



TopDry Terminal™ for Autoflow/ Autobatch Operation

Models:

24, 30, 36 FT DIAMETER

Operation Manual

PNEG-4900

Version 1.0

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PNEG-4900

All information, illustrations, photos, and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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NOTES

1 Safety Precautions

Topics Covered in this Chapter

- Safety Guidelines
- Cautionary Symbol Definitions
- Safety Cautions
- Safety Decals
- Safety Sign-off Sheet

Safety Guidelines

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Save these safety guidelines for future reference.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY** or **DEATH**.

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

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

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

ST-0001-3

Cautionary Symbol Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.

Table 1-1 Description of the different cautionary symbols

Symbol	Description
	This symbol indicates an imminently hazardous situation which, if not avoided, will result in serious injury or death.
	This symbol indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.
	This symbol indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.
	This symbol is used to address practices not related to personal injury.
	This symbol indicates a general hazard.
	This symbol indicates a prohibited activity.
	This symbol indicates a mandatory action.

ST-0005-2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection		Respiratory Protection		Foot Protection	
Hearing Protection		Head Protection		Fall Protection	
Hand Protection					

- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

Follow Safety Instructions

- **Warning:** If the information in the manual is not followed exactly, a fire or explosion can result, causing property damage, personal injury or loss of life.
- Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.
- Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.
- If you do not understand any part of this manual or need assistance, contact your dealer.



ST-0025-2

Chapter 1: Safety Precautions

Install and Operate Equipment Properly

- Make sure grain chutes are empty by performing a manual dump before entering the bin.
- Before attempting to remove and reinstall the fan blade, contact GSI for the recommended procedure.



ST-0031-2

For Your Safety

- If you smell gas:
 - Do not try to light any appliance.
 - Extinguish any open flames.
 - Do not touch any electrical switch.
 - Immediately call your gas supplier. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- The use and storage of gasoline and other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous.
- Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment. Installation and service must be performed by a qualified installer, service agency or the gas supplier.



ST-0024-1

Install and Operate Electrical Equipment Properly

- Electrical controls must be installed by a qualified electrician and must meet the standards set by the National Electric Code, Canadian Electrical Code, and all local and state codes.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.



ST-0027-2

Handle and Use Equipment Properly

- Equipment is intended for the use of grain drying only. Any other use is a misuse of this equipment.
- The operating instructions in this manual pertain to the common cereal grains as indicated. When drying any other grain, contact GSI for additional recommendations.
- On LP fired units, set pressure regulator to avoid excessive gas pressure applied to the burner during ignition and operation. Do not exceed maximum recommended drying temperatures.
- Equipment has sharp edges that can cause serious injury. To avoid injury, handle sharp edges with caution and use proper protective clothing and equipment at all times.
- All guards must be in place before and during operation. Images of guards removed in this manual are for illustration purposes only.
- Use caution when working around high-speed fans, gas burners, augers and auxiliary conveyors which can start automatically.
- Keep hands, feet, and clothing away from moving parts.
- Do not bypass any safety device or interlock.
- Do not enter the dryer or bin while it is operating.
- Do not operate in an area where combustible material will be drawn into the dryer.



ST-0029-2

Exercise Caution When Drying Flammable Grains

- Be aware that some grains are highly flammable including, but not limited to, rapeseed, canola, linseed, sunflower and milo.
- All grain and seed must be whole (minimal cracking or crushing), clean, and dust free before drying.
- Avoid dust and chaff from being drawn into the fan and heater.
- To reduce risk of fire, keep the fan, heater, drying plenum, and ducts clean at all times.
- In the event of a fire (or suspected fire):
 1. Shut down the entire dryer.
 2. Turn off the fuel at the tank or supply valve.
 3. Shut off and lock electrical power.
 4. Evacuate the area.
 5. Call the fire department.



ST-0032-1

Install and Operate Gas-Fired Equipment Properly

- Gas-fired equipment should be installed by a qualified pipe fitter and must conform with local codes.
- For Canada: The equipment shall be installed in accordance with the *Natural Gas and Propane Installation Code, CSA B149.1*, or the *Propane Storage and Handling Code, CSA B149.2*, or applicable provincial regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.
- For the United States: The equipment shall be installed in accordance with the *National Fuel Gas Code ANSI Z223.1/ NFPA 54*.



ST-0016-2

Prevent Roof Damage Due to Vacuum Pressure

- Roof damage can result from excessive vacuum or internal pressure from fans or other air moving systems. The manufacturer does not warrant this type of roof damage.
- Adequate ventilation or “makeup air” devices must be provided for all powered air handling systems.
- The manufacturer does not recommend the use of downward flow systems (suction).
- Severe roof damage can result from any blockage of air passages.
- Operating fans during high humidity or cold weather conditions can cause air exhaust or intake ports to freeze.



ST-0028-2

Maintain Equipment and Work Area

- Understand service procedures before doing work.
- Keep area clean and dry.
- Do not service equipment while it is operating. Disconnect and lock-out power and fuel supply before entering equipment or before performing maintenance.
- Keep your equipment in proper working condition. Replace worn or broken parts immediately.
- Depressurize the fuel train before disassembling for service.
- Allow the fan to operate for 20 minutes with the burner off to purge products of combustion and to cool the components before entering.
- Check regularly for any developing gas plumbing leaks. Do not operate the dryer if any gas leak is detected. Shut down and repair before further operation.



ST-0030-2

Chapter 1: Safety Precautions

Store Bin Sheets Properly

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



ST-0058-1

Rotating Auger Hazard

- Keep clear of rotating augers and moving parts.
- Do not remove or modify guards or covers.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Failure to follow these precautions will result in serious injury or death.



ST-0037-1

Stay Clear of Hoisted Equipment

- Always use proper lifting or hoisting equipment when assembling or disassembling equipment.
- Do not walk or stand under hoisted equipment.
- Always use sturdy and stable supports when needed for installation. Not following these safety precautions creates the risk of falling equipment, which can crush personnel and cause serious injury or death.



ST-0047-1

Confined Space Hazards and Entry Procedures

- Note that the interior of this equipment is considered a confined space. Maintenance of this equipment can require access to the confined space.
- Access doors must be shut and locked except when access is required.
- Doors giving access to dangerous equipment must be safety interlocked.
- The following entry procedures must be followed:
 - Be aware of all possible hazards present inside the confined space and wear personal protective equipment (PPE) as needed.
 - Complete a permit to work and follow all permit required confined space entry procedures defined by the site manager.
 - Make sure that the area has been purged of any hazardous products or gases. Check the atmosphere for harmful gases or vapors with a suitable gas analyzer and make sure levels are safe before entering.
 - Do not smoke or use naked flames.
 - Lock out and tag out power supplies and fuel supplies to all equipment.
 - Do not work alone. Work in teams of at least three so that help is immediately available in the event of an emergency.
 - Confirm that all personnel have safely exited the equipment and tools have been recovered once work is complete.



ST-0055-1

Chapter 1: Safety Precautions

Fall Hazard

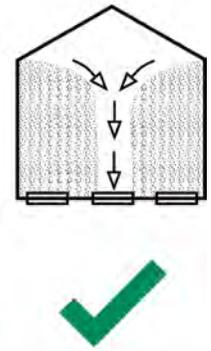
- Ladders, stairways and platforms are for use by competent and trained personnel only. Do not allow children or other unauthorized persons to have access to the equipment.
- Access to the equipment must be restricted by the use of security fencing and lockable gates.
- Lower sections of ladders must be fitted with a lockable safety gate to prevent unauthorized access.
- Make sure that hot surfaces have had adequate time to cool before working on or in the equipment.
- Lock out and tag out power supplies and fuel supplies to all equipment.
- Do not attach lifting equipment to ladders or platforms.
- Do not go outside of the safety rails provided on elevated platforms.
- Do not work at heights during high winds, rain, snow, or ice storms.



ST-0056-1

Unload the Bin Correctly

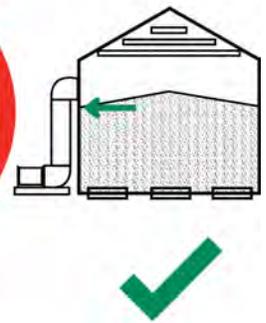
- Use CENTER FLOOR OUTLET ONLY until NO grain remains above this outlet.
- Side floor outlets to be used ONLY when above condition is satisfied.
- Lock all side floor outlets to avoid accidental premature use.
- See manufacturers instructions for proper use of factory supplied sidedraw (wall) discharge systems.



ST-0060-1

Do Not Overfill TopDry

- Do not overfill TopDry. Stored grain must be no higher than the heater duct opening.
- Filling the bin above this point will cause a blockage of the ducts.



ST-0062-1

Safety Decals

The safety decals on your equipment are safety indicators which must be carefully read and understood by all personnel involved in the installation, operation, service and maintenance of the equipment.

To replace a damaged or missing decal, contact us to receive a free replacement.

GSI Decals

1004 E. Illinois Street
 Assumption, IL 62510
 Phone: 1-217-226-4421

Bin Decals

Location	Decal No.	Decal	Description
Located next to aeration system.	DC-995		Caution Vacuum Pressure

Chapter 1: Safety Precautions

Location	Decal No.	Decal	Description
On bin door covers	DC-GBC-1A	 <p>! DANGER</p> <p>Rotating flighting will kill or dismember. Flowing material will trap and suffocate. Crusted material will collapse and suffocate.</p> <p>Keep clear of all augers. DO NOT ENTER this bin!</p> <p>If you must enter the bin:</p> <ol style="list-style-type: none"> 1. Shut off and lock out all power. 2. Use a safety harness and safety line. 3. Station another person outside the bin. 4. Avoid the center of the bin. 5. Wear proper breathing equipment or respirator. <p>Failure to heed these warnings will result in serious injury or death.</p>	Danger Keep Clear of Augers
On bin door covers	DC-GBC-2A	 <p>! WARNING</p> <p>UNLOADING INSTRUCTIONS:</p> <ol style="list-style-type: none"> 1. Use CENTER FLOOR OUTLET ONLY until NO grain remains above this outlet. 2. Side floor outlets to be used ONLY when above condition is satisfied. 3. Lock all side floor outlets to avoid accidental premature use. 4. See manufacturers instructions for proper use of factory supplied sidedraw (wall) discharge systems. <p>Failure to heed these warnings could result in serious injury, death, structural damage or collapse of tank.</p>	Warning Unload Instructions

Fan and Heater Decals

Location	Decal No.	Decal	Description
Fan and Heater Unit	DC-1943	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>⚠ DANGER HIGH VOLTAGE.</p> <p>Will cause injury or death. Lockout power before servicing.</p> <p><small>GSI Group 217-226-4421</small></p> </div> <div style="width: 30%; text-align: center;">  </div> <div style="width: 30%;"> <p>⚠ DANGER HAUTE TENSION.</p> <p>Causera des blessures ou la mort. Bloquez le courant avant de faire l'entretien.</p> <p><small>DC-1943</small></p> </div> </div>	High Voltage Danger Decal
Fan and Heater Unit	DC-1948	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>⚠ DANGER HIGH VOLTAGE</p> <p>Will cause serious injury or death. Lockout power before servicing.</p> <p><small>GSI Group 217-226-4421</small></p> </div> <div style="width: 30%; text-align: center;">  </div> <div style="width: 30%;"> <p>⚠ DANGER HAUTE TENSION</p> <p>Causera de sérieuses blessures ou la mort. Couper/verrouiller le courant avant l'entretien.</p> <p><small>DC-1948</small></p> </div> </div>	High Voltage Danger Decal
Fan and Heater Unit	DC-1949	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>⚠ WARNING</p> <p>Stay clear of rotating blade. Blade could start automatically. Can cause serious injury. Disconnect power before servicing.</p> <p><small>GSI Group Inc. 217-226-4421</small></p> </div> <div style="width: 30%; text-align: center;">  </div> <div style="width: 30%;"> <p>⚠ AVERTISSEMENT</p> <p>Restez éloigné de la lame tournante. La lame peut se mettre en marche automatiquement. Peut causer de sérieuses blessures. Verrouillez le courant avant l'entretien.</p> <p><small>DC-1949</small></p> </div> </div>	Rotating Blade Warning Decal
Fan and Heater Unit	DC-1959	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>⚠ WARNING</p> <p>Flame and pressure beyond door can cause serious injury. Do not operate with service door removed. Keep head and hands clear.</p> <p><small>GSI Group 217-226-4421</small></p> </div> <div style="width: 30%; text-align: center;">  </div> <div style="width: 30%;"> <p>⚠ AVERTISSEMENT</p> <p>La flamme et la pression au-delà de la porte peuvent causer des dommages sérieux. Ne pas faire fonctionner si la porte de service est enlevée. Gardez les mains et la tête éloignés.</p> <p><small>DC-1959</small></p> </div> </div>	Flame and Pressure Warning Decal
Fan and Heater Unit	DC-2330	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>⚠ WARNING</p> <p>Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.</p> <p><small>GSI Group 217-226-4421</small></p> </div> <div style="width: 30%; text-align: center;">  </div> <div style="width: 30%;"> <p>⚠ AVERTISSEMENT</p> <p>Une installation, un réglage, une modification, un entretien ou une réparation incorrects peuvent entraîner des dommages, des blessures, voire la mort. Lisez attentivement les instructions d'installation, d'opération et d'entretien avant d'installer ou de réparer cet équipement.</p> <p><small>DC-2330</small></p> </div> </div>	Read Manual Warning Decal

Chapter 1: Safety Precautions

Location	Decal No.	Decal		Description
Fan and Heater Unit	DC-2331	<p>WARNING</p> <p>The use and storage of gasoline and other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous.</p> <p><small>GSI Group 217-226-4421</small></p>	<p>AVERTISSEMENT</p> <p>Il est dangereux d'utiliser ou de stocker de l'essence ou tout autre liquide ou vapeur inflammables dans des contenants ouverts à proximité de cet appareil.</p> <p><small>DC-2331</small></p>	Flammable Vapor Warning Decal
Fan and Heater Unit	DC-2392	<p>WARNING</p> <p>If the information in the manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.</p> <p>Do not store or use gasoline or other flammable vapours and liquids in the vicinity of this or any other appliance.</p> <p>What to do if you smell gas</p> <ul style="list-style-type: none"> - Do not try to light any appliance. - Extinguish any open flames. - Do not touch any electrical switch. - Immediately call your gas supplier. <p>Follow the gas supplier's instructions.</p> <ul style="list-style-type: none"> - If you cannot reach your gas supplier call the fire department. <p>Installation and service must be performed by a qualified installer, service agency or the gas supplier.</p> <p><small>GSI Group 217-226-4401</small></p>	<p>AVERTISSEMENT</p> <p>Si les directives du manuel ne sont pas suivies à la lettre, une explosion ou un incendie pourrait survenir et causer des dommages à la propriété, des blessures corporelles voire même la mort.</p> <p>N'entreposez pas et n'utilisez pas d'essence et d'autres vapeurs et liquides inflammables près de cet appareil ou de tout autre appareil.</p> <p>Que faire en présence d'une odeur de gaz</p> <ul style="list-style-type: none"> - N'essayez pas d'allumer un autre appareil - Éteignez toute flamme découverte - Ne touchez à aucun interrupteur électrique - Contactez immédiatement votre fournisseur de gaz. Suivre les instructions du fournisseur de gaz. <ul style="list-style-type: none"> - Si vous n'êtes pas en mesure de joindre votre fournisseur de gaz, appelez les pompiers <p>L'installation et l'entretien doivent être effectués par un installateur qualifié, une agence spécialisée en entretien ou le fournisseur de gaz.</p> <p><small>DC-2392</small></p>	Flammable Vapor Warning Decal

NOTES

2 The TopDry™ System

Topics Covered in this Chapter

- Overview of the TopDry Grain Dryer
- Location of TopDry Components and Accessories
- TopDry Terminal Drying Capacities
- Storage Capacity

Overview of the TopDry Grain Dryer

The TopDry Grain Dryer is a grain bin with the addition of a peaked drying floor inside the top of the bin. The grain flows into the top of the bin and special leveling bands keep the grain at a uniform depth. A large fan and heater unit, located on the ground, heat the grain located in the overhead drying chamber via ductwork. Once dried, the grain is dumped into the holding area below for storage. A smaller aeration fan cools the grain and captures heat from the previously dried grain and pushes it upward to help dry the next load.

Figure 2-1 *TopDry Grain Dryer Installation*



Location of TopDry Components and Accessories

Use the following as a suggested guideline for placing the TopDry components and accessories.

When locating the manway, make sure that the outside ladder will not interfere with other accessories below. Roof vents must be spaced evenly around the roof. (Quantity will vary with individual systems.)

- IMPORTANT:**
1. Items (I), (K), (M), and (O) must be in this location between the first two stiffeners to the right of the fan for proper operation.
 2. Items (I), (K), and (M) must be at platform or an optional ladder and platform will be required.
 3. Aeration fan must not be placed within 90 degrees of a fan or burner.
 4. Storage chamber rotary switch must be mounted 3 ft. below fan/heater duct opening.
 5. TopDry Terminal (Q) can be remote mounted or mounted to the dryer.

Figure 2-2 Location of TopDry Components and Accessories — Top View

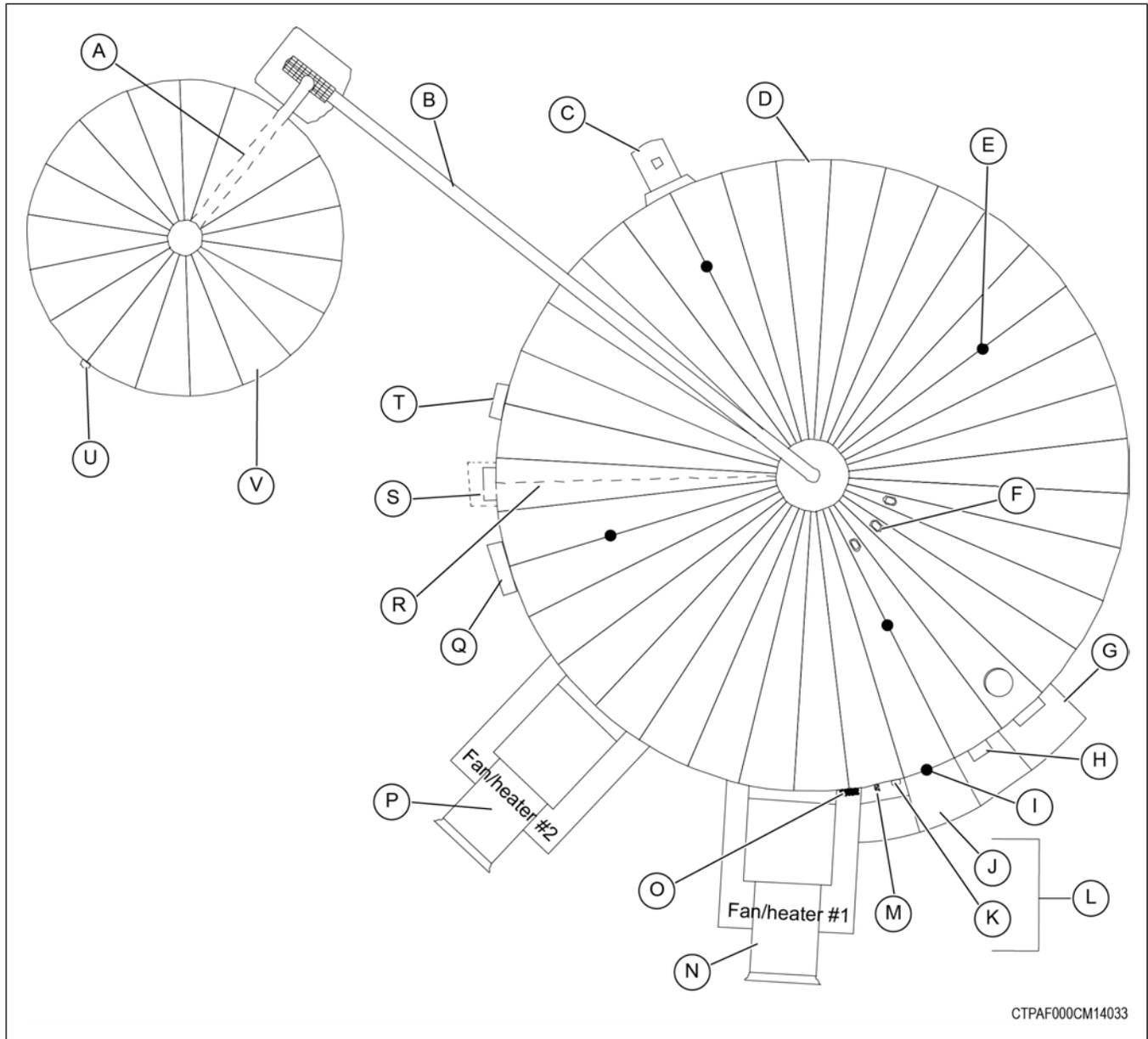
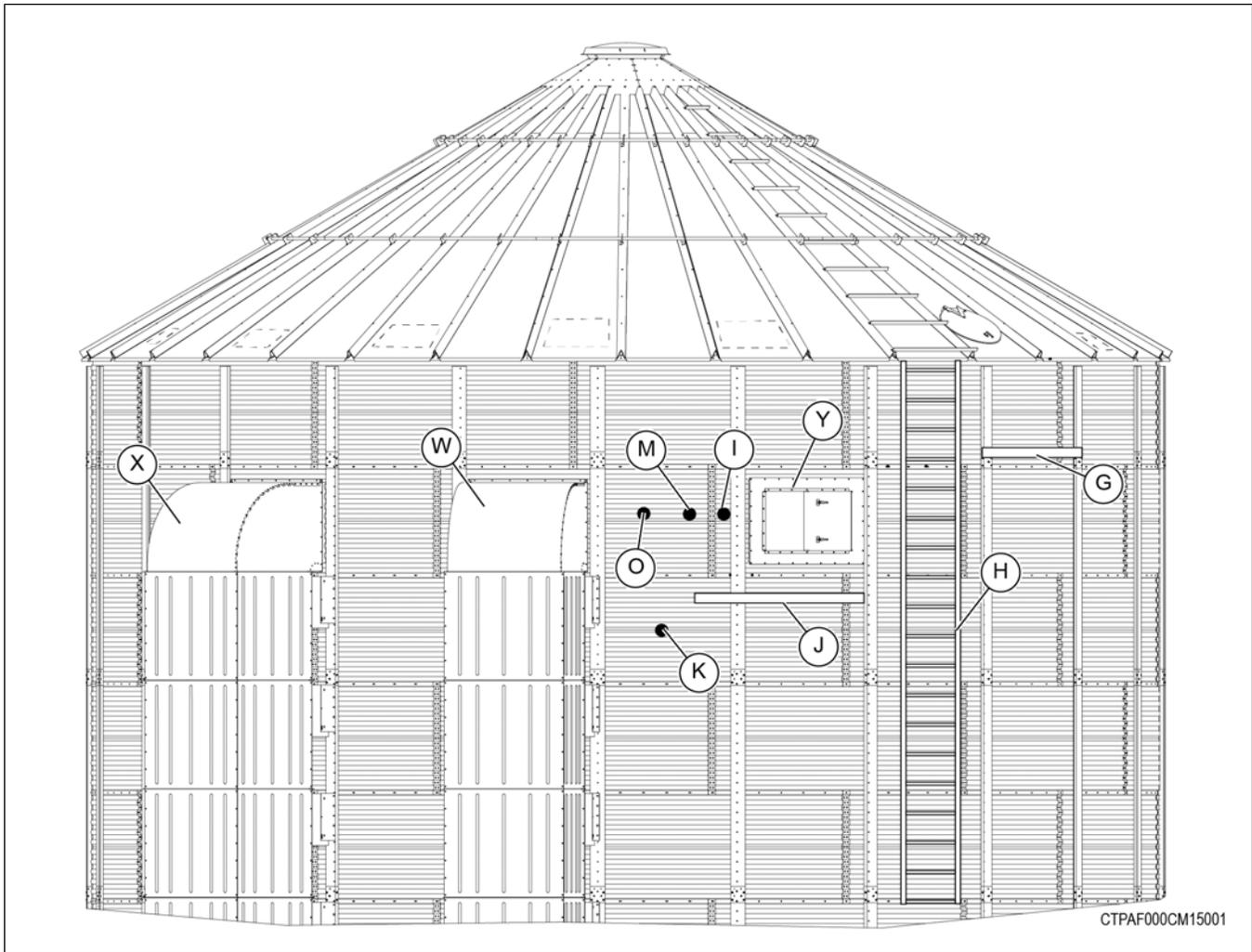


Figure 2-3 Location of TopDry Components and Accessories — Side View



CTPAF000CM15001

A	Fill system no. 2	M	Grain temperature sensor junction box ¹²
B	Fill system no. 1	N	Control fan/heater
C	Aeration fan ³	O	Plenum temperature sensor ¹
D	TopDry drying bin	P	Fan/heater (Secondary)
E	Grain temperature sensors	Q	TopDry Terminal control mounted at eye level
F	Drying chamber rotary switch	R	Cable route
G	Eave platform	S	Chute controller
H	Ladder	T	Fill system control mounted at eye level
I	Plenum high limit sensor ¹²	U	Wet supply rotary switch (optional)
J	Storage chamber platform	V	Wet storage bin
K	Storage chamber rotary switch ¹²⁴		

1. Must be in this location between the first two stiffeners to the right of the fan for proper operation.
2. Must be at platform or optional ladder and platform will be required.
3. Must not be placed within 90 degrees of a fan or burner.
4. Must be mounted 3 ft. below heat duct opening

TopDry Terminal Drying Capacities

Table 2-1 Drying Rates for Shelled Corn

TopDry Terminal Series			24' Dia. 1-Fan		30' Dia. 1-Fan		30' Dia. 2-Fan		36' Dia. 1-Fan		36' Dia. 2-Fan	
Fan & Heater Unit(s)	Plenum Temp.	Moisture Content Wet Basis	BPH	Dump Interval Min								
15 H.P. 36" Fan 3.5 million BTU	160° F	20%	528	21.6	557	31.9	939	18.9			993	19.4
		25%	334	34.1	353	50.4	595	29.9			629	30.6
		30%	209	54.6	220	80.8	371	47.9			393	49
	180° F	20%	675*	16.8*	713*	24.9*	1202	14.8			1271	15.1
		25%	428*	26.6*	451*	39.4*	761	23.4			805	23.9
		30%	267*	42.6*	282*	63.1*	475	37.4			503	38.3
	200° F	20%	791*	14.4*	835*	21.3*	1407*	12.6*			1488*	12.9*
		25%	501*	22.7*	529*	33.6*	891*	19.9*			943*	20.4*
		30%	313*	36.4*	330*	53.9*	557*	32.0*			589*	32.7*
15 H.P. 40" Fan 6.25 million BTU	160° F	20%	648	17.5	711	25	1154	15.4			1269	15.2
		25%	411	27.7	450	39.5	731	24.3			803	24
		30%	256	44.4	281	63.3	457	39			502	38.4
	180° F	20%	830*	13.7*	909*	19.5*	1477	12			1623	11.9
		25%	525*	21.6*	576*	30.9*	936	19			1028	18.7
		30%	328*	34.7*	360*	49.5*	584	30.4			642	30
	200° F	20%	971*	11.7*	1065*	16.7*	1730*	10.2*			1901	10.1*
		25%	615*	18.5*	674*	26.4*	1096*	16.2*			1204	16.0*
		30%	384*	29.6*	421*	42.2*	684*	26.0*			752	25.6*
30 H.P. 42" Fan 10.25 million BTU	160° F	20%	740	15.4	806	22			819	23.5	1452	13.2
		25%	469	24.3	511	34.8			519	37.1	920	20.9
		30%	293	38.9	319	55.8			324	59.4	574	33.5
	180° F	20%	947	12	1032	17.2			1048	18.3	1858	10.4
		25%	600	19	653	27.2			664	29	1177	16.3
		30%	375	30.4	408	43.6			415	46.4	735	26.1
	200° F	20%	1109	10.2	1208	14.7			1227	15.6	2176	8.8
		25%	702	16.2	765	23.2			777	24.7	1378	14
		30%	439	25.9	478	37.2			486	39.6	861	22.4
40 H.P. 42" Fan 10.25 million BTU	160° F	20%			920	19.3			950	20.2		
		25%			583	30.5			602	32		
		30%			364	48.9			376	51.2		
	180° F	20%			1178	15.1			1216	15.8		
		25%			746	23.8			770	25		
		30%			466	38.2			481	40		
	200° F	20%			1379	12.9			1424	13.5		
		25%			873	20.3			902	21.3		
		30%			545	32.6			563	34.2		

NOTE: * Insufficient burner BTUs for 45°F ambient temperature.

Batch Capacities exclude loading time. Final moisture 15% after complete cooling.

Estimated at 45°F. ambient temperature, 65% relative humidity. 1/3 CFM/Bu. cooling rate.

Capacities listed are wet bushels/tonnes, for mature unfrozen #2 yellow shelled dent corn at listed moisture content and are estimates based on drying principles, field results and computer simulation. Variance may occur due to grain's physiological factors (kernel size, chemical composition, variety, maturity), excessive fines, adverse weather conditions, etc.

Storage Capacity

Table 2-2 Storage Capacity

Bin Diameter	Grain in Process (BU)	Dump Size (BU)	Rings	Eave Height	Peak Height	Maximum Storage (BU)
24 ft.	560	187	5	18'-5"	25'-0"	4,373
			6	22'-1"	28'-8"	5,758
			7	25'-9"	32'-4"	7,143
			8	29'-5"	36'-0"	8,528
			9	33'-1"	39'-8"	9,913
			10	36'-9"	43'-4"	11,298
30 ft.	845	282	5	18'-5"	26'-9"	6,804
			6	22'-1"	30'-5"	8,968
			7	25'-9"	34'-1"	11,132
			8	29'-5"	37'-9"	13,296
			9	33'-1"	41'-5"	15,460
			10	36'-9"	45'-1"	17,624
			11	40'-5"	48'-9"	19,788
36 ft.	1215	303	6	22'-1"	32'-6"	12,914
			7	25'-9"	36'-2"	16,029
			8	29'-5"	39'-10"	19,144
			9	33'-1"	43'-6"	22,259
			10	36'-9"	47'-2"	25,374
			11	40'-5"	50'-10"	28,489
			12	44'-1"	54'-6"	32,549

NOTE: Maximum storage estimated with 12 in. aeration floor, level to bottom of fan entrance, with upper batch filled.

NOTES

3 Gas and Electrical Specifications

Topics Covered in this Chapter

- The Fuel Supply
- Electrical Load Information

The Fuel Supply

You can choose either Liquid Propane (LP) or Natural Gas (NG) to fuel the heater(s) for your TopDry.

Liquid Propane

If using LP gas, make sure to slowly open the main fuel supply valve at the supply tank.

Table 3-1 *Liquid Propane (LP) Fuel Recommendations*

Dryer Fan Size	Dryer Horsepower	Maximum Heat Capacity BTU per Hour	Maximum Fuel Flow Gallons per Hour	Minimum Line Size	Orifice Size	Minimum Operating Pressure	Maximum Operating Pressure
36 in.	15	4.5 Million	49	1/2 in.	21/64 in.	2 lb.	14 lbs.
40 in.	15	5.95 Million	63	1/2 in.	11/32 in.	2 lb.	18.5 lbs.
42 in.	30	8.75 Million	95	1/2 in.	7/16 in.	2 lb.	16 lbs.
42 in.	40	10.25 Million	112	3/4 in.	29/64 in.	2 lb.	19.5 lbs.

Natural Gas

If using natural gas, turn ON the valve along the supply line. Then open the ball valve on the fan heater unit(s).

Table 3-2 *Natural Gas (NG) Fuel Recommendations*

Dryer Fan Size	Dryer Horsepower	Maximum Heat Capacity BTU per Hour	Maximum Fuel Flow Cubic Ft. per Hour	Minimum Line Size	Orifice Size	Minimum Operating Pressure	Maximum Operating Pressure
36 in.	15	4.5 Million	4500	2 in.	27/64 in.	1 lb.	12.5 lbs.
40 in.	15	5.75 Million	5750	2 in.	33/64 in.	1 lb.	9 lbs.
42 in.	30	8.75 Million	8750	2 in.	19/32 in.	1 lb.	12 lbs.
42 in.	40	10.25 Million	10,250	2 in.	23/32 in.	1 lb.	8 lbs.

Electrical Load Information

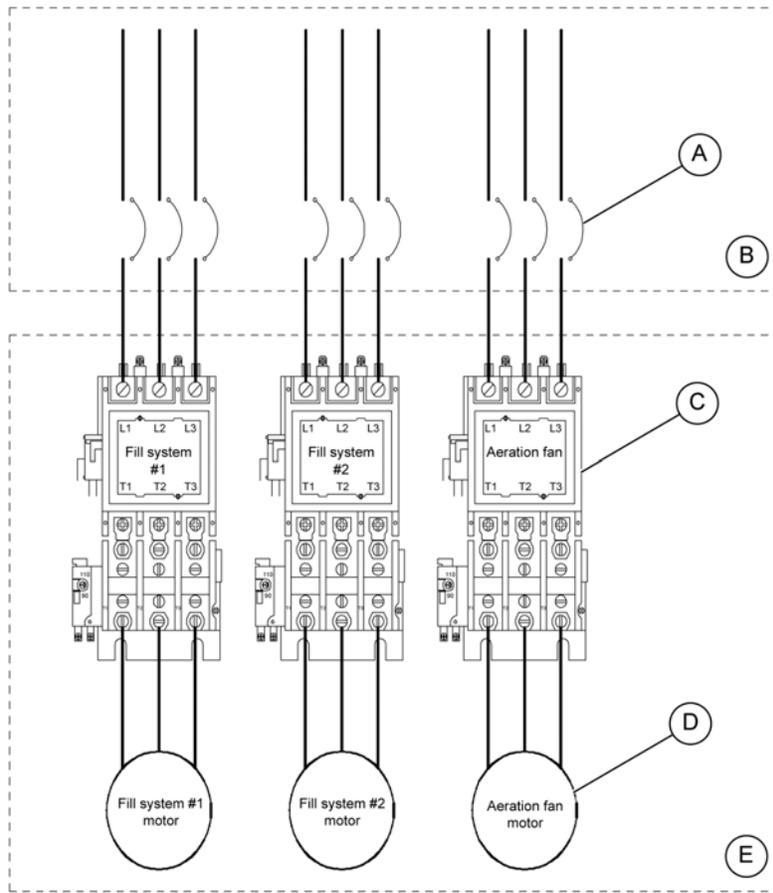
The chart below is a reference for the electrician wiring the grain dryer. It is recommended that you contact your local power company and have a representatives survey the installation to make sure that the wiring is compatible with their system and that adequate power is supplied to the unit.



The grain dryer must be the only equipment connected to the recommended service amps. Standard electrical safety procedures must be used. (Refer to the National Electrical Code Standard Handbook by the National Fire Protection Association.) A qualified electrician must make all electrical wiring installations.

Dryer Fan Size	Voltage	Horsepower	Full Load Amps	Fuse (Slow Blow)	Breaker
36 in.	220V 1 PH	15	78	150	150
	208V 3 PH	15	44	125	125
	220V 3 PH	15	39	100	100
	380V 50 Hz	15	27	80	80
	460V 3 PH	15	20	50	50
	575V 3 PH	15	16	40	40
40 in.	220V 1 PH	15	78	150	150
	208V 3 PH	15	44	125	125
	220V 3 PH	15	39	100	100
	380V 50 Hz	15	27	80	80
	460V 3 PH	15	20	50	50
	575V 3 PH	15	16	40	40
42 in.	208V 3 PH	30	80	150	150
	220V 3 PH	30	74	150	150
	380V 50 Hz	30	39	100	100
	460V 3 PH	30	37	100	100
	575V 3 PH	30	30	80	80
42 in.	208V 3 PH	40	108	200	200
	220V 3 PH	40	102	200	200
	380V 50 Hz	40	47	100	100
	460V 3 PH	40	51	100	100
	575V 3 PH	40	40	100	100

Figure 3-1 Electrical Load Information



A	Breaker	D	Motors
B	Entrance panel	E	Fill system control
C	Starters in fill system control		

NOTES

4 Control Panels

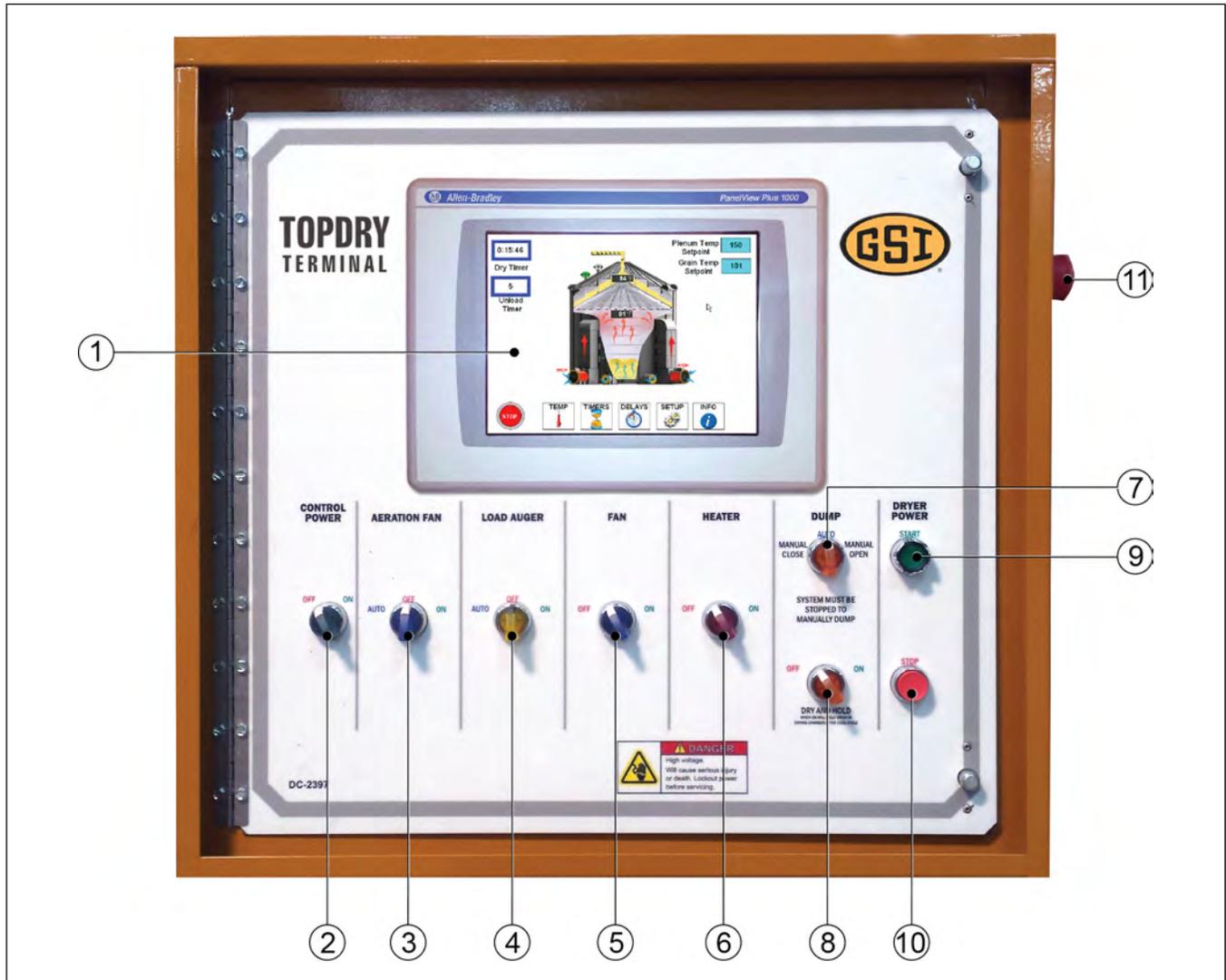
Topics Covered in this Chapter

- The TopDry Terminal Control Panel
- Powering on the Touch Screen
- Overview of the User Interface
- Configuring the Operational Settings for the TopDry Terminal
- The Timer and Delay Menu
- The Temperature Menu
- The Information Menu
- Factory Default Settings
- The Fill System Control

The TopDry Terminal Control Panel

Along with the touchscreen user interface, the control panel contains all buttons and switches that allow you to set up and operate your dryer.

Figure 4-1 The TopDry Terminal



NOTE: Images of the dryer, control panel, and user interface menus that are included in this guide are for illustrative purposes only and may not entirely resemble the actual product.

Table 4-1 The components of the TopDry Terminal

Item	Name	Description
1	Touchscreen	Allows you to access all of the user interface menus and set all parameters (see Overview of the User Interface, page 36 for details)

Table 4-1 The components of the TopDry Terminal (cont'd.)

Item	Name	Description
2	Control power switch	<p>Controls the power to the TopDry system by way of the following modes:</p> <ul style="list-style-type: none"> • Off: the TopDry Terminal will not operate • On: the switch illuminates when the TopDry Terminal is successfully powered up <p>Note the following:</p> <ul style="list-style-type: none"> • If the switch is placed in the ON position and the light does not illuminate, make sure that the Emergency Stop switches located on the TopDry Terminal, the fill system control, and each fan control box are pulled out
3	Aeration fan switch	<p>Controls the aeration fan(s) by way of the following modes:</p> <ul style="list-style-type: none"> • Off: the aeration fan(s) do not operate • On: the aeration fan(s) operate when the Control Power switch is ON and the Dryer Power button is illuminated • Auto: in Autoflow mode, the aeration fan(s) operate continuously; in Autobatch mode, the aeration fan(s) start and stop with the main drying fan(s) <p>Note the following:</p> <ul style="list-style-type: none"> • The Aeration Fans can be directly controlled with the fill system control • The Aeration Fan switch is illuminated whenever the aeration fan(s) are operating
4	Load auger switch	<p>Controls the load auger by way of the following modes:</p> <ul style="list-style-type: none"> • Off: the load auger(s) do not operate • On: the fill system(s) work the same as in Auto, except the out of grain timer is ignored • Auto: When operating in <i>Autoflow mode</i>, the load auger(s) start and stop automatically depending on the level of grain relative to the drying chamber high level rotary switch. When operating in <i>Autobatch mode</i>, the fill system(s) will shut off when the Dry Timer reaches the Percent Time Until Load Off value and not refill the drying chamber even if the grain level drops below the Drying Chamber High Level Rotary switch <p>Note the following:</p> <ul style="list-style-type: none"> • The Load Auger switch is illuminated when the unload auger is operating • If auxiliary loading equipment is configured and connected to your dryer, the Load Auger switch on the TopDry Terminal also controls the operation of this additional equipment when the switch on the Fill System Control is set to AUTO

Chapter 4: Control Panels

Table 4-1 The components of the TopDry Terminal (cont'd.)

Item	Name	Description
5	Fan switch	<p>Controls the main drying fans by way of the following modes:</p> <ul style="list-style-type: none">• Off: the main drying fan(s) do not operate• On: The main drying fan(s) will operate continuously in both Autobatch and Autoflow modes, except during the grain dump cycle, where the fan(s) will shut-off for a pre-set time that is programmed into the Fan OFF Delay settings <p>Note the following:</p> <ul style="list-style-type: none">• The Fan switch is illuminated when the air switch is closed.
6	Heater switch	<p>Controls the burner(s) operation by way of the following modes:</p> <ul style="list-style-type: none">• Off: the heater(s) do not ignite• On: the burner(s) will ignite after the main drying fan(s) are operating and the purge time has elapsed <p>Note the following:</p> <ul style="list-style-type: none">• The Heater switch will blink during the ignition cycle and will remain solid once the burner(s) are ignited
7	Dump switch	<p>Controls the chute controller by way of the following modes:</p> <ul style="list-style-type: none">• Auto: the chute controller rotates to open (lower) the dump chutes at the beginning of the dump cycle and then rotates to close (raise) the dump chutes at the end of the dump cycle• Manually Open: the chute controller rotates to open (lower) the dump chutes• Manually Close: the chute controller rotates to close (raise) the dump chutes <p>Note the following:</p> <ul style="list-style-type: none">• The Dump switch will blink when the chutes are moving and will remain solid when the chutes are open• The TopDry must be stopped to manually open the dump chutes.
8	Dry and Hold switch	<p>Controls the chute controller by way of the following modes:</p> <ul style="list-style-type: none">• On: the grain in the drying chamber will not be dumped into the storage chamber at the end of the drying cycle and the dryer will stop and cool for as long as the cool timer is set• Off: the dryer will operate normally <p>Note the following:</p> <ul style="list-style-type: none">• The Dry and Hold switch is illuminated when in the ON position

Table 4-1 The components of the TopDry Terminal (cont'd.)

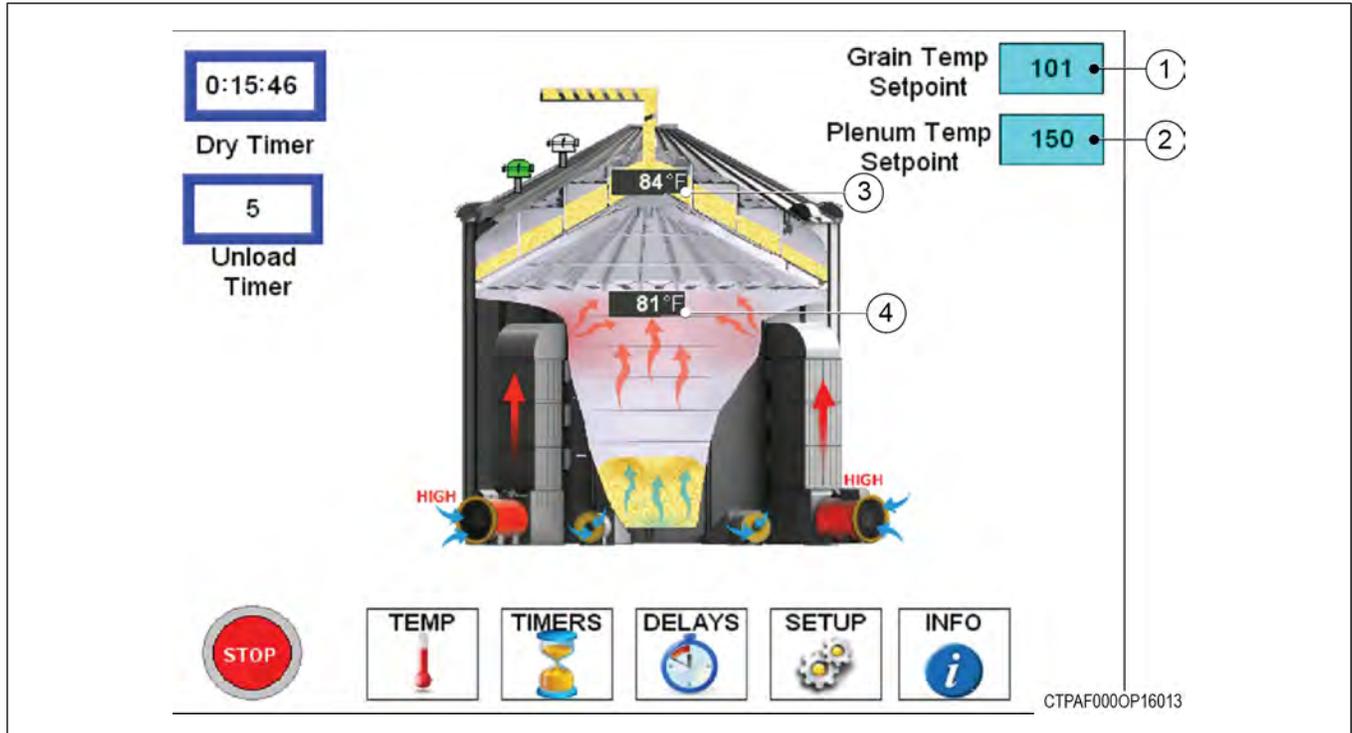
Item	Name	Description
9	Dryer Power button	<p>This button energizes the control switches and operates the dryer based on the switch settings.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • The Dryer Power button illuminates when the dryer is operating. • The Dump switch is disabled after this button is pushed.
10	Stop button	<p>Stops all dryer functions; not to be confused with the Stop button on the touchscreen, which is included in the user interface's main menu</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If an automatic dryer shut down occurs, first determine and correct the cause of the shut down. Then, press the Stop button to reset the dryer before starting.
11	Emergency stop (e-stop)	<p>A safety device used to turn off the dryer's control power and immediately stop all of its functions (the main power, which is controlled by the main electrical disconnect, does not turn off when you press the Emergency Stop plunger</p> <p>DANGER:</p> <ul style="list-style-type: none"> • Never disable an Emergency Stop. Make sure all safety devices are installed and work properly.

Powering on the Touch Screen

What You Should Know

The Touch Screen on the TopDry Terminal allows you to configure all timing functions, temperature controls, safety circuit checks and dryer setup parameters while also providing an animated representation of the TopDry operation. It is designed to simplify operation by providing a touch control of the dryer and a self-diagnostic of the TopDry.

Figure 4-2 TopDry Terminal Touch Screen (Main Menu)



1. Make sure the main power supply is on to the TopDry system.
2. Turn the **Control Power** switch on the TopDry Terminal to the **ON** position.

The touch screen will start to boot and the main screen will appear.

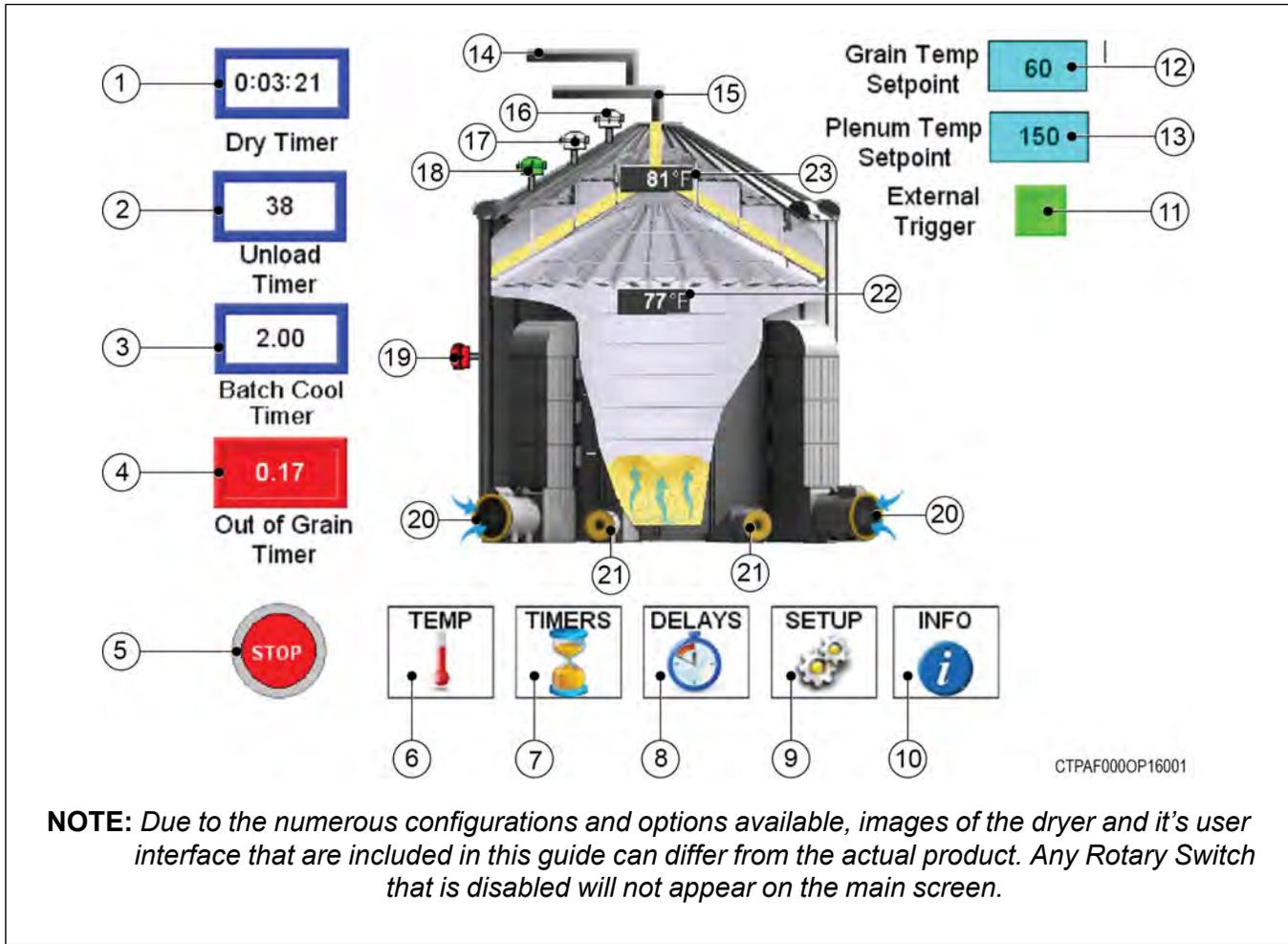
Overview of the User Interface

The user interface allows you to access all operation and information windows via a touch-sensitive screen. The interface includes an intuitive menu structure that allows you to easily locate parameter settings and system information.

The Main Menu

The main menu serves as a starting point for all your dryer related operations. In addition to providing access to all parameter settings, the main menu displays real-time temperature and timer settings.

Figure 4-3 The main menu with all displays shown



NOTE: Due to the numerous configurations and options available, images of the dryer and its user interface that are included in this guide can differ from the actual product. Any Rotary Switch that is disabled will not appear on the main screen.

Table 4-2 Description of the main menu's buttons and displays

Item	Name	Description
1	Dry timer button	Shortcut that allows you to quickly modify the time the burner operates; displays current time remaining
2	Unload timer button	Shortcut that allows you to quickly modify the time the dump chutes are open; displays current time remaining
3	Batch cool timer button	Used in Autobatch Mode Only, shortcut allows you to quickly modify the time the grain is cooled before it is dumped; displays current time remaining
4	Out of grain timer	Displays the time left before the system will shut down as a result of no grain being detected by the high level switch
5	Stop button	Stops all dryer functions
6	Temp menu button	Allows you to access the temperature menu
7	Timer menu button	Allows you to access the timer menu
8	Delay menu button	Allows you to access the delay time menu
9	Setup menu button	Allows you to access the setup menu
10	Info menu button	Allows you to access the information menu
11	External trigger	Displays when an external trigger is present, such as a moisture controller

Chapter 4: Control Panels

Table 4-2 Description of the main menu's buttons and displays (cont'd.)

Item	Name	Description
12	Grain temperature setpoint button	Shortcut that allows you to quickly modify the setpoint temperature of the grain; displays the current grain temperature setpoint
13	Plenum temperature setpoint button	Shortcut that allows you to quickly modify the setpoint temperature of the plenum; displays the current plenum temperature setpoint
14	Fill system 2	Graphic representation of the second fill system; animates flowing grain when in operation
15	Fill system 1	Graphic representation of the first fill system; animates flowing grain when in operation
16	Drying chamber overflow switch	Graphic representation of the overflow switch in the drying chamber; only appears when it senses grain and will blink red
17	High level drying chamber switch	Graphic representation of the high level switch in the drying chamber; flashes red when not sensing grain; solid green when sensing grain
18	Low level drying chamber switch	Graphic representation of the low level switch in the drying chamber; flashes red when not sensing grain; solid green when sensing grain
19	Storage chamber high level switch	Graphic representation of the high level switch in the storage chamber; only appears when it senses grain and will blink red
20	Burners	Graphic representation of a burner; turns red when in operation
21	Aeration fans	Graphic representation of a aeration fan; turns blue when in operation
22	Plenum temperature	Displays the current temperature of the plenum
23	Grain temperature	Displays the current temperature of the grain in the drying chamber

Configuring the Operational Settings for the TopDry Terminal

By clicking the **Setup** icon on the main menu, you can configure settings for your system. These settings can vary depending on the equipment installed on your TopDry.

What You Should Know

Figure 4-4 The setup menu

Setup

Ver: TopDry16_R1_0_C

02/02/2016
12:58:58

CLOCK UPDATE

EXIT

CTPAF0000P16004

Item — Name	Item — Name
1 — Drying mode	12 — Low level switch
2 — Discharge mode	13 — Drying chamber overflow
3 — Switch selection	14 — Start fans with high level
4 — Aeration	15 — Number of fill systems
5 — Fill system	16 — Percentage time until load off
6 — Burner	17 — Hi-Lo burner
7 — Auto flow enabled	18 — Number of burners
8 — Time only mode	19 — Burner differential
9 — Time and temperature mode	20 — Selection area
10 — Time and external trigger mode	21 — Number of aeration fans
11 — Wet tank switch	22 — Clock update

To configure the TopDry Terminal to your system:

1. Click the **Setup** icon from the main menu.
2. Set the following parameters:

NOTE: *The current settings are highlighted in green.*

Drying Mode — The mode of operation for the dryer. Toggles between the “Auto Flow Enabled” for autoflow operation and “Auto Batch Enabled” for autobatch operation.

Discharge Mode — Selects how the system determines when the grain is discharged from the dump chutes. The available discharge modes are the following:

- Time only mode: The grain is dumped at the end of its drying cycle based strictly on the time set in the Dry Timer setting.
- Time and Temp Mode: The dryer will hold the grain until the Dry Timer setting has elapsed and the Grain Temperature Setpoint has been reached.
- Time and External Trigger Mode: The dryer will hold the grain until the Dry Timer setting has elapsed and has been triggered by an external device, such as a moisture controller.

Switch Selection — The level switches installed on your TopDry system. The available switches are the following:

- Wet Tank Switch: Select if an optional wet tank level switch is used.
- Low Level Switch: Select if a low level drying chamber switch is installed.
- Dry Chamber Overflow: Select if a drying chamber overflow switch is installed.
- Start Fans with High Level: Select to start the fans based on grain depth. When enabled, the fan(s) will not start until the grain level in the dryer has reached the high level drying chamber switch.

NOTE: *The High Level Switch must be installed and is not optional.*

Aeration — The number of aeration fans used on your TopDry system.

Fill System — Determines how your system will control the fill conveyors. The available options are the following:

- Number of Fill Systems: Enter the number of conveyors that are supplying the wet grain to your TopDry system, one or two.
- Percent Time Until Load Off: Used for autobatch only. Enter the percentage of lapsed time remaining on the Dry Timer after which the wet fill system will not try to refill the TopDry.

Burner — Determines how your system will control the burner(s). The available options are the following:

- Hi-Lo Burner: Toggles the burner(s) between Hi-Lo operation or off-on operation.
- Number of Burners: The number of drying fan and heater(s) on your TopDry.
- Burner Differential: The temperature differential that the burner(s) will cycle between on a high and low firing rate during Hi-Lo burner operation.

NOTE: *This should always be set to one degree unless special circumstances exist.*

Clock Update — Sets the year, month, day, hour, minute, and seconds on the TopDry's internal clock.

3. Click the **Exit** to return to the main menu.

The Timer and Delay Menu

You can access and set all parameters for the timers and delays from the same menu. The figure that follows illustrates and describes the parameter fields.

Figure 4-5 Timers and delays menu

Item	Name	Value
1	Timers	
2	Delays	
3	Fan off delay (seconds)	60.00
4	Fan start delay (seconds)	2.50
5	Wet supply switch delay (seconds)	40.00
6	Low level switch delay (seconds)	5.00
7	High level switch delay (seconds)	45.00
8	Load 1 delay (seconds)	30.00
9	Load 2 delay (seconds)	30.00
10	Dry timer (minutes)	20.00
11	Unload time (seconds)	38.00
12	Batch cool timer (minutes) Batchflow Only	2.00
13	Purge time (seconds)	30.00
14	Cool down timer (seconds)	20.00
15	Out of grain timer (minutes)	8.00
16	Click to change setting	
17	Current setting	

CTPAF0000P16002

Setting the Timers

By clicking the **Timers** icon on the main menu, you can set the time for the Dry, Cool Down, Unload, Out-of-Grain, and Purge timers.

What You Should Know

The timers perform the following functions:

Chapter 4: Control Panels

- The **Dry Timer** sets the amount of time the burner operates during a drying cycle. The setting is based on the moisture content of the grain being dried. Refer to [TopDry Terminal Drying Capacities, page 24](#).
- The **Unload Timer** sets the amount of time the dump chutes are open during a dump cycle. This setting is based on the size of the TopDry. Initial settings are given in [Initial Dryer Start-Up, page 58](#).
- The **Batch Cool Timer** can be used if the dryer is being operated in autobatch mode, and cool grain is desired during the autobatch dump cycle. It is also available when Dry and Hold Mode is on.
- The **Purge Timer** is the amount of time the fan(s) must operate before the burner will light on initial startup. For domestic dryers, this timer will always be set to 30 seconds.
- The **Cool Down Timer** allows grain to cool for the pre-set time if an error condition occurs. Error conditions that apply are:
- The **Out-of-Grain Timer** is activated when the chamber high level switch no longer senses grain, signaling that the fill system needs to refill the dryer. If the **Out-of-Grain Timer** goes to 0 before the dryer has refilled, the dryer will shut down with an out-of-grain warning.

To change the setting on any timer:

1. Click the **Timers** icon shown on the main menu.

The Timers and Delays window will be displayed, providing access to all of the timer settings.

2. Click the dark blue (upper portion) of the button to launch the keypad.

NOTE: *The light blue portion on any of the buttons displays the time remaining on that timer. If the dryer is momentarily stopped for any reason, the timers will stop, but will continue counting down when the dryer is restarted.*

3. Enter the desired time using the keypad and click the “Enter” key (lower right hand button) which will enter the new value into the TopDry Terminal memory.
4. Click **Exit** to return to the main menu.

Setting the Delays

By clicking the **Timers** icon on the main menu, you can set the time for the Fan Off Delay, Fan Start Delay, Wet Supply Switch Delay, Low Level Switch Delay, High Level Switch Delay, Load 1 Delay, and Load 2 Delay.

What You Should Know

The delays perform the following functions:

- The **Fan Off Delay** sets the amount of time the fan(s) and burner(s) shut off during a dump cycle. Shutting off the fan(s) during a dump cycle prevents the drying floor from becoming excessively dirty when there is a large amount of foreign material in the grain being dried. Setting the Fan Off Delay time higher than the **Unload Time** will allow the dust and fines to settle before the fans turn on.
- The **Fan Start Delay** sets the delay between the start of multiple fans in a two fan TopDry, thus reducing the starting electrical current. This delay has to be set short enough (usually 3 seconds or less) to prevent the second fan from rotating and starting in a reverse rotation.
- The **Wet Supply Switch Delay** sets the amount of time the *optional* wet supply grain level switch can be uncovered before the dryer will shut down. If this optional switch is not used, the delay should be set to 0.

- The **Low Level Switch Delay** sets the amount of time the drying chamber low level switch can be uncovered, indicating the drying chamber is low on grain, before the dryer will shut down.
NOTE: *This is to prevent nuisance shutdowns and must normally be left at the default setting.*
- The **High Level Switch Delay** sets the amount of time that the fill system continues to operate after the grain level reaches the drying chamber high level switch. The high level switch delay should be set long enough to allow grain to cover the switch so the fill system does not start and stop frequently during the drying cycle due to grain settlement or shrinkage. However, the delay should be set short enough to keep grain from reaching the drying chamber overflow switch.
- The **Load 1 Delay on a single fill system** sets the amount of time that the fill conveyor closest to the fill hatch on the dryer (Load 1) operates after the high level switch delay has timed to 0. This allows the fill conveyor to clean out before stopping. It also sets the amount of time the conveyor continues to operate after the **Load** switch is turned from the **ON** position to the **OFF** position. If no **Load 1 Delay** is needed, the time is set to 0. *On a two fill system*, the **Load 1 Delay** sets the amount of time the Load 1 conveyor continues to operate after the secondary conveyor has shutoff.
- The **Load 2 Delay** sets the amount of time that the *optional* second fill conveyor continues to operate after the high level switch delay has timed to 0. It also sets the amount of time the second conveyor continues to operate after the **Load** switch is turned from the **ON** position to the **OFF** position. If your system does not include a second conveyor, set the **Load 2 Delay** time to 0.

To change the setting on any delay:

1. Click the **Timers** icon shown on the main menu.

The Timers and Delays window will be displayed, providing access to all of the delay settings.

2. Click the dark blue (upper portion) of the button to launch the keypad.

NOTE: *The light blue portion on any of the buttons displays the time remaining on that timer. If the dryer is momentarily stopped for any reason, the timers will stop, but will continue counting down when the dryer is restarted.*

3. Enter the desired time using the keypad and click the “Enter” key (lower right hand button) which will enter the new value into the TopDry Terminal memory.
4. Click **Exit** to return to the main menu.

The Temperature Menu

The temperature menu allows you to configure the sensors and adjust the temperature limits for the daily operation of your dryer.

The TopDry Terminal monitors each of the four grain temperature sensors separately and then displays an average of these four readings on the main menu. Each individual grain temperature sensor value can be viewed from the temperature menu. During the drying process, a large temperature differential between the four sensors usually indicates a problem with the drying process (plugged dump chute, dirty drying floor, etc). The dryer can be programmed to automatically shut down if this differential becomes too large by setting the **Max Grain Sensor Differential**. If a grain temperature sensor fails, it can be temporarily disabled and ignored until the sensor is fixed. Slight variations in temperature readings between the four sensors can be corrected by setting the appropriate **Grain Temperature Offsets** for the selected sensors.

Figure 4-6 The temperature menu

The screenshot shows the 'Temperature' control panel. It is divided into three main sections:

- Grain Temp Sensors (1-4):** Each sensor has a temperature display (e.g., 79.8, 84.1, 85.1, 85.2) and an 'Offset' display (all 0.0). To the right of each sensor is a green 'Grain Temp Sensor X Enabled' button (4).
- TEMP. SETPOINTS (6):** Contains 'Grain Temp Setpoint' (101.0) and 'Plenum Temp Setpoint' (150.0). Below these are current temperature displays: 83.55 and 80.48.
- TEMPERATURE LIMITS (9):** Contains 'Grain Max Temp' (140.0) and 'Plenum Max Temp' (200.0). Below these are current limit displays: 140.00 and 200.00.
- GRAIN TEMP SENSORS (1):** A 'Max Grain Sensor Differential' display showing 15.
- EXIT (14):** A button with a red arrow pointing right.

Item — Name

1 — Grain temperature sensors	8 — Plenum temperature setpoint
2 — Grain sensor temperature (1– 4)	9 — Temperature limits
3 — Grain sensor temperature offset (1– 4)	10 — Maximum grain temperature
4 — Enable or disable grain sensor (1– 4)	11 — Maximum plenum temperature
5 — Maximum grain sensor differential	12 — Setpoint temperature
6 — Temperature setpoints	13 — Current temperature
7 — Grain temperature setpoint	14 — Exit

Setting the Sensors and Temperature Limits

By clicking the **TEMP** icon from the main menu, you can enable and set the limits of the temperature sensors.

1. Enable or disable the temperature sensors by clicking on the **Grain Temp Sensor** buttons.
NOTE: Sensor should only be disabled when a sensor failure has occurred.
2. Set the temperature for each sensor by clicking on the light blue area of the button for that sensor.
3. Set the offset for each sensor by clicking on the dark blue area of the button for that sensor.
NOTE: Setting an offset is an unusual occurrence and is normally set by a Service Technician.
4. Set the maximum grain sensor differential by clicking on the dark blue area of the **Max Grain Sensor Differential** button.
NOTE: Setting this to low will cause nuisance shutdowns. Default is set at 15° F.

5. Set the temperature setpoints for the plenum and grain temperature by clicking on the dark blue area of the **Grain Temp Setpoint** and **Plenum Temp Setpoint** buttons.

NOTE: *The number displayed in the light blue area is the current temperature of the drying grain and the plenum.*

6. Set the temperature high limits by clicking on the dark blue area of the **Grain Max Temp** button and the **Plenum Max Temp** button.

NOTE: *The current settings are shown in the light blue area of the button.*

7. Click the **Exit** button to return to the main menu.

Setting the Temperature Setpoints for the Plenum and Grain from the Main Screen

By clicking the blue buttons in the upper right hand corner of the main menu, you can configure the temperature setpoints for the plenum and grain. These settings can also be set from the temperature screen.

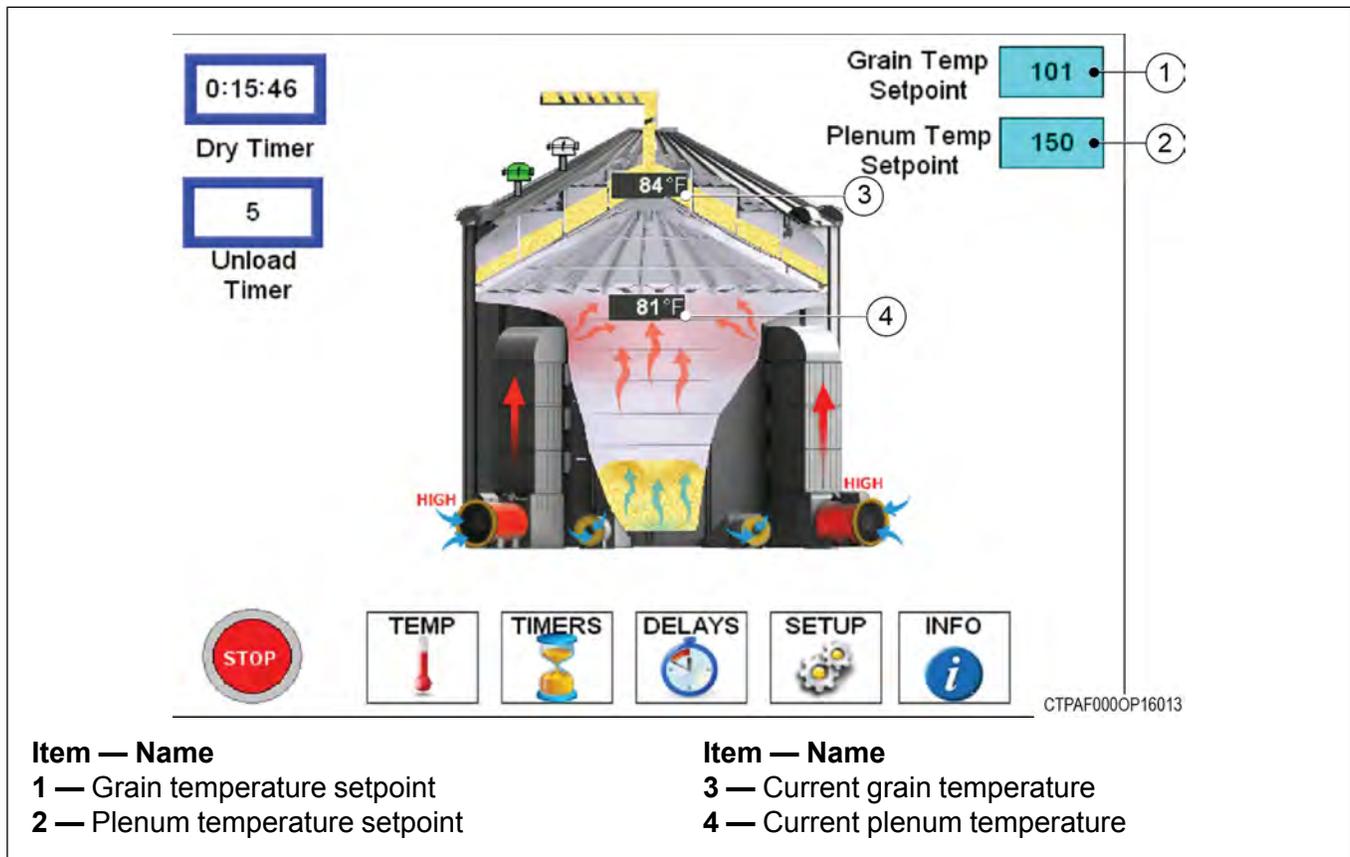
What You Should Know

The current plenum temperature is displayed in a black box in the heat plenum (storage) area of the dryer illustration. The current grain temperature is displayed in a black box in the drying grain of the dryer illustration.

To adjust the Plenum or Grain setpoint temperature:

1. Click the blue **Plenum Temp Setpoint** or the **Grain Temp Setpoint** button in the upper right-hand corner of the main menu.
2. Enter the desired temperature into the keypad and click enter.

Figure 4-7 Main menu



The Information Menu

The information menu allows you to view alarms, setup Watchdog message, view operation history and access to a graphic diagnostic display of the control boards.

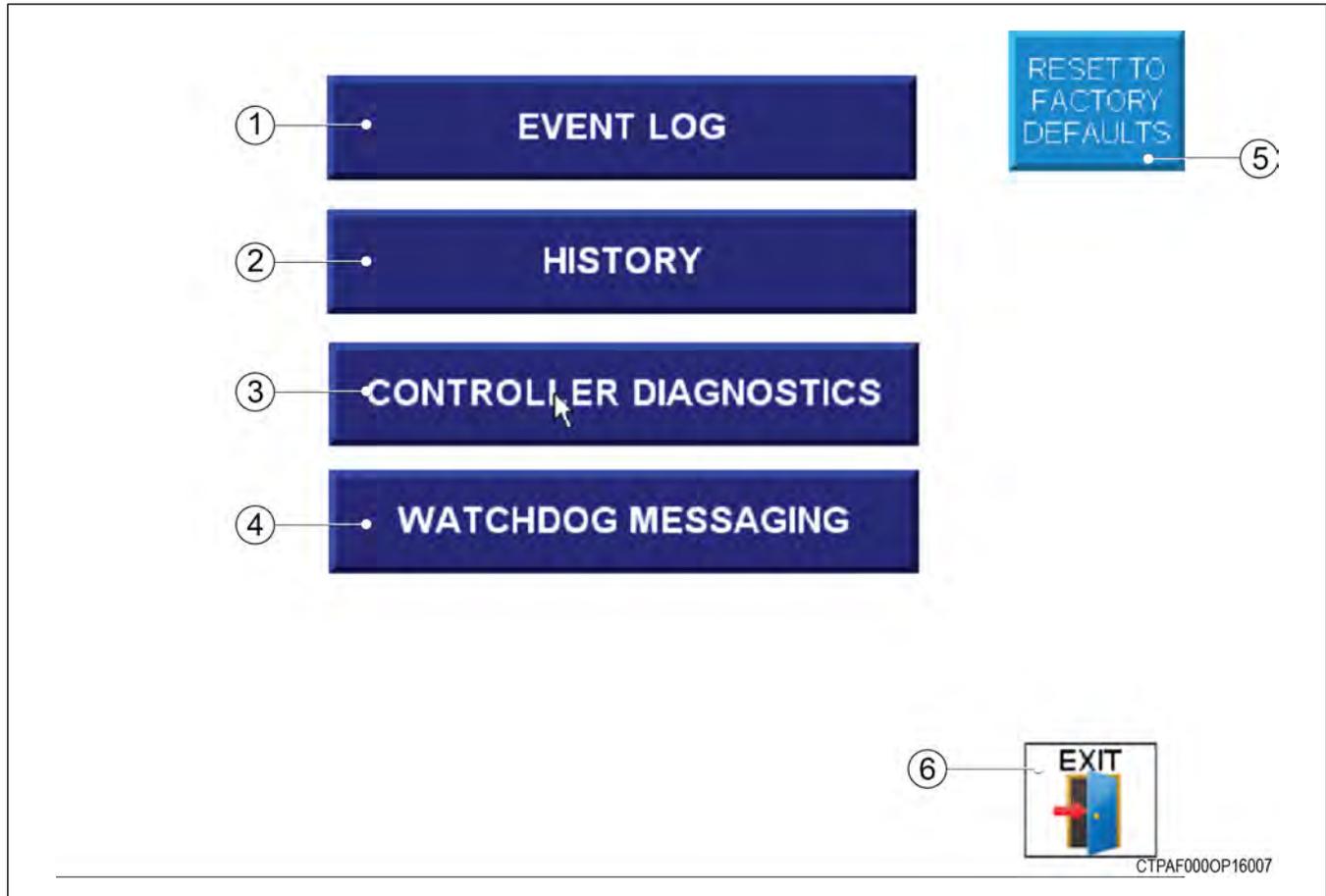


Table 4-3 *The information menu*

Item	Name	Description
1	Event log	Allows you to view the alarm history.
2	History	Allows you to view information about the last eight dump cycles. The cycle duration, plenum temperature, fill time, date and the dump time are displayed.
3	Controller diagnostics	Aids in troubleshooting a PLC problem; displays the status of the PLC inputs and outputs, any fault codes that are present on the PLC, and a PLC indicating the meaning of the fault codes.
4	Watchdog messaging	Allows you to set up the messaging feature available through the TopDry Terminal (Refer to)
5	Reset to factory defaults	Resets all parameter settings to the factory default settings. (Refer to Factory Default Settings, page 48)
6	Exit	Exist back to the main menu.

Factory Default Settings

You can reference the default factory settings to compare them with any changes you may have made.

Table 4-4 *TopDry Terminal Default Settings*

Parameter	Factory Value	Units
Drying Mode	AutoFlow	
Time or Time/Temp Dry	Time & Temp	
Wet Tank Switch	Disabled	
Low Level Switch	Enabled	
Dry Chamber Overflow Switch	Enabled	
Start Fans w/High Level Sw	Disabled	
# Aeration Fans	1	
# Fill Systems	1	
Percent Time Until Unload Off	25	
Burner Hi-Lo or On/Off Mode	Hi-Lo	
# of Burners	1	
Burner Differential	1	°F
Dry Timer	20	minutes
Unload Timer	38	seconds
Batch Cool Time	0	minutes
Purge Time	30	seconds
Cool Down Timer	20	minutes
Out of Grain Timer	8	minutes
Fan Off Delay	60	seconds
Fan Start Delay	2.5	seconds
Wet Supply Switch Delay	40	seconds
Low Level Switch Delay	5	seconds
High Level Switch Delay	45	seconds
Load 1 Delay	30	seconds
Load 2 Delay	30	seconds
Grain Temp Setpoint	101	°F
Plenum Temp Setpoint	150	°F
Grain Max Temp	140	°F
Plenum Max Temp	200	°F
Grain Temp Sensor 1 Offset	0	°F
Grain Temp Sensor 2 Offset	0	°F
Grain Temp Sensor 3 Offset	0	°F
Grain Temp Sensor 4 Offset	0	°F
Max Grain Sensor Temp Differential	15	°F

The Fill System Control

The fill system control box houses the motor starters for fill system 1, fill system 2 and the aeration fan(s). You can set the switches to determine the mode of operation for the fill system and aeration fan(s).

Figure 4-8 Fill System Control



Table 4-5 The components of the fill system control

Item	Name	Description
1	Fill system 1 switch	<p>Controls the primary load auger by way of the following modes:</p> <ul style="list-style-type: none"> • Off: the load auger does not operate • On: the fill system operates continuously • Auto: when the load auger switch on the TopDry Terminal is set to Auto, the load auger starts and stops as determined by the TopDry Terminal <p>Note the following:</p> <ul style="list-style-type: none"> • The Load Auger switch is illuminated whenever the unload auger is operating

Chapter 4: Control Panels

Table 4-5 *The components of the fill system control (cont'd.)*

Item	Name	Description
2	Fill system 2 switch	<p>Controls the secondary load auger by way of the following modes:</p> <ul style="list-style-type: none">• Off: the load auger does not operate• On: the fill system operates continuously• Auto: when the load auger switch on the TopDry Terminal is set to Auto, the load auger starts and stops as determined by the TopDry Terminal <p>Note the following:</p> <ul style="list-style-type: none">• The Load Auger switch is illuminated whenever the unload auger is operating
3	Aeration fan switch	<p>Controls the aeration fan(s) located at the bottom of the bin by way of the following modes:</p> <ul style="list-style-type: none">• Off: the aeration fan(s) do not operate• On: the aeration fan(s) operate continuously• Auto: when the aeration fan switch on the TopDry Terminal is set to AUTO, the aeration fan(s) operate continuously in AutoFlow mode; in Autobatch mode, the aeration fan(s) start and stop with the main drying fan(s) <p>Note the following:</p> <ul style="list-style-type: none">• The Aeration Fan switch is illuminated whenever the aeration fan(s) are operating.
4	Emergency stop (e-stop)	<p>A safety device used to turn off the dryer's control power and immediately stop all of its functions (the main power, which is controlled by the main electrical disconnect, does not turn off when you press the Emergency Stop plunger</p> <p>DANGER:</p> <ul style="list-style-type: none">• Never disable an Emergency Stop. Make sure all safety devices are installed and work properly.

5 Getting Started

Topics Covered in this Chapter

- Pre-Season Inspections
- Testing and Leveling the Dump Chutes
- Testing the Fill System
- Testing the Aeration Fan
- Testing the Air Switch
- Testing the Burner

Pre-Season Inspections

Before the dryer is started or filled, fully inspect the TopDry system to ensure all components are in good working order.



Make sure all power sources are locked out and tagged out. If entering the bin, follow confined space entry procedures.

Drying Chamber

- Inspect dump hoppers for obstructions.
- Make sure that the gaps between the dump chutes and the floor sheets are a minimum of 1-1/2 in.
- Make sure leveling bands are installed correctly and are not damaged.

Rotary Switches

- Make sure all rotary switches are spinning freely.
- Make sure the seals around the rotary switches are water tight.

Dump Chutes

- Make sure the dump chutes are level and parallel to the storage floor.
- Make sure the center plate is no more than 12 in. from the pulley when the chutes are closed (level). If the center plate is further than 12 in. from the pulley when the chutes are closed, the chains must be lengthened.

Fuel Supply

- Make sure an adequate gas supply is available.
- Inspect all gas lines and connections for leaks.
- Fix any gas leaks immediately.

Fans

- Make sure fans rotate freely in the correct direction.

Electrical Components

- Make sure there are no loose or bare wires.

Testing and Leveling the Dump Chutes

Before attaching the sprocket chain to the lift plate cable, you must test that the sprocket travels from the open limit switch position to the close limit switch position.

Before You Begin

- Make sure you have completed the pre-season inspections.
- E-Stops are pulled out.
- Make sure the sprockets are aligned correctly.
- Power has been supplied to the system.
- Turn all switches on the TopDry Terminal to **OFF**.
- Turn the **Control Power** switch to **ON**.
- Push the **Dryer Power Start** button.

To test the chute controller:

NOTE: *When the cover is removed, the damper switch (B) must be depressed for the system to operate during testing.*



Rotating sprockets can cut and crush. Keep away from all moving parts.

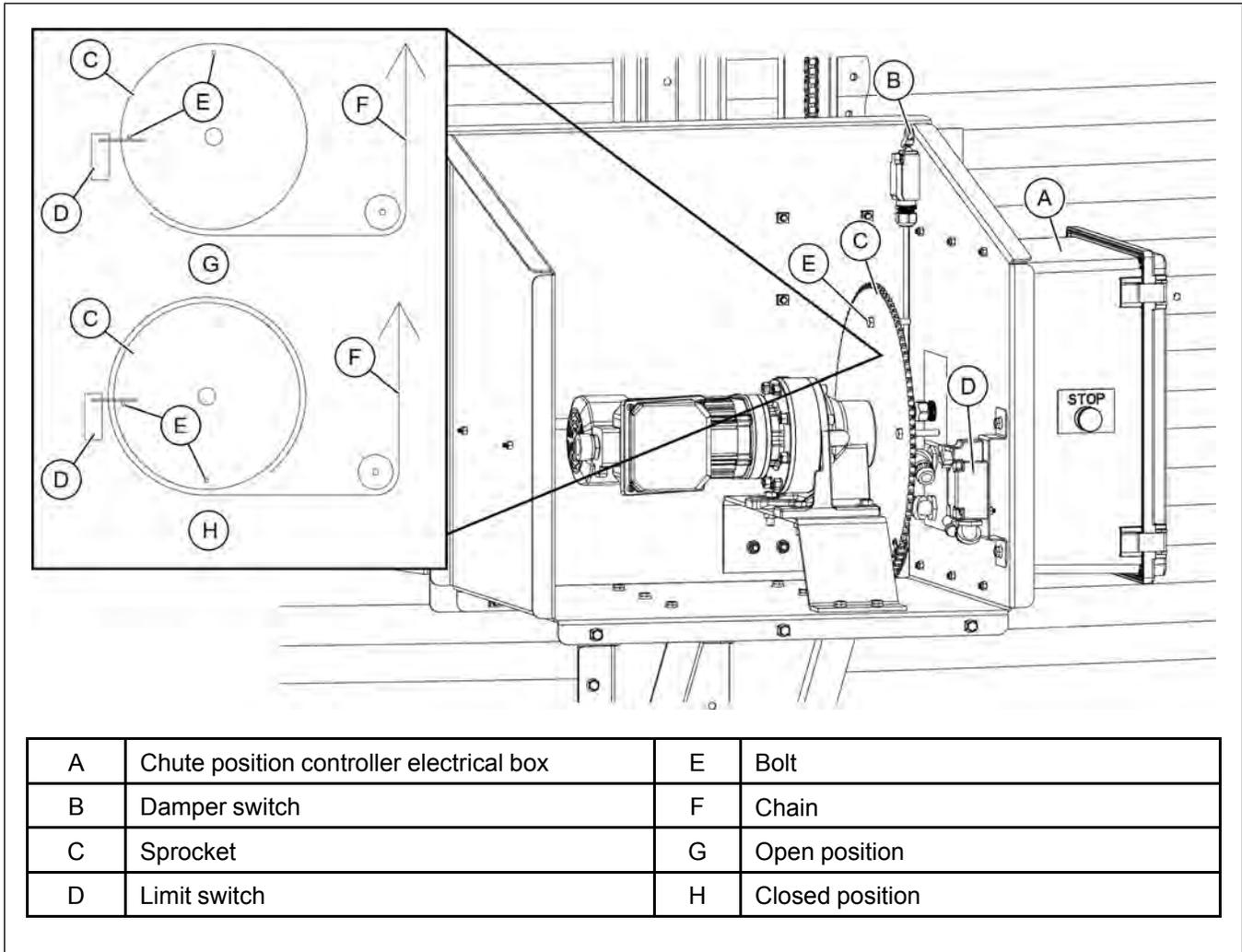
1. Make sure that the bolts (E) on the sprocket (C) are in the open position (G).
2. Set the **Dump** switch on the TopDry Terminal to **Manual Close** position.
The bolts (E) on the sprocket (C) should rotate to the closed position (H), tripping the limit switch (D).
3. Set the **Dump** switch on the TopDry Terminal to **Manual Open** position.
The bolts (E) on the sprocket (C) should rotate to the open position (G), tripping the limit switch (D).
4. Connect the sprocket chain and the lift cable to the turnbuckle.

To level the dump chutes:

5. Set the **Dump** switch on the TopDry Terminal to **Manual Close** position and inspect the dump chutes.
The dump chutes should be level in the closed position.
6. Inspect the dump chutes, and if they are not level, use the turnbuckle to adjust the chutes until they are level.
7. Set the **Dump** switch on the TopDry Terminal to **Manual Open** position and inspect the dump chutes.

- The dump chutes should be fully open.
8. Inspect the dump chutes, and if they are not fully open, loosen the double nuts on the hinge bolts.
 9. Re-install all guarding and enclosures.
 10. Set the **Dump** switch on the TopDry Terminal to the **Auto** position and press the **Stop** button.
- The dump chutes should raise to the closed position.

Figure 5-1 Chute controller limit switch positions



Testing the Fill System

You must test the fill system that will deliver the wet grain to the TopDry is operating properly prior to drying grain.

Before You Begin

- Make sure you have completed the pre-season inspections.
- E-Stops are pulled out.
- Power has been supplied to the system.

Chapter 5: Getting Started

- Prepare the wet storage tank to deliver grain to the dryer.
- Turn all switches on the TopDry Terminal to **OFF**.
- Turn the **Control Power** switch to **ON**.
- Push the **Dryer Power Start** button.

To test the fill system:



Make sure all personnel are away from any equipment controlled by the TopDry Terminal. Equipment can start and stop automatically.

1. Turn the **Fill System #1** switch on the fill system control to **AUTO**.
2. If using two fill systems, turn the **Fill System #2** switch on the fill system control to **AUTO**.
3. Turn the **Load Auger** switch on the TopDry Terminal to **ON**.
The fill system should begin to operate the fill conveyors from the wet supply tank to the dryer.
4. Turn the **Load Auger** switch on the TopDry Terminal to **OFF**.

Testing the Aeration Fan

The aeration fan(s) are the fan(s) not connected to a heater at the base of the bin. You must test the fans prior to operating the TopDry System.

Before You Begin

- Make sure you have completed the pre-season inspections.
- E-Stops are pulled out.
- Power has been supplied to the system.

To test the aeration fan:

1. On the fill system control, turn the **Aeration Fan** switch to **ON** and **OFF** quickly.
2. Observe the rotation of the fan.
IMPORTANT: The fan should rotate counterclockwise.
3. If the fan doesn't rotate counterclockwise, reverse the fan direction.

To reverse the fan direction:



Turn OFF all power sources before performing any maintenance to the equipment.

4. Turn off all power sources.
5. In the fill system control box, reverse two of the three power supply wires going into the motor starter.

Tip

Reverse the two outside wires, L1 and L3, leaving the middle wire in the same position.

Testing the Air Switch

Airflow must be detected by the air switch before the heaters will begin to operate.

Before You Begin

- Make sure you have completed the pre-season inspections.
- E-Stops are pulled out.
- Power has been supplied to the system.
- Turn all switches on the TopDry Terminal to **OFF**.
- Turn the **Control Power** switch to **ON**.
- Push the **Dryer Power Start** button.

To test the airflow switch:

1. Turn the **Fan** switch to **ON**.

Single Fan Unit: The fan switch light will blink until the fan has started and the airflow switch is closed.

Two Fan Unit: In a two fan unit, the fan switch light will blink until both fans have started and the airflow switch is closed.

2. Turn the **Aeration Fan** switch to **ON**.
3. Turn the **Fan** switch to **OFF**.

To adjust the airflow switch:

4. Locate the airflow switch in the fan electrical box.
5. Turn the airflow switch clockwise to decrease sensitivity and counterclockwise to increase sensitivity.

Testing the Burner

The burner(s) are connected to the heater ducts at the base of the bin. You must test the fans and burners prior to operating the TopDry system.

Before You Begin

- Make sure you have completed the pre-season inspections.
- E-Stops are pulled out.
- Power has been supplied to the system.
- Turn on the fuel supply.
- Turn all switches on the TopDry Terminal to **OFF**.
- Turn the **Control Power** switch to **ON**.
- Push the **Dryer Power Start** button.

To test the burner:

1. Turn the **Fan** switch to **ON**.
2. Turn the **Heater** switch to **ON**.

The burner will light after the purge delay and the light in the heater switch will blink during the purge and ignition period. Once a flame is sensed, the light will stop flashing and remain on.

3. Set the high-fire and low-fire gas pressures (See Adjusting the gas pressure):

- LP Settings: high-fire set to 6–15 lbs., low-fire set to 2–6 lbs.
- NG Settings: high-fire set to 6–10 lbs., set to 1–3 lbs.

NOTE: *Do not set the pressure to low as to cause the burner to make popping noises when in low fire. This can damage the burner.*

6 Operation

Topics Covered in this Chapter

- Shutting off the Dryer in an Emergency
- Initial Dryer Start-Up
- Normal Start-Up
- Drying Grain in Last Fill
- Shutting off the Dryer

Shutting off the Dryer in an Emergency

What You Should Know



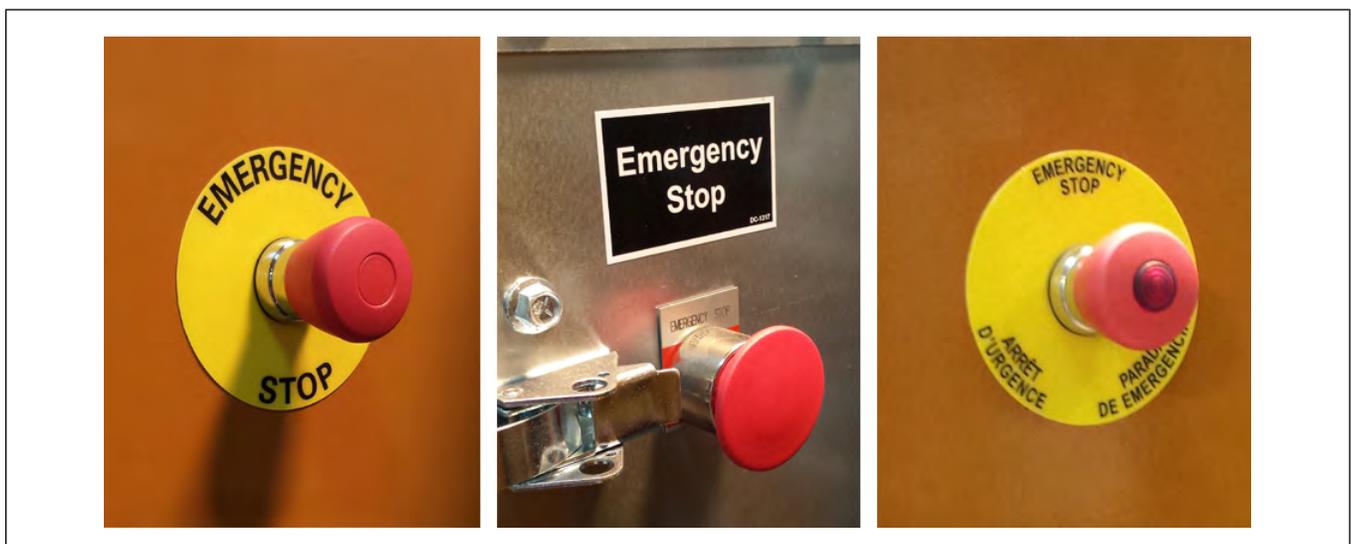
Never disable an Emergency Stop. Make sure all safety devices are installed and operate properly.

1. Push the **Emergency Stop** on the TopDry Terminal or any of the other **Emergency Stop** locations.
This will turn off the dryer's control power and immediately stop all of its functions.

NOTE: *Pressing the **Emergency Stop** button stops dryer functions but does not turn off the power that is present at the various electrical cabinets. Turn off the main electrical disconnect switch to shut off power to the dryer and all electrical cabinets. Failure to do so might lead to serious injury or death*

2. Turn off the main electrical disconnect.

Figure 6-1 Emergency Stops (E-Stops)



Initial Dryer Start-Up

Before You Begin

- Make sure to complete all pre-season checks and tests. Refer to [Pre-Season Inspections, page 51](#).
- Make sure there is wet grain in the wet supply tank.



Make sure all personnel are clear from the TopDry and loading systems before starting or operating your equipment. Lock out all power sources before performing any testing or maintenance. Equipment can automatically start without warning.

What You Should Know

1. Turn the **Control Power** switch on the TopDry Terminal to **OFF**.
2. Turn the **ON** the main power supply.
3. Set the switches on the TopDry Terminal as follows:
 - Aeration Fan switch - **AUTO**
 - Load Auger switch - **AUTO**
 - Fan switch - **OFF**
 - Heater switch - **OFF**
 - Dump switch - **AUTO**
 - Dry and Hold switch - **OFF**

4. Set the switches on the fill system control box to **AUTO**.

NOTE: *If you do not have a second fill system, set the second fill system switch to **OFF**.*

5. Turn the **Control Power** switch on the TopDry Terminal to **ON**.

The TopDry Terminal touchscreen will load and display a graphic representation of the TopDry system with the switches installed on your system. The fan(s) and burner(s) should indicate they are off and the grain switches should be red indicating no grain is present.

6. Configure your system as described in [Configuring the Operational Settings for the TopDry Terminal, page 38](#).
7. Set the **Dry Timer** using the drying charts for the specific bin size, fan and heater size, drying temperature and grain input moisture content. Refer to [Table 2-1 Drying Rates for Shelled Corn, page 24](#).
8. Set the **Dump Timer** as follows:
 - 24 ft. diameter bin = 28 Seconds
 - 30 ft. diameter bin = 34 Seconds
 - 36 ft. diameter bin = 31 Seconds
9. Set the delays as described in [Setting the Delays, page 42](#).
10. Set the timers as described in [Setting the Timers, page 41](#).

11. Set the **Grain Temperature Setpoint** as follows:

- 180°F Drying temperature = 100°F Grain temperature set point
- 170°F Drying temperature = 103°F Grain temperature set point
- 160°F Drying temperature = 105°F Grain temperature set point
- 150°F Drying temperature = 108°F Grain temperature set point
- * 140°F Drying temperature = 110°F Grain temperature set point
- * 130°F Drying temperature = 113°F Grain temperature set point
- * 120°F Drying temperature = 115°F Grain temperature set point

NOTE: * *When drying at a temperature lower than 150°F the grain temperature set point on the moisture control thermostat may require a lower setting at night.*

12. Press the **Dryer Power** switch on the dryer control panel.

The fill system(s) should start immediately and should stop when the grain reaches the Drying Chamber High Level Rotary switch.

13. Turn the **Fan** switch on the TopDry Terminal to **AUTO**.

14. Turn the **Heater** switch on the TopDry Terminal to **AUTO**.

The dryer will operate as you have configured it in the Setup Menu and dump the grain accordingly.

15. After the dump cycle, stop the dryer and test the grain moisture.

- If using Autobatch, test after the first dump is completed.
- If using Autoflow, test after the 10th dump has completed.

16. If the moisture of the grain is too high, increase the grain temperature set point 3°F for each additional point of moisture to be removed.

17. If the moisture of the grain is too low, decrease the grain temperature set point 3°F for each additional point of moisture to be added.

18. If you changed the grain temperature setpoint, make sure to adjust the **Dry Timer** accordingly. Refer to [TopDry Terminal Drying Capacities, page 24](#).

19. Re-start the dryer and repeat steps 15 thru 18 until your desired moisture content is obtained.

NOTE: *Anytime a change is made to the **Grain Temperature Setpoint** in **Autoflow Mode**, the dryer must complete four dump cycles before the moisture of the grain can be accurately tested.*

Normal Start-Up

When the dryer is started with grain in the drying chamber that has already been partially dried, the dryer can be started without making any adjustments to time or temperature; however, the moisture of the grain should be checked after the fourth dump.

Drying Grain in Last Fill

When all the wet grain has been loaded into the drying chamber, you have reached the last fill for the TopDry unit and will need to change setting for the last drying cycle.

1. When all the wet grain has been loaded into the drying chamber, push the **STOP** button on the TopDry Terminal.
2. Set the time on the **Dry Timer** for twice the recommended amount using the charts [TopDry Terminal Drying Capacities, page 24](#) for the specific bin size, fan and heater size, drying temperature and incoming grain moisture content.
3. Turn the **Dry and Hold** switch to the **ON** position.
4. Turn the **Load Auger** switch to the **OFF** position.
5. Press the **Dryer Power Start** button.
6. After the drying cycle is complete, let the aeration fans operate until the grain is cooled.
7. You can manually dump the grain into the storage chamber or let the grain stay in the drying chamber for storage.
8. Refer to [Shutting off the Dryer, page 60](#).

Shutting off the Dryer

A proper daily shutoff procedure prolongs the life of your equipment.

1. Close the fuel supply valve at the tank or along the fuel supply line.
2. If the burner is operating, let the dryer run out of fuel.
This will result in a *Loss of Flame Error*.
3. Press the **Dryer Power Stop** button to clear the error.
4. Turn the **Control Power** switch to the **OFF** position.
5. Turn **OFF** the main power disconnect at the entrance panel.

7 Troubleshooting

Topics Covered in this Chapter

- TopDry Terminal Error Messages

TopDry Terminal Error Messages

Error Message	Cause/Remedy
Fill #1 Conveyor Overload	Thermal overload on Fill Conveyor #1 located in the fill box has tripped. The overload must be manually reset.
Fill #2 Conveyor Overload	Thermal overload on Fill Conveyor #2 located in the fill box has tripped. The overload must be manually reset.
Grain Maximum Temp! Press Stop Button to reset.	The grain temperature in the drying chamber is higher than the Grain Max Temp setting. Inspect dryer for excess trash or plugged dump chutes.
Drying Chamber Overflow Switch Tripped	The grain level in the drying chamber has reached the Drying Chamber Overflow switch. Grain will have to be dumped from the drying chamber before the dryer can be restarted. The High Level switch delay setting needs to be lowered.
Drying Chamber Low Level Switch Exposed	The Low Level Switch delay timer has timed out indicating the dryer is low on grain. Dryer is out of wet grain or filling too slowly.
Wet Grain Supply Empty. Add grain to Wet Tank or disable Wet Tank Switch on Setup Menu to continue.	The (optional) Wet Supply Switch delay timer has timed out, indicating the wet supply tank is low on grain.
High and/or Low Level Drying Chamber Switch Failed	The PLC controller sees grain on the high switch but not the low switch which cannot happen in normal operation, so the high or low switch has failed.
Grain Temp Sensor 2 Open	The TopDry Terminal sees an open electrical connection to the grain temp sensor #2. Check wiring or replace sensor. Temporarily disable grain temp sensor #2 in the Temperature Menu to continue drying.
Grain Temp Sensor 2 Shorted	The TopDry Terminal sees a shorted electrical connection to the grain temp sensor #2. Check wiring or replace sensor. Temporarily disable grain temp sensor #2 in the Temperature Menu to continue drying.
Grain Temp Sensor 3 Open	The TopDry Terminal sees an open electrical connection to the grain temp sensor #3. Check wiring or replace sensor. Temporarily disable grain temp sensor #3 in the Temperature Menu to continue drying.
Grain Temp Sensor 3 Shorted	The TopDry Terminal sees a shorted electrical connection to grain temp sensor #3. Check wiring or replace sensor. Temporarily disable grain temp sensor #3 in the Temperature Menu to continue drying.
Dump Chutes Closed but Open Switch Still ON	The dump chutes have closed, but the controller still sees the Open Microswitch on the chute controller in a closed position. The open microswitch is defective or stuck closed.
Dump Chutes Open but Closed Switch Still ON	The dump chutes have opened, but the controller still sees the Closed Microswitch on the chute controller in a closed position. The closed microswitch is defective or stuck closed.

Chapter 7: Troubleshooting

Error Message	Cause/Remedy
Dump Chutes Did Not Open	Check the dump chute drive VFD and make sure the display is powered on and that there is no fault code on its display.
Dump Chutes Did Not Close	Check the dump chute drive VFD and make sure the display is powered on and that there is no fault code on its display.
Storage Chamber Hi-Limit Switch Failed	The Storage Chamber High Level switch has failed. Both the normally open and normally closed states are the same.
Grain Temp Sensor 4 Open	The controller sees an open electrical connection to the grain temp sensor #4. Check wiring or replace sensor. Temporarily disable the grain temp sensor #4 in the Temperature Menu to continue drying.
Grain Temp Sensor 4 Shorted	The controller sees a shorted electrical connection to the grain temp sensor #4. Check wiring or replace sensor. Temporarily disable the grain temp sensor #4 in the Temperature Menu to continue drying.
Grain Temp Sensor to Sensor Max Differential Exceeded. Check status of Grain Temp Sensors.	The differential between the individual grain temperature sensors has exceed the value set for the Max Grain Sensor Differential in the Temperature Menu. Check for plugged dump chutes or trash buildup in the drying chamber.
Analog Plenum Temp Hi-Limit Tripped	The plenum temperature has exceed the Plenum Max Temp setpoint entered on the Temperature Menu. Lower the low fire gas pressure setting or lower the plenum temperature setpoint.
Analog Grain Temp Hi-Limit Tripped	The grain temperature has exceed the Plenum Grain Temp setpoint entered on the Temperature Menu. Check for plugged dump chutes or check for over-dried grain.
Plenum Temp Sensor Open	The controller sees an open electrical connection to the plenum temperature sensor. Check wiring or replace sensor.
Plenum Temp Sensor Shorted	The controller sees a shorted electrical connection to the plenum temperature sensor. Check wiring or replace sensor.
Grain Temp Sensor 1 Open	The controller sees an open electrical connection to the grain temp sensor #1. Check wiring or replace sensor. Temporarily disable the grain temp sensor #1 in the Temperature Menu to continue drying.
Grain Temp Sensor 1 Shorted	The controller sees a shorted electrical connection to grain temp sensor #1. Check wiring or replace sensor. Temporarily disable grain temp sensor #1 in the Temperature Screen to continue drying.
Aeration Fan 1 Motor Overload	The thermal overload for Aeration Fan #1 located in the fill box has tripped indicating an over-current condition. The overload must be reset manually.
Aeration Fan 2 Motor Overload	The thermal overload for Aeration Fan #2 located in the fill box has tripped indicating an over-current condition. The overload must be reset manually.
Heater 1 Housing Temp Hi-Limit	The temperature high limit located on the housing of fan and heater #1 has opened, indicating that the housing has overheated. The high limit sensor must be manually reset.
Heater 1 Gas Vapor Temp Hi-Limit	The LP gas vapor temperature sensor located in the gas pipe downstream from the vaporizer coil on fan and heater #1 has opened indicating that the vaporizer coil is running too hot. The vaporizer is adjusted by loosening the bolt and moving the vaporizer away from the flame. The sensor automatically resets itself.

Error Message	Cause/Remedy
Heater 1 Digital Plenum Temp Hi-Limit	The mechanical 250 degree plenum temp hi-limit has opened. Check for possible fire or overheated grain.
Heater 1 Gas Pressure Out of Range	The optional gas pressure switch on heater #1 fuel train has opened. Reduce gas pressure.
Heater 1 Heater Ignition Failure	Heater #1 failed to light during the ignition period. Either the heater failed to light or the flame sensor needs adjustment. The flame sensor can be bent so that it will be in the flame. If the heater is not lighting, make sure that the dryer is getting fuel, all solenoids are opening, and the ignitor is sparking.
Heater 1 Heater Flame Lost	Heater #1 lost flame after it has initially lighted. Adjust the flame sensor so that it is in the flame. Make sure that the dryer is not running out of fuel.
Heater 1 Fan Motor Overload	The thermal overload for fan #1 located in the fan #1 electrical box has tripped indicating an overcurrent condition. The overload must be reset manually.
Heater 1 Air Flow Never Detected	The air switch located in the fan #1 electrical box is open due to the fan not turning or the air switch needing adjustment.
Heater 1 Air Flow Lost	The air switch located in the fan #1 electrical box has opened after initially closing. The air switch needs adjustment or airflow to or from fan #1 is being restricted.
Heater 1 Air Switch Stuck/Premature	The air switch is closed without fan #1 running. Adjust air switch.
Heater 1 Fan Contactor Aux Contacts Failed to Close	The auxiliary contacts on the fan #1 motor starter failed to close when the starter was energized. Check that starter #1 is pulling in when energized.
Heater 2 Housing Temp Hi-Limit	The temperature high limit located on the housing of fan and heater #2 opened, indicating that the housing has overheated. The high limit sensor must be manually reset.
Heater 2 Gas Vapor Temp Hi-Limit	The LP gas vapor temperature sensor located in the gas pipe downstream from the vaporizer coil on fan and heater #2 has opened indicating that the vaporizer coil is running too hot. The vaporizer is adjusted by loosening the bolt and moving the vaporizer away from the flame. The sensor automatically resets itself.
Heater 2 Gas Pressure Out of Range	The optional gas pressure switch on heater #2 fuel train has opened. Reduce gas pressure
Heater 2 Heater Ignition Failure	Heater #2 failed to light during the ignition period. Either the heater failed to light or the flame sensor needs adjustment. The flame sensor can be bent so that it will be in the flame. If the heater is not lighting, make sure that the dryer is getting fuel, all solenoids are opening, and the ignitor is sparking.
Heater 2 Heater Flame Lost	Heater #2 lost flame after it has initially lighted. Adjust the flame sensor so that it is in the flame. Make sure that the dryer is not running out of fuel.
Heater 2 Fan Motor Overload	The thermal overload for Fan #2 located in the fan #2 electrical box has tripped indicating an over-current condition. The overload must be reset manually.
Heater 2 Air Flow Never Detected	The air switch located in the fan #2 electrical box is open due to the fan not turning or the air switch needing adjustment.

Chapter 7: Troubleshooting

Error Message	Cause/Remedy
Heater 2 Air Flow Lost	The air switch located in the fan #2 electrical box has opened after initially closing. The air switch needs adjustment or airflow to or from fan #1 is being restricted.
Heater 2 Air Switch Stuck/Premature	The air switch is closed without fan #2 running. Adjust air switch.
Heater 2 Fan Contactor Aux Contacts Failed to Close	The auxiliary contacts on the fan #2 motor starter failed to close when the starter was energized. Check that starter #1 is pulling in when energized.
FillBox Communication Down	Communication has been lost between the remote PLC I/O in the fill box and the main PLC in the control box. Check the Ethernet connections in both the fill box and control box. Make sure the remote I/O in the fill box is powered.
Out of Grain Timer Expired - Cooling Down	The out of grain timer has expired. Either the dryer is out of grain or the fill system is filling too slowly. The dryer will go to cool down mode.
Storage Chamber is Full - Cooling Down	The grain level in the storage chamber has reached the storage chamber level switches indicating the storage chamber is full. Grain will have to be removed from the storage chamber before the dryer can be restarted. The dryer will go to cool down mode.
Low Level Switch Exposed - Cooling Down	The low grain level switch has become uncovered and the low level switch delay timer has timed out. The dryer will enter into cool down mode.
Wet Grain Supply Empty - Cooling Down	The optional wet supply level switch has become uncovered the wet supply delay timer has timed out indicating the wet supply is empty. The dryer will enter into cool down mode.

GSI Group, LLC Limited Warranty

The GSI Group, LLC (“GSI”) warrants products which it manufactures to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user’s sole remedy (and GSI’s only obligation) is to repair or replace, at GSI’s option and expense, products that in GSI’s judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

Warranty Extensions: The Limited Warranty period is extended for the following products:

	Product	Warranty Period
AP Fans and Flooring	Performer Series Direct Drive Fan Motor	3 Years
	All Fiberglass Housings	Lifetime
	All Fiberglass Propellers	Lifetime
AP/Cumberland	Flex-Flo/Pan Feeding System Motors	2 Years
Cumberland Feeding/Watering Systems	Feeder System Pan Assemblies	5 Years **
	Feed Tubes (1-3/4" and 2.00")	10 Years *
	Centerless Augers	10 Years *
	Watering Nipples	10 Years *
Grain Systems	Grain Bin Structural Design	5 Years
Grain Systems Farm Fans Zimmerman	Portable and Tower Dryers	2 Years
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years

* Warranty prorated from list price:
 0 to 3 years - no cost to end-user
 3 to 5 years - end-user pays 25%
 5 to 7 years - end-user pays 50%
 7 to 10 years - end-user pays 75%

** Warranty prorated from list price:
 0 to 3 years - no cost to end-user
 3 to 5 years - end-user pays 50%

† Motors, burner components and moving parts not included.
 Portable dryer screens included.
 Tower dryer screens not included.

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12th) month from the date of purchase and continuing until the sixtieth (60th) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

Conditions and Limitations:

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

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor.

GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

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



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GSI is a worldwide brand of AGCO Corporation.