OWNER'S MANUAL

150 lb. HD LAUNDRY DRYER

Gas: Natural and LP

Steam

Technical specifications

Installation instructions

Operating instructions

Maintenance

HD150.1

Cissell Manufacturing Co.

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THIS MANUAL MUST BE GIVEN TO THE EQUIPMENT OWNER

IMPORTANT NOTICES—PLEASE READ

For optimum efficiency and safety, we recommend that you read the Manual before operating the equipment. Store this manual in a file or binder and keep for future reference.

WARNING: **For your safety, the information in this manual must be followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.**

- Do not store or use gasoline or other flammable liquids or vapors in the vicinity of this or any other appliance.

- WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliances.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Clear the room, building, or area of all occupants.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach the gas supplier, call the fire department.**

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

WARNING: In the event the user smells gas odor, instructions on what to do must be posted in a prominent location. This information can be obtained from the local gas supplier.

WARNING: Wear Safety Shoes to prevent injuries.

WARNING: Purchaser must post the following notice in a prominent location:

FOR YOUR SAFETY
Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WARNING: A clothes dryer produces combustible lint and should be exhausted outside the building. The dryer and the area around the dryer should be kept free of lint.

WARNING: Be safe, before servicing machine, the main power should be shut off.

WARNING: To avoid fire hazard, do not dry articles containing foam rubber or similar texture materials. Do not put into this dryer flammable items such as baby bed mattresses, throw rugs, undergarments (brassieres, etc.) and other items which use rubber as padding or backing. Rubber easily oxidizes causing excessive heat and possible fire. These items should be air dried.

WARNING: Synthetic solvent fumes from drycleaning machines create acids when drawn through the dryer. These fumes cause rusting of painted parts, pitting of bright or plated parts, and completely removes the zinc from galvanized parts, such as the tumbler basket. If drycleaning machines are in the same area as the tumbler, the tumbler's make-up air must come from a source free of solvent fumes.

WARNING: Do not operate without guards in place.

WARNING: Check the lint trap often and clean as needed but at least a minimum of once per day.

WARNING: Alterations to equipment may not be carried out without consulting with the factory and only by a qualified engineer or technician. Only **Manufacturer's** parts may be used.

WARNING: Remove clothes from dryer as soon as it stops. This keeps wrinkles from setting in and reduces the possibility of spontaneous combustion.

WARNING: Be Safe - shut main electrical power and gas supply off externally before attempting service.

WARNING: Never use drycleaning solvents, gasoline, kerosene, or other flammable liquids in the dryer. ***FIRE AND EXPLOSION WILL OCCUR. NEVER PUT FABRICS TREATED WITH THESE LIQUIDS INTO THE DRYER. NEVER USE THESE LIQUIDS NEAR THE DRYER..***

WARNING: Do not place items exposed to cooking oils in your dryer. Items contaminated with cooking oils may contribute to a chemical reaction that could cause a load to catch fire.

WARNING: Never let children play near or operate the dryer. Serious injury could occur if a child should crawl inside and the dryer is turned on.

WARNING: Never tumble fiberglass materials in the dryer unless the labels say they are machine dryable. Glass fibers break and can remain in the dryer. These fibers cause skin irritation if they become mixed with other fabrics.

WARNING: Before operating gas ignition system - purge air from natural gas or propane gas lines per manufacturer's instructions.

WARNING: To reduce the risk of electric shock, disconnect this appliance from the power supply before attempting any user maintenance other than cleaning the lint trap. Turning the controls to the OFF position does not disconnect this appliance from the power supply.

ATTENTION: L'ACHETEUR DOIT PLACER L'AVERTISSEMENT SUIVANT DANS UN ENDROIT CLAIR ET VISIBLE:

AVERTISSEMENT. Assurez-vous de bien suivre les instructions donnees dans cette notice pour reduire au minimum le risque d'incendie ou d'explosion ou pour eviter tuot dommage materiel, toute blessure ou la mort.

__ Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil ou de tout autre apparell.

__ **QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:**

- Ne pas tenter d'allumer d'apparell.
- Ne touchez a aucun interrupteur. Ne pas vous servir des telephones se trouvant dans le batiment ou vous vous trouvez.
- Evacuez la piece, le batiment ou la zone.
- Appelez immediatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur de gaz, appelez le service des incendies.

__ l'installation et l'entretien doivent etre assures par un installateur ou un service d'entretien qualifie ou par le fournisseur de gaz.

ATTENTION: L'ACHETEUR DOIT PLACER L'AVERTISSEMENT SUIVANT DANS UN ENDROIT CLAIR ET VISIBLE:

POUR VOTRE SECURITE

Ne pas entreposer ni utiliser d' essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil ou de tout autre appareil.

CISSELL DRYER WARRANTY

The Cissell Manufacturing Company (Cissell) warrants all new equipment (and the original parts thereof) to be free from defects in material or workmanship for a period of three (3) years from the date of sale thereof to an original purchaser for use, except as hereinafter provided. With respect to non-durable parts normally requiring replacement in less than three (3) years due to normal wear and tear, and with respect to all new repair or replacement parts for Cissell equipment for which the three (3) year warranty period has expired, or for all new repair or replacement parts for equipment other than Cissell equipment, the warranty period is limited to ninety (90) days from date of sale. The warranty period on each new replacement part furnished by Cissell in fulfillment of the warranty on new equipment or parts shall be for the unexpired portion of the original warranty period on the part replaced.

With respect to electric motors, coin meters and other accessories furnished with the new equipment, but not manufactured by Cissell, the warranty is limited to that provided by the respective manufacturer.

Cissell's total liability arising out of the manufacture and sale of new equipment and parts, whether under the warranty or caused by Cissell's negligence or otherwise, shall be limited to Cissell repairing or replacing, at its option, any defective equipment or part returned f.o.b. Cissell's factory, transportation prepaid, within the applicable warranty period and found by Cissell to have been defective, and in no event shall Cissell be liable for damages of any kind, whether for any injury to persons or property or for any special or consequential damages. The liability of Cissell does not include furnishing (or paying for) any labor such as that required to service, remove or install; to diagnose troubles; to adjust, remove or replace defective equipment or a part; nor does it include any responsibility for transportation expense which is involved therein.

The warranty of Cissell is contingent upon installation and use of its equipment under normal operating conditions. The warranty is void on equipment or parts; that have been subjected to misuse, accident, or negligent damage; operated under loads, pressures, speeds, electrical connections, plumbing, or conditions other than those specified by Cissell; operated or repaired with other than genuine Cissell replacement parts; damaged by fire, flood, vandalism, or such other causes beyond the control of Cissell; altered or repaired in any way that effects the reliability or detracts from its performance, or; which have had the identification plate, or serial number, altered, defaced, or removed.

No defective equipment or part may be returned to Cissell for repair or replacement without prior written authorization from Cissell. Charges for unauthorized repairs will not be accepted or paid by Cissell.

CISSELL MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY, STATUTORY OR OTHERWISE, CONCERNING THE EQUIPMENT OR PARTS INCLUDING, WITHOUT LIMITATION, A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, OR A WARRANTY OF MERCHANTABILITY. THE WARRANTIES GIVEN ABOVE ARE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. CISSELL NEITHER ASSUMES, NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT, ANY OTHER WARRANTY OR LIABILITY IN CONNECTION WITH THE MANUFACTURE, USE OR SALE OF ITS EQUIPMENT OR PARTS.

For warranty service, contact the Distributor from whom the Cissell equipment or part was purchased. If the Distributor cannot be reached, contact Cissell.

IDENTIFICATION NAMEPLATE

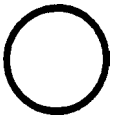
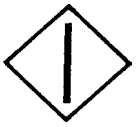
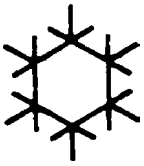
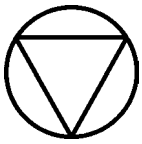
The Identification Nameplate is located on the rear wall of the dryer. It contains the dryer serial number, product number, model number, electrical specifications and other important data that may be needed when servicing and ordering parts, wiring diagrams, etc. Do not remove this nameplate.

TABLE OF CONTENTS
150 LB. LAUNDRY DRYER

PAGE

SYMBOLS

The following symbols are used in this manual and/or on the machine.

Symbol	Description	Symbol
	**NOTE!**	
	**Hot! Do Not Touch Heiß! Nicht Beruhren Haute temperature! Ne pas toucher Caliente! no tocar**	
	**dangerous voltage tension dangereuse Gefährliche elektrische Spannung tension peligrosa**	
	**On Marche Ein Conectado**	
	**Off Arrêt Aus Desconectado**	
	**Start Demarrage Start Arranque de un movimiento**	
	**Emission of heat in general Emission de chaleur en general Warmeabgabe allgemein Emisión de calor**	
	**Cooling Refroidissement Kühlen Enfriamiento**	
	Rotation in two directions Rotation dans les deux sens Drehbewigung in zwei Richtungen Movimiento rotativo en los dos sentidos	
	Direction of rotation Sens de mouvement continu De rotation Drehbewegung in Pfeilrichtung movimiento Giratorio o rotatorio en el sentido de la flecha	
	End of Cycle	
	Caution Attention Achtung Atencion; precaucion	

UNPACKING

This dryer is packed in a large wooden crate.

Upon arrival of the equipment, any damage in shipment should be reported to the carrier immediately.

Upon locating permanent location of a unit, care should be taken in movement and placement of equipment.

See outline clearance diagrams for correct dimensions.

Remove all packing material such as: tape, manuals, skid, etc.

Leveling: Use spirit level on top of dryer. The use of shims are acceptable for this procedure.

Check voltage and amperes on rating plate before installing the dryer.

GENERAL INSTALLATION (ALL DRYERS)

The construction of the dryers permits installation side-by-side to save space or to provide a wall arrangement. Position dryer for the least amount of exhaust piping and elbows, and allow free access to the rear of dryer for future servicing of belts, pulleys and motors. Installation clearance from all combustable material is 0" ceiling clearance, 0" rear clearance, and 0" side clearance.

IMPORTANT
Opening the clothes loading door deactivates the door switch to shut off the motors, fan, gas, steam, or electric element. To restart the dryer, close the door and press in the push to start button and hold briefly.

IMPORTANT
This dryer is designed for a capacity maximum load. Overloading it will result in long drying times and damp spots on some clothes.

IMPORTANT
Maximum operating efficiency is dependent upon proper air curculation. The lint screen must be kept cleaned daily to insure proper air circulation throughout the dryer.

GENERAL

Before operating dryer, open basket door and remove blocking between front panel and basket. Read the instruction tags, owner's manual, warnings, etc.

The dryer is so designed that when an operator opens the dryer door, the basket and exhaust fan stop. You can expect fast drying from this laundry dryer. Hot, dry air is properly and effectively moved through the basket and exhausted through a lint trap to the atmosphere. The dryer comes equipped with an inclined self-cleaning lint screen. In this system, lint accumulates on the underside of the screen until a blanket of lint will fall from the screen to the bottom of the dryer cabinet, and should be removed daily or as required, to prevent an overaccumulation.

IMPORTANT

IMPORTANT
Provide adequate clearance for air openings into the combustion chamber.

REPLACEMENT PARTS

Replacement parts for this dryer are available from your distributor or by contacting the factory at the address or phone number printed on the cover of this manual.

PROCEDURE FOR DISASSEMBLING THE TOP OF THE DRYER

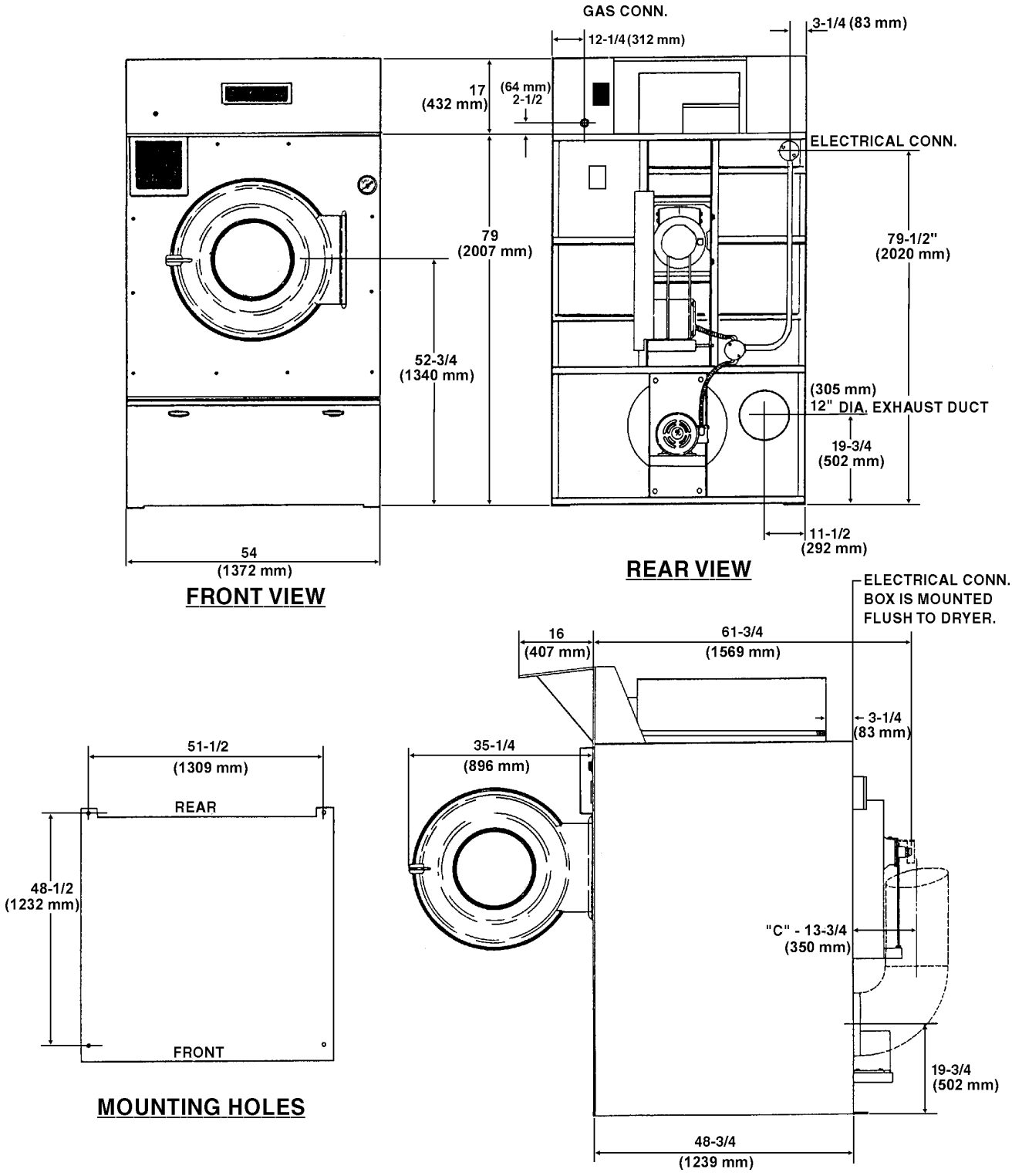
1. Unscrew two (2) front cover panel hold-down screws and open the front cover panel. If wires enclosed are not color coded or numbered, mark wires before disconnecting. Refer to the wiring diagram.

2. Disconnect the wire plugs in the right and left control boxes. Unscrew the two (2) hold-down bolts from the bottom of the boxes and one screw from the outside rear of the boxes. Remove the two (2) screws that hold the conduit plate to the boxes. Remove the boxes and the top brace as one assembly.

3. Unscrew the six (6) bolts that hold down the heating unit.

4. Remove the air switch box on the rear of the dryer and disconnect the two (2) wires and the box from the rear of the dryer. Leave the air switch fastened to the dryer rear wall.

5. To re-assemble, reverse this procedure.

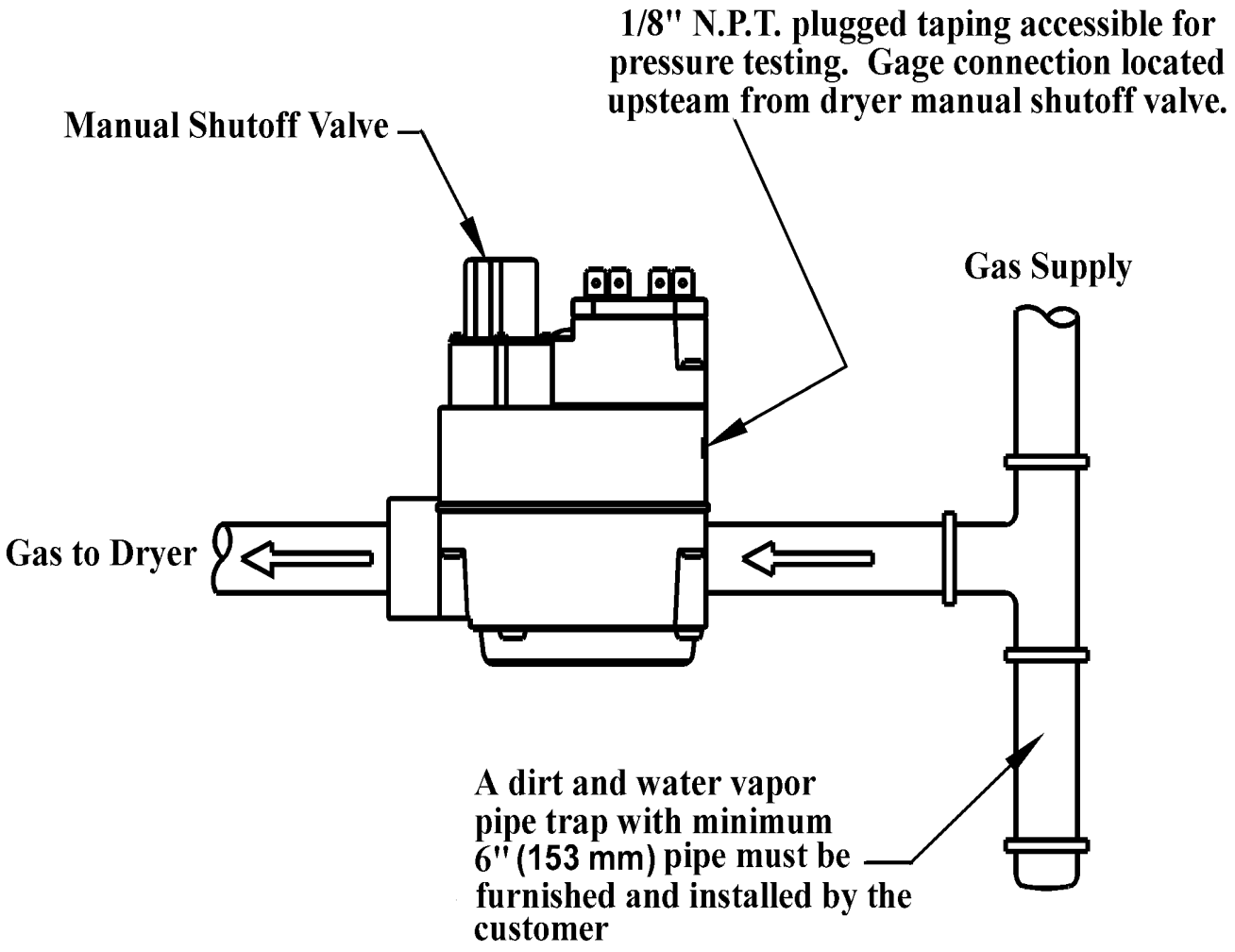

GAS CONN.
12-1/4 (312 mm)
3-1/4 (83 mm)
17
(432 mm)
(64 mm)
2-1/2
ELECTRICAL CONN.
79
(2007 mm)
79-1/2"
(2020 mm)
52-3/4
(1340 mm)
(305 mm)
12" DIA. EXHAUST DUCT
19-3/4
(502 mm)
11-1/2
(292 mm)
54
(1372 mm)
FRONT VIEW
REAR VIEW
ELECTRICAL CONN.
BOX IS MOUNTED
FLUSH TO DRYER.
16
(407 mm)
61-3/4
(1569 mm)
3-1/4
(83 mm)
35-1/4
(896 mm)
51-1/2
(1309 mm)
REAR
48-1/2
(1232 mm)
FRONT
"C" - 13-3/4
(350 mm)
19-3/4
(502 mm)
48-3/4
(1239 mm)
MOUNTING HOLES

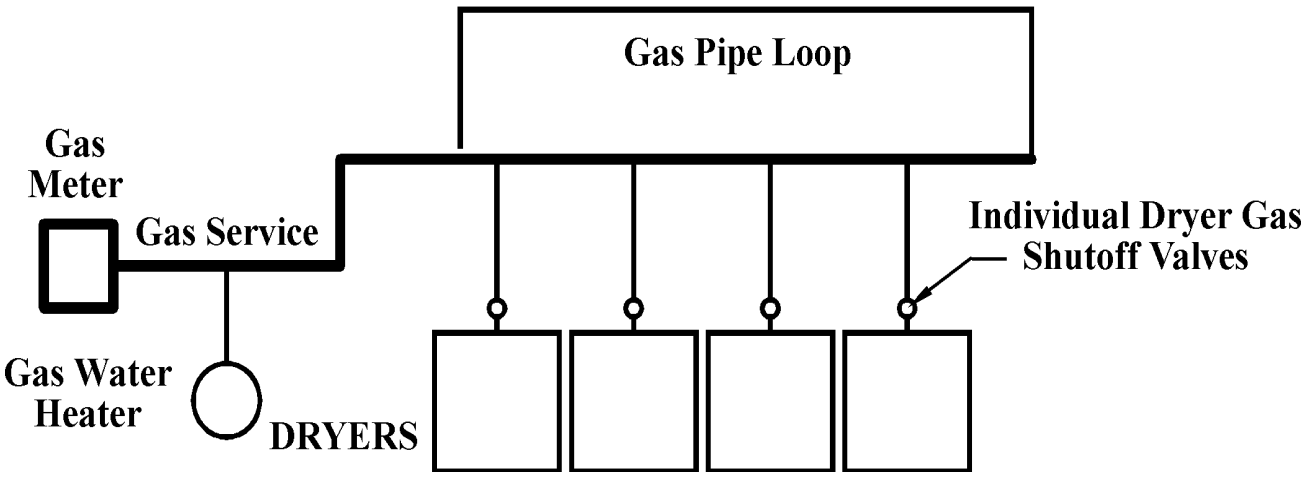
GENERAL SPECIFICATIONS FOR 150 lb. DRYERS

Floor Space	64” (1626 mm) Deep x 54” (1372 mm) Wide x 96” (2439 mm) High
Doors	31-1/4” (794 mm) Diameter
Basket Size	50” (1270 mm) Diameter x 42” (1067 mm) Deep
Basket Capacity (Dry Weight)	150 lbs. (68.0 kg) Dryweight
Basket Motor	1-1/2 HP (1.12 kW)
Fan Motor	1-1/2 HP (1.12 kW)
Basket RPM (Reversing)	28 - 3.2 reversals per min.
(Non-Reversing)	30
Exhaust Duct	12” (305 mm) Diameter
Maximum Air Displacement	2,250 cfm (3825 m^3/h)
Recommended Operating Range	1,900 - 2,100 cfm (3230 - 3570 m^3/h)
Net Weight *(Gas)*	1,740 lbs. (789 kg) approx.
(Steam)	1,754 lbs. (796 kg) approx.
Shipping Weight *(Gas)*	1,890 lbs. (857 kg) approx.
(Steam)	1,944 lbs. (882 kg) approx.
Export Shipping Dimensions	104” H (2642 mm) x 60” W (1524 mm) x 74” L (1880 mm)
Export Crate *(Gas)*	254.5 ft^3 (7.21 m^3)
(Steam)	261.1 ft^3 (7.40 m^3)
Load Weight on Floor Area	.69 lb./sq. in. (48.5 lb./sq. in.)
BTU Input Rating * (see next page)	370,000 Btu per hour (93,240 kcal/h) (Nat., Mixed, Mfg., Butane and Propane Gases)
Steam Consumption	12.5 bhp - 419 lbs. (418,187 Btu/h)
Operating Steam Pressure	100 psi (6.9 bar) max
Gas Supply	1” (3 mm) Pipe Connection
Manifold Pressure	3.5”w.c. (8.7 mbar) (Natural Gas) 11”w.c. (27 mbar) (LP Gas)
Electric Ignition	Direct Spark Ignition System

Gas Pipe Size Chart

TOTAL BTU/HR (for LP Gas correct total Btu/h below by multiplying by .6)	TOTAL KCAL HOUR	GAS PIPE SIZE FOR 1000 Btu (252 kcal/h) NATURAL GAS AT 7" w. c. (17.5 bar) PRESSURE In figuring total length of pipe, make allowance for tees and elbows.					
		(25 ft.) 7,62 m	(50 ft.) 15,24 m	(75 ft.) 22,86 m	(100 ft.) 30,48 m	(125 ft.) 38,1 m	(150 ft.) 45,72 m
60,000	15000	3/4	3/4	3/4	3/4	3/4	3/4
80,000	20000	3/4	3/4	3/4	1	1	1
100,000	25200	3/4	3/4	1	1	1	1
120,000	30200	3/4	1	1	1	1	1
140,000	35200	3/4	1	1	1	1	1 1/4
160,000	40300	3/4	1	1	1 1/4	1 1/4	1 1/4
180,000	45300	1	1	1	1 1/4	1 1/4	1 1/4
200,000	50400	1	1	1 1/4	1 1/4	1 1/4	1 1/2
300,000	75600	1	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2
400,000	100800	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2
500,000	126000	1 1/4	1 1/2	1 1/2	2	2	2
600,000	151200	1 1/2	1 1/2	2	2	2	2
700,000	176400	1 1/2	2	2	2	2	2 1/2
800,000	202000	1 1/2	2	2	2	2 1/2	2 1/2
900,000	230000	2	2	2	2 1/2	2 1/2	2 1/2
1,000,000	250000	2	2	2	2 1/2	2 1/2	2 1/2
1,100,000	270000	2	2	2 1/2	2 1/2	2 1/2	2 1/2
1,200,000	300000	2	2	2 1/2	2 1/2	2 1/2	2 1/2
1,300,000	330000	2	2 1/2	2 1/2	2 1/2	2 1/2	3
1,400,000	350000	2	2 1/2	2 1/2	2 1/2	3	3
1,500,000	380000	2	2 1/2	2 1/2	2 1/2	3	3
1,600,000	400000	2	2 1/2	2 1/2	3	3	3
1,700,000	430000	2	2 1/2	2 1/2	3	3	3
1,800,000	450000	2 1/2	2 1/2	3	3	3	3
1,900,000	480000	2 1/2	2 1/2	3	3	3	3
2,000,000	504000	2 1/2	2 1/2	3	3	3	3 1/2
2,200,000	550000	2 1/2	3	3	3	3 1/2	3 1/2
2,400,000	605000	2 1/2	3	3	3	3 1/2	3 1/2
2,600,000	650000	2 1/2	3	3	3 1/2	3 1/2	3 1/2
2,800,000	705000	2 1/2	3	3	3 1/2	3 1/2	3 1/2
3,000,000	750000	2 1/2	3	3 1/2	3 1/2	3 1/2	4
3,200,000	806000	3	3	3 1/2	3 1/2	3 1/2	4
3,400,000	850000	3	3 1/2	3 1/2	3 1/2	4	4
3,600,000	907000	3	3 1/2	3 1/2	3 1/2	4	4
3,800,000	960000	3	3 1/2	3 1/2	4	4	4
4,000,000	1000000	3	3 1/2	3 1/2	4	4	4


1/8" N.P.T. plugged taping accessible for pressure testing. Gage connection located upsteam from dryer manual shutoff valve.
Manual Shutoff Valve
Gas Supply
Gas to Dryer
A dirt and water vapor pipe trap with minimum 6" (153 mm) pipe must be furnished and installed by the customer


Gas Pipe Loop
Gas Meter
Gas Service
Individual Dryer Gas Shutoff Valves
Gas Water Heater
DRYERS

STEAM PIPING INSTALLATION

1. Gas service installation must conform with local codes, or in the absence of local codes with the ***National Fuel Gas Code, ANSI Z223.1 or the CAN/CGA-B149, Installtion Codes.***

2. Check Rating Plate located on rear wall of dryer, for type of gas to equip the dryer and the altitude (elevation).

3. Check with the gas supplier for the gas pressure and the proper gas supply line installation.

NOTE: The dryer and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).

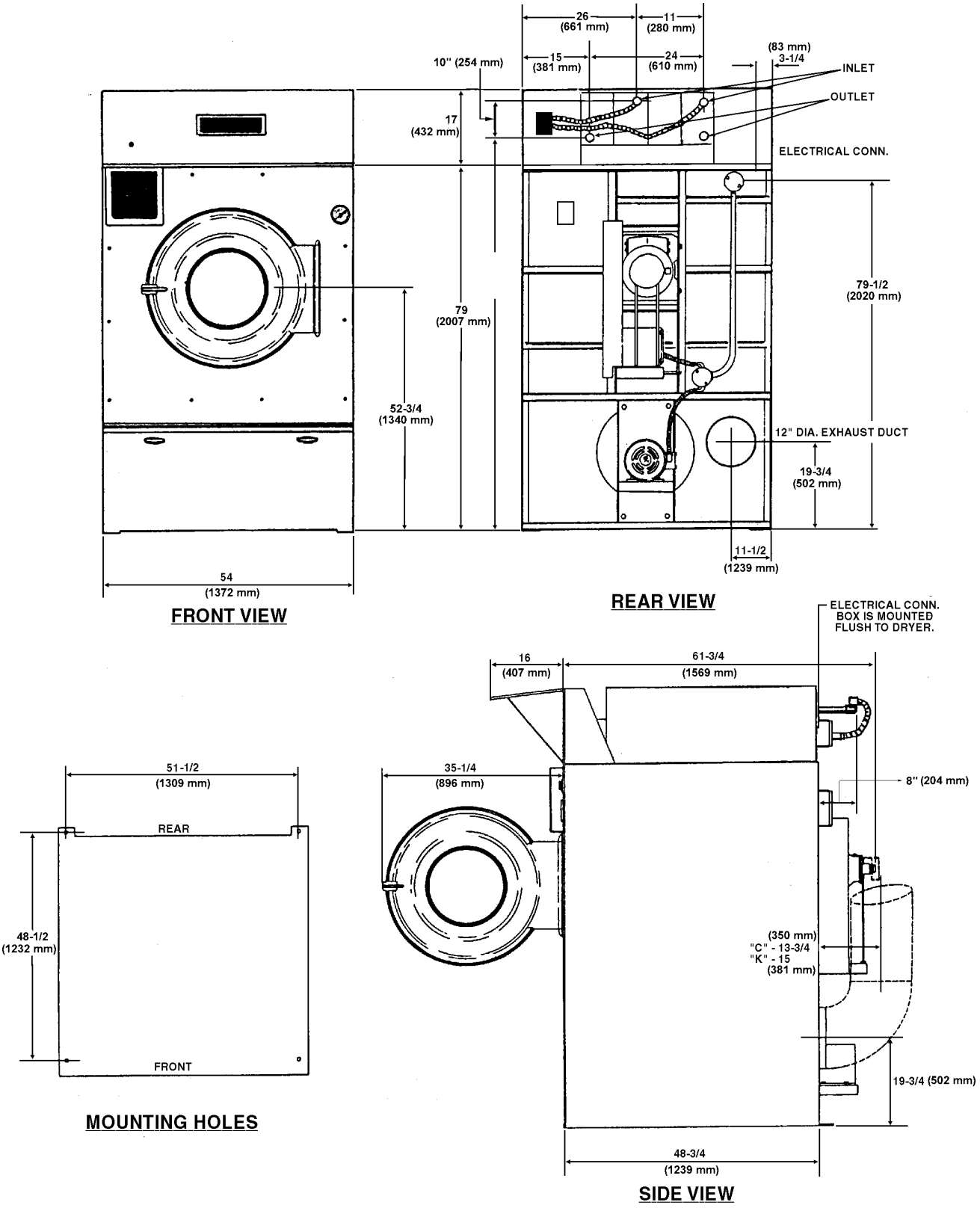
The dryer must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 PSIG (3.5 kPa).

CAUTION: Low gas pressure and intermittent gas will cause gas ignition problems. This will cause inadequate drying of the clothes load.

NATURAL & LP GASES: Check the gas pressure inlet supply to the dryer, 14" w. c. (34.9 bar) pressure maximum. Check the manifold pressure, 3.5" w. c. (8.8 bar) for natural gas and 11" w. c. (27.4 bar) for LP gas.

CAUTION: Gas loop piping must be installed as shown on the following page, to maintain equal pressure for all dryers connected to a single gas service. Install other gas appliances upstream from the loop.

150 lb. Steam Heated Models (Illustration)



150 lb. Steam Heated Laundry Dryers - Specifications

GENERAL SPECIFICATIONS FOR 150 lb. LAUNDRY DRYERS (STEAM HEATED)

Operating Steam Pressure	100 psig (6.9 bar) Maximum
Boiler HP	12.5 HP (9.33 kW)
Heat Capacity	8 Coil
Steam Coils	(4) 6”(153 mm) x 10 1/4” (261 mm) x 40 1/2”(1029 mm)
Steam Supply Connection	3/4” (20 mm)
Steam Return Connection	3/4” (20 mm)
Trap Connection	(2) 3/4” (20 mm)
Maximum Air Displacement	2250 cfm (63.7 m^3/h)

LIST OF MOTORS USED - 150 lb. LAUNDRY DRYERS

Motor No.	Voltage	Hz.	Phase	HP	kW	Amps	BASKET or FAN
*MTR304	200-240/460-480	60	3	1 1/2	1.12	4.8/2.4	Fan or Basket
MTR100	575	60	3	1 1/2	1.12	2.0	Fan or Basket
*MTR304	240/415	50	3	1 1/2	1.12	4.8/2.4	Fan or Basket
*MTR304	220/380	50/60	3	1 1/2	1.12	4.8/2.4	Fan or Basket

*All MTR30X series motors have internal overload protection. In case of a trip, the overloads are resetable from a button located on the main body of the motor.

TOTAL CONTROLS

Total controls on dryer are 1 to 3 amperes.

INPUT RATINGS

*Input ratings as shown are for elevations up to 2000 ft. (610 m). For high elevations, ratings should be reduced 4% for each 1000 ft. (305 m) above sea level.

ELECTRICAL WIRING

Electrical wiring to dryer must conform to local electrical code requirements.

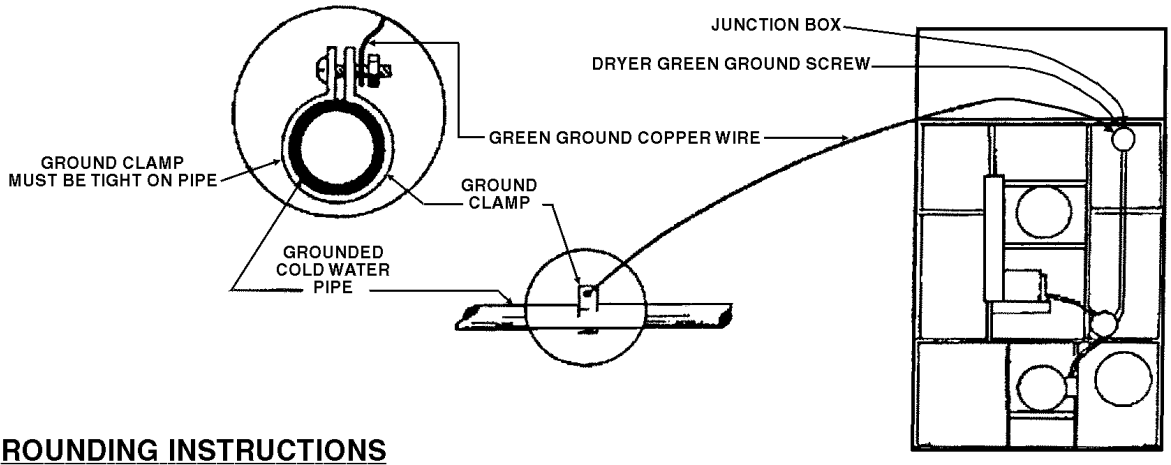
ELECTRICAL CONNECTIONS - ALL DRYERS

Dryers must be electrically grounded by a separate #14 or larger green wire from the grounding terminal within the Service Connection Box to a cold water pipe. In all cases, the grounding method must comply with local electrical code requirements; or in the absence of local codes, with the ***National Electrical Code, ANSI/NFPA 70 or the Canadian Electrical Code, CA C22.1.***

See wiring diagram furnished with dryer. Your dryer is completely wired at the factory and it is only necessary for the electrician to connect the power leads to the wire connectors with the Service Connection Box on the rear of the dryer. Do not connect the dryer to any voltage or current other than that specified on the Dryer Rating Plate. (Wiring diagrams are located on rear wall of dryer.)

All panels must be in position before operation of dryer.

(ILLUSTRATION) GROUNDING INSTRUCTIONS



GROUNDING INSTRUCTIONS

«Attention. Lors des opérations d'entretien des commandes, ètiqueter tous les fils avant de les dèconnecter. Toute erreur de câblage peut être une source de danger et de panne»

STEAM DRYERS -OPTION INSTALLATION INSTRUCTIONS

1. The dryer comes in two wood crates:

   A - Very large crate

   B - Smaller crate

2. Open Crate A and lift dryer off the skid and set in place.

3. Open Crate B. It contains two assemblies:

   I - Control Box Assembly

   II - Steam Bonnet Assembly

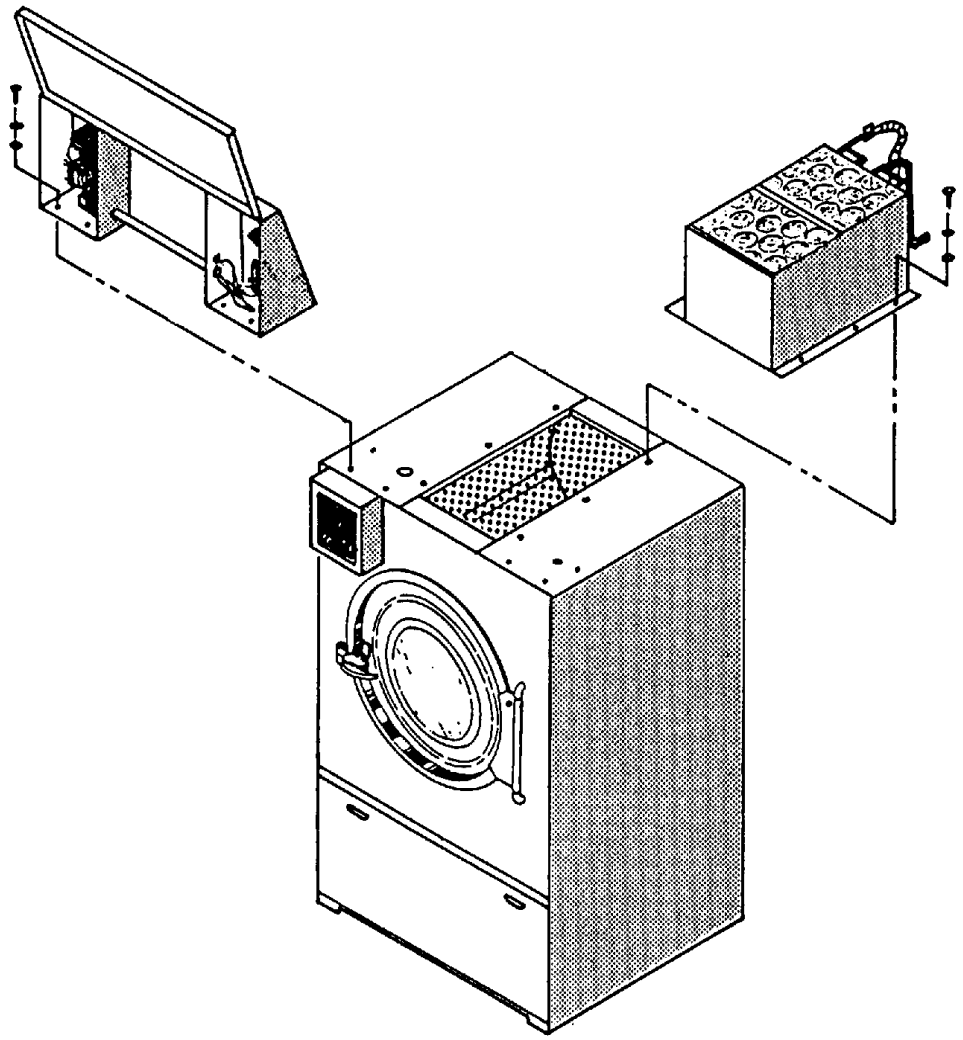
4. Place II - Steam Bonnet Assembly on top of the dryer and slide piped end to rear of dryer. Bolt to top with six 3/8" (10 mm) bolts, flat washers and lockwashers provided. Attach Solenoid Conduits (2) to the Right Front Control Box. Then connect the wires as per diagram on the rear wall of dryer.

5. Place I - Control Box Assembly on top front of the dryer and bolt in place with six 3/8" (10 mm) bolts, flat washers and lockwashers. Snap the electrical connections together.

6. Proceed with steam piping, electrical services and duct work, as specified in technical manual.

I - Control Box Assembly

II - Steam Bonnet Assembly



STEAM PIPING - INSTALLATION INSTRUCTIONS

1. Set and anchor dryer in position. Machine should be level assure proper steam circulation.

2. To prevent condensate draining from headers to dryer, piping should have a minimum 12” (305 mm)above respective header. Do not make steam connection to header with a horizontal or downwardly facing tee or elbow.

3. Whenever possible, horizontal runs of steam lines must drain, by gravity, to respective steam header. Water pockets, or an improperly drained steam header will provide wet steam, causing improper operation of dryer. If pockets or improper drainage cannot be eliminated, install a by-pass trap to drain condensate from the low point in the steam supply header to the return.

4. In both steam supply and steam return line, it is recommended that each have a 3/4”(20 mm) union and 3/4” (20 mm) globe valve. This will enable you to disconnect the steam connections and service the dryer while your plant is in operation.

5. Before connecting trap and check valve to dryer, open globe valve in steam supply line and allow steam to flow through dryer to flush out any dirt and scale from dryer. This will assure proper operation of trap when connected.

6. After flushing system, install bucket trap (with built-in strainer) and check valve. For successful operation of dryer, install trap 18" (458 mm) below coil and as near to the dryer as possible. Inspect trap carefully for inlet and outlet markings and install according to trap manufacturer's instructions. If steam is gravity returned to boiler, omit trap but install check valve in return line near dryer.

7. Install union and globe valve in return line and make final pipe connections to return header.

PIPING RECOMMENDATIONS

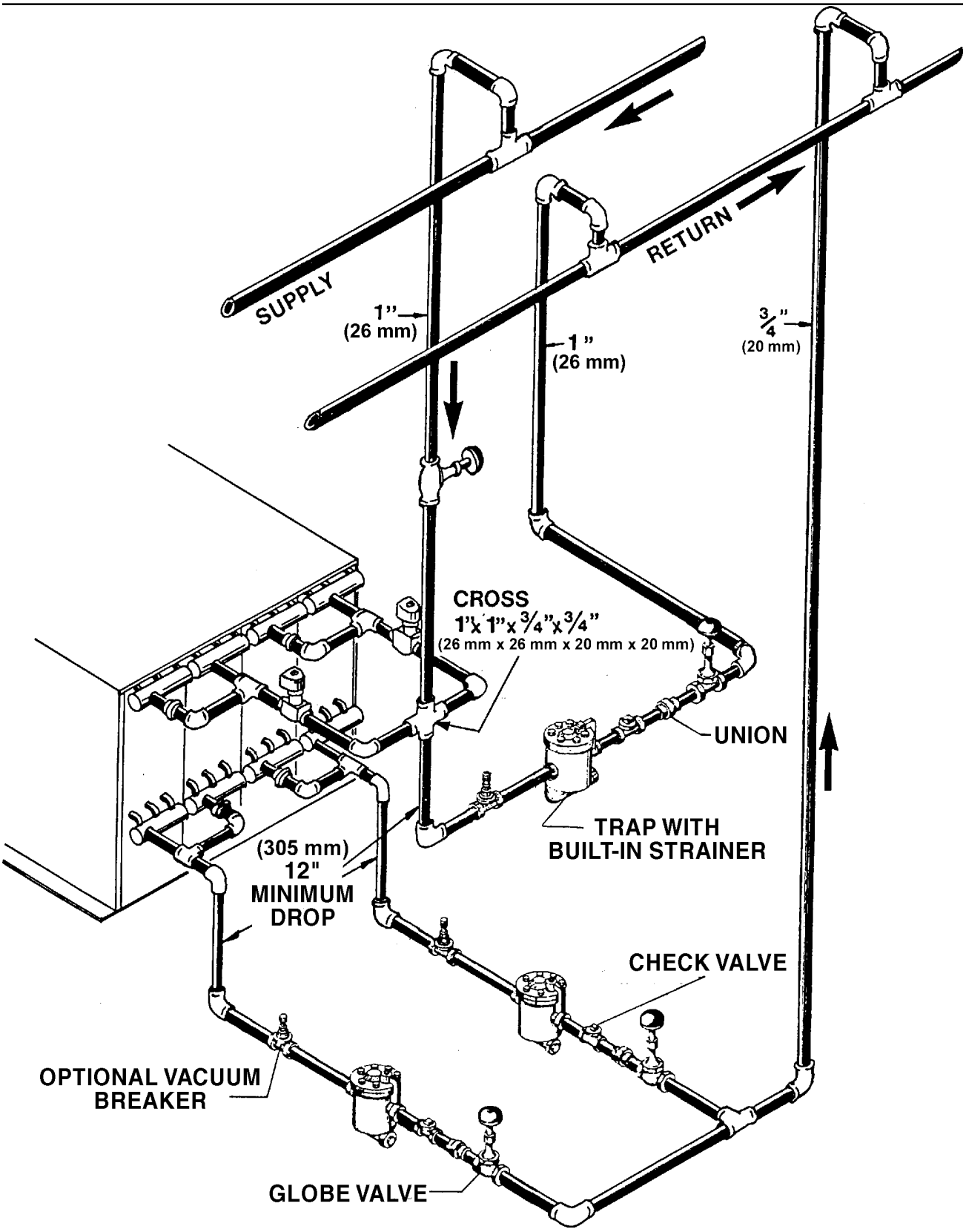
1. Trap each dryer individually. Always keep the trap clean and in good working condition.

2. When dryer is on the end of a line of equipment, extend header at least 4 feet (2 m)beyond dryer. Install gloge valve, union, check valve and by-pass trap at end of line. If gravity return to boiler, omit trap.

3. Insulate steam supply and return line for safety of operator and safety while servicing dryer.

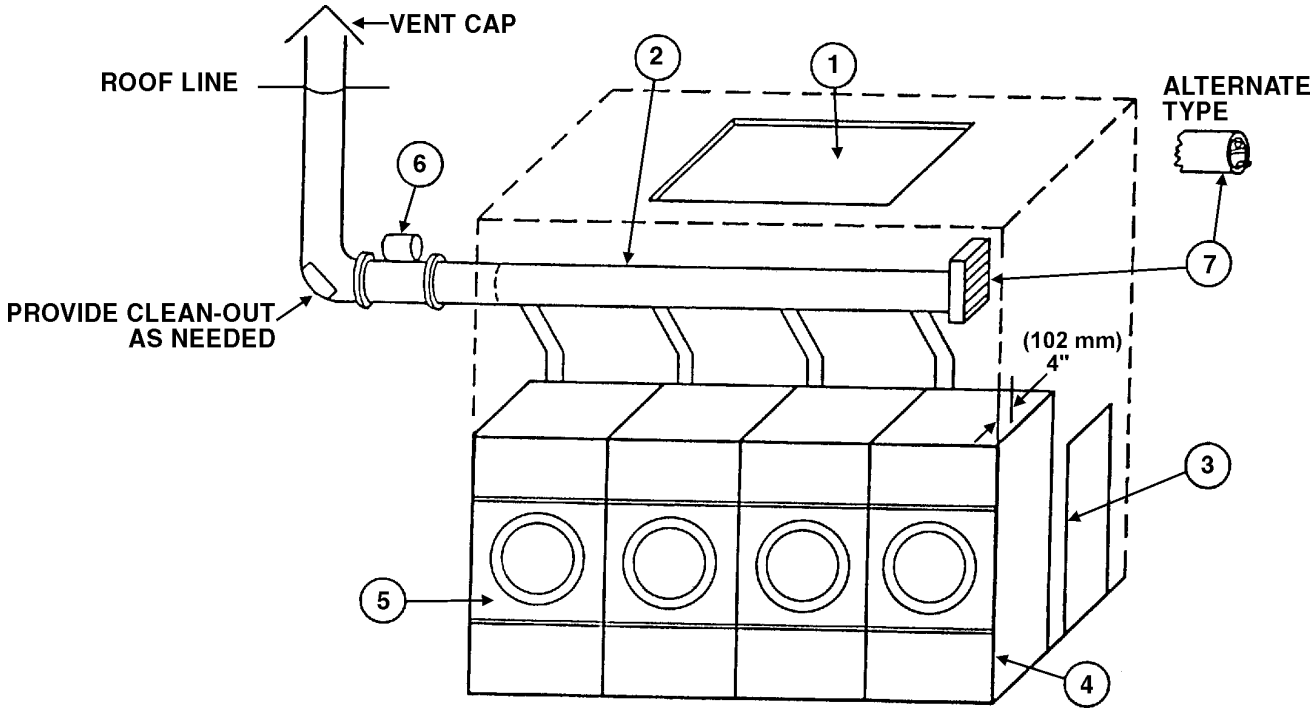
4. Keep dryer in good working condition. Repair or replace any worn or defective parts.

Steam Piping Installation (Illustration)



INDIVIDUALLY TRAPPED COILS ARE RECOMMENDED RATHER THAN MANFOLDING RETURN INTO ONE TRAP.

Dryer Installation with Multiple Exhaust (Illustration)



DRYER INSTALLATION WITH MULTIPLE EXHAUST

For Exhaust Duct more than 14 feet (5 m) and 2 elbows equivalent and more than 0.3 inches (8 mm) static pressure. (See illustration on previous page.)

1. Make-up air from outside building may enter enclosure from top or side walls. *(See Dryer Make-up Air Requirements Chart)*

2. Use constant diameter duct with area equal to the sum of dryer duct areas.

EXAMPLE: 6-8 inch (153-204 mm) diameter duct = 1-19.6 inch (26-498 mm) diameter duct in area. Use 20 inch (508 mm) diameter duct or diameter to match tube-axial fan.

EXAMPLE

3. Enclosure (plenum) with service door. This separates the dryer air from room comfort air. If dryers use room air instead of outside air, the heat loss can be another 25 Btu/h (6.3 kcal/h) for each cubic foot per minute (cfm) used.

4. Zero inches clearance to combustible material allowed on sides and at points within 4 inches (102 mm) of front on top.

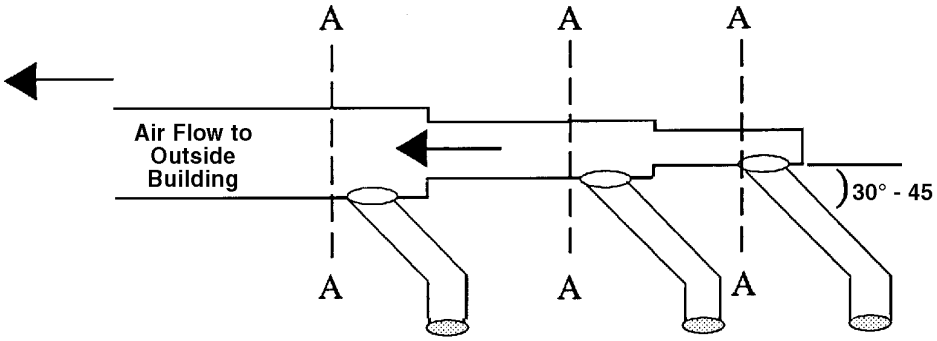
5. Heat loss into laundry room from dryer fronts *only* is about 60 Btu/h (16 kcal/h) per square root.

6. Flange mounted, belt driven tube-axial fan. **Fan must be run when one or more dryers are running.** *See suggested Automatic Electrical Control Wiring Diagram on previous page.* Must meet local electrical codes. Fan air flow (cfm) is equal to sum of dryer air flows, but static pressure (sp) is dependent on length of pipe and number of elbows.

7. **Barometric Bypass Damper** - Adjust to *closed flutter position* with all dryers and exhaust fan running. **Must be located with enclosure.**

CAUTION
***Never* install hot water heaters or other gas appliances in the same room as dryers. *Never* install cooling exhaust fans in the same room as dryers.**

For Exhaust Duct less than 14 feet (5 m) and 2 elbows equivalent and less than 0.3 inches (.8 mbar) static pressure.

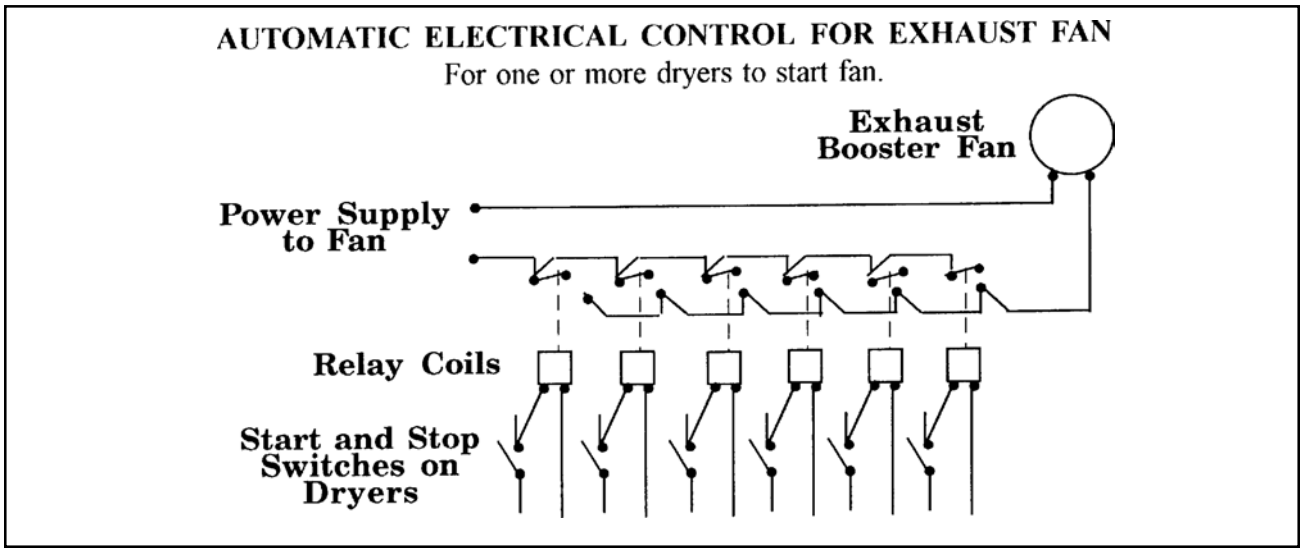


DRYER EXHAUSTS

Area of section "A-A" must be equal to the sum of dryer exhaust pipes entering multiple exhaust pipe. (*See chart below.*)

MODELS: HD150

No. of Dryers	1	2	3	4	5	6	7	8	9	10	11	12
Duct Diameter (in inches)	12	17	21	24	27	30	32	34	36	38	40	42
(in CM)	30	43	53	61	68	76	81	86	91	97	100	106



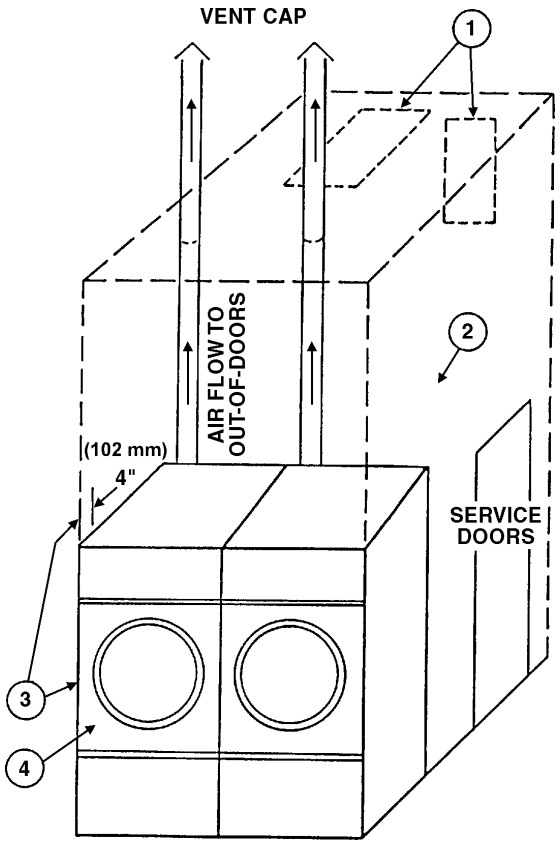
Suggested Minimum Dryer Make-up Air Requirements

Dryer Model	Dryer Pocket Capacity		Maximum Air Flow Rate per Pocket		Duct Size For Service Connection		Required Make-up Air Area per Pocket	
	lb	kg	cfm	m3/h	inch	mm	sq. inch	cm2
HD30 ST	30	13.6	450	765	6	153	87	561
HD75 ST	75	34	1000	1700	12	305	192	1240
HD110.1	110	50	2200	3740	12	305	422	2723
HD110.1 E/S	110	50	850	1445	8	203	163	1052
HD125.1	125	56.7	2000	3400	12	305	384	2477
HD150.1	150	68	2250	3825	12	305	432	2787
HD175.1	175	79.4	2780	4726	12	305	534	3445
HD190.1	190	86.2	3000	5100	12	305	576	3716
HD20.1	20	9.1	450	765	6	153	87	561
HD30SL	30	13.6	600	1020	8	203	116	748
HD30.1	30	13.6	625	1063	8	203	120	774
HD50.1	50	22.7	850	1445	8	203	164	1058
HD75.1	75	34	1000	1700	8	203	192	1240
HD80.1	80	36.3	1000	1700	10	254	192	1240

Notes:

1) The Model HD30 ST has 2 pockets per dryer, each pocket has the above listed characteristics; each pocket is exhausted separately with a 6" (153mm) duct.
2) The Model HD75 ST has 2 pockets per dryer, each pocket has the above listed characteristics; both pockets have one 8" (203mm) exhaust manifolded into one 12" (305mm) exhaust duct for exhaust connection.
3) For the HD30 ST and the HD75 ST Models, the Required Make-up Air Area shown in the table should be doubled since it is shown per pocket,only.

Dryer Installation with Separate Exhaust (Preferred)



DRYER INSTALLATION WITH SEPARATE EXHAUST (PREFERRED)

For ductwork less than 14 feet (5 m) and 2 elbows equivalent and less than 0.3 inches (.8 mbar) static pressure.

NEVER exhaust the dryer into a chimney.

NEVER install wire mesh screen over the exhaust or make-up air area.

NEVER exhaust into a wall, ceiling, or concealed space.

1. Make-Up Air opening from outside the building may enter the enclosure from the top or side walls. *(See Dryer Make-up Air Requirements Chart)*

2. Enclosure (plenum) with service door. This separates the dryer air from the room comfort air. If dryers use room air instead of outside air, additional heat loss can be another 25 Btu/h (6.3 kcal/h) for each cubic foot per minute (cfm) used.

3. Zero inches clearance to combustible material allowed on sides and at points within 4 inches (102 mm) of front on top.

4. Heat loss into laundry room from dryer front panels is about 60 Btu/h (16 kcal/h) per square foot.

DRYER AIR FLOW INSTALLATION

Nothing is more important than air flow for the proper operation of a clothes dryer. A dryer is a pump which draws make-up air from the out-of-doors, through the heater, through the clothes and then forces the air through the exhaust duct back to the out-of-doors. Just as in a fluid water pump, there must be the proper fluid air flow out of the exhaust duct.

In summary, there must be the proper size out-of-doors inlet air opening (4-6 times the combined areas of the air outlet) and an exhaust duct, with appropriate size and length, to allow air flow through the dryer with no more than 0.3" w.. c. (.75 mbar) static pressure in the exhaust duct.

In some instances, special fans are required to supply make-up air, and/or boost exhaust fans are required for both regular and energy savings models.

FOR BEST DRYING

FOR BEST DRYING:

1. Exhaust duct maximum length 14 feet (5 m) of straight duct and maximum to two 90º bends.
2. Use 45º and 30º elbows wherever possible.
3. **Exhaust each dryer separately.**
4. **Do not** install wire mesh or other restrictions in the exhaust duct.
5. Use clean-outs in the exhaust duct and clean periodically when needed.
6. **Never** exceed 0.3 inches w. c. (.75 mbar) static pressure in the exhaust duct.
7. Inside surface of the duct **must be smooth.**
8. Recommend pop rivets for duct assembly.

FOR BEST DRYING

FOR BEST DRYING:

1. Provide opening to the out-of-doors in accordance with the following:

   For each dryer -

   8 inches (204 mm) diameter exhaust requires 2 square feet (.1858 m²) make-up air.

   12 inches (305 mm) diameter exhaust requires 4 square feet (.3716 m²) make-up air.

2. Use barometric shutters in the inlet air opening to control air when dryers are not running.

OTHER RECOMMENDATIONS

OTHER RECOMMENDATIONS

To assure compliance, consult local building code requirements.

TROUBLESHOOTING

TROUBLESHOOTING

Hot dryer surfaces, scorched clothes, slow drying, lint accumulations, or air switch malfunction are indicators of exhaust duct and/or make-up air problems.

RULES FOR SAFE OPERATION OF YOUR DRYER

RULES

1. Be sure your dryer is installed properly in accordance with the recommended instructions.

2. **CAUTION**
   Be safe - Shut main electrical power supply and gas supply off externally before attempting service.

3. **CAUTION**
   a. **Never use dry cleaning solvents**: gasoline, kerosene, or other flammible liquids in the dryer. **FIRE AND EXPLOSION WILL OCCUR!**

   b. **Never put fabrics treated with these liquids into the dryer.**

   c. **Never use these liquids near the dryer.**

   d. **Always keep the lint screen clean**; a full lint screen may be a fire hazard.

   e. **Never use heat to dry items that contain plastic, foam, or sponge rubber, or rags coated with wax or paint**. The heat may damage the material or create a fire hazard. Rubber easily oxidizes, causing excessive heat and possible fire. Never dry the above items in the dryer.

4. **Never let children play near or operate the dryer.** Serious injury will occur if a child should crawl inside and the dryer is turned on.

5. Never use the dryer door opening and top as a step stool.

6. Read and follow manufacturer's instructions on packages of laundry and cleaning aids. Heed any warnings or precautions.

7. Never tumble fiberglass materials in the dryer unless the labels say they are machine dryable. Glass fibers break and could remain in the dryer causing skin irriatation if they become mixed into other fabrics.

8. **Reference** - Lighting and shutdown instructions and wiring diagrams are located on the rear wall of the dryer cabinet.

9. **The dryer must not be installed or stored in an area where it will be exposed to water and/or weather.**

CAUTION

Synthetic solvent fumes from dry cleaning machines create acids when drawn through the dryer. These acid fumes cause rusting of painted parts, pitting of bright plated parts and completely removes the zinc from galvanized metal parts, such as the tumbler basket.

If the dry cleaning machines are in the same area as the tumbler, then the tumbler make-up air must come from a source free of solvent fumes.

NOTE

It is best to run a properly sized bag of rags and/or old towels through one or two cycles prior to drying in service. This process will remove any films or residual coatings left by the manufacturing process.

ENERGY SAVING TIPS

ENERGY SAVING TIPS

1. Install dryer so that you can use short, straight venting. Turns, elbows and long vent tubing tend to increase drying time. Longer dry time means the use of more energy and higher operating costs.

2. Operate dryer using full-size loads. Very large loads use extra energy. Very small loads waste energy.

3. Dry lightweight fabrics separately from heavy fabrics. You'll use less energy and get more even drying results by drying fabrics of similar weight together.

4. Clean the lint screen after each load. A clean lint screen helps give faster, more economical drying.

5. Don't open the dryer door while drying. You let warm air escape from the dryer into the room.

6. Unload your dryer as soon as it stops. This saves having to re-start your dryer to remove wrinkles.

ABOVE 2,000 FEET (610 m)

ELEVATIONS ABOVE 2,000 FEET (610 m)

Input ratings shown on the rating plate (serial tag) are for elevations up to 2,000 feet (610 m). For elevations above 2,000 feet (610 m), rating should be reduced at a rate of 4% for each 1,000 feet (305 m) above sea level.

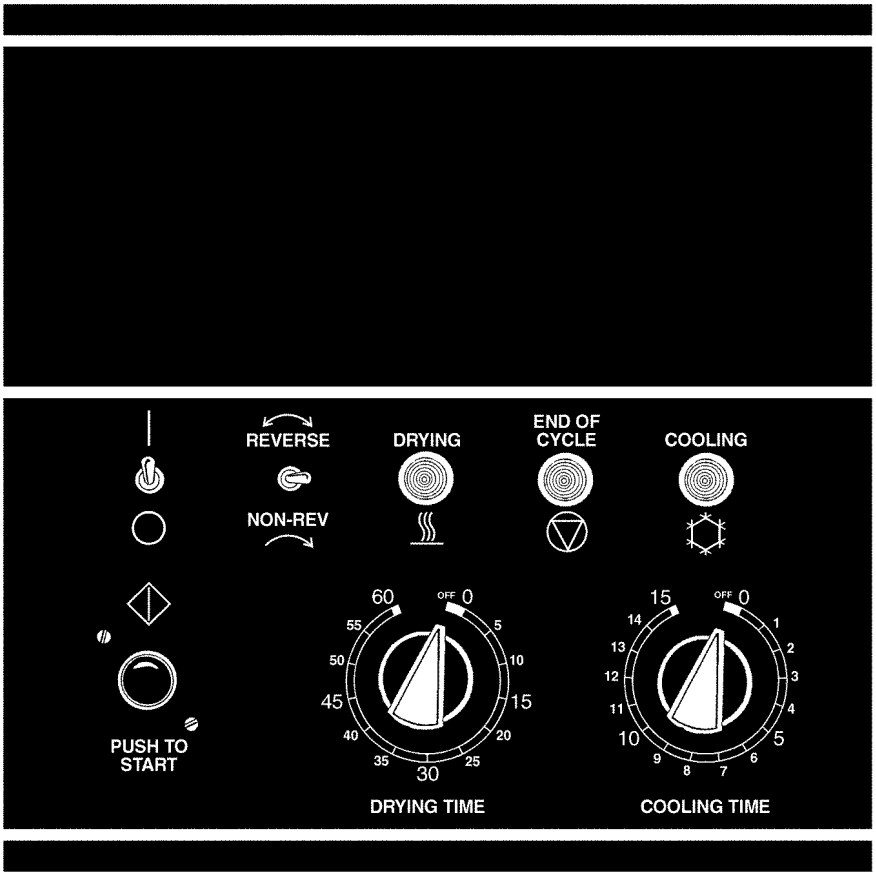


Fig. 1

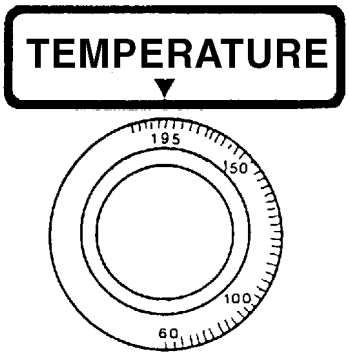


Fig. 2 Temperature Selection

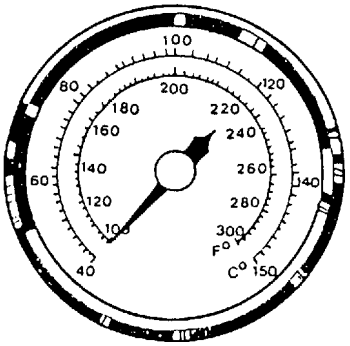


Fig. 3 Thermometer

OPERATING INSTRUCTIONS - TWO TIMER MODELS

1. After loading the dryer tumbler with water washed clothes load, proceed to close the loading door. For better drying, do not load dryer with combination of garments that twist.

2. Turn the 60-minute drying timer to the desired drying time. The drying cycle light will be on and indicate the drying. The light shuts off when drying time is complete. (See figure 1 on page 30.)

3. Turn the 15-minute cooling cycle timer to the desired cool down time. **(Note: Dryer will not start unless some cooling time is selected!).** After the drying cycle is completed, then the cooling cycle time will automatically operate. The cooling light will be on and indicate the cooling of the clothes load. The light shuts off when cooling time is completed. (See figure 1 on page 30.)

4. **Temperature Selector** - Select temperature per type of load being dried in the dryer. (See figure 2 on page 30.)
   High Heat - Mixed and heavy fabrics, set dial to 195º F (91° C).
   Normal - Cottons and linens, set dial to 170º F (77° C).
   Permanent Press Heat - Poly knit synthetics, blends, lightweight fabrics, set dial to 150º F (66° C).
   Low Heat - Delicate, sheer fabrics, easy-to-dry, set dial to 135º F (58° C).

5. **Thermometer** - Use this with your temperature selection. Teach yourself what temperature is too hot or too cold. (See figure 3 on page 30.)

6. Turn switch to "start" position. (See figure 1 on page 30.)

7. Close the dryer door, but the basket will not rotate until the **PUSH-TO-START BUTTON** is pressed. Press in the **PUSH-TO-START BUTTON** (approximately 2 seconds) until the dryer starts running and then release button. (See figure 1 on page 30.)

   What is happening to the drying operation:
   a. The fan motor will operate.
   b. The basket will rotate.
   c. The heat source will be energized.
   d. The heated air mix with the water washed clothes to evaporate the moisture from the garments.
   e. The thermostats will function to maintain a safe temperature throughout the drying cycle.
   f. The heat will be shut off and the motor will continue to run to cool the dry load to a desired handling temperature.

8. When the drying timer completes its time, then the cooling timer will be energized and the cooling light will be "On". When the cooling light will stay "On" and the "End-of-Cycle" light will be "On". The "End-of-Cycle" light will go off when the "Start/Stop" switch is turned to "Off" or "O". At the end of the cool-down cycle, the clothes load is dry.

9. To shut the dryer "Off", move the "Start/Stop" switch to "Off" or "O" position. This switch is a safety switch to immediately stop the dryer's operation.

   Special Reversing Feature - Set the "Reversing/Non-Reversing" switch to "Reversing". See service manual for setting of time of each reversal. Reversing of the basket is designed for loads that twist (example - bed sheets and large mixed loads). "Non-Reversing" is for small or medium-size items that don't twist.

TROUBLESHOOTING

To help you troubleshoot the dryer, we list below the most common reasons for service calls and some answers to the problems. **Before you call service**, please review the following items:

DRYER WON'T START

DRYER WON'T START

1. Is the door completely closed?
2. Are the controls set to the **"on"** position?
3. Did you push the **"start"** control?
4. Has a fuse blown or a circuit breaker tripped?
5. Are the fuses tight?
6. Check for low voltage.

DRYER WON'T HEAT

DRYER WON'T HEAT

1. Is the dryer set for **"cooling time"** rather than **"drying time"**?
2. Are the gas valve in the dryer and the valve on the main gas line turned on?
3. Check for low or intermittant **gas pressure**.

CLOTHES ARE NOT SATISFACTORILY DRY

CLOTHES ARE NOT SATISFACTORILY DRY

1. Timed cycle - Did you allow enough heating time before the cool-down part of the cycle?
2. Is the lint screen blocked?
3. Is the exhaust duct to the outside clean and not blocked? (A blocked exhaust will cause slow drying and other ploblems.)

GAS DRYER IGNITION

GAS DRYER IGNITION

Refer to the page on "Instructions for the Direct Ignition System Operation". Check to see if the manual gas valve is open. Then reset the dryer controls. **All panels, covers, and doors must be in place and closed before starting the dryer.**

VERY IMPORTANT
When calling the factory for service, always refer to the model number, product number and serial number (found on the rating plate of the dryer).

TROUBLE	CAUSE	REMEDY
Dryer runs, but no heat.	Line fuse or heater circuit fuse blown to unit.	Replace fuse.
	Defective door switch.	Replace door switch.
	Air switch not operating.	Clean out lint compartment daily. Check back draft damper for foreign objects, lint accumulation or other causes that may prevent damper from opening. Check duct work for lint build-up. Check installation sheet to insure that duct work and make-up air openings are adequately sized. Check exhaust outlet. If a screen has been improperly installed on the outlet, it may be clogged with lint or frozen during winter. Never install a screen on the exhaust outlet. Vacuum within dryer drops to .09" w. c. (.225 mbar), or less, for normal operation of dryer, vacuum reading (in inches of water column) should range between .15 and .3 inches (.38 and .75 mbar). Vacuum reading can be made with a vacuum U-gauge by removing a sheet metal screw in the front panel of dryer, and inserting the rubber tube of the vacuum gauge into screw opening.
	Air switch out of adjustment.	See air switch adjustment sheet in service section.
	Air switch defective.	Replace air switch.
	Gas pressure too low.	Check manifold pressure and adjust to pressure specified on rating plate. If this pressure cannot be obtained, have gas supplier check main pressure.
	Improper orifice.	Dryer is orificed for type of gas specified on rating plate. Check with gas supplier to determine specifications for gas being used. If different from rating plate, contact factory and obtain proper orifices.
	Electric power to heating unit turned off.	Turn power on.

TROUBLE	CAUSE	REMEDY
Dryer runs, but no heat (continued).	Defective relay.	Replace relay.
	Defective thermostat.	Replace thermostat.
	Defective safety overload thermostat.	Replace thermostat.
	Lint compartment door open.	Close door.
	Incorrect voltage.	Check for correct control voltage - 24V.
	No voltage.	Check power supply, check secondary voltage on transformer, check wiring and wiring diagram.
	Lint door OPEN.	CLOSE Lint Door.
	Defective Gas Valve.	Replace Valve Assembly.
	Gas turned OFF.	Turn Manual Gas Valve ON.
	Spark Igniter not igniting gas.	Check ground.
Main burners burning improperly.	Burner air shutters closed.	Open for blue flame.
	Dirt in burner.	Blow out.
	Gas pressure too high.	Check rating plate for correct gas pressure.
	Orifice too large.	Send to factory for correct orifices.
	Restricted or blocked exhaust.	Clean exhaust.
Low gas flame or high gas flame.	Incorrect main burner orifices.	Replace orifices -- check factory for correct size.
Dryer too hot.	Incorrect main burner orifices.	Replace orifices -- check factory for correct size.
	Inadequate make-up air.	Make-up air must be 4 to 6 times the exhaust area of the dryer.
	Lint accumulated.	Remove lint.
	Exhaust duct dampers.	Must be full open or replace.
	Gas pressure too high.	Adjust gas pressure as specified on rating plate.
	Partially restricted or inadequately sized exhaust system.	Check installation sheet in service section for recommended sizes. Check for and remove obstructions or lint build-up from duct work. Never use smaller size exhaust duct. Always use larger size exhaust duct.
	Defective thermostat.	Replace thermostat.

TROUBLE	CAUSE	REMEDY
Motors will not start.	No power.	Check fuses on circuit breakers. Make sure main control switch is ON.
	Incorrect power.	Check power source; voltage, phase, and frequency must be the same as specified on electrical rating plate.
	Time off.	Turn timer clockwise to desired time setting.
	Loose wiring connections.	Check wire connections in electrical box on rear of dryer.
	Defective starting relay.	Check coils and contacts.
	Motor internal overloads have tripped (only on MTR30X series).	Reset the internal overloads on the motor by pressing the button located on the body of the motor.
Motor tripping on thermal overload.	Low voltage.	Check voltage at motor terminals. Voltage must be within (plus or minus) 10% of voltage shown on motor rating plate -- if not, check with local power company for recommended corrective measures.
	Inadequate wiring.	Check with local power company to insure that wiring is adequately sized for load.
	Loose connections.	Check all electrical connections and tighten any loose connections.
	Inadequate air.	Check installation sheet in service section for recommended make-up air openings.
	Poor housekeeping.	Clean lint accumulation on and around motors.
Basket motor will not run.	Loading door open.	Close door.
	Door switch out of adjustment.	Adjust switch by removing cover and bend actuator lever to clear switch button 3/8” (10 mm) with cover in place.
	Defective door switch.	Replace switch.
	Defective basket motor contactor.	Replace contactor.
Basket will not reverse.	Reversing timer.	Adjust timer (see page in Maintenance section).
		Check timer to see if working properly.

TROUBLE	CAUSE	REMEDY
Dryer does not stop at end of time period (6).	Defective timer.	Replace timer.
Dryer runs, but no steam to coils.	Valve closed.	Check all valves in steam supply and return -- make sure they are open.
	Steam trap blocked.	Remove and clean. Replace if defective.
	Solenoid valve.	On dryers using solenoid temperature control, check operation of solenoid valve by advancing thermostat.
	Thermostat.	On dryers using solenoid temperature control, thermostat controls operation of solenoid valve. If defective, replace thermostat.
	Check valve installed incorrectly.	Check for inlet and outlet marking on check valve, and invert if necessary.
	Strainer clogged.	Remove plug and blow down strainer or remove and clean thoroughly if heavily clogged.
Water in steam line.	Steam piping installed incorrectly.	Check piping per steam installation instructions.
	Trap not functioning.	Check trap for size and capacity. If dirty and sluggish, clean thoroughly or replace. Check return line for high back pressure, or another trap charging against the trap functioning improperly.
Basket motor runs, but basket will not revolve.	V-Belt broken.	Replace V-Belt.
	V-Belt loose.	Adjust belt tension.
	Motor Pulley loose.	Tighten Set Screw.
	Basket overloaded.	Remove load.
Dryer noisy or vibrating.	Not leveled.	Check manual for proper leveling procedures.
	Fan out of balance.	Accidental damage to the fan blade can change the dynamic balance. Damaged fans should be replaced.
	Basket rubbing.	Adjust basket clearance.
	V-Belt sheaves.	Tighten Set Screws, make sure sheaves are in proper alignment.
	Belt.	Adjust belt tension.
	Foreign objects.	Occaisionally screws, nails, etc., will hang in the basket perforations and drag against the sweep sheets surrounding the basket. Such foreign objects should be removed immediately.

DIRECT SPARK IGNITION OPERATION

1. When a call for heat is received from the control supplying 24VAC to the Ignition Control Module, the pre-purge delay timer begins. This delay time allows any air/sediment to be ejected prior to burner ignition. Following the pre-purge delay period, the gas valve is energized and the spark ignitor sparks for the trial ignition period.

2. When a flame is detected during the trial for ignition period, the spark ignitor shuts off and the gas valve remains energized.

3. If no flame is detected by the Flame Sense Circuit, the Ignition Control Module will go into safety lockout. The valve will be turned off immediately. If the module has multiple retries and no flame is detected, the gas valve is de-energized and the module goes into an interpurge delay. After this delay, the module will attempt another trial for the ignition period. This will continue until the number of retries has been used up. At the time, the module will go into safety lockout.

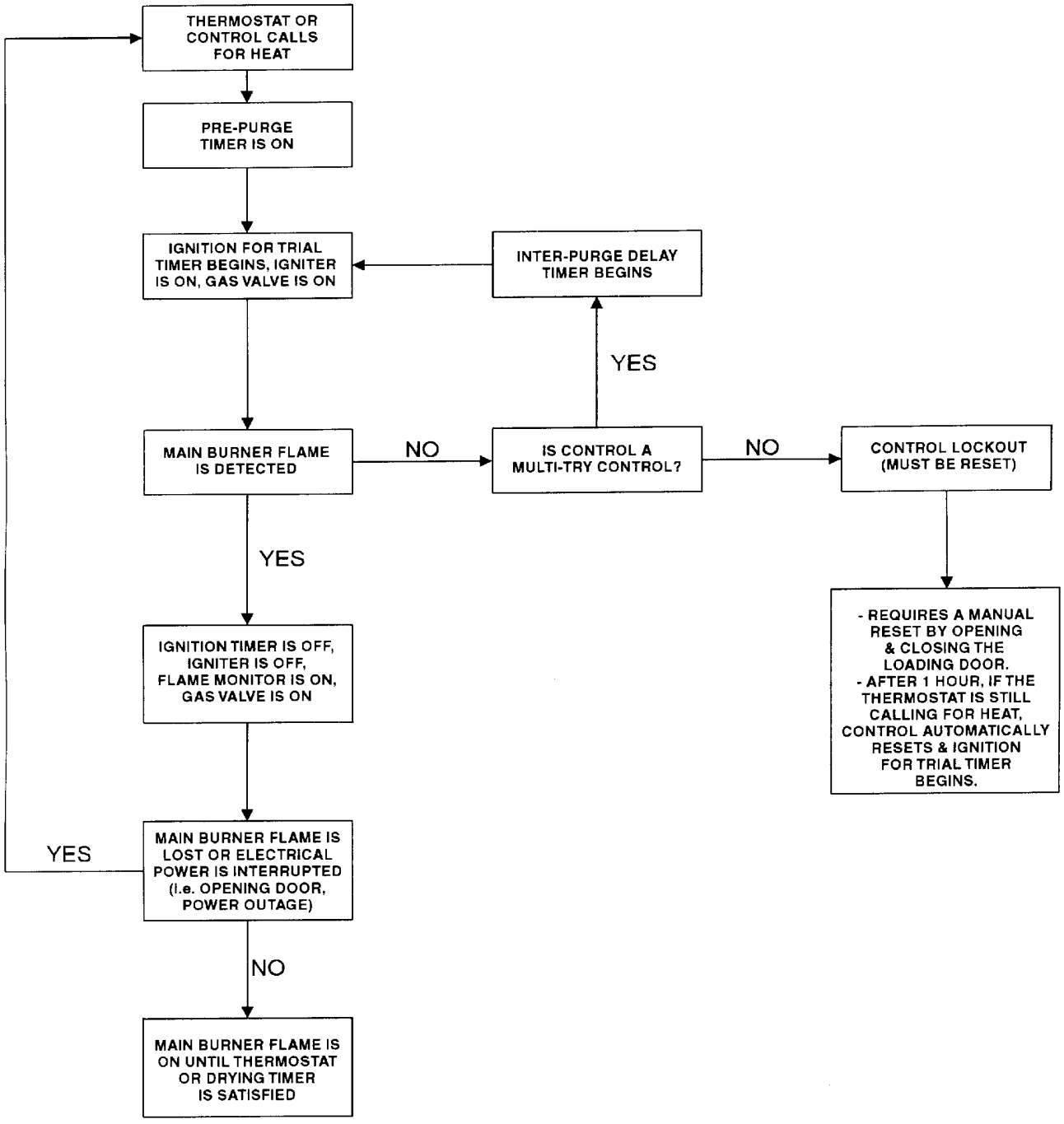
4. Recovery from safety lockout requires one of the following:
   a. A manual reset by opening and closing the loading door.
   b. After one hour if the Control Thermostat is still calling for heat, the module will automatically reset and the trial for ignition period will start over.

5. Opening the loading door will cause the flame to extinguish. Closing the door and starting the dryer will restart the trial for ignition period.

6. Once the Control Thermostat has been satisfied and/or the Drying Timer has been timed out, the Ignition Control Module(s) will be de-energized, the gas valve(s) will be de-energized and the flames will extinguish.

7. The machine will continue to run in a cooldown mode without heat. This process will cool the load to the touch and help to eliminate wrinkling.

DIRECT SPARK
IGNITION OPERATION
FLOW CHART



MAINTENANCE

MAINTENANCE

1. **CLEAN LINT TRAP DAILY.** Remove lint before starting day's operation. A clean lint trap will increase the efficiency of the dryer, as the moisture-laden air will be exhausted more quickly.

2. **CLEAN BASKET AND SWEEP SHEETS.** Clean periodically and/or as often as required. The basket and sweep sheets are easily accessible by removing the front panel of the dryer.

3. **GEAR REDUCER.** Maintain the correct oil level. See separate page on Gear Reducer Operation and Maintenance, for detailed information.

4. **PULLEYS AND BELTS.** Keep belts clean. Oil and dirt will shorten the useful life of the belt. Never allow a belt to run against the belt guard. Check periodically for alignment. Pulley shafts must be parallel and the grooves must be aligned. Check and re-tighten pulley set screws periodically. Check belt tension periodically. Lower motor to increase tension by adjusting the nuts fastening the motor plate to the rod connected to the Gear Reducer.

5. **ELECTRIC MOTORS.** Keep motors clean and dry. Motors having ball bearings are packed with sufficient grease for approximately five years of normal operation. After five years, the bearings and housing should be cleaned thoroughly. Repack each bearing and the cavity in back of the bearing on-third full with Chevron Grease No. SR1-2.

   Motors having wool packed sleeve bearings are oiled at the factory for one year of normal operation. After one year, add annually one-half teaspoon of electric motor oil or S.A.E.#10 to each bearing. For 24 hour per day operation, add one teaspoon of oil annually.

   If motors overheat, check voltage and wiring. Low voltage, inadequate wiring, and loose connections are the main cause of motor failure.

MAINTENANCE

MAINTENANCE (continued)

6. **STEAM HEATED UNITS.** Keep steam coils clean. Check periodically and clean often, as required. Remove lint and dirt build-up from fins. Dirty fins decrease the efficiency of steam heated units.

7. **GAS BURNERS.** Keep burners clean. Check and clean often.

8. **GAS PRESSURE.** Gas pressure should be checked periodically per specifications on separate page.

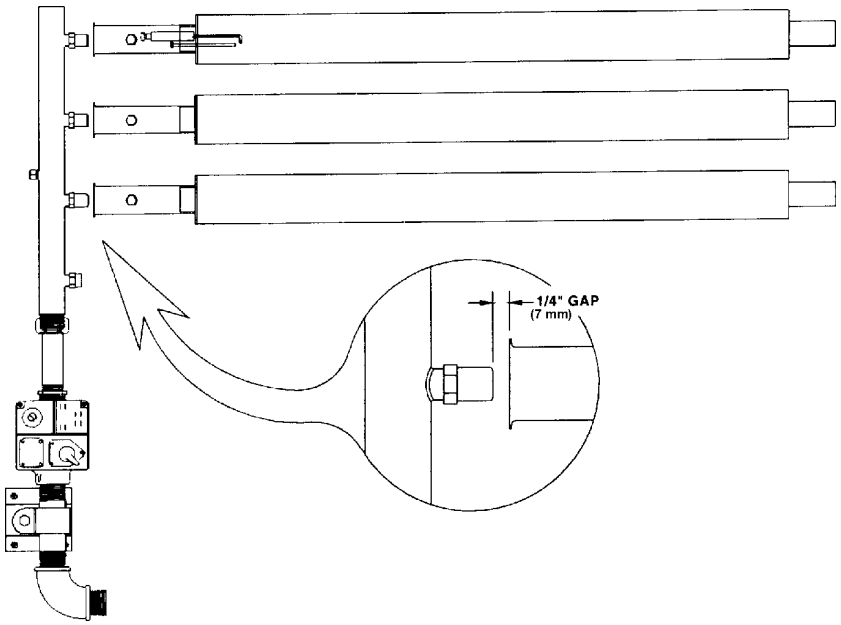
9. **EXHAUST SYSTEM.** Periodically check and clean.

10. **VOLTAGE.** Voltage should be checked periodically per rating plate located on rear wall of dryer.

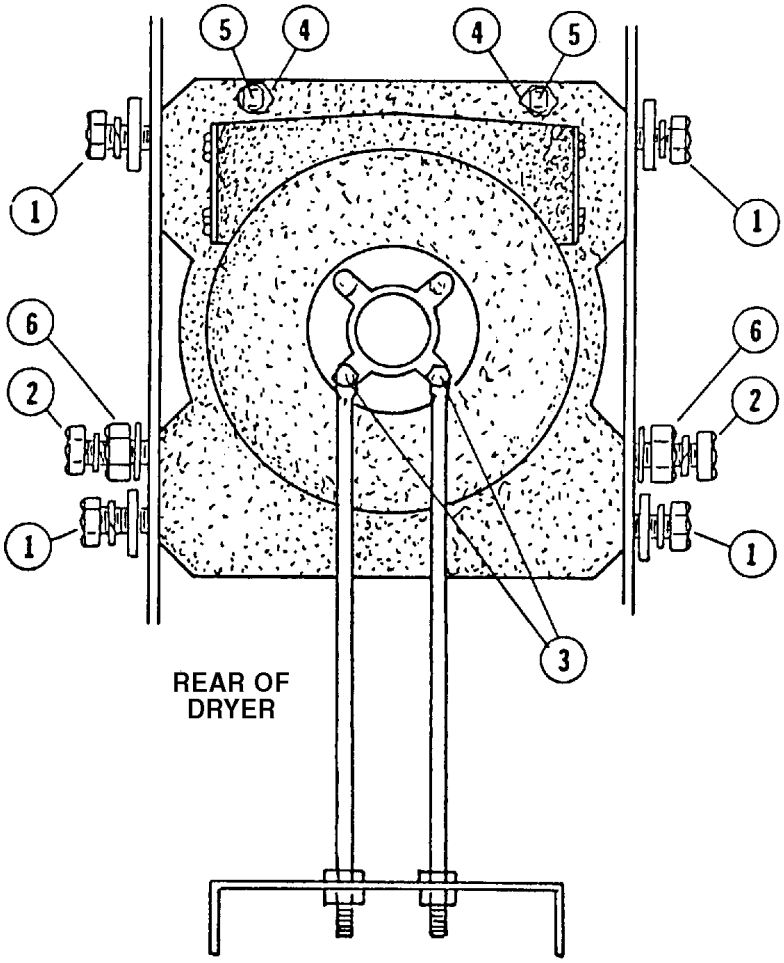
11. **COMBUSTION (MAKE-UP) AND VENTILATING AIR.** The flow should not be obstructed.

12. **DRYER AREA.** Keep dryer area clean of lint and free from combustiible materials, gasoline, and other flammable liquids/vapors

BURNER AIR INLET ADJUSTMENT



CAUTION
Please insure that there is a 1/4" (7 mm) gap between the orifice and burner opening.


5
4
4
5
1
1
6
2
6
2
1
1
3
REAR OF
DRYER

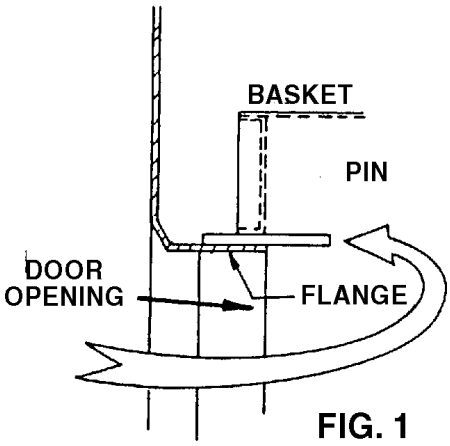

BASKET
PIN
DOOR
OPENING
FLANGE

FIG. 1

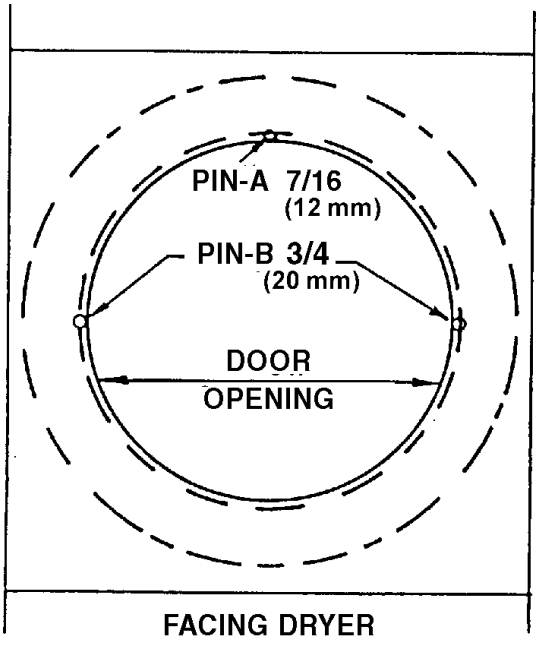

PIN-A 7/16
(12 mm)
PIN-B 3/4
(20 mm)
DOOR
OPENING
FACING DRYER

FIG. 2

INSTRUCTIONS FOR ALIGNING BASKETS ON 150 LB. DRYERS

INSTRUCTIONS

1. Loosen bolts number one (1) through five (5).

2. Place pin “A” in position shown in figures 1 and 2.

3. Check pins “B” at position shown in figures 1 and 2 for equal clearance.

4. If pin “B” clearance is unequal, adjust at nut #6.

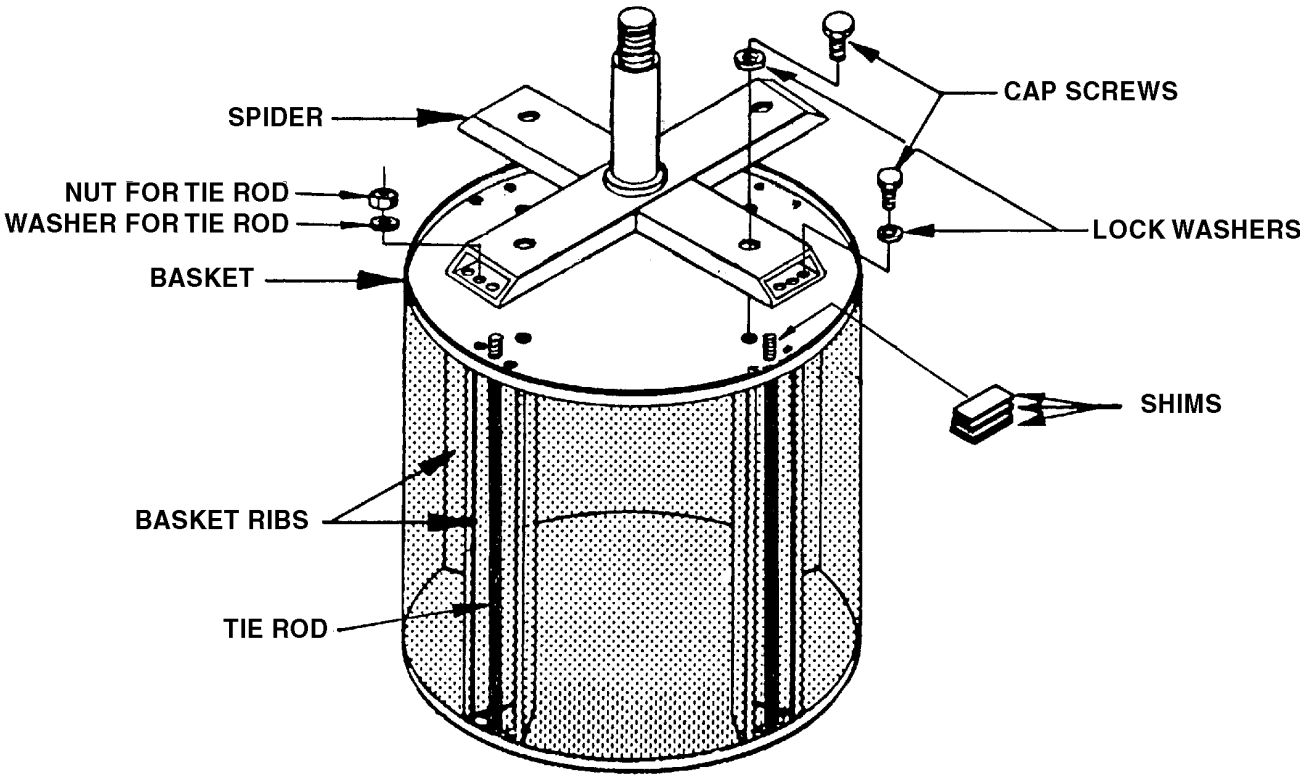
5. When clearance at pin “B” is correct, tighten bolts #1 in the following order, as viewed from rear of dryer, top right, bottom left, top left and bottom right.

6. Tighten bolts #5 until flush against back of dryer. Tighten lock nut #4 to secure bolt #5 in position.

7. Tighten bolts #2 and #3.

8. Remove pin “A” and check for proper clearance at points “A” and “B”. If clearance is incorrect, repeat the above steps.

NOTE
Use short sections of round steel rod for pins or drill bits may be used in place of round rod.


SPIDER
NUT FOR TIE ROD
WASHER FOR TIE ROD
BASKET
BASKET RIBS
TIE ROD
CAP SCREWS
LOCK WASHERS
SHIMS

INSTRUCTIONS FOR SHIMMING THE BASKET AND SPIDER ASSEMBLY

This procedure is normally necessary when replacing either the basket or the spider assembly on any dryer. The alignment of these two parts is crucial in assuring a true running basket.

A. Align the basket as per instructions on the previous page.

B. Rotate the basket to determine where the most out-of-round point is (where the basket scrapes or comes closest to scraping the sweep sheet).

C. Mark this position and the nearest rib to this position. If it is between two ribs, both ribs may need to be shimmed.

D. Remove the basket from the dryer (do not loosen the alignment bolts).

E. With the basket on the floor (spider up), loosen the cap screws and tie rod nuts enough to insert one or two shims between the spider leg and the basket at the marked position. With shims in place, tighten the screws and nuts.

F. Install spider and basket assembly and check again.

G. If basket is still out-of-round, start at *Step B* and repeat procedure.

H. When shimming is completed, re-align basket.

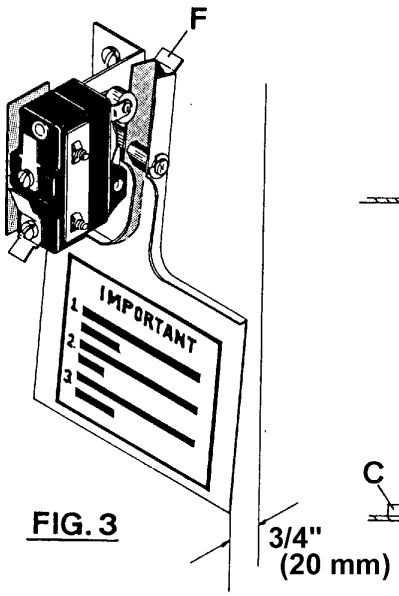


FIG. 3

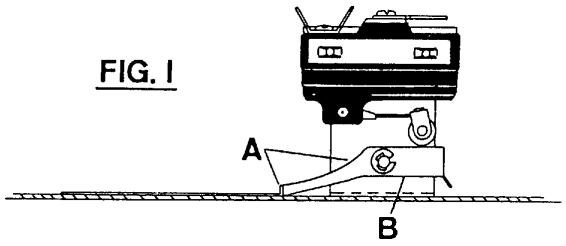


FIG. I

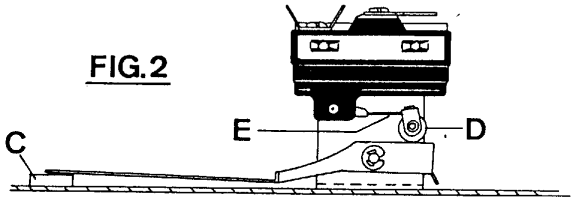


FIG.2

AIRSWITCH ADJUSTMENT

1. Shut off current; disconnect leads and remove air switch.

2. Lay air switch assembly on flat surface. Adjust air blade at “A” (figure 1) so that air blade lays flat and surface “B” is parallel to the flat surface.

3. Place 3/8” x 5/8” (10 mm x 16 mm) spacer bar or equivalent “C” (figure 2) under air blade in position shown; hold switch mounting bracket firmly and adjust switch actuator “D” with needle nose pliers at “E” by twisting actuator right or left, whichever is needed, so that switch closes when end of air blade engages bar “C”.

4. Maximum opening of air switch must be no greater than 3/4” (20 mm) (figure 3). Bend tab “F” in or out to maintain this dimension.

5. Re-install air switch assembly on rear of dryer.

6. Re-check operation of air blade. Switch must close before air blade engages face of opening and re-open before stop “F” engages.

INSTRUCTIONS FOR DRYERS WITH REVERSING CONTROL TIMER

Instructions

In operation, coasting of basket increases, making it necessary to readjust reversing timer.

> **CAUTION**
> **Failure to do this will cause the thermal overload units for the basket to cut-out unnecessarily and probably damage the gear reducer.**

Adjustment of Reversing Timer Dwell Time

> **CAUTION**
> **Dryer power supply must be shut off before adjusting timer.**

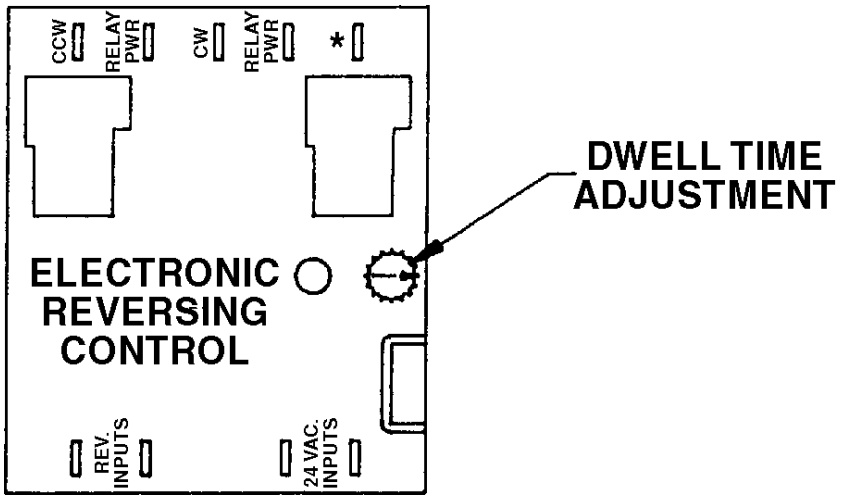
The dwell time is the time from when the motor turns "off", to when it turns "on" again in the opposite direction.

Turning the dwell adjustment knob counter-clockwise increases the dwell time and turning it clockwise decreases the dwell time.

Recommended dwell time for the basket to stop completely is 5 to 7 seconds. Minimum basket stopping time is 4 seconds.

> **NOTE**
> **Select non-reversing or reversing before starting dryer.**

> **NOTE**
> **Fan rotates counter-clockwise as viewed from back end of motor. See arrow on motor support. to change rotation, reverse power leads L1 and L2.**



INSTRUCTIONS FOR DRYERS WITHOUT REVERSING CONTROL FAN AND BASKET ROTATION

Instructions

NOTE
Fan rotates counter-clockwise as viewed from back end of motor. See arrow on motor support.

Basket rotates counter-clockwise as viewed from back end of motor. See arrow on motor support.

Basket rotates counter-clockwise as viewed from front of tumbler.

To change rotation of both fan and basket, reverse power leads L1 and L2.

To change rotation of fan only, reverse motor leads F1 and F2.

To change rotation of basket only, reverse motor leads B1 and B2.

LARGE GEAR REDUCER MAINTENANCE

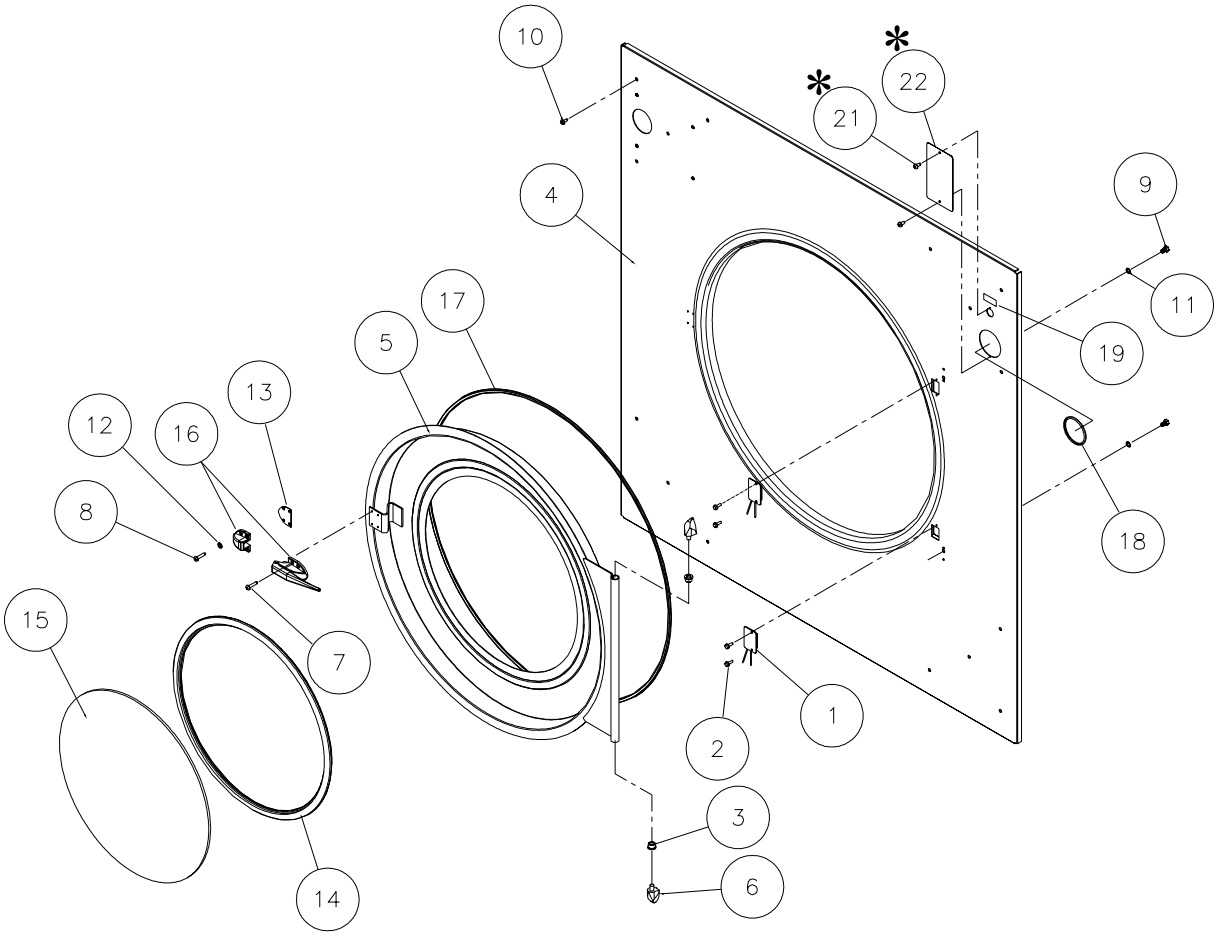
LARGE GEAR REDUCER MAINTENANCE

Before placing the dryer in operation, check the oil level. If the oil level is correct, it can be checked by removing the fill overflow plug on the right hand side of the gear reducer (facing rear).

If oil must be added, remove the vent plug at the top of the gear reducer and add as needed.

CHANGE OIL ONCE EVERY 6 MONTHS.

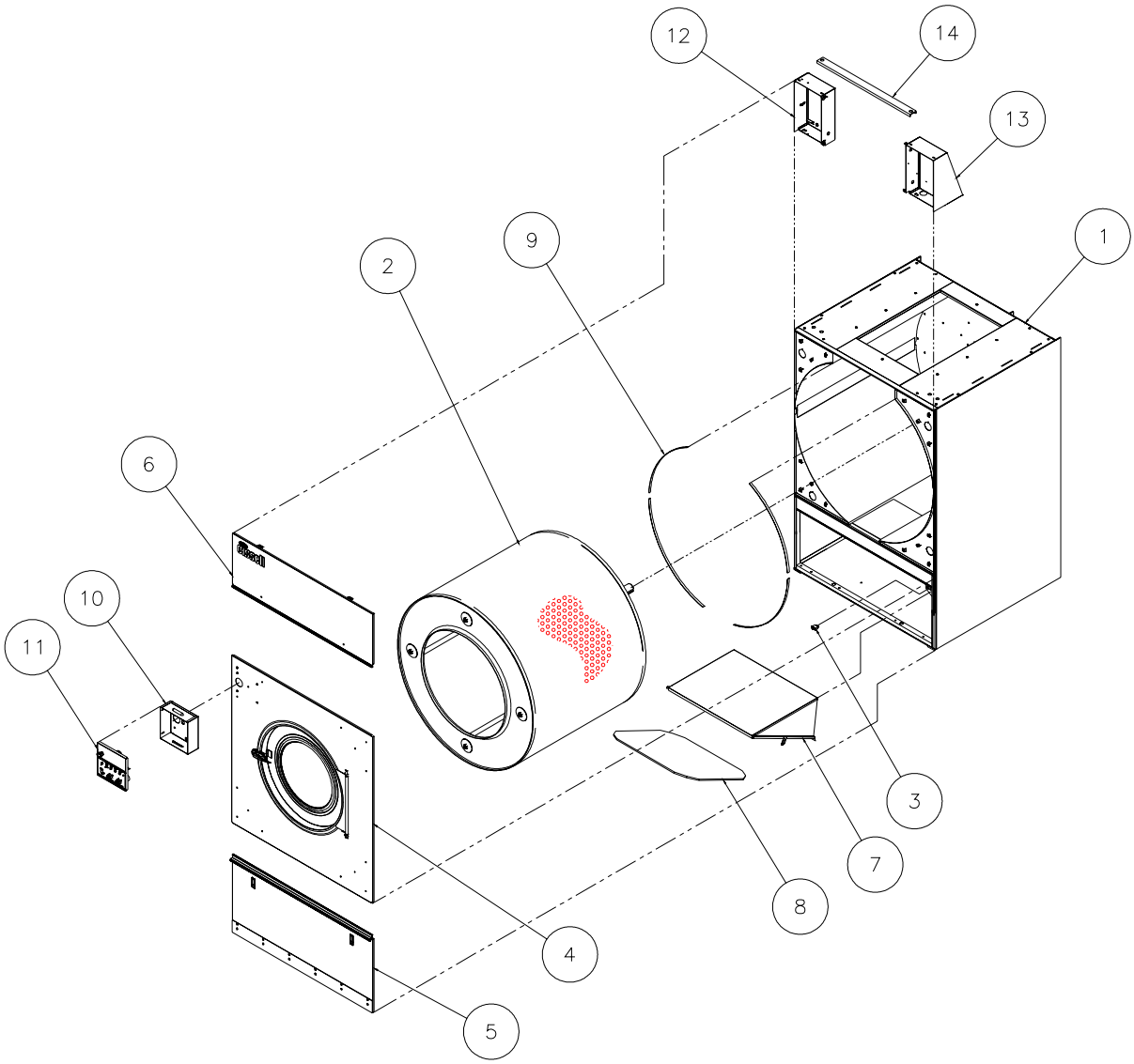
TU15449 - Time/Temp. Front panel assembly



* Cover plate used for DMP and PRO HC.

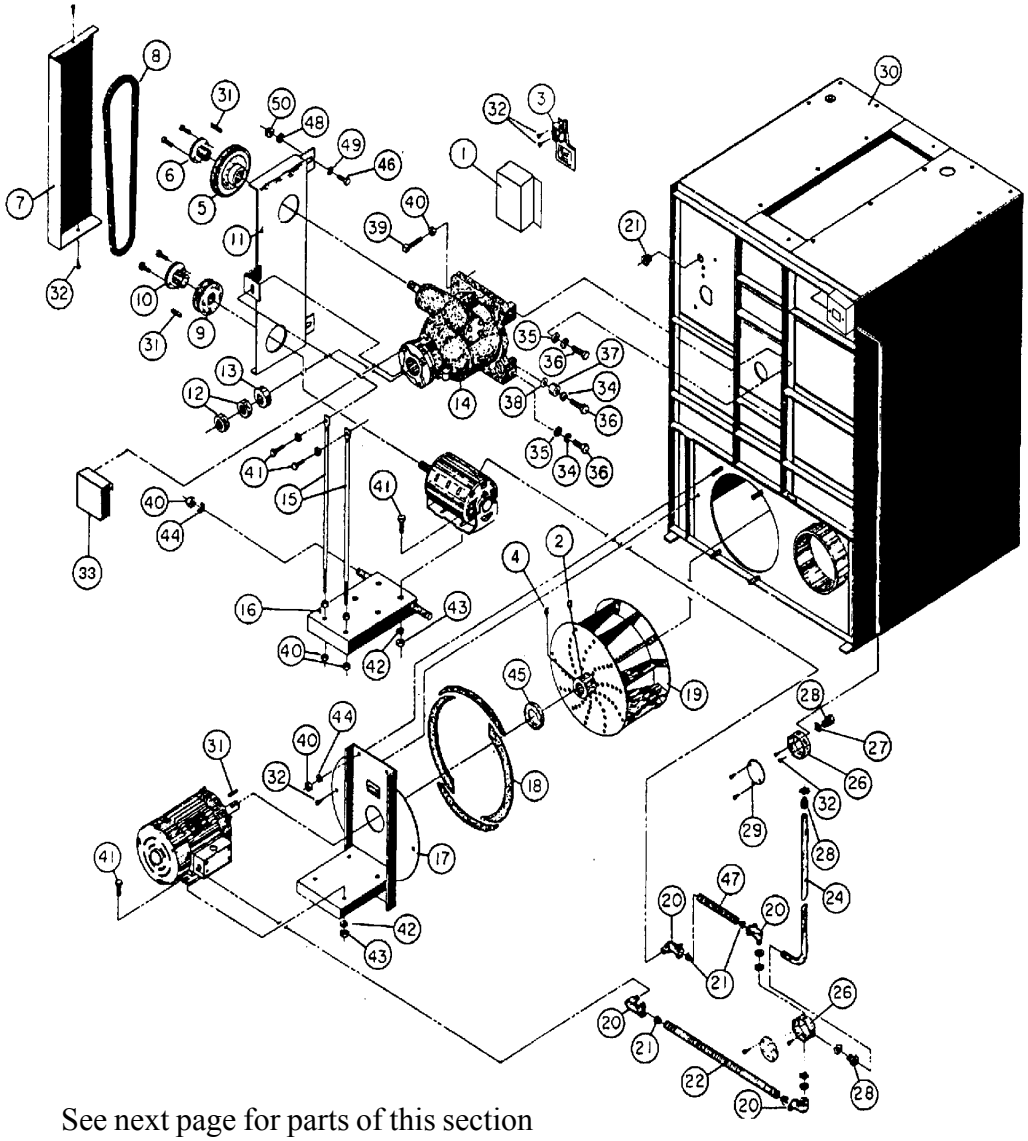
Ref. No.	Part No.	Description
1	EA-00652-0	Reed Switch
2	SB-00975-0	#6-32 Screw
3	PIF172	Hinge post bearing
4	TU15448	Front panel (Specify color)
5	TU14483	Loading door (Specify color)
6	TU2236	Hinge post
7	TU2686	#8-32 Pan Hd. screw
8	TU2687	#8 Ph. Hd. screw
9	TU2836	5/16-18 H.H. screw
10	TU3209	#14 Pan Hd. screw
11	TU3212	5/16 Lock washer
12	TU3785	#8 E.T. Cup washer

Ref. No.	Part No.	Description
13	TU5503	Door latch spacer
14	TU7169	Gasket
15	TU15107	Door glass - 20 1/4”
16	TUA2319H	Door latch w/keeper
17	TU5288	Door gasket
18	TU2641	Thermometer gasket
19	TU5458	Temperature label
20	TU6030	Thermostat asm.(see detail)
*21	TU7733	#8 X 1/2 Lg. Screw
*22	TU15525	Cover plate (Specify color)

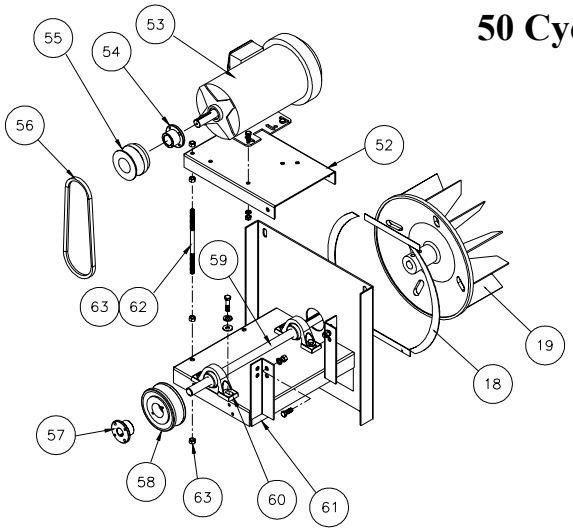


Ref. No.	Part No.	Description
1	TU13803	Jacket (Specify color)
2	TU5803	Basket and Spider Assembly (Galvanized)
	TUS5803	Basket and Spider Asembly (Stainless Steel)
3	EA-11621-0	Lint Door Switch
4	TU15449	Time/Temp. Front Panel Asm. (Specify color)
5	TU14638	Lint Door Assembly
6	TU14631	Burner Access Door Asm. (Specify color)
7	TU10345	Lint Trap Hood
8	K121	Frame Lint Screen (only)
	K368	Screen (only)
9	430146179	Gasket
10	TU5203	Control Box (Specify color)
11	******	Control Panel Asm. (See Details)
12	TU15456	Left Hand Control Box Asm. (Specify color)
13	TU15455	Right Hand Contro Box Asm. (Specify color)
14	TU5674	Control Box Brace

MODEL: L50CD42 GAS, STEAM



See next page for parts of this section

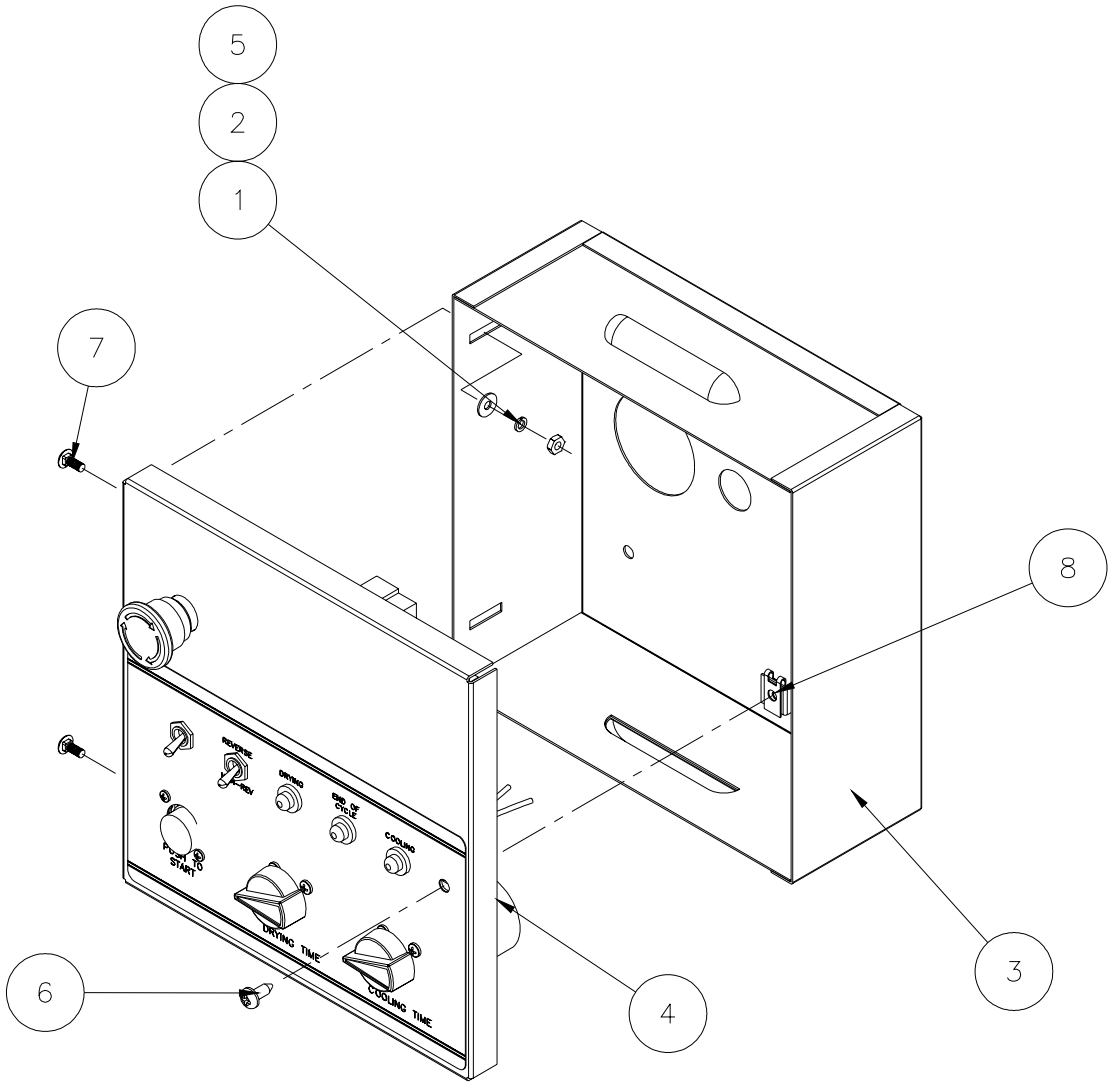


50 Cycle

52	TU4706	Plate, MTR. Mount
53	MTR	Motor (See Chart)
54	TU2007	Bushing, Sheave 7/8”
55	TU2009	Sheave 39H
56	TU3393	Belt, V
57	TU3807	Bushing, Sheave 3/4”
58	TU2008	Sheave, 46H
59	TU1693	Shaft, Jack 3/4”
60	SB138	Bearing, Pillow Block 3/4”
61	TU5659	Mount, Motor

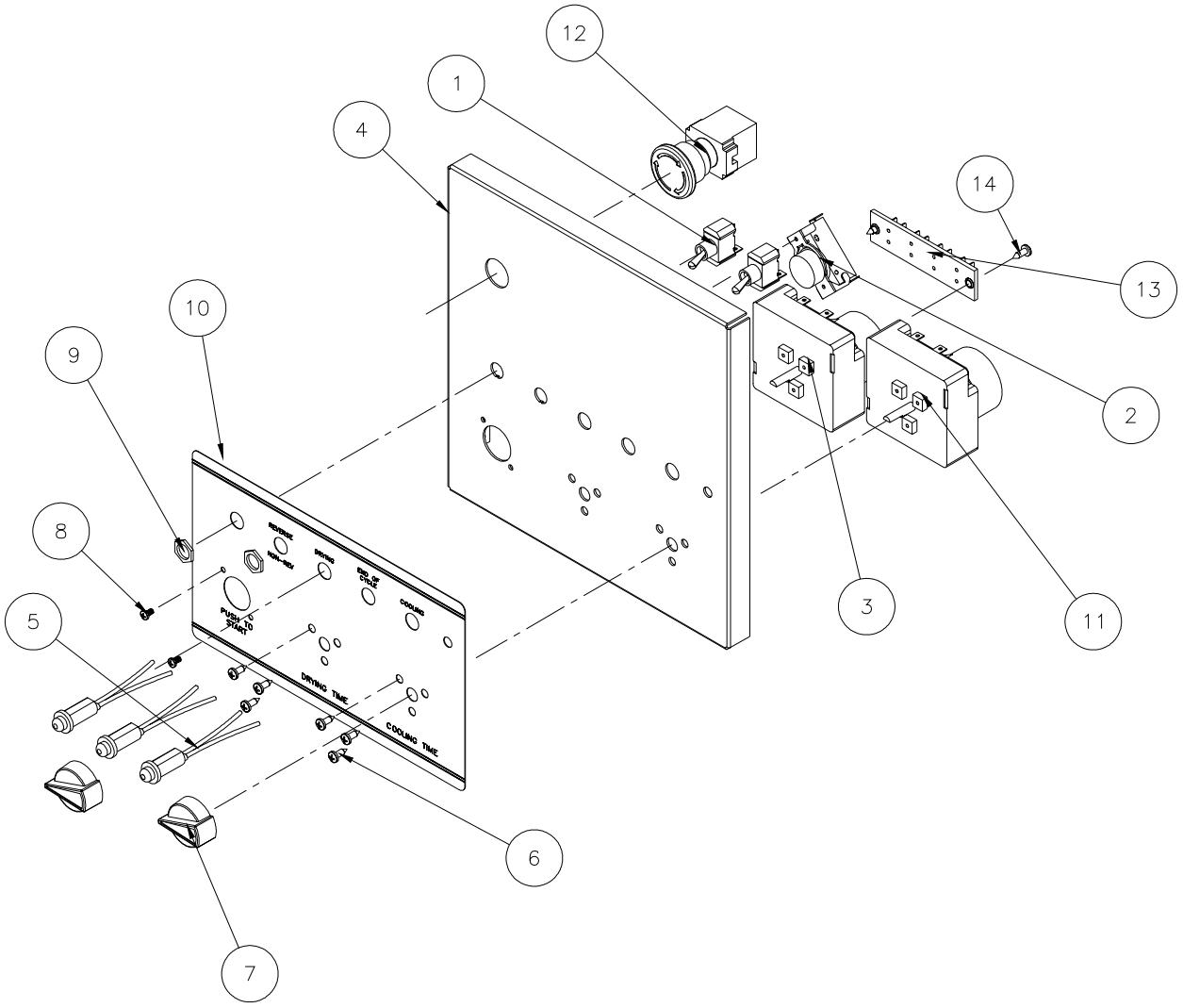
MODELS: HD150.1 Gas, Steam

1	TUX415	Air Switch Cover
2	TU4967	Allen Head Set Screw
3	TU8206	Air Switch Assembly
4	AT304	Square Head Set Screw
5	TU9663	Gear Sheave (50/60 Hz.)
6	TU3807	Sheave Bushing
7	TU14092	Rear Guard Cover Plate
8	TU2363	"V" Belt 5L500
9	TU9751	Motor Sheave—60 Hz.
	TU6081	Motor Sheave—50 Hz.
10	TU2007	Sheave Bushing
11	TU9615	Inside Belt Guard
12	TU470	1 - 3/8" - 12 Hex Nut
13	TU6633	Basket Shaft Washer
14	TM200	Gear Reducer
15	TU5328	Belt Adjusting Rod
16	TU4626	Basket Motor Mount Weldment
17	TU5658	Motor and Fan Mount Weldment (60 Hz.)
18	TU2473	Gasket Set
19	TU403	Fan Wheel with Set Screw (60 Hz.)
20	TU4791	90° Elbow Connector
21	TU2372	Snap Bushing
22	CFB2100	1/2" Greenfield Cable - 21" Long
23	TU6026	Top Motor Conduit
24	TU13834	Back Motor Conduit
25	TU6028	Power Lead Conduit
26	500300644	Junction Boxes (2)
27	TU7130	1/2" Straight Connector (2 each)
28	TU7131	3/4" Straight Connector (2 each)
29	SB170	Junction Box Cover (2)
30	TU9422	Jacket Welded Assembly
31	TU4684	Key (2 each)
32	TU7733	#8 - 18 x 1/2" Self Tap Screw (Pkg. of 6)
33	TU7517	Shaft Cover "C" Only
34	TU2831	1/2" Split Lockwasher (Pkg. of 6)
35	TU1851	1/2" Flat Washer
36	TU2195	1/2" - 13 x 1 3/4" Hex Head Cap Screw (Pkg. of 6)
37	TU455	Cam Adjustment Nut
38	TU3575	7/8" I.T. Lockwasher
39	TU5312	3/8" - 16 x 3" Sq. Hd. Set Screw
40	TU4787	3/8" - 16 Hex Nut (Pkg. of 6)
41	TU5439	5/16" - 18 x 3/4" Hex Hd. Cap Screw (Pkg. of 6)
42	TU2814	5/16" Split Lockwasher (Pkg. of 6)
43	C249	5/16" - 18 Hex Nut (Pkg. of 6)
44	VSB134	3/8" Split Lockwasher (Pkg. of 6)
45	TU108	Felt Seal
46	FB189	1/4" - 20 x 1" Hex Head Screw
47	CFB1000	1/2" Greenfield Cable—10" L
48	TU2846	1/4" Split Lockwasher (Pkg. of 6)
49	TU2847	1/4" Flat Washer (Pkg. of 6)
50	TU4934	1/4" - 20 x 7/16" Hex Nut (Pkg. of 6)



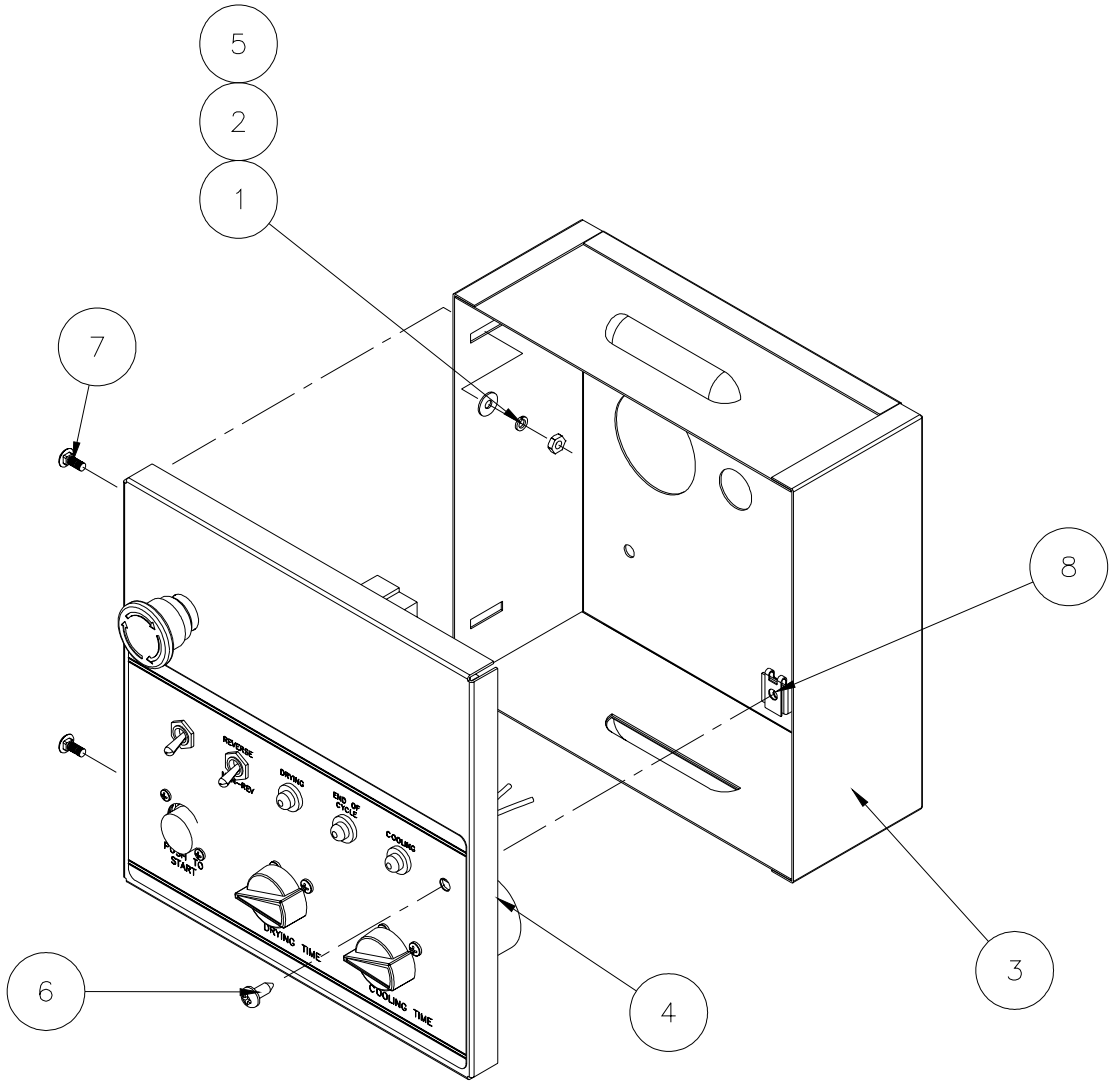
TU15408 - Non-Reversing

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	FG187	#10 Lock Washer	8	TU7848	Tinnerman Clip
2	P104	1/4” Brass Washer			
3	TU13621	Crontrol Box weld Assembly			
4	TU15407	Control Panel Assembly			
5	TU2842	#10-32 Hex Nut			
6	TU3209	#14 Sheet Metal Screw			
7	TU3479	#10-32 Truss HD. Screw			



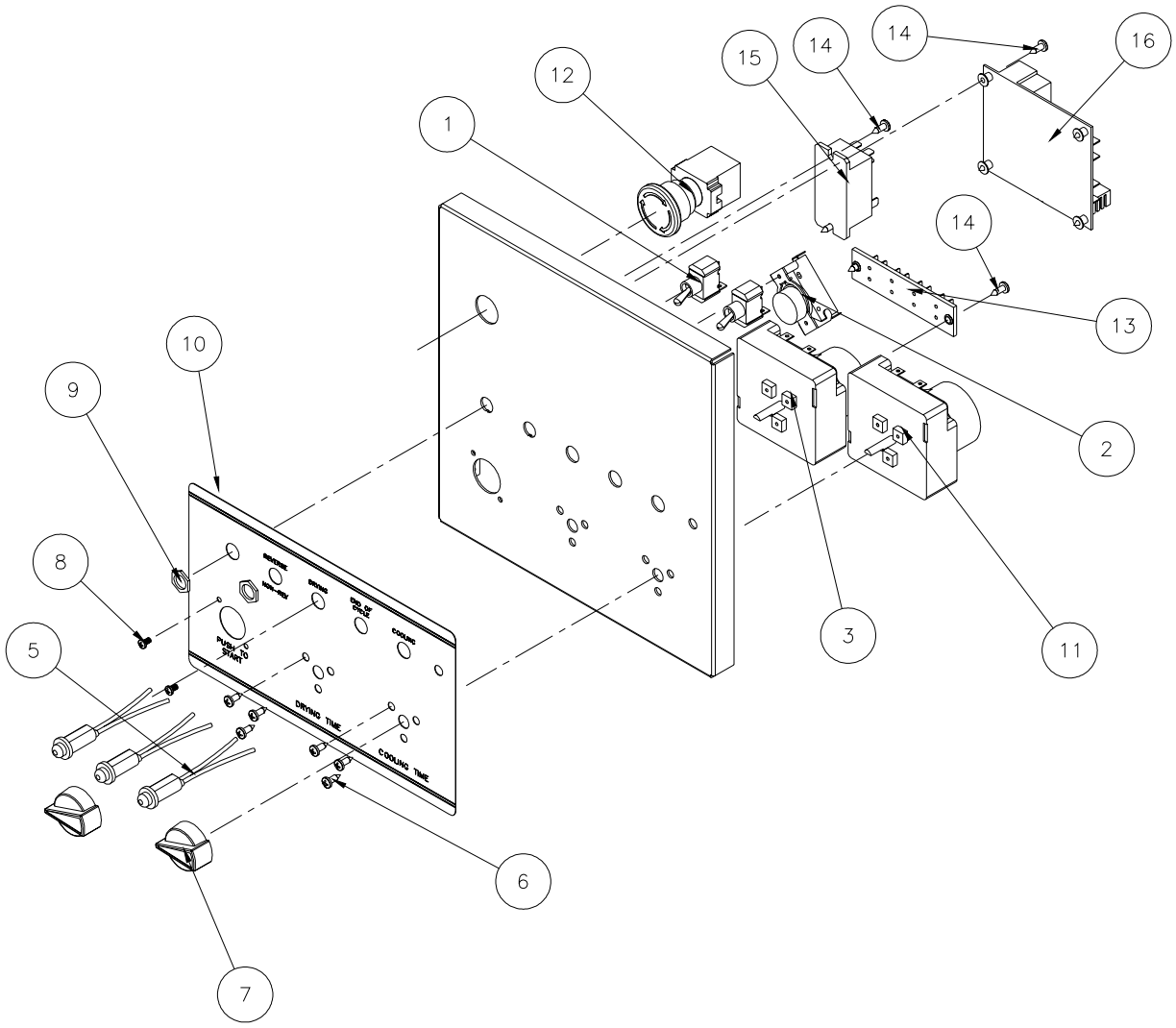
TU15407 - Non-Reversing

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	FG147	Toggle Switch (2 each)	8	ET208	#6 - 32 x 1/4" Binding
2	TU9028	Push Button Switch			Head Screw (2 each)
3	TU12932	Timer (0-60 Minutes)	9	TU3805	Hex Nut (2 each)
4	TU13620	Control Panel Weldment	10	TU15406	Nameplate, Non-Reversing, 2-Timer
5	TUT316	24V LED Light (3 each)	11	TU12933	Timer (0-15 Minutes)
6	TU7733	#8 - 18 x 1/2"	12	TU14435	Emergency Stop
		Self-Drill Screw (8 each)	13	TU8629	Terminal Board
7	TU2555	Knob Assembly (2 each)	14	TU7733	#8-18 x 1/2" Self-Drilling Screw



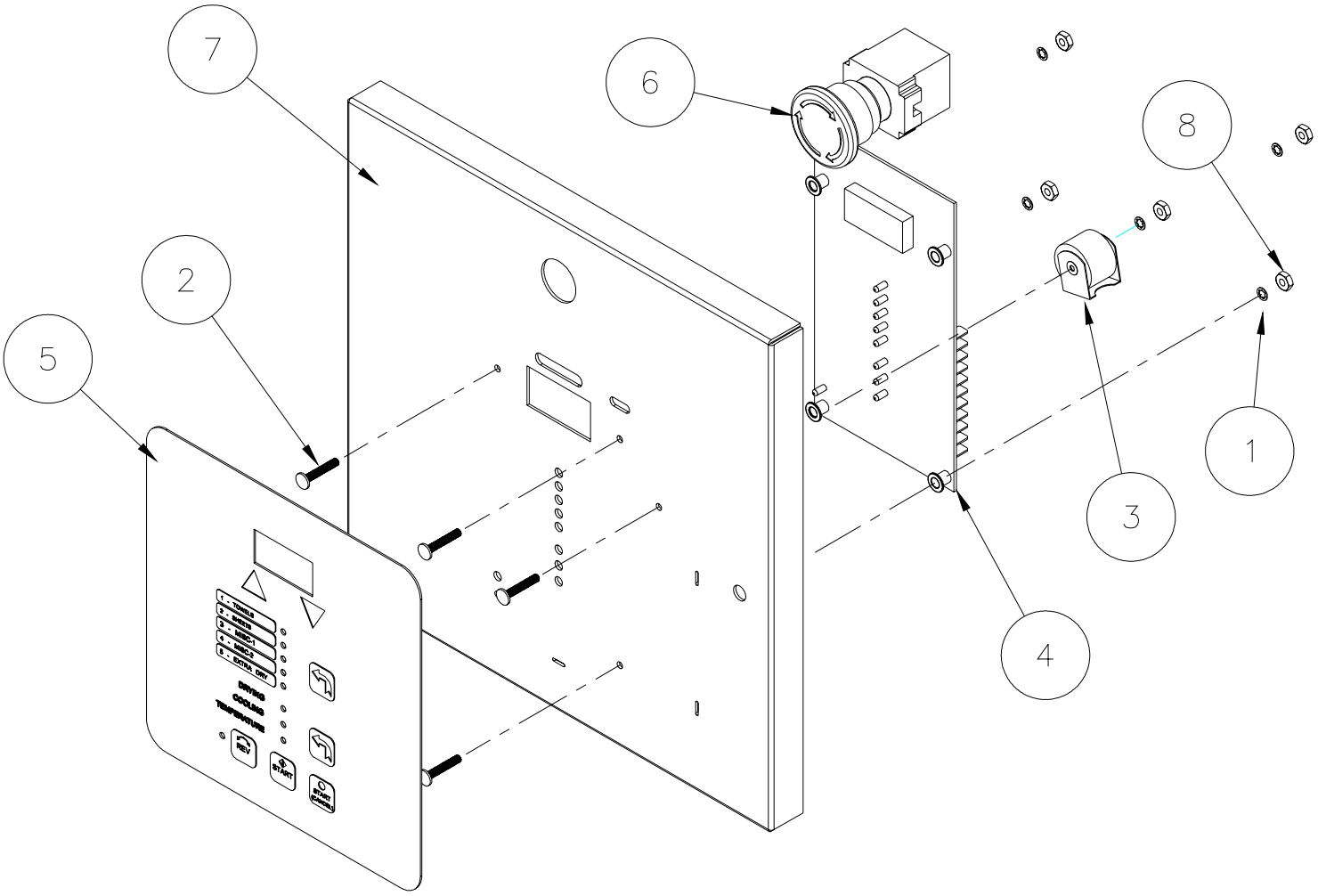
TU13859 - Reversing

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	FG187	#10 Lock Washer	8	TU7848	Tinnerman Clip
2	P104	1/4" Brass Washer			
3	TU13621	Crontrol Box weld Assembly			
4	TU15111	Control Panel Assembly			
5	TU2842	#10-32 Hex Nut			
6	TU3209	#14 Sheet Metal Screw			
7	TU3479	#10-32 Truss HD. Screw			

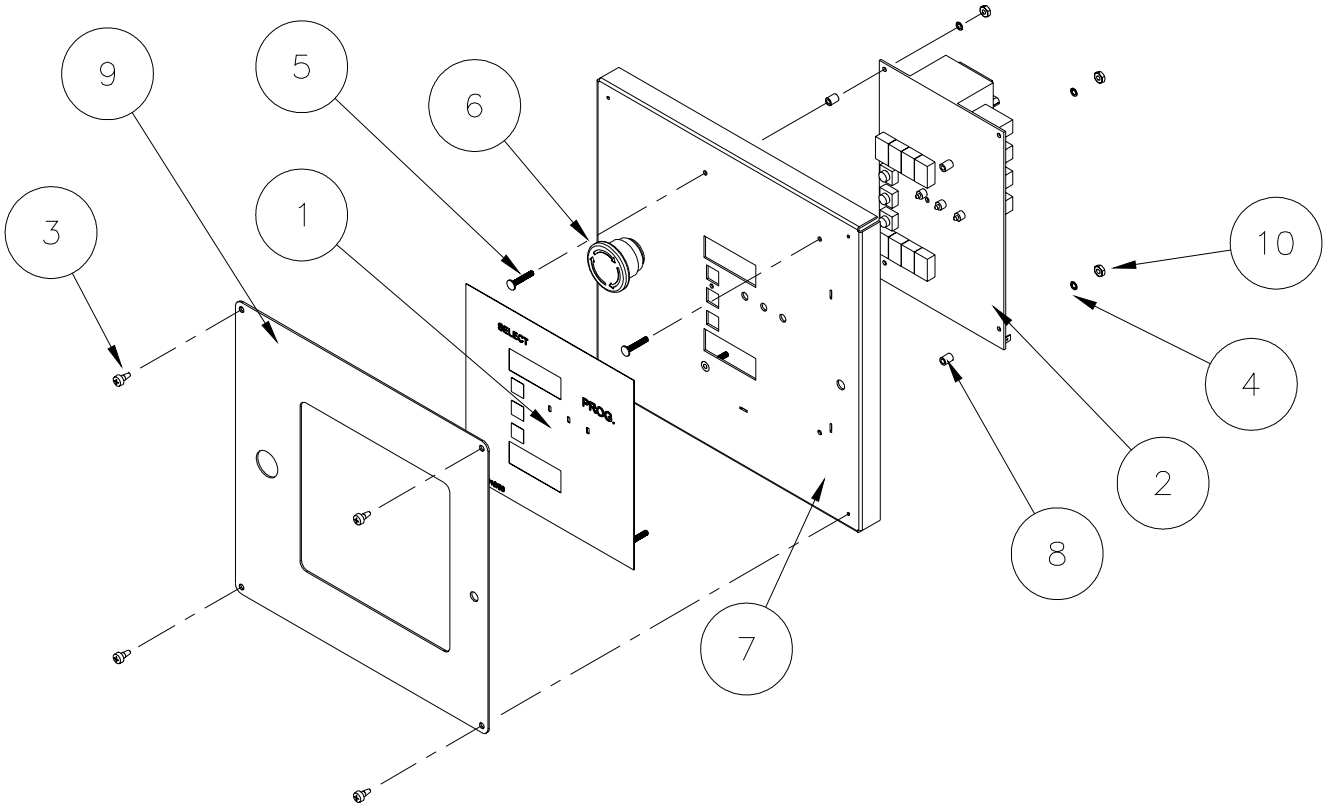


TU15111 - Reversing

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	FG147	Toggle Switch (2 each)	9	TU3805	Hex Nut (2 each)
2	TU9028	Push Button Switch	10	TU13825	Nameplate, Reversing, 2-Timer
3	TU12932	Timer (0-60 Minutes)	11	TU12933	Timer (0-15 Minutes)
4	TU13620	Control Panel Weldment	12	TU14435	Emergency Stop
5	TUT316	24V LED Light (3 each)	13	TU8629	Terminal Board
6	TU7733	#8 - 18 x 1/2”	14	TU7733	#8-18 x 1/2” Self-Drilling Screw
		Self-Drill Screw (8 each)	15	F1300	24V Relay
7	TU2555	Knob Assembly (2 each)	16	TU12874	Reversing Board
8	ET208	#6 - 32 x 1/4” Binding			
		Head Screw (2 each)			

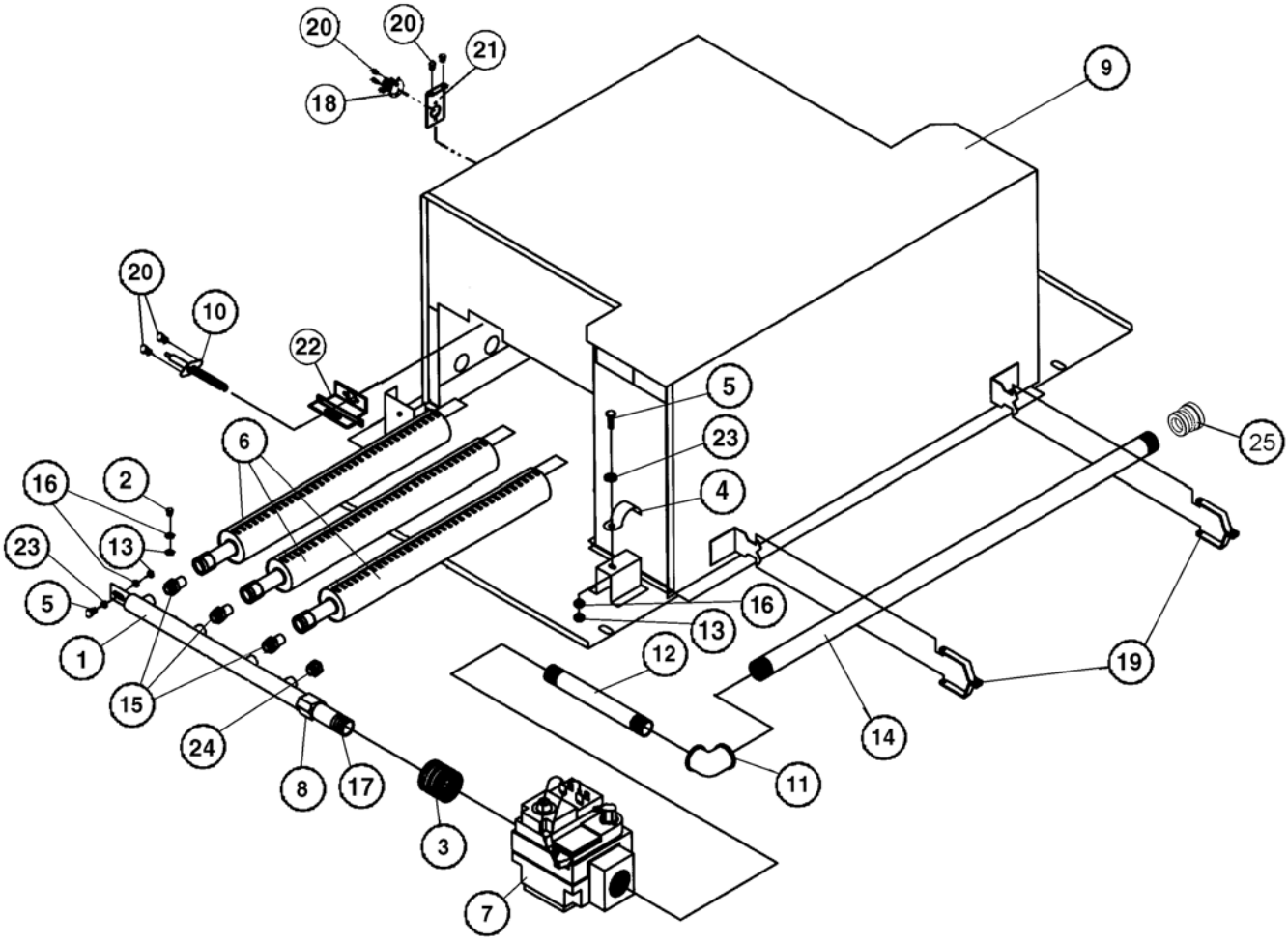


Ref. No.	Part No.	Description
1	ET208	Screw, Binding Head 6-32 X 1/4
2	FG147	Switch, toggel SPST 2 position
3	F1300	Relay, 24VAC
4	TUT316	Light, LED 24V W/1/4 Q.C.
5	TU12874	Timer, Solid State Reversing
6	TU12932	Timer, Model N407 0-60
7	TU12933	Timer, Model N407 0-15
8	TU13825	Nameplate



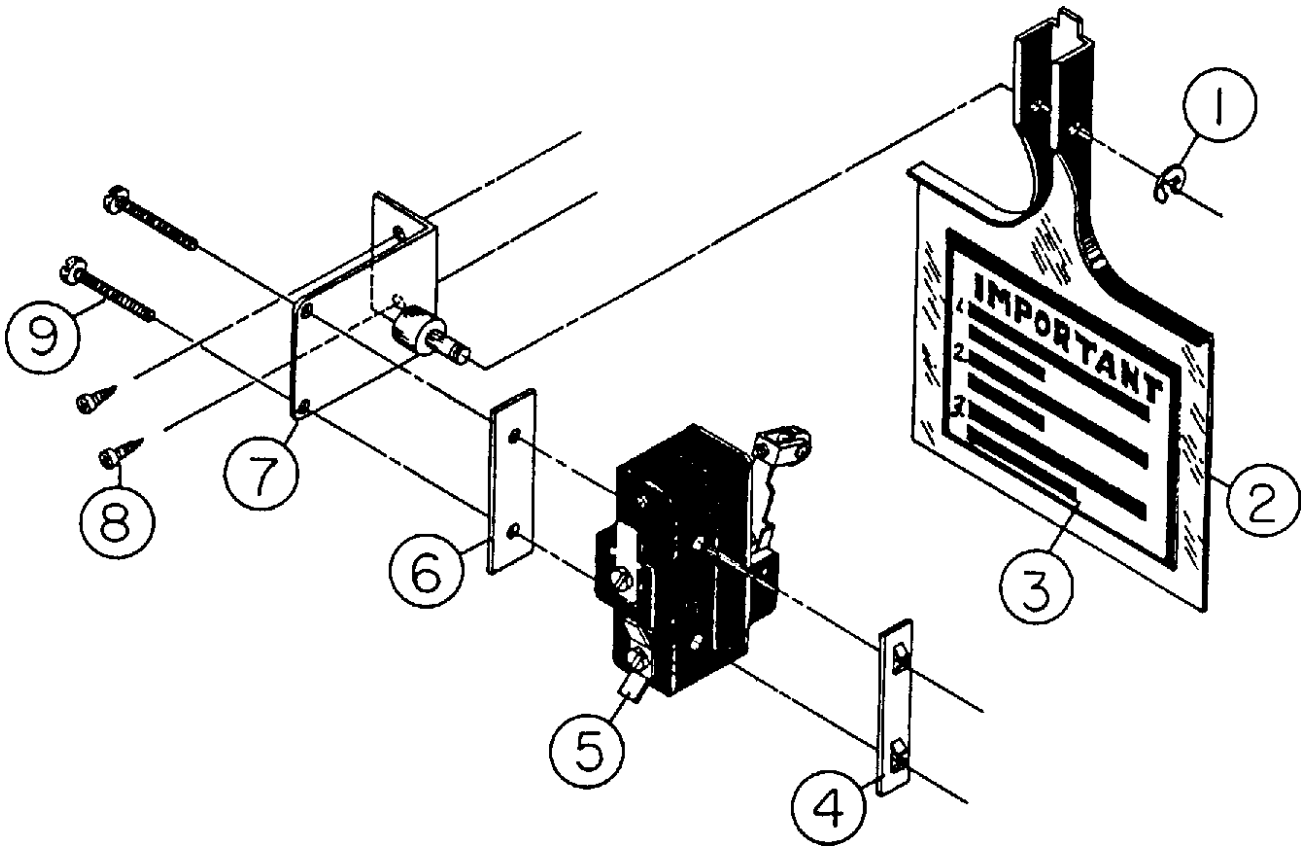
Ref. No.	Part No.	Description
1	254/00018/00	Overlay
2	254/00070/00	PRO/HC Control
3	M261	Screw, #8-32
4	M270	Lockwasher
5	TU12253	Stud, #6-32
6	TU14435	Emergency Stop
7	TU14442	Control Panel Weld
8	TU14701	Spacer
9	TU14727	Cover
10	TU3400	Nut, #6-32

TU14030 - LP Gas Bonnet
TU13836 - Natural Gas Bonnet

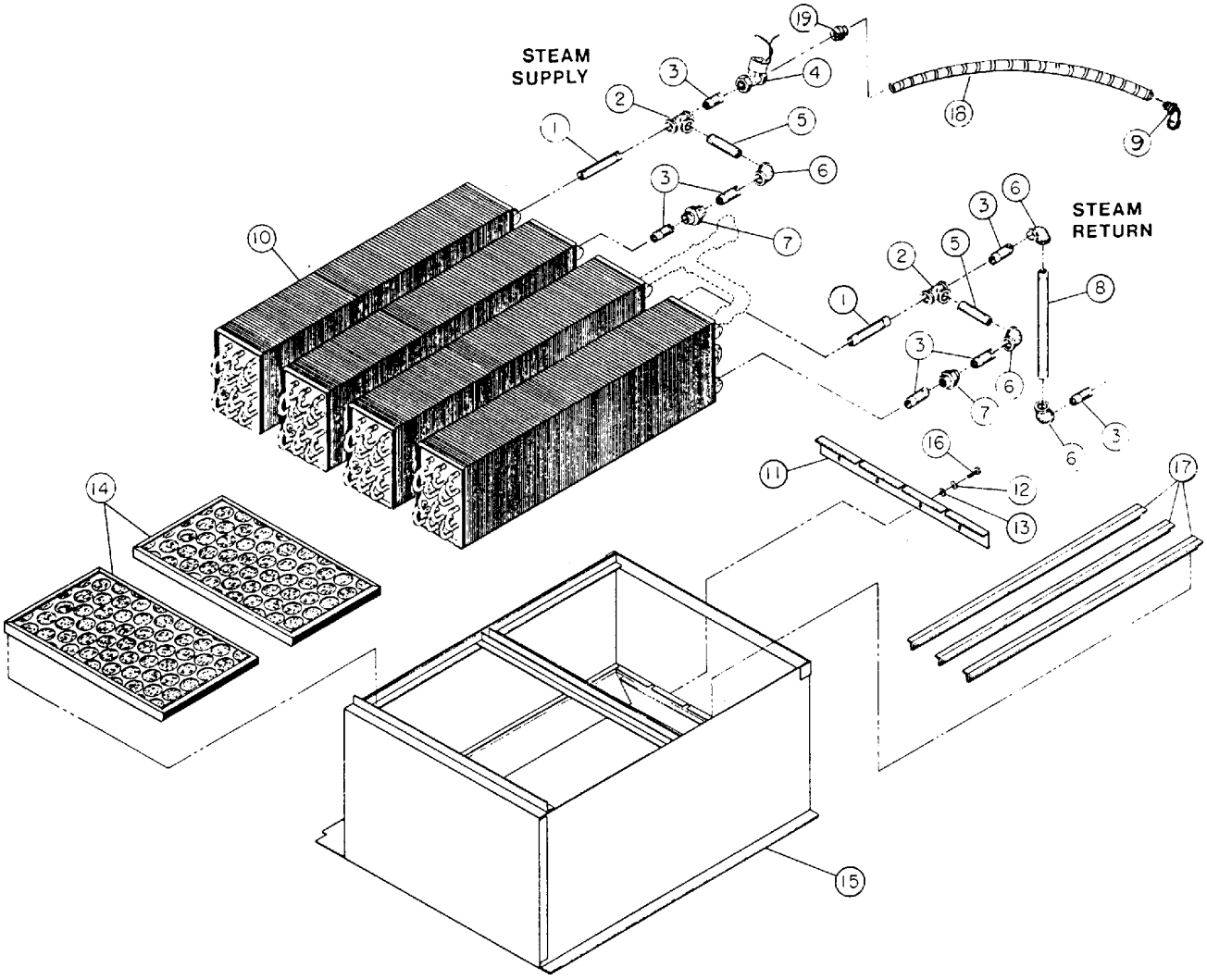


1	TU14058	Gas Manifold
2	CB36	1/4" - 20 x 1/2" Hex Head Screw
3	OP267	3/4" x 1/2" Steel Bushing
4	PT196	3/4" Strap
5	RC344	1/4" - 20 x 3/4" Hex Head Screw
6	TUX387	BSI Asm. Burner
7	TUX352	3/4" Natural Gas Valve
	TUX435	3/4" LP Gas Valve
8	TU6862	Gas Manifold Nut
9	TU13613	Bonnet Assembly
10	GA-00764-0	Direct Spark Ignition Electrode
11	TU4605	3/4" Elbow
12	TU4606	3/4" x 4" Nipple
13	TU4934	1/4" - 20 Hex Nut
14	TU13823	3/4" x 36" Nipple
15	TU3539	Burner Orifice
16	TU2846	1/4" Lock Washer
17	664946146	Pipe, Tail
18	TU13678	Thermostat, Man. Reset 300°
19	TU2226	Manifold Mounting Bracket
20	TU7733	#8 - 18 x 1/2" Self-Drill Screw
21	TU13695	Bonnet Thermostat Bracket
22	TU13647	Electrode Mounting Bracket
23	TU2847	1/4" Flat Washer
24	TU10946	Pipe Plug (Large)
25	TU2735	Reducer

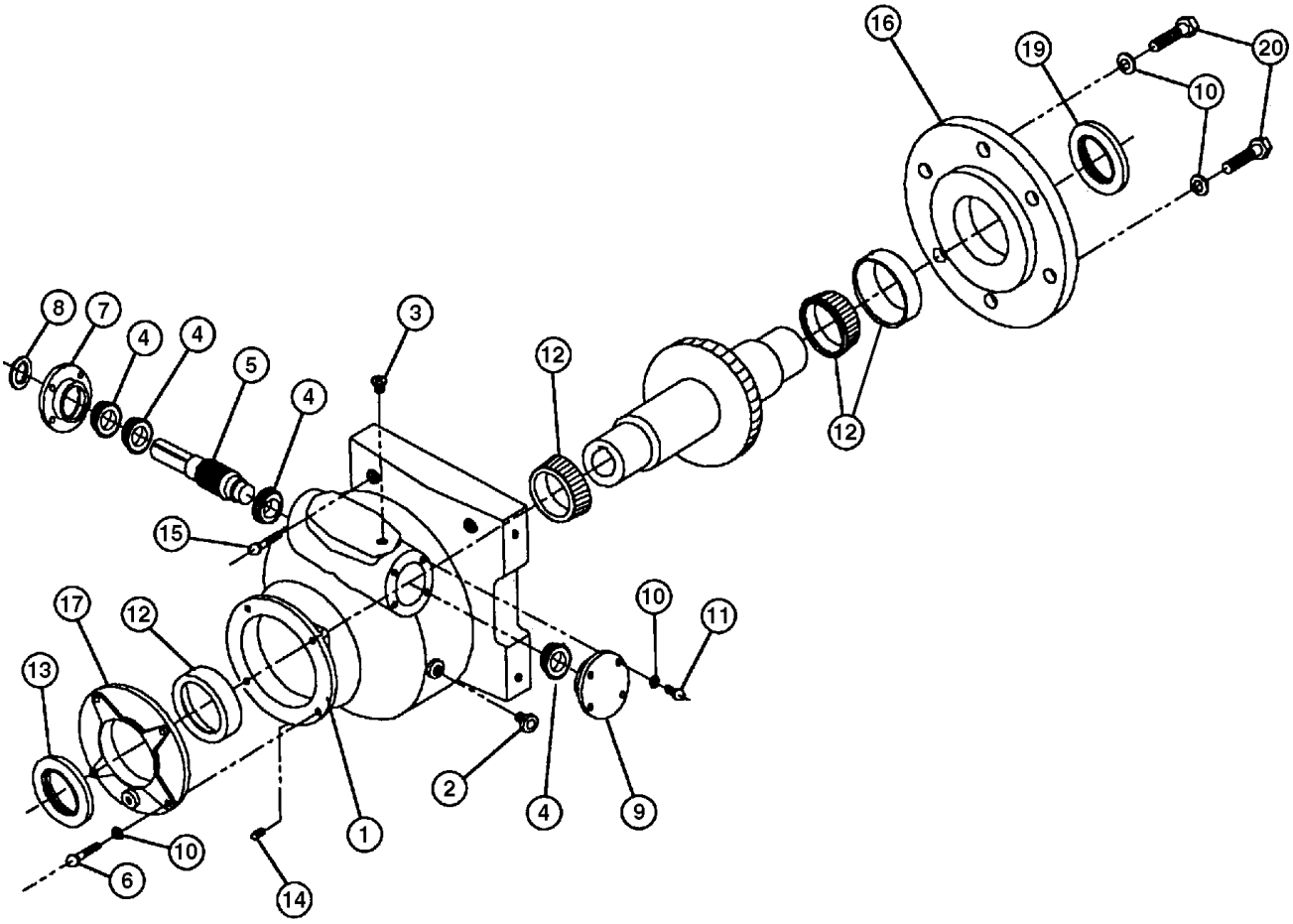
AIR SWITCH ASSEMBLY
TU8206



1	F888	"E" Ring
2	TU2463	Actuator Arm
3	TU3476	Air Switch Decal
4	TU1771	#6 Tinnerman Nut (Pkg. of 12)
5	TU8155	Air Switch
6	TU1770	Insulator
7	TU8171	Air Switch Bracket
8	TU7733	#8 - 18 x 1/2" Self Drilling Screw (Pkg. of 6)
9	TU3219	#6 x 1" Round Head S.M.S.



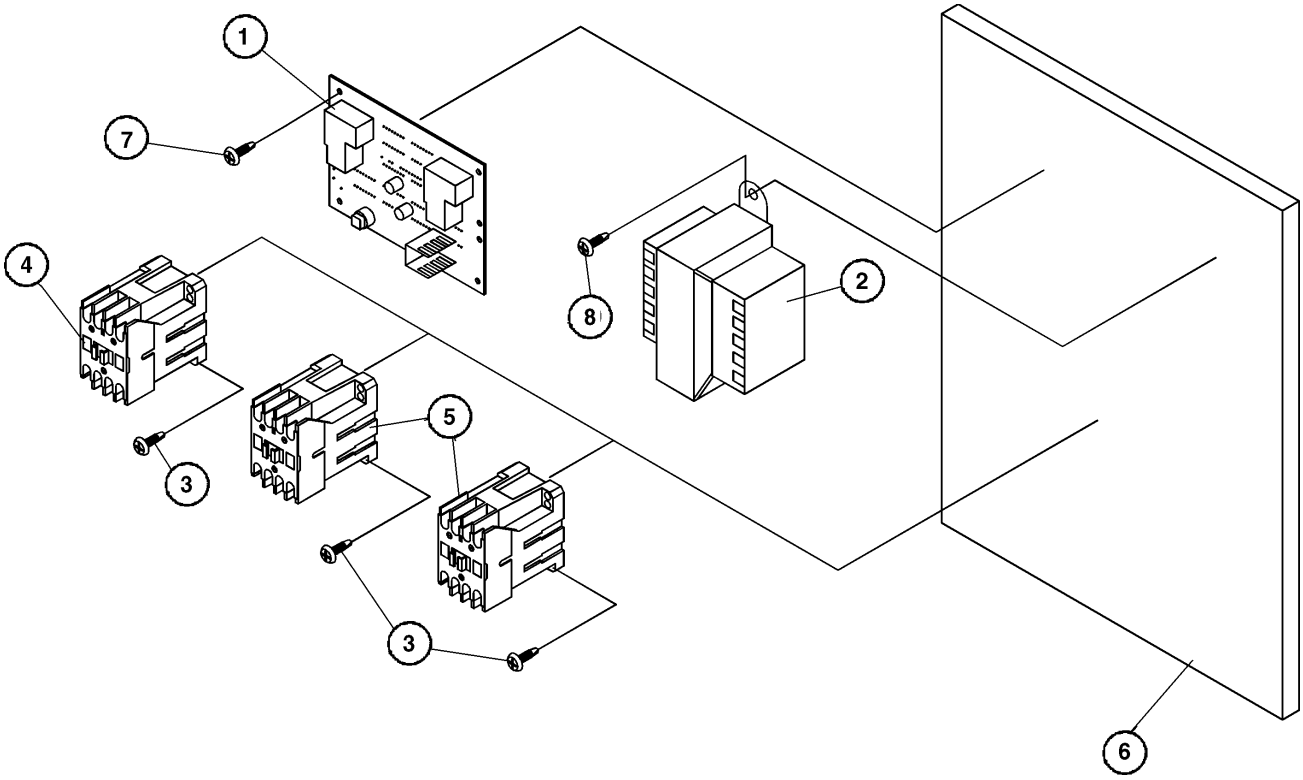
1	TU4610	3/4” x 5” Pipe Nipple (4 each)	13	TU2847	Flat Washer (4 each) (Pkg. of 6)
2	TU4597	3/4” Tee (4 each)	14	TU9953	Air Filter 20” x 24” x 1” (2 each)
3	TU4608	3/4” x 2” Pipe Nipple (14 each)	15	TU9873	Steam Bonnet Weldment
4	TU13517	*Steam Solenoid Valve 24V (2 each)	16	CB36	1/4” - 20 x 1/2” Hex Bolt (4 each) (Pkg. of 6)
5	TU4620	3/4” x 4 1/2” Pipe Nipple (4 each)	17	TU9889	Coil Support Angle (3 each)
6	TU4605	3/4” Elbow (8 each)	18	504641292	1/2” Greenfield Cable (sold by foot) Right Side—72” Left Side—84”
7	TU4600	3/4” Union (4 each)			
8	TU4599	3/4” x 18” Pipe Nipple (2 each)			
9	TU4791	Angle 90° Connector (2 each)			
10	TU1699	Steam Coils (4 each)	19	TU4790	Straight Connector (2 each)
11	TU9890	Hold Down Bracket			
12	TU2846	1/4” Split Lockwasher (4 each) (Pkg. of 6)			



1	TM203	Housing	10	VSB134	3/8” Split Lockwasher (Pkg. of 6)
2	K474	Oil Level Plug Kit	11	TU3246	3/8” - 16 x 1” Cap Screw (Pkg. of 6)
3	TM119	1/4” Vent Plug	12	TM217	Large Bearing Cone & Cup
4	TM208	Small Bearing Cone & Cup	13	TM220	Large Klozure
5	TM225	Worm & Worm Gear	14	TM221	1/4” Pipe Plug
6	IB139	3/8” - 16 x 1 1/4” Cap Screw	15	TU5312	3/8” x 3” Set Screw
7	TM205	Small Open End Cap	16	TM211	Large End Cap 10 1/2 Dia.
8	TM204	Small Klozure	17	TM212	Small End Cap 6 3/4 Dia.
9	TM218	Small Closed End Cap			

TM225 Worm and Worm Gear Set (for TM200 ONLY) (only sold as set)

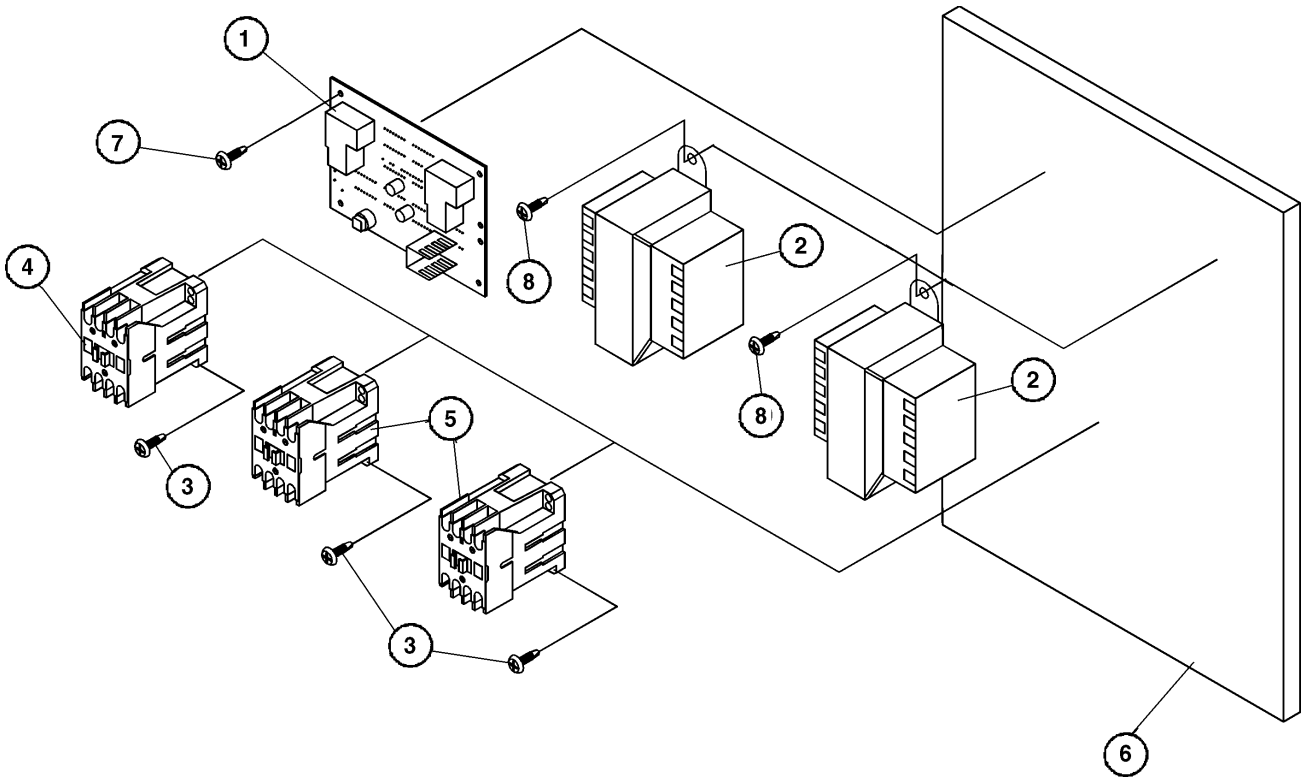
Not Illustrated—TU3465 one pint of Transmission Oil



TU14146	Reversing Control Panel 200-240V, 24V Controls
TU14147	Reversing Control Panel 460-480V, 24V Controls
TU14198	Reversing Control Panel 240/415V, 24V Controls
TU14149	Non-Reversing Control Panel 460-480V, 24V Controls
TU14148	Non-Reversing Control Panel 200-240V, 24V Controls
TU14199	Non-Reversing Control Panel 240/415V, 24V Controls

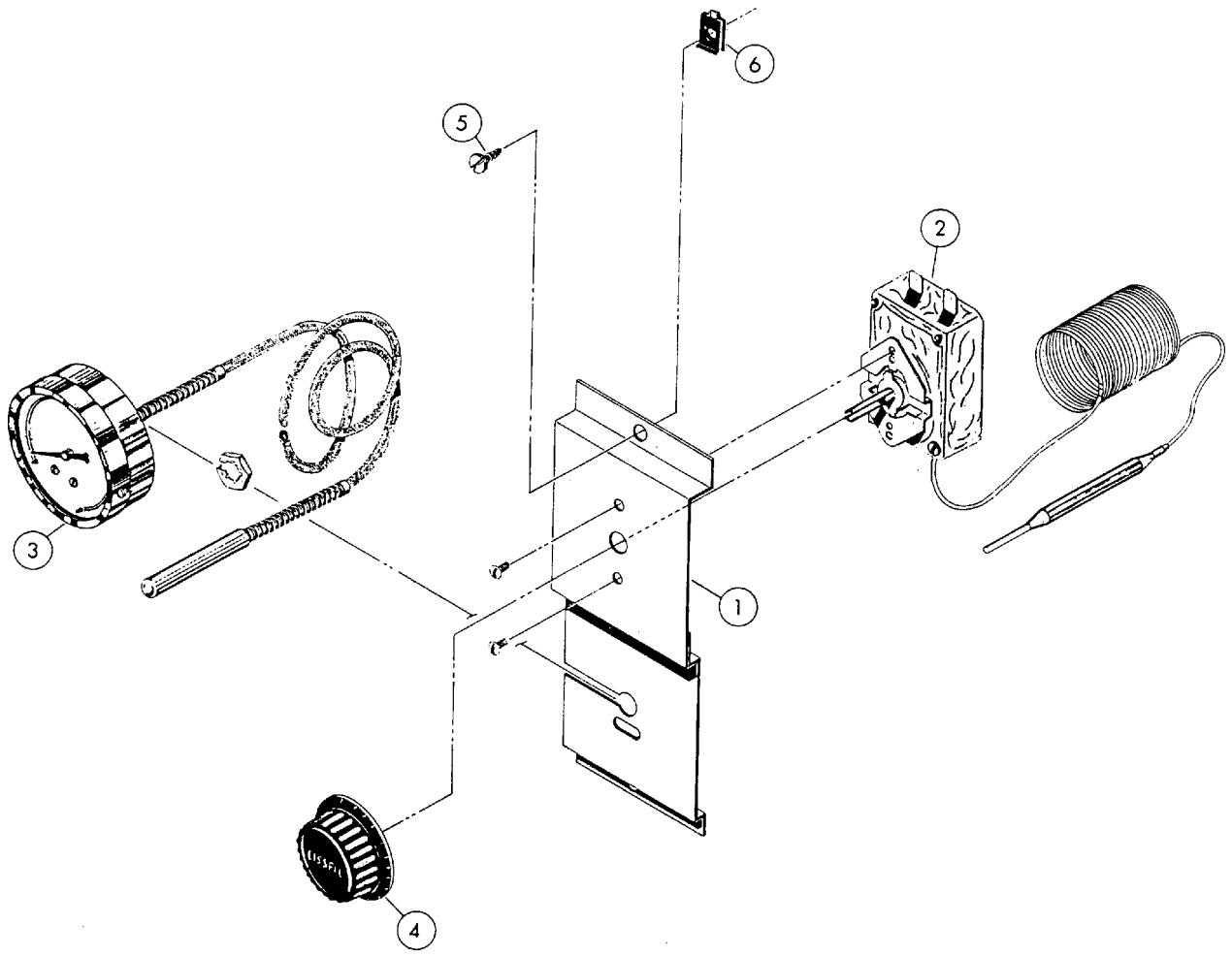
1	TU12874	Timer, Solid State Reversing
2	TU13480	Transformer 200-240V/24V w/Reset
	TU13514	Transformer, 480/24V w/Reset
3	F540	#6 x 5/8” Phillips Head Screw
4	TU13516	Contactor, 24V
5	TU13526	Contactor Assembly, 24V
6	TU14026	Motor Control Plate
7	TU2793	8 - 18 x 3/4” Self-Drill Screw (Pkg 6)
8	TU7733	8 - 18 x 1/2” Self-Drill Screw (Pkg 6)

Reversing Control Panel Assembly (Steam)



TU14150	Reversing Control Panel 200-240V, 24V Controls
TU14151	Reversing Control Panel 460-480V, 24V Controls
TU14197	Reversing Control Panel 240/415V, 24V Controls
TU14152	Non-Reversing Control Panel 200-240V, 24V Controls
TU14153	Non-Reversing Control Panel 460-480V, 24V Controls
TU14196	Non-Reversing Control Panel 240/415V, 24V Controls

1	TU12874	Timer, Solid State Reversing
2	TU13480	Transformer 200-240V/24V w/Reset
	TU13514	Transformer, 480/24V w/Reset
3	F540	#6 x 5/8” Phillips Head Screw
4	TU13516	Contactor, 24V
5	TU13526	Contactor Assembly, 24V
6	TU14026	Motor Control Plate
7	TU2793	8 - 18 x 3/4” Self-Drill Screw (Pkg 6)
8	TU7733	8 - 18 x 1/2” Self-Drill Screw (Pkg 6)



TU6030—"C" Model—Consists of Ref. No. 1, 2, 3

1	TU5530	Mounting Bracket
2	TU1980	Thermostat
3	TU3593	Thermometer
	TU3816	Lens Replacement (Texas Gage ONLY)
	TU8475	Lens Replacement (Marshaltown Inst. ONLY)
	TU11193	Lens Replacement (Weiss—consult factory)
	TU13213	Lens Replacement (Weiss—consult factory)
4	TU490	Thermostat Knob—Fahrenheit
	TU491	Thermostat Knob—Centigrade
5	TU3209	#14 x 5/8" S.M.S. (Pkg. of 6)
6	LB74	#14 Tinnerman Clip (Pkg. of 6)