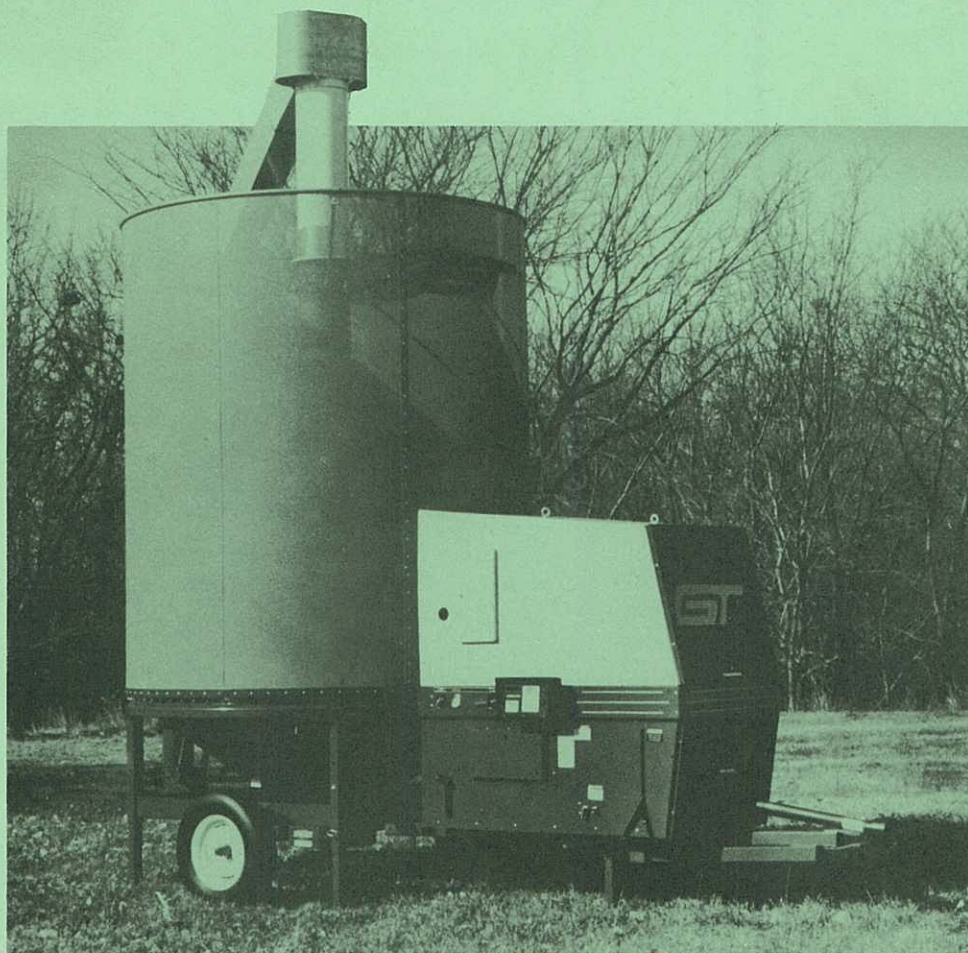


300 SERIES

GRAIN DRYER

OPERATOR'S MANUAL

& PARTS BOOK



Form S-3094-10

Printed in U.S.A.



P.O. Box 525 • Clay Center, KS 67432, U.S.A.
(785) 632-2151 • (800) 423-9428 • FAX (785) 632-3308
Email: info@gtmfg.com • Website: www.gtmfg.com

MANUFACTURERS OF FARM AND INDUSTRIAL EQUIPMENT

300 SERIES OPERATORS MANUAL & PARTS CATALOG

Your GT Grain Dryer is one of the finest grain dryers ever built; designed to give you excellent service for many years. The information and suggestions found in this owners manual will help you achieve this.

Your GT Grain Dryer dealer is well trained and equipped to give you complete service when and if the need should arise.

We would also like to take this opportunity to thank you for choosing GT and assure you of our continuing interest in your complete satisfaction.

TABLE OF CONTENTS

Battery Connections	12
Bolt Torque Chart	90
Burner Starting Instructions	17
Controls Identification	16-20
Electrical Schematics	33-35
Fuel Flow Chart	32
General Information	8
Theory of Drying	8
Rate of Drying	8
When Grain Is Mature	8
Storage Moisture Levels	8
Moisture Testing	9
Cooling of Grain	9
Installation and Set-Up	10
Lubrication	13-14
Maintenance:	
General Operating	38
Microprocessor and Sensors	37
Microprocessor Installation	21
Operating Instructions	23-31
Parts List:	
Agitator Assembly	72
Auger Assembly	76
Burner Assembly	58-62
Frame Assembly	68
Gearbox Assembly	73
Grain Capillary Assembly	79
Grain Cleaner Assembly	87
Hydraulic or Electric Unloader	88
Loading Hopper	82

TABLE OF CONTENTS (continued)

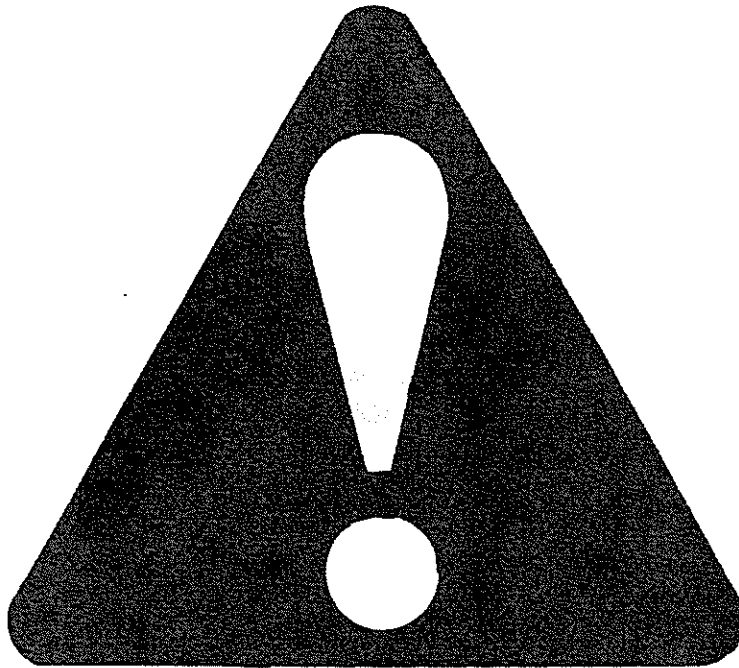
Nuts, Washers, and Lockwashers	90
Outside Skin Assembly	78-79
Pelmet Assembly	80
Plenum Assembly	74
Power Unit	45-53
Propane Controls Assembly	58
Tumbler Assembly	56-57
Safety Information	3
Sensor Locations	54-55 & 72
Sequence of Operation for Controller	23
Table of Contents	1-2
Trouble Shooting	40

SAFETY

  **DO NOT OPERATE OR ALLOW ANYONE TO OPERATE THIS EQUIPMENT WHO HAS NOT BEEN PROPERLY TRAINED IN ITS SAFE OPERATION.**


Throughout your operator's manual and at various locations on your machine you will see the Safety-Alert symbol shown below. This emblem has been adopted by the agricultural equipment industry to provide a universal symbol which means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

This symbol is our way of telling you to pay special attention to the instructions or warnings which follow because your safety is involved.



**SAFETY-ALERT SYMBOL
FOR AGRICULTURAL EQUIPMENT**

The following labels found on your machine provide important safety messages and instruction for safe operation.

 **As these labels become worn, damaged, or illegible replace them immediately. These labels are available at your authorized dealer.**

BE A SAFE OPERATOR

BY THINKING – BEFORE ACTING

AND

BY READING YOUR OPERATOR'S MANUAL

AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home, or on the highway, are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs.

Regardless of the care used in the design and construction of any type of equipment, there are many conditions that cannot be completely safeguarded against without interfering with reasonable accessibility and efficient operation.

**A CAREFUL OPERATOR IS THE BEST INSURANCE
AGAINST AN ACCIDENT.**

**THE COMPLETE OBSERVANCE OF ONE SIMPLE RULE
WOULD PREVENT MANY THOUSAND SERIOUS
INJURIES EACH YEAR. THAT RULE IS:**

**STOP MACHINE TO ADJUST, LUBRICATE, SERVICE,
CLEAN OR MOVE.**



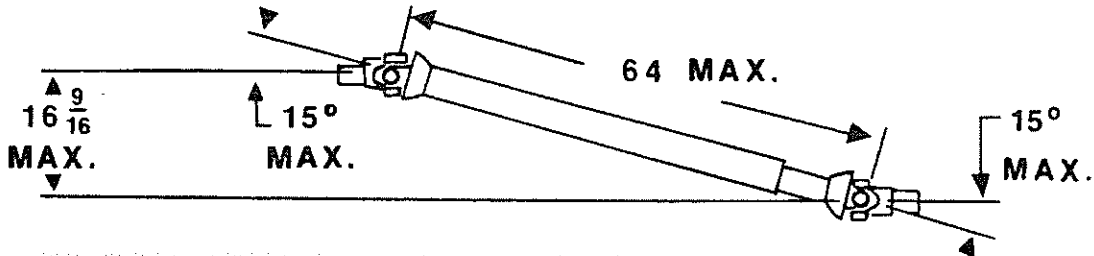
CAUTION

1. Read and understand the Operator's Manual before operating the unit.
2. Keep children, visitors and all untrained personnel away from the machine while in operation.
3. Keep all shields and safety devices in place.
4. Stop machine to adjust, lubricate, service, clean or move.
5. Keep hands, feet and clothing away from moving parts.
6. Disconnect electrical power before servicing.
7. Keep unit level when operating.
8. Maintain proper tire pressure when transporting machine. (Refer to Manufacturer's Recommendations.)



DANGER

For maximum safety and smoothest operation keep p.t.o. shaft in closed position while under load. Keep u-joint angles equal. Do not remove safety shields. Do not exceed 540 r.p.m.



FAILURE TO HEED WILL CAUSE PTO SHAFT FAILURE OR SEPARATION & RESULT IN SERIOUS INJURY OR DEATH.



DANGER



ROTATING DRIVELINE
CONTACT CAN CAUSE DEATH
KEEP AWAY!

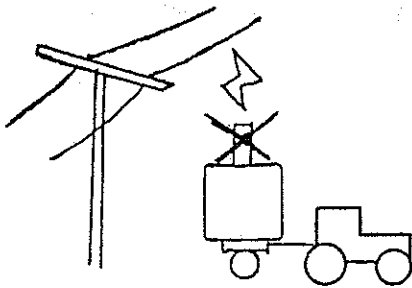
DO NOT OPERATE WITHOUT —

- ALL DRIVELINE, TRACTOR AND EQUIPMENT SHIELDS IN PLACE
- DRIVELINES SECURELY ATTACHED AT BOTH ENDS
- DRIVELINE SHIELDS THAT TURN FREELY ON DRIVELINE

L1

279561

DANGER



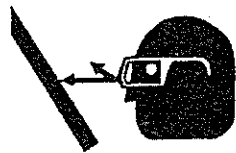
ELECTROCUTION HAZARD

To prevent serious injury or death from electrocution:

- Remove unloading head when transporting.
- Stay away from overhead power lines when transporting.
- This machine is not grounded.
- Electrocution can occur without direct contact.



DANGER



CONNECT TO LIQUID PROPANE ONLY.

Wear Rubber Gloves and Eye Protection.

Avoid Contact with Propane.



Check for Leaks with Soap and Water. NEVER USE FLAME.

CAUTION

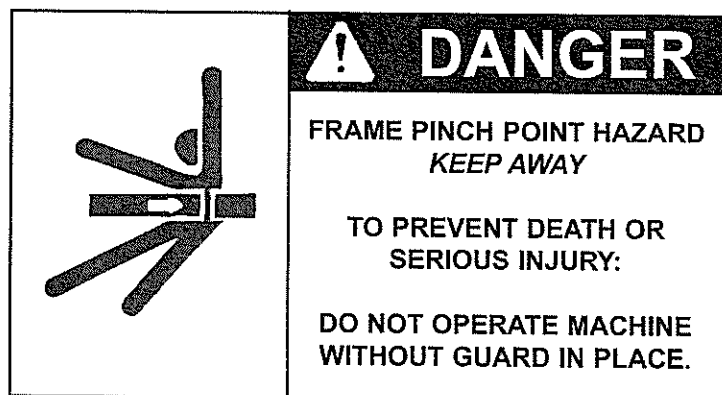
**ENGAGE FAN CLUTCH
VERY SLOWLY WHEN
PTO IS OPERATING**



MAX. PTO SPEED 540 R.P.M.

TORQUE WHEEL BOLTS TO 70 LB. – FT.
(94.85 N – M). CHECK TORQUE
BEFORE TOWING AND PERIODICALLY
UNTIL TORQUE IS HELD.

74535





1. Keep all guards and shield in place.



2. Inspect your drive before adding power and know how to shut down in an emergency.



3. Stop all moving parts before allowing anyone to approach the equipment for cleaning, unplugging, adjusting, performing maintenance or any other duty.



4. Replace all safety shields/guards before restarting.



5. Replace all safety shields/guards as they become worn, damaged, unusable, missing or lost.

GENERAL INFORMATION

Mechanical drying of grain is a relatively new process; therefore, emphasis must be placed on proper operation of grain drying equipment. Your GT Dryer was designed and engineered to retain grain quality, and to dry grain as rapidly as possible at the lowest cost consistent with retention of quality grain. study and follow this manual so you too may enjoy the additional profits derived from drying.

THEORY OF DRYING

The theory of drying has two basic stages: (1) diffusing of internal moisture to the surface of the kernel, and (2) removal of external moisture by air flowing around the kernel. Vapor pressure is increased inside the kernel which causes moisture to diffuse through the micropores of the seed coat. The grain temperature largely establishes this rate of diffusion and hence must be controlled to not exceed a maximum rate which would result in a ruptured kernel.

Removal of the exterior moisture for a given air flow is dependent upon the air temperature. these two stages must be balanced to produce quality dried grain.

This balance is accomplished quite simply in the GT Grain Dryer with its uniform circulation, regulated heat, and controlled air flow.

RATE OF DRYING

In addition to the kind and variety of grain, the drying rate is controlled by atmospheric conditions. Hard and fast rules cannot be set forth because of these variables. It will be necessary to dry several batches to determine the exact dryer settings in a specific area. A chart for recording necessary information for later use is included in the back of this manual.

WHEN GRAIN IS MATURE

Most grain is mature at 30% to 35% moisture. While some grain may be harvested easily at 30%, others do not harvest well above 20%. Therefore, grain should be harvested as soon as possible after maturity, as long as grain damage is at a minimum and gleaning thorough.

STORAGE MOISTURE LEVELS

To properly store grain, the grain moisture content must be compatible with the length of time the grain will be in storage, and with the grain's intended use. This moisture content will vary due to locale.

GRAIN	1 YEAR STORAGE (% Moisture)
Corn	13%
Wheat	13-14%
Barley	13%
Rice	12%
Oats	13%
Rape Seed	10.5%
Grain Sorghum	12%
Flax	9%
Soybeans	11%
Edible Beans	14-16%
Sunflower Seed (Oil Type)	10%
Sunflower Seed (Bird Seed Type)	12%

Corn may be stored at 15% moisture if moved before warm spring weather. For long time storage – up to 5 years, or for grain stored as seed stock, moisture level should be 2% lower than shown above.

MOISTURE TESTING

Since grain must go into storage at not more than specified moisture content, it is necessary to use a reliable tester to determine moisture content. When marketing grain from the dryer, it should be only dry enough to eliminate moisture discounts. The moisture tester may also be profitably used to determine when to harvest.

COOLING OF GRAIN

It is very important to cool grain. Grain being put in storage should be cooled after drying to within 20 degrees F of atmospheric temperature or, 10 degrees F of grain already in the storage bin. Moisture migration from the air to grain will occur if the grain is not cooled to these limits.

INSTALLATION AND SET-UP

1. INSTALLATION OF EQUIPMENT

The equipment shall be installed in accordance with the installation code for gas burning appliances and equipment, CAN 1-B149 or applicable code or Provincial Regulation for the class. Installation shall also comply with National Electric Code, Canadian Electric Code, and all governing regulations regarding electrical equipment installation.

2. PLACING MACHINE FOR OPERATION

Select a site as level as possible, 50 ft. (15 meters) from any inhabited building. Set machine, if possible, with fan into prevailing winds. Lower the supporting legs and insert pins. If machine is being set on a level concrete slab, no additional blocking will be necessary. However if being set on dirt, at least a 2" x 8" x 12" board or equivalent should be placed under each leg for additional flotation. Add any additional blocking material necessary to bring machine level. Use a level on the main frame to determine this.

3. INSTALLING TOP SECTION OF AUGER AND ADJUST FOR UNLOADING

When installing the top section of auger, it may be necessary to jack the lower flight up to allow the bolt holes in the connecting shaft to align. The weight of the complete auger should be supported by the top auger bearing when in proper adjustment.

If the dryer is equipped with the standard swivel head, removing bolts through mounting flanges which hold the upper and lower auger tubes together will allow the upper tube to be rotated to provide unloading at several points. It should be also noted that on the standard swivel head when the unloading spout is set for unloading one direction, it will also unload in the opposite direction. One-fourth turn, of unloading spout, relocates the auger head to recirculating position. When unloading or recirculating the unloading spout must reset in holders provided at top of bin. These holders may be relocated by drilling bin wall and rebolting holders. Should use of both unloading positions be desired, an additional holder may be obtained through your dealers parts department. Be sure that the openings in the upper auger tube and the auger head are properly aligned to insure good circulation.

If the dryer is equipped with the hydraulic drive horizontal top unloading head, the discharge should be set directly off the right or left hand sides of the dryer. It is recommended that the hydraulic lines to the drive motor be connected to a source with a capacity of 7 gallons per minute at 1000 psi.

After connecting hydraulic source to lines at dryer, make certain that the unloading flight has the proper rotation to remove grain from the head. When looking into the discharge end of the auger it should be rotating counter clockwise

When using the horizontal unloading head, it is not advisable to leave grain set in the dryer for any length of time (such as overnight) without the vertical auger operating. If grain must be left in the dryer, it should be lowered to a level below the top of the unload auger head to prevent grain from running back down the vertical auger.

4. LOCATING PROPANE GAS SUPPLY TANK

Location of the Propane Gas Supply Tank must be in accordance with local, state or provincial regulation. It should also be approved by the insurance company. A minimum distance of twenty-five (25 ft.) (7.5 meters) is recommended for safety and will allow room for maneuvering grain hauling equipment.

GT Propane Gas fired dryers are equipped with Vaporizers and must be connected to the supply tank for LIQUID withdrawal. It is recommended that rubber hose specifically made for Propane gas be used as a supply line connecting tank to dryer. Specifications for the line are: (1) minimum working pressure 350 psi, (2) minimum bursting strength 1,750 psi, and (3) 1/2" minimum inside diameter. Tank pressure is used at the dryer; therefore, it is not necessary to install a pressure regulator at the tank.



DANGER

All lines and fittings should be checked periodically for leaks before and during operation. Check for leaks with liquid detergent suds or comparable substance, but NEVER with flame. Failure to do so may result in serious injury or death.



CAUTION

Do not use storage tanks that have been used to store Anhydrous Ammonia. This causes corrosion to the gas line controls.

Always protect gas supply line against vehicle or animal damage.

5. ELECTRICAL CONNECTIONS

Power take off machines have as standard equipment a 12 VDC negative ground control circuit. The lead wire in wires must be properly connected to the tractor battery. Red clip to hot (+) side of battery and black clip to ground (-) side of battery. See proper battery connections on page 12.

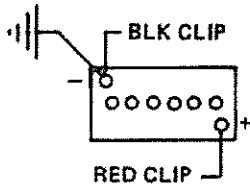
IMPORTANT: Battery connections other than that described above will be harmful to the ignition system.

6. NATURAL GAS

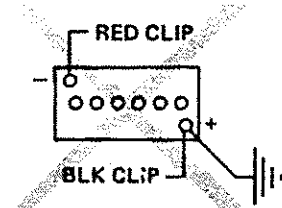
Specifications for natural gas connections are available from the gas supplier and must be adhered to. The RB Series dryers will require up to 20 psig., depending on locality. Pressure shown is at the dryer. Maximum natural gas volume required for the RB300 and 345XL is 22 cubic feet per minute.

BATTERY CONNECTIONS

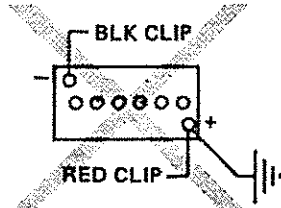
12 VOLT SYSTEM (ONE 12 VOLT BATTERY)



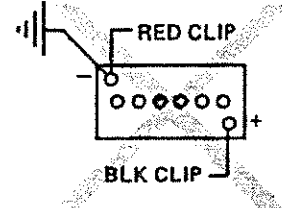
CORRECT



INCORRECT

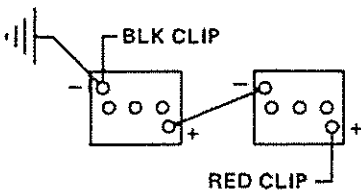


INCORRECT

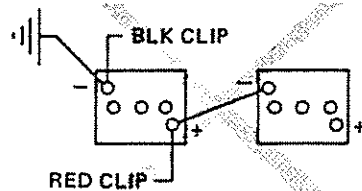


INCORRECT

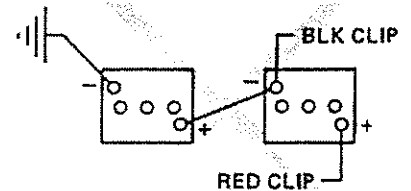
12 VOLT SYSTEM (TWO 6 VOLT BATTERIES)



CORRECT

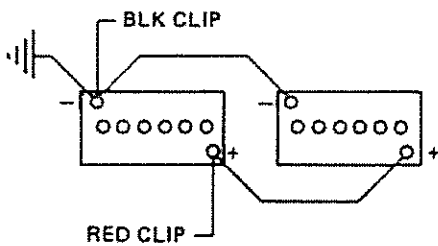


INCORRECT

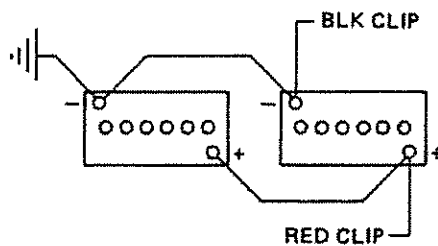


INCORRECT

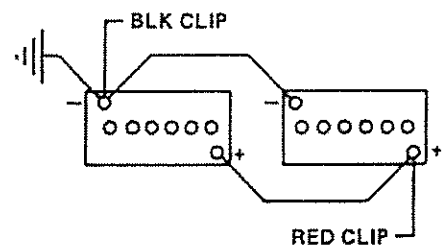
12 VOLT SYSTEM (TWO 12 VOLT BATTERIES)



CORRECT

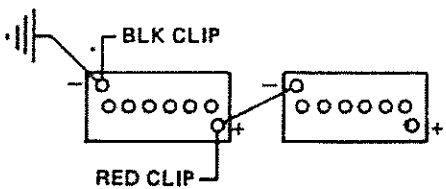


CORRECT

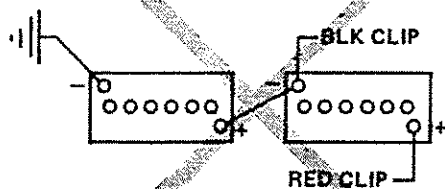


CORRECT

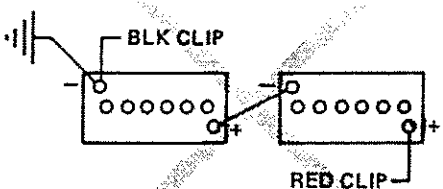
24 VOLT SYSTEM (TWO 12 VOLT BATTERIES)



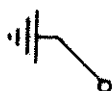
CORRECT



INCORRECT



INCORRECT

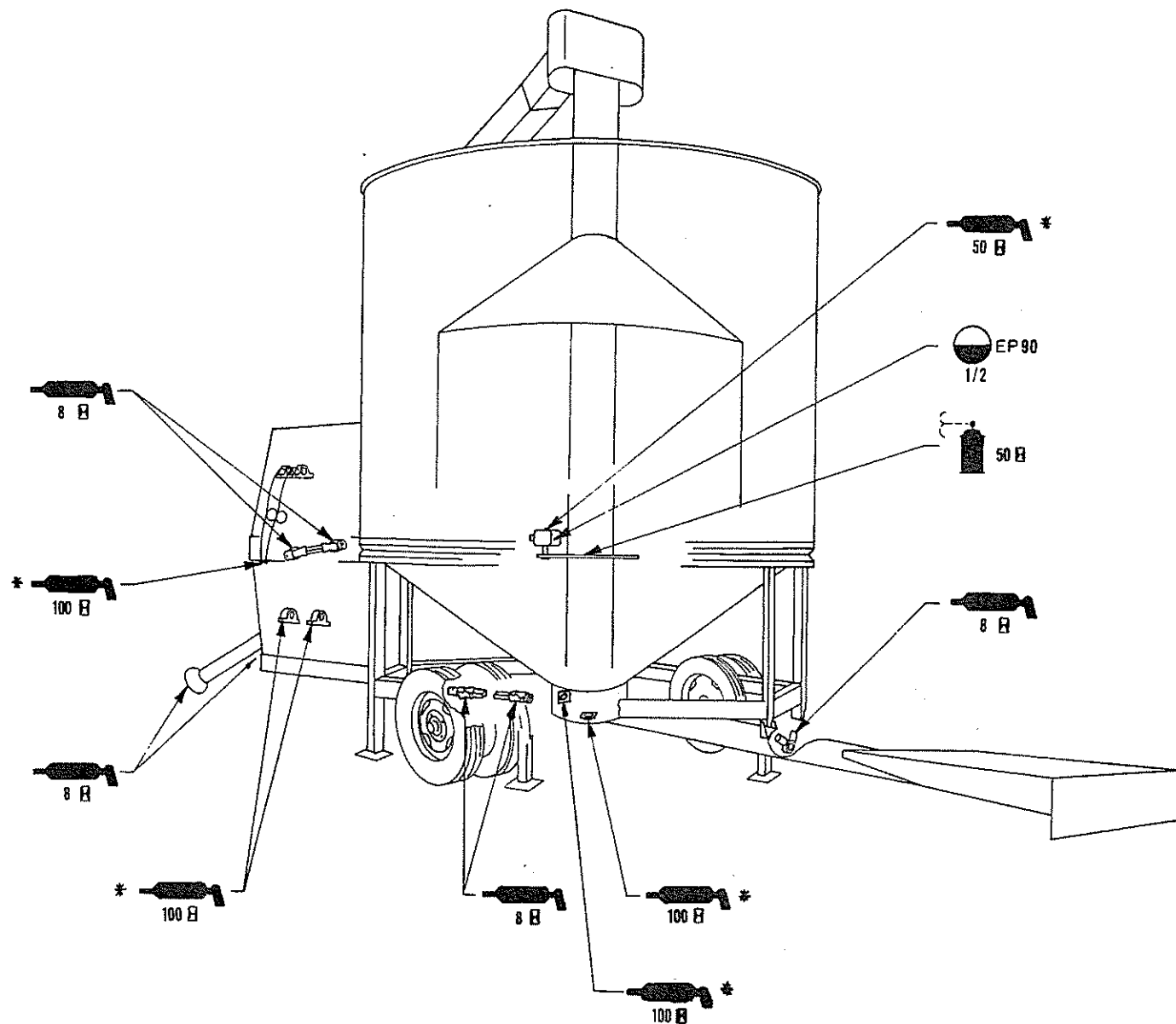


DENOTES TRACTOR GROUND

7. LUBRICATION

Use a high-low temperature grease or equivalent made especially for ball and roller bearings in extreme temperatures.

Refer to the following chart for location of lubrication points and frequency of lubrication. A small amount of grease at the specified intervals is recommended over a large amount at less frequent intervals.



*These grease points are located at centralized panel. (QF only)

Symbol descriptions:



Grease Point

x H

Lubrication Frequency (Hours of Operation)



Gearbox Oil Level & Type



Dry Film Spray Lubricant

When performing the 100 hour lubrication, check to see that set screws in bearing and tumblers are tight.

IMPORTANT: In extremely cold weather, it may be necessary to operate the dryer at a low RPM for a short period of time to allow the grease in the bearings to warm up.

8. SERVICING AND CARE OF AGITATOR

It is important that the agitator be inspected before and after the first load. Then after each 100 hours of operation.

- A. The tapered agitator rollers must support the plate sprocket so there is no horizontal movement of sprocket.

The dryer has four rollers mounted on the agitator sprocket so each roller supports an equal load. These rollers are tapered so all horizontal and vertical slack may be taken up.

B. Adjusting Rollers

1. Secure the cam nut and loosen the bolt.
2. Rotate the cam nut counter-clockwise (when looking down into the cam nut) while holding the bolt stationary.
3. Secure the cam nut and tighten the bolt.
4. All cam nuts must be rotated an equal amount so the agitator sprocket remains true.
5. Rotate agitator arms by hand and check clearance.

NOTE: Agitator drive chain is provided with a spring loaded idler, however, it is necessary to periodically check the chain slack.



DANGER

Do not open inspection door or enter machine while in operation. Failure to do so may result in serious injury or death.

9. BELT TENSION

With machine running at normal speed, belts should be tight enough to keep out the slack. Keep belts tight to prolong life.

10. VAPORIZER (Propane Only)

The vaporizer is designed for year round operation. However, the temperature of the vapor controls (pressure regulator, solenoid valves, ball valve, etc.) can be adjusted by moving the vaporizer ring up or down relative to the burner ring. The controls will run warmest with the vaporizer ring directly in line with the burner ring. By loosening the vaporizer bracket from the burner, the vaporizer can be slid up or down to cool the controls. The temperature of the vapor controls can also be adjusted by moving the vaporizer ring closer or farther from the burner by changing the position of the vaporizer on the burner in the clamp. The vapor plumbing under normal conditions should be operating at a temperature of approximately 120F to 140F. The temperature may be checked by placing your bare hand on the plumbing and will range from warm to hot.

If the vaporizer has been overheated causing possible rupture you will be unable to control the plenum temperature. Check propane tank for liquid withdrawal. Vapor withdrawal will cause over-heating of the vaporizer and possible damage to the controls.

11. CHECK OUT — BEFORE LOADING

All piping and burners have been checked and test fired at the factory. It is possible, however, that some of the connections may have been loosened or damaged during shipment. After connecting supply tank to dryer all connections should be tested under pressure with gas pressure on. Tractor can then be started and dryer test run before loading with grain.



DANGER

- 14 Check with liquid soap solution, never with flame. failure to do so may result in serious injury or death.

LOADING THE BIN

NOTE: The fan clutch can be disengaged during loading and unloading of dryer to lower the energy requirement. It also reduces the amount of dirt and dust which is blown out of the dryer during the load and unload cycle.

When the loading hopper attachment is used for filling the dryer, follow these steps to prevent the grain from being fed into the dryer faster than the vertical auger can recirculate it. When this happens the grain can build up in the bottom of the dryer until it gets into the agitator assembly and causes damage to the agitator.

- A. Make sure that the vertical auger drive belt is kept tight and is not slipping.
- B. Make sure the discharge holes at the top of the vertical auger housing are completely open with the swivel head in the recirculating position.
- C. Make sure that the bottom auger well is kept clean of trash or fine material build up which restricts the flow of grain into the intake of the vertical auger.
- D. The vertical auger flighting cannot be worn down at the intake end.
- E. Slow down the PTO speed to approximately 450 RPM when filling the dryer with lightweight grains such as sunflower seeds, oats, etc.
- F. Set the grain flow regulator in the loading hopper down $1\frac{1}{2}$ " as shown in the drawing. See. Figure A.

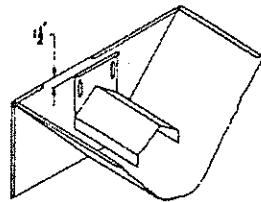


Figure A

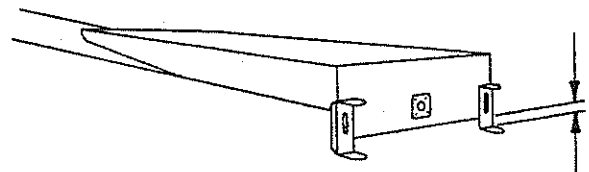


Figure B

- G. Adjust the loading hopper feet so they touch the ground as the loading auger becomes fully engaged with the drive portion of the auger. See Figure B.



DANGER

Make certain that the auger intake is free of debris and that everyone is clear before engaging the loading auger. Failure to do so may result in serious injury or death.

- H. Slowly engage loading hopper clutch. See Figure 18 on page 20.
- I. Fill the grain bin until the grain level is approximately 5 to 10 inches below the top ring. This amount depends on initial grain moisture. As wet grain is heated it will expand. Leaving a couple of inches at the top provides the additional room needed and prevents the dryer from spilling over. Disengage the loading auger when the bin is full.

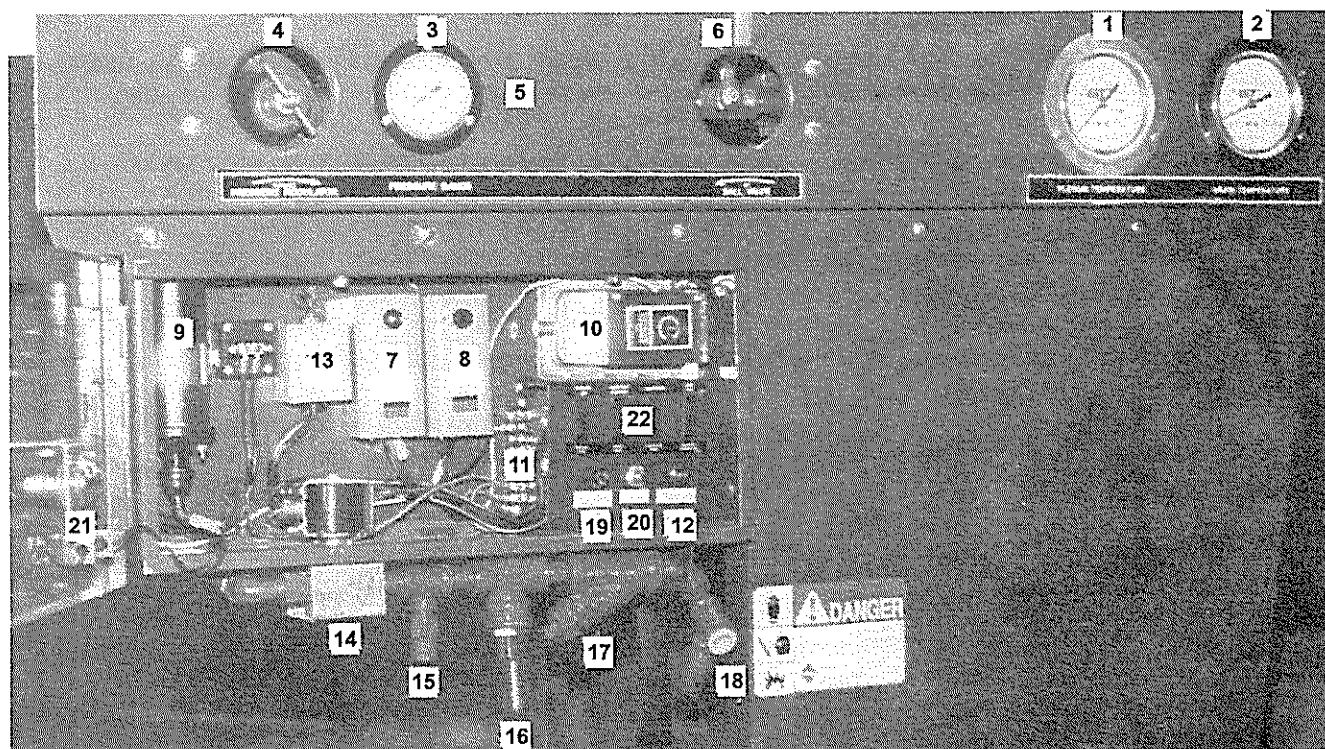
DO NOT LEAVE GRAIN IN DRYER OVERNIGHT. Grain that remains in the dryer overnight will absorb moisture and swell. This swelling can cause the vertical auger to seize.

When the loading attachment is not used, overhead bins or a conventional farm type elevator or auger may be used. In using any method of filling from top, make delivery of grain into dryer as near to center as possible. Start machine, without burner, at the same time loading begins. This helps keep bin loaded evenly. Bin will fill to rim and pyramid evenly to auger outlet.

THIS PICTURE SHOWS ALL COMPONENTS OF THE CONTROL SYSTEM OF THE GT DRYER. ALL PARTS ARE NUMBERED AND IDENTIFIED BY DESCRIPTION. THE FOLLOWING PAGES OF THIS MAINTENANCE AND SERVICE BULLETIN REFER TO THE INFORMATION CONTAINED HEREIN.

STUDY THIS INFORMATION. IT WILL GREATLY ASSIST YOU IN THE OPERATION OF YOUR DRYER.

NON MICRO-PRO



- | | |
|--|----------------------------------|
| 1. Plenum Thermometer | 12. On-Off Switch (Power Switch) |
| 2. Grain Thermometer | 13. Flame Detector |
| 3. Pressure Gauge | 14. Solenoid Valve - Liquid |
| 4. Pressure Regulator | 15. Pressure Relief Valve |
| 5. Solenoid Valve - Vapor
(located directly behind panel) | 16. Manual Valve - Propane |
| 6. Ball Valve | 17. Strainer |
| 7. Plenum Control | 18. Propane Inlet |
| 8. Grain Control, Temperature | 19. Fuse |
| 9. Ignition Coil | 20. Start Switch |
| 10. Air Switch | 21. Panel Light |
| 11. Terminal Block | 22. Indicator Lights |

STARTING THE BURNER - NON MICRO

- A. Connect electrical lead in wires. Power take-off machines have as standard equipment a 12 VDC negative ground control circuit. It is important that the lead in wires be properly connected to the tractor battery. Red clip to the hot (+) side of the battery and black clip to the ground (—) side of the battery. An improper connection may cause the in-line fuse, located in the junction box, to blow.
- B. Fan should be at operating speed. This speed can be obtained by approximately 525 RPM PTO speed, however, a lower fan and PTO speed is recommended in some conditions.
- C. Check the Plenum and grain temperature controls in the control box for proper setting. (Refer to instructions in this manual.) Re-set the controls if necessary.
- D. NOTE: For other than initial starting, skip to step H and continue.
For initial starting, the ball valve and quick acting valves should be open, and the high pressure regulator handle should be turned out (counter-clockwise) until the screw turns freely, then turn back in (clockwise) one full turn on non-grain guard units. Grain guard units ignite on low burn so pressure regulator must be turned clockwise several turns.
- E. Move power switch to the "on" position. Depress and hold burner start switch, and at the same time turn the regulator screw clockwise until burner lights. Hold start switch depressed until flame detector is activated, usually 20 to 30 seconds.
- F. If frost should appear on the gas lines wait 2 to 3 minutes to allow the vaporizer to heat before increasing the gas pressure.
- G. Gradually increase the plenum temperature by screwing the pressure regulator handle in (clockwise). If frost appears on the line at any time wait a few minutes before increasing pressure further. Continue to increase the gas pressure until the plenum pressure is approximately 26 PSI.
- H. For restarting the burner it is not necessary to change the setting of the pressure regulator unless a different plenum operating temperature is desired. Simply turn the ball valve handle so that it is only partially (one quarter) open. Open the quick acting valve.
- I. Move power switch to the "on" position. Depress and hold burner start switch, and at the same time turn the regulator screw clockwise until burner lights. Hold start switch depressed until flame detector is activated, usually 20 to 30 seconds.
- J. After flame is established gradually open the ball valve until completely open. NOTE: Opening the ball valve too rapidly may cause frost to form in the gas lines.

ADJUSTING GRAIN TEMPERATURE CONTROL (See #8, Photo, page 16)

The grain temperature control is located inside control panel and serves to prevent over-heating of grain. When the grain temperature gets above the dial setting the control will shut the burner off and the red grain temperature light will come on. Check periodically. Refer to chart under maximum temperature of grain. (See page 19.)

To initially set the grain temperature control turn the dial setting to about 10° or 20°F above the "commercial use" grain temperature in the following table (NOTE: When drying grain for seed purposes refer to instructions in next paragraph.) Example: Shelled corn for commercial sale; set dial at 140° or 150°F. As the batch is drying, periodically take grain samples from the sampler tube and check the moisture content on an accurate moisture tester. When the moisture gets within 1 - 1½ percentage points of the desired final moisture content slowly turn the dial on the grain temperature control down until the gas is shut off thus extinguishing the burner. Let the grain cool to the desired temperature. The grain will continue to dry during the cooling process so should be near the desired dryness after cooling. If the grain is still a little too wet raise the temperature control setting one or two degrees on the next batch. If the grain was a little too dry lower the temperature control setting one or two degrees on the next batch.

When drying grain for seed purposes set the grain temperature control at or slightly below the temperature specified in the malt or seed column of the grain temperature chart. The plenum temperature should be set according to the seed column of the plenum temperature chart. When the grain in the dryer reaches the control setting the burner will be extinguished. Check the moisture content of the grain in the dryer. If this batch of grain is too wet, lower the plenum temperature slightly for the next batch. Lowering the plenum temperature will increase the drying time and therefore decrease the grain moisture. Conversely, if the batch of grain is too dry, raising the plenum temperature slightly for the next batch will decrease the drying time and therefore increase the grain moisture. Do not exceed maximum plenum or grain temperature shown in charts.

The grain temperature control serves as an indicator to degree of dryness, but settings must be ascertained at user level. For recording temperatures used, a sheet is provided in back of this manual. Each batch should be tested to be sure the proper moisture level is reached. Different varieties of the same grain may require different grain temperature settings to achieve the same degree of dryness.

WHEN TO TURN OFF BURNER

The burner can be extinguished either manually by the Off-On switch or automatically by the grain temperature control when the grain reaches the desired dryness. This can be determined by use of a moisture tester. Allow the fan to run until the grain cools to about 20° above the outside temperature of 10° above grain in storage. Grain will dry as much as 1% during the cooling period, depending on the relative humidity.

7. UNLOADING

After the grain has cooled, swing the unloading spout to the unloading position if the dryer is equipped with the standard swivel head or engage the hydraulic motor if equipped with the horizontal unloading head.

8. DRYER NOT IN USE

When the dryer is not in use, the quick acting valve under the control panel and the power switch must be in the "OFF" position. The supply line should also be shut off at the tank. If location is such as to permit traffic of livestock between dryer and supply tank, protection of the supply line is a must.

NOTE: When shutting the burner off for an extended period of time (even overnight) it is a good safety practice to shut the gas off at the supply tank and let all of the gas in the lines burn out.

9. PLENUM TEMPERATURE RANGES FOR DRYING

GRAIN GUARD

GRAIN*	PLENUM TEMPERATURE OPERATING RANGE (degrees F)	PRESET PLENUM TEMPERATURE (degrees F)
Barley	180 — 200	190
Barley Seed	120 — 170	160
Beans	140 — 160	150
Corn	200 — 230	220
Corn Seed	140 — 180	160
Flax	140 — 160	150
Flax Seed	90 — 120	120
Grain Sorghum	230 — 250	230
Grain Sorghum Seed	140 — 180	160
Linseed	140 — 160	150
Oats	200 — 230	220
Oats Seed	140 — 180	160
Peas	140 — 160	150
Rape	140 — 160	150
Rape Seed	90 — 120	120
Rough Rice	140 — 160	150
Rough Rice Seed	90 — 120	120
Soybeans	180 — 200	190
Soybeans Seed	120 — 170	150
Sunflower - Bird	110 — 150	140
Sunflower - Oil	110 — 150	150
Wheat	150 — 180	170
Wheat Seed	100 — 150	130

*NOTE: Grains which are not indicated as "Seed", are intended for commercial use or animal feed.

ADJUSTING PLENUM CONTROL

The plenum temperature control is located inside the control box and is used to set the desired drying temperature inside the plenum chamber. Use the above chart as a guide to set the control. The actual plenum temperature will go approximately 5°-10° above or below the specified setting on the control.

10. MAXIMUM GRAIN TEMPERATURE FOR INDICATED USE

GRAIN	PRESET GRAIN TEMP (Grain Guard) (degrees F)		MAXIMUM GRAIN TEMP. (degrees F)		
	SEED	COMM. USE/ FEED	SEED	COMM. USE	FEED
Barley	105	120	105	120	140
Beans		110		110	
Corn	110	130	110	130	140
Flax	105	120	110	120	
Grain Sorghum	110	130	110	140	140
Linseed		105		105	
Oats	105	130	105	140	140
Peas		105		105	
Rape	110	120	110	120	
Rough Rice	110	110	110	110	110
Soybeans	105	120	105	120	140
Sunflower - Bird		90		90	
Sunflower - Oil		100		100	
Wheat	105	120	105	120	140

OPERATING INSTRUCTIONS



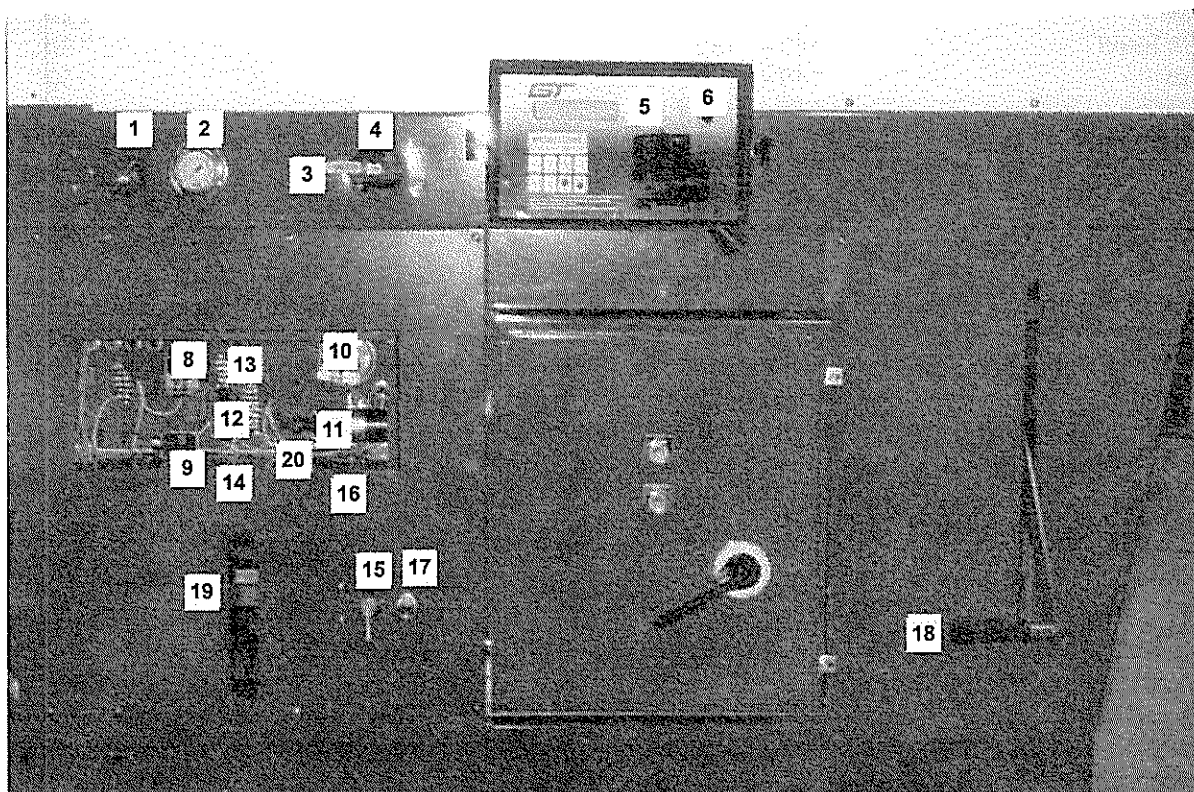
Do not operate this machine until you have read and fully understand its safe operation.

1. CONTROLS

This picture shows all components of the control system of the GT Dryer. All parts are numbered and identified by description. The following pages of the Operation, Maintenance and Service sections refer to the following information contained herein.

STUDY THIS INFORMATION. IT WILL GREATLY ASSIST YOU IN THE OPERATION OF YOUR DRYER.

GRAIN GUARD

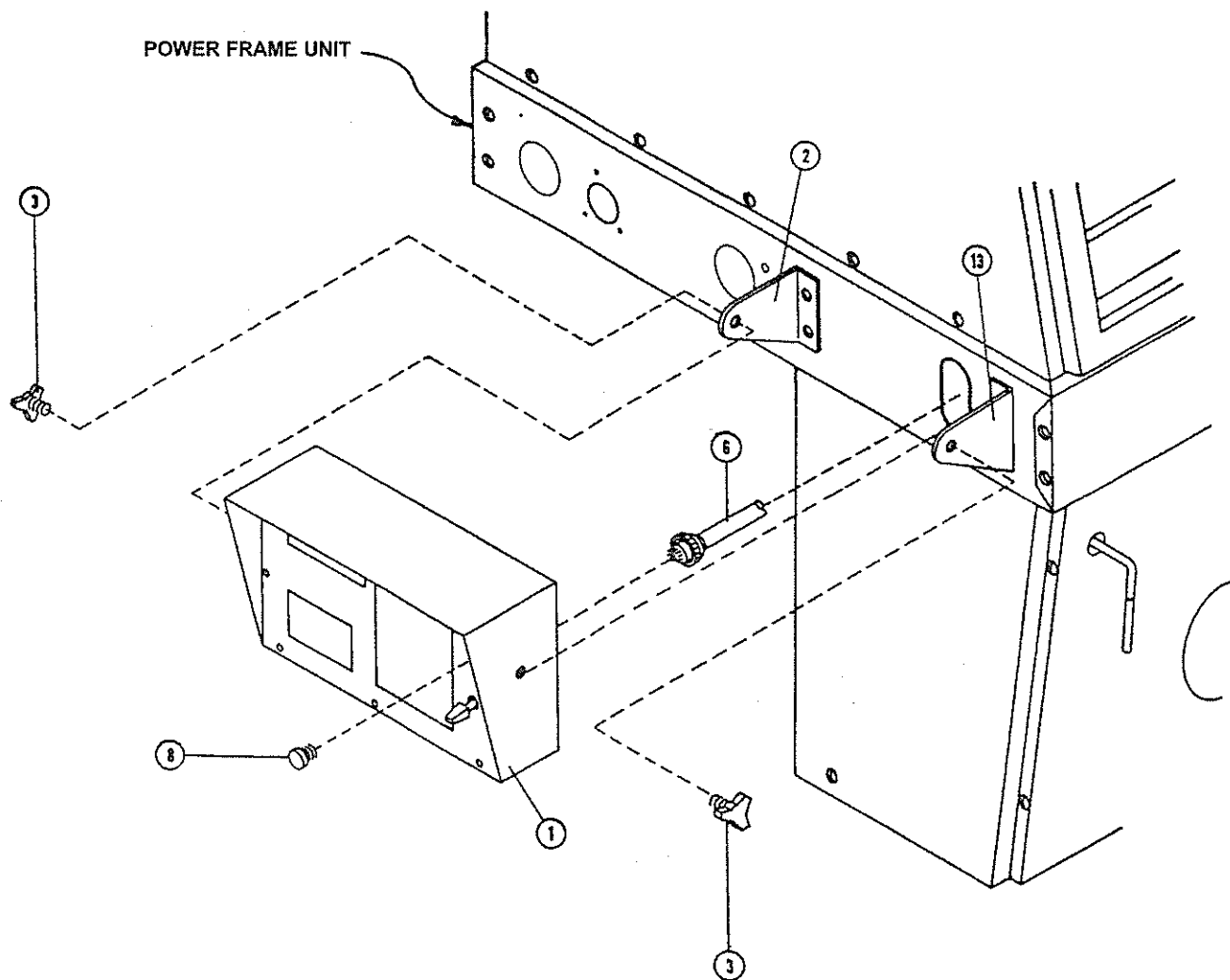


- | | |
|---|---|
| 1. Pressure Regulator | 11. Ignition Coil |
| 2. Pressure Gauge | 12. In-Line fuse |
| 3. Solenoid Valves - Vapor
(located directly behind panel) | 13. Terminal Blocks |
| 4. Ball Valve | 14. Pressure Relief Valve (behind door) |
| 5. Microprocessor Unit | 15. Quick Acting Valve - Propane |
| 6. Indicator Light | 16. Strainer (behind door) |
| 8. Flame Detector | 17. Propane Inlet |
| 9. Solenoid Valve - Liquid | 18. Fan Clutch |
| 10. Air Switch | 19. Loading Hopper Clutch |
| | 20. Tractor Leadwire |

MICROPROCESSOR INSTALLATION

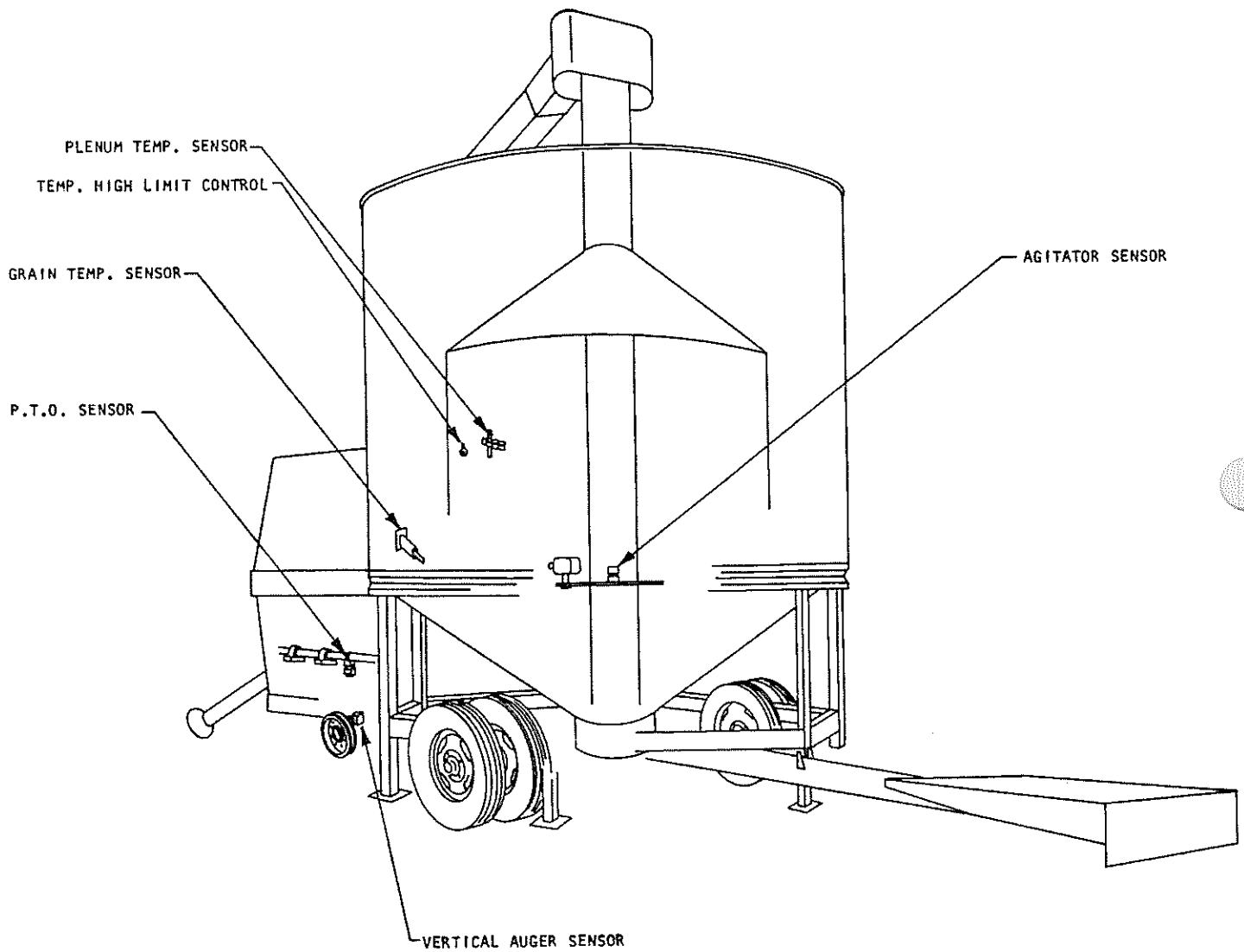
1. Connect cable (6) to rear of the microprocessor box (1). A polarized screw connector locks the cable into place.
2. Mount the microprocessor box (1) to the right front power frame unit by threading the plastic adjusting knobs (3) through mounting brackets (2) and (13) and into the microprocessor box.
3. Adjust the microprocessor box to a convenient angle to reduce glare and improve readability. Tighten adjusting knobs.

MICRO PROCESSOR BOX ASSEMBLY



REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	DA25004	1	Micro-Pro Assembly
2	D25845	1	Mount, Rear Box
3	77235	2	Knob, Adjusting
6	77579	1	Harness
8	77237	1	Lamp
13	D25840	1	Mount, Front Box
	73286	1	Rubber, Slotted Hole for Cable

GRAIN GUARD SENSOR LOCATIONS



Single Batch Detailed Controller Operation

4.1 Operating Assumptions - In this section it is assumed that the controller and the associated dryer are operating normally. Failures in the operation of either will be discussed in Section 5. The exception is certain "error" conditions that may reasonably be expected to occur, such as failure to fill because the grain source has been exhausted.

4.2 Single Batch (SB) Dryer

4.2.1 Controller Options - The options provided the operator are shown in Figure 4-A.

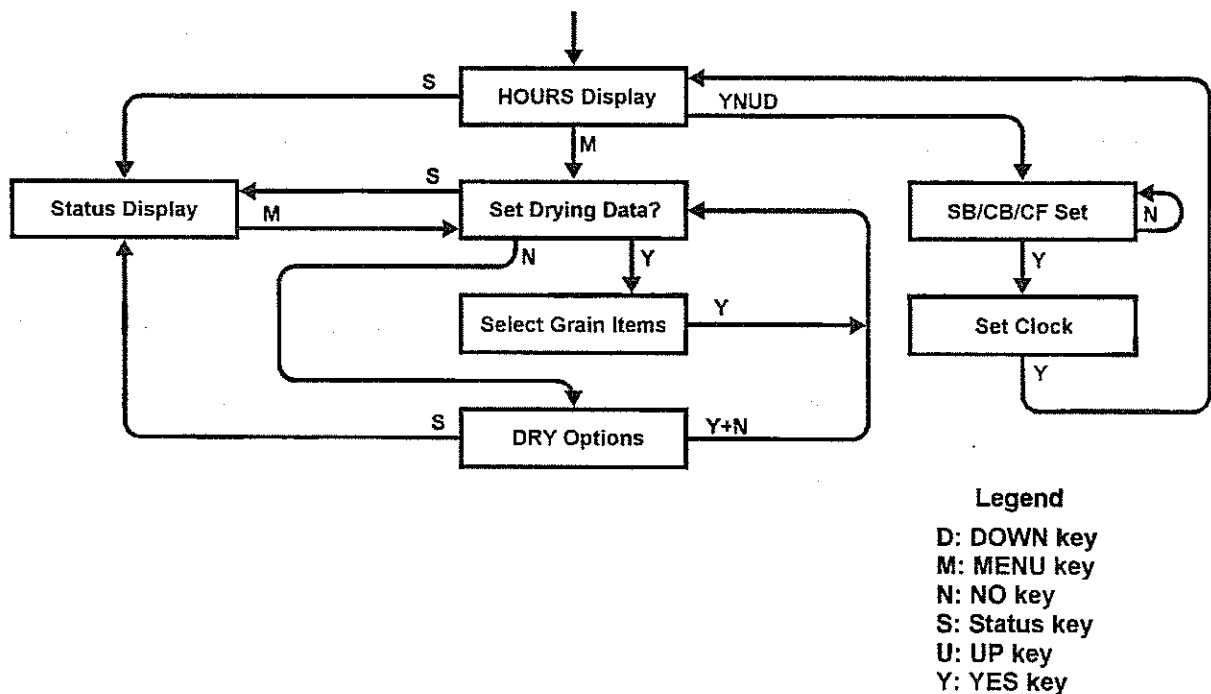


Figure 4-A Controller menu options available when the unit is set to operate in the SB mode.

4.2.2 Drying Operation

4.2.2.1 - Filling - The SB dryer is manually filled with the selected grain to be dried to whatever level is desired. This process does not involve the controller in any way. The controller may be left in the off condition during this operation.

4.2.2.2 Ready for Drying - The following steps will dry a load of grain.

4.2.2.2.1 Turning the Unit On - Press and release the ON key. The display will change from being blank to:

Hours xxxxx

where "xxxxx" will be a number between 000 and 25599. The number displayed will be the number of hours that the controller has been in the operating state.

4.2.2.2.2 Controller Status display - Press the STATUS key. The path to reach the STATUS display message is shown in Figure 4-B.

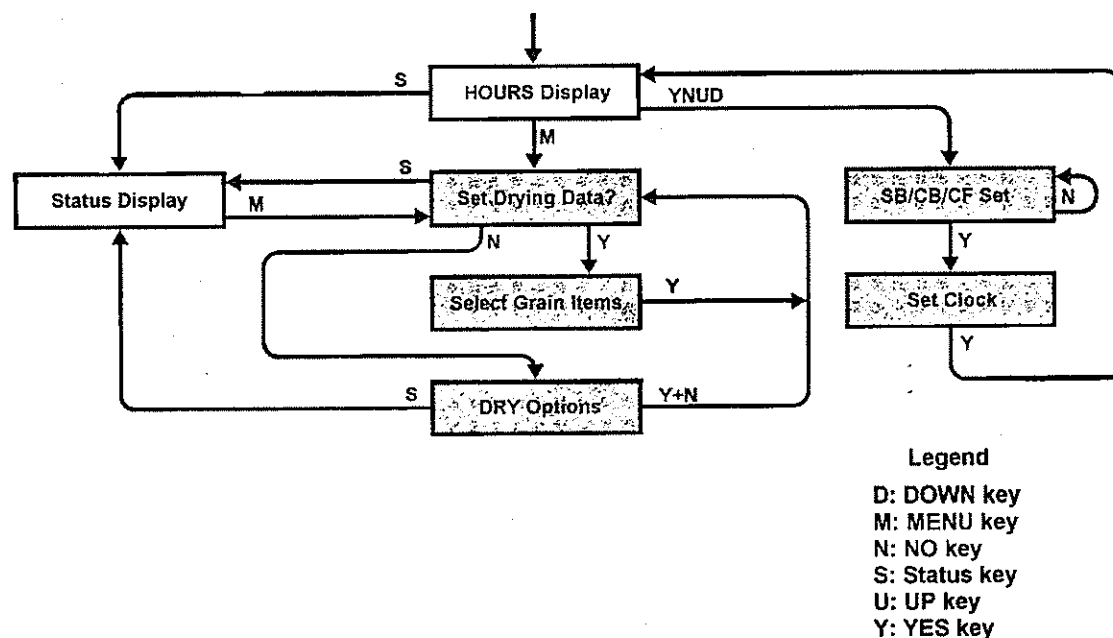


Figure 4-B Path from hours display to status display

Providing that no error conditions exist, the display will switch to one of the messages shown below. Each message will remain for 2 seconds. After each has been displayed once, the pattern will repeat. The *Dry pp sdd* message will only be present if the optional moisture sensing module is attached.

Idle
 or *Grain ttt sdddS*
 or *Dry pp sdd%*

The *Idle* indication is the state of the controller and the dryer i.e. no action in regard to drying is under way.

The **Grain** message tells the operator that the numbers to the right are for the temperature of the grain in the bin. **ttt** is the temperature of the grain. **sddd** is the temperature difference between the grain set point and the current temperature (**ttt**). **s** is the sign of the difference and will be + to indicate that the grain in the bin is above the set point and - to indicate that it is below. **S** is the temperature system being used and will be **F** for Fahrenheit and **C** for Celsius.

The **Dry pp sdd%** message will only be present if moisture sensing has been installed. **Dry** informs the operator that the information which follows is the moisture level of the grain in the bin. **pp** is the current moisture percentage. **sdd** is the percentage difference between the grain set point and the current moisture percentage (**pp**), with the **s** being the sign of the difference. A + sign means the moisture level is above the set point and a - sign means it is below.

4.2.2.2.3 Establishing Drying Conditions - Press and release the MENU key. The path taken by the controller to reach the grain parameter setting display is shown in Figure 4-C.

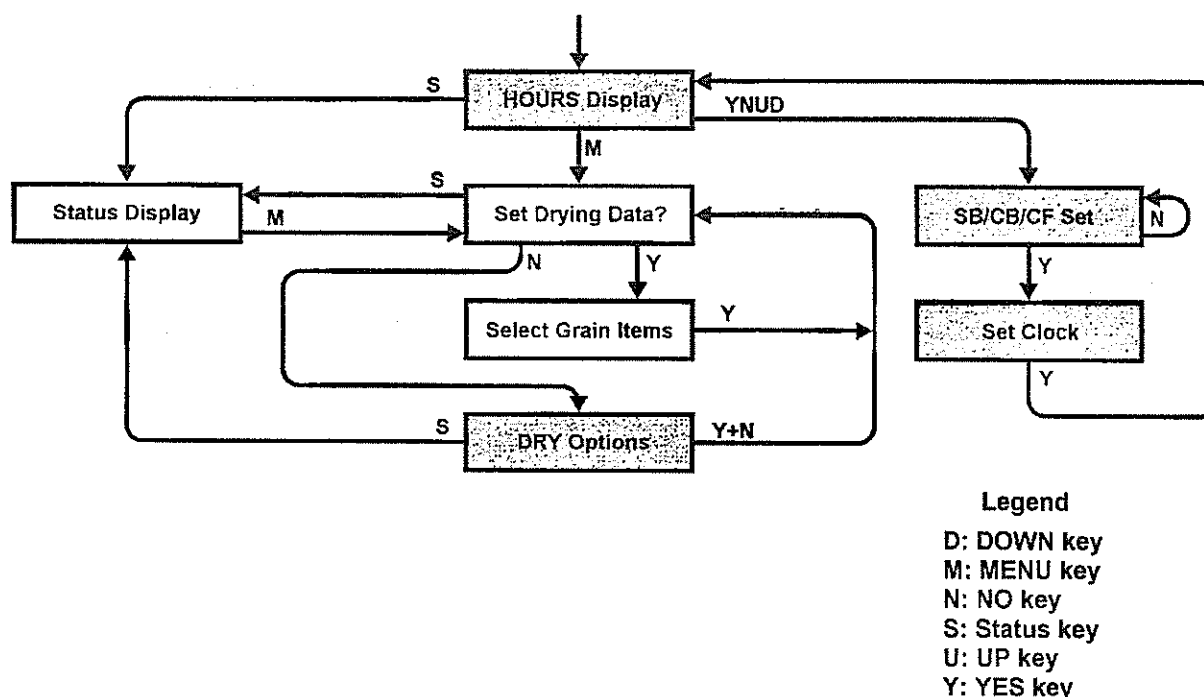


Figure 4-C Path followed by controller from the status display to setting grain drying parameters.

Providing that no error conditions exist, the display will switch to the messages shown below.

Set Drying Data?

The menu routine has only two main areas for an SB dryer: grain parameter setting and activating/deactivating drying. If it is desired to set or adjust the grain parameters, press YES. If the current settings are acceptable, press NO and the controller will move to the condition described in Section 4.2.2.2.4.

4.2.2.2.3.1 Select Grain - Press and release the YES key. The display will now change to:

Gggggggg?

where **Gggggggg?** represents one of the grains in the controller's library. The selected grain from the library will always be the one last selected. So, if the grain selected for drying during the previous dryer use was **CORN?**, that is what the dryer will initially display. This recall of the previously set parameters is true for all of the settings in this sub-menu. This allows the operator to turn the unit off and return later to dry another batch without having to remember the previous settings.

The appearance of a ? in any controller message prompts the user to the fact that he must make a selection.

If the grain displayed is not the one desired, use the **↑ (UP)** and **↓ (DOWN)** keys to step through the alphabetized table until the desired grain is reached. It should be noted that once these keys are used, even if the same grain is then selected, all previously set grain parameters will be replaced by those suggested values in the controller's library and those set by the previous operator will be lost.

The only way the controller can exit the grain parameter selection sub-menu is to press **YES**.

4.2.2.2.3.2 Select Temperature System - Once the desired grain is displayed, press **YES**. The display will now change to:

Degrees S?

S will either be **C** or **F**, indicating that the current temperature displaying system is Celsius (**C**) or Fahrenheit (**F**). A "no" response will switch the display to the other system while another "no" will return it to the original. This sub-menu may only be left by answering with a **YES** key depression and the last displayed system will be the one set.

4.2.2.2.3.3 Set the Plenum Temperature - Depressing and releasing the **YES** key will cause the display to change to:

Plenum? ttt sdddS

The **Plenum** indicates that the current plenum temperature set point conditions are being displayed. The **?**, as with all controller displays, shows that the value may be adjusted. The **ttt sdddS** format is very similar to the one previously introduced in **Section 4.2.2.2.2**. **ttt** is the desired plenum temperature during drying, rather than the actual temperature. **sddd** is again the sign and the difference, but this difference is between **ttt** and the suggested value found in the controller's library. This allows the operator to see how far the suggested set point he has deviated. **S**, as before, is the temperature system being used and will be **F** for Fahrenheit and **C** for Celsius.

If the plenum set point displayed is not the one desired, the **↑ (UP)** and **↓ (DOWN)** keys may be used to step through the values until the desired point is reached. One depression will raise or lower - depending on which key is used - the set point one degree. If either key is depressed and held, the temperatures will increment or decrement at the rate of once per second until the key is released or a limiting value is reached.

The library contains limiting values, above which the plenum may not be set. Attempting to lower the plenum temperature below the grain set point is not allowed either. This sub-menu may only be left by answering with a "yes" response, setting the last displayed value as the desired one.

4.2.2.2.3.4 Select the Grain Temperature - Pressing the "yes" key will cause the display to change to:

Grain? ttt sdddS

The **Grain** indicates that the current grain temperature set point conditions are being displayed.

The **?** shows that the value may be adjusted. The *ttt sdddS* format is very similar to the one previously introduced in Section 4.2.2.2.3.3. *ttt* is the desired or maximum grain temperature during drying rather than the actual temperature. *sddd* is the sign and the difference between *ttt* and the suggested value in the controller's library for the selected grain. This latter value allows the operator to see how far the set point has deviated from the suggested setting. **S** is the temperature system and will be **F** for Fahrenheit and **C** for Celsius.

If the grain set point displayed is not the one desired, use the ↑ (**UP**) and ↓ (**DOWN**) keys until the desired value is reached. One depression will raise or lower - depending on which key is used - the set point one degree. If either key is depressed and held, the temperatures will increment or decrement at the rate of once per second until the key is released or a limiting value is reached.

The library also contains values above which the grain may not be set. Attempting to raise the grain temperature above the plenum set point is not allowed either. The grain temperature may not be set to freezing or below. This sub-menu may only be left by depressing the **YES**. The last displayed value will be the one set.

4.2.2.2.3.6 Exit from Grain Parameter Set - Figure 4-D illustrates the options available after setting the drying temperature information. A single depression of **YES** will return the unit to the condition described Section 4.2.2.2.3 with the display being: *Set Drying Data?* If **YES** is again pressed, the grain parameter setting sub-menus will again become active. Pressing **NO** moved the controller on to the drying option.

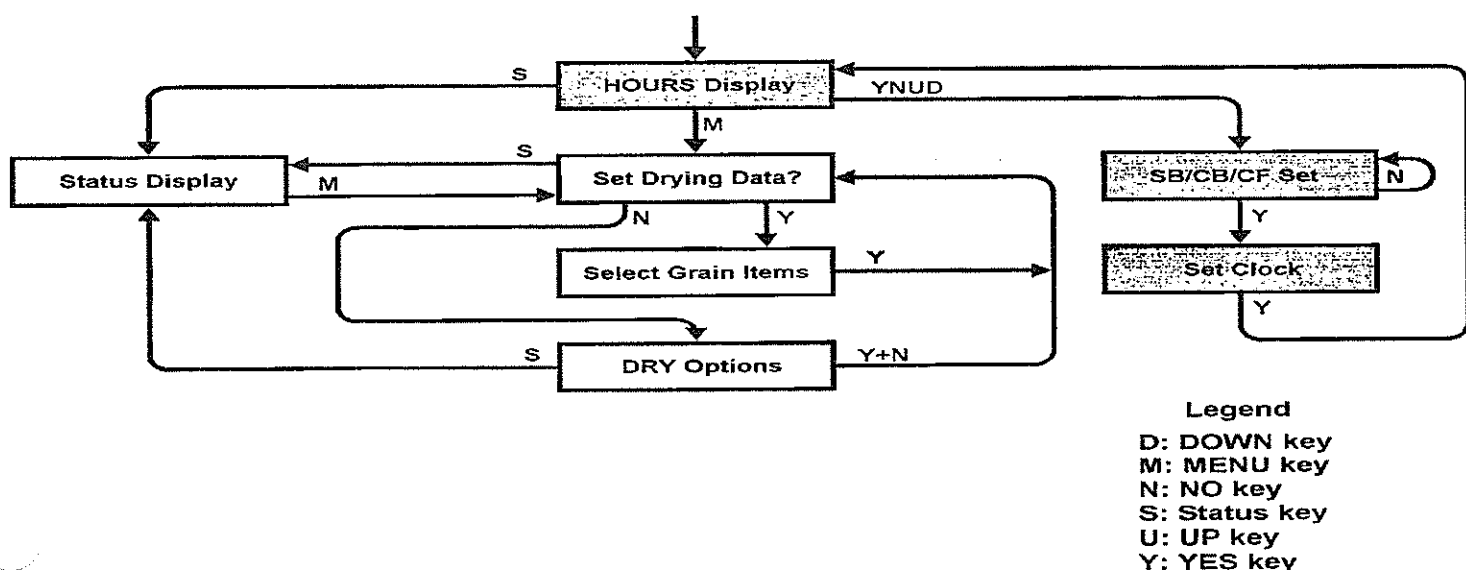


Figure 4-D Options available after the temperature information has been set.

4.2.2.3 Begin Drying - Press and Release **NO**. The controller will move from the grain parameter setting mode to the dry option state.

The display will now show the following message:

Batch Dry On?

A “yes” response will initiate a drying cycle. A “no” will return the unit to the grain parameter setting mode. The **STATUS** key will return the unit to showing the status messages as described in **Section 4.2.2.2.2**.

4.2.2.3.1 Grain Bin Purge - Depress and Release **YES**. The display will revert to:

Set Drying Data?

Because the display is in the data entry mode, it does not give any indication that the dryer as begun a drying cycle. In fact, answering with a **YES** key depression at this time will once again bring up the grain menu. Instead, press and release the **STATUS** key. The display will change to the following:

Purge

Unless some problem occurs, this message will remain for 16 seconds as the fan is clearing the plenum of any fuel fumes that might otherwise cause an explosion during ignition. After the purge time has passed, the display will change to:

Ignite

In this phase the fuel volume is set to a low level and the electric ignitor will be activated. This state will last until the flame detector senses that a flame is present or until 90 seconds has passed, this latter time being the limit for allowing ignition. The dryer will return to idle in the event that the flame fails to light.

After ignition is detected, the ignitor is turned off and the display will change to:

Heat

This is a 30 second period during which the burner is allowed to warm the fuel heater, if present, while the flame remains at a low setting.

After the heating phase has passed, three or four displays will occur in a repeating sequence, each lasting 2 seconds. They are:

<i>Dry</i>		
<i>Plenum</i>	<i>ttt</i>	<i>sdddS</i>
<i>Grain</i>	<i>ttt</i>	<i>sdddS</i>
<i>Dry</i>	<i>pp</i>	<i>sdd%</i>

The first of these messages indicate that drying is under way. The second and third give the current plenum and grain temperatures where *ttt* is the current temperature and *sdddS* is the difference between the current temperature and the set point temperature, not the library temperature.

The last message will only be present if the controller has the moisture sensing module installed. *pp* is the present grain moisture and *sdd%* is the difference between that value and the set point.

If the dryer has not been in operation for a few minutes or more, at the same time the display changes from *Heat* to the cycling display, the burner will switch to the high-output mode. It will remain in that state until the plenum *sdddS* reaches 0 or +1 i.e. the plenum setpoint temperature and the actual temperature are equal. At that time, the burner will revert to the low output state until the plenum temperature decreases to the point where it is one or two degrees below the setpoint. At that time it will once again revert to the high-output state. This cycling will continue as long as the drying process is required to reduce the grain moisture to the desired point.

4.2.2.4 - Options During Drying - While the grain is being dried, the operator may press the **MENU** key and again gain access to both the grain parameter setting routine and the drying options. These routines operate exactly as they did before with two exceptions:

1. The previously selected grain is not displayed and cannot be changed while the burner is in operation.
2. Instead of the *Batch Dry On?* message, the display will show *Dry Off?* Answering **NO** will return the *Set Drying Data?* option while a **YES** depression will cause the dryer to immediately return to the idle state, turning off the burner. The *Set Drying Data?* display will again be shown, but the **STATUS** key will verify that the controller has returned to the idle state.

4.2.2.5 - End of Drying - The dryer operation may be halted in one of three ways:

1. A problem is detected.
2. Manually by the operator as indicated in **Section 4.2.2.4**.
3. The grain reaches the set point condition.

In all cases, the gas valves are closed and the ignition turned off if the dryer was in the *Ignite* phase of start up. In cases 1 and 3, the display will have a message indicating what condition stopped dryer operation. *Grain* is the display provided for normal completion of drying. All others indicate an abnormal conclusion to the drying process.

If the moisture module is not installed, the grain will be considered to be dry when its temperature reaches the grain set point temperature. If the moisture module is installed, drying is considered to be completed when the moisture reading equals the set point moisture value.

With one exception, the indicator lamp on the front panel will be lit whenever a stop occurs by any other means than operator intervention. That one condition is over-Voltage, as the high Voltage could burn out the lamp.

In the event of either a case 1 or 3 stop, the indicator lamp may be extinguished and the normal idle operation display restored by pressing any front panel key except **OFF**, which will turn the controller off.

5. Failures and Exceptional Condition Processing

5.1 Failsafe Operation - The circuitry of the controller and the associated dryer have been designed so single failures will not cause unsafe conditions to develop. For example: should the controller fail with the fuel valves open and the burner operating, the plenum temperature would eventually reach the point where the plenum temperature limit switch would open. This would open the fuel valve electrical supply, shutting off the fuel supply to the burner.

This is not to say that problems cannot occur which might result in loss. If, for example, the operator attempts to dry a load to a very low moisture content or to dry the grain very quickly, a fire can be started in the grain bin. Unless the operator takes appropriate steps to extinguish the fire, grain destruction and damage to the dryer could occur.

5.2 Monitored Variables - Table 5A lists the various items monitored by the controller.

Item

DC Supply Voltage level
Agitator Rotation
Auger Rotation
Plenum Over-Temp Switch
Plenum Temperature
Air Flow
Flame Detector
Grain Temperature

Table 5A Sensor inputs utilized by the controller.

5.3 What Constitutes a Failures and the Controller's Response - Section 4 describes how to operate the controller, assuming that the dryer-controller combination functions in the intended manner. But if the controller detects some undesired or exceptional condition, it will generally take four actions. These are:

1. **Lit Indicator Lamp** - The front-panel **INDICATOR LIGHT** will be lit.
2. **Return to Idle** - The controller returns to the *Idle* state if it is not in that state. This will involve halting all dryer motors, closing all fuel valves and stopping the ignitor.
3. **Failure Message** - The Display will provide information that will allow the operator to determine the failure or condition which caused the dryer to halt.

5.4 When a failure occurs, the general goal is to return the unit to a safe condition so that no destruction may result from the failure and to draw the operator's attention to the failure. But some expected conditions have the same goal. When a single batch of grain is finished drying, it would be appropriate to halt all dryer operations and alert the operator. Due to the similarity in actions required of the controller in cases such as these, the controller treats both of these situations the same i.e. as if they were failures.

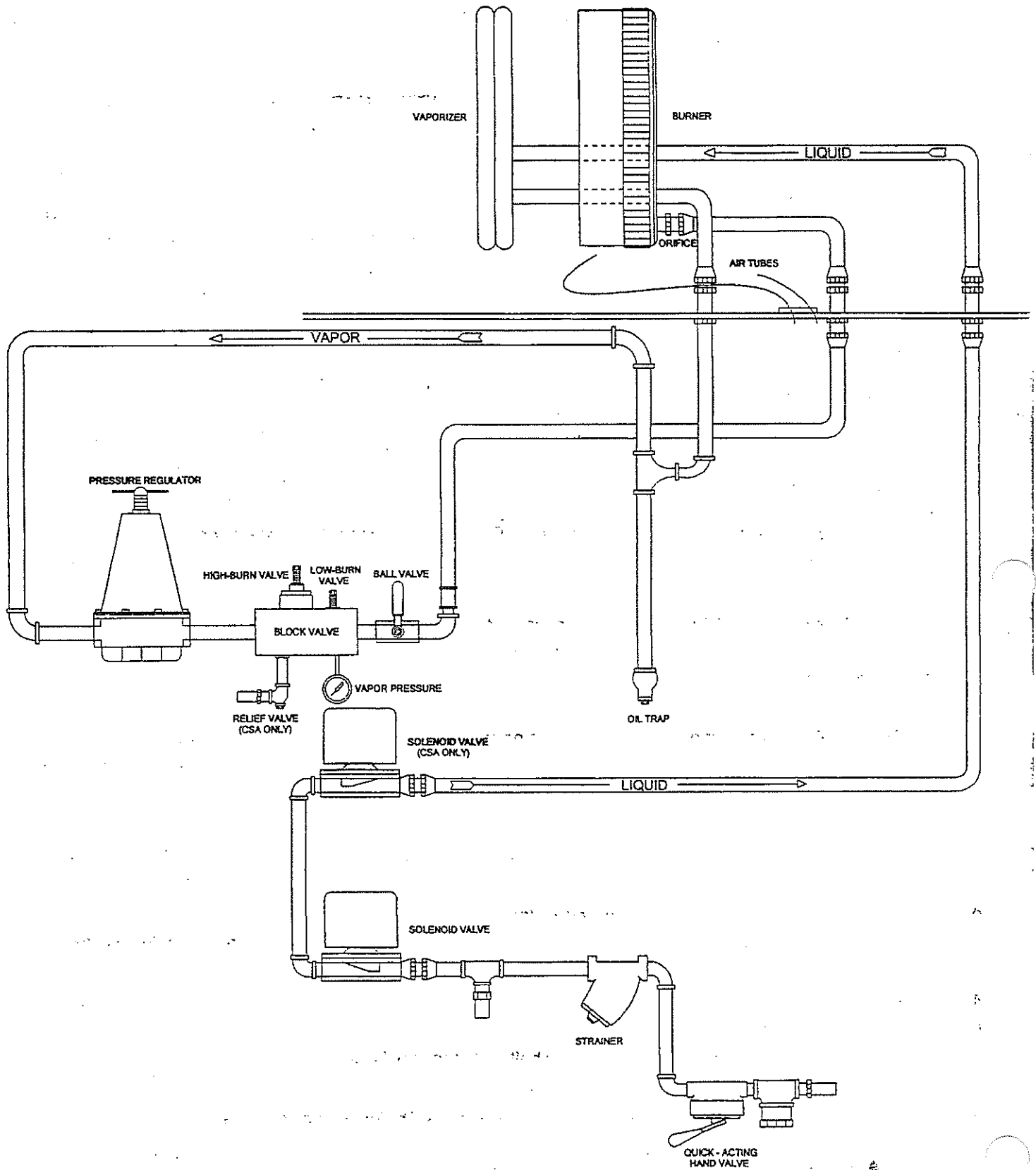
Table 5B lists all possible error messages and their meanings.

<u>Message</u>	<u>Priority</u>	<u>Meaning</u>
<i>Voltage Low</i>	7	The 12 Volt DC supply is lower than about 9.5 Volts
<i>Voltage High</i>	7	The 12 Volt DC supply is higher than about 17 Volts
<i>Plenum Hot</i>	6	Plenum switch or sensor found a high plenum temperature
<i>Air Low</i>	6	Air flow switch is open, indicating inadequate air flow
<i>No Flame</i>	5	Flame is absent when it should be present
<i>Flame On</i>	5	Flame switch is closed when it should be open
<i>Agitator Slow</i>	2	Agitator rotational rate is too low
<i>Auger Slow</i>	2	Auger stopped
<i>Grain Done</i>	1	Grain drying completed

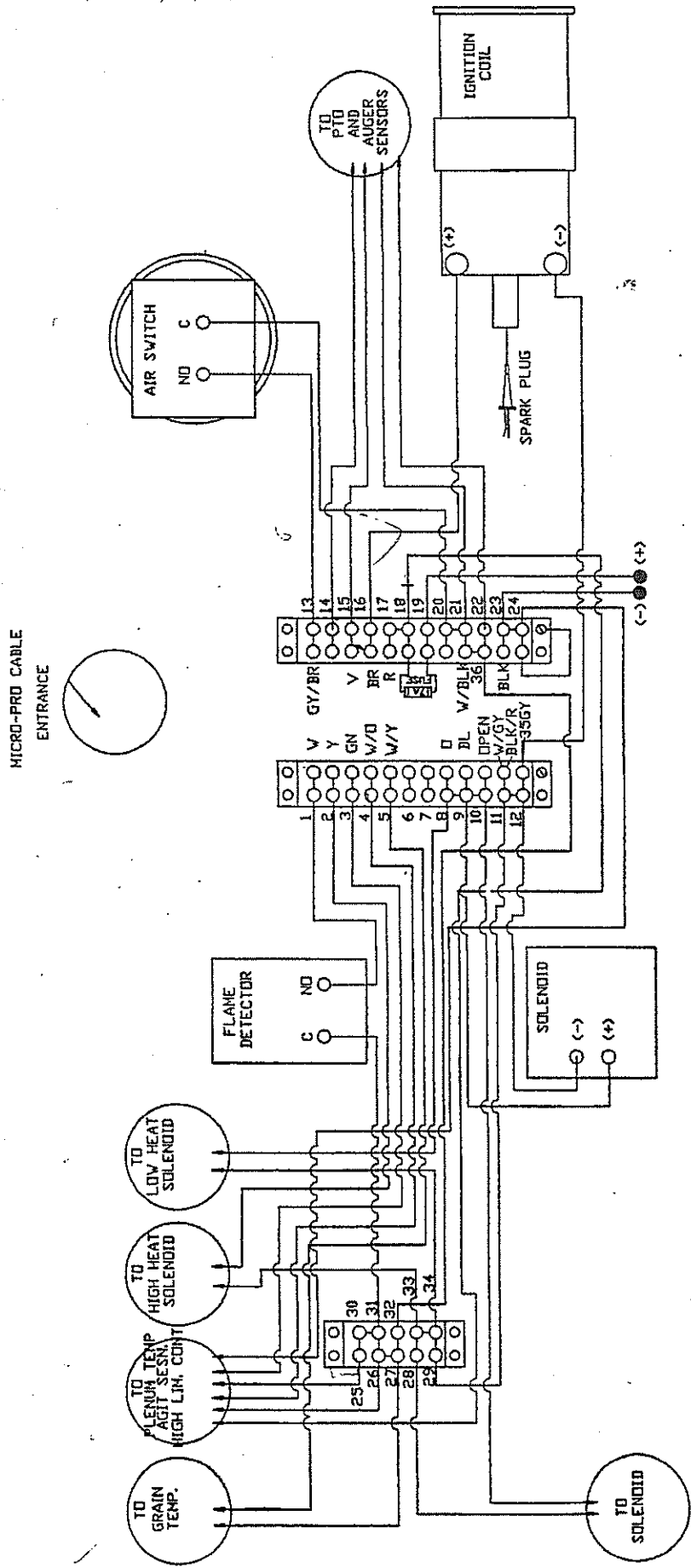
Table 5B Error messages the controller can deliver and their meaning.

In some cases it might be possible for two or more failures to occur at the same time. For example: if the motor which drives the auger and agitator would fail to start, both auger and agitator failures would occur. In the event of simultaneous failure conditions, only one is displayed and that will be the one with the higher priority as indicated in table 5B.

PROPANE GAS FLOW CHART



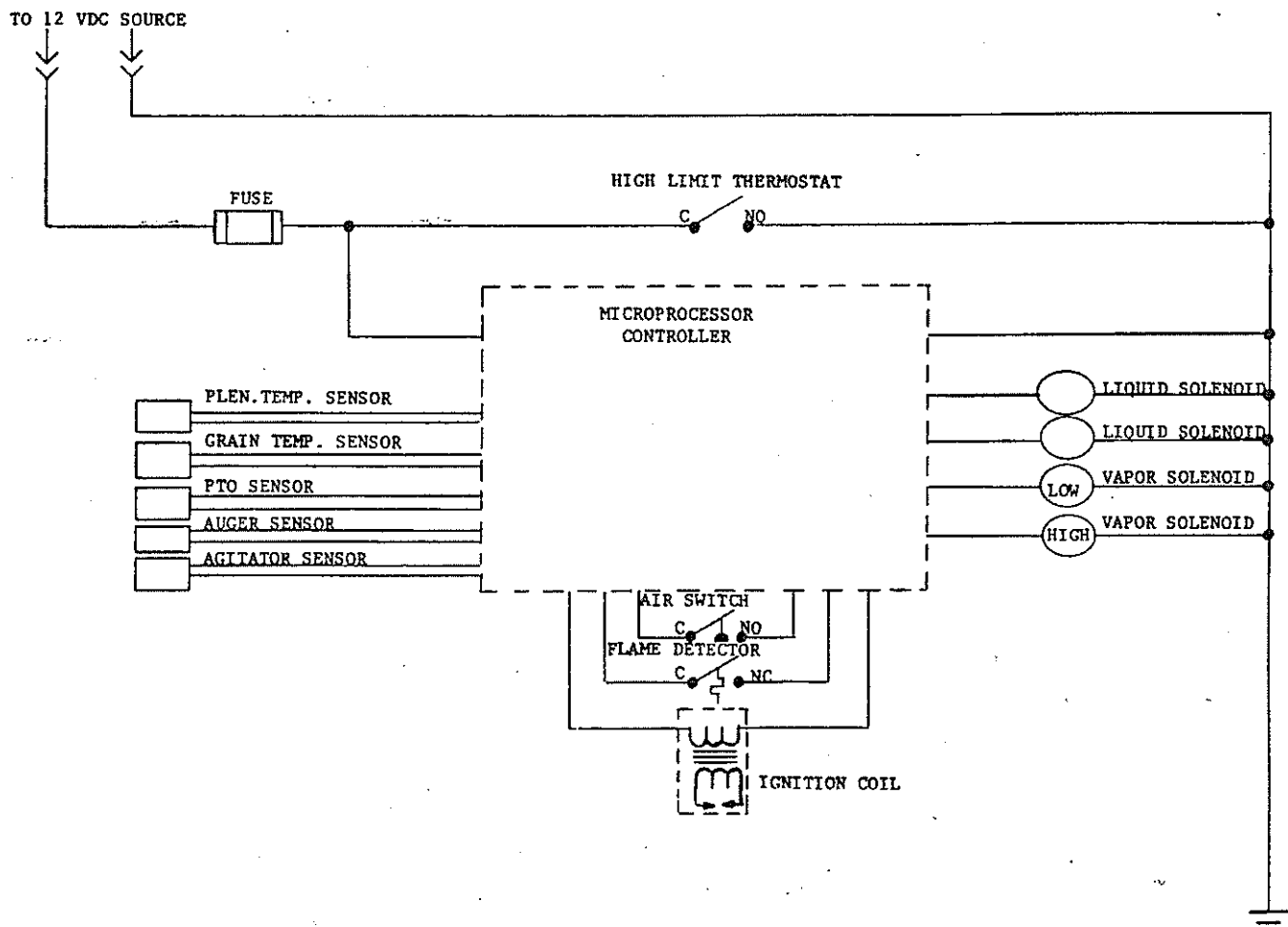
WIRING DIAGRAM - GRAIN GUARD



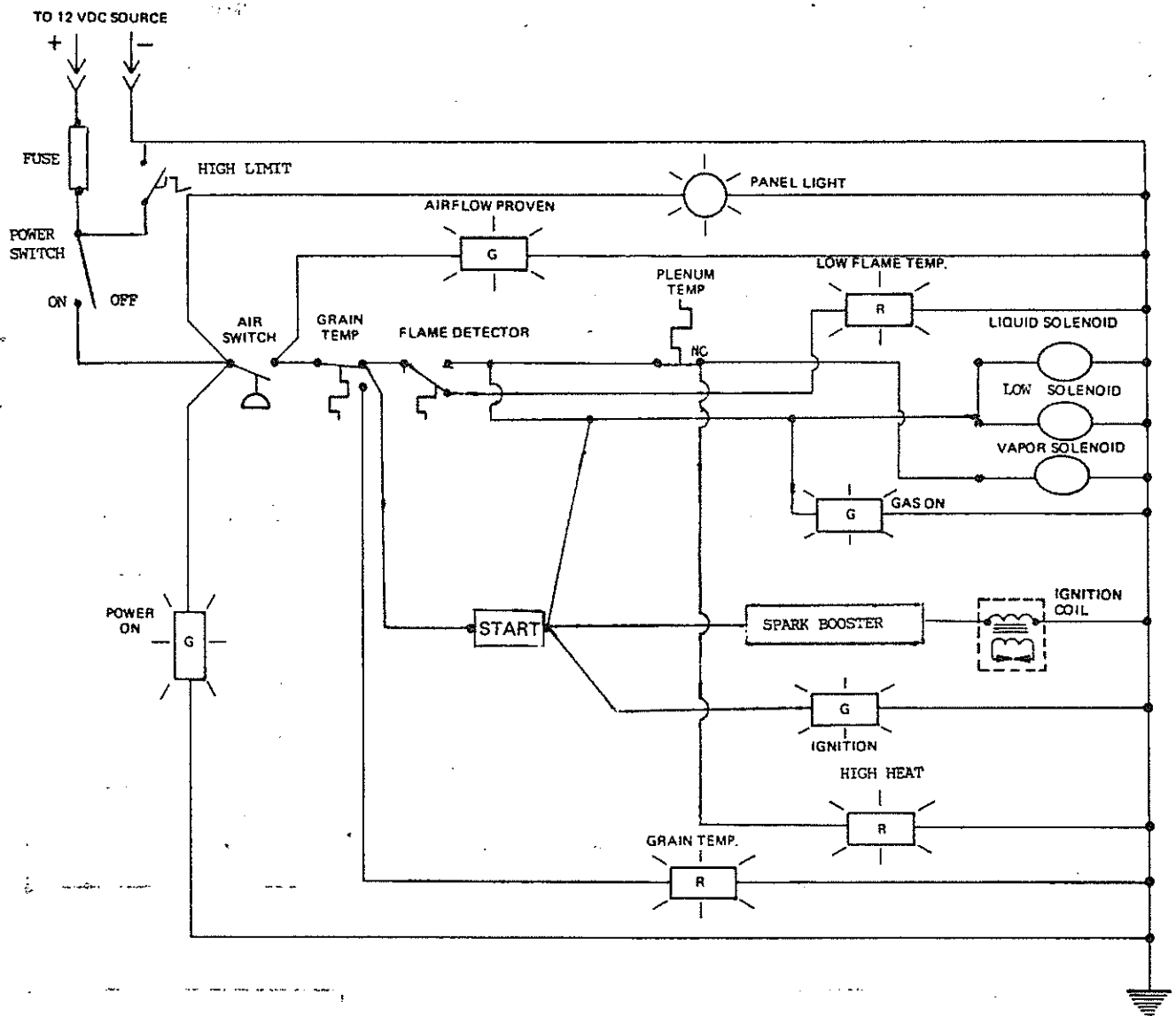
TERMINAL BLOCK KEY - GRAIN GUARD

POSITIVE (+) TERMINALS	COMMON (—) TERMINALS
1. Flame Detector (Norm. Open) - Black	12. Liquid Solenoid - Blue or Grey
2. High Heat Solenoid - Black	20. Air Switch (Common) - White
3. Agitator Sensor - White/Blue	21. PTO Sensor - White
4. Plenum Temp. Sensor - White/Orange	22. Auger Sensor - Black
5. Grain Temp. Sensor - White/Orange	23. Battery (Negative 12 VDC)
6. Open Terminal	24. High Limit Switch - White/Black
7. Open Terminal	25. Agitator Sensor - White/Black
8. Low Heat Solenoid - Black	26. Plenum Temp. Sensor - White/Black
9. Liquid Solenoid - Black	27. Grain Temp. Sensor - White/Black
10. Liquid Solenoid - Black	28. Liquid Solenoid - Blue or Grey
11. Terminal Post 29 - White	29. Terminal Post 11 - White
13. Air Switch (Norm. Open) - Black	30. Open Terminal
14. PTO Sensor - Brown	31. Flame Detector (Common) - White
15. Auger Sensor - Yellow	32. Terminal Post 36 - White/Black
16. Ignition Coil (Positive) - Black	33. High Heat Solenoid - Blue
17. Open Terminal	34. Low Heat Solenoid - Blue
18. High Limit Switch - Orange	35. Ignition Coil (Negative) - White
19. Battery (Positive 12 VDC)	36. Terminal Post 32 - White/Black

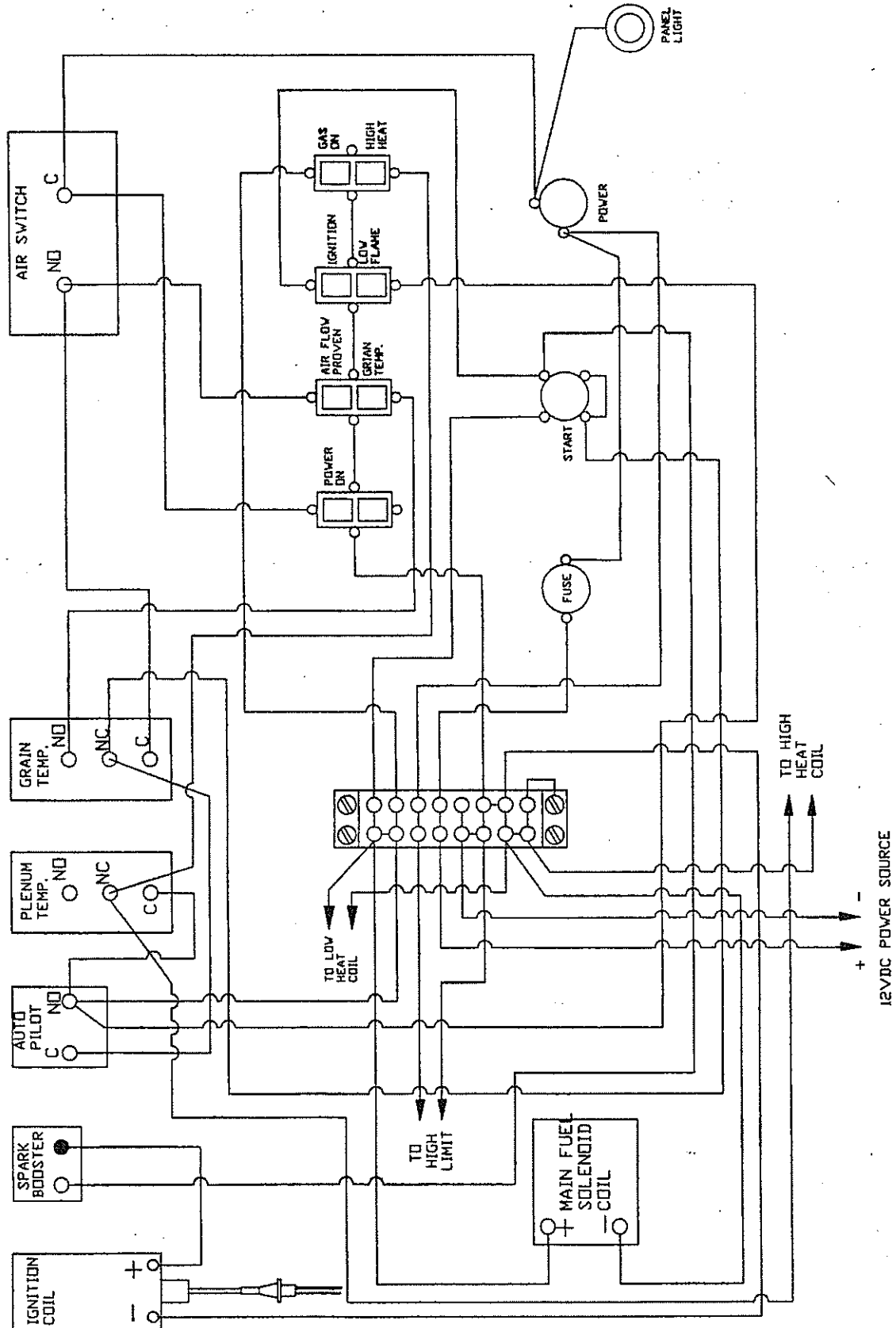
ELECTRIC SCHEMATIC



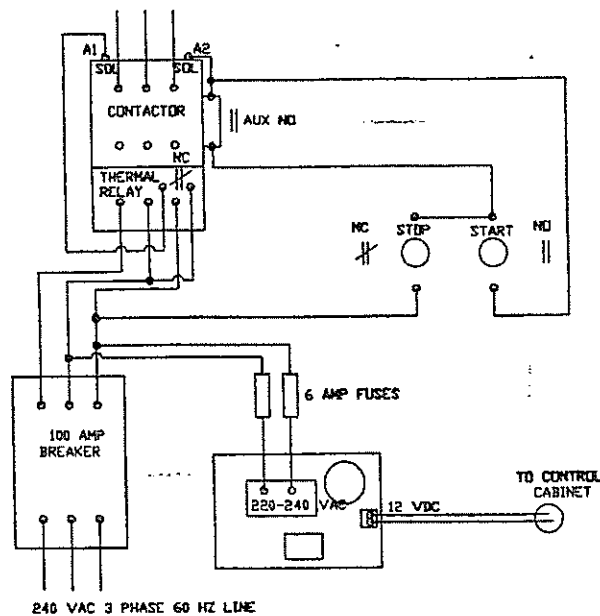
ELECTRIC SCHEMATIC - NON MICRO



WIRING DIAGRAM - NON MICRO



ELECTRIC PANEL WIRING SIDE MOUNT



SIDE MOUNT DRIVE SEQUENCE OF OPERATION

With the circuit breaker connected to the proper source and in the "on" position the circuit is completed to the magnetic starter and to the stepdown voltage transformer. Voltage to the magnetic starter controls is now reduced to 110 VAC. Voltage to the burner control panel is fed through the 110 VAC to 12 VDC converter so that the burner controls operate on 12 volts.

Pushing the motor start button completes the circuit through the holding coil on the magnetic starter causing its contacts to close thus supplying power to start and run the motor.

When the starter contacts close, the contacts on the interlock also close which completes the circuit bypassing the start button. The start button may be released.

MICROPROCESSOR AND SENSOR MAINTENANCE



WARNING: DO NOT OPEN THE MICROPROCESSOR ENCLOSURE! There are no owner serviceable components. Service is to be done by authorized personnel only. See your authorized GT dealer.

1. Disconnect the microprocessor unit (see page 21) BEFORE servicing any motion or temperature sensor. Failure to do so may result in permanent damage to the microprocessor.
2. When the dryer is not in use store the microprocessor unit in a cool, dry place free of dust. This will help to insure long, trouble free service from your microprocessor.
3. The correct spacing between the motion sensors and magnets is 0.125 inch. The unit will function properly if the clearance is less than this but should they come into contact the sensors would be destroyed.
4. The temperature sensors are polarized and must be installed properly. See the wiring diagram, page 33 for proper wire locations. Should the wires become reversed, the dryer will not ignite. The sensors are seen as "HOT" and ignition is prevented.
5. It is important to keep your electrical supply to the dryer in peak operating condition. requires 11.5 volts DC to operate properly. A weak battery or tractor alternator can cause the "VOLTS LOW" error indication to appear on the display. Excessively long or light tractor lead cables can cause a similar problem.

cont'd on page 38


6. The spark plug wire used on this machine is a carbon filled cable. If the spark plug wire is ever replaced on the machine it must be of this type. The metal conductor in other types of spark plug wires causes excessive electrical "Noise" which inhibits the operation of the processor.
7. Overheating of the plenum is protected against by two systems, the microprocessor and a thermostat located inside the plenum. Should the thermostat be activated, a fuse in the control box (see page 16 & 20) will blow halting operation. This fuse must be replaced before operation can resume.

GENERAL OPERATING MAINTENANCE

1. Keep the area clean of shucks, chaff and other combustible foreign material.
2. Keep the fan screen clean.
3. Periodically check the ignition system, all controls and safety shut-off valves for proper operation and gas tightness.
4. Periodically clean the screen in the fuel line strainer.
5. Drain propylene out of oil trap pipe in plumbing weekly.
6. Check all belts for proper tension.
7. Lubricate the machine as outlined on page 13.
8. Make certain dryer weight is evenly supported by jacks.
9. Depending on operating and fuel conditions the burner ports may need to be cleaned periodically. Working from the inside the plenum chamber and using a 5/64" diameter drill bit or torch tip cleaner open up the burner ports.
10.  Keep all safety labels and operating instructions clean and legible. If any label becomes worn, damaged, or illegible, replace it immediately.
11.  Replace all shields/guards removed for service before operating the machine.

REMEMBER: An ounce of prevention is worth a pound of cure!

PREPARING DRYER FOR STORAGE

1. If dryer remains connected to the fuel supply, close the shut-off valve at the tank and the ball valve and quick acting valve at the dryer.
2. Remove the microprocessor. Store in a cool, dry place free of dust.
3. With masking tape or equivalent, seal holes in air switch tube, any openings in the fuel system, and the microprocessor cable end just removed.
4. Open clean out door in bottom well, clean out all grain, leave door open.
5. Remove belts. Store in a cool, dry place.
6. Brush protective coating of oil on chains and belt surfaces of pulleys.
7. Lubricate all bearings. See chart on page 13.
8. Inspect for worn or damaged parts which should be replaced before being used again.
9.  Replace any safety or operating label that has become worn, damaged or illegible.
9. Set jacks to support dryer weight.

PREPARING DRYER FOR USE - OUT OF STORAGE

1. Remove masking tape covering openings.
2. Connect microprocessor control cable and mount microprocessor to the dryer.
3. Replace and tighten belts.
4. Make certain bottom well is clean and close clean out door just prior to using.
5. Lubricate all bearings. See chart on page 13.
6. Close access door.
7. Check burner ports and clean if necessary. See item (9) of General Operating Maintenance.
8. Test fire the burner and check out all controls to make sure they are working properly before grain is added to the dryer.
9. Level dryer and make certain the weight is equally distributed on the jacks.
10. Check safety and operating decals. If any are not legible they should be replaced.

TRANSPORTING THE DRYER



DANGER

Be alert to overhead obstructions and wires. Failure to do so may result in serious injury, electrocution or death. Removal of top auger section is recommended before towing.



CAUTION

OBSERVE THE FOLLOWING RULES WHEN TRANSPORTING THE DRYER.

1. Make certain the hitch pin is securely attached and an alternate hitch safety chain is secured to the dryer and towing vehicle.
2. Do not transport the dryer at speeds in excess of 20 MPH (32 KPH) and comply with any local regulations governing marking, towing and maximum width.
3. Do not transport the dryer after dark or during periods of poor visibility.
4. Maintain proper tire pressure. (Refer to tire manufacturer's recommendations on the sidewall.)
5. Make certain the microprocessor is securely fastened to the dryer. If the dryer is to be towed any distance the microprocessor should be removed from the dryer and safely stored.

TROUBLE SHOOTING

WARNING: CAUTION SHOULD BE EXERCISED WHEN CHECKING CONTROL PANEL. USE VOLT METER OR TEST LIGHT.

WARNING: DISCONNECT THE MICROPROCESSOR BEFORE SERVICING THE ELECTRICAL OR SENSOR SYSTEMS. FAILURE TO DO SO MAY RESULT IN PERMANENT DAMAGE TO THE UNIT.

Reconnect the microprocessor cable and make certain that it is tight before attempting to restart the dryer.

See page 31 for a complete listing of the error messages given on the microprocessor.

Problem A. BURNER WILL NOT LIGHT

Probable Cause

1. Check the microprocessor display for error message. If given, correct and proceed.
 2. Are both tank and dryer fuel valves open?
 3. Is power supply properly connected? Must have the red battery clip connected to the hot (+) side of the battery and the black clip connected to the ground (—) side of the battery. Refer to page 12 for proper battery connections.
 4. Check that the in-line fuse has not blown.
 5. Is the grain temperature above the grain temperature setting?
 6. Check to see that the solenoid valves are opening. With the fan at operating speed push the power switch to the "ON" position and proceed with the starting instructions. When "IGNITE" appears on the display the solenoid valves should open. If the valves open there should be a pressure reading on the pressure gauge.
- NOTE: There is a built in 16 second purge delay from the time the "YES" to "DRY" key is pressed until the valves open as ignition attempts are made.
7. Display returns to "HOURS" just as "IGNITE" appears on display. Attempt to restart the dryer carefully watching the display. If insufficient voltage is being applied to the dryer, the error message "VOLTS LOW" will very briefly flash on the display and then "HOURS" will appear.
 8. Air switch not closing ("AIR" displayed on screen). Remove and clean or replace air switch tube.
 9. Check for plugged orifice.
 10. Possible loose wire connection.
 11. Gas pressure too low. Up to 5 PSI for ignition may be required for propane.
 12. Gas pressure too high. 30 PSI is near maximum for ignition with propane burner. If gas pressure above 30 PSI are encountered, check the 5/64" diameter burner ports for signs of plugging and clean them out if necessary.
 13. System improperly grounded. Check lead wire connections at terminal block.
 14. Check plug for spark. If no spark check the following after disconnecting power to the system.
 - a. Check spark gap. Gap should be 3/32" + or — 1/32". If plug is carboned at the points, clean and replace after checking gap.
 - b. Check high voltage lead wire for cracks or breaks, and replace if necessary.
 - c. Check that the high voltage lead wire is not too close to a metal surface to insure that arcing will not occur at any point other than across the high voltage electrode at the ignitor.
 15. Check the fuel strainer.
 16. Flame detector must be open.

Problem B. BURNER LIGHTS BUT PRESSURE WILL NOT EXCEED 5 TO 6 PSI AND/OR HAS EXCESSIVE FLUTTERING.

Probable Cause

1. Vapor solenoid malfunctioning.
Solution:
Disassemble solenoid body and remove diaphragm. If diaphragm is oily or dirty, wipe clean and replace. If diaphragm is ruptured replace with new diaphragm.
2. Pressure regulator malfunctioning.
3. High heat solenoid is not opening. Check wire connections. If still does not open, disassemble and clean solenoid valve.

Problem C. BURNER IGNITES BUT GOES OUT DURING OPERATION

Probable Cause

1. Electrical connection may be loose.
2. Worn insulation or wet wires may be grounding.
3. Excessive flow valve at tank may be closing.
4. Check for stoppage in air switch tube. ("AIR" indicated on display.) Remove tube from switch and clean or replace.
5. The flame detector bulb is not sensing flame at the burner. The flame detector must sense enough heat from the flame to close its contacts before the 90 second ignition period has elapsed. If the flame detector is not closing it will be necessary to adjust the sensor bulb mounted to the burner so that it picks up more heat from the flame. To do this adjust the bulb so that it protrudes into the burner 1/2" to 5/8". Do not over-tighten the locking nut on the flame detecting bulb.
6. Inaccurate plenum temperature sensor. "PLENUM" appears on the display

Problem D. UNCONTROLLABLE HEAT.

Probable Cause

1. Cracked Vaporizer.
2. Ruptured gas line.

Problem E. TRASH OR GRAIN FIRE.

Probable Cause

1. Excessive plenum temperature.
2. Trash build-up in plenum.
3. Poor circulation due to agitator being out of operation or adjustment.
4. Ruptured gas line or vaporizer.
5. Improper burner or baffle adjustment.
Solution:
a. Shut off gas supply.
b. Disengage fan clutch and continue to circulate grain in machine or empty machine if necessary.

Problem F. GAS WILL NOT SHUT OFF IMMEDIATELY WHEN POWER IS SHUT OFF.

Probable Cause

1. Perforated diaphragm in vapor solenoid valve.
2. Plunger upside down on vapor solenoid valve.
3. Lack of diaphragm in vapor solenoid valve.

Problem G. AGITATOR DRIVE CHAIN OFF



DANGER

Do not open inspection door or enter machine while in operation.

Probable Cause

1. Roller stuck — seized bearing — may be flat on one side.
2. Too much horizontal play between agitator race and rollers.
3. Agitator drive sprocket out of line.
4. Too slack a chain.
5. Excess feeding of loading auger causing grain level to rise above agitator. (Close grain flow regulator slightly to reduce feed rate.)

Problem H. AUGER STOPPAGE

Probable Cause

1. Slack belt.
2. Block of wood or rock lodged between auger flight and housing.
3. Extremely wet grain standing overnight.
4. Bottom auger bearing frozen.

Problem I. EXCESSIVE DRYING TIME

Probable Cause

1. Plenum temperature too low for conditions.
2. Inaccurate plenum temperature sensor.
3. Poor circulation of grain.
4. Dirty or trashy grain.
5. Hard to dry variety. (Thick seed coat)
6. Incorrect fan speed.
7. Adverse weather conditions.
8. Recirculation of exhaust air from dryer back into plenum.

Problem J. POOR GRAIN CIRCULATION

Probable Cause

1. Fan speed above that recommended.
2. Build up of foreign material, especially in bottom section of dryer.
3. Agitator not operating.

INDICATOR LIGHT CHECK OUT PROCEDURE - NON-MICRO

The indicator lights on the dryer's switch panel have been put there to aid in the operation of the dryer. These lights should be checked to assure that they are operating.

With the fan operating at the recommended RPM, the electrical power source properly connected, the gas supply turned on, and all the gas valves open; complete the following test.

Turn the power switch on and see that the green "POWER ON" and "AIR FLOW PROVEN" lights come on.

Push the start button, the ignition light and the gas on light will come on. Hold start button for about 30 seconds and then release. The "LOW FLAME" light should remain on.

Panel should now register the normal operating condition, i.e., Green: Power, Airflow and Gas On lights on. There will be no Red lights on unless the "HIGH HEAT" Thermostat is above the Plenum temperature, then the "HIGH HEAT" Red light will be on.

Turn grain temperature thermostat below indicated grain temperature. The Red Grain Temperature Light will come on and the Gas On Light should go off. After approximately 20 seconds the "LOW FLAME LIGHT" will go off.

MICROPROCESSOR CONTROL SYSTEM

See page 31 for a complete listing of the error messages given on the microprocessor.

WARNING: DISCONNECT THE MICROPROCESSOR BEFORE SERVICING THE ELECTRICAL OR SENSOR SYSTEMS. FAILURE TO DO SO MAY RESULT IN PERMANENT DAMAGE TO THE UNIT.

Reconnect the microprocessor cable and make certain that it is tight before attempting to restart the dryer.

1. **Low Voltage:** The microprocessor requires 11.5 volts DC to operate properly. If this is not available, operation will cease at that point and "VOLTS LOW" will flash on the display.

Probable Cause

- A. Lead wires from tractor to dryer too long.
 - B. Lead wires too light of a wire gauge.
 - C. Battery weak.
 - D. Tractor alternator weak.
 - E. A loose or poor connection.
2. **Rotational Sensor Failure:** The microprocessor may indicate an error even though the component (Auger, Agitator, PTO) seems to be functioning properly.

DISCONNECT THE MICROPROCESSOR BEFORE SERVICING MOTION SENSORS!

Probable Cause:

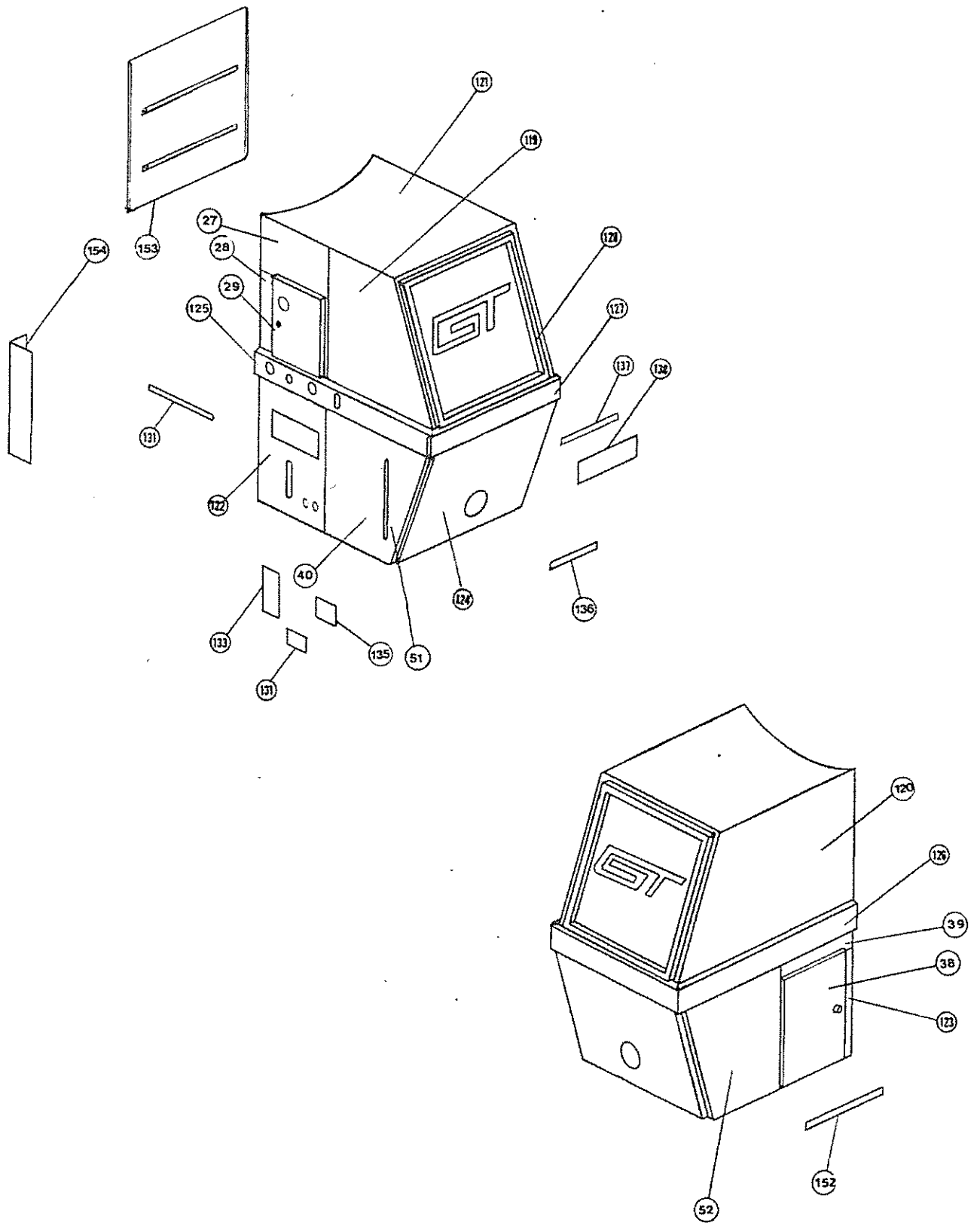
- A. Sensor failure. To check the switch, line up the sensor and the magnet then using a volt meter or continuity tester, see if there is continuity across the corresponding lugs on the terminal block. There should be a signal. Now rotate the magnet a quarter turn past the sensor and check the continuity again. If everything is working properly there should be no continuity.
 - B. Sensor out of adjustment. There should only be 0.125 inch between the magnet and the rotational sensor. Distances greater than this will give a weak signal and may not activate the sensor.
 - C. Loose or poor connections at either the terminal block or the sensor connection.
3. **Spark Plug Wire:** Should the spark plug wire become damaged and need to be replaced it is important that a carbon filled cable and not a solid wire conductor be used. A wire conductor will cause excessive electrical "Noise" inhibiting the operation of the machine.
 4. **Inaccurate Temperature Readings:**

Probable Cause:

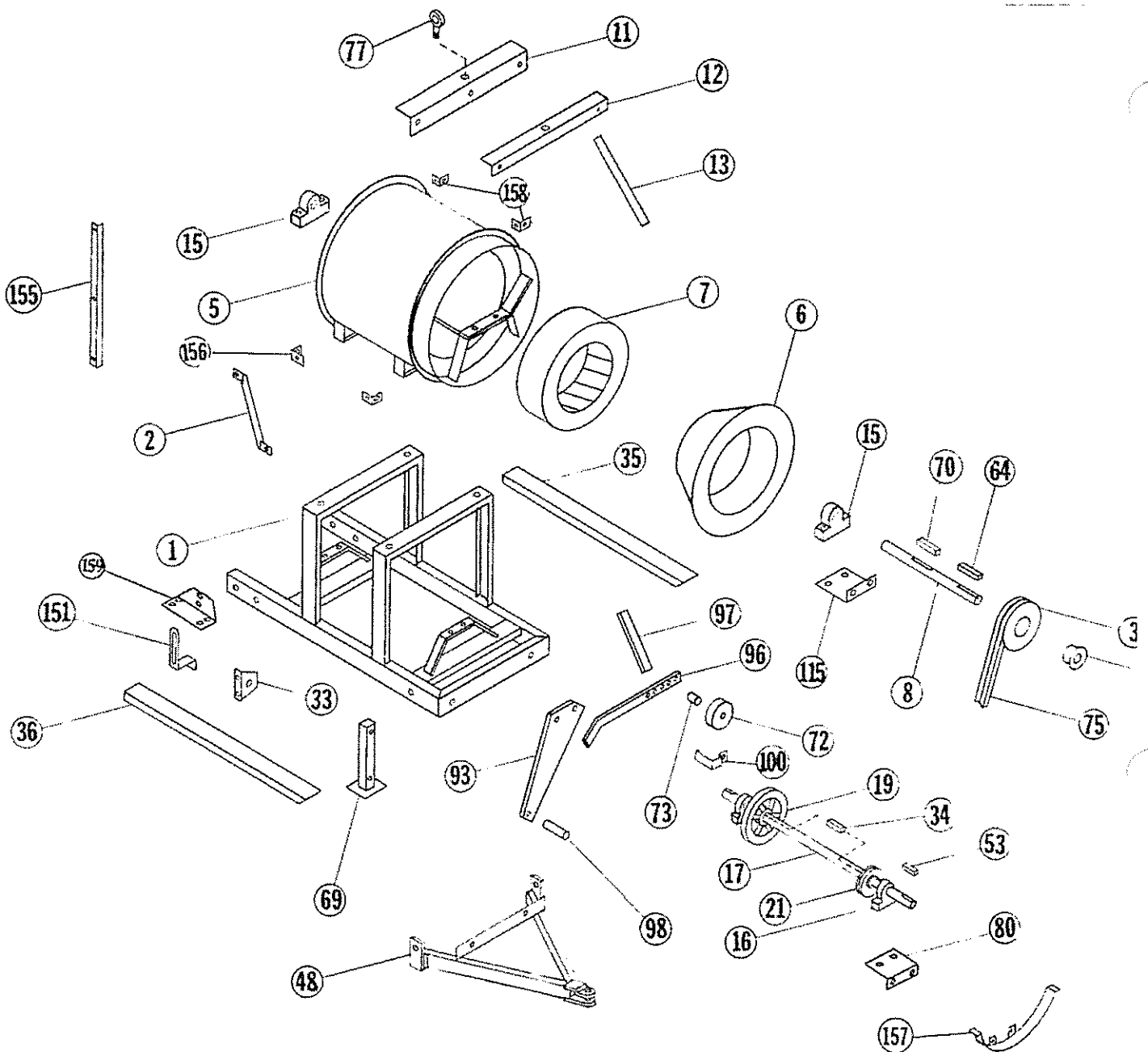
- A. Loose or poor connection.
- B. Wires hooked up backwards. The temperature sensor wires are polarized and must be hooked up correctly. See wiring diagram on page 33
- C. Temperature sensor failure:
 1. If the sensor shorts out, the microprocessor will see this as an extremely cold condition and will try to bring the temperature up. "PLENUM LOW" will appear on the display if the plenum sensor fails.
 2. If the sensor opens, the microprocessor will see this as an extremely hot condition and shut the dryer down. If the plenum sensor fails "PLENUM" will appear on the display. "GRAIN" will appear if the grain sensor fails.
 3. If the sensor falls out of calibration a faulty temperature will be given. This should be detectable by observation. If the plenum cannot achieve the preset value, check the plenum temperature sensor. If the microprocessor says the grain is dry and the grain is still cold check the grain temperature sensor.

ASSEMBLY DRAWINGS AND PARTS LIST

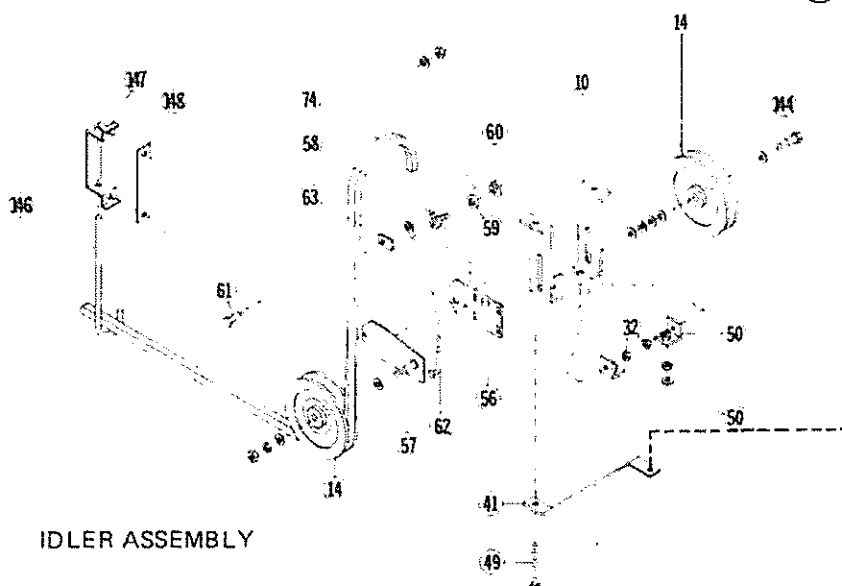
POWER UNIT ASSEMBLY (QF)



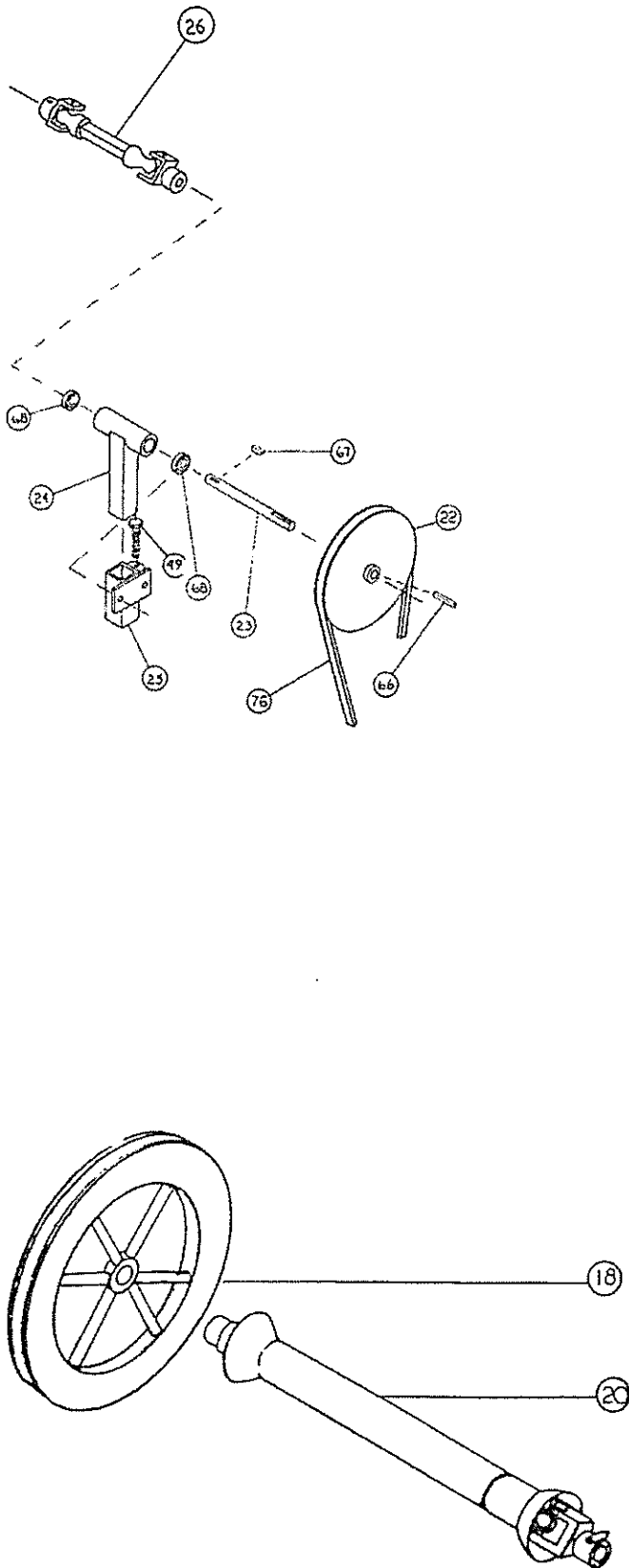
POWER UNIT ASSEMBLY (QF)



IDLER ASSEMBLY



POWER UNIT ASSEMBLY (QF)



POWER UNIT ASSEMBLY (QF)

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D32017	1	Frame Power
2	D37090	1	Brace, Right
2	D37095	1	Brace, Left
3	76056	1	Sheave, Fan Driven (2B 7.0)
4	76002	1	Hub, Fan Driven Sheave
5	D57315	1	Fan
6	D37305	1	Venturi, In-Line Fan
7	D22071	1	Fan
8	D22081	1	Shaft, Fan
10	D32010	1	Support, Idler
11	D37100	1	Support, Large Top Panel
12	D37105	1	Support, Small Top Panel
13	D37200	4	Brace, Top Panel
14	D22142	1	Sheave, Idler (U.S.)
	D22146	1	Sheave, Idler (U.S.)
	D22145	2	Sheave, Idler (U.K.)
	D22147	2	Sheave, Idler (Poland)
15	85019	2	Bearing, 2" Pillow Block
16	D22097	2	Bearing, 1½" Pillow Block
17	D37115S	1	Shaft, Power
18	D22170	1	Sheave, Fan Drive (2B 24)
19	D22180	1	Sheave, Auger Drive (1C9)
20	D52194	1	Tumbler, PTO Drive (See page 53 for parts)
21	D22780	1	Sheave, Agitator Drive (1B4)
22	D22790	1	Sheave, Agitator Driven (1B16)
23	D22850	1	Jackshaft, Agitator
24	D22861	1	Housing, Agitator Bearing w/o Bearings
24	D22866	1	Housing, Agitator Bearing w/Bearings
25	D22871	1	Mount, Agitator Bearing Housing
26	D59342	1	Tumbler, Agitator Drive (See page 52 for parts)
27	D37150	1	Panel, Upper Rear Rt.
28	D37155	1	Panel, Lower Rear, Rt.
29	D37261	1	Door, Rt. Upper
32	72255	2	Nut, 5/8" Jam
33	D37225	4	Support, Wrapper
34	73411	2	Key, 3/8" sq. x 1½" lg.
35	D37120	1	Support, Lower Panel Left
36	D37110	1	Support, Lower Panel Right
38	D37260	1	Door, Left
39	D37265	1	Filler, Door
41	D37125	1	Brace, Idler Support
43	73332	7	Zerk, 1/8" NPT Female Grease
44	73150	4	Grease Line, 3/16" Copper per ft.
45	73109	11	Compression Fitting, 3/16" Tube to 1/8 N.P.T.
48	D37065	1	Hitch
49	71957	3	Capscrew, ½" x 5" Full Thread
50	D22260	2	Tightner
51	D37250	1	Panel, Right Lower Front
52	D37160	1	Panel, Left Lower Front
53	73415	1	Key 3/8" sq. x 4¼"
54	D22099	As Req'd.	Spacer
56	D22801	1	Fixed Member, Spring Loaded Idler
57	D22812	1	Pivot Member, Spring Loaded Idler
58	73308	1	Spring
59	D22820	1	Washer
60	73231	1	Ring, Retaining
61	71028	1	Capscrew, 5/16" x 1¼"
62	D22840	1	L-Bolt
63	D22830	1	Stop, Pivot
64	73424	1	Key, ½" x ½" x3-7/8"
65	71110	3	Capscrew, ½" x 3"

POWER UNIT ASSEMBLY (QF)

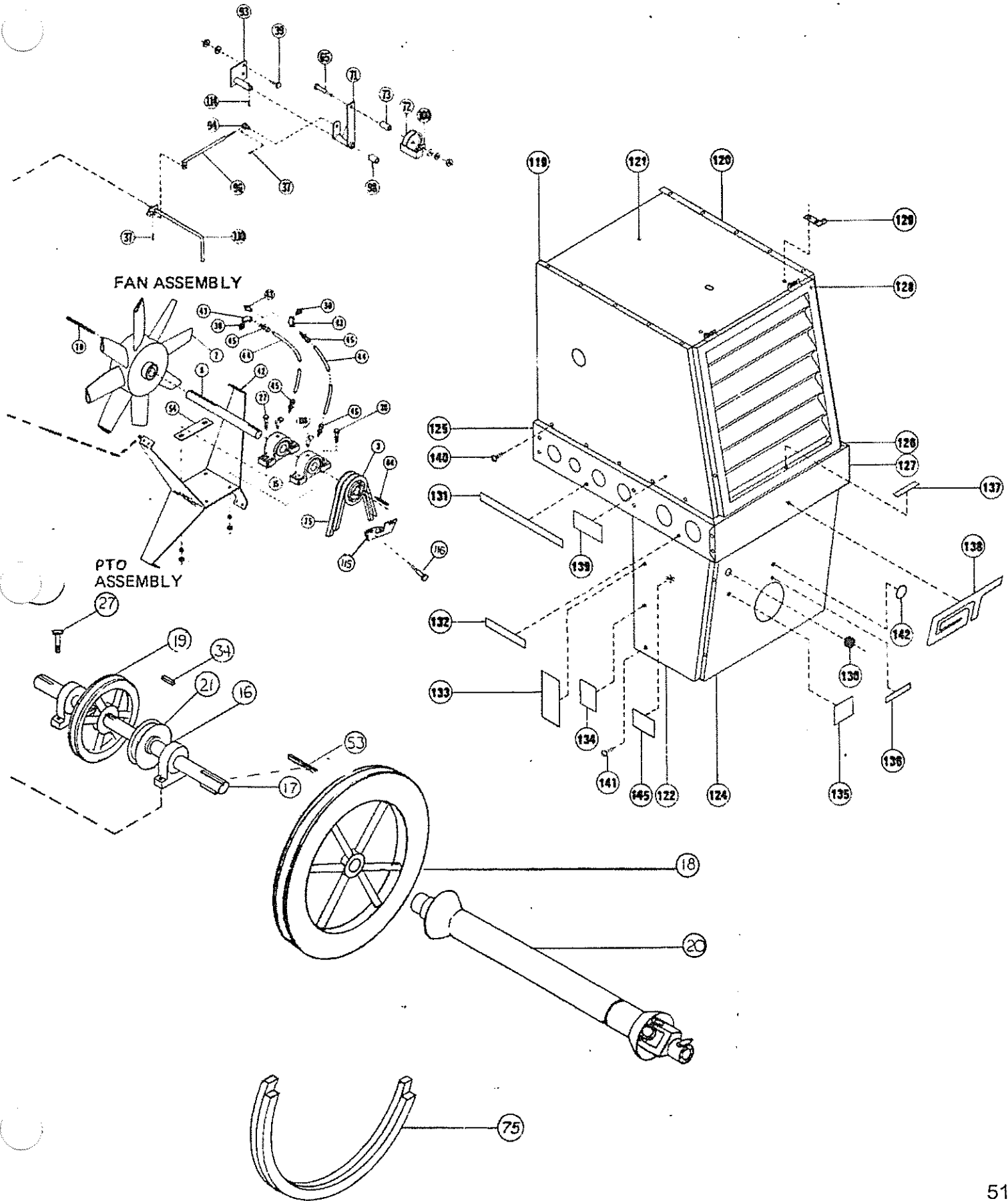
REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
66	73400	1	Key, 1/4" sq. x 1 1/4"
67	42-18282	1	Key, 808 Woodruff
68	42-16334	2	Bearing, Agitator Jackshaft
69	D37070	2	Jacks
70	73419	1	Key, 1/2" x 1/2" x 2 1/2"
72	42-16336	1	Pulley, Idler
73	D32220	1	Spacer
74	D22620	1	Belt, Auger Drive (C195)
75	D32272	1	Belt, Fan Drive (2RB133)
76	42-66015	1	Belt, Agitator Drive (B58)
77	71941	2	Eyebolt, 1/2" x 1 1/2"
79	71051	1	Capscrew, 3/8" x 3/4"
80	D37135	1	Belt Retainer, Lower Fan
93	D57130	1	Handle, Clutch
96	D57150	1	Link, Clutch Handle
97	D57145	1	Arm, Clutch Handle
98	D57155	1	Tube, Clutch Handle
	03518	1	Grip, Rubber Handle
100	D32260	1	Guide, Fan Belt
115	D57140	1	Brake, Fan Sheave
119	D37192	1	Panel, Right Fan Guard
120	D37180	1	Panel, Left Fan Guard
121	D37170	1	Panel, Top Fan Guard
122	D37186	1	Panel, Right Lower Rear
123	D37270	1	Panel, Left Lower Rear
	D37165	1	Filler, Left Lower Rear (U.S. Only)
124	D37175	1	Guard, Front Belt
125	D52892	1	Wrapper, Right Power Frame - (LP Gas)
	D52894	1	Wrapper, Right Power Frame - (Non-Micro)
126	D52131	1	Wrapper, Left Power Frame
127	D32081	1	Wrapper, Front Power Frame
128	D37195	1	Grill
131	74620	1	Decal, Valve
133	73682	1	Decal, Caution Be a Safe Operator
134	73661	1	Decal, Danger LP Gas Supply
135	73668	1	Decal, Caution Fan Clutch
136	73607	1	Decal, Max. PTO Speed 540 RPM
137	74706	1	Decal, Max. Fan Speed
138	73949	1	Decal, GT Logo
144	71135	1	Capscrew, 5/8" x 3"
145	73981	1	Decal, DANGER - Electrocutation
146	D21420	1	Rod, Auger Belt Guide
147	D21430	1	Bracket, Auger Belt Guide Rod
148	D21440	1	Clamp, Auger Guide Bracket
150	D22146	1	Sheave, Idler
151	D57215	1	Lock, Clutch
152	74705	1	Decal, Grease Line
153	D37280	1	Panel, Rear
154	D37275	1	Frame, Right
155	D37085	2	Brace, Panel
156	D37286	1	Bracket, Rt. Fan Guard
157	D37325	1	Guide, Fan Belt
158	D37285	3	Bracket, Fan Guard
159	D37081	1	Mount, Junction Box

NOTE: For nuts, washers and lockwashers - see page 94

Exploded view diagram of a power unit assembly. The main assembly includes a base frame (1), a large circular component (22), and various structural members (2, 37, 76, 77). Fasteners and connectors are labeled with numbers in circles: 40, 69, 26, 39, 79, 80, 157, 68, 24, 49, 68, 25, 23, 67, 66, 65, 64, 63, 62, 61, 58, 57, 56, 55, 54, 53, 52, 51, 48, 47, 46, 45, 44, 43, 42, 41, 38, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 1. A detailed inset labeled "IDLER ASSEMBLY" shows a separate mechanism with parts 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1.

POWER UNIT ASSEMBLY

FAN CLUTCH ASSEMBLY



POWER UNIT ASSEMBLY

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D22016	1	Power Frame Assembly
2	D22022	1	Brace
3	76005	1	Fan Sheave, PTO (2B 4.8" x 1½")
	76007	1	Hub, Fan Sheave
7	OD22075A	1	Fan Wheel
8	D22080	1	Fan Shaft
10	D32010	1	Idler Support
14	D22142	1	Sheave, Idler (U.S.)
	D22146	1	Sheave, Idler (.U.S.)
	D22145	2	Sheave, Idler (Cast U.K.)
	D22147	2	Sheave, Idler (Cast 1C7 Poland)
15	D22090	2	Bearing, 1½" Pillow Block w/Shim & Adapter
16	D22097	2	Bearing, 1½" Pillow Block
17	D22161S	1	Power Shaft
18	D22170	1	Fan Drive Sheave (2B 24" x 1½")
19	D22180	1	Auger Drive Sheave (1C 9" x 1½")
20	D52192	1	Tumbler Shaft (See page 35 for parts)
21	D22780	1	Sheave 1B 4" x 1½"
22	D22790	1	Pulley, 1B 16" x 1"
23	D22850	1	Agitator Jackshaft
24	D22861	1	Agitator Bearing Housing w/o Bearings
24	D22866	1	Agitator Bearing Housing w/Bearings
25	D22871	1	Agitator Bearing Housing Mount
26	D28250	1	Agitator Drive Tumbler (See page 34 for parts)
27	71106	6	1½" x 2" Capscrew
28	71107	2	1½" x 2¼" Capscrew
32	72255	2	5/8" Jam Nut
34	73411	3	3/8" x 3/8" x 1½" Key
37	73534	2	Cotter Pin, 1/8" x 1¼"
38	71129	4	5/8" x 1½" Capscrew
39	71102	8	½" x 1" Capscrew
40	71053	12	3/8" x 1¼" Capscrew
41	D22631	1	Idler Support Brace
42	D22240	1	Fan Shaft Support Brace
43	73332	2	Zerk, 1/8" NPT Female Grease
44	D52705	2	Fan Shaft Bearing Grease Line
45	73109	4	3/16" x 1/8" Pipe Compression Fitting
	73048	2	¼-28 x 1/8" N.P.T. Adapter (NTN Bearing Only)
49	71957	3	½" x 5" Full Thread Capscrew
50	D22260	2	Tightner
51	71110	4	½" x 3½" Capscrew
52	71825	8	¼-20 x 3/4" Slotted HD Machine Screw
53	73415	1	3/8" x 3/8" x 4¼" Key
54	D22099	As Req'd.	Spacer
56	D22801	1	Fixed Member, Spring Loaded Idler
57	D22812	1	Pivot Member, Spring Loaded Idler
58	73308	1	Spring
59	D22820	1	Washer 1" x 2 1/8" O.D.
60	73231	1	Retaining Ring
61	71028	1	5/16" x 1¼" Capscrew
62	D22840	1	L-Bolt Spring Loaded Idler

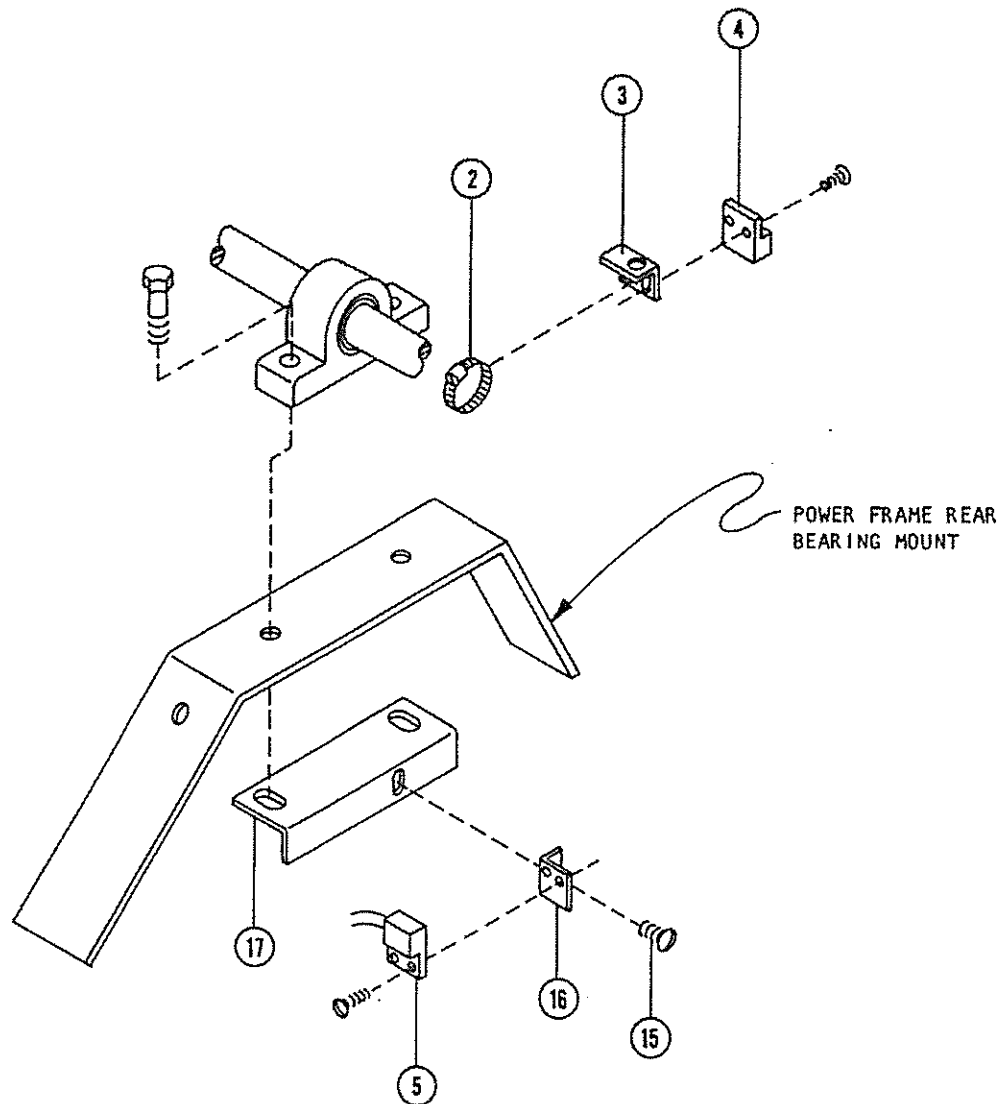
NOTE: For nuts, washers and lockwashers - see page 94

POWER UNIT ASSEMBLY (QF)

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
63	D22830	1	Pivot Stop for Spring Loaded Idler
64	73420	1	Key, 3/8" x 3/8" x 6-3/8"
65	71110	3	Capscrew, 1/2" x 3"
66	73400	1	1/4" x 1/4" x 1 1/4" Key
67	42-18282	1	No. 808 Woodruff Key
68	42-16334	2	1" Bearing
69	73508	1	3/8" x 2 1/2" Capscrew
71	D32161	1	Arm, Fan Clutch Idler
72	42-16336	1	Pulley, Idler
73	D32220	1	Spacer
74	D22620	1	Auger Drive Belt (C195)
75	D22271	2	Fan Belt, PTO (B131)
76	K52701	1	B75 Belt, Agitator Drive
77	71941	1	Eyebolt, 1/2" x 1 1/2"
78	D22652	1	Guard, Power Shaft
79	71051	1	Capscrew, 3/8" x 3/4"
80	D37135	1	Belt Retainer, Lower Fan
93	D32171	1	Pivot, Clutch Idler
94	D32270	1	Pin, Fan Clutch Swivel
96	D32235	1	Arm, Link
98	D32040	1	Tube, Belt Retaining
100	D32260	1	Guide, Fan Clutch Belt
110	D32151	1	Handle, Fan Clutch
114	73536	1	Cotter pin, 1/8" x 1 3/4"
115	D32250	1	Brake, Fan Sheave
116	71061	2	Capscrew, 3/8" x 3 1/2"
118	73048		Adapter, Grease Line, 1/4" x 28 Male to 1/8" N.P.T. Female x 90°
119	D22213	1	Panel, Right Fan Guard
120	D22221	1	Panel, Left Fan Guard
121	D22042	1	Panel, Top Fan Guard
122	D32110	1	Panel, Right Belt Guard
123	D32100	1	Panel, Left Belt Guard
124	D22062	1	Guard, Front Belt
125	D32092	1	Wrapper, Right Power Frame - (LP Gas)
126	D32070	1	Wrapper, Left Power Frame
127	D32080	1	Wrapper, Front Power Frame
128	D22052	1	Grill
129	D32102	2	Grill Hinge Strap
130	73278	1	Grommet
131	74620	1	Decal, Valve
132	73958	1	Decal, Plenum and Grain Temperature
133	73682	1	Decal, Caution Be a Safe Operator
134	73661	1	Decal, Danger LP Gas Supply
135	73668	1	Decal, Caution Fan Clutch
136	73607	1	Decal, Max. PTO Speed 540 RPM
137	74706	1	Decal, Max. Fan Speed 1850 RPM
138	73949	1	Decal, GT Logo
140	71823	42	1/4" x 20 x 1/2" Slotted HD Machine Screw
141	71825	6	1/4" x 20 x 3/4" Slotted HD Machine Screw
143	73833	2	Decal, Danger Keep Hands & Feet Away
144	71135	1	Capscrew, 5/8" x 3"
145	73981	1	Decal, DANGER - Electrocutation
146	D21420	1	Rod, Auger Belt Guide
147	D21430	1	Bracket, Auger Belt Guide Rod
148	D21440	1	Clamp, Auger Guide Bracket
157	D37325	1	Guide, Fan Belt

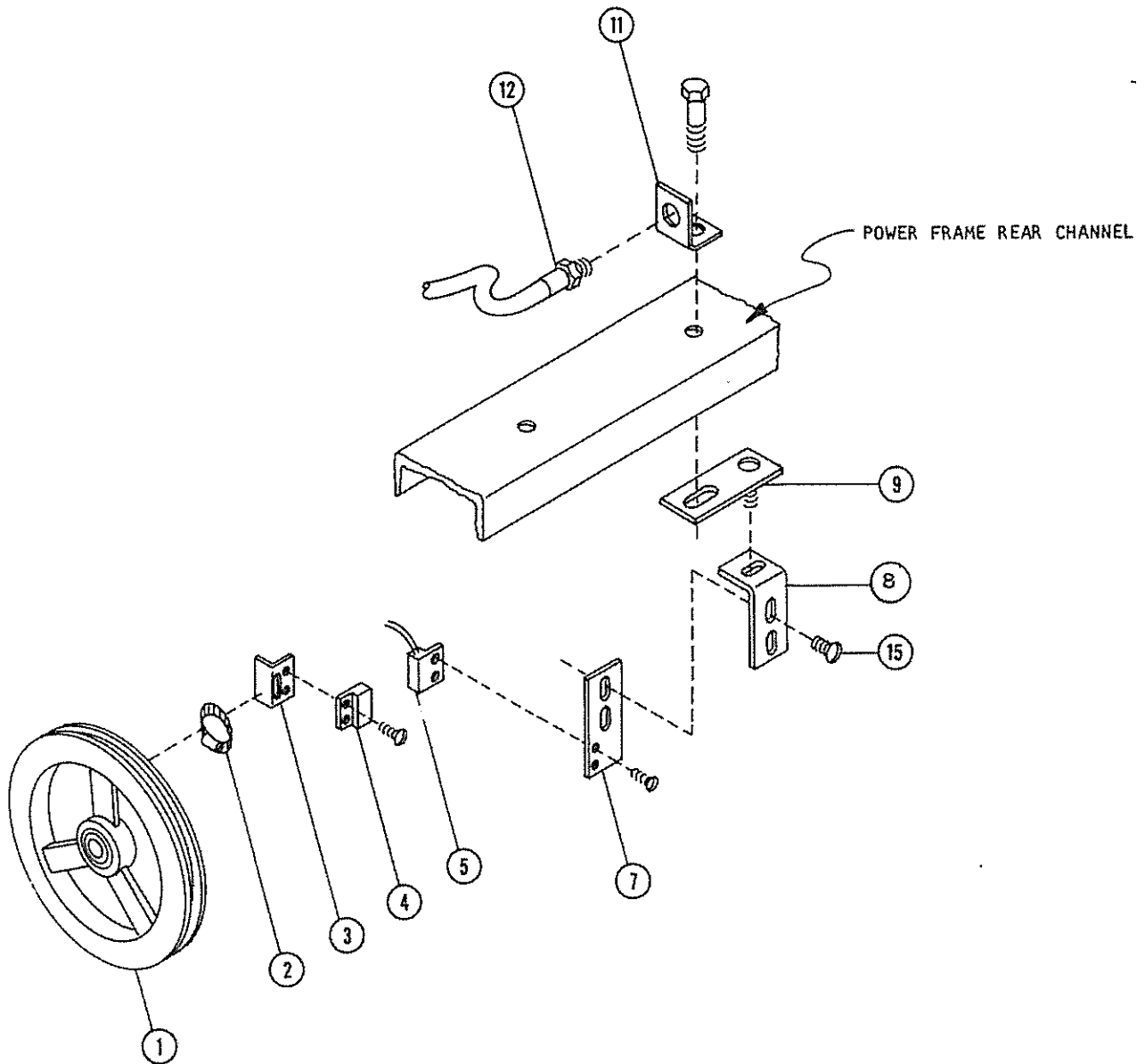
NOTE: For nuts, washers and lockwashers - see page 94

PTO SENSOR ASSEMBLY



REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
2	79065	1	Clamp, Sensor
3	D25900	1	Angle, Sensor
4	77247	1	Magnet
5	77248	1	Sensor, Pickup
15	71823	1	Screw, 1/4 x 1/2 Machine
16	D25795	1	Mount, PTO Sensor
17	D25830	1	Bracket, PTO

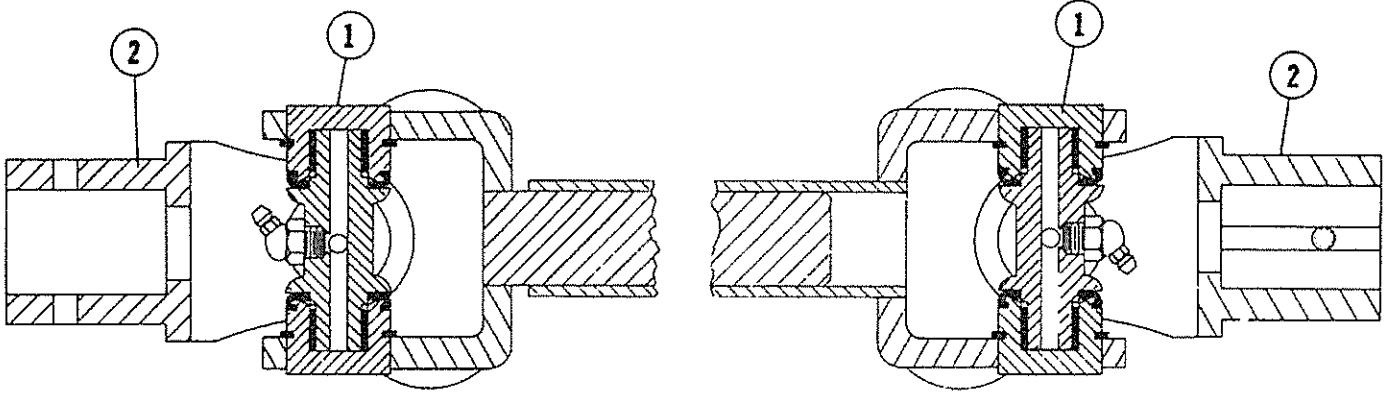
MICRO-PRO VERTICAL AUGER SENSOR ASSEMBLY



REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D22142	1	Sheave, Idler (U.S.)
	D22145	2	Sheave, Idler (Cast U.K.)
	D22146	1	Sheave, Idler (U.S.)
	D22147	2	Sheave, Idler (Cast 1C7 Poland)
2	79065	1	Clamp
3	D25900	1	Angle, Vertical Auger Sensor
4	77247	1	Magnet
5	77248	1	Sensor, Pickup
7	D25805	1	Bracket, Sensor Mtg.
8	D25880	1	Bracket, Upper
9	D25850	1	Tab, Sensor
11	D25820	1	Mount, Conduit
12	73157	1	Connector, 3/8 St
15	71823	3	Screw, 1/4 x 1/2 Machine

AGITATOR DRIVE TUMBLER (QF)
D59342

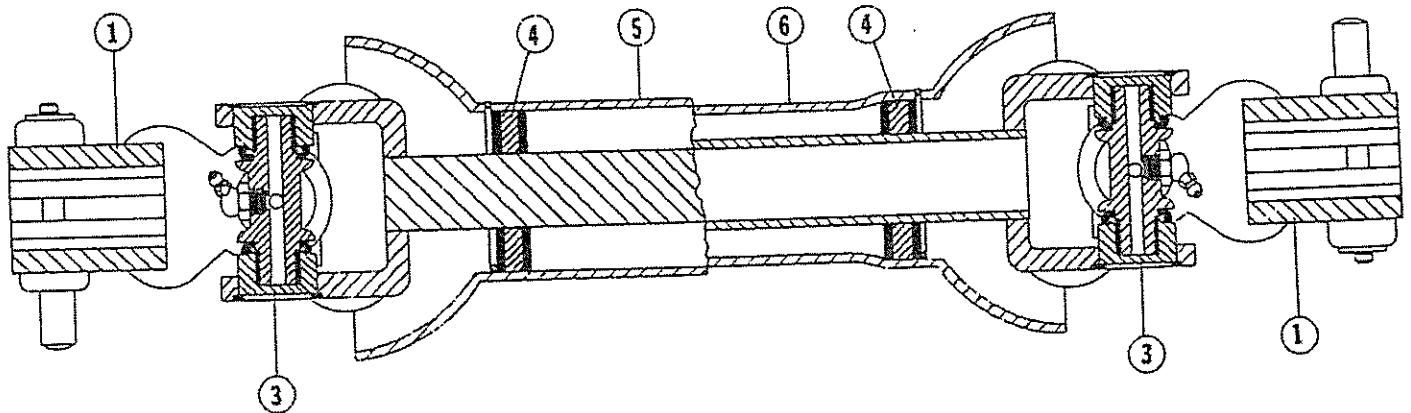
REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	75519	2	U-Joint Kit
2	42-16182	2	Yoke w/Keyway



NOTE: For nuts, washers and lockwashers - see page 94

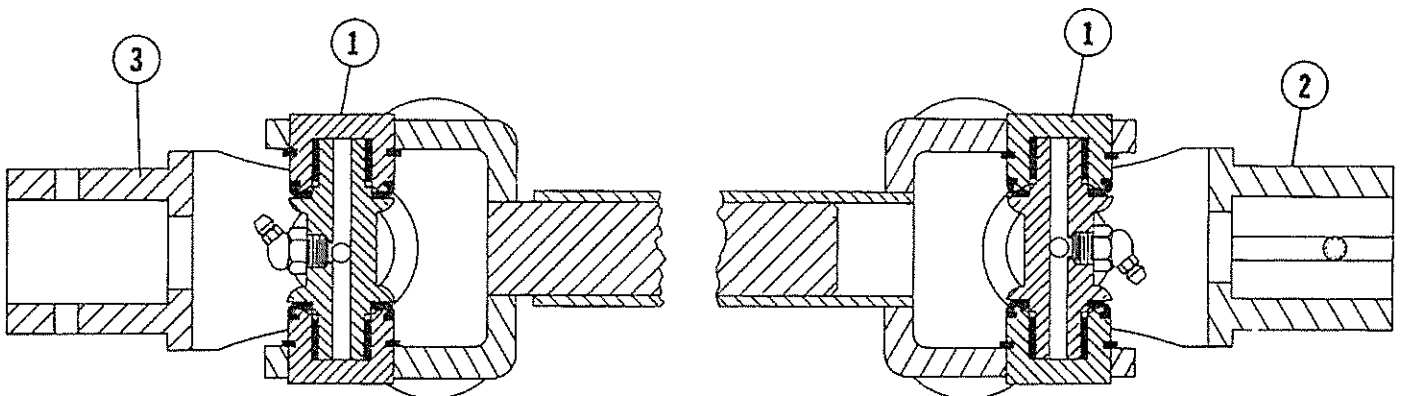
**PTO TUMBLER SHAFT
D52194
WATERSCHIED TUMBLER**

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	73299	2	Yoke w/Spine (WCHD)
3	73298	2	U-Joint Kit (Cross Kit WCHD)
4	75514	2	Nylon Bearing Kit
5	75516	1	Safety Shield, Outer
6	75515	1	Safety Shield, Inner



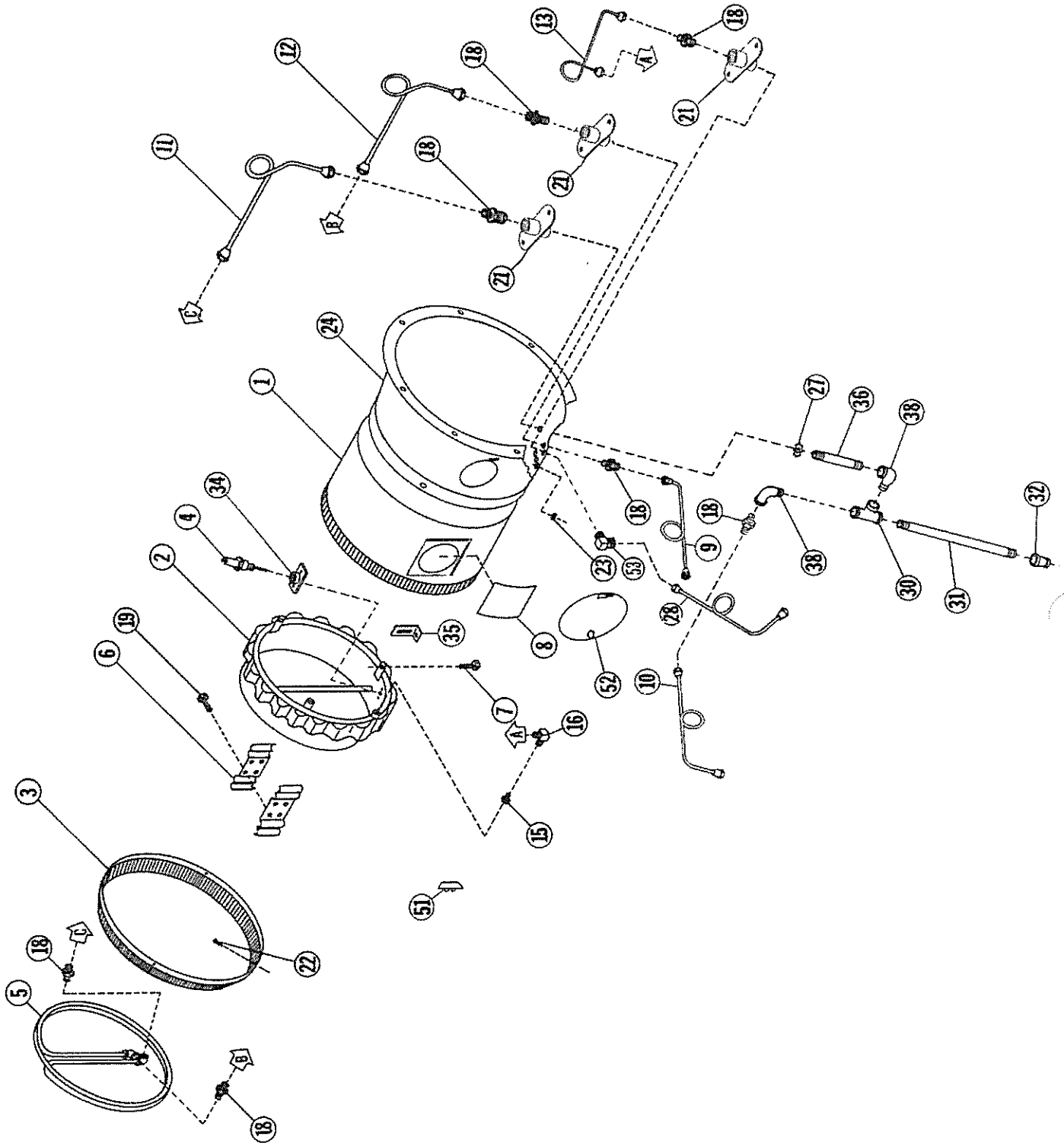
**AGITATOR DRIVE TUMBLER
D28250**

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	42-16181	2	U-Joint Kit
2	42-16182	1	Yoke w/Keyway
3	73596	1	Yoke w/Pin Hole



NOTE: For nuts, washers and lockwashers - see page 94

BURNER ASSEMBLY (QF)



BURNER ASSEMBLY (QF)

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D37210	1	Tube, Burner (Propane)
2	D22304	1	Burner, Ring (Propane)
3	D22690	1	Ring, Flame Deflector
4	D22320	1	Spark Plug
5	D22341	1	Vaporizer, Ring
6	57001242	2	Bracket, Vaporizer
7	71959	3	Bolt, Burner MR
8	D22462	1	Window, Plexiglass
9	D37245	1	Tube, Outside Liquid to Vapor
10	D37235	1	Tube, Outside Vapor to Plumb.
11	D22361	1	Tube, Inside Vapor
12	D22454	1	Tube, Inside Liquid
13	D22373	1	Tube, Inside Vapor to Burn
15	D22404	1	Orifice - LP
16	D32301	1	Holder, Orifice
18	73086	7	Adapter, 1/2" P. to 1/2" T. Union
19	71028	4	Capscrew, 5/16" x 1 1/4" Hex
21	D37330	3	Coupler, Union Brkt.
22	71942	4	Screw, No. 14 x 3/4" Metal
23	73270	2	Grommet, 3/8" I.D. Rubber
24	74160	1	Adaptor, Fan
25	72035	2	Screw, No. 8 x 1/4" Metal
27	77100	1	Nut, Conduit
28	D37231	1	Tube, Outside, Vapor to Burner
30	72947	1	Tee, 1/2" x 1/2" x 1/2" N.P.T.
31	72928	1	Nipple, 1/2" x 13"
32	72910	1	Reducer, 1/2" x 1/4"
33	72633	1	Plug, 1/4" N.P.T. Plug
34	57001241	1	Mount, Spark Plug
35	D32130	1	Bracket, Flame Detector Bulb Mount
36	72797	1	Nipple, 1/2" x 4 1/2" XH
38	72946	2	Elbow, 1/2" x 90° St.
51	D32370	1	Shield, Burner LP
52	D37205	1	Cover, Hole
53	73101	1	Adapter 90°

NOTE: For nuts, washers and lockwashers - see page 94



BURNER ASSEMBLY

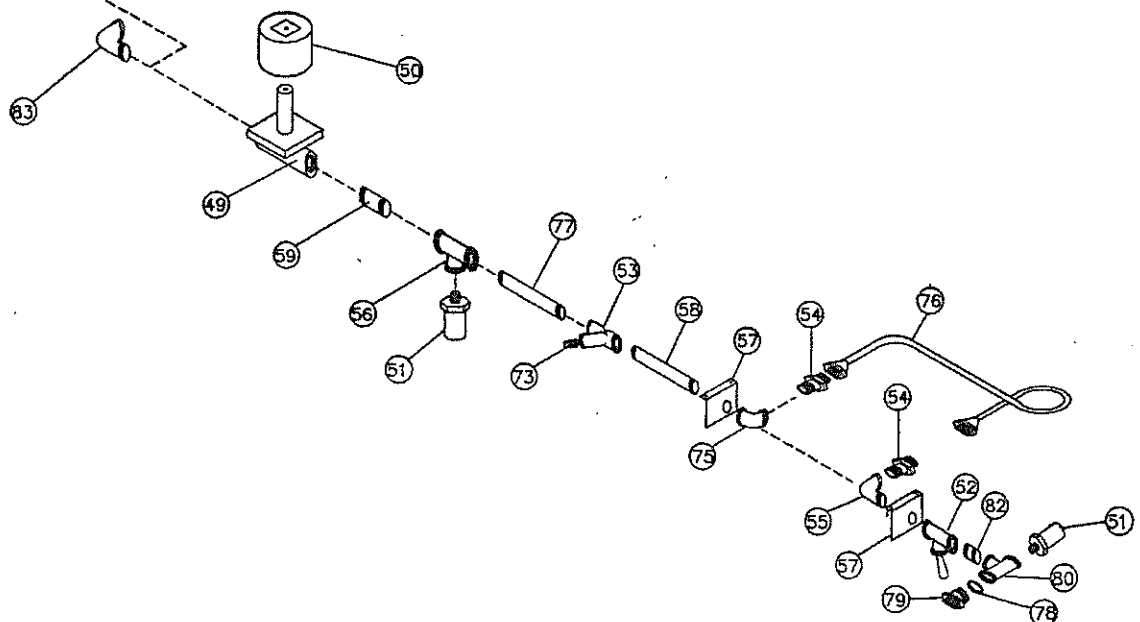
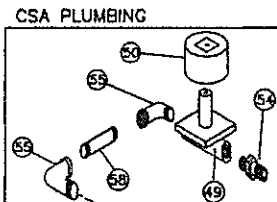
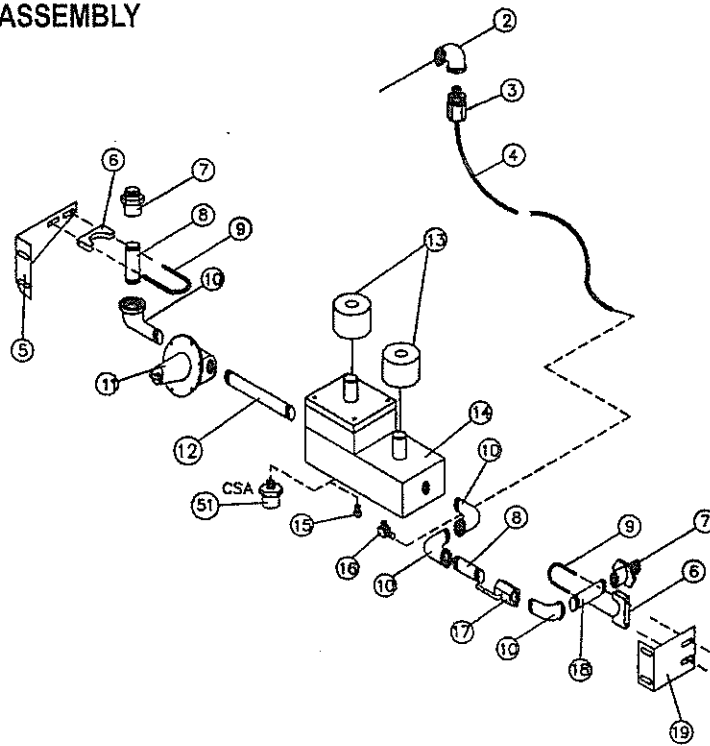
REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D22295	1	Tube, Burner (Propane)
1	D32960	1	Burner, Ring (Propane)
2	D22304*	1	Ring, Flame Deflector
2	D22305	1	Spark Plug
3	D22690	1	Vaporizer, Ring
4	D22320	2	Bracket, Vaporizer
5	D22341*	3	Bolt, Burner MR
6	57001242*	1	Window, Plexiglass
7	57001240	1	Tube, Outside Liquid to Vapor
8	D22462	1	Tube, Outside Vapor to Plumb.
9	D22333	1	Tube, Inside Vapor
9	D32331*@	1	Tube, Inside Liquid
10	D32312*	1	Tube, Inside Vapor to Burn
11	D22361*	1	Orifice - LP
12	D22454*	1	Holder, Orifice
13	D22373	1	Tube, Inside Vapor to Burner
14	D22352	1	Door, Inspection
15	D22404*	1	Orifice - LP
16	D32301*	1	Holder, Orifice
18	73086*	7	Adapter, ½" P. to ½" T. Union
19	71028*	4	Capscrew, 5/16 " x 1¼" Hex
21	D37330	3	Coupler, Union Brkt.
22	71942*	4	Screw, No. 14 x 3/4" Metal
23	73270	2	Grommet, 3/8" I.D. Rubber
24	71825	8	Machine Screw ¼" - 20 x 3/4" SL HD
25	72035	2	Screw, no. 8 x ¼" Metal
27	77100*	1	Nut, Conduit
28	D32321*	1	Tube, Outside, Vapor to Burner
29	72790*	1	Nipple, ½" Close
30	72886*	1	Tee, ½" x ½" x ½" N.P.T.
31	72928*	1	Nipple, ½" x 13"
32	72910*	1	Reducer, ½" x ¼"
33	72633*	1	Plug, ¼" N.P.T. Pipe
34	57001241	1	Mount, Spark Plug
35	D32130	1	Bracket, Flame Detector Bulb Mount
36	72797*	1	Nipple, ½" x 4½" XH
37	72793*	1	Nipple, ½" x 2½" XH
38	72858*	1	Elbow, ½" x 90° St.
39	72843*	1	Elbow, ½" x 90°

NOTE: For nuts, washers and lockwashers - see page 94

NOTE: *Propane Burners Only

NOTE: @CSA Dryers Only

PROPANE CONTROL CABINET ASSEMBLY MICRO-PRO



**PROPANE CONTROL CABINET ASSEMBLY
MICRO-PRO**

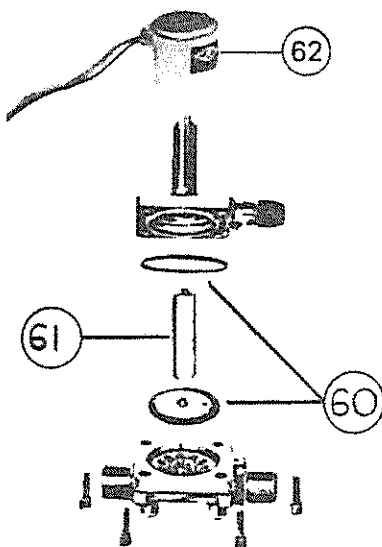
REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D25102	1	Gauge, Pressure
2	72841	1	Elbow, 1/4" x 90 Degree
3	73110	1	Connector, 1/4" Tee to 1/4" Pipe
4	D55310	1	Line, Pressure Gauge
5	D25632	1	Bracket, Rear Plumbing
6	D25610	2	Clamp, 1/2" Saddle
7	73071	2	Connector, 1/2" Tee to 1/2" Pipe
8	72792	2	Nipple, 1/2" x 2"
9	71987	2	U-Bolt
10	72858	4	Elbow, 1/2" Street
11	D25191	1	Regulator, 1/2" Pressure
12	72799	1	Nipple, 1/2" x 6" SCD80
13	77575	2	Coil, Solenoid Block
14	77587	1	Valve, 1/2" Solenoid Block
15	73146	1	Plug, 1/4" NPP Brass
16	73047	1	Elbow, 90° Brass, 1/4" Tee to 1/4" M.N.P.T.
17	74123	1	Valve, Ball
18	72793	1	Nipple, 1/2" x 2 1/2"
19	D25620	1	Bracket, Front Plumbing
32	D25252	1	Bracket, Solenoid
35	D25862	1	Cabinet
36	D25512	1	Door, Cabinet
37	74618	1	Decal Wiring
38	74619	1	Decal, Sequence
39	D25161	1	Flame Detector
40	77231	1	Block, Terminal
41	73159	5	Connector, 3/8" x 90 Degree
42	73166	Per Ft.	Conduit, 3/8" Liquidtite
43	73157	1	Connector, 3/8" Straight
44	D32020	1	Tube, Air Switch
45	72279	1	Nut, 1" NF Hex
46	K25030	1	Air Switch
47	77228	1	Coil
48	71683	2	Screw, 10-24 x 1/2" Machine
49	77640	1	Body, 3/8" N.P.T. Solenoid Valve (2 for CSA)
50	77641	1	Coil, Solenoid Valve 12 Volt (2 for CSA)
51	D25240	2	Valve, 1/4" N.P.T. Relief (3 for CSA)
52	D25120	1	Valve, 3/8" N.P.T. Quick Acting
53	D25280	1	Strainer, 3/8" N.P.T.
54	73085	2	Connector, 1/2" Tube to 3/8" M.N.P.T. (3 for CSA)
55	72944	1	Elbow, 3/8" N.P.T. Street (3 for CSA)
56	72956	1	Tee, 3/8" N.P.T.
	72980	1	Bushing, 3/8 x 1/4" Red
57	D25272	1	Bracket, Plumbing
58	72784	1	Nipple, 3/8" N.P.T. x 3" X.H. CSA
59	72781	3	Nipple, 3/8" N.P.T. x 1 1/2" X.H.
60	73278	2	Grommet
61	73270	2	Grommet, 3/8" I.D. Rubber
62	77188	1	Holder, In-Line Fuse
63	77268	1	Fuse, 7 Amp
64	73110	1	Fitting, 1/4" Tee to 1/4" Pipe
65	77229	1	Bracket Coil
66	77267	2	Block, Terminal
67	74658	1	Decal Starting Instructions
	D22200	1	Wire, Tractor Lead-In
71	72673	1	Plug, 1/2" N.P.T. Pipe
73	72653	1	Plug, 3/8" N.P.T. Pipe
74	D25275	1	Bracket
75	72948	1	Elbow, 3/8" N.P.T.
76	D57242	1	Tube, Liquid Copper
77	72787	1	Nipple, 3/8" x 4 1/2"
78	72595	1	Washer
79	90037	1	Connector, 1/2" Hose to 3/8" N.P.
80	72956	1	Tee, 3/8"
	72890	2	Bushing 3/8" x 1/4" Reducer
82	72780	1	Nipple, 3/8" Close
	77245	Per Ft.	Wire, Spark Plug
	73268	1	Terminal, Spark Plug
	77249	1	Terminal, Straight
	77250	1	Boot
83	73100	1	Elbow, 1/2" Tee to 3/8" NPT x 90 Degree Male

NOTE: For nuts, washers and lockwashers - see page 94

PROPANE CONTROL CABINET ASSEMBLY MICRO-PRO

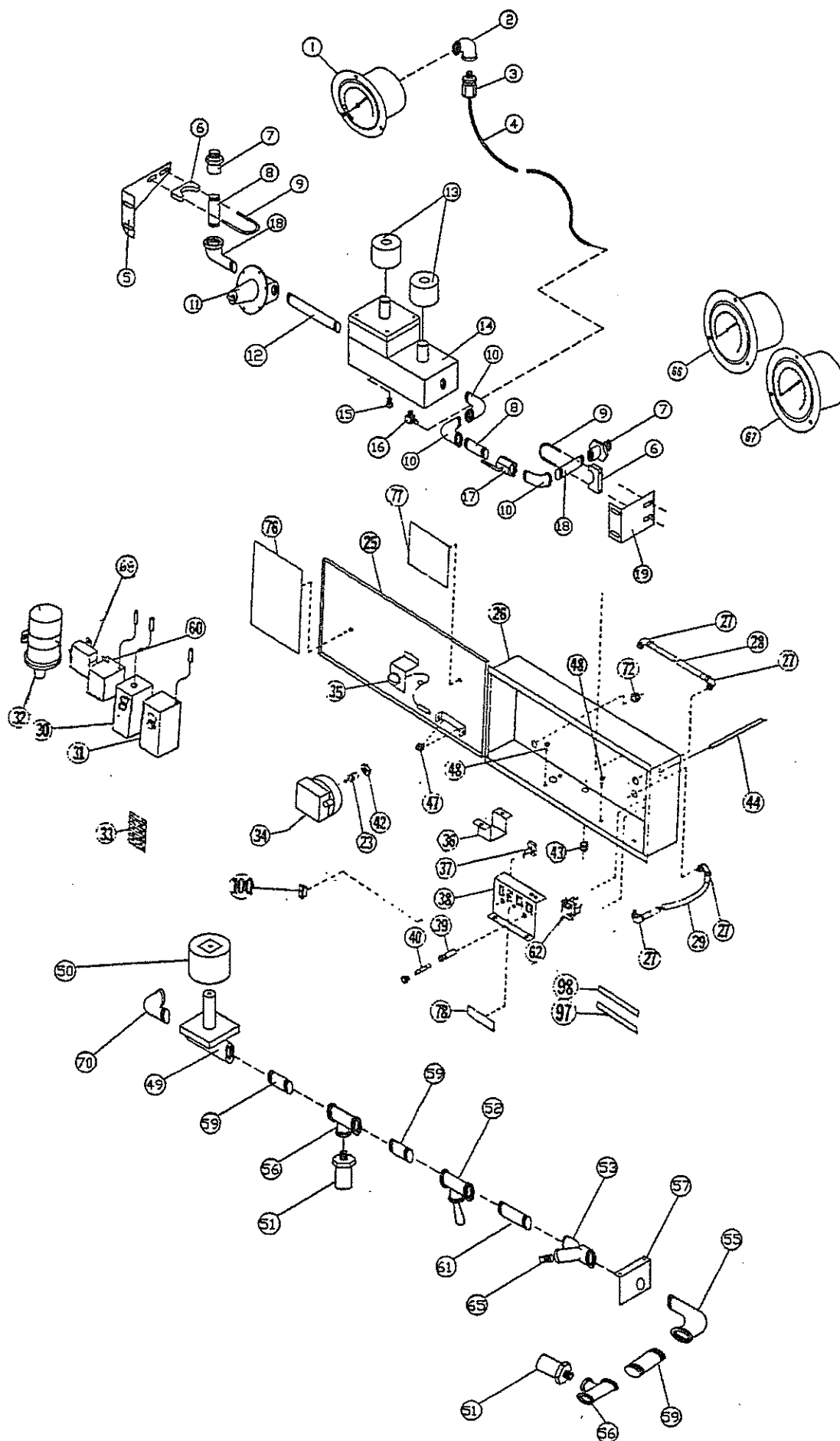
REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
60	73278	2	Grommet
61	73270	2	Grommet
62	77188	1	Holder, In-Line Fuse
63	77268	1	Fuse, 7 Amp
64	73110	1	Fitting, ¼ T to ¼ Pipe
65	77229	1	Bracket, Coil
66	77267	2	Block, Terminal
67	74658	1	Decal, Starting Instructions
	D22200	1	Wire, Tractor Lead-In
71	72673	1	Plug, ½" N.P.T. Pipe
73	72653	1	Plug, 3/8" N.P.T. Pipe
74	D25275	1	Bracket
75	72948	1	Elbow, 3/8" N.P.T.
76	D57242	1	Tube, Liquid Copper
77	72787	1	Nipple, 3/8" N.P.T. x 4½"
78	72595	1	Washer
79	90037	1	Connector, ½" Hose to 3/8 N.P.T.
80	72956	1	Tee, 3/8
	72890	2	Bushing, 3/8" to 1/4" Reducer
82	72780	1	Nipple, 3/8" Close
	77245	Per Ft	Wire, Spark Plug
	73268	1	Terminal, Spark Plug
	77249	1	Terminal, Straight
	77250	1	Boot
83	73100	1	Elbow, ½"T - 3/8 N.P.T.

SOLENOID VALVE ASSEMBLY



REF. NO.	PART NO.	DESCRIPTION
60	77507	Kit, 3/8" Solenoid Valve Diaphragm Repair
60	77508	Kit, ½" Solenoid Valve Diaphragm Repair
60	77506	Kit, 1" Solenoid Valve Diaphragm Repair (Natural Gas)
62	77641	Coil, 12 Volt Solenoid Valve, 27" Leads w//Forks

PROPANE CONTROL CABINET ASSEMBLY NON-MICRO



PROPANE CONTROL CABINET ASSEMBLY

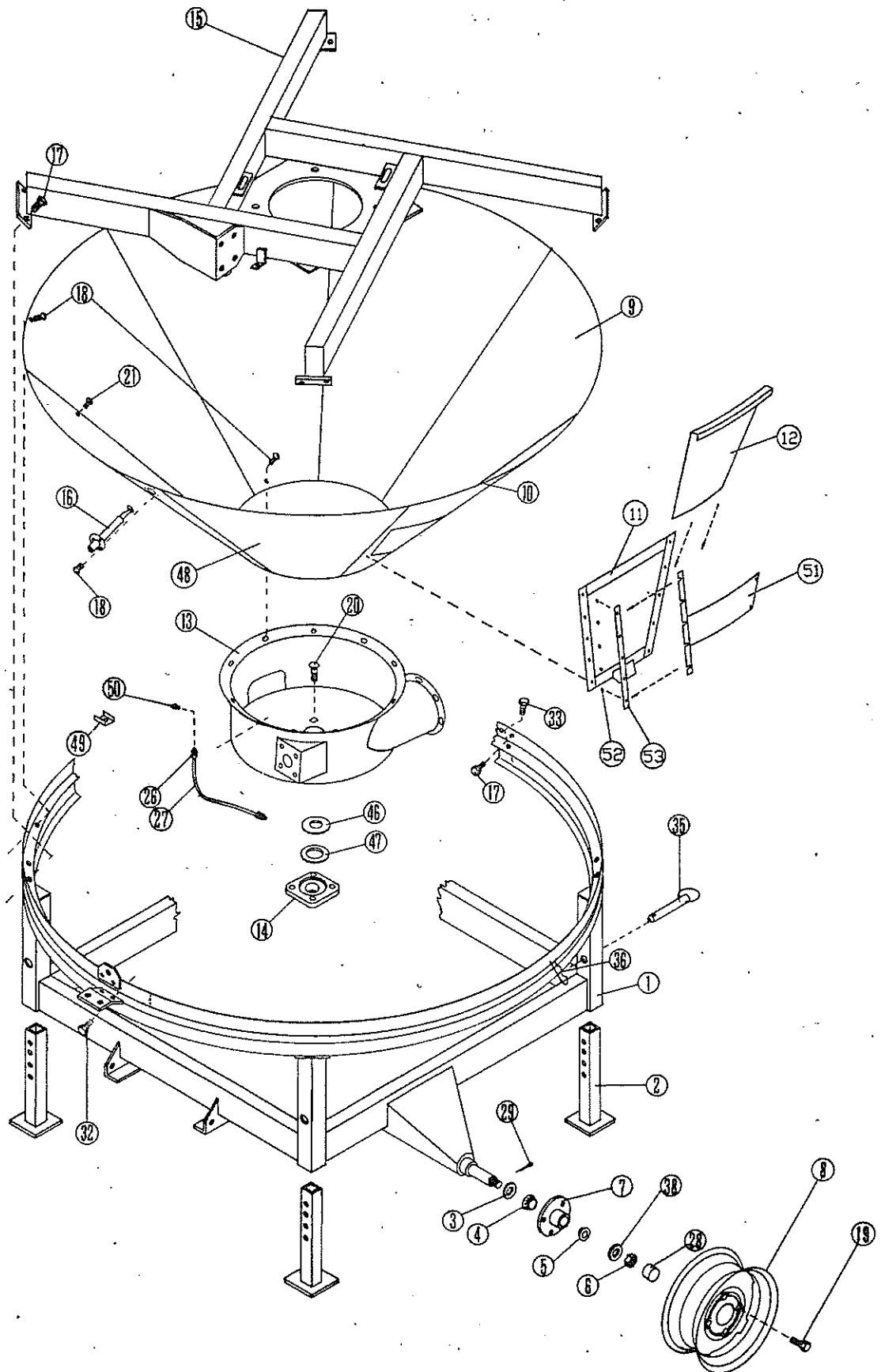
REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D25102	1	Gauge, Pressure
2	72841	1	Elbow, 1/4" x 90 Degree
3	73110	2	Connector, 1/4" Tee to 1/4" Pipe
4	D55310	1	Line, Pressure Gauge
5	D25632	1	Bracket, Rear Plumbing
6	D25610	2	Clamp, 1/2" Saddle
7	73071	2	Connector, 1/2" Tee to 1/2" Pipe
8	72792	2	Nipple, 1/2" x 2"
9	71987	2	U-Bolt
10	72858	4	Elbow, 1/2" Street
11	D25191	1	Regulator, 1/2" Pressure
12	72799	1	Nipple, 1/2" x 6" SCD80
13	77575	2	Coil, Solenoid Block
14	77587	1	Valve, 1/2" Solenoid Block
15	73146	1	Plug, 1/4" NPP Brass
16	73047	1	Elbow, 90 Degree Brass, 1/4" Tee To 1/4" M.N.P.T.
17	74123	1	Valve, Ball
19	D25620	1	Bracket, Front Plumbing
25	D25511	1	Door, Cabinet
26	D25503	1	Cabinet
27	73159	4	Connector, 3/8" Conduit x 90 Degree
28	D25261	1	Conduit, 16" Long
29	D25263	1	Conduit, 12" Long
30	D25770	1	Switch Plenum
31	K25231	1	Thermostat, Grain Temperature
32	77228	1	Coil, Ignition, 12 Volt
33	77230	1	Block, Terminal
34	K25030	1	Switch, Air
35	73223	1	Light, Utility 12 Volt Only
36	D25252	1	Bracket, Solenoid
37	D25130	1	Switch, On-Off
38	D25212	1	Bracket, Switch
39	D25170	1	Holder, Fuse
40	77143	1	Fuse, 10 Amp
41	72093	2	Screw, No. 8 x 1" Metal
42	72279	1	Nut, 1" N.F. Hex Ham
43	73278	1	Grommet, 5/8" I.D. Rubber
44	D52321	1	Tube, Air Switch
	D22200	1	Wire, Tractor Lead-In

PROPANE CONTROL CABINET ASSEMBLY

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
47	73271	2	Grommet, 1/4" I.D. Rubber
48	71683	5	Screw, 10-24 x 1/2" Slotted Head Machine
49	77640	1	Body, 3/8" N.P.T. Solenoid Valve
50	77641	1	Coil, Solenoid Valve 12 Volt
51	D25240	2	Valve, 1/4" N.P.T. Relief
52	D25120	1	Valve, 3/8" N.P.T. Quick Acting
53	D25280	1	Strainer, 3/8" N.P.T.
54	73085	1	Connector 1/2" Tube to 3/8" M.N.P.T.
55	72857	1	Elbow 3/8" N.P.T. Street
56	72956	2	Tee, 3/8" N.P.T.
	72980	2	Bushing, 3/8" x 1/4" Red
57	D25272	1	Bracket, Plumbing
59	72781	3	Nipple, 3/8" N.P.T. x 1 1/2" X.H.
60	D25161	1	Flame, Detector
61	72782	1	Nipple, 3/8" x 2"
62	D25140	1	Switch, Plush to Start
63	72793	1	Nipple, 1/2" x 2 1/2"
65	72653	1	Plug, 3/8" N.P.T. Pipe
66	D24033	1	Thermometer, Plenum
67	D24123	1	Thermometer, Grain
68	77384	1	Booster, Spark
69	72035	3	Screw, No. 8 x 1/4" Metal
70	73100	1	Elbow, 1/2" Tee To 3/8" NFT x 90 Degree Male
72	73270	2	Grommet, 3/8" I.D. Rubber
76	74714	1	Decal, Operating Instruction - Propane
77	74715	1	Decal, Wiring Diagram
78	73962	1	Decal, Push To Start
97	74531	1	Decal, Red Indicator
98	74530	1	Decal, Green Indicator
100	77162	4	Light, Indicator

NOTE: For nuts, washers and lockwashers - see page 94

FRAME ASSEMBLY



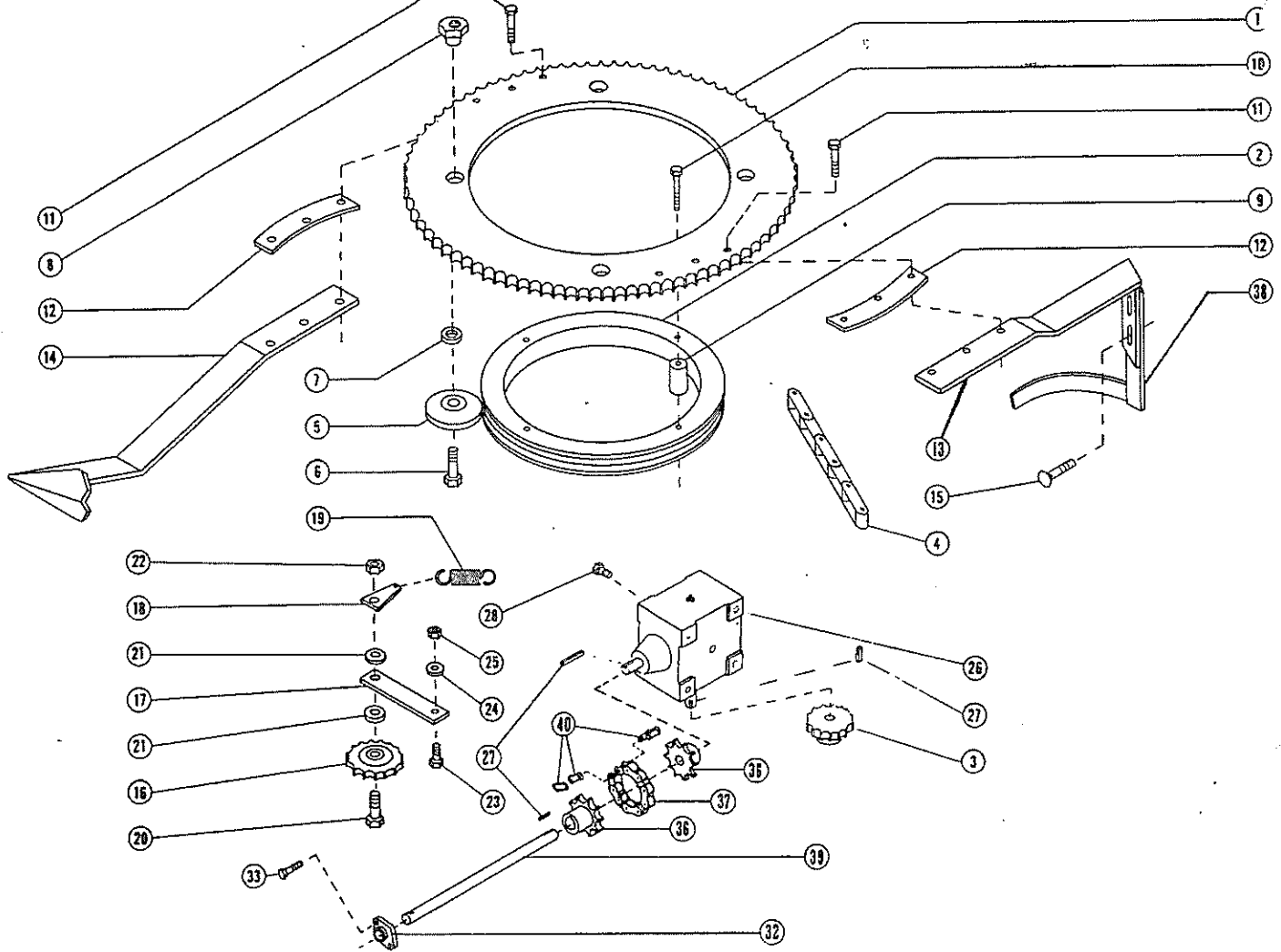
FRAME ASSEMBLY

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D21013	1	Main Welded Frame
2	D21021	4	Jack
2	D21022	4	Jack, Adjustable
3	D21190	2	Seal
4	42-110149	2	Inner Bearing
5	D21050	2	Outer Bearing
6	D21060	2	Nut
7	D21075	2	Hub with Bearing Cups
8	D21080	2	Wheel Rim 15"
	D21085	2	Wheel, Tire & Tube Mounted
9	D21450	5	Bin Bottom Sheet (Perf. Coated)
10	D21460	1	Bin Bottom Sheet w/Access Hole (Perf. Coated)
11	D21124	1	Access Door Frame
12	D21133	1	Access Door
13	D21141	1	Bin Bottom Well w/Boot
14	D21161	1	Bottom Auger Bearing
15	D21172	1	Spider
16	D21182	1	Grain Sampler
	D21340	1	Half, Inner Sampler
	D21350	1	Half, Outer Sampler
17	71053	16	3/8" x 1 1/4" Capscrew
18	71923	114	1/4" - 20 x 1/2" Slotted HD Machine Screw
19	42-16053	8	Stud
20	71329	4	1/2" x 1 1/2" Carriage Bolt
21	71922	75	1/4" - 20 x 3/8" Slotted HD Machine Screw
23	42-16127	1	1/8" Zerk
26	73109	2	3/16" Compression Fittings with 1/8" Pipe Thread
27	73150	1	Lower Bearing Grease Line (QF only)
27	73332	1	Zerk, 1/8" Female (QF only)
28	D21200	2	Cap
29	73527	2	5/32" x 1 1/4" Cotter Pin
33	71054	2	3/8" x 1 1/2" Capscrew
34	71825	2	1/4" - 20 x 3/4" Slotted HD Machine Screw
35	73586	4	Pin
36	73587	4	Clip
38	72474	2	3/4" Washer
46	73289	1	Seal, 2" I.D. Neoprene Shaft
47	73290	1	Seal, 2.72" I.D. Neoprene Bearing
48	D21400	1	Bin Bottom Sheet (Solid)
49	D29560	3	Clip
50	73048	1	Zerk, 1/8" Female (QF only)
50	42-16127	1	Zerk, 1/8" Grease
51	D21500	1	Track
52	72488	6	Washer
53	D21136	1	Bar, Safety
	74716	1	Decal, Safety
	73287	1	Rubber, Access Door Frame

NOTE: For nuts, washers and lockwashers - see page 94

AGITATOR ASSEMBLY

TOP VIEW

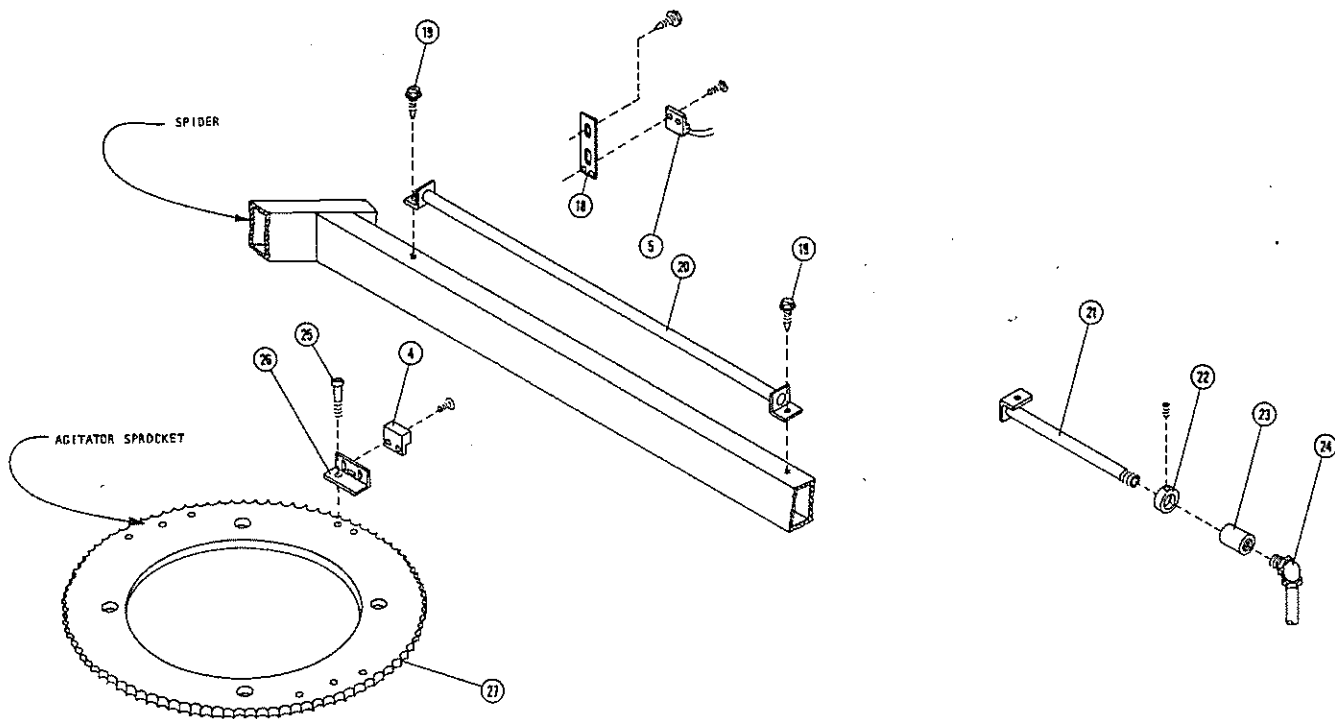


AGITATOR ASSEMBLY

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D28033	1	Sprocket, No. 60, 112 Teeth
2	D28260	1	Race, Agitator
3	D28090	1	Sprocket, No. 60, 13 Teeth
4	D28141	1	Chain, Roller No. 60, 128 Pitches
5	D28161	4	Roller, Agitator w/Bearings
	D28300	8	Bearing (Only) - Agitator Roller
6	73521	4	Capscrew, 3/4" x 2 3/4" HT
7	72522	4	Washer
8	D28204	4	Nut, Cam
9	D28270	4	Spacer
10	73519	4	Capscrew, 7/16" x 5" HT
11	71081	6	Capscrew, 7/16" x 2"
12	D28082	4	Spacer
13	D28211	1	Arm, Horiz. Sect. Vertical Agitator
14	D28062	1	Arm, Horizontal Agitator
15	71331	2	Bolt, 1/2" x 2" Carriage
16	D28172	1	Sprocket, No. 60 Idler, 15 Tooth
17	D28181	1	Arm, Idler
18	D28280	1	Tab, Spring
19	D28190	1	Spring
20	71132	1	Capscrew, 5/8" x 2 1/4"
21	72413	2	Washer
22	72376	1	Nut, 5/8" Lock
23	71103	1	Capscrew, 1/2" x 1 1/4"
24	72412	1	Washer, 1/2"
25	72379	1	Nut, 1/2" Lock
26	D28241	1	Gearbox
27	73400	3	Key, 1/4" Square x 1 1/4" Lg.
28	71052	4	Capscrew, 3/8" x 1"
32	D28290	1	Bearing
33	71029	2	Capscrew, 5/16" x 1 1/2"
36	D28330	2	Coupler Half, 60B 10 x 1
37	D28331	1	Chain, No. 60 Roller 9 Pitch
38	D28221	1	Paddle, Vertical Agitator Arm
39	D28123	1	Shaft, Agitator
39	D28124	1	Shaft, Agitator (QF Only)
40	73368	1	Link, No. 60 Roller Chain Connecting

NOTE: For nuts, washers and lockwashers - see page 94

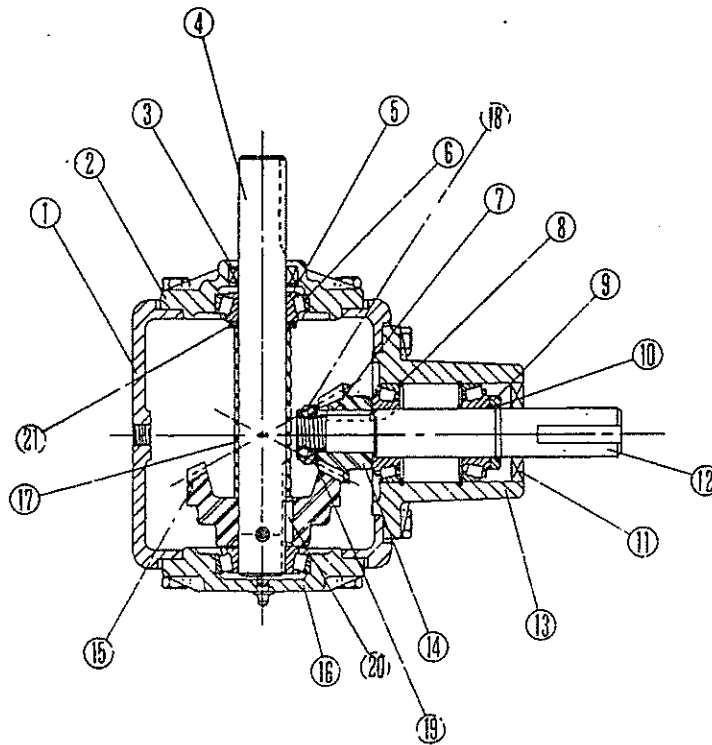
AGITATOR SENSOR ASSEMBLY



REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
* 4	77247	1	Magnet
* 5	77248	1	Sensor, Pickup
*18	D25790	1	Bracket, Agitator Sensor Mtg.
*19	71942	3	Screw, # 14 x 3/4"
*20	D24255	1	Pipe, Agitator Sensor Spider
21	D24260	1	Pipe, Agitator Sensor Grain Wall
22	D22130	1	Collar Set
23	72836	1	Coupler, 1/2"
24	73159	1	Elbow, 3/8" Conduit
*25	71688	1	Screw, #10 x 3/4"
*26	D25900	1	Angle, Agitator Sensor Mtg.
27	S28033	1	Sprocket, Agitator

* Micro-Pro Only

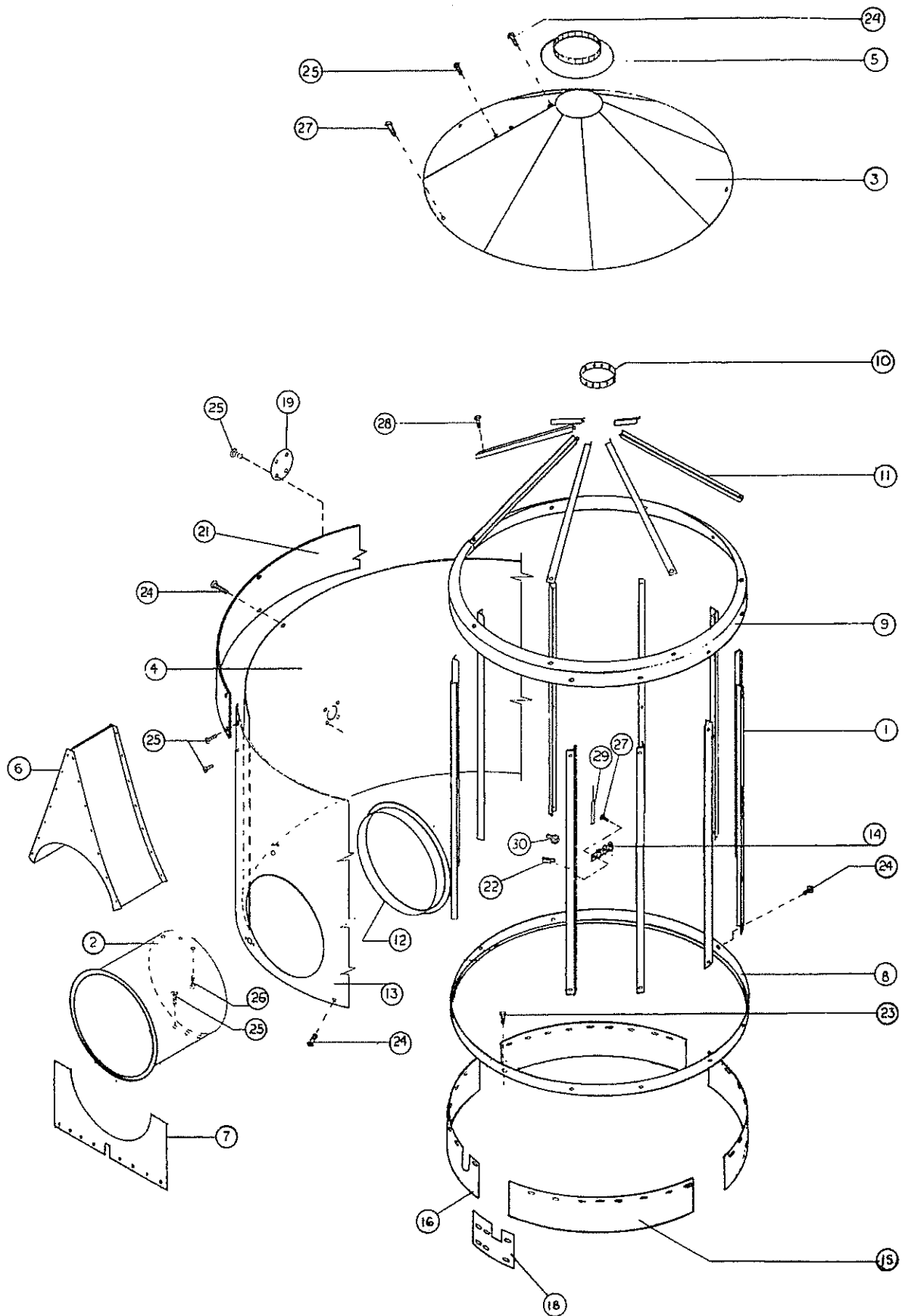
**GEARBOX ASSEMBLY
GT D28241**



Identification No. D28241 is located on a metal tag under cap bolt.

REF. NO.	PART NO.	DESCRIPTION
1	77400	Housing
2	42-16144	Cap
	42-16152	Sems Cap Screws
3	42-16146	Seal
4	77401	Shaft
5	42-16147	Bearing Cone
6	42-16148	Bearing Cup
	42-16155	Gasket (.015)
	42-16156	Gasket (.005)
7	77402	Key
8	77403	Retaining Ring
9	77404	Collar
10	77405	Retaining Ring
11	77406	Seal
12	77414	Shaft
13	77408	Cap
14	77079	Gear
15	77080	Gear
16	77412	Cap
17	42-90058	Spacer
18	77410	Locknut
19	77409	Washer
20	77411	Key
21	42-90057	Washer
	42-16151	Roll Pin
	77413	Pipe Plug (Solid
	72924	Relief Valve
	72921	Reducer

PLENUM ASSEMBLY



PLENUM ASSEMBLY

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D33010	21	Plenum Frame Angle
2	D23020	1	Tube, Connecting
3	D23340	7	Sheet, Lid
4	D33210	1	Sheet, w/o Connecting Tube Hole
5	D23051	1	Cap, Cone
6	D23061	1	Saddle
7	D23070	1	Enclosure, Front
8	D23080	1	Band, Lower
9	D23100	1	Band, Transition
10	D23110	1	Ring, Top
11	D23120	14	Angle, Lid Frame
12	D23130	1	Ring, Connecting Tube Hole
13	D23140	1	Sheet, w/Connecting Tube Hole
14	D23161	2	Bracket, Thermometer Support
15	D23172	3	Skirt
16	D23182	1	Skirt, w/Slot
18	D23192	4	Splices, Plenum Skirt
19	D24210	1	Plate, Cover
21	D33220	2	Sheet, Extension Strip
22	D23210	2	Clip, Push On
23	71052	4	3/8" x 1" Capscrew
24	71825	44	Machine Screw, 1/4" - 20 x 3/4" Slotted Truss Head
25	71822	136	Machine Screw, 1/4" - 20 x 3/8" Slotted Truss Head
26	71942	7	No. 14 x 3/4" Metal Screw (Self-Tapping)
27	71823	92	Machine Screw 1/4" - 20 x 1/2" Slotted Truss Head
28	71001	14	Capscrew, 1/4" x 3/4"
*29	77271	1	Sensor, Temperature Plenum
30	77585	1	Sensor, High Limit Control, Kit
	D23230	1	Bracket, High Limit Control
	77567	1	Sensor, High Limit Control
	72958	1	Nut, Brass
	72522	1	Spacer

* Micro-Pro Only

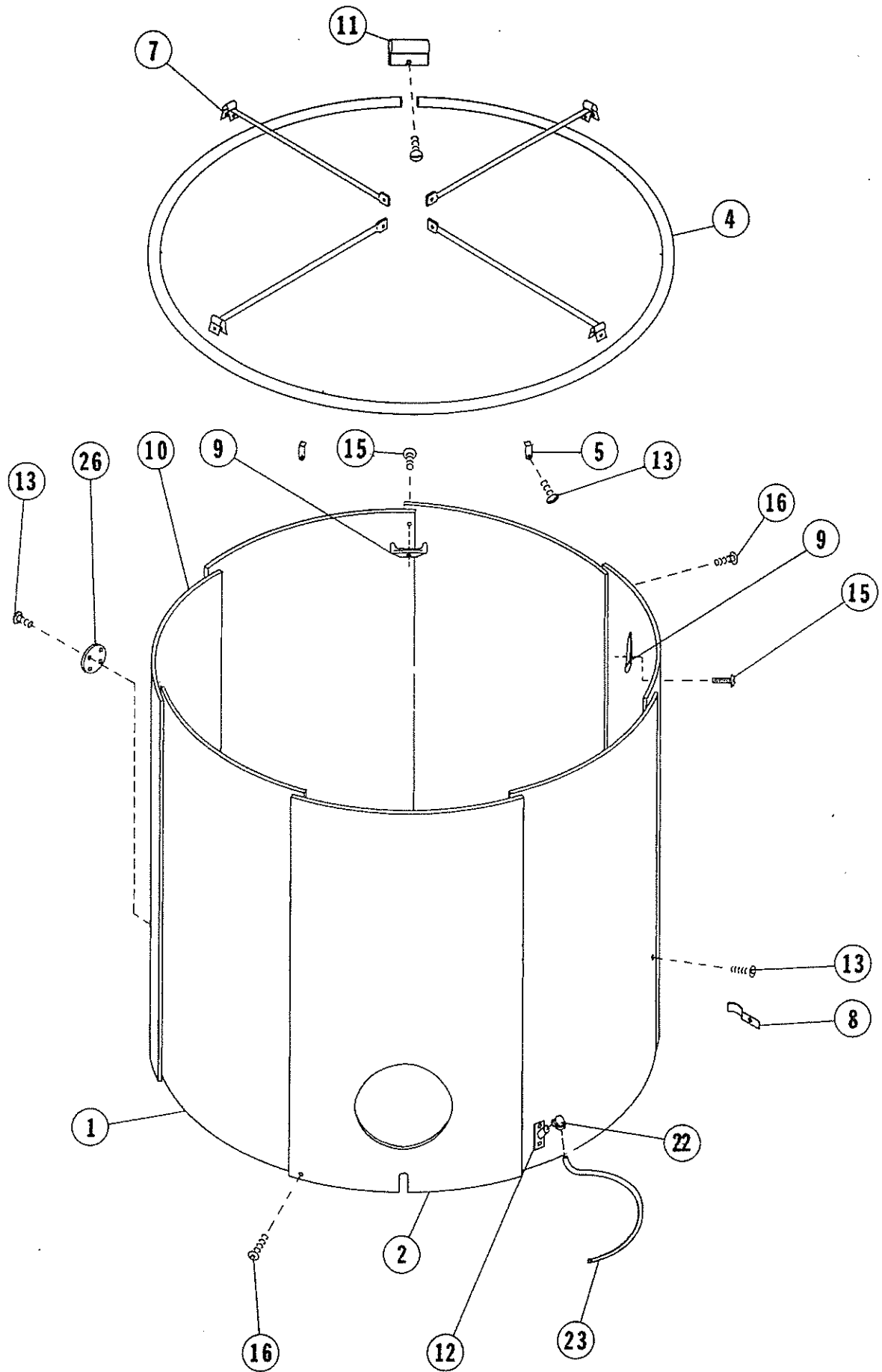
This diagram illustrates the exploded view of a mechanical assembly, likely a vertical pump or motor. The components are numbered 1 through 40. The main vertical shaft (1) is the central component, surrounded by various housing parts (9, 11, 12, 13, 14, 15, 16, 18, 19, 21, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40). The assembly includes a base (4) with a wheel-like structure, a top cap (2), and various internal components like a rotor (18) and a stator (11). The diagram shows the relative positions and assembly sequence of these parts.

AUGER ASSEMBLY

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D26013	1	Swivel Head
2	D21161	1	2" Flange Bearing
3	D26020	1	Upper Stub Shaft
4	76090	1	Sheave 1c 18.0 L/SF Hub
	76045	1	HUB 2" SF QD
6	D26065	2	Clamp, Support (at Spider)
7	D36071	1	Spout
8	D36081	1	Spout Control Handle
	03518	1	Grip, Handle
9	D26091	1	Head Baffle, Side
10	D26101	1	Lower Stub Shaft
11	D36111	1	Auger Tube (Top Section)
12	D36121	1	Auger Tube (Bottom Section)
13	D36131	1	Flighting (Top Section)
14	D36141	1	Flighting (Bottom Section)
15	D26150	1	Stub Connecting Shaft
16	D26162	2	Inspection Hole Cover
17	D26170	1	Split Auger Support
18	71329	6	½" x 1½" Carriage Bolt
19	71056	10	3/8" x 2" Capscrew
20	73520	8	5/8" x 3½" Capscrew
21	71001	4	¼" x ¾" Capscrew
22	73417	1	½" x ½" x 1½" Key
23	D41030	2	Cleaning Attachment Band
24	71052	10	3/8" x 1" Capscrew
	73180	1	Flighting Repair Section
25	D26180	1	Head Baffle, Top
26	D26190	1	Head Baffle, Spout Cover
27	D26200	1	Head Baffle, Spout
28	71825	24	¼" - 20 x ¾" Slotted HD Machine Screw
29	72424	1	2" Washer
30	D26220	1	Grain Cleaner Hole Cover
31	71054	4	3/8" x 1½" Capscrew
	DA26000		Head Baffle Assy. (Includes Items 1, 9, 25, 26 & 27)
32	D26057	2	Clamp Brace
40	69503	1	Snap Ring

NOTE: For nuts, washers and lockwashers - see page 94

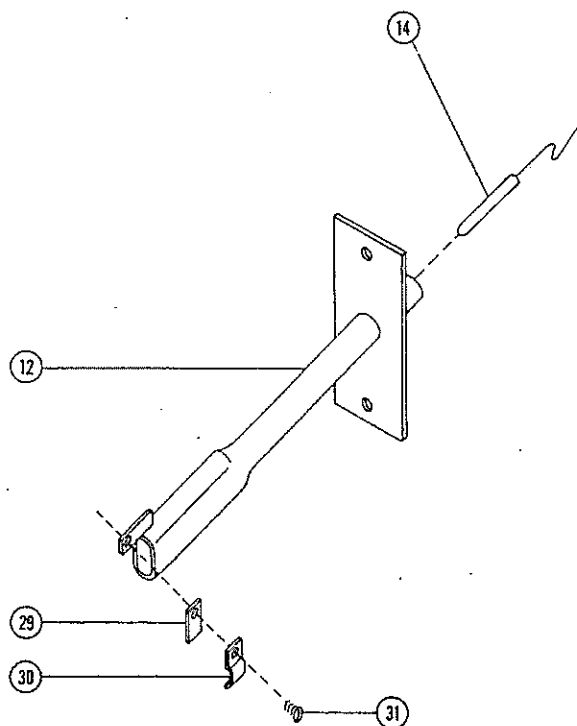
OUTSIDE SKIN ASSEMBLY



OUTSIDE SKIN ASSEMBLY

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D34260	5	Outside Sheet 46" x 113½" Fine Perforated, Coated
2	D34240	1	Outside Sheet with Hole Fine Perforated, Coated
4	D24040	1	Cap Ring
5	D24050	6	Ring Holder
7	D24072	4	Auger Brace
8	D24080	1	Spout Control Catch
9	D24091	2	Spout Support
10	D34250	1	Outside Sheet w/Hole for Grain Cleaner - Fine Perf., Coated
11	D24110	1	Rim Connector
*12	D24240	1	Grain Temperature Capillary Support Bracket
12	D24131	1	Bracket, Grain Capillary
13	71822	192	¼" - 20 x 3/8" Slotted HD Machine Screw
15	71825	16	¼" - 20 x ¾" Slotted HD Machine Screw
16	71823	85	¼" - 20 x ½" Slotted HD Machine Screw
22	73159	2	Elbow, 3/8 Liquidite
*23	D25267	1	Liquidite Conduit
23	D54191	1	Conduit
26	D24210	1	Cover Plate
	73966	1	Logo, GT
	D22491	1	Bracket, Conduit

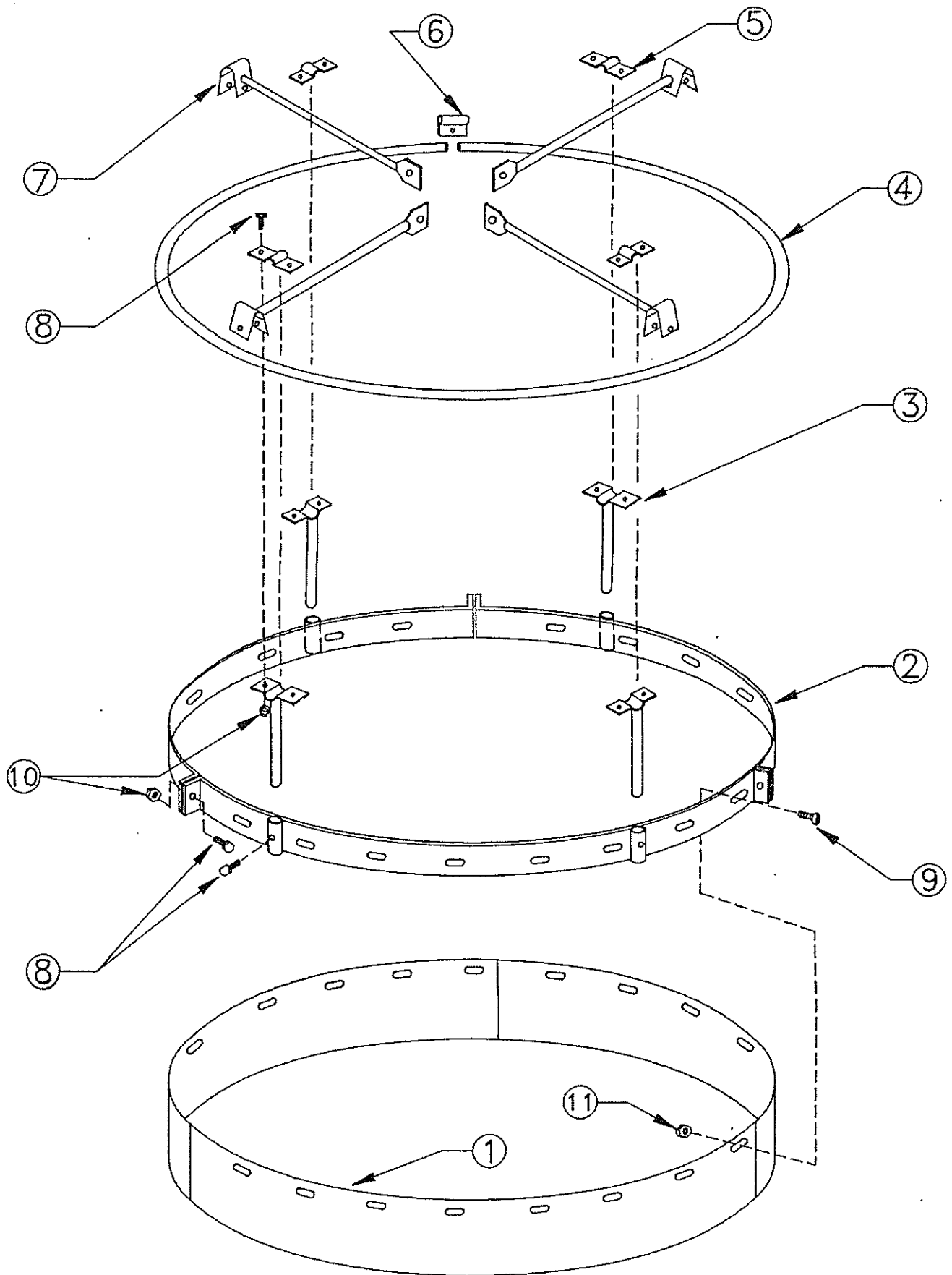
*GRAIN CAPILIARY ASSEMBLY



* Micro-Pro Only

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
12	D24240	1	Bracket, Grain Temp Sensor
14	77271	1	Sensor, Grain Temperature
29	D24270	1	Strip, Clamping
30	73486	1	Clip, Jiffy
31	71685	1	Screw, #10 - 24 x ¾

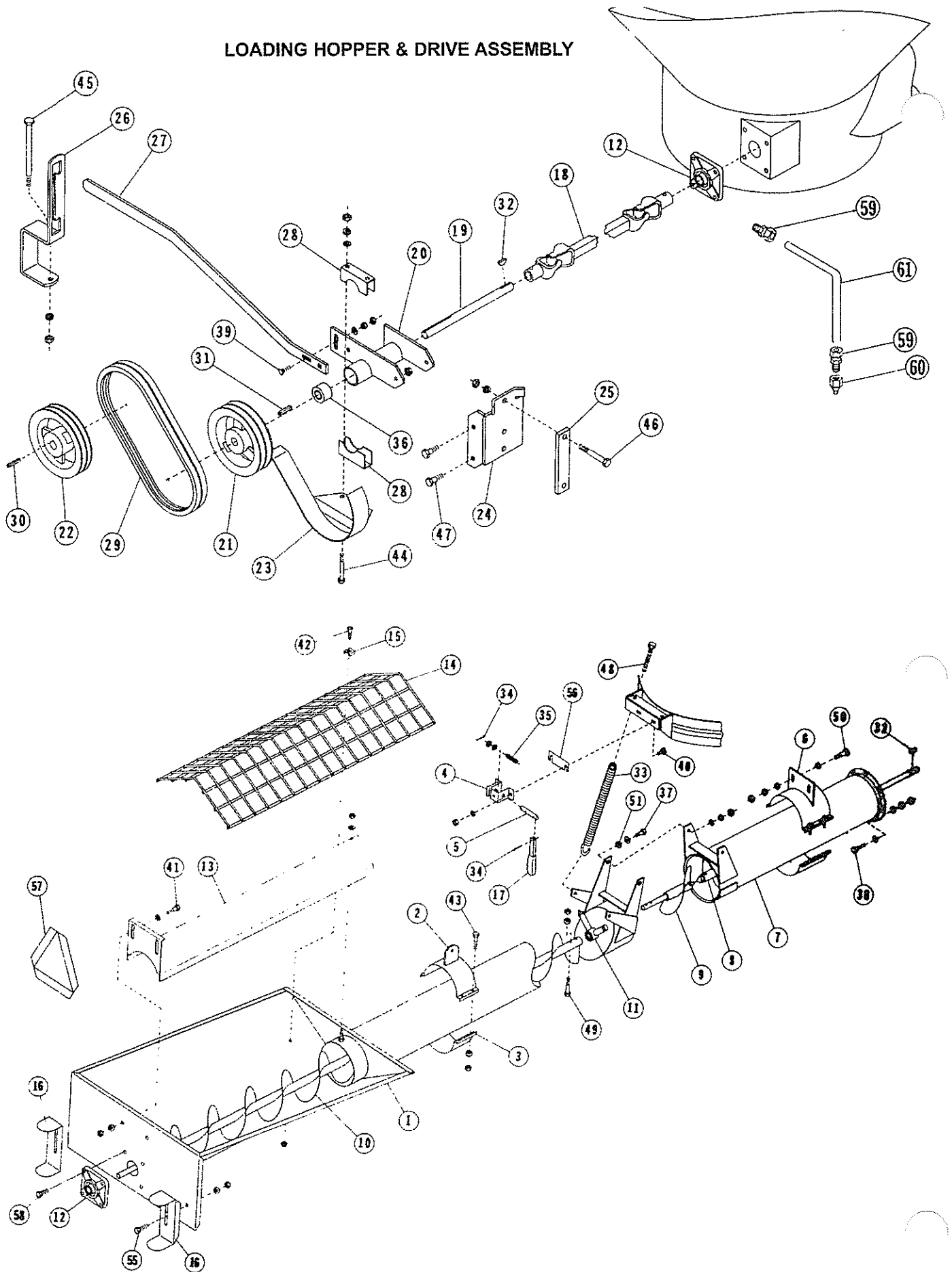
PELMET KIT - 300 BUSHEL



PELMET KIT - 300 BUSHEL

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D33230	4	Skirt, Pelmet
2	D33240	4	Ring, Pelmet
3	D33250	4	Leg, Pelmet
4	D24040	1	Ring, Cap
5	502360	4	Clamp, Pelmet Leg
6	D24110	1	Connector, Rim
7	D24072	4	Brace
8	71052	18	Capscrew, 3/8 x 1
9	71825	25	Screw 1/4-20 x 3/4 O/T SL HD
10	72210	18	Nut, 3/8 Hex
11	72382	25	Nut, Whiz Lock 1/4
	72440	14	Washer, 3/8 Lock

LOADING HOPPER & DRIVE ASSEMBLY

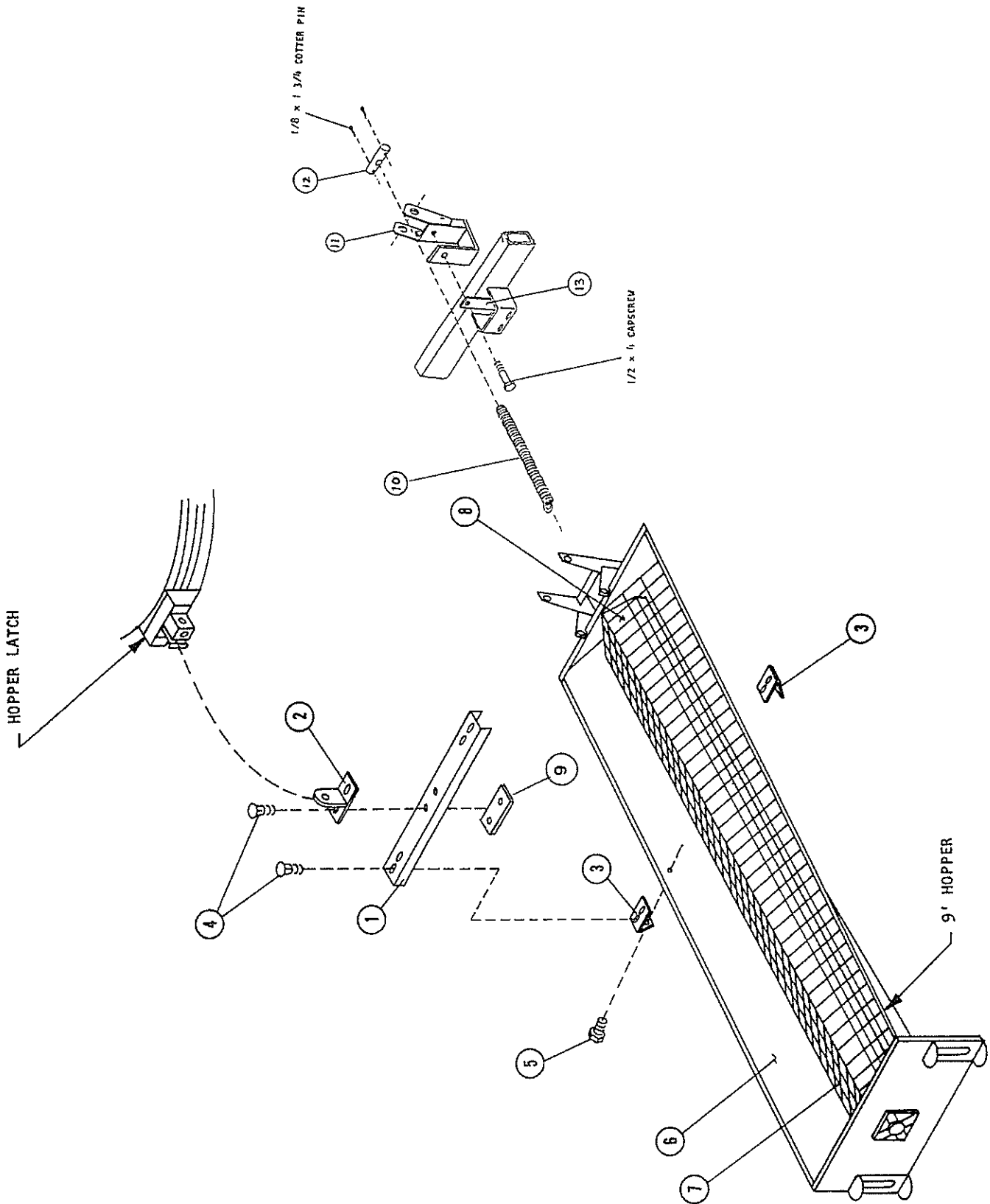


LOADING HOPPER & DRIVE ASSEMBLY

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D29013	1	Hopper, Extended
2	D29500	1	Catch, Hopper
3	41-10143	1	Band, Half
4	D29521	1	Latch, Hopper
5	D29540	1	Pin, Latch
6	D59141	1	Mount, Tube
7	D29031	1	Tube, Front Auger
8	D29052	1	Flight, Front Auger
9	D59391	1	Flight, Short Sect. Rear Auger
10	D29042	1	Flight, Long Sect. Rear Auger
11	42-98080	1	Bearing & Casting
	71127	1	Capscrew, 5/8" x 1"
	D29510	1	Bolt w/Zerk
	42-18183	1	Bronze Bearing
12	42-66022	2	Bearing
13	D59150	1	Regulator, Grain Flow
14	D29471	1	Grill, Hopper
15	D29560	4	Clip Grill
16	D29161	2	Stand, Hopper
17	D29531	1	Latch Handle
18	D59342	1	Tumbler (See page 52 for parts)
19	D22850	1	Jackshaft
20	D29490	1	Housing, L.H. Jackshaft
21	76089	1	Sheave, 2B6.6 L/SDS HUB
	76084	1	HUB QD SDS 1"
22	76089	1	Sheave, 2B6.6 L/SDS HUB
	76007	1	HUB, 1.5" SDS
23	D29372	1	Guard, Belt
24	D29352	1	Bracket, Jackshaft
25	D52910	1	Strap
26	D57215	1	Lock, Clutch Handle (QF Only)
26	D29382	1	Lock, Clutch Handle
27	D29362	1	Handle
	03519	1	Grip, Handle
28	42-16453	2	Clamp, Mount
29	D29321	2	Belt, B40
30	73411	1	Key, 3/8" x 3/8" x 1 1/2"
31	42-66057	1	Key, 1/4" x 1/4" x 1 1/2"
32	42-18282	2	Key, No. 808 Woodruff
33	73317	2	Spring, Lift
	D29480	2	Spring, Lift w/Plug Nut
34	73534	2	Pin, Cotter, 1/8" x 1 1/4"
35	73316	1	Spring, Pin
36	42-16334	2	Bearing, 1"
37	71104	2	Capscrew, 1/2" x 1 1/2"
38	71027	8	Capscrew, 5/16" x 1"
39	71277	1	Bolt, Carriage, 3/8" x 1"
40	71251	8	Bolt, Carriage, 5/16" x 3/4"
41	71026	2	Capscrew, 5/16" x 3/4"
42	71825	4	Screw, 5/8" x 3/4" SL HD Machine
43	71054	8	Capscrew, 3/8" x 1 1/2"
44	71038	2	Capscrew, 5/16" x 4 1/2"
45	71062	1	Capscrew, 3/8" x 4"
46	71111	2	Capscrew, 1/2" x 3 1/2"
47	71103	2	Capscrew, 1/2" x 1 1/4"
48	71988	2	Capscrew, 1/2" x 6" Full THD
49	73504	2	Capscrew, 7/16" x 2 1/2"
50	71104	2	Bolt, 1/2" x 1 1/2"
51	D29020	2	Spacer, 1/2" ID x 1" OD x 5/16"
52	71303	1	Bolt, Carriage, 7/16" x 1 1/4"
55	71051	2	Capscrew, 3/8" x 3/4"
56	D29550	As Req'd.	Spacer, Hopper Latch
57	73899	1	Decal, Slow Moving Vehicle
58	71053	8	Capscrew, 3/8" x 1 1/4"
59	73109	2	Fitting, Brass
60	73332	2	Zerk, 1/8" Female
61	73150	6 ft.	3/16" Copper Line

NOTE: For nuts, washers and lockwashers - see page 94

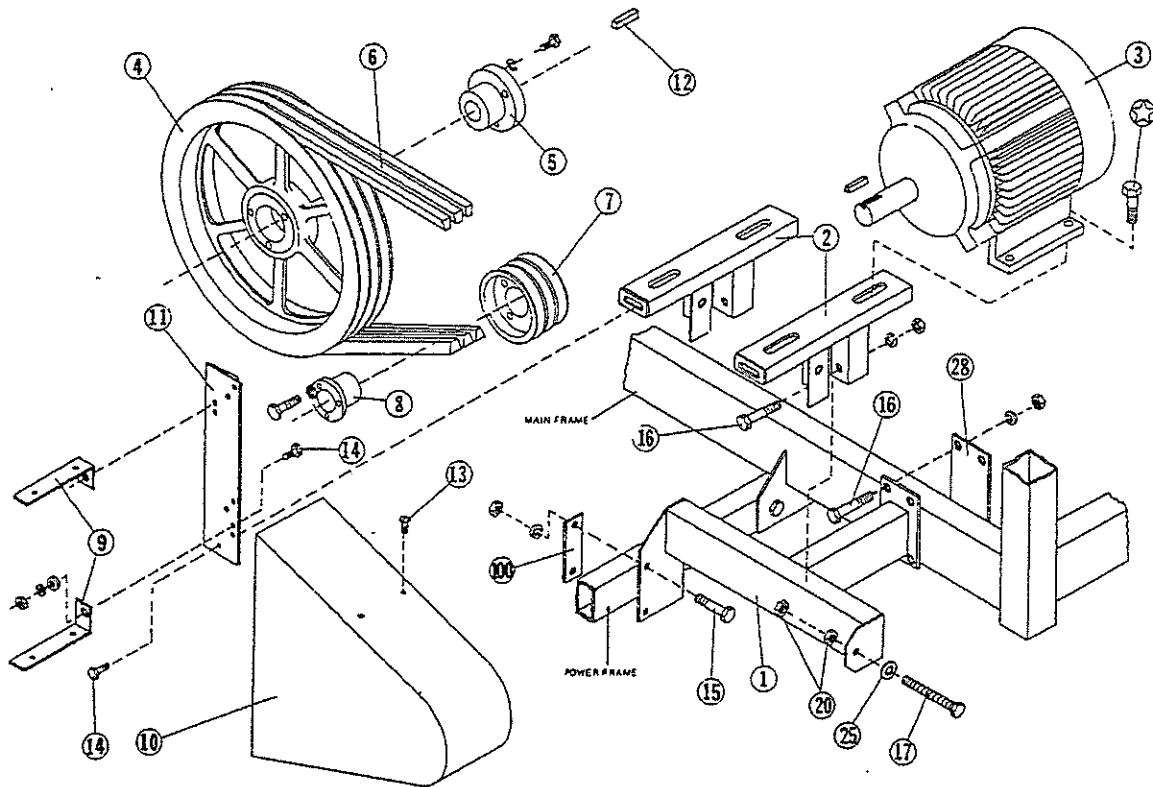
9' HOPPER PARTS



9' HOPPER PARTS LIST

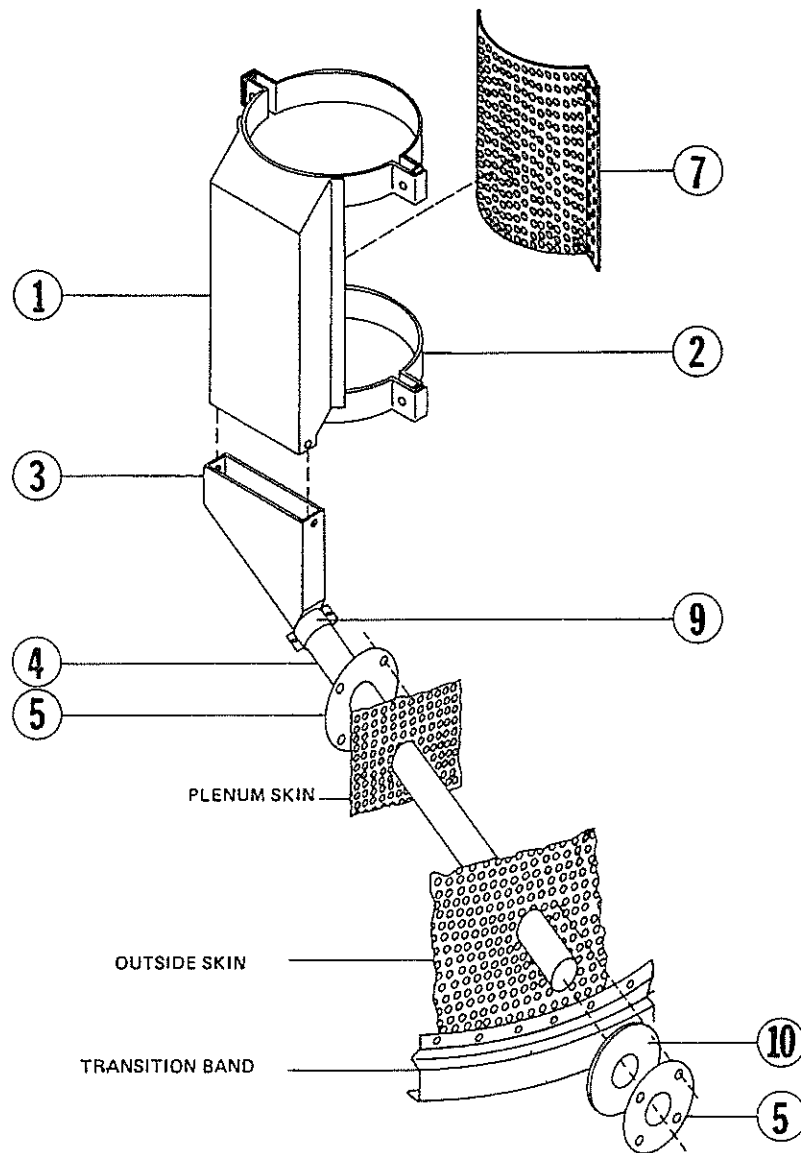
REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D29750	1	Channel
2	D29740	1	Catch
3	D29730	2	Hook
4	71252	6	Bolt, 5/16 x 1 Carriage
5	71027	2	Capscrew, 5/16 x 1
6	D29710	1	Hopper, 9'
7	D29476	1	Grill, Hopper
8	D29720	1	Regulator, Grain
9	D29755	1	Plate, Channel
10	D29480	1	Spring w/Nut
11	D29860	1	Channel, Mtg.
12	D29870	1	Pivot, Hopper Spring
13	D52720	1	Plate, Mounting

SIDE MOUNT ELECTRIC POWER UNIT ASSEMBLY



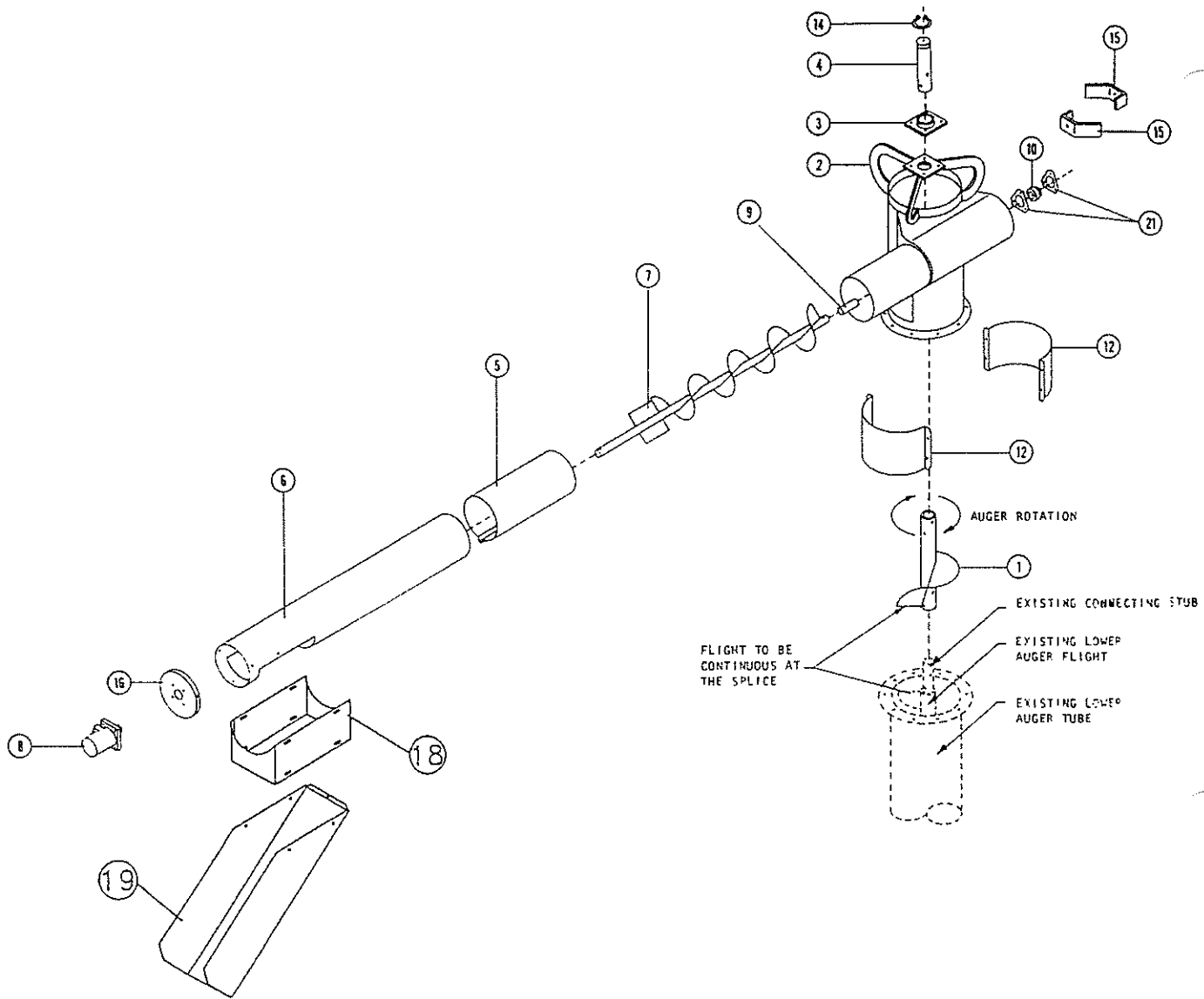
REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D22917	1	Frame
2	D22916	2	Channel, Motor Mount
3	D52213	1	Motor, 20 HP TEFC
4	76001	1	Sheave, 19.4" Less Hub
5	76011	1	Hub, 1 1/2" SK
6	D32990	1	Belt, B90 (Set of 3)
7	76012	1	Sheave, 5.2" Less Hub
8	76014	1	Hub, 1-5/8" SD
9	D32670	2	Bracket, Belt Guard
10	D59430	1	Guard
11	D32660	1	Mount, Belt Guard
12	42-510050	1	Key, 3/8" sq x 2" Long
13	71825	4	Screw, 1/4-20 x 3/4 Machine
14	71052	4	Capscrew, 3/8" x 1" Hex
15	71060	2	Capscrew, 3/8" x 3" Hex
16	71061	6	Capscrew, 3/8" x 3 1/2" Hex
17	71988	1	Capscrew, 1/2" x 6" Full Thread
19	72210	12	Nut, 3/8" Hex
20	72212	2	Nut, 1/2" Hex
21	72382	4	Nut, 1/4" Whiz Lock
24	72440	12	Washer, 3/8" Spring Lock
25	72412	1	Plate, Mounting
28	D22910	1	Plate, Mounting
100	502053	1	Strap, Mounting - Side Motor Mount

GRAIN CLEANING ATTACHMENT

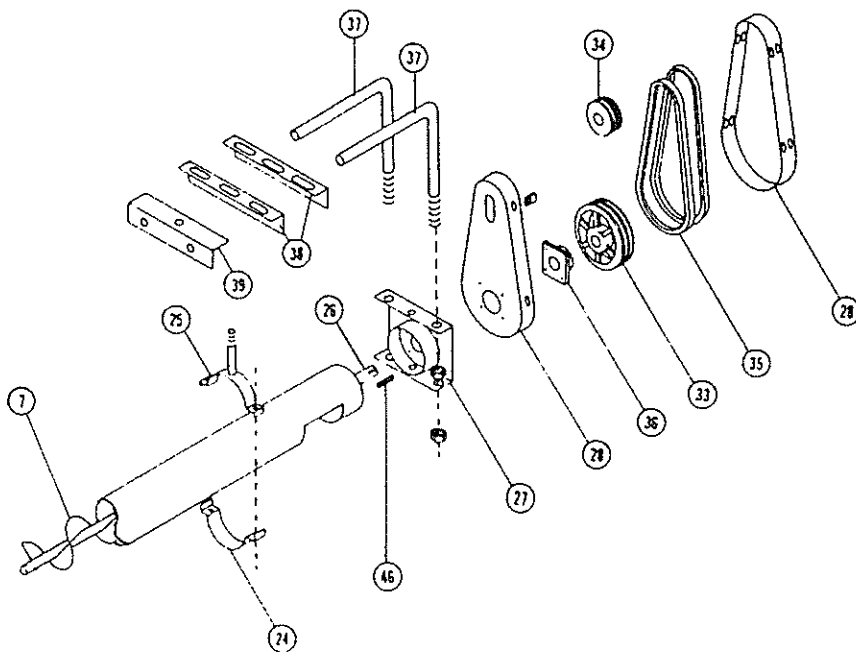


REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
	A41011	1	Grain Cleaning Attachment
1	D41020	1	Cleaning Attachment Body
2	D41030	2	Cleaning Attachment Bands
3	D41082	1	Cleaning Attachment Transition
4	D41090	1	Cleaning Attachment Top Tube
5	D41100	1	Flange, Cleaning Attachment Tube
7	A41100	1	Cleaning Attachment Screen (Corn, Sunflower) 7/32" Holes
7	A41110	1	Cleaning Attachment Screen (Wheat, Oats, Barley, Milo) 7/64" Holes
7	A41120	1	Cleaning Attachment Screen (Soybeans) 5/32" Holes
7	A41130	1	Cover Plate (To replace screen)
7	A41105	1	Cleaning Attachment Screen (Flax) 5/64" Holes
7	A41115	1	Cleaning Attachment Screen (Rape Seed) 1/16" Holes
9	D41081	1	Band, Transition 1/2
10	73289	1	Seal, Rubber

HYDRAULIC UNLOAD HEAD



ELECTRIC UNLOAD HEAD






HYDRAULIC & ELECTRIC UNLOAD HEAD PARTS LIST

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	D26311	1	Auger, Horiz. Unload, Vertical
2	D26282	1	Head, Top Auger
3	D21161	1	Bearing, 2" Flanged
4	D26021	1	Stub, Top Auger
5	42-58080	1	Band, 8" x 14½" Connecting
6	D26305	1	Housing, Horiz. Unload Auger
7	D26295	1	Flight, Horiz. Unload Auger
8	D26270	1	Motor, M202 Hydraulic
9	42-56211	1	Stub, Flight Shaft
10	85000	1	Bearing, 1"
12	D26162	2	Band, Inspection Hole
14	69503	1	Snap Ring
15	D26441	2	Spreader, Grain
16	D26255	1	End Cap
18	D26265	1	Adapter, Spout
19	D26326	1	Spout, Top Unl. Head
21	42-54054	1 Pair	Retainer, Bearing
23	71051	7	Capscrew, 3/8" x ¾"
24	41-10042	3	Half Band 8"
25	42-58082	1	Band, Rear Motor Support
26	42-58037	1	Stub, Head
	D26291	1	Flight, Horz Elect. Unl.
27	42-58049	1	Plate, Head
28	42-58081	1	Guard, Belt
33	76052	1	Pulley, 2B 9.4 L/Hub
33	76069	1	Hub, 1¼" SK
34	75044	1	Pulley, 2B 3" x 24mm
35	D29321	2	Belt, B40
36	42-58052	1	Bearing
37	42-58046	2	Rod, Motor Mounting
38	42-58048	1	Strap, Motor Mount w/Nuts
38	42-58091	1	Strap, Motor Mount
39	42-58083	1	Angle, Rear Motor Support
46	42-58050	1	Key
	D25995	1	Plate, Elec.

NUTS, WASHERS AND LOCKWASHERS

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
72208	¼" Nut	72438	¼" L-Washer
72209	5/16" Nut	72439	5/16" L-Washer
72210	3/8" Nut	72440	3/8" L-Washer
72211	7/16" Nut	72441	7/16" L-Washer
72212	½" Nut	72442	½" L-Washer
72213	5/8" Nut	72443	5/8" L-Washer
72380	¼" L-Nut	72408	¼" Washer
72379	½" L-Nut	72409	5/16" Washer
72375	¾" L-Nut	72410	3/8" Washer
72382	¼" Whiz Lock-Nut	72411	7/16" Washer
72334	¼" Tinnerman Nut	72412	½" Washer
72376	5/8" Lock Nut	72413	5/8" Washer
72195	#4 Nut	72486	#4 Nylon Washer
72204	#10 Nut	72434	#10 L-Washer

TORQUE ALL BOLTS PER TORQUE SPECIFICATION CHART

COARSE THREAD FASTENER	GRADE DESIGNATION	SCREW, STUD, OR BOLT SHANK SIZE OR DIAMETER							
		1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"
 CAP SCREW	S.A.E. 2 STEEL	5	11	20	30	50	70	100	170
 CAP SCREW	S.A.E. 5 STEEL	8	17	30	50	75	110	150	270
 CAP SCREW	S.A.E. 8 STEEL	12	24	45	70	105	155	210	375

Torques are in ft - lbs.

Torques shown are for National Coarse Thread Plain or Zinc plated fasteners carrying residual oil of Manufacture.



P.O. Box 525

Clay Center, KS 67432, U.S.A.

In Kansas Phone

(785) 632-2151

U.S. Toll Free WATS

(800) 423-9428

FAX

(785) 632-3308