GSI / Top Dry

2001 Service School Manual

a division of

THE GSI GROUP

Roof Damage Warning and Disclaimer

GSI DOES NOT WARRANT ANY ROOF DAMAGE CAUSED BY EXCESSIVE VACUUM OR INTERNAL PRESSURE FROM FANS OR OTHER AIR MOVING SYSTEMS. ADEQUATE VENTILATION AND/OR "MAKEUP AIR" DEVICES SHOULD BE PROVIDED FOR ALL POWERED AIR HANDLING SYSTEMS. GSI DOES NOT RECOMMEND THE USE OF DOWNWARD FLOW SYSTEMS (SUCTION). SEVERE ROOF DAMAGE CAN RESULT FROM ANY BLOCKAGE OF AIR PASSAGES. RUNNING FANS DURING HIGH HUMIDITY/ COLD WEATHER CONDITIONS CAN CAUSE AIR EXHAUST OR INTAKE PORTS TO FREEZE.

Operating Instructions

The principal concern of the GSI Group, Inc. ("GSI") is your safety and the safety of others associated with grain handling equipment. This manual is written to help you understand safe operating procedures, and some of the problems that may be encountered by the operator or 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 who are in the fan area. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation, where serious injury or death may occur.

Safety Alert Symbol

The symbol shown is used to call your attention to instructions concerning your personal safety. Watch for this symbol; it points out important safety precautions. It means "ATTENTION", "WARNING", "CAUTION", and "DANGER". Read the message and be cautious to the possibility of personal injury or death.

WARNING! BE ALERT!

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

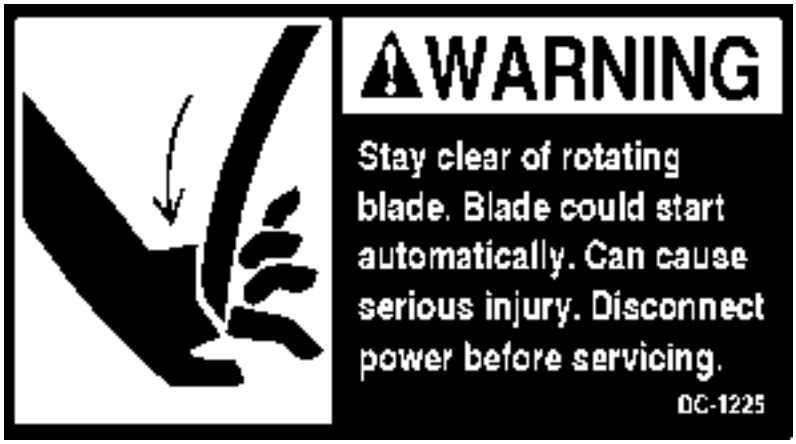
Grain Systems, Inc. recommends contacting your local power company, and having a representative survey your installation so the wiring is compatible with their system, and adequate power is supplied to your unit.

Safety decals should be read and understood by all people in the grain handling area. The rotating blade, fire warning decals and voltage danger decal must be displayed on the fan can. The bottom right decal should be present on the inside bin door cover of the two ring door, 24" porthole door cover and the roof manway cover.

If a decal is damaged or is missing contact:

Grain Systems, Inc.
1004 E. Illinois St.
Assumption, IL 62510
217-226-4421

A free replacement will be sent to you.



READ THESE INSTRUCTIONS
BEFORE OPERATION AND SERVICE
SAVE FOR FUTURE REFERENCE

1. Read and understand the operating manual before trying to operate the dryer.

2. Power supply should be OFF for service of electrical components. Use CAUTION in checking voltage or other procedures requiring power to be ON.

3. Check for gas leaks at all gas pipe connections. If any leaks are detected, do not operate the dryer. Shut down and repair before further operation.

4. Never attempt to operate the dryer by jumping or otherwise bypassing any safety devices on the unit.

5. Set pressure regulator to avoid excessive gas pressure applied to burner during ignition and when burner is in operation. Do not exceed maximum recommended drying temperature.

6. Keep the dryer clean. Do not allow fine material to accumulate in the plenum or drying chamber.

7. Use CAUTION in working around high speed fans, gas burners, augers and auxiliary conveyors which START AUTOMATICALLY.

8. Do not operate in any area where combustible material will be drawn into the fan.

9. Before attempting to remove and reinstall any propellor, make certain to read the recommended procedure listed within the servicing section of the manual.

10. Clean grain is easier to dry. Fine material increases resistance to airflow and requires removal of extra moisture.

This product is intended for the use of grain handling only. Any other use is considered a misuse of the product.
Some edges of the product components can be sharp. It is recommended that each component of this product be examined to determine if there are any safety considerations to be taken. Any and all necessary personal protective equipment should be worn at all tines when handling, assembling, installing and operation of the product and/or components.
Guards are removed for illustration purpose only. All guardsmust be in place before/during operation.

Use Caution in the Operation of this Equipment

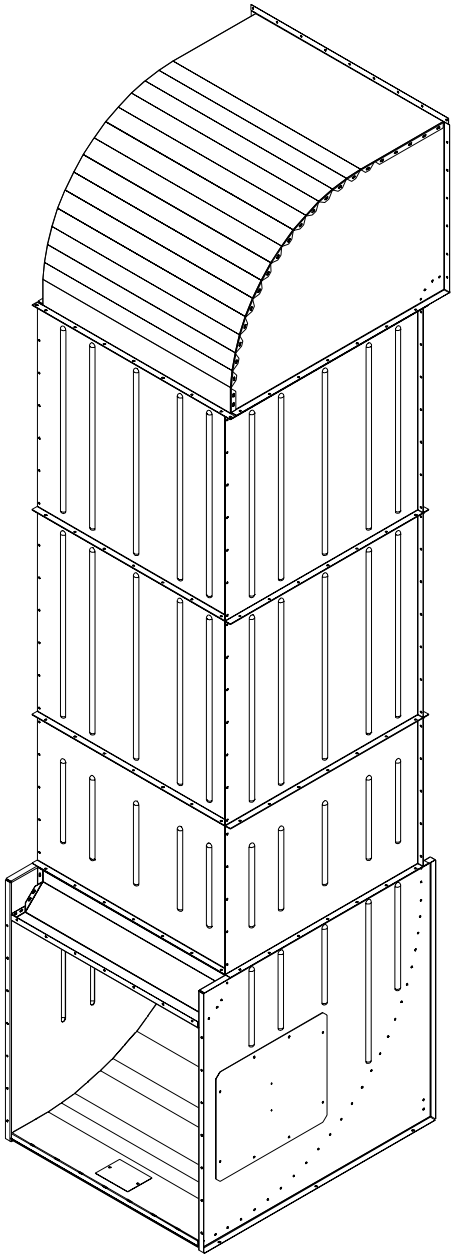
The design and manufacture of this dryer is directed toward operator safety. However, the very nature of a grain dryer having a gas burner, high voltage electrical equipment and high speed rotating parts, does present a hazard to personnel, which can not be completely safeguarded against, without interfering with efficient operation and reasonable access to components.
Use extreme caution in working around high speed fans, gas-fired heaters, augers and auxiliary conveyors, which may start without warning when the dryer is operating on automatic control.

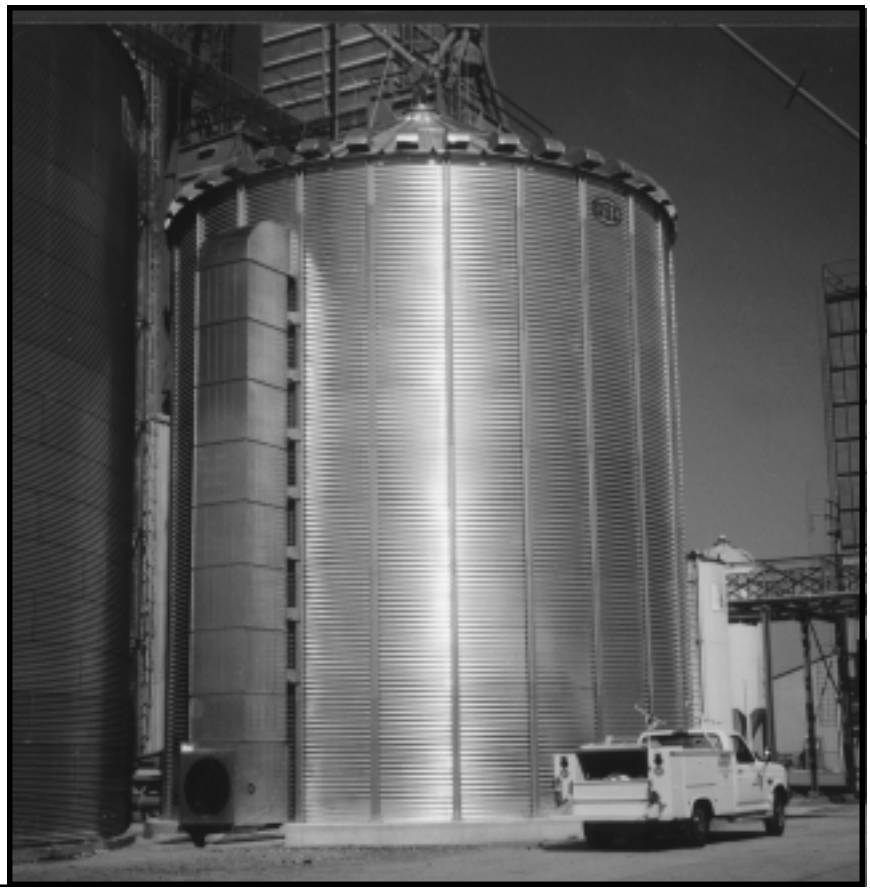
KEEP THE DRYER CLEAN
DO NOT ALLOW FINE
MATERIAL TO ACCUMULATE
IN THE PLENUM CHAMBER
OR SURROUNDING THE
OUTSIDE OF THE DRYER

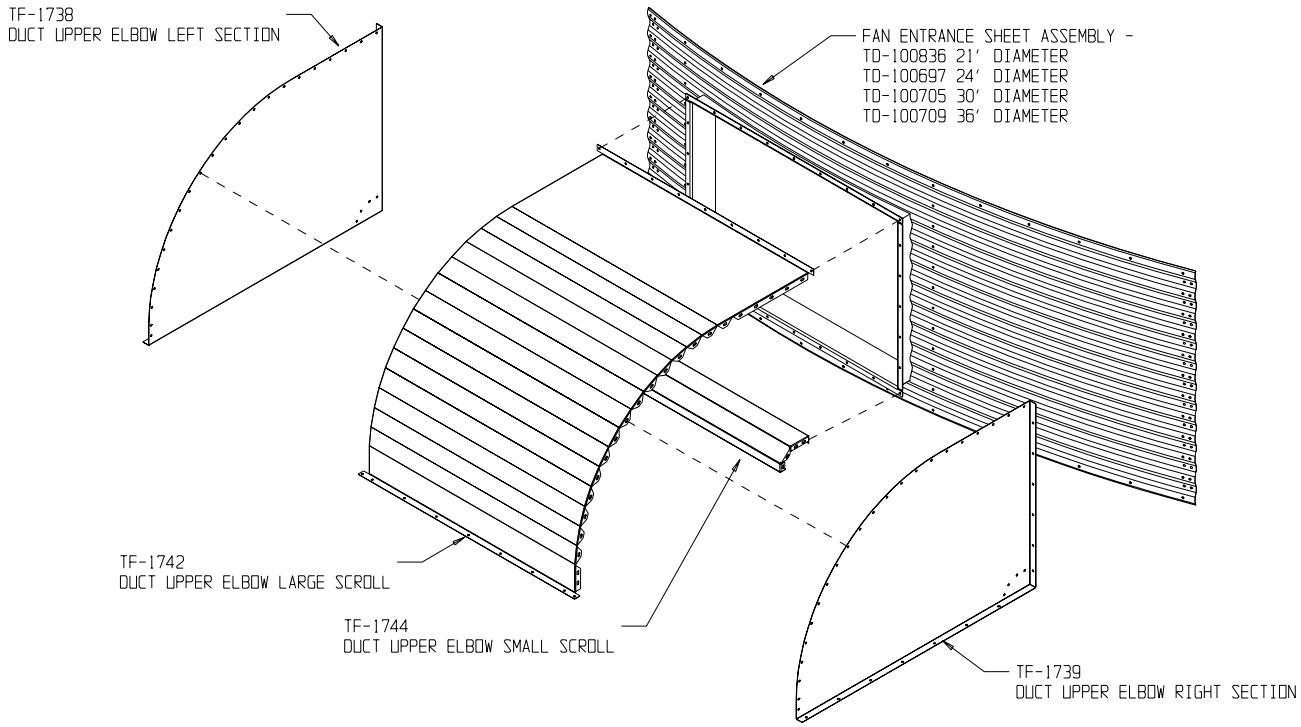
Continued safe, dependable operation of automatic equipment depends, to a great degree, upon the owner. For a safe and dependable drying system, follow the recommendations within this manual, and make it a practice to regularly inspect the operation of the unit for any developing problems or unsafe conditions.
Take special note of the safety precautions listed above before attempting to operate the dryer.

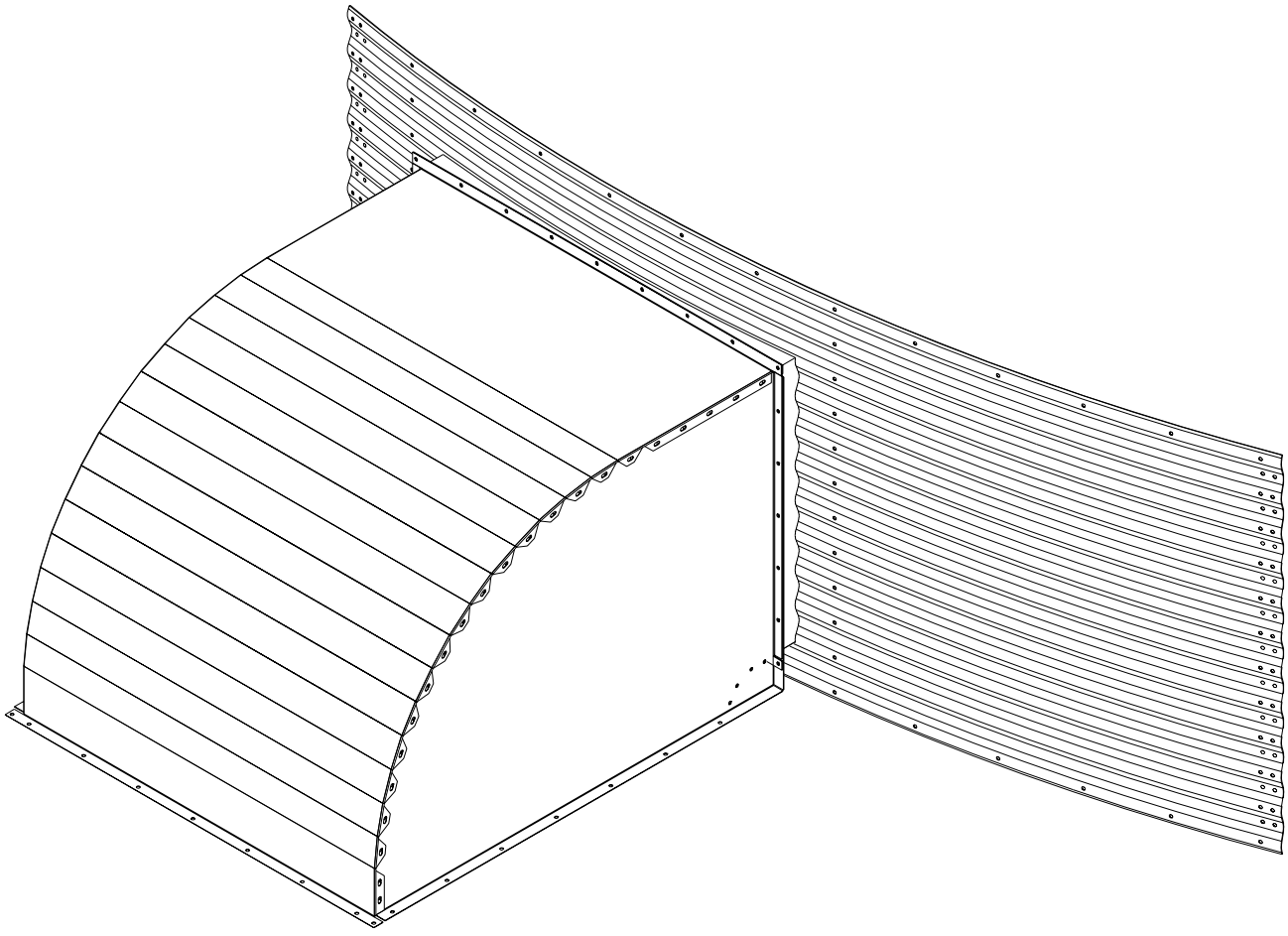
GSI / Top Dry

Duct Installation

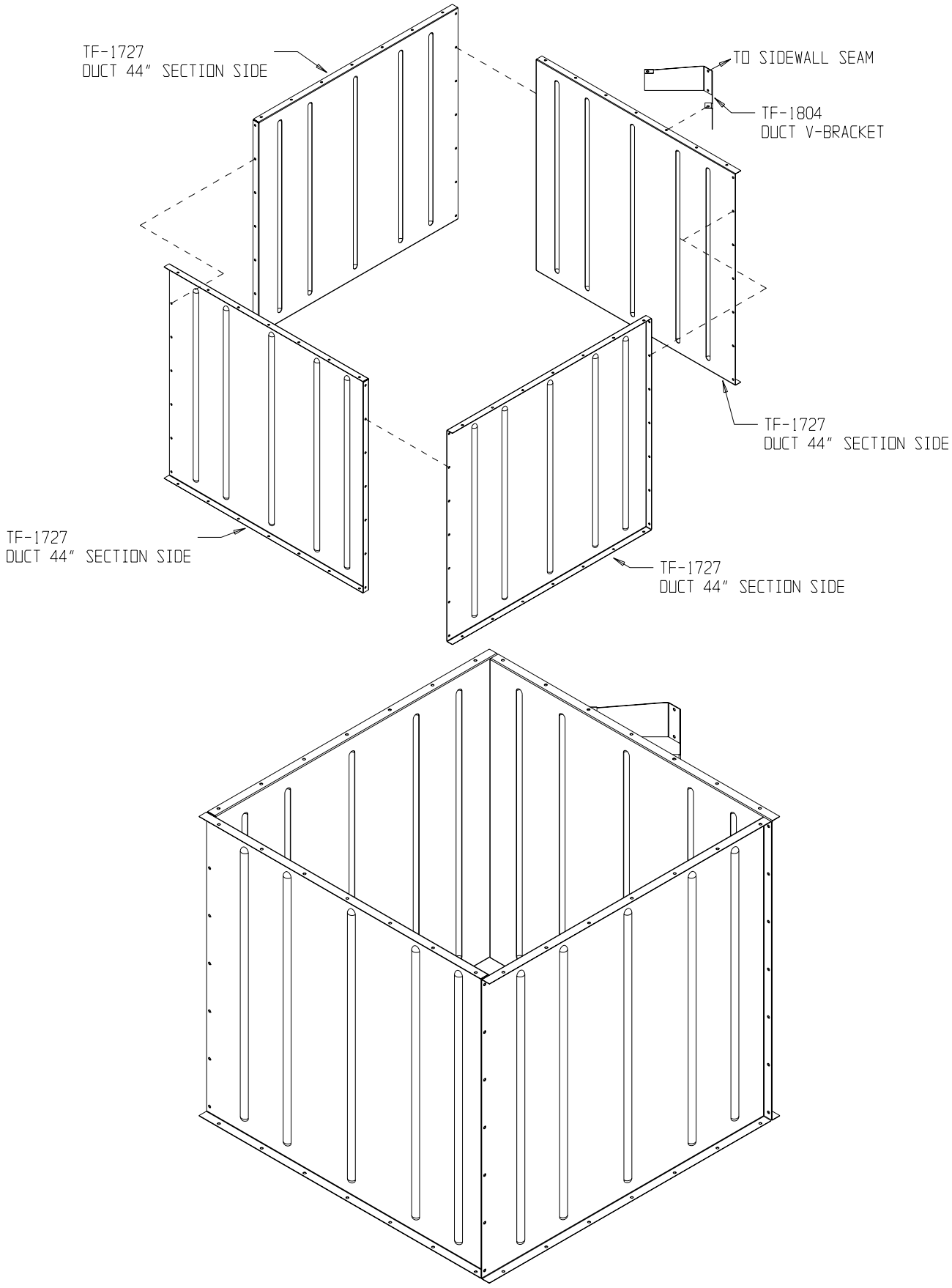




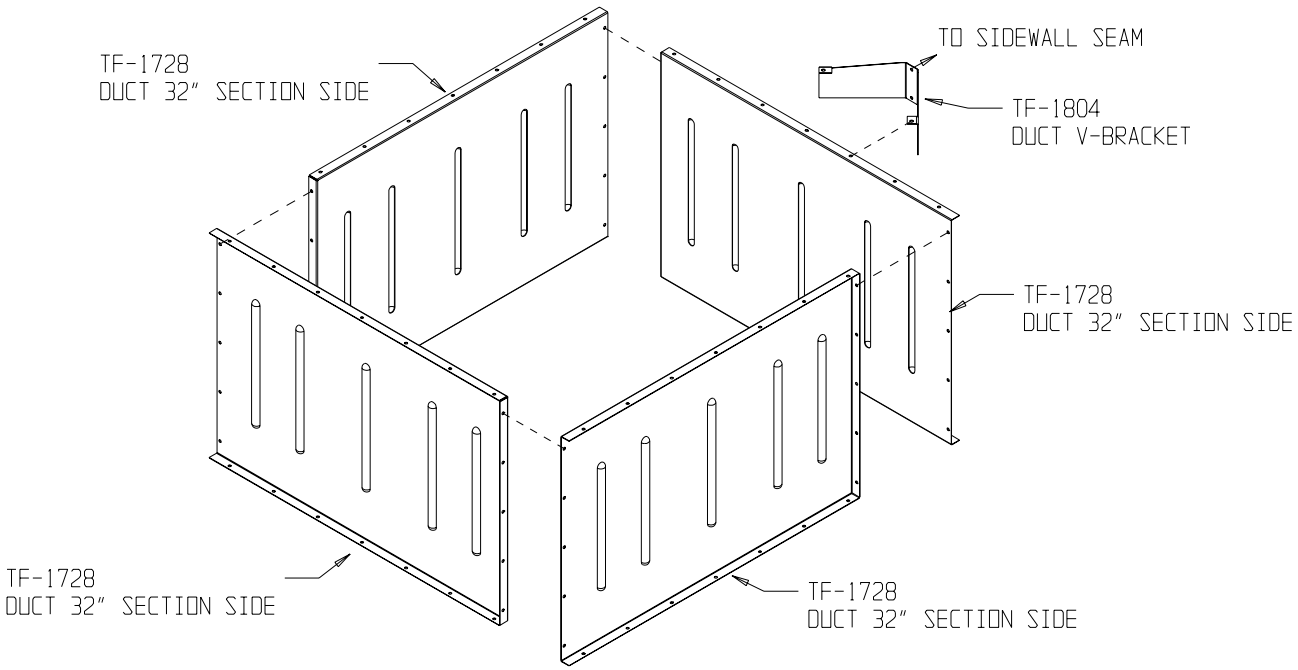


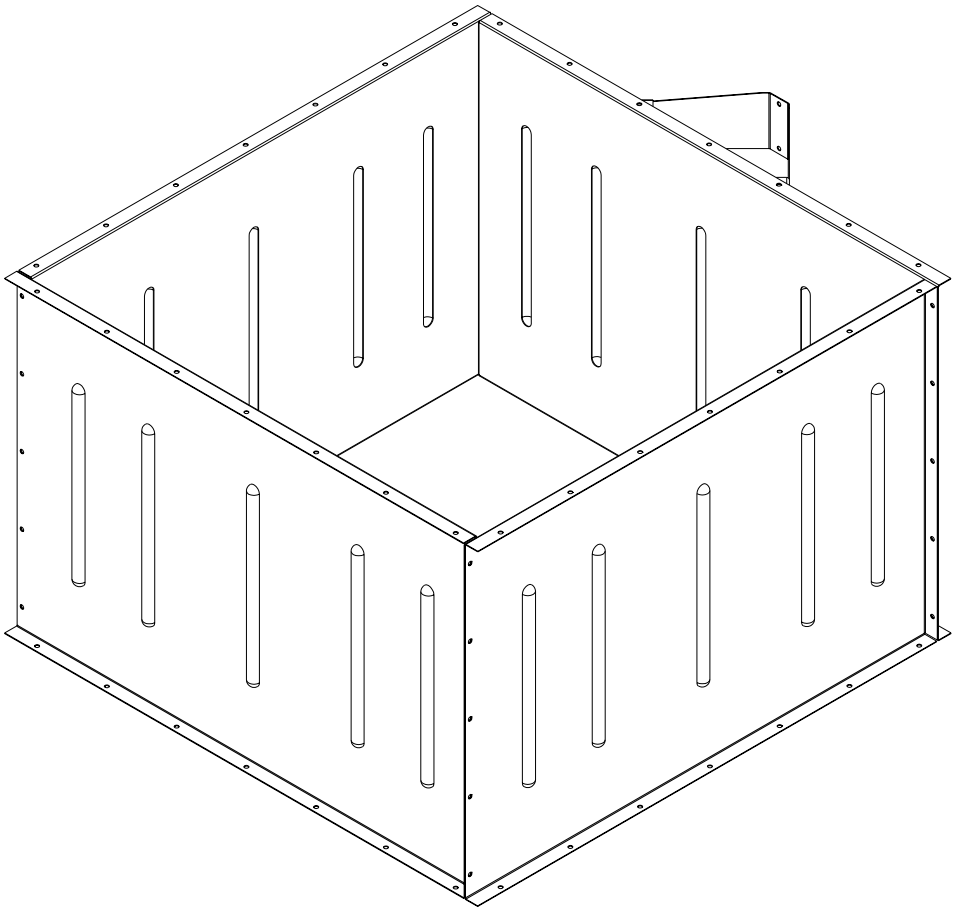


Top Elbow Duct Section

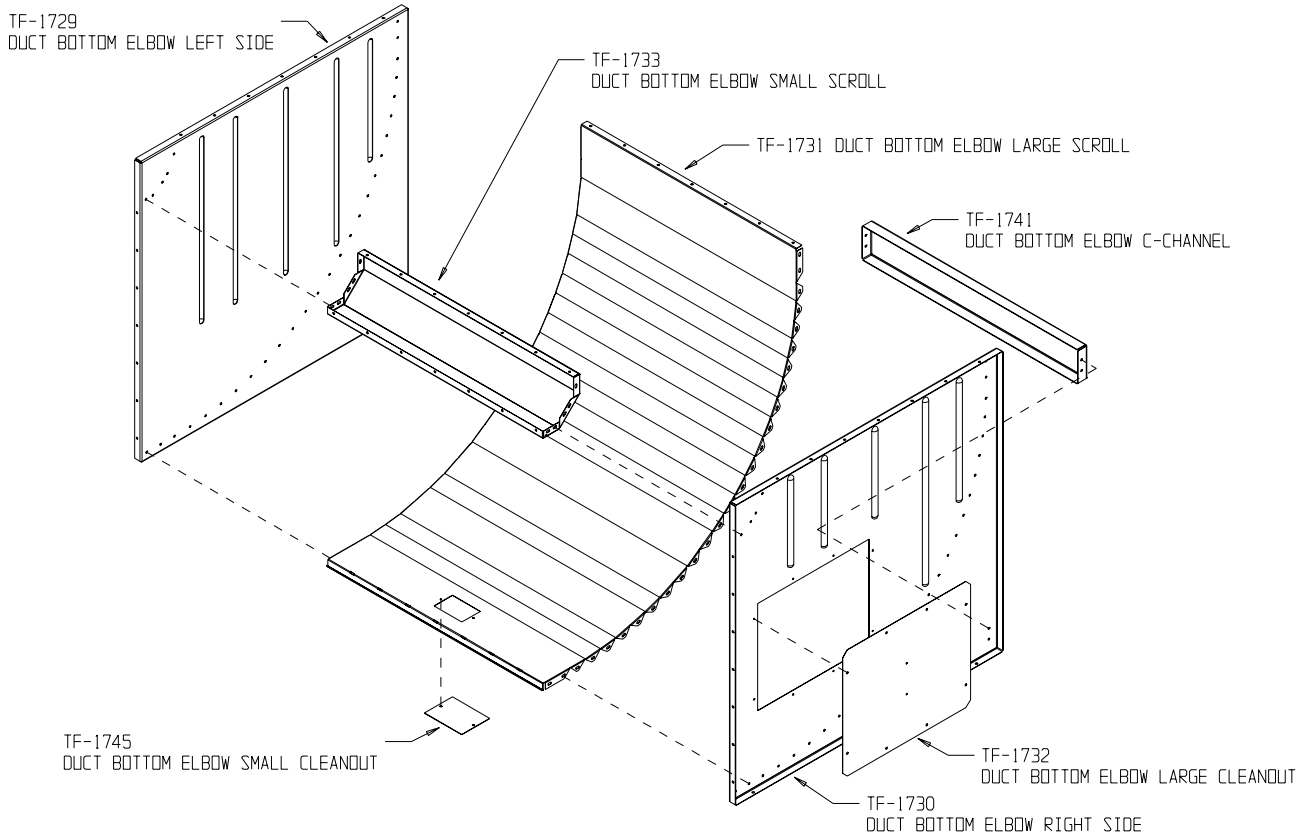


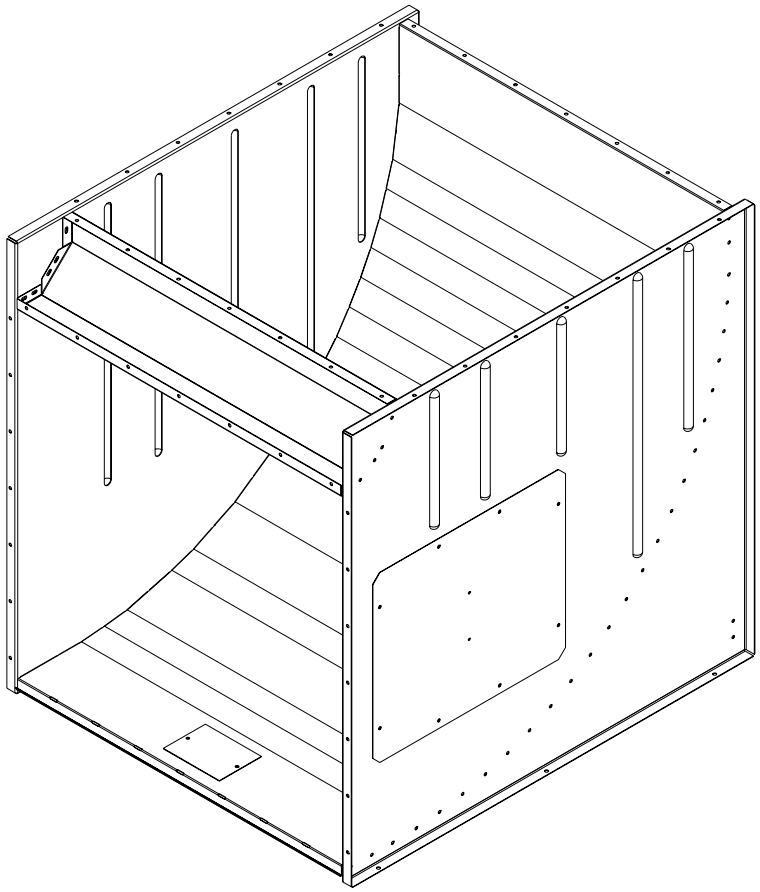
44" Duct Section



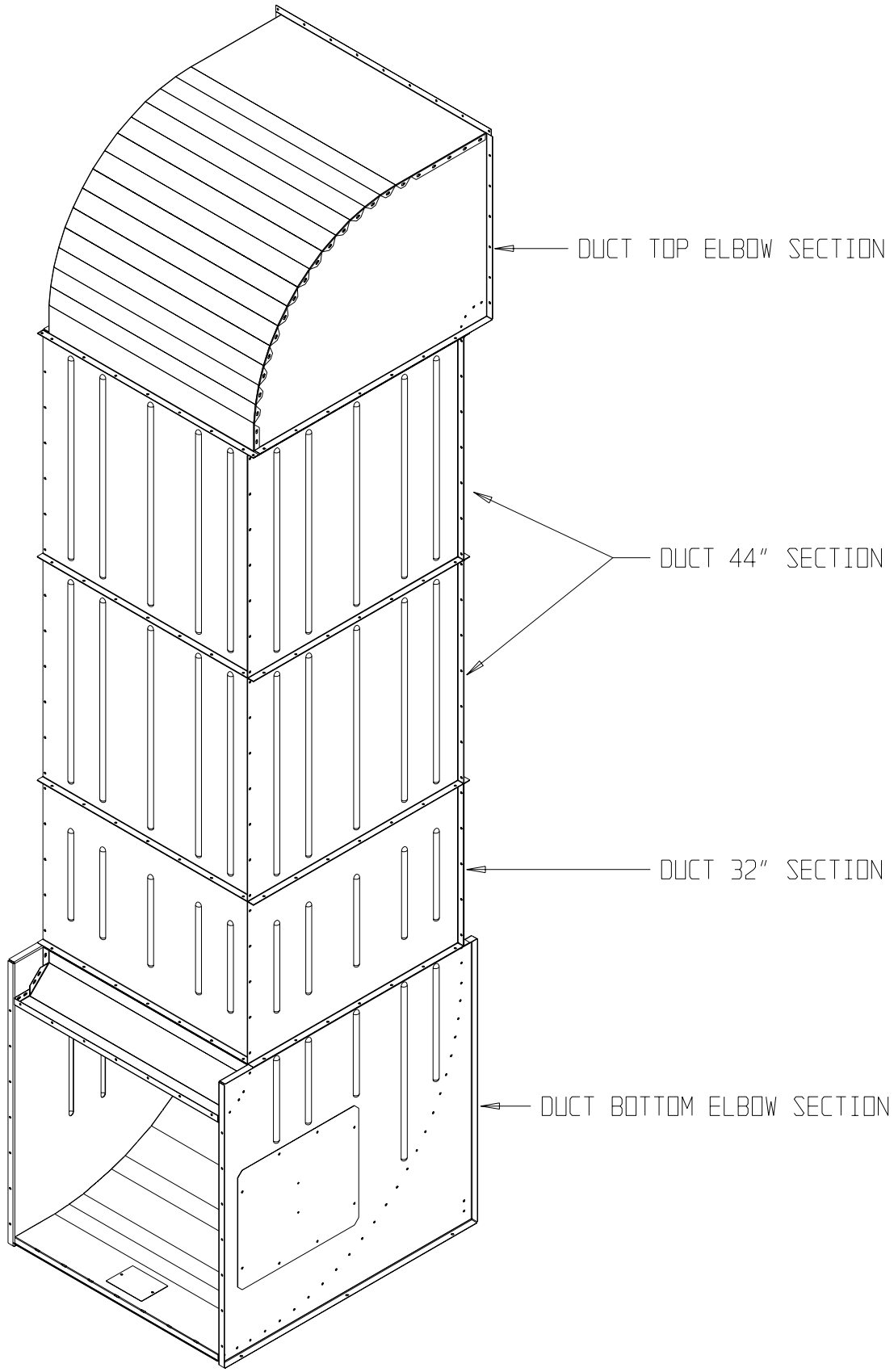


32" Duct Section





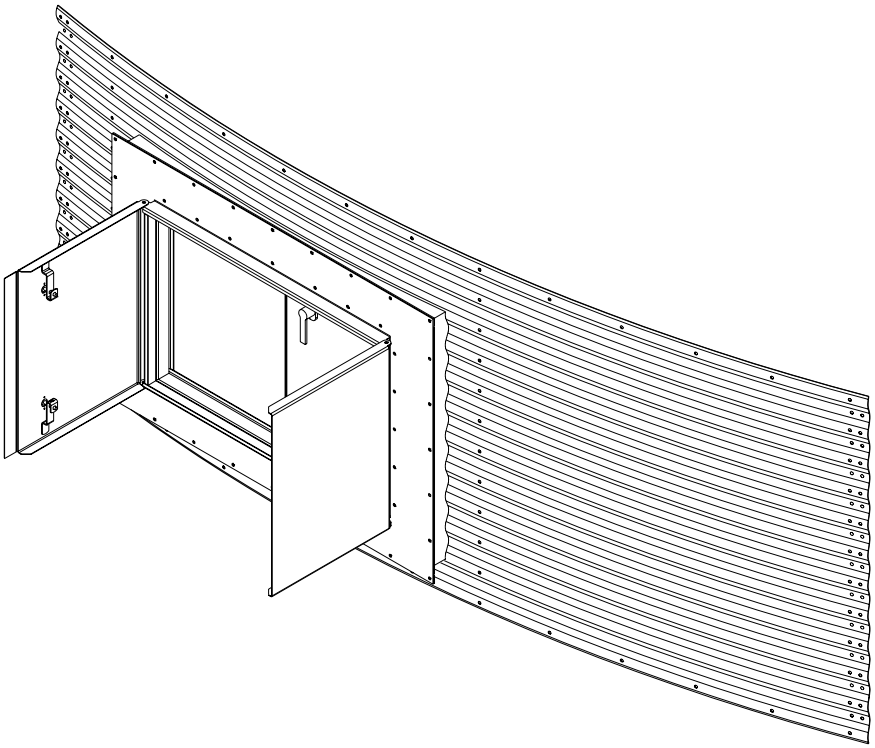
Bottom Elbow Duct Section

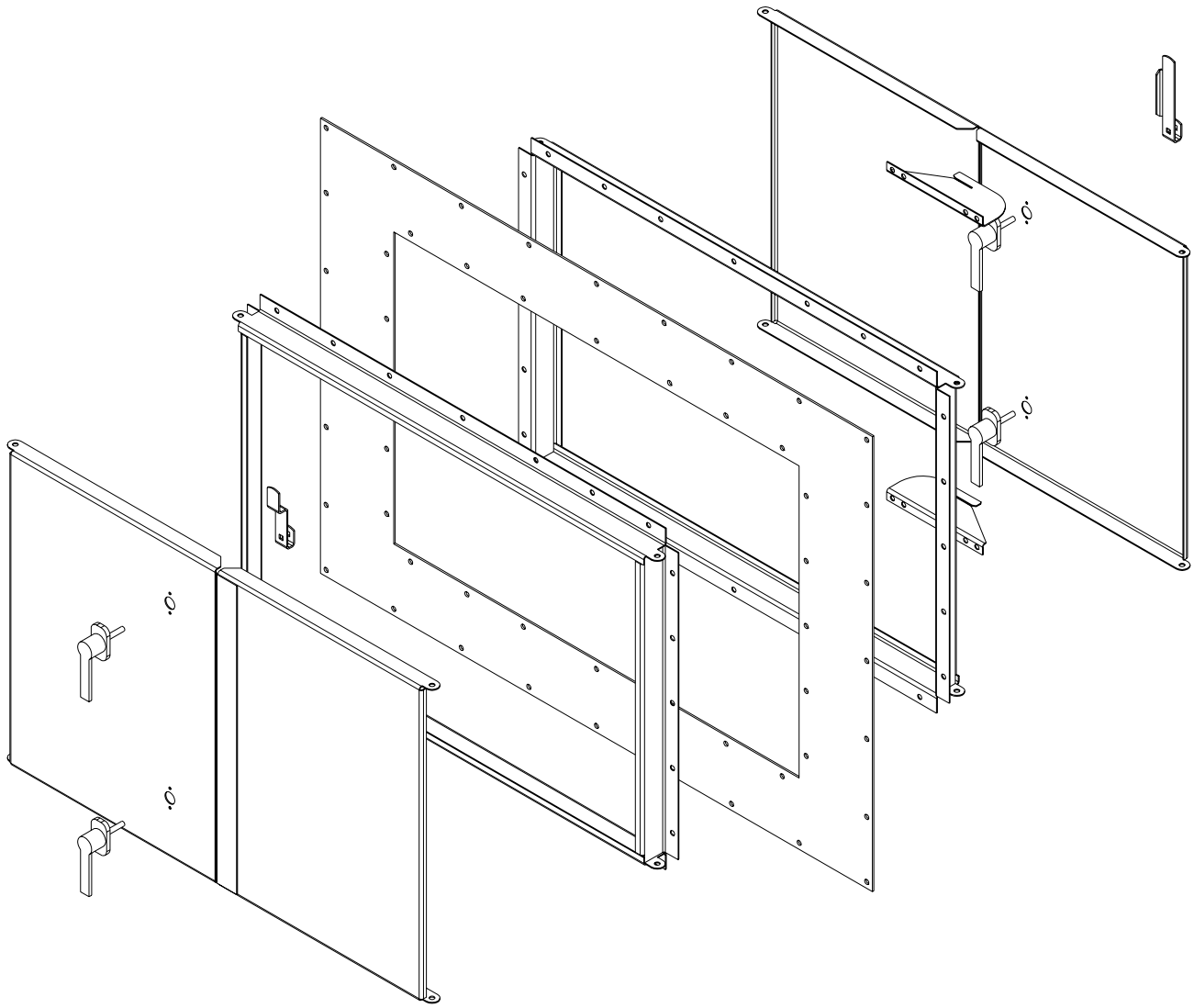


Duct Assembly - (Six Ring Top Dry)

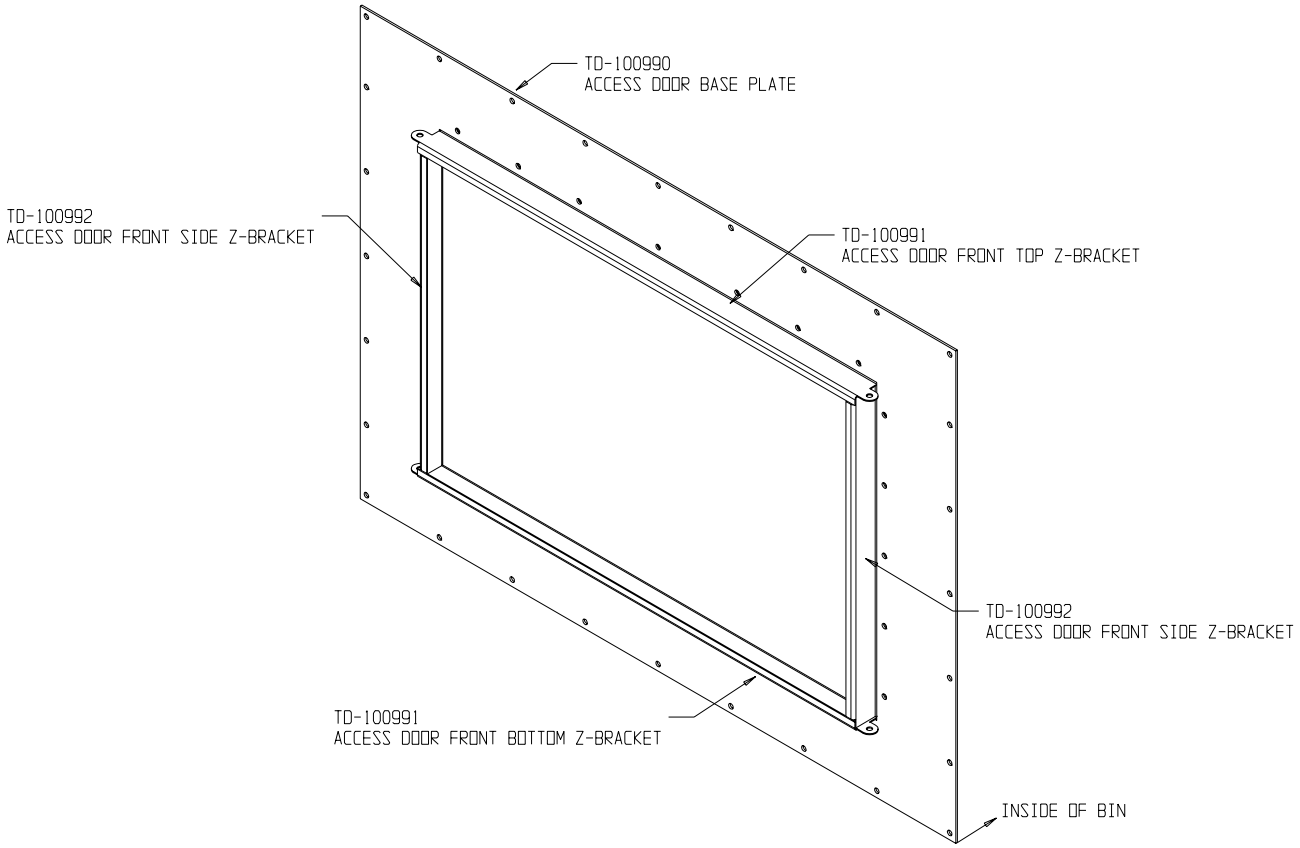
GSI / Top Dry

Access Door Installation

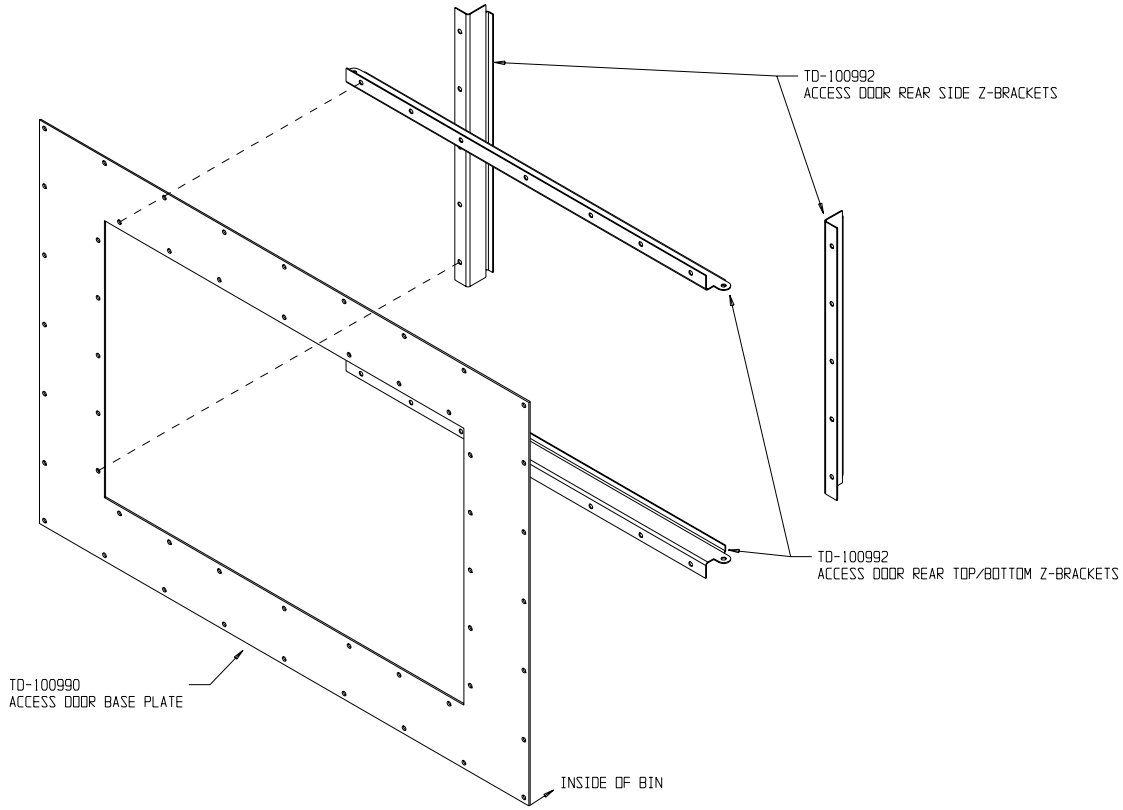




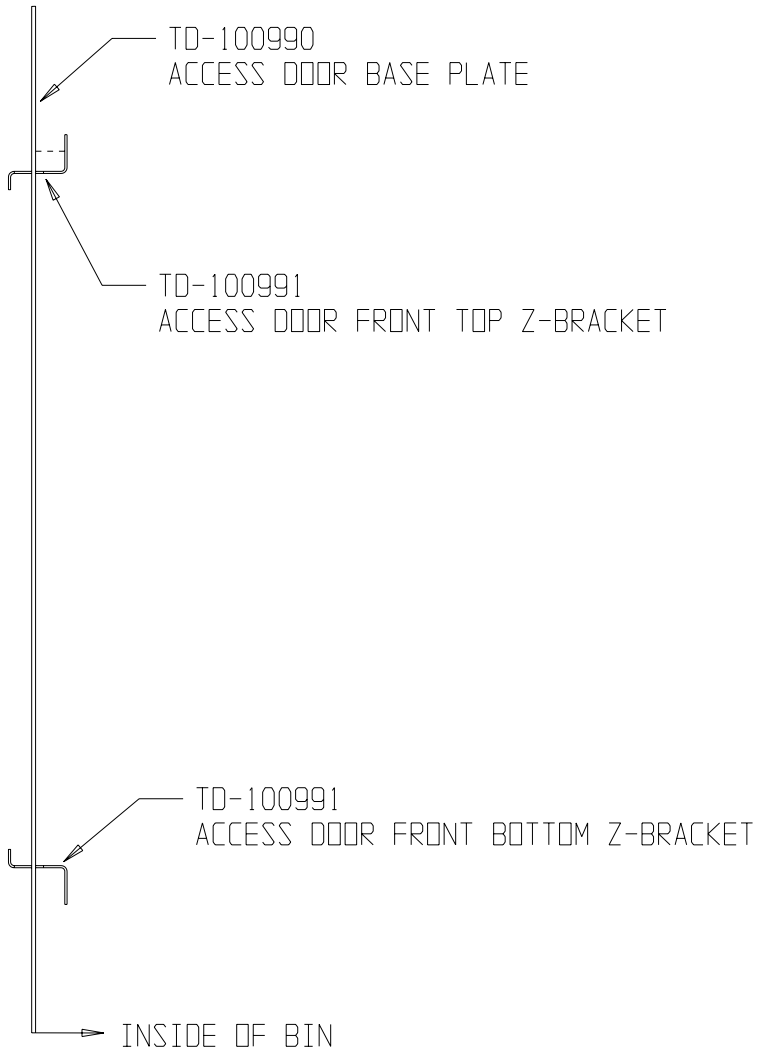
Access Door Assembly - Expanded View



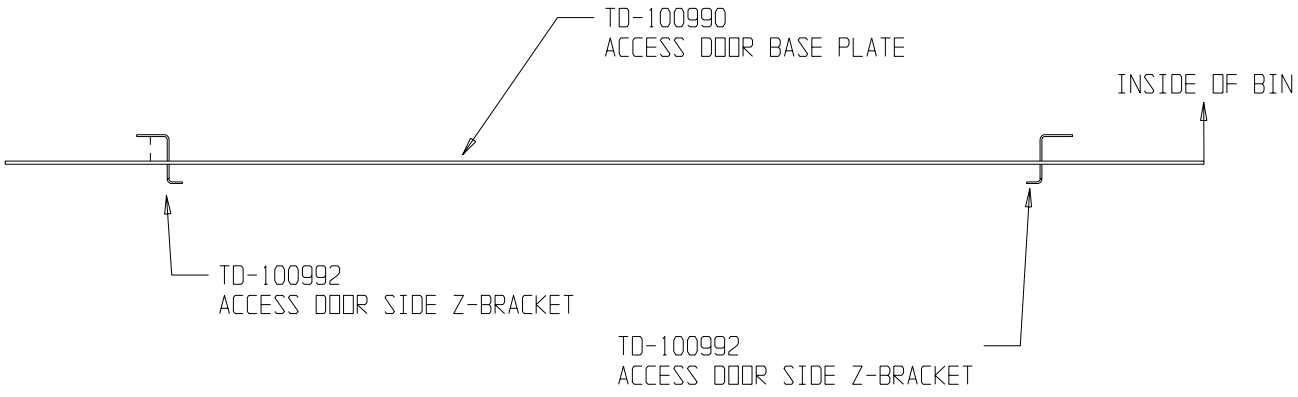
Front Z-Bracket Assembly



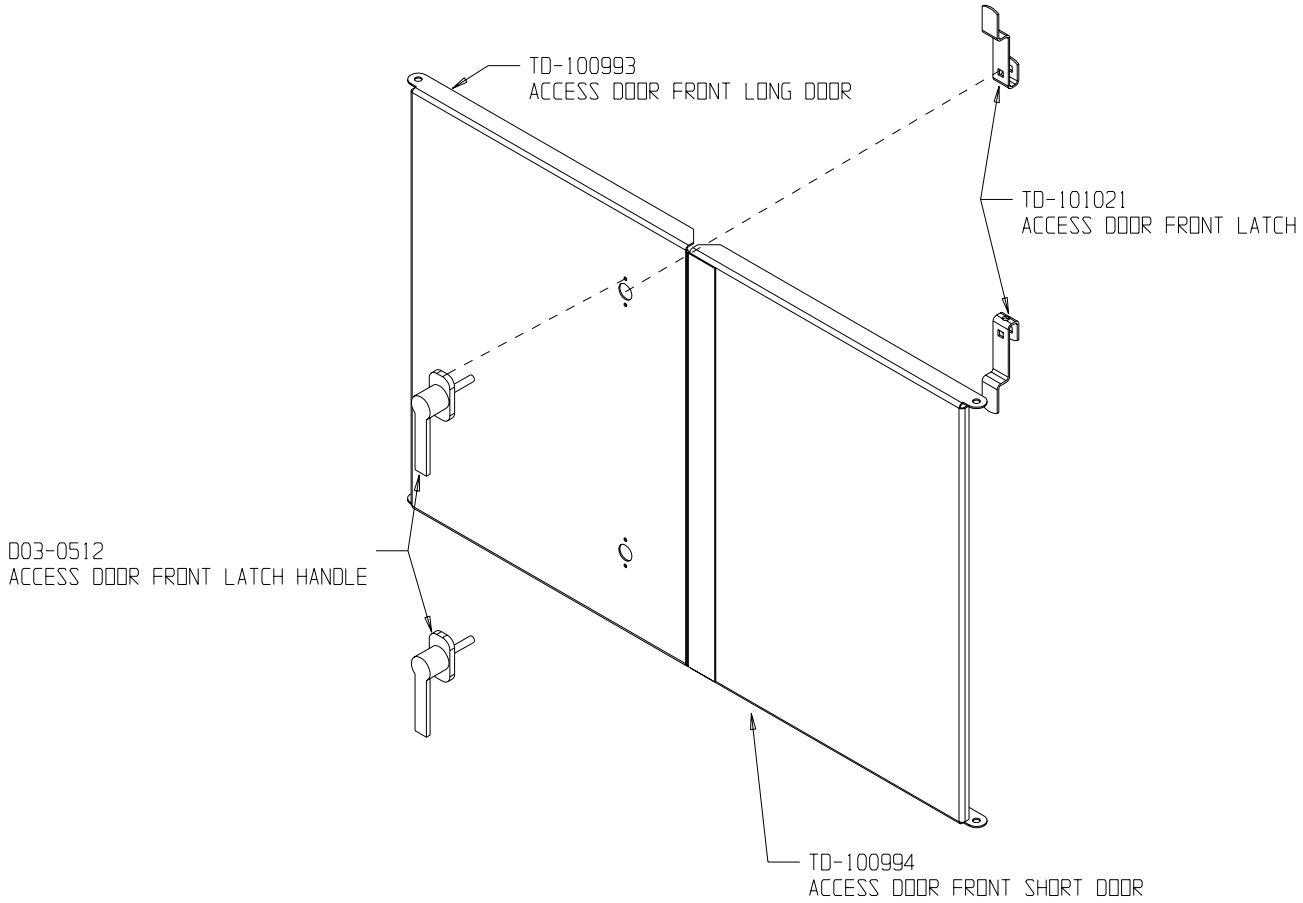
Rear Z-Bracket Assembly



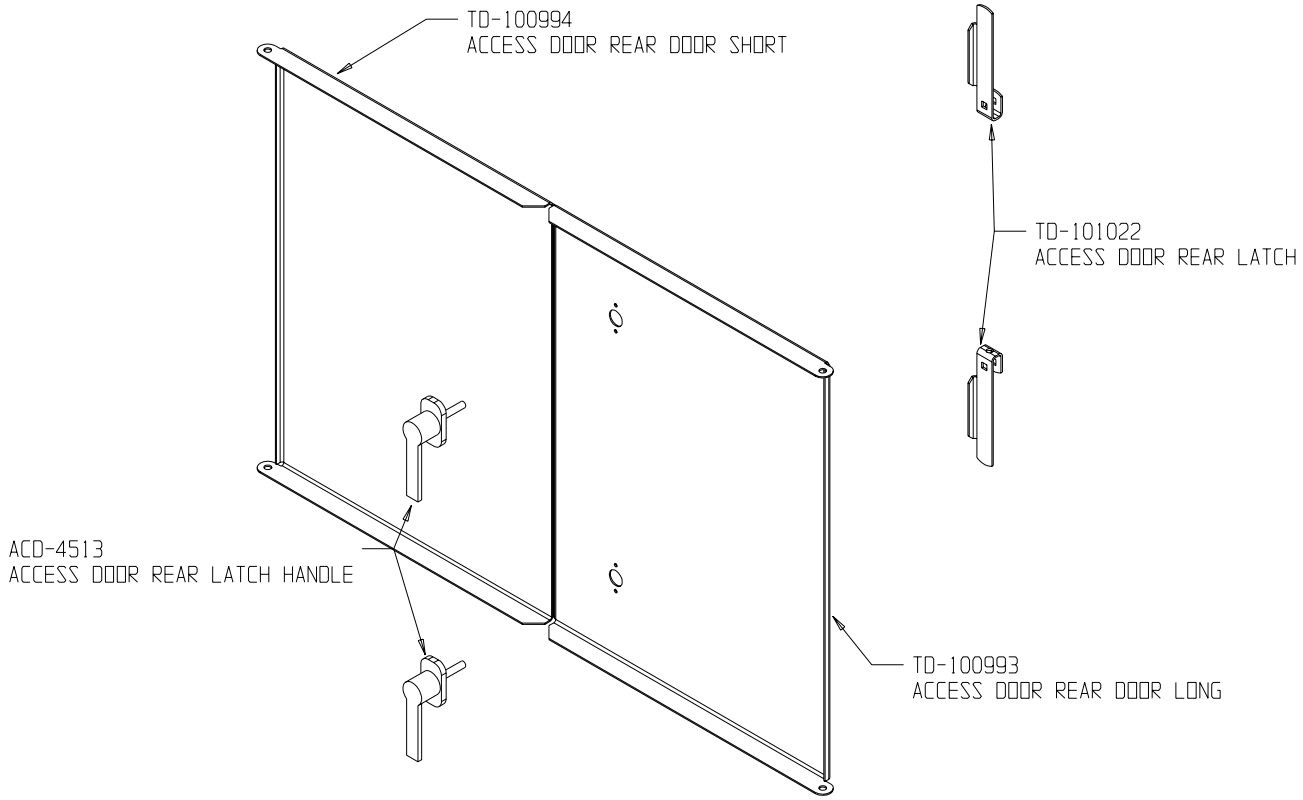
Front Top/Bottom Z-Bracket Assembly - Side View



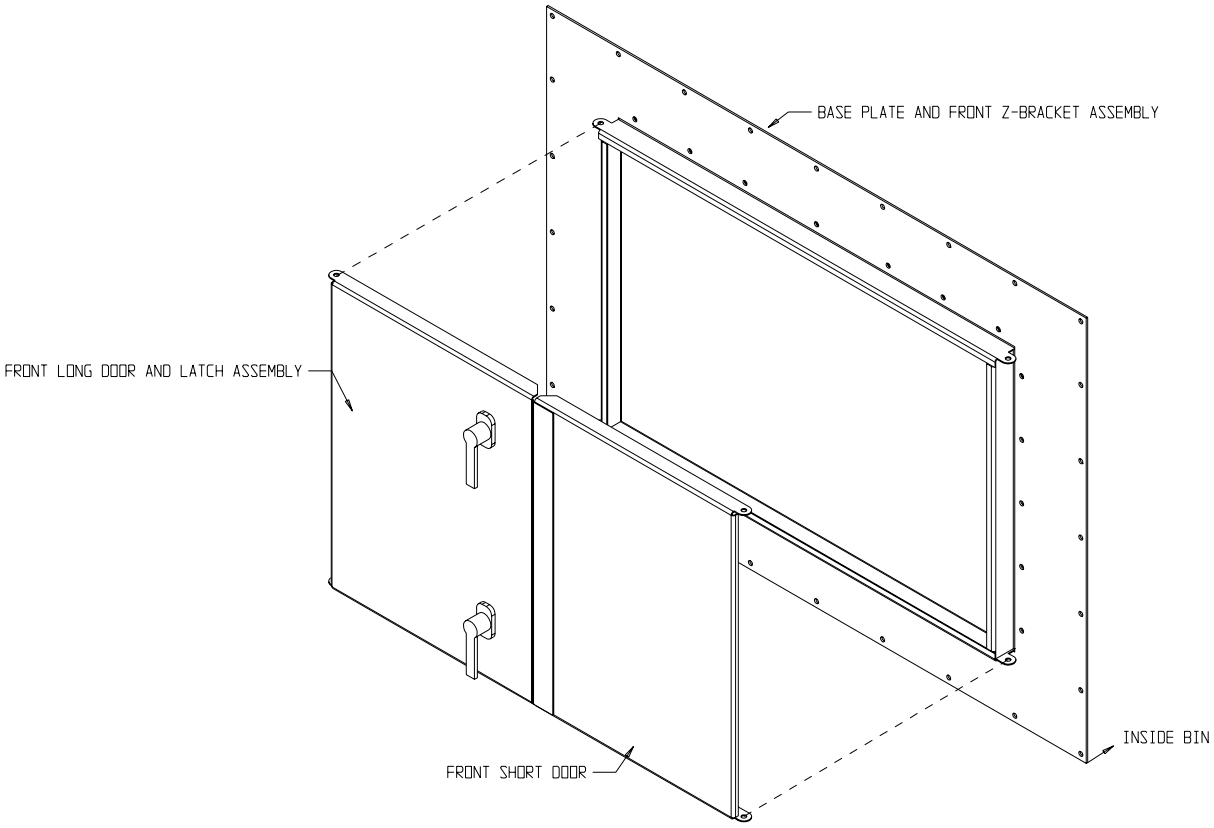
Front Side Z-Bracket Assembly - Top View



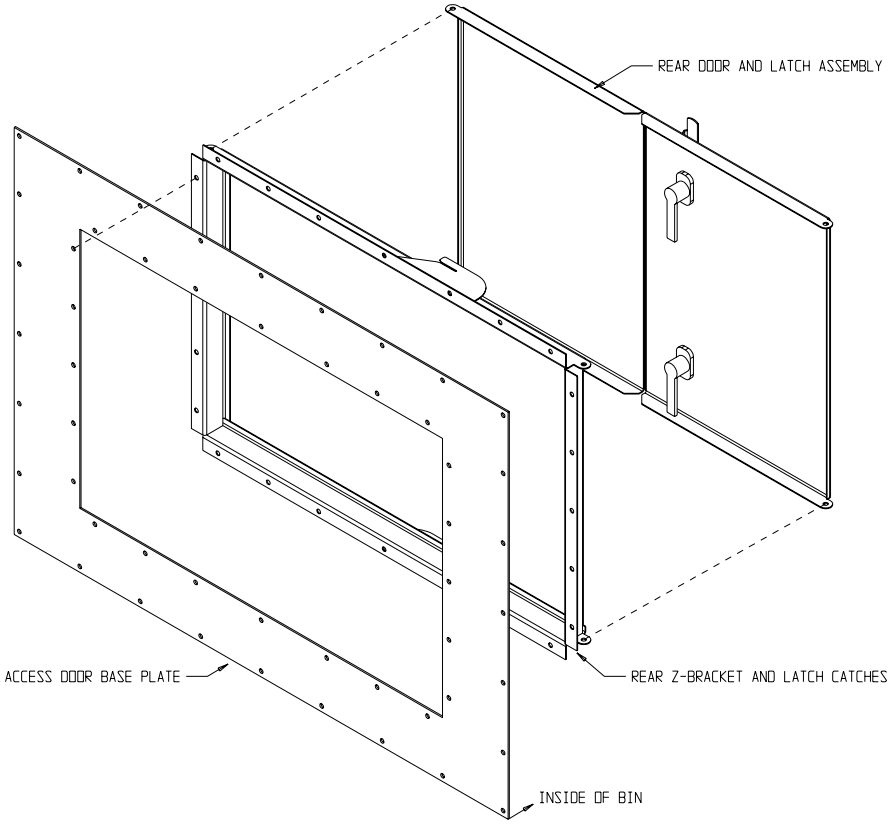
Front Door Latch Assembly



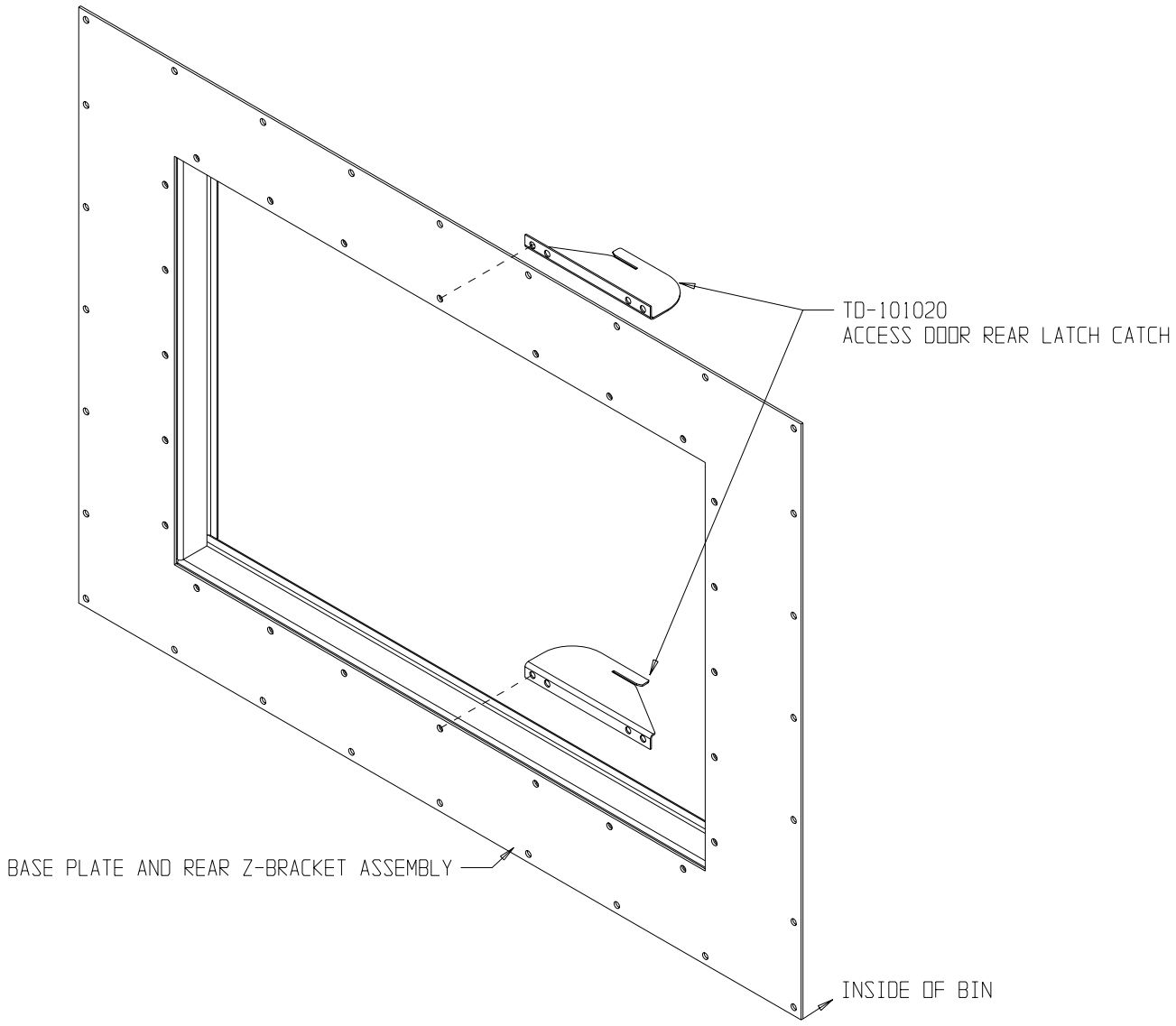
Rear Door Latch Assembly



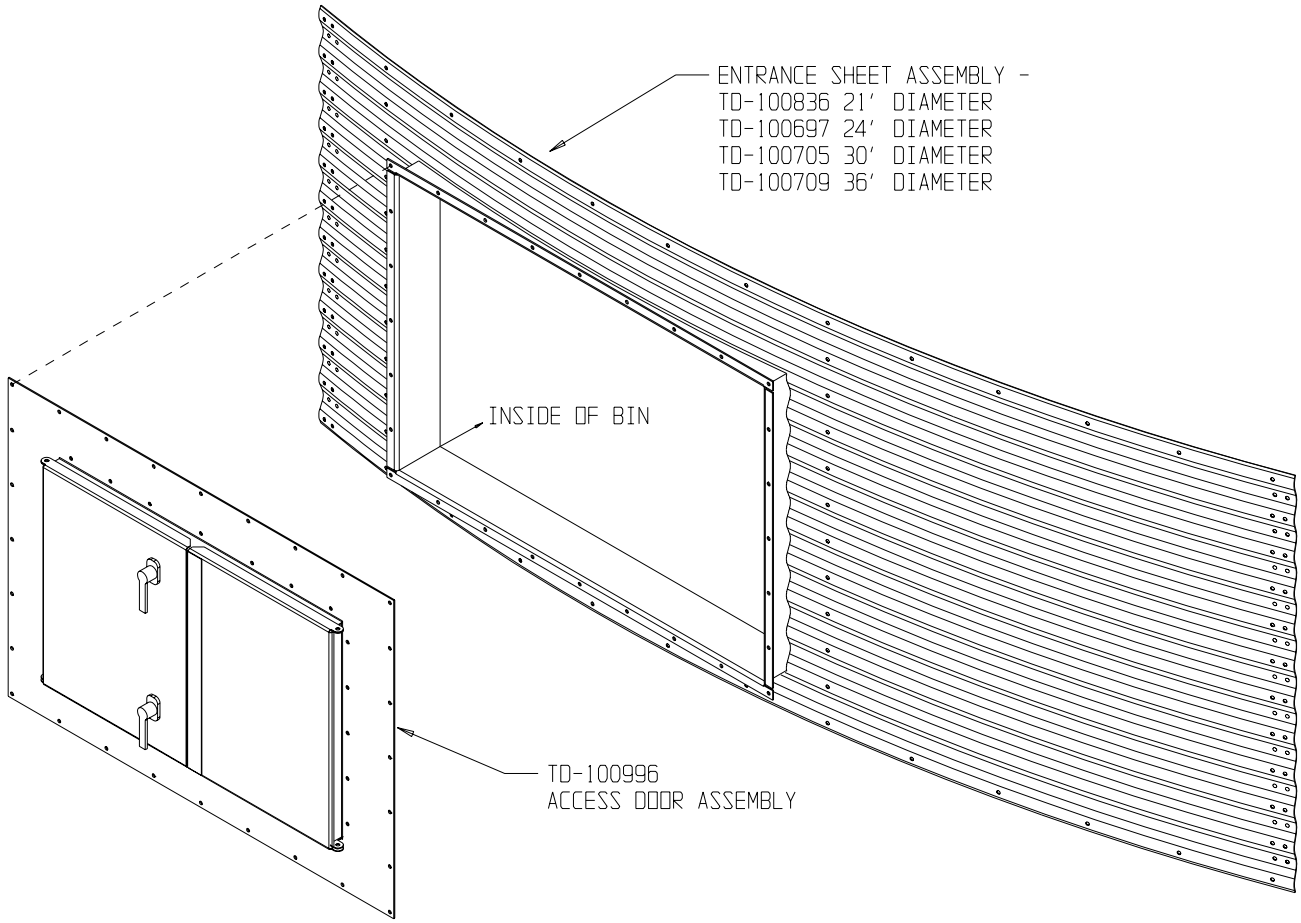
Front Doors to Z-Bracket Assembly



Rear Doors to Z-Bracket Assembly



Rear Door Latch Catch Assembly

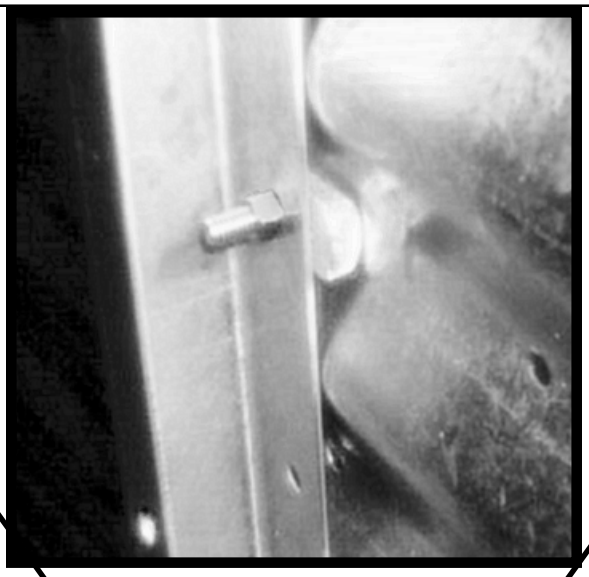


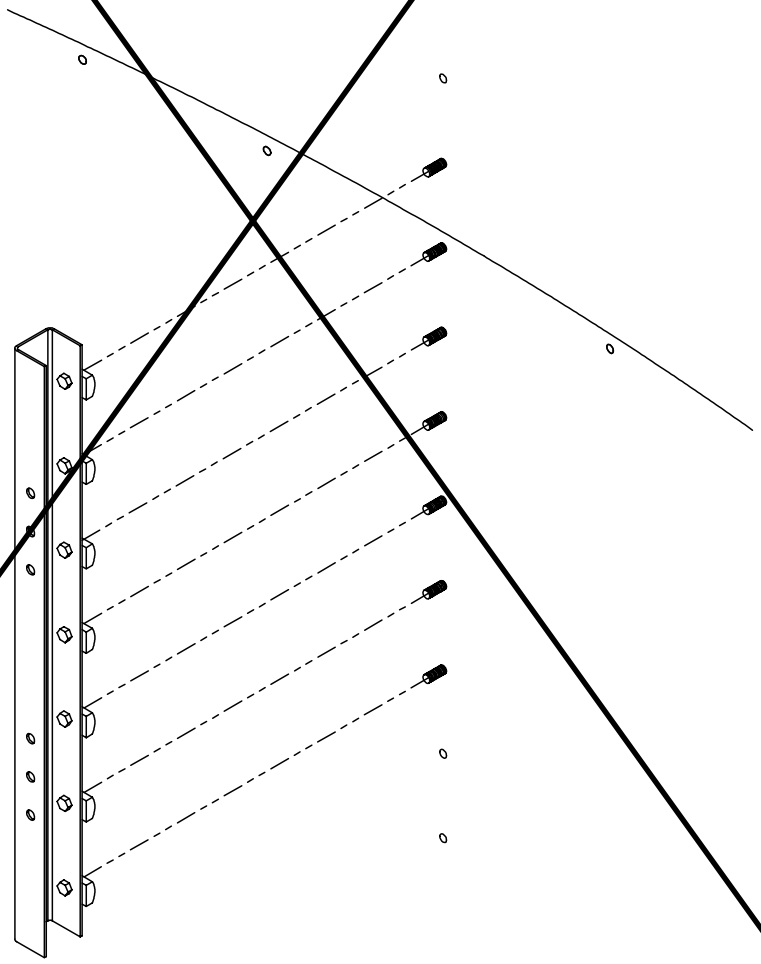
Access Door to Entrance Sheet Assembly

GSI / Top Dry

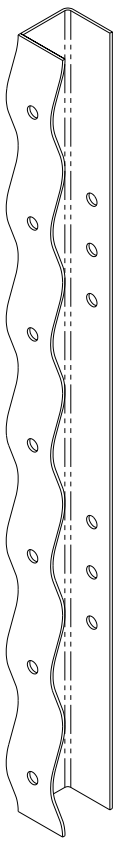
Product Updates

* Corrugated Stiffener Bracket
* Eave Clips
* Partially Perforated Eave Flashing
* Venturi Airswitch
* Brake Motor
* IEC Electrical Components
* Grain Temperature Sensor Junction Box
* Rotary Switch Junction Box

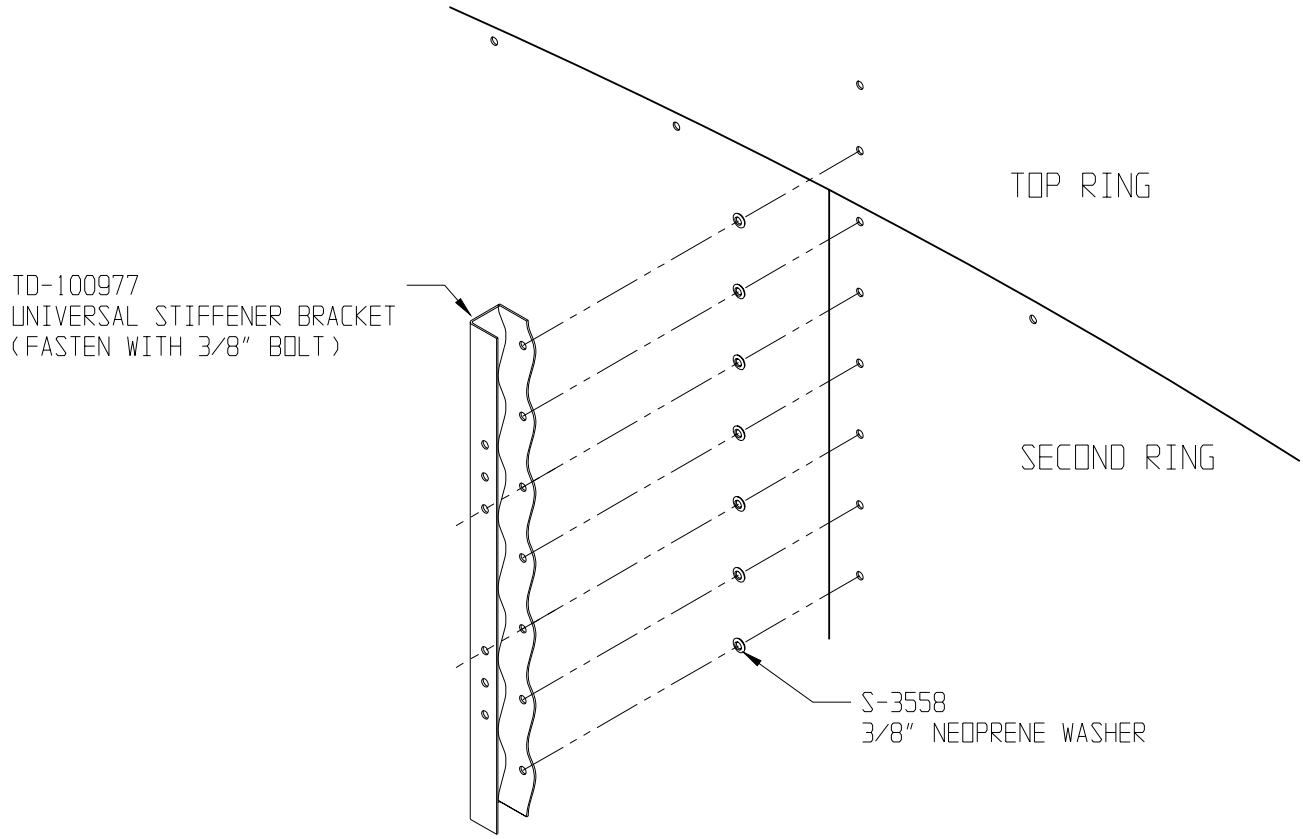




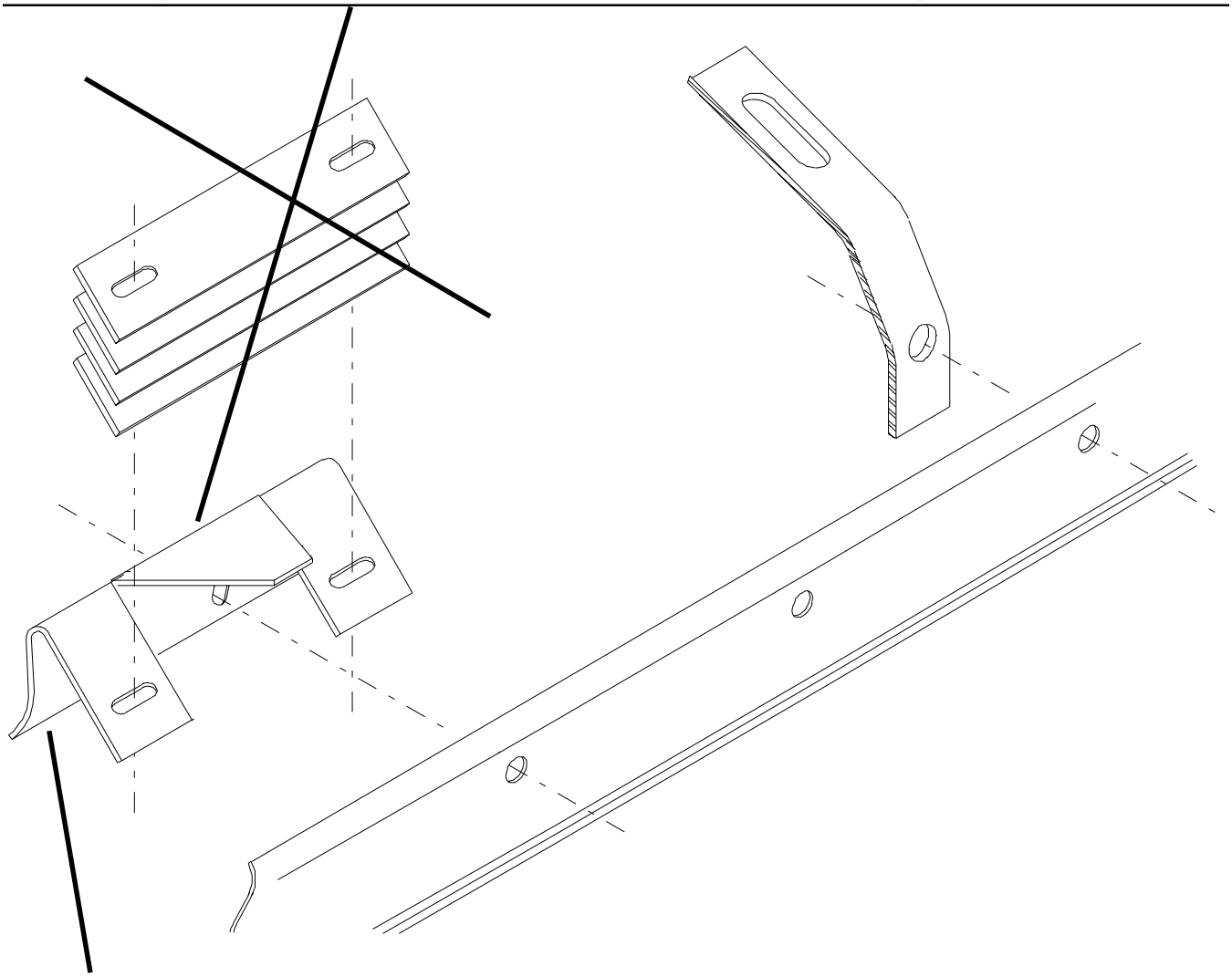
Old-Style Stiffener Bracket w/Corrugation Spacers



TD-100977 Corrugated Stiffener Bracket

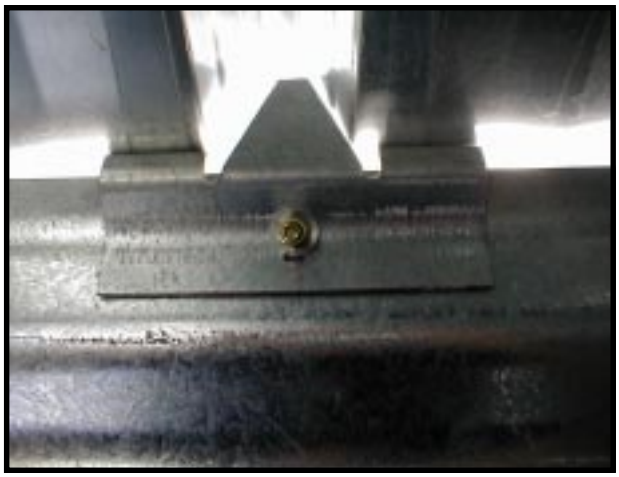


Corrugated Stiffener Bracket Installation

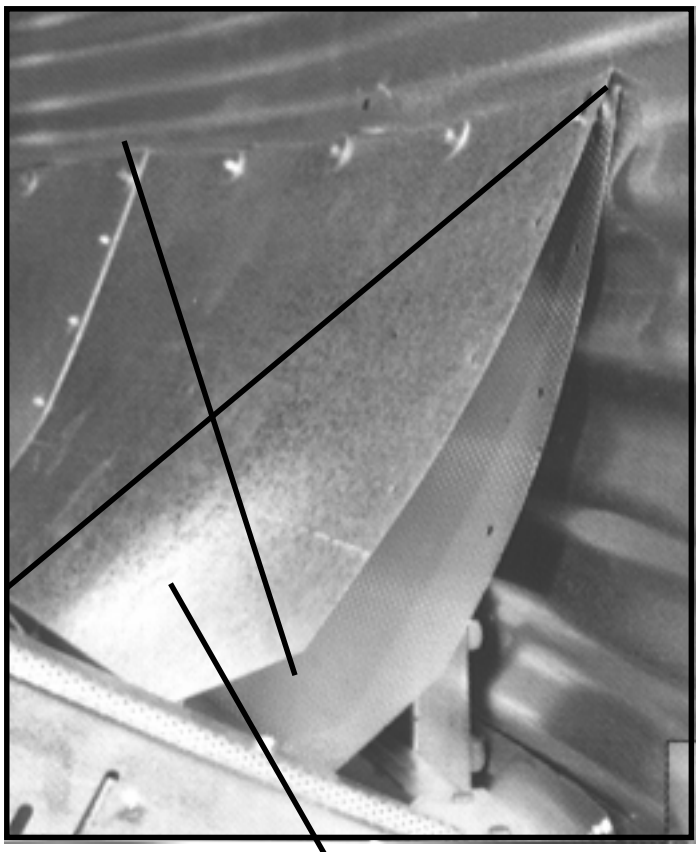


TD - 101017
Large Eave Clip (30' & 36' Diameter Top Dry Units)

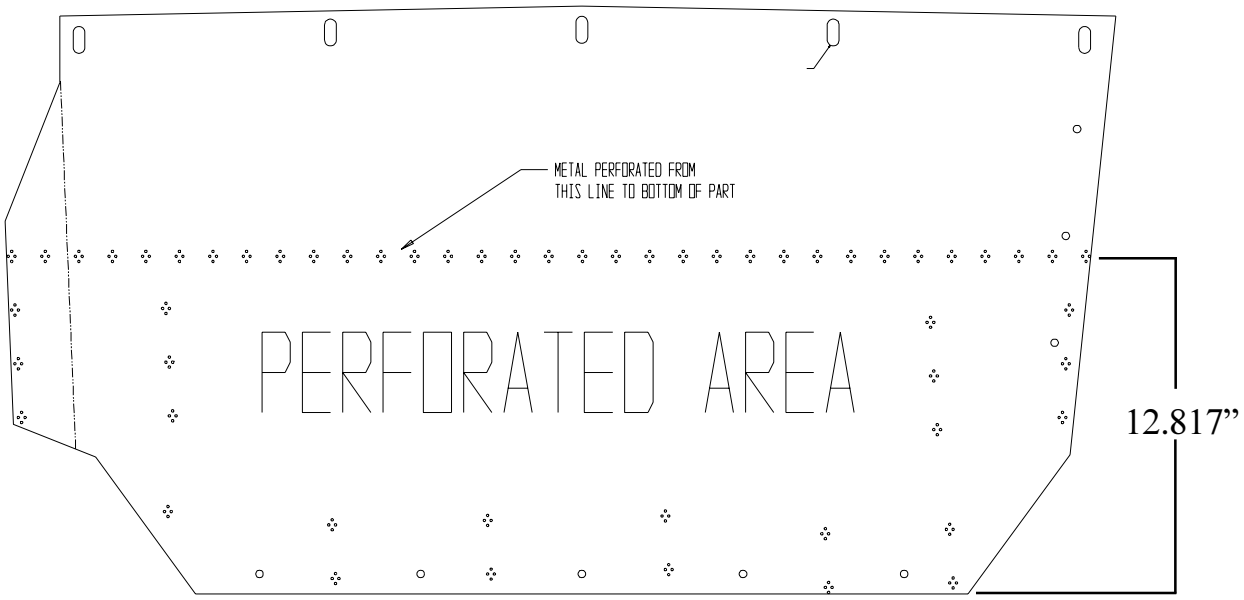
TD-101074
Small Eave Clip (21' & 24" Diameter Top Dry UNits)



New Top Dry Eave Clip Design

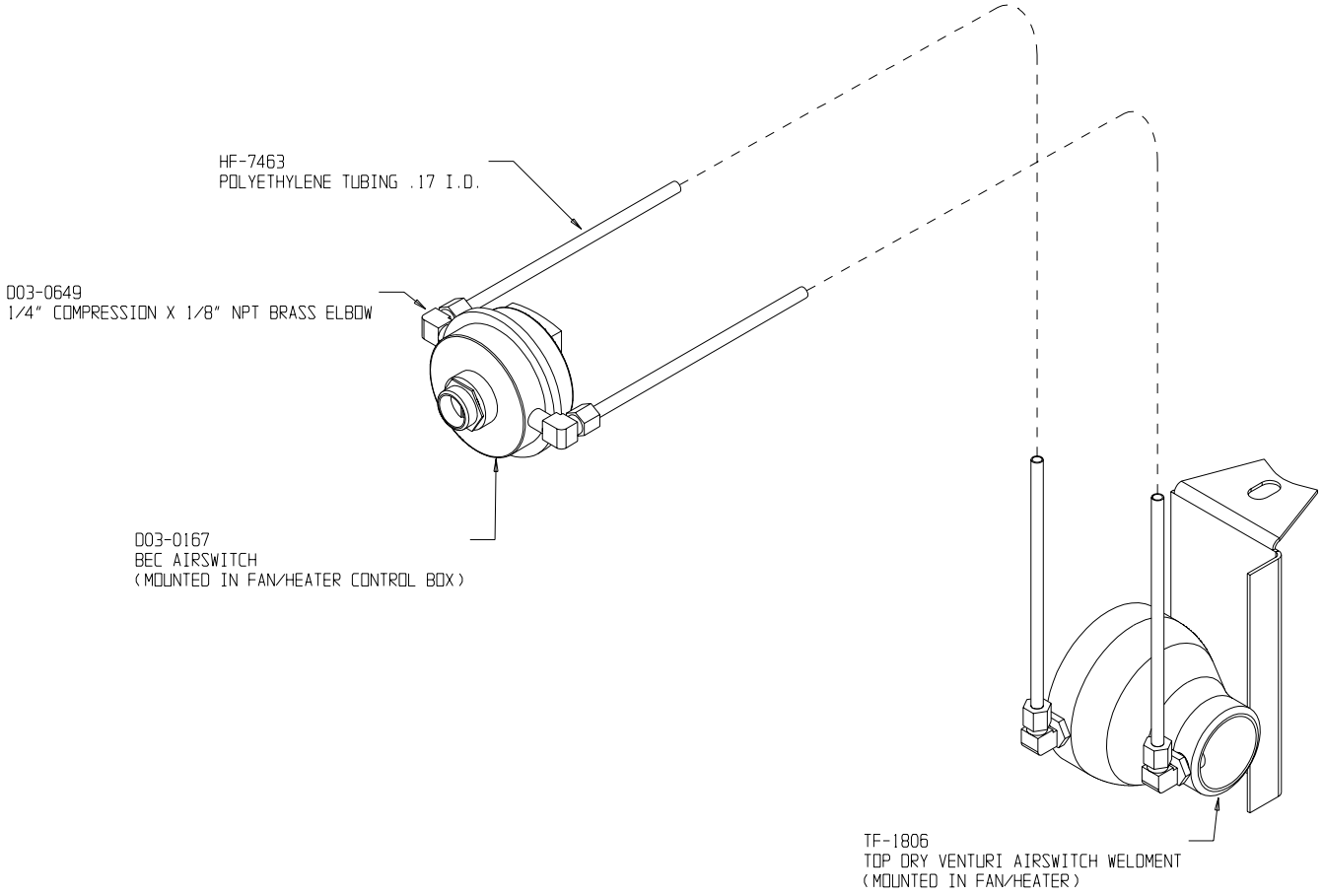


TAF-6112 Discharge Flow Plate
(Not Used)



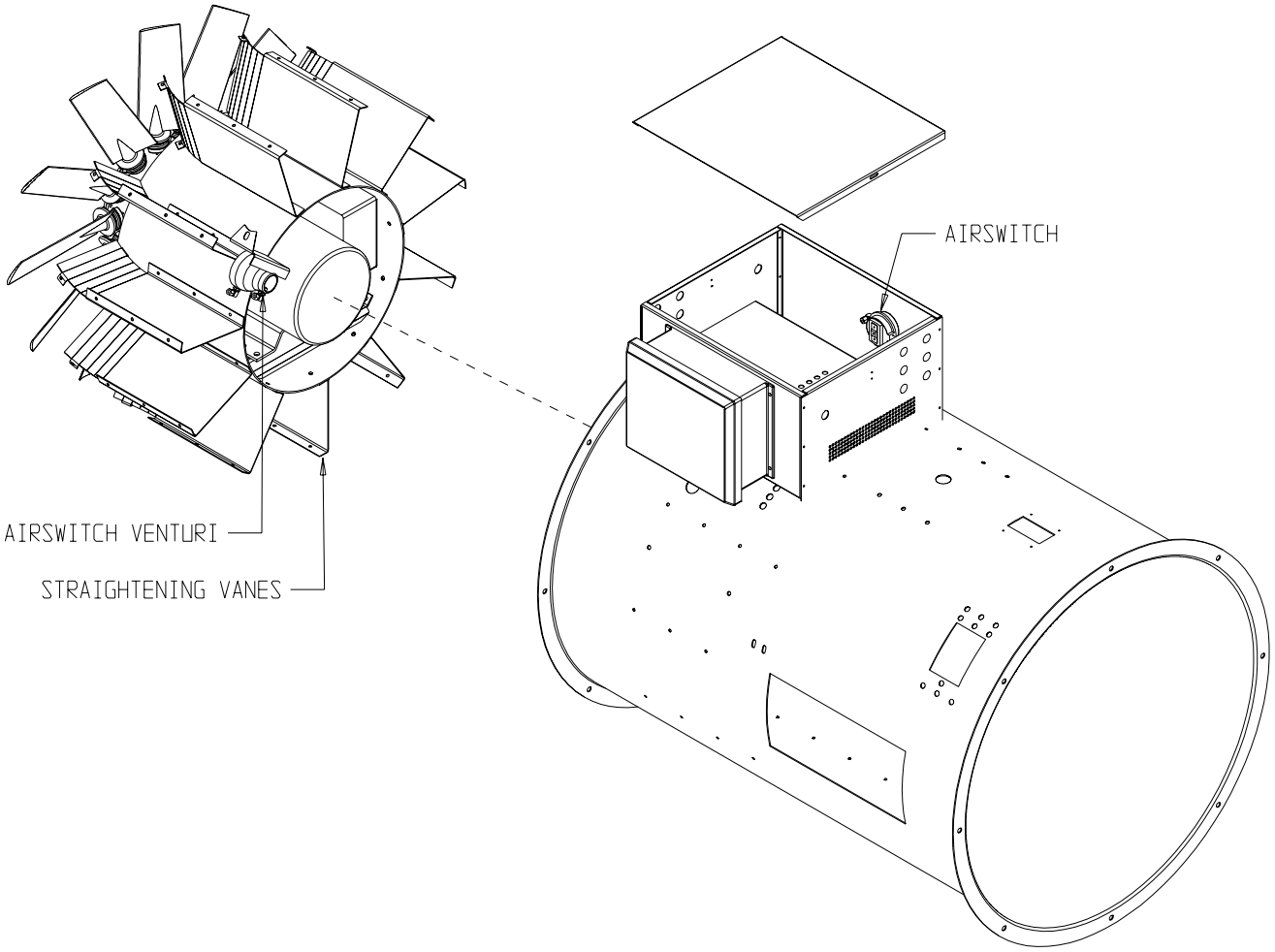
TD-1SG1018 Perforated Eave Flashing

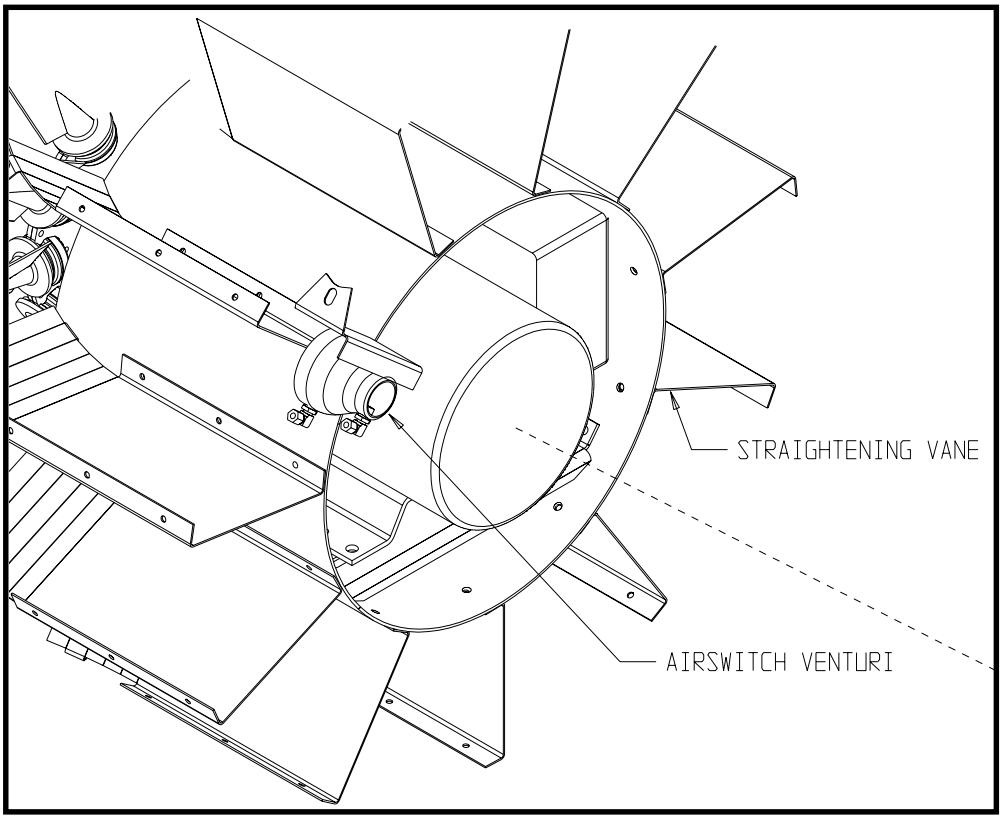
New Perforated Eave Flashing Design



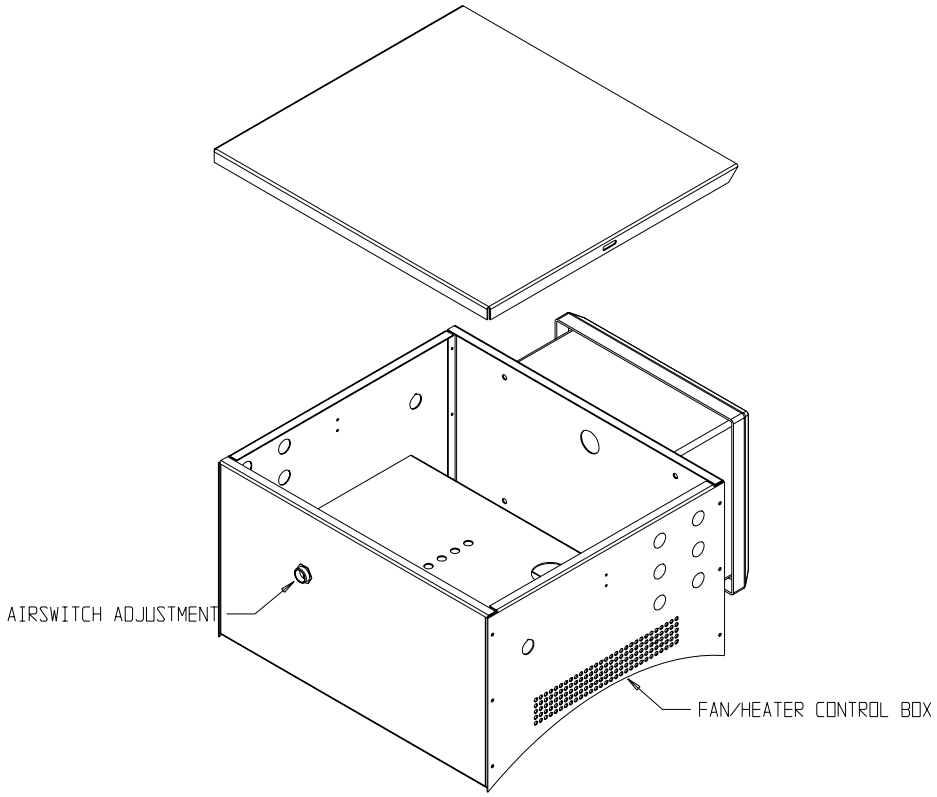
TF-1807 Top Dry Venturi Airswitch Assembly

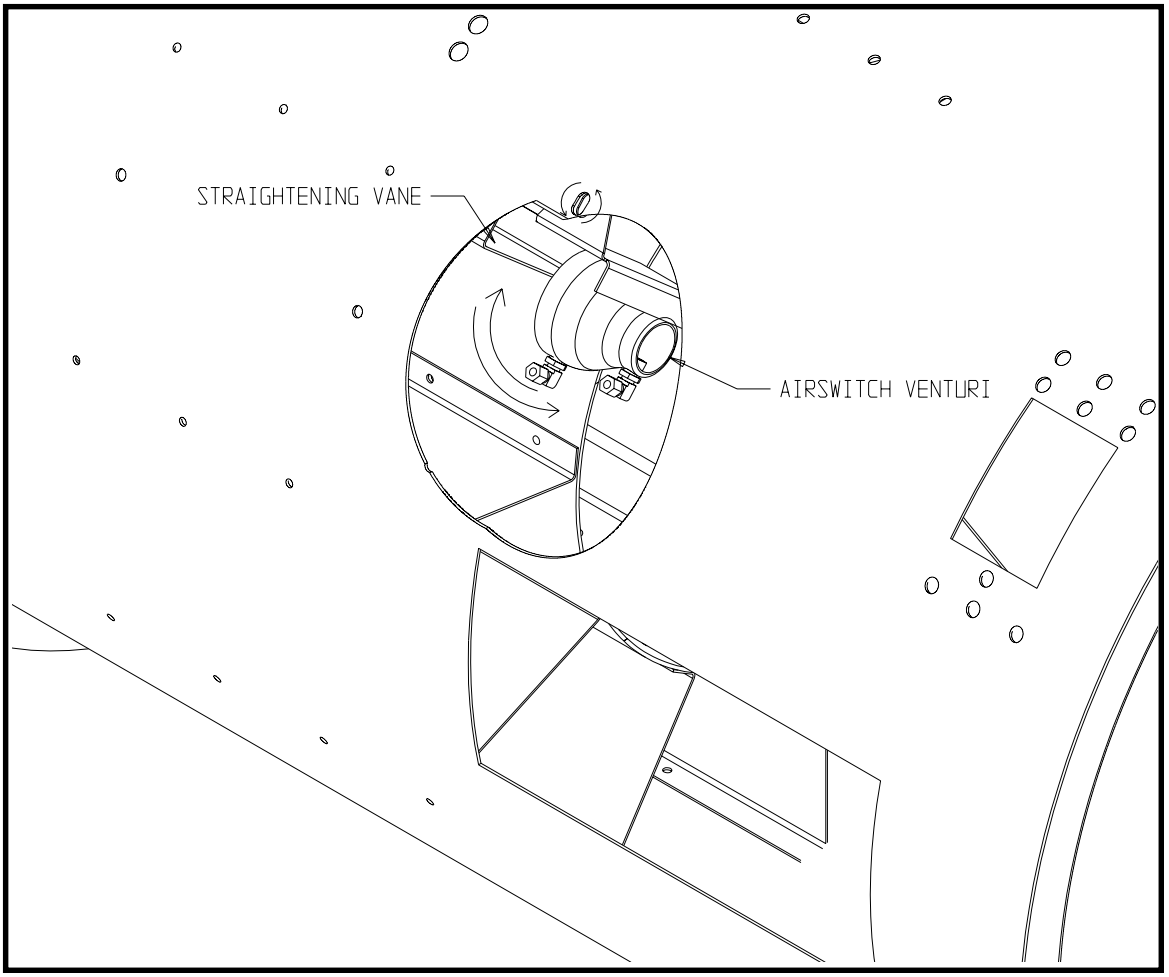
New Venturi Airswitch Assembly



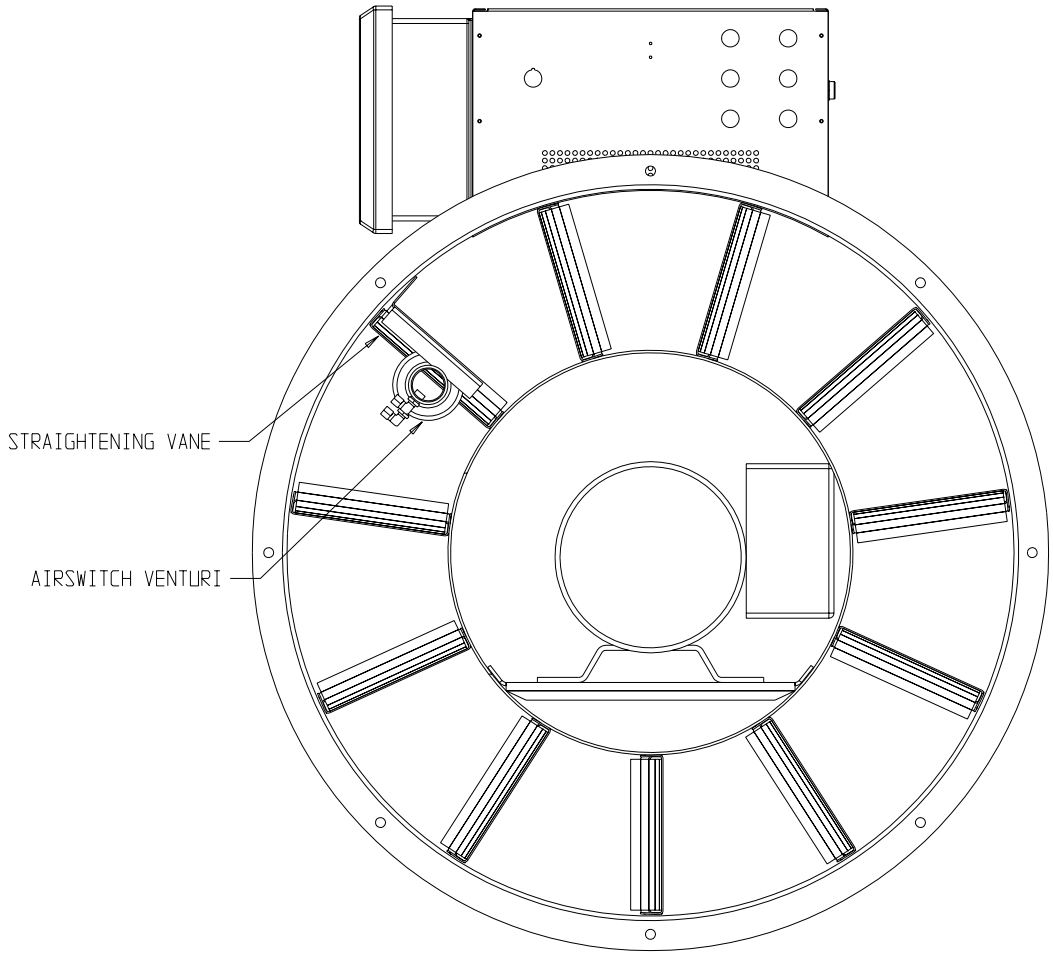


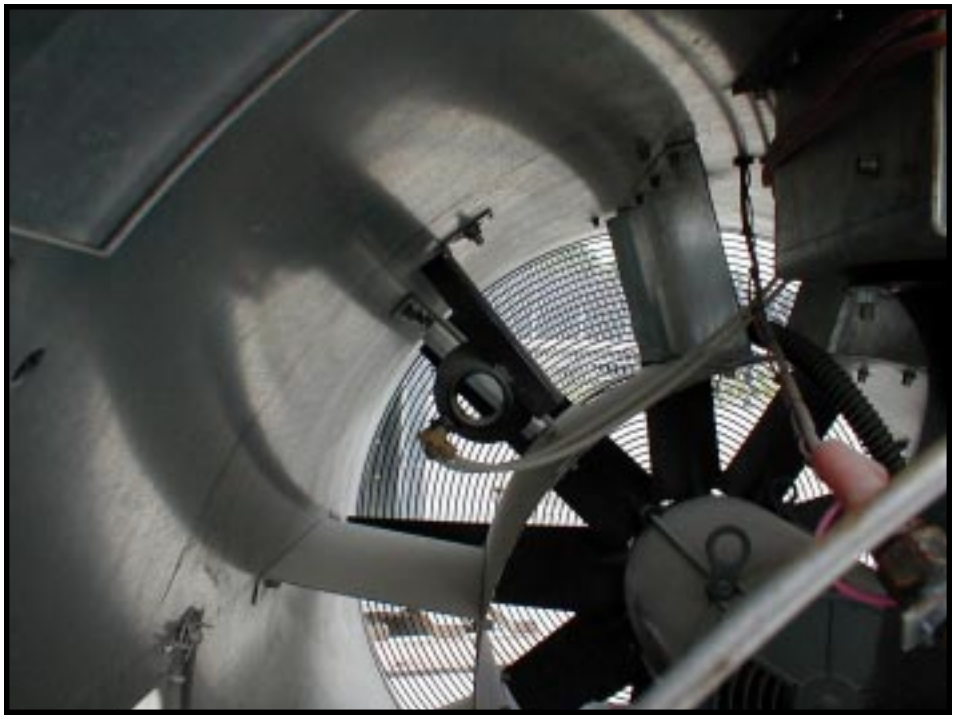
Airswitch and Venturi Location





Venturi Airswitch Adjustment





Venturi Location - End View

CERTIFICATION DATA SHEET

CUSTOMER:

CUSTOMER ORDER:

MEMC ORDER:

MODEL #: 256TBDX7028AD

CONN. DIAGRAM: A-EE9048PD

OUTLINE: A-SS87956-1545

WINDING: B104131

MOUNTING: F1

TYPICAL MOTOR DATA

HP	SYNC. RPM	F.L. RPM	FRAME	ENCLOSURE	KVA CODE	DESIGN
15	1800	1765	256TZ	DP	E	N/A

PH	FREQ	VOLTS	AMPS	START TYPE	DUTY	INSL	S.F.	AMB
1	60	230	61 /	B	CONT	F	1.0	40

FULL LOAD EFF:	85.5	3/4 LOAD EFF:	88.6	1/2 LOAD EFF:	87.3	GTD. EFF
FULL LOAD PF:	95.5	3/4 LOAD PF:	95.9	1/2 LOAD PF:	94.8	N/A

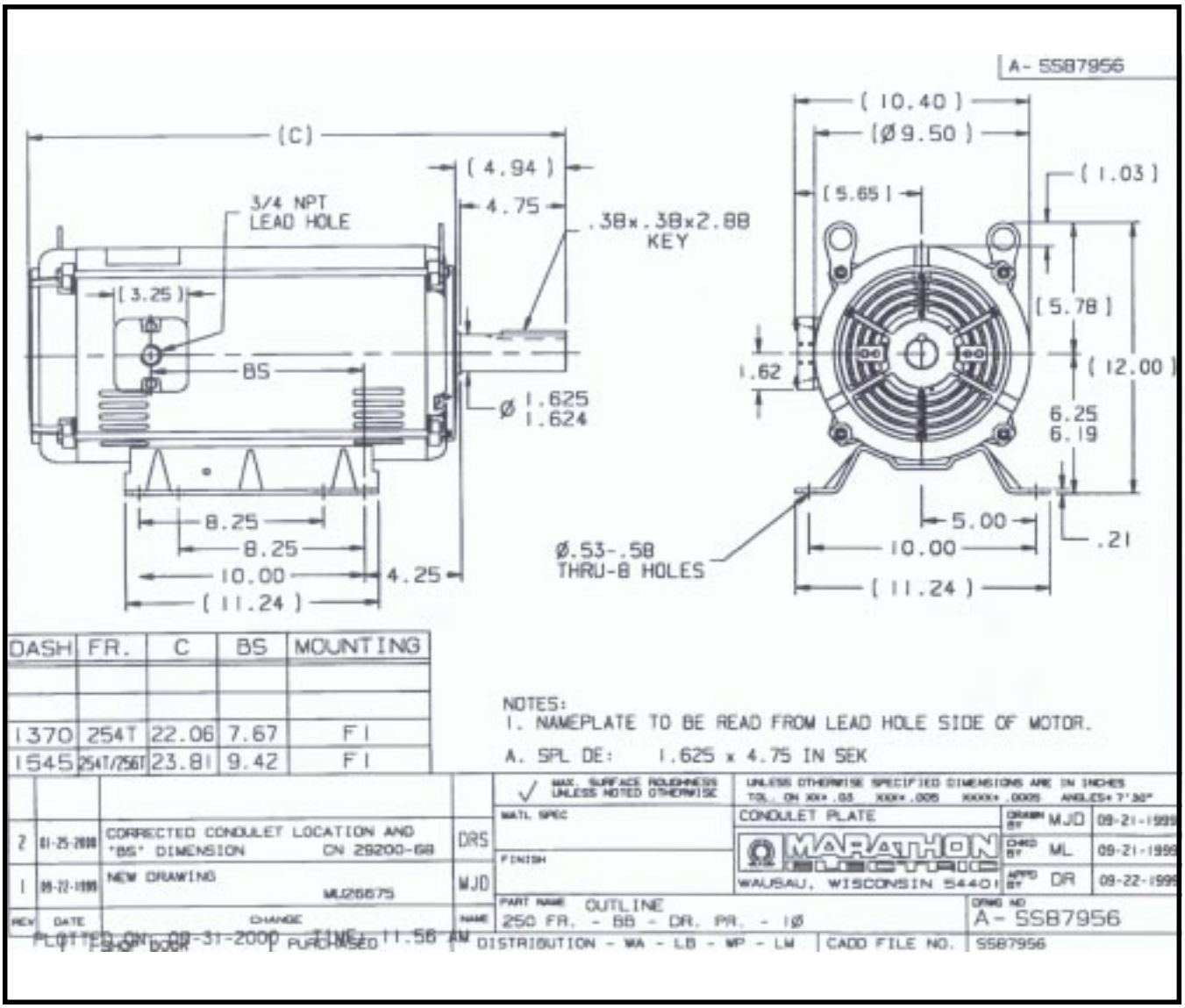
F. L. TORQUE LB-FT	LOCKED ROTOR AMPS	L.R. TORQUE LB-FT	B.D. TORQUE LB-FT
44.6	285.9 /	36.4	92.4

SUPPLEMENTAL INFORMATION

SOUND PRESSURE @ 3 FT.	ROTOR WK^2	APROX. MOTOR WGT
dBA	LB-FT^2	LBS.

SPACE HEATERS	PROTECTORS	BEARINGS
NONE	T-STATS (N/C)	BALL

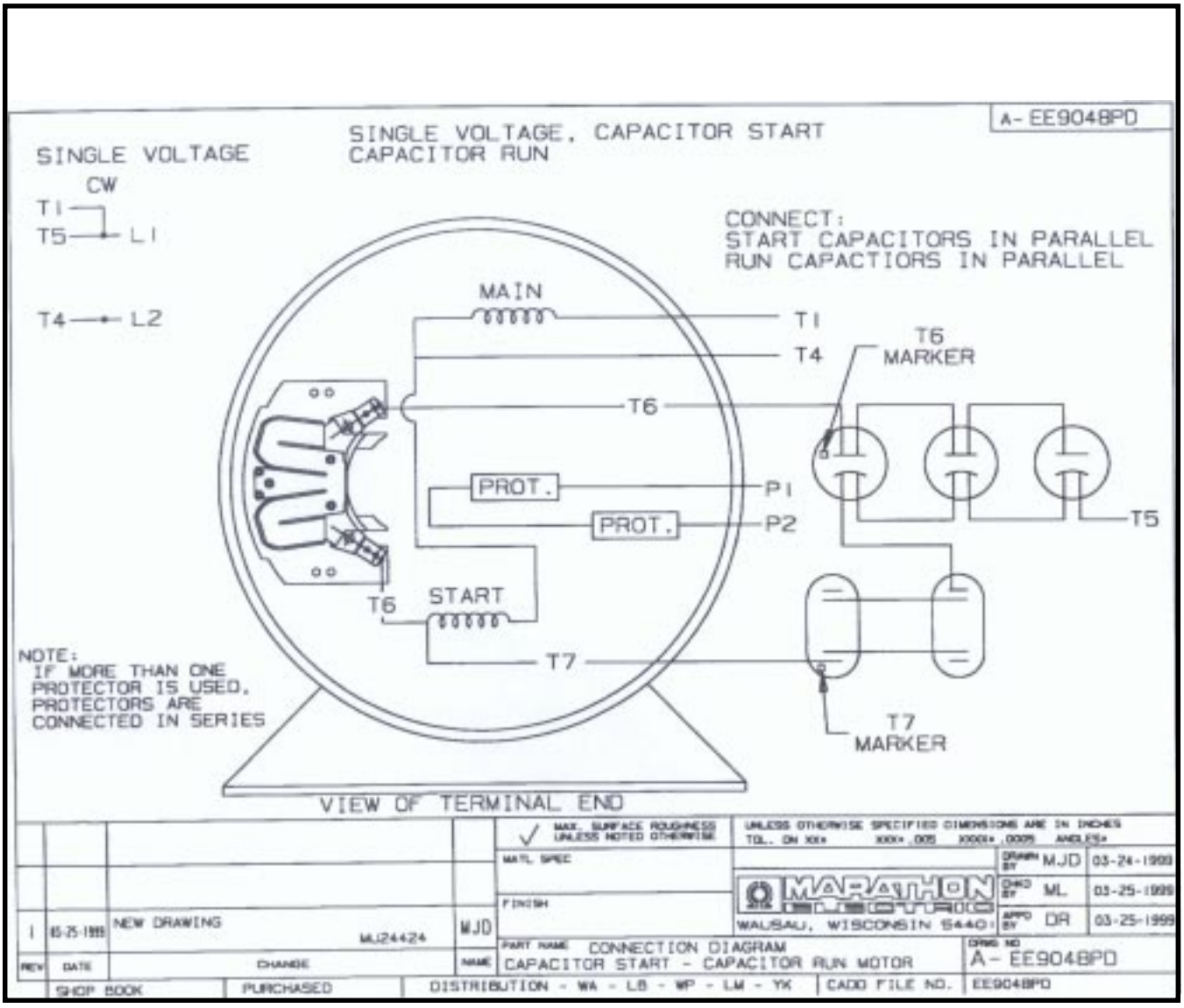
C-7815 Brake Motor: Data



DASH	FR.	C	BS	MOUNTING
1370	254T	22.06	7.67	F1
1545	254T/256T	23.81	9.42	F1

REV	DATE	CHANGE	NAME
2	01-25-2000	CORRECTED CONDULET LOCATION AND "BS" DIMENSION ON 29200-68	DRS
1	09-22-1999	NEW DRAWING ML26875	MJD

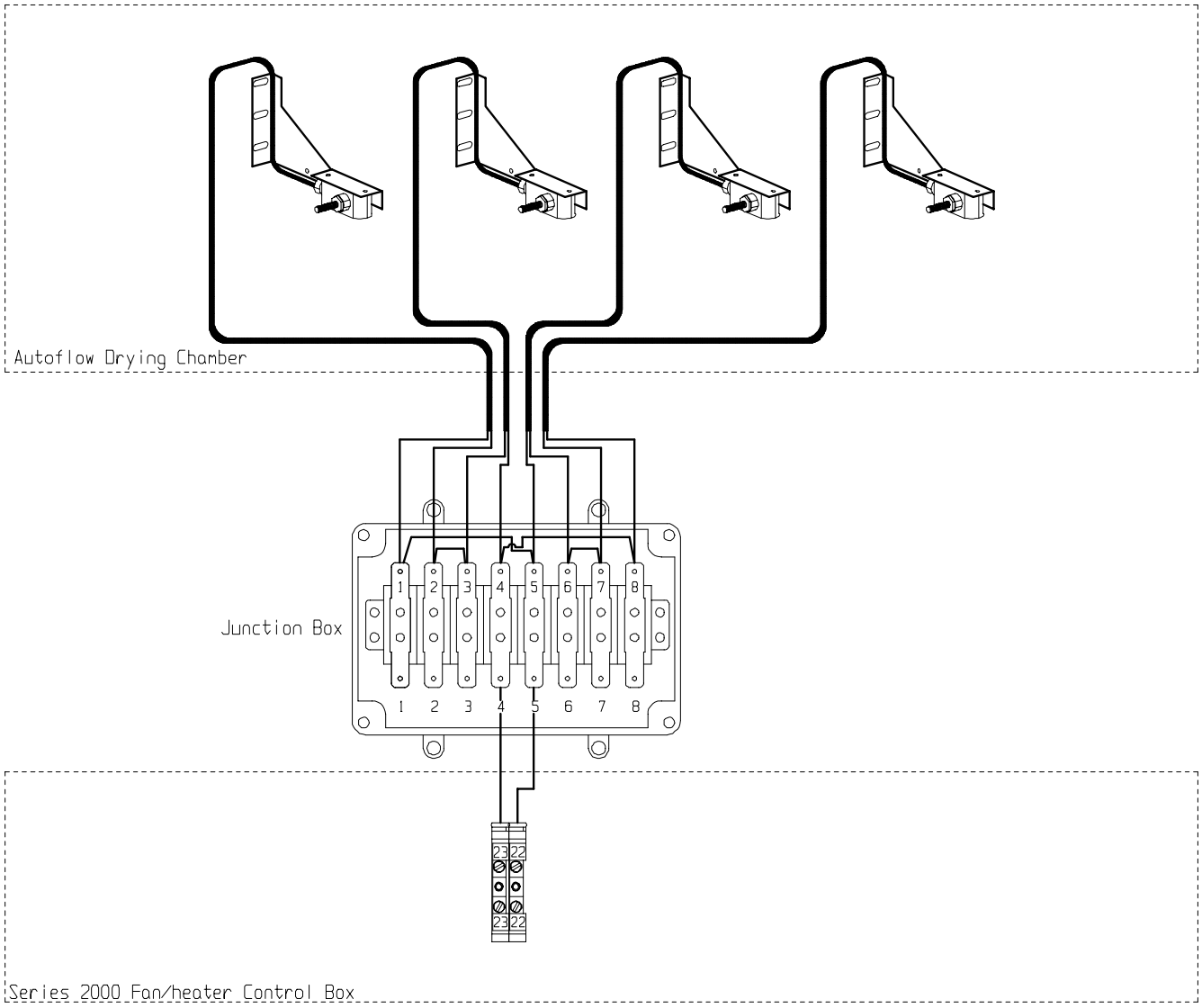
C-7815 Brake Motor: Dimensions



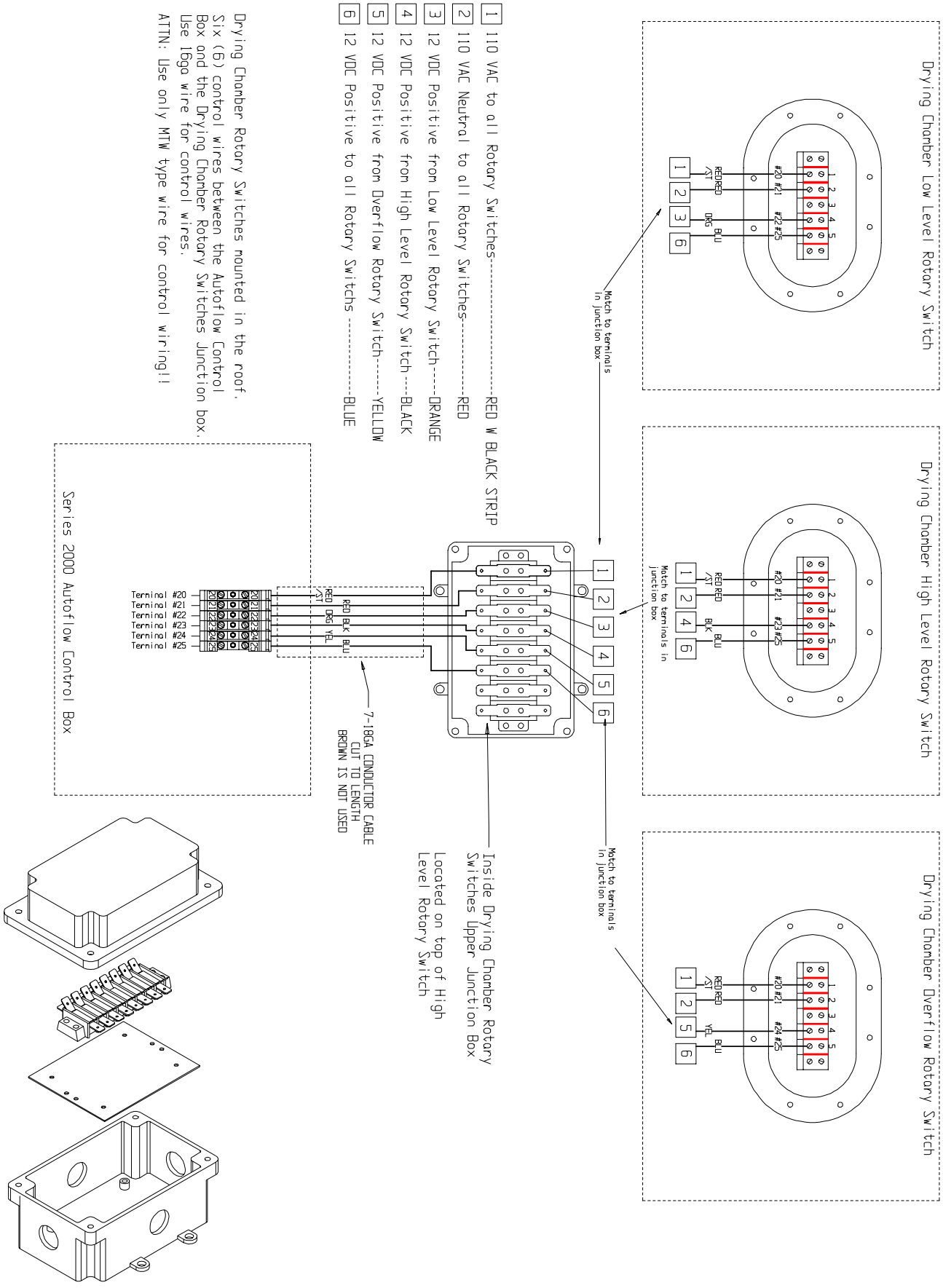
C-7815 Brake Motor: Connections

IEC Component Usage & Specifications

Voltage:	220v1ph	**Voltage:**	208v3ph	**Voltage:**	208v3ph
Horsepower:	15	**Horsepower:**	30	**Horsepower:**	40
Contactor:	D03-0496	**Contactor:**	D03-0498	**Contactor:**	D03-0539
Overload:	D03-0484	**Overload:**	D03-0486	**Overload:**	D03-0540
Max. Amps	65	**Max. Amps**	97	**Max. Amps**	140
Voltage:	208v3ph	**Voltage:**	220v3ph	**Voltage:**	220v3ph
Horsepower:	15	**Horsepower:**	30	**Horsepower:**	40
Contactor:	D03-0495	**Contactor:**	D03-0497	**Contactor:**	D03-0498
Overload:	D03-0482	**Overload:**	D03-0485	**Overload:**	D03-0487
Max. Amps	43	**Max. Amps**	82	**Max. Amps**	110
Voltage:	220v3ph	**Voltage:**	380v3ph	**Voltage:**	380v3ph
Horsepower:	15	**Horsepower:**	30	**Horsepower:**	40
Contactor:	D03-0494	**Contactor:**	D03-0495	**Contactor:**	D03-0496
Overload:	D03-0482	**Overload:**	D03-0483	**Overload:**	D03-0483
Max. Amps	43	**Max. Amps**	55	**Max. Amps**	55
Voltage:	380v3ph	**Voltage:**	460v3ph	**Voltage:**	460v3ph
Horsepower:	15	**Horsepower:**	30	**Horsepower:**	40
Contactor:	D03-0492	**Contactor:**	D03-0494	**Contactor:**	D03-0495
Overload:	D03-0479	**Overload:**	D03-0482	**Overload:**	D03-0483
Max. Amps	32	**Max. Amps**	43	**Max. Amps**	55
Voltage:	460v3ph	**Voltage:**	575v3ph	**Voltage:**	575v3ph
Horsepower:	15	**Horsepower:**	30	**Horsepower:**	40
Contactor:	D03-0491	**Contactor:**	D03-0493	**Contactor:**	D03-0494
Overload:	D03-0477	**Overload:**	D03-0480	**Overload:**	D03-0482
Max. Amps	22	**Max. Amps**	40	**Max. Amps**	43
Voltage:	575v3ph				
Horsepower:	15				
Contactor:	D03-0491				
Overload:	D03-0476				
Max. Amps	18				



TAF-6166 Grain Temperature Sensor Junction Box



TAF-6167 Drying Chamber Rotary Switch Junction Box

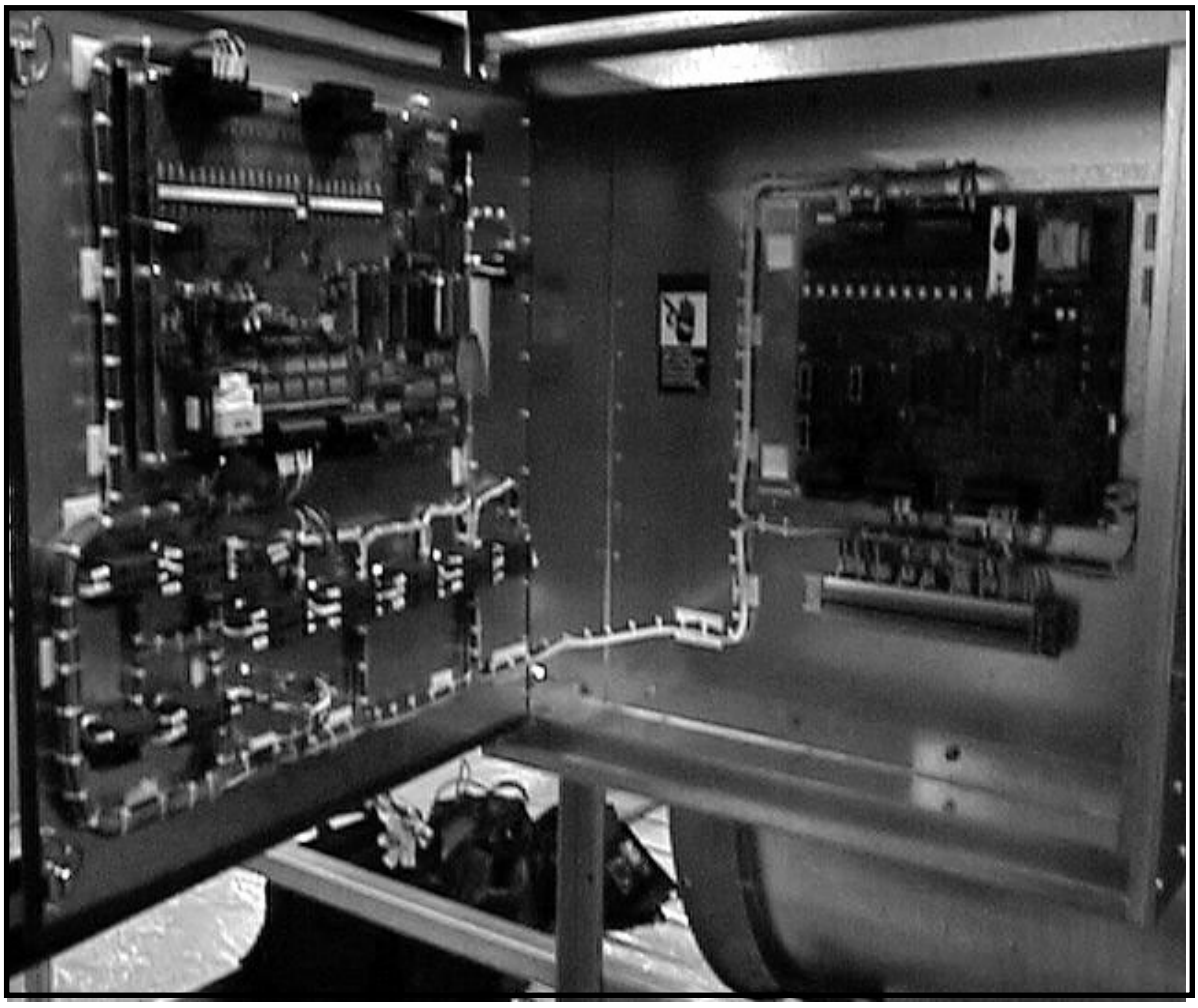
GSI / Top Dry

Software Changes

* **Series 2000 Batch Software Changes**

* **Series 2000 Autoflow Software Changes**

* **Current Software Versions**



Series 2000 Batch Software Changes

Significant Software changes since July 12, 1995

(Software version number is displayed at all units on power-up)

- Software Version 0.30

  Flame out is 10 seconds. The ignitor shuts off in 7.5 seconds.

- Software Version 0.29

  Eliminated the diesel option.

  Default fan delay equals zero seconds.

- Software Version 0.28

  Created an O / noO flag in the set-up mode for hot surface ignition.
  O = Hot surface ignition.
  noO = Ignitor

  Created a D / noD flag for diesel units (removed in .29).

- Software Version 0.27

  Fixed a problem with the non-Top Dry heaters where after 30 minutes Error 3 would be given.

- Software Version 0.26

  Changed the flame out time to 12 sec onds, ignitor shuts off in 9 seconds, 3 seconds later it shuts off if no flame (changed in version .30).

  Include the "Flame" symbol in the ambient temperature and humidity modes.

  Allow the humidity differential to be set to

- Software Version 0.25

  Added a mode select for the humidity and ambient temperature sensor. Uses the mode switch inputs (fan bypass).

- Software Version 0.23C

  The Slave Heater will not switch between its error and the error on the Master Heater (if they are different).

  If there is an inconsistancy between master and slave units (error 9,10, or 11), the master tries resending the ignitor command 50 times before issuing the error.

- Software Version 0.23B

  Extended the ignitor on time to 14 sec- onds, and shut off the last 4 seconds (changed in version .26).

- Software Version 0.23A

  Now allow 20 seconds for illegal flame detection.

- Software Version 0.23

  By placing dipswitch #3 in the "on" position you can disable the airswitch test.

  In the Top Dry mode, if J5-3 and J5-4 are shorted together the unit will jump immediately to the cool cycle, even if the dryer has been running less than 10 minutes.

Series 2000 Batch Software Changes

Significant Software changes since July 12, 1995,continued

(Software version number is displayed at all units on power-up)

- Software Version 0.22

  When setting the dry time to 3.2 hours the display would say .32 hours when the program mode was exited - fixed that problem.

  Clearing the NOVRAM is now down by powering up with the program temperature switch held down, press the increase switch until a 7 is dis played and press the program tempera- ture switch again. You have two seconds to press the increase and decrease switches at the same time to clear the NOVRAM.

- Software Version 0.21

  When in the Top Dry mode the heater is always set up as a hi-lo fire unit.

- Software Version 0.20

  Created a option in the set-up mode: L or no L

  If L is selected, the dryer timer has to be at zero and the grain temperature has to be at the desired set point before the unit will advance to the cool cycle.

  If noL is selected, the dry timer has to be at zero or grain temperature has to be at the desired set point before the unit will advance to the cool cycle.

  If the grain temperature exceeds 200 degrees F, after the initial 10 minutes of the dry cycle, the dryer will advance to the cool cycle.

  In some instances the plenum tempera- ture would jump to 275 degrees F - fixed that problem.

- Software Version 0.19

  Added software for a humidity sensi- tive controller.

- Software Version 0.18

  The dryer will not advance to the cool cycle for at least ten minutes after start-up. This allows the grain temperature sensor to stabilize.

  Fixed a problem with display flicker on two fan units.

Series 2000 Batch Software Changes

Significant Software changes since July 12, 1995,

(Software version number is displayed at all units on power-up)

- Software Version 0.17

  On two fan units, when the slave shut down the master fan would not shut off-fixed that problem.

  When a limit error is given the screen now says: **000** instead of just displaying the temperature.

- Software Version 0.15

  On some errors you could not view the hours since shutdown-fixed that problem.

- Software Version 0.14

  You can change the Dry and Cool times while the dryer is running, press the increase and decrease switches at the same time after the new times have been entered and the pro gram mode exited, and the new times will be loaded immediately.

  Holding the increase switch while pressing the start switch will start both the fan and heater in a continuous heatcycle. 99.9 hours will be displayed on the screen forever or until the unit is powered down.

  Holding the decrease switch while pressing the start switch will start both the fan and heater in a continuous cool cycle. 99.9 hours will be displayed on the screen forever or until the unit is powered down.

- Software Version 0.12

  When a shutdown occurs while drying you can view the number of hours since the shutdown by pressing the decrease switch.

  Limited the maximum temperature setting to 230 degrees F.

- Software Version 0.10

  The fan, on any fan/heater unit, will not shut off if flame is sensed illegally until flame is no longer sensed.

Series 2000 Autoflow Heater Software Changes

Significant Software Changes

(Software version number is displayed on power-up)

VERSION: 1.09

1.) Provided On-Off burner option.

VERSION: 1.08

1.) Fixed software to correctly display Celsius temperatures.

2.) Increased the hysteresis of the air switch to avoid unnecessary shutdowns.

VERSION: 1.07

1.) Changed the way the check sum works.

2.) No longer allow the grain temp setpoint to be changed at the fan/heater units.

VERSION: 1.06

1.) Made airswitch active for all fans/heaters.

VERSION: 1.05

1.) Made a selection for diesel burner. Ignition relay is pulsed on after burner starts to reset diesel module.

VERSION: 1.04

1.) Changed software so the ignitor comes on when the burner initially attempts to light and then it goes off about five seconds later and we try to sense flame then.

VERSION: 1.03

1.) Fixed software so that if slave loses contact with master, everything shuts down accordingly.

VERSION: 1.02

1.) The master now sends the plenum temperature differential to the fan/heaters as a byte on the network.

VERSION: 1.01

1.) The plenum temperature decides which temperature scale the heater software is on. This fixes a problem of the plenum temperature going to 86F and stopping.

VERSION: 1.00

1.) Added Soft-Start relay output.

Series 2000 Autoflow Display Software Changes

Significant Software Changes

(Software version number is displayed on power-up)

VERSION: 2.11

1) Burner differential would not stay at 1 deg. F when the dryer was turn off, using 2.10, now it does.

2) When grain reaches the Storage Chamber Rotary Switch, the dryer will enter a "Cool Down Mode". The fan will run and cool the grain for 10 minutes before shutting down due to a Storage Chamber Full error.

3) When grain falls away from the Wet Supply Rotary Switch, the dryer will enter a "Cool Down Mode" after the fill system shut off. The fan will run and cool the grain for 10 minutes before shutting down due to a No Wet Supply error.

4) When the Dry & Hold switch is placed in the "On" position the dryer will enter a "Cool Down Mode" for 20 minutes before stopping. This only happens at the end of the dry cycle.

5) Corrected a problem with the Fans Off Delay. If there is time on this delay, the fans and heaters will shut off during the unload cycle, after the unload cycle is complete the delay counts down. The fans and heaters will not start again until the delay has reached zero.

6) Corrected a problem with the Time Until Load Off percentage set in the set-up mode. Now, in Autobatch only, the Fill Systems will shut off if grain has not reached the dry chamber high level rotary switch within the set percentage of the dry timer is completed. Example: 1 hr dry time, 50% Time Until Load off. The fill systems will shut off regardless of rotary switch status after 30min has expired.

7) Corrected a problem with the Refill Delay. Now, in Autobatch Only. The Refill Delay begins to count down after the unload cycle is completed. If grain has not reached the drying chamber low level rotary switch before this delay reaches zero, a dry chamber empty error is given.

Series 2000 Autoflow Display Software Changes

Significant Software Changes

(Software version number is displayed on power-up)

VERSION: 2.10

1) Changed the Minimum Burner Differential to 1 Deg. Fahrenheit

2) Fixed the problem where the burner was not shutting off when the Dry & Hold switch was placed in the "On" position, the Dry Cycle was complete, and the Dryer was in the Cool Cycle. Now, when the Dry & Hold switch is placed in the "On" position, and the Dry Cycle is complete, the dryer will shut the burner off and will cool for the amount of time on the Cool Timer before stopping.

3) Fixed a problem where the dryer was not shutting down with an "Out of Grain" error when the Wet Supply Rotary Switch was exposed. Now when the Wet Supply Rotary Switch is exposed, the Fill #1, and Fill #2 delay will count down and shut off Fill System #1 & #2, then the dryer will shut down with an "Out of Grain" error. If there is still grain against the Low Level Rotary Switch, the dryer can be restarted by pressing the Stop switch to clear the error, turning the Load Auger switch to the "Off" position, and pressing the Start switch. When the Start switch is pressed the screen will say "Press <Enter> to Dry Remaining Grain". If the <enter> button is pressed the dryer will restart.
NOTE: If the Load Auger switch is left in the "Auto" position an "Out of Grain" error will be given on startup.

Series 2000 Autoflow Display Software Changes

Significant Software Canges

(Software version number is displayed at all units on power-up)

VERSION: 2.09

1) Selection screen for On-Off burner. This cannot be used in conjunction with diesel burner.

NOTE: Must change heater software also. Use following version number or higher:

Heater ==> 1.09

VERSION: 2.08

1) Changed the burner differential setup screen to correctly display Celsius temperatures.

2) Now only a year above 2000 may be entered upon setting the date.

3) Burner differential is now greater than 1 and less than 10 degrees.

VERSION: 2.07

1) Changed the checksum method for the network to help insure data integrity.

2) Force aeration fan to start before drying fans start, unless aeration switch is in off position.

3) Load systems cannot start for five seconds after start of system.

NOTE: Must change heater and I/O software also. Use following version number or higher:

Heater ==> 1.07
IO ==> 1.07

VERSION: 2.06

1) Stopped the ability to change the grain setpoint from heaters.

VERSION: 2.05

1) Fixed a problem with fan 1 reporting air switch already engaged if fan 2 had not started yet.

2) Fixed the low level disabling software so a warning is not reported when the high level grain switch detects grain without the low level detecting grain.

VERSION: 2.04

1) Made all airswitches active once again.

Series 2000 Autoflow Display Software Changes

Significant Software Canges

(Software version number is displayed at all units on power-up)

VERSION: 2.03

NOTE: This software originated from 1.06 and is intended to fix version 2.00.

1) Added diesel option which if selected pulses the ignitor relay on for about 1/2second after power to burner is on.

2) Took out option for modem string until it is needed.

3) Added safeties for thermistor shorts and opens.

4) By holding in on the HELP switch while turning on power you may check for proper wiring of the control panel switches and for correct operation of keypad.

5) Made hour meter active. Reset it by holding in on the HOURS key while turning on the power. Press HOURS key to view.

6) Moisture control light flashes in temp hold mode.

7) Added software to indicate to the user that the DUMP switch is not in the AUTO position.

8) If the DRY & HOLD switch is in the ON position the dryer now goes through the cool cycle before shutting down. The cool timer is displayed while this is happening.

9) Changed software so the dryer won't shutdown while changing model number on the dryer.

10) The user can no longer go into EXTENDED SETUP while the dryer is running.

11) The warning of BIN HIGH PRESSURE LIMIT is now active high - in other words it must get 12VDC on pin J2-20 in order to give a shutdown.

Series 2000 Autoflow Display Software Changes

Significant Software Canges

(Software version number is displayed at all units on power-up)

VERSION: 2.02

1) Changed the "Batch percentage off" selection screen to a screen which allows you to enter a time (just like any other timer) at which the dryer will shut off loading in the DRY TIME. The timer is called the BATCH FILL TIME.

VERSION: 2.01

1) Attempted to fix the problem of grain setpoint changing by itself.

2) Fixed problem of batch dryer always shutting down with a "DRYING CHAMBER EMPTY" warning. A delay called the "REFILL TIMER" allows the dryer to fill back up.

Series 2000 Autoflow Display Software Changes

Significant Software Canges

(Software version number is displayed at all units on power-up)

VERSION: 2.00

1) Fixed hour timer so dryer will now show running time of dryer.

2) Changed the way the dryer shut down when using the dry and hold switch, now it will cool the grain using the cool timer before it shuts down to prevent heat buildup of grain past the grain temp set points thereby causing a shutdown condition. Works in Autoflow and AutoBatch modes.

3) Fixed the clock to properly roll over in the year 2000.

4) Added a user batch count and user timer independent from the Total batch and Total time allowing monitoring of different users drying grain or different fields for comparison of drying t ime.

5) Added a test procedure for the keypad. Turning all of the control switches to the right (on position) and holding in the stop switch while turning on the control power activates it. User can now test each individual keypad switch for malfunction or stuck keys.

6) Added control switch testing by pressing and hold the plenum and grain switches in while turning on the control power. This will allow the user to test for failed switches or computer failure to detect switch position changes.

7) Removed garbage displayed when user selected to view total running time and total batches.

8) Added a check to make sure the dump switch is always in the Auto position. Otherwise if left in manual close will cause the dryer never to dump.

9) Fixed several bugs that were reported to use by users and dealers.

10) I added the ability to reset the Total Dryer running time by pressing the HOUR and RESET button together and turn on the dryer.

11) Removed watchdog option in Extended setup mode since watchdog has not been implemented yet.

12) Changed the wording to some of the error messages concerning the rotary switches to help eliminate some confusion of which switch was at fault.

13) Moisture control light will now flash to give a visual indication that the dryer is in temperature hold.

Series 2000 Autoflow Display Software Changes

Significant Software Changes

(Software version number is displayed at all units on power-up)

VERSION: 1.06

1) Fixed dryer so the grain hi limit occurs at 20 F above the grain temp setpoint.

2) Made timeout on the open/close of the actuator 20 seconds instead of 15 seconds. This extra time was added to compensate for the weaker batteries taking longer to close the chutes.

VERSION: 1.05

1) Made the out of grain timer active.

VERSION: 1.04

1) The application of 12v to terminal number j1-20 will shutdown the dryer and give an indication that the bin is full due to the high level of static pressure within. "BIN AIR PRES SURE LIM" will be displayed on screen's top line until the user corrects the problem.

2) Corrected the hour meter problem.

3) Changed how the dry timer is displayed: Now when the dry timer goes to zero it will begin counting upward at the user set time as long as the dryer remains in temp hold.

VERSION: 1.03

1) Added software to allow the aeration fan to continue running even if there was a dryer shut down. The aeration fan BYPASS mode must be selected under setup.

VERSION: 1.02

1) The Bin high limit rotary switch is monitored in both states to insure that a switch failure has not taken place. If both switches are in the same state a switch failure is reported.

Current Top Dry Software

Top Dry Series 2000 Autoflow -

Display Computer Board - Version 2.11

Heater Computer Board - Version 1.09

Input/ Output Board - Version 1.07

Top Dry Series 2000 Batch Heater Software -

Series 2000 Batch - Version .30

EMCS Top Dry Autoflow Software -

EMCS Autoflow - Version 2.22

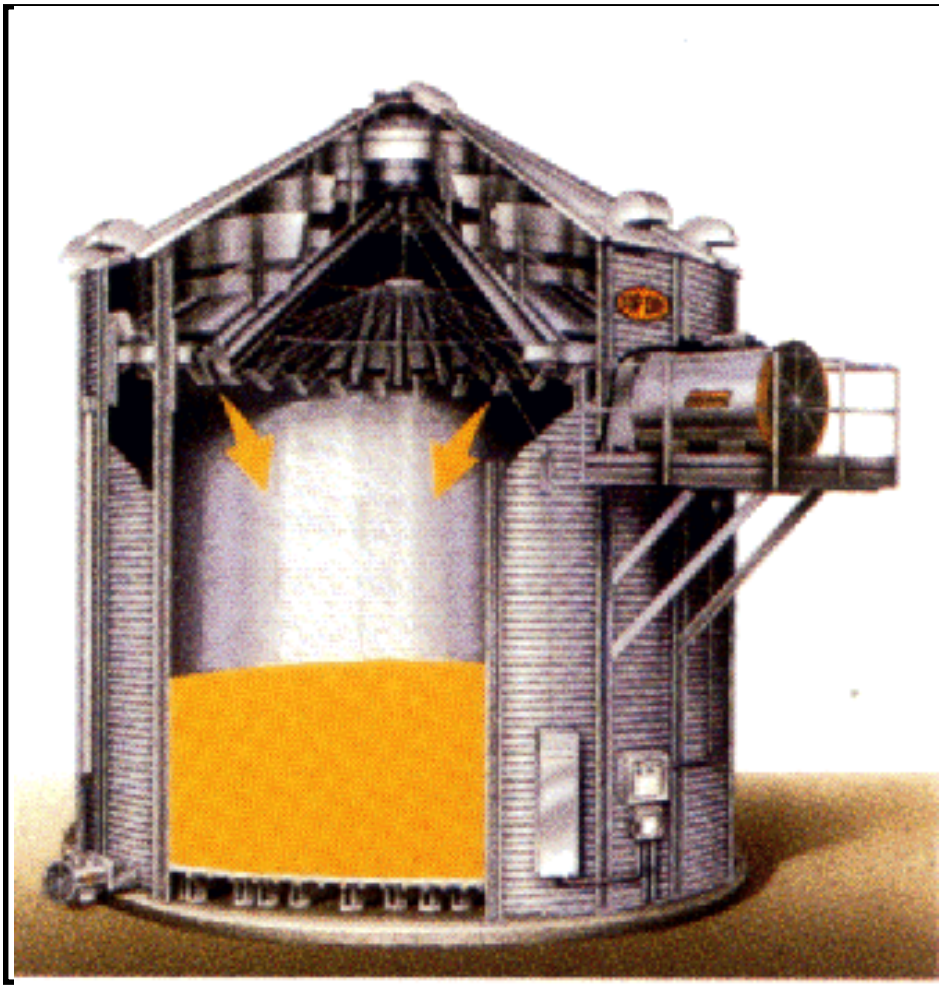
GSI / Top Dry

Additional Information

* **Top Dry Sidewall Gauges**

* **Top Dry Stiffener Gauges**

* **Fan Blade Data**



NOMINAL DIA. OF SIDEWALL (Ft)	NUMBER OF RINGS OF SIDEWALL	Sidewall Base Ring	Sidewall Ring #2	Sidewall Ring #3	Sidewall Ring #4	Sidewall Ring #5	Sidewall Ring #6	Sidewall Ring #7	Sidewall Ring #8	Sidewall Ring #9	Sidewall Ring #10	Sidewall Ring #11
18	5	20ga	20ga	20ga	20ga	20ga						
18	6	20ga	20ga	20ga	20ga	20ga	20ga					
18	7	20ga	20ga	20ga	20ga	20ga	20ga	20ga				
21	5	20ga	20ga	20ga	20ga	20ga						
21	6	20ga	20ga	20ga	20ga	20ga	20ga					
21	7	20ga	20ga	20ga	20ga	20ga	20ga	20ga				
21	8	18ga	20ga	20ga	20ga	20ga	20ga	20ga	20ga			
24	5	20ga	20ga	20ga	20ga	20ga						
24	6	20ga	20ga	20ga	20ga	20ga	20ga					
24	7	18ga	20ga	20ga	20ga	20ga	20ga	20ga				
24	8	18ga	18ga	20ga	20ga	20ga	20ga	20ga	20ga			
24	9	17ga	18ga	18ga	20ga	20ga	20ga	20ga	20ga	20ga		
24	10	17ga	17ga	18ga	18ga	18ga	20ga	20ga	20ga	20ga	20ga	
27	5	18ga	18ga	18ga	20ga	20ga						
27	6	18ga	18ga	18ga	18ga	20ga	20ga					
27	7	18ga	18ga	18ga	18ga	18ga	20ga	20ga				
27	8	17ga	18ga	18ga	18ga	18ga	18ga	20ga	20ga			
27	9	17ga	17ga	18ga	18ga	18ga	18ga	18ga	20ga	20ga		
27	10	17ga	17ga	17ga	18ga	18ga	18ga	18ga	18ga	20ga	20ga	
30	5	18ga	18ga	18ga	18ga	20ga						
30	6	18ga	18ga	18ga	18ga	18ga	20ga					
30	7	17ga	18ga	18ga	18ga	18ga	18ga	20ga				
30	8	17ga	17ga	18ga	18ga	18ga	18ga	18ga	20ga			
30	9	17ga	17ga	17ga	18ga	18ga	18ga	18ga	18ga	20ga		
30	10	16ga	17ga	17ga	17ga	18ga	18ga	18ga	18ga	18ga	20ga	
30	11	16ga	17ga	17ga	17ga	17ga	18ga	18ga	18ga	18ga	18ga	20ga
36	5	17ga	18ga	18ga	18ga	20ga						
36	6	17ga	18ga	18ga	18ga	18ga	20ga					
36	7	16ga	17ga	18ga	18ga	18ga	18ga	20ga				
36	8	16ga	16ga	17ga	18ga	18ga	18ga	18ga	20ga			
36	9	16ga	16ga	16ga	17ga	18ga	18ga	18ga	18ga	20ga		
36	10	15ga	16ga	16ga	16ga	17ga	18ga	18ga	18ga	18ga	20ga	
36	11	14ga	15ga	15ga	16ga	16ga	17ga	18ga	18ga	18ga	18ga	20ga

Top Dry Sidewall Gauges

NOMINAL DIA. OF SIDEWALL (Ft)	NUMBER OF RINGS OF SIDEWALL	Stiffener Base Ring	Stiffener Ring #2	Stiffener Ring #3	Stiffener Ring #4	Stiffener Ring #5	Stiffener Ring #6	Stiffener Ring #7	Stiffener Ring #8	Stiffener Ring #9	Stiffener Ring #10	Stiffener Ring #11
18	5	14ga		16ga	16ga	16ga						
18	6	14ga		16ga		16ga	16ga					
18	7	12ga		14ga		16ga	16ga	16ga				
21	5	14ga		16ga	16ga	16ga						
21	6	14ga		16ga		16ga	16ga					
21	7	12ga		14ga		16ga	16ga	16ga				
21	8	12ga		14ga		16ga		16ga	16ga			
24	5	14ga		16ga	16ga	16ga						
24	6	12ga		14ga		16ga	16ga					
24	7	12ga		14ga		16ga	16ga	16ga				
24	8	12ga		14ga		12ga		16ga	16ga			
24	9	10ga		12ga		12ga		14ga	14ga	16ga		
24	10	8ga		10ga		12ga		14ga		16ga	16ga	
27	5	14ga		16ga	16ga	16ga						
27	6	12ga		14ga		16ga	16ga					
27	7	12ga		14ga		16ga	16ga	16ga				
27	8	12ga		12ga		14ga		16ga	16ga			
27	9	10ga		12ga		14ga		16ga	16ga	16ga		
27	10	8ga		10ga		12ga		14ga		16ga	16ga	
30	5	12ga		14ga	16ga	16ga						
30	6	12ga		14ga		16ga	16ga					
30	7	12ga		12ga		14ga	16ga	16ga				
30	8	10ga		12ga		14ga		16ga	16ga			
30	9	10ga		12ga		12ga		14ga	16ga	16ga		
30	10	8ga		10ga		12ga		14ga		16ga	16ga	
30	11	8ga		10ga		12ga		12ga		14ga	16ga	16ga
36	5	12ga		14ga	16ga	16ga						
36	6	12ga		12ga		14ga	16ga					
36	7	10ga		12ga		14ga	14ga	16ga				
36	8	10ga		12ga		12ga		14ga	16ga			
36	9	8ga		10ga		12ga		14ga	14ga	16ga		
36	10	8ga		10ga		12ga		12ga		14ga	16ga	
36	11	8ga		8ga		10ga		12ga		14ga	14ga	16ga

Top Dry Stiffener Gauges

Diameter	Hp	RPM	GSI #	Multi-Wing #	Blades	Pitch
36"	12	1750	D01-0468	35.75-12-5ZR-PPG-28.5BSP1	12	28.5°
36"	12	1400	D82-0002	35.75-12-5ZR-PPG-32.5BSP1	12	32.5°
36"	15	1750	D82-0002	35.75-12-5ZR-PPG-32.5BSP1	12	32.5°
36"	15	1400	TF-1499	35.75-12-5ZR-PPG-37.5	12	37.5°
42"	15	1750	D01-0469	42.5-9-5ZR-PPG-32.5BSP1	9	33.75°
42"	15	1400	D01-0470	42.5-9-5ZR-PPG-35BSP1	9	35°
42"	20	1750	D01-0470	42.5-9-5ZR-PPG-35BSP1	9	35°
42"	20	1400	D01-0471	42.5-12-5ZR-PPG-32.5AR	12	32.5°
42"	30	1750	D01-0472	42.5-16-5ZR-PPG-30AR	16	31.25°
42"	30	1400	D01-0473	42.5-16-5ZR-PPG-35AR	16	35°
42"	40	1750	D01-0473	42.5-16-5ZR-PPG-35AR	16	35°
42"	40	1400	TF-1500	42.5-16-5ZR-PPG-37.5	16	37.5°

Fan Blade Data

GSI / Top Dry

Software Diagnostics

* **Series 2000 Batch Fan & Heater**

* **Series 2000 Autoflow Display**

* **Series 2000 Autoflow Fan & Heater**

Series 2000 Batch Fan / Heater

Initializing the Novram

- Turn the Control Power " off ".
- Hold down the Program Temperature switch.
- Turn the Control Power switch "on " with the Program Temperature switch held down.
- Press the Increase switch until 7 is on the display.
- Press the Program Temperature switch again.
- You have two seconds to depress the Increase or Decrease switches at the same time.
- The NOVRAM has been initialized.

NOTE: The computer has now been cleared of all memory, including the type of dryer it is and all Set-up variables.

Series 2000 Batch Fan / Heater

Programming Set-up Variables

- Turn the Control Power " off "
- Turn the Control Power switch " on " with the Program Temperature switch held down.
- Press the Increase switch until 3 is on the display.
- Press the Program Temperature switch again.
- **C** or **no C** will bill displayed.
- Use the Increase or Decrease switch to toggle between **C** or **no C.**
  C - Hi-Lo cycling heater
  no C - On/Off cycling heater
- When the correct selection is on the screen press the Program Temperature switch again.
- **H** or **no H** will be displayed.
- Use the Increase or Decrease switch to toggle between **H** or **no H.**
  H - Humidity sensor present
  no H - No humidity sensor present
- When the correct selection is on the screen press the Program Temperature switch again.
- **F** or **C** will be displayed.
- Use the Increase or Decrease switch to toggle between **F** or **C.**
  F - Temperatures displayed in Fahren- heit.
  C-Temperatures displayed in Celsius.
- When the correct selection is on the screen press the Program Temperature switch again.
- **L** or **no L** will be displayed.
- Use the Increase or Decrease switch to toggle between **L** or **no L**.

  L - The dryer will advance to the Cool cycle when the Dry timer has reached zero and the Grain temperature set point has been met.
  noL - The dryer will advance to the Cool cycle when either the Dry timer has reached zero or the Grain temperature set point has been met.
- When the correct selection is on the screen press the Program Temperature switch again.

Series 2000 Batch Fan / Heater

CAUTION: DO NOT ATTEMPT BELOW PROCEDURE WITH GAS LINE CONNECTED.

Diagnostic Mode

- Turn the Control Power " off ".
- Hold down the Program Temperature switch.
- Turn the Control Power switch "on " with the Program Temperature switch held down.
- Press the Increase switch until 8 is on the display.
- Press the Program Temperature switch again.
- Press the Program Dry time switch to engage the Fan starter-**Fan** will be displayed.
- Press the Increase switch to make the ignitor spark-**IN** will be displayed.
- Press the Program Temperature switch to open the LP and Main Solenoid- **LP** will be displayed.
- Press the Start switch to open the Cycle solenoid -**CS** will be displayed.
- Turn the control power "off" to exit the Diagnostic mode.

Series 2000 Autoflow Display

Keypad Test

- Turn the Control Power "off".
- Turn the Control Power switch "on" with the Help Switch pressed.
- The Keypad Switches can now be tested.

Control Switch Tests

- Turn the Control Power "off" .
- Turn the Control Power switch "on" with the Plenum and Grain Switches pressed.
- The Control Switches can now be tested.

Series 2000 Autoflow Fan / Heater

CAUTION: DO NOT ATTEMPT BELOW PROCEDURE WITH GAS LINE CONNECTED.

Diagnostic Mode

- Turn the Control Power " off ".
- Hold down the Program Temperature switch.
- Turn the Control Power switch "on " with the Program Temperature switch held down.
- Press the Program Dry time switch to engage the Fan Starter.
- Press the Program Temperature switch to start theIgnitor.
- Press the Hours x 1000 switch to open the Ssolenoid.
- Turn the control power "off" to exit the Diagnostic mode.

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