OWNER'S MANUAL

110 lb. Laundry Dryer

Refer to Addendum A for Updated Information

MODELS

GAS	STEAM	ELECTRIC
L44CD42G	L44CD42S	L44CD42E
L44FD42G	L44KD42S	L44KD42E
L44KD42G	C110S	C110E
L44RD42G		
C110G		

CISSELL MANUFACTURING COMPANY
HEADQUARTERS
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SERVICE/PARTS FAX: (502) 681-1275

THIS MANUAL MUST BE GIVEN TO THE EQUIPMENT OWNER.

MAN2110 **ENC5669** **9/99** **D0021R1**
2/07

Addendum A

L44CD42, L44KD42 Models

PART NO.	DESCRIPTION	COMMENTS	PAGE NO.
TU1980	Thermostat	Control thermostat	
TU2477	Thermostat	High limit	
TU3593	Thermometer		
TU1979H	Door Switch	Includes hardware	
K189	Timer Replacement Kit	15 minute; 120 Volt	
K188	Timer Replacement Kit	60 minute; 120 Volt	
K194	Timer Replacement Kit	15 minute; 240 Volt; 60 Hertz	
K193	Timer Replacement Kit	60 minute; 240 Volt; 60 Hertz	
K190	Timer Replacement Kit	15 minute; 240 Volt; 50 Hertz	
K192	Timer Replacement Kit	60 minute; 240 Volt; 50 Hertz	
TU2363	Belt	Basket	
TU3393	Belt	Fan; 50 Hertz	
TU3806	Sheave	Basket; Double motor	
TU3807	Sheave Bushing	Basket; Double motor	
TU2832	Sheave	Motor; 60 Hertz; Double motor	
TU6081	Sheave	Motor; 50 Hertz; Double motor	
TU2833	Bushing	Motor; Double motor	
TM200	Gear Reducer		
TU403	Fan	60 Hertz	
TU6086	Fan	50 Hertz	
SB138	Pillow Block Bearing	50 Hertz; Replaced by TU16035 Bearing	
TU1693	Jack Shaft	50 Hertz	
TU8206	Air Switch Kit		
TU14482	Switch		
TU6557	Gas Valve	Natural Gas	
TU13187	Gas Valve	Natural Gas; 120 Volt; Approximately 1994; Baso	
TU13373	Gas Valve	L.P. Gas; 120 Volt; Approximately 1994; Baso	
TU8596	Ignitor	Glow bar	
TU8599	Relay	Ignition	
TU8598	Radiant Sensor		
TU2808	Steam Coil	6 x15 ¾ x 40 ½	
TU1699	Steam Coil	6 x 10 ¼ x 40 ½	
TU5924	Steam Solenoid Valve	240 Volt	
K642	Loading Door Kit	15 ¾	
TU217	Door Glass	15 ¾	
TU1692	Door Glass Gasket	15 ¾	
TU5288	Door Gasket		
TUA2319H	Door Handle		
TU14483WHT	Basket Door	Includes latch bracket	
TU15107	Door Glass		
TU15966	Door Glass Gasket	20-1/4	
TU7801	Front Panel	Add color	
TU5645WH	Lint Door	Add color	
K169	Lint Door Kit	T-handle	
TU6469	Basket		
K421	Basket and Spider Kit		
K109	Spider Kit		
K368	Lint Screen Kit		

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

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 death.**

- 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 your 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 two (2) 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 two (2) years due to normal wear and tear, and with respect to all new repair or replacement parts for Cissell equipment for which the two (2) 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 expressed 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 ed or implied. Cissell neither asumes, 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.

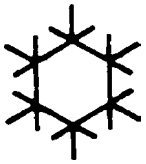
IDENTIFICATION NAMEPLATE

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.

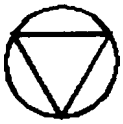
TABLE OF CONTENTS
110 LB. LAUNDRY DRYER

SYMBOLS

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

Symbol	Description
	**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** **êmission de chaleur en general** **Warmeabgabe allgemein** **emisión de calor**
	**cooling** **refroidissement** **Kühlen** **enfriamiento**

SYMBOLS

Symbol	Description
	**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.

On gear reducer models, remove screw and insert red vent attached to reducer.

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 12” (305 mm) ceiling clearance, 24” (610 mm) rear clearance, and 0” side clearance.

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

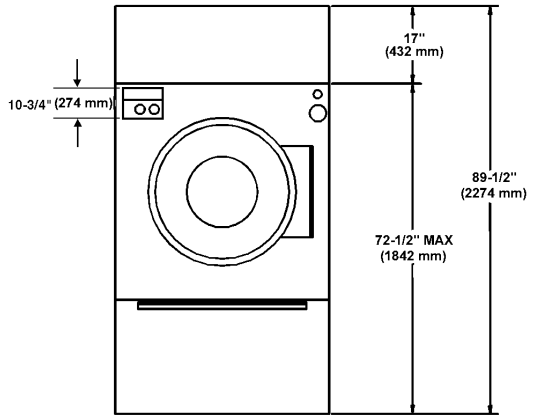
IMPORTANT
Opening the clothes loading door deactivates the door switch to shut off the motors, fan, gas, steam, or electric element. To restart the dryer, close the door and press in the push to start button for approximately 2 seconds.

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

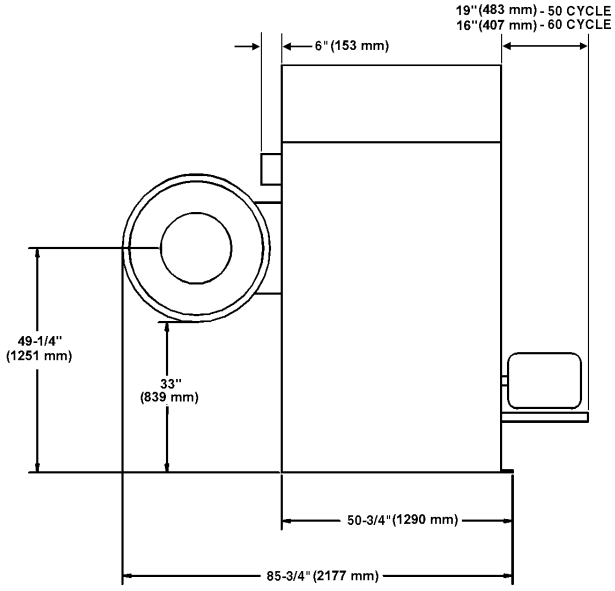
IMPORTANT
Maximum operating efficiency is dependent upon proper air circulation. The lint screen must be kept clean daily to insure proper air circulation throughout the dryer.

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

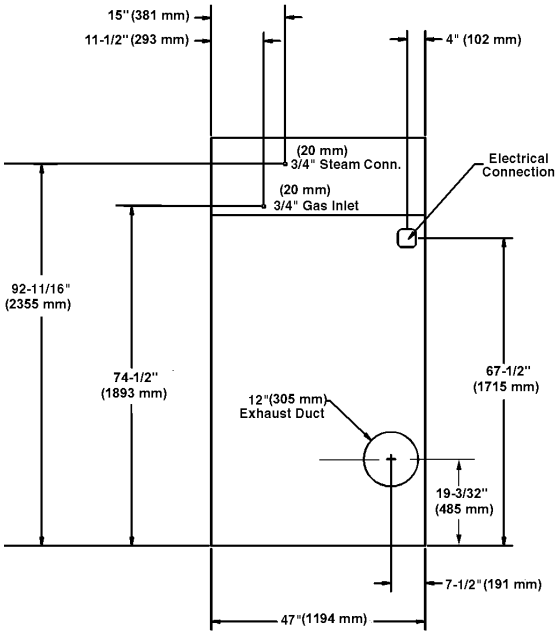
FRONT VIEW DIMENSIONS



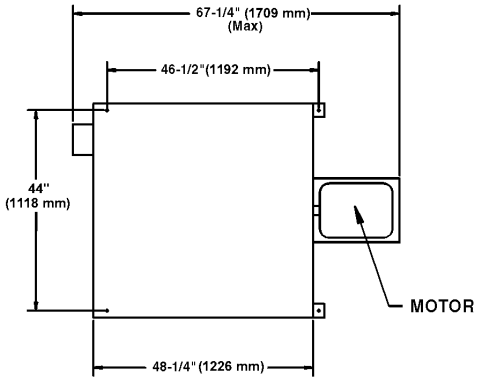
RIGHT VIEW DIMENSIONS



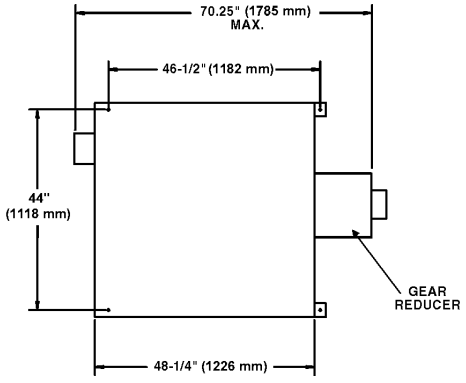
REAR VIEW DIMENSIONS



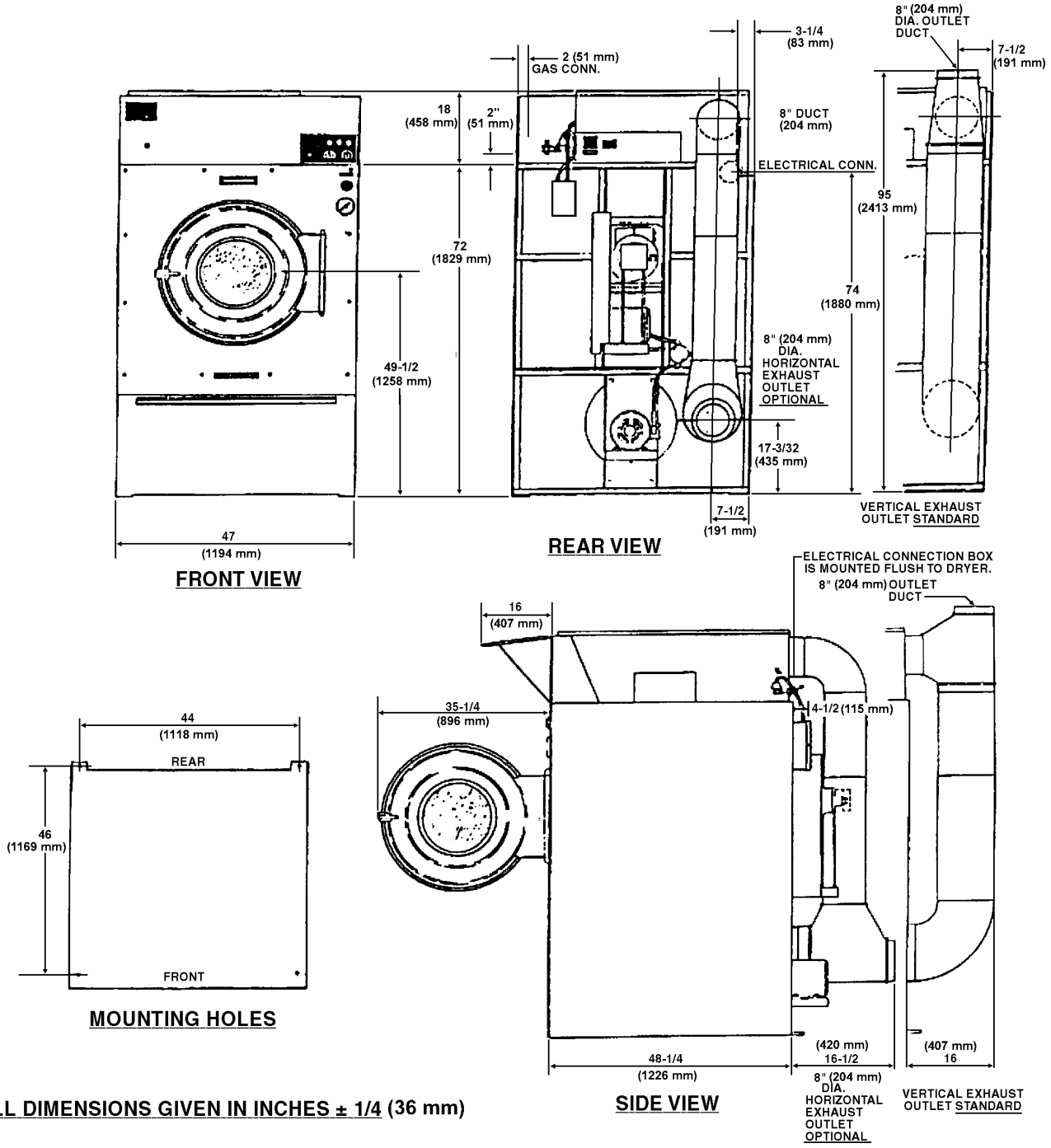
TOP VIEW DIMENSIONS
50 CYCLE



TOP VIEW DIMENSIONS
60 CYCLE

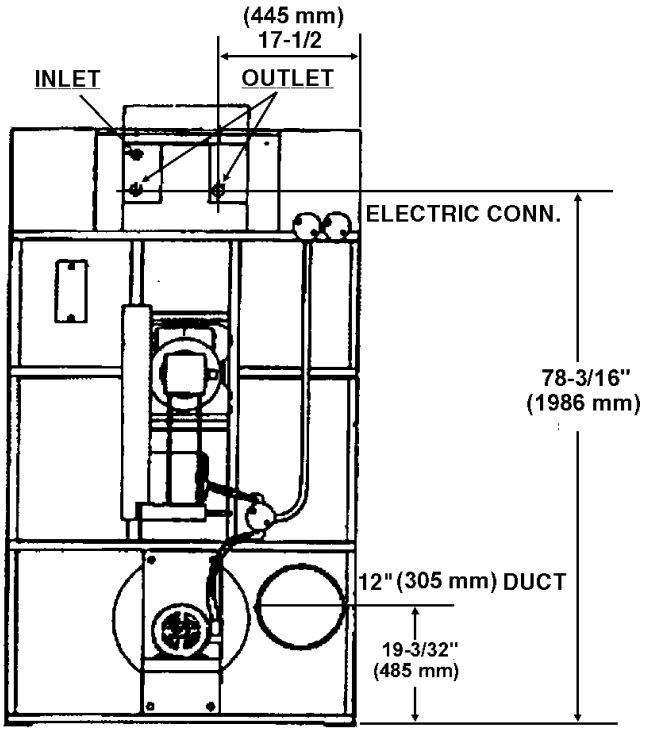


ENERGY-SAVER MODEL

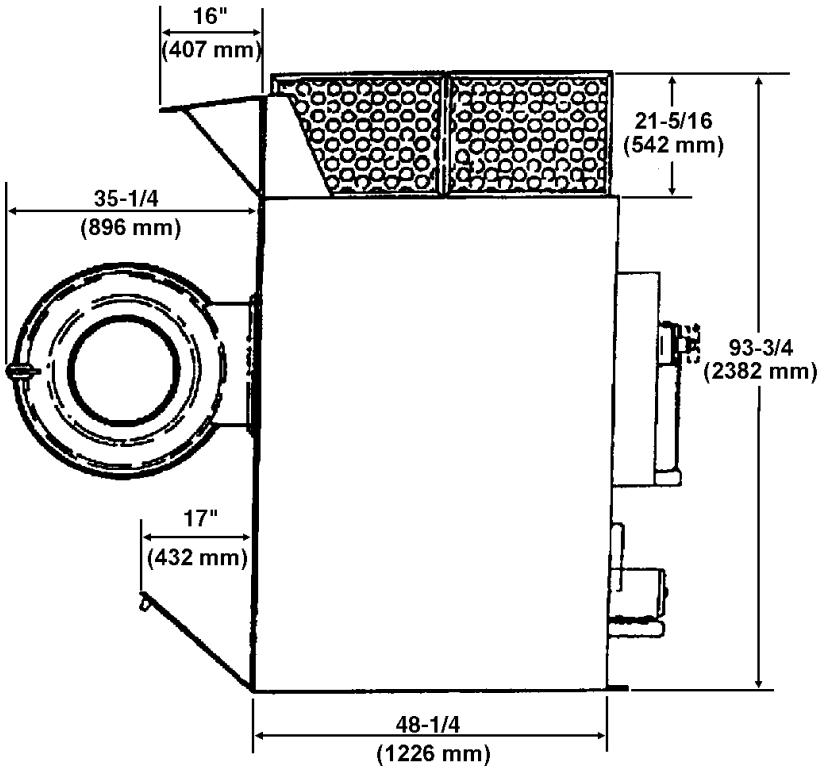


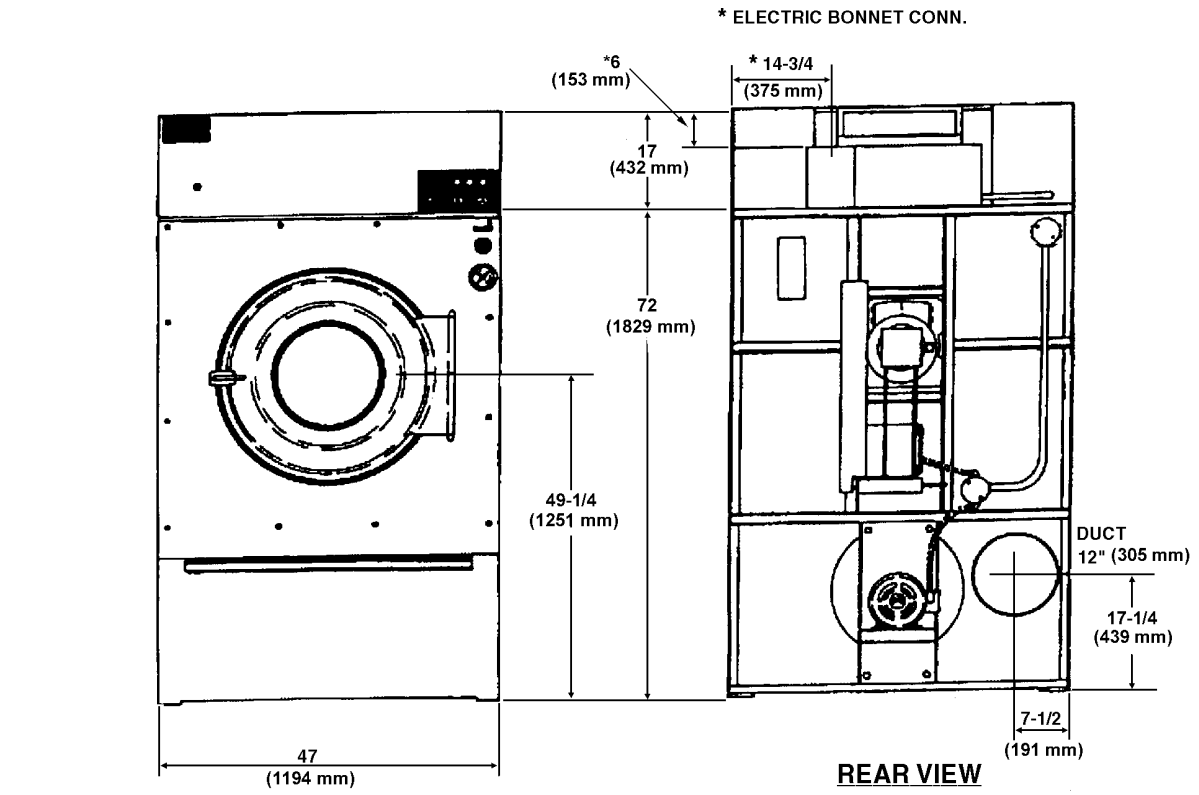
ALL DIMENSIONS GIVEN IN INCHES ± 1/4 (36 mm)

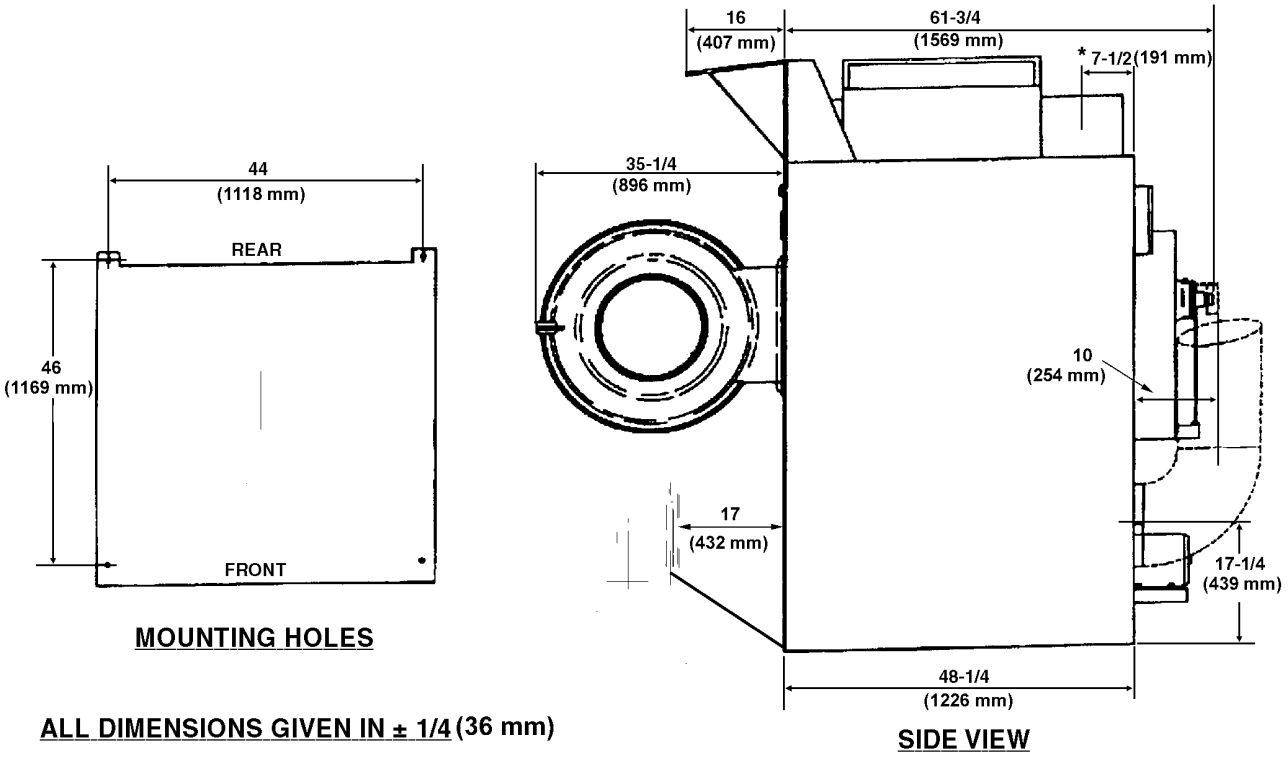
FRONT VIEW DIMENSIONS



RIGHT VIEW DIMENSIONS







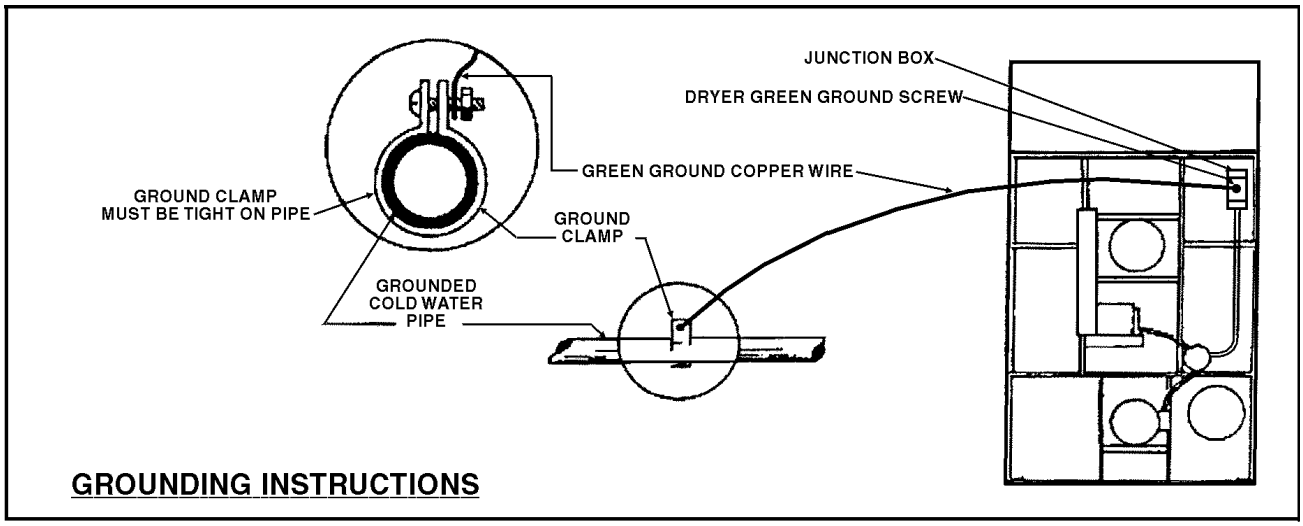
ALL DIMENSIONS GIVEN IN ± 1/4 (36 mm)

GENERAL SPECIFICATIONS FOR 110 lb. DRYERS

Floor Space	
Gas	67" Deep x 47" W x 89-1/8" H (1702 mm x 1194 mm x 2264 mm)
Steam	67" Deep x 47" W x 93-3/4" H (1702 mm x 1194 mm x 2382 mm)
Door Opening	31-1/4" diameter (794 mm)
Basket Size	44" diameter x 42" Deep (1118 mm x 1067 mm)
Basket Load Capacity	110 lbs. (50 kg) dryweight
Basket Motor	1 hp (.75 kW)
Fan Motor	1-1/2 hp (1.12 kW)
Basket RPM	
Reversing	28 (3.2 reversals per minute)
Non-Reversing	34
Exhaust Duct	12" diameter (305 mm)
Maximum Air Displacement	
Steam	2000 cfm (3400 m^3/h)
Gas	2000 cfm (3400 m^3/h))
Recommended Operating Range	1800-2000 cfm (3060-3400 m^3/h)
Net Weight (approximate)	
Steam	1,614 lb. (733 kg)
Gas	1,515 lb. (688 kg)
Shipping Weight	
Steam - 1 crate (approx.)	1,764 lb. (801 kg)
Gas - 1 crate (approx.)	1,665 lb. (756 kg)
Export Shipping Dimensions	93" L x 53" W x 78" H -232.7 cu. ft. (2363 mm x 1347 mm x 1982 mm) - (6.59 m^3)
BTU Input Rating	250,000 Btu/h (63,000 kcal/h) (nat., mixed and mfg. gases) 250,000 Btu/h (63,000 kcal/h) (propane and butane gases)
Gas Supply	3/4" (DN20) pipe connection
Electric Ignition	Direct Spark Ignition System
Manifold Gas Pressure	3.5" w.c. (8.8 mbar) Max. (Nat. Gas); 11" w.c. (27.4 mbar) (LP Gas)
Drying Time (dry weight)	110 lb. (49.9 kg) (Indian Head)
(Approximate - testing in laboratory)	70% water retention - 25 min. 50% water retention - 22 min.

Specifications

STEAM HEATED DRYERS ONLY	Operating Steam Pressure ..... 100 PSIG (6.9 bar) Max. Boiler HP (w/normal ld.) (*14FPI*) ..... 10.4 (7.76 kW) (*4-Coil*) ..... 7.87 (5.88 kW) (*6-Coil*) ..... 9.5 (5.88 kW) Steam Coils ..... (2) 40-1/2”L x 15-3/4”H x 6”W (2) (1029 mm x 401 mm x 153 mm) Traps for Steam Heating Coils ..... 3/4” (20 mm) (DN20) (2) Steam Supply Line ..... 3/4” (20 mm) (DN20) Steam Return Line ..... 3/4” (20 mm) (DN20)
ELECTRIC LAUNDRY DRYER (see Electric Bonnet Sheet)	Drying Time (Dry Weight) 80 kW ..... 110 lb. (49.9 kg) Indian Head cloth (Approx. - teasting in lab.) 80 kW ..... 70% water retention - 31 min. 50% water retention - 23 min.



ELECTRICAL CONNECTIONS FOR 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—Latest Edition***.

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 within the service connection box on the rear of the dryer. **Do not change wiring without consulting the factory, as you may void the factory warranty. DO NOT CONNECT THE DRYER TO ANY VOLTAGE OR CURRENT OTHER THAN THAT SPECIFIED ON THE DRYER RATING PLATE.** (Wiring diagram is located on rear wall of dryer.)

All panels must be in position before operation of dryer.

«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»

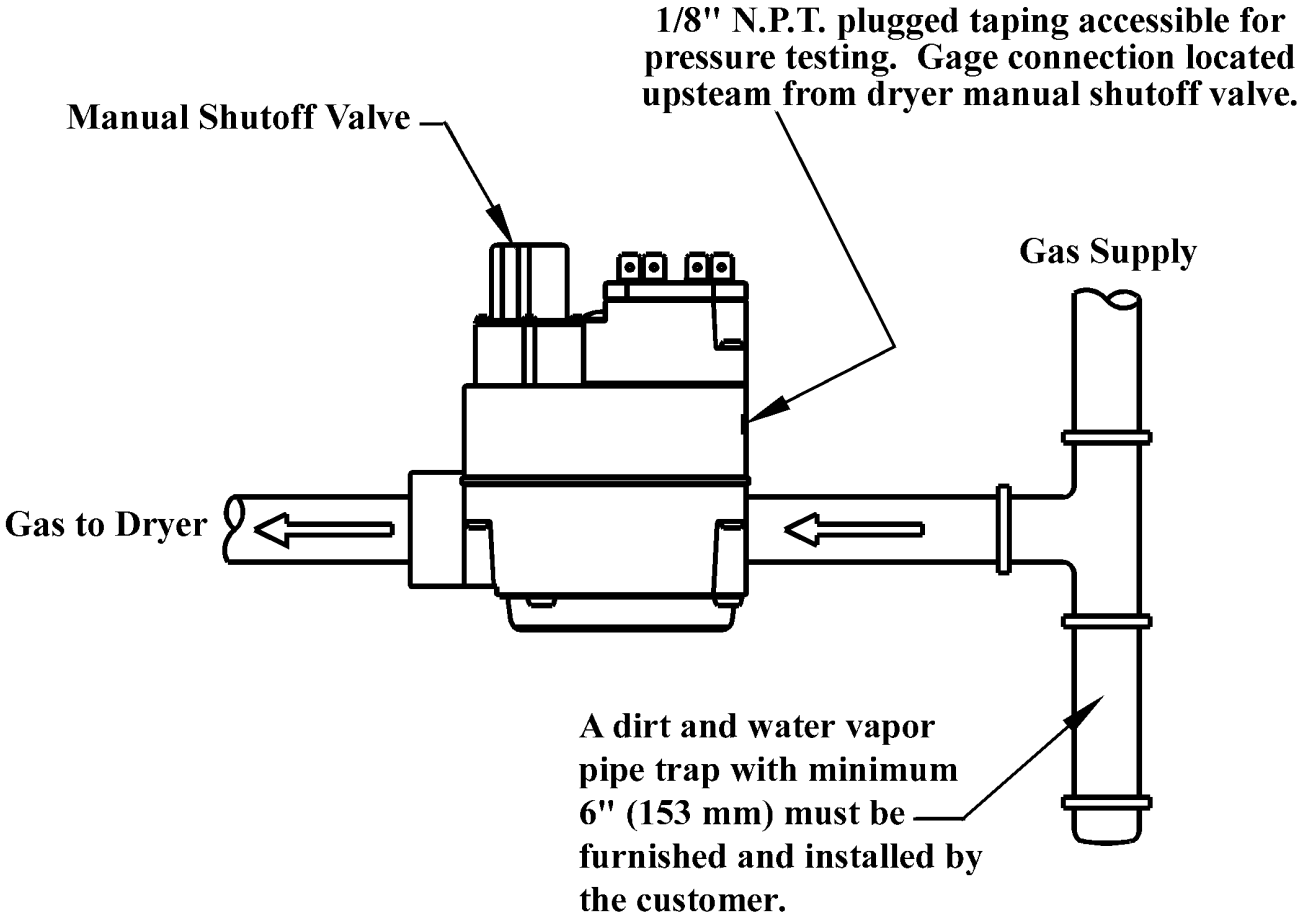
GAS SERVICE INSTALLATION INFORMATION

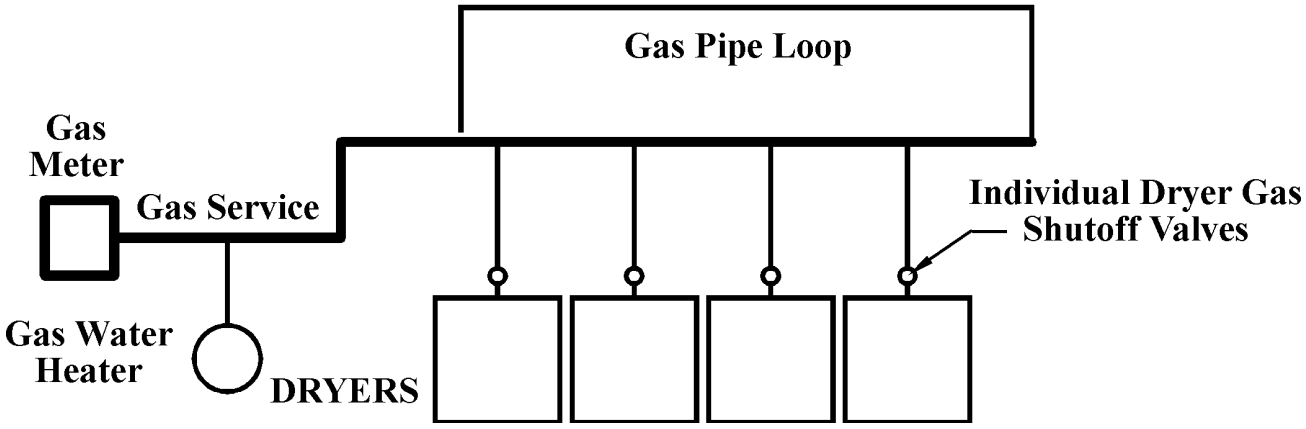
The size of the gas service pipe is dependant upon many variables, such as tees, lengths, etc. Specific pipe size should be obtained from the gas supplier. Refer to the *Gas Pipe Size Chart* in this manual for general *gas pipe size* information.

CAUTION
Gas loop piping must be installed as shown in Illustration, to maintain equal gas pressure for all dryers connected to a single gas service.

Other gas using appliances should be connected upstream from the loop.

WARNING
(LIQUIFIED PETROLEUM GASES ONLY)
A Gas Pressure Regulator for Liquified Petroleum Gases is not furnished on Gas Heated Clothes Dryers. This regulator is normally furnished by the installer. In accordance with American Gas Association (AGA) standards, a gas pressure regulator, when installed indoors, must be equipped with a vent limiter, or a vent line must be installed from the gas pressure regulator vent to the outdoors.


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) must be furnished and installed by the customer.


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

Gas Pipe Size Chart

TOTAL BTU/HR (for LP Gas correct total BTU/HR below by multiplying by .6)	TOTAL KCAL	GAS PIPE SIZE FOR 1000 BTU (250 KCAL) NATURAL GAS AT 7" W.C. (17.5 MBAR) PRESSURE In figuring total length of pipe, make allowance for tees and elbows.					
	HOUR	(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

GAS PIPING INSTALLATION

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

2. Check with utilities for proper gas pressure and gas supply line.

3. Check the altitude elevation of dryer.

4. The dryer and its individual shut-off valve must be disconnected from the gas supply piping system at test pressures in excess of 1/2 psig (.04 bar).

5. The dryer must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system, at test pressures equal to or less than 1/2 psig (.04 bar).

NATURAL GAS ONLY
Check the gas pressure inlet supply to the dryer, 11”w.c. (27.4 bar) pressure maximum. Check the manifold pressure, 3.5”w.c. (8.8 bar) pressure inside the dryer.

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

INSTALLATION INSTRUCTIONS

1. Set and anchor dryer in position. Machine should be level to 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 bypass 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.

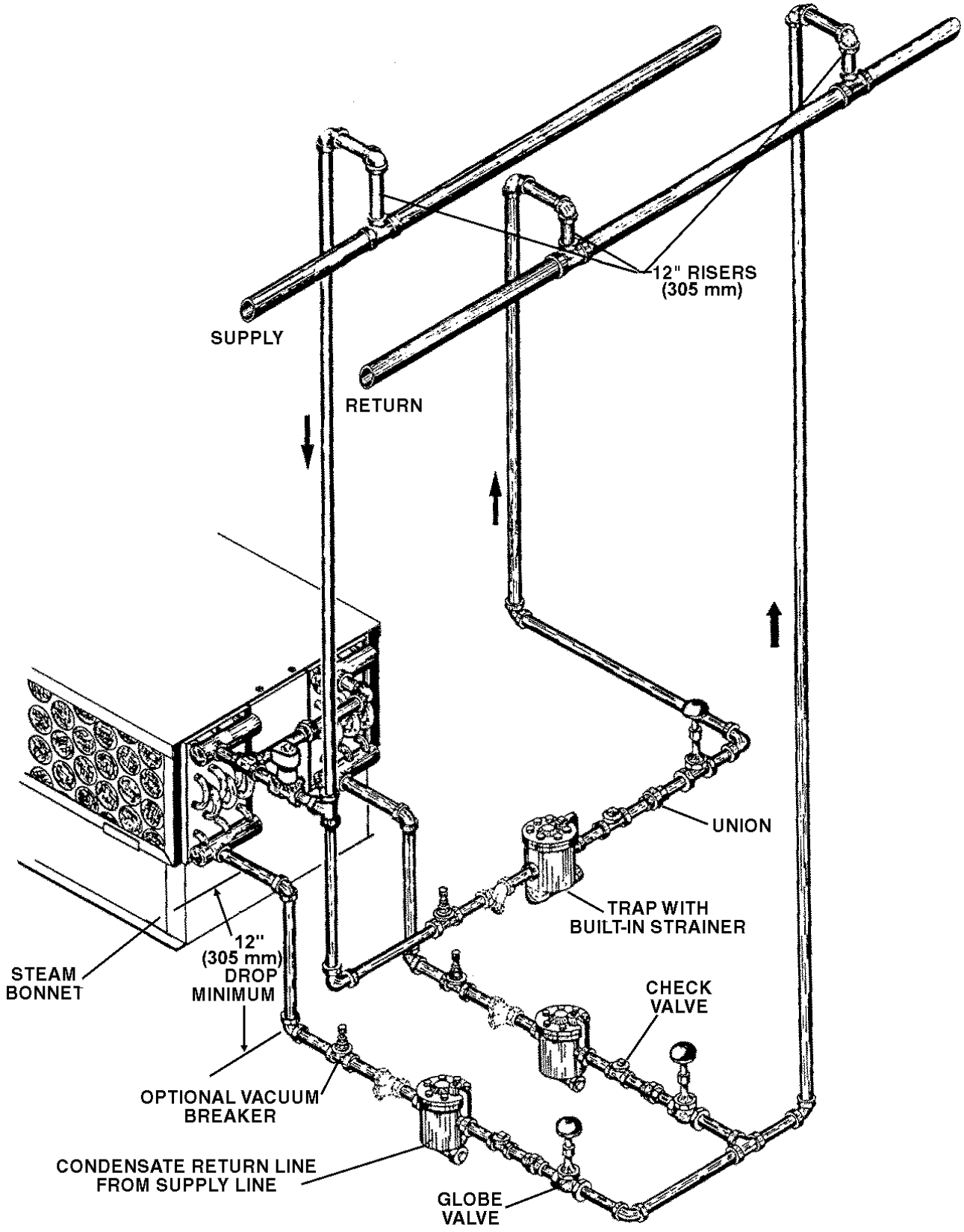
PIPING RECOMMENDATIONS

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

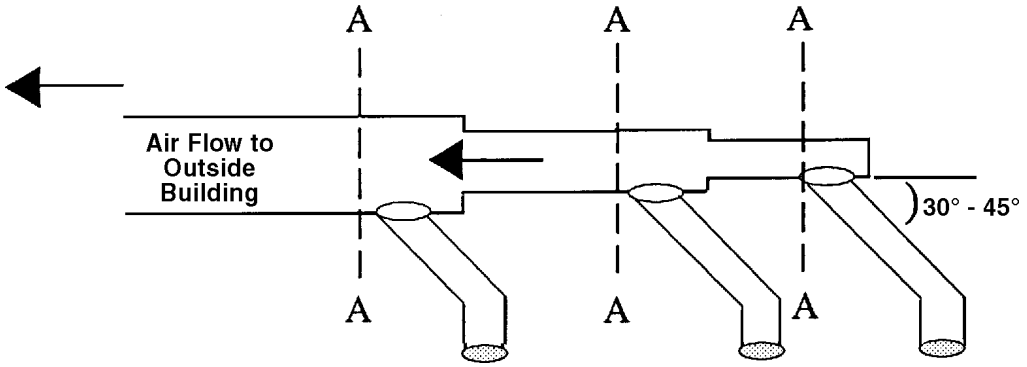
2. When dryer is on the end of a line of equipment, extend header at least 4 feet (2 m) beyond dryer. Install globe valve, union, check valve and bypass trap at end of line. If gravity returned to boiler, omit trap.

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.


12" RISERS
(305 mm)
SUPPLY
RETURN
UNION
TRAP WITH
BUILT-IN STRAINER
CHECK
VALVE
STEAM
BONNET
12"
(305 mm)
DROP
MINIMUM
OPTIONAL VACUUM
BREAKER
CONDENSATE RETURN LINE
FROM SUPPLY LINE
GLOBE
VALVE

For Exhaust Duct less than 14 feet (5m) and 2 elbows equivalent and less than 0.3 inches (8 mm) 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: L28FD30, L28US30, L36FD30, L36US30, L36US36, L44FD42

No. of dryers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Duct diameter (in inches)	6	9	11	12	14	15	16	17	18	19	20	21	22	23	23	24	25	26	26	27	28	28	29	30
(in cm)	15	23	27	30	35	38	41	43	46	48	51	53	56	58	58	61	63	66	66	68	71	71	73	76

MODELS: L28CD30, L28UR30, L36CD30, L36UR30, L36UR36, L36AR36, L44FD42

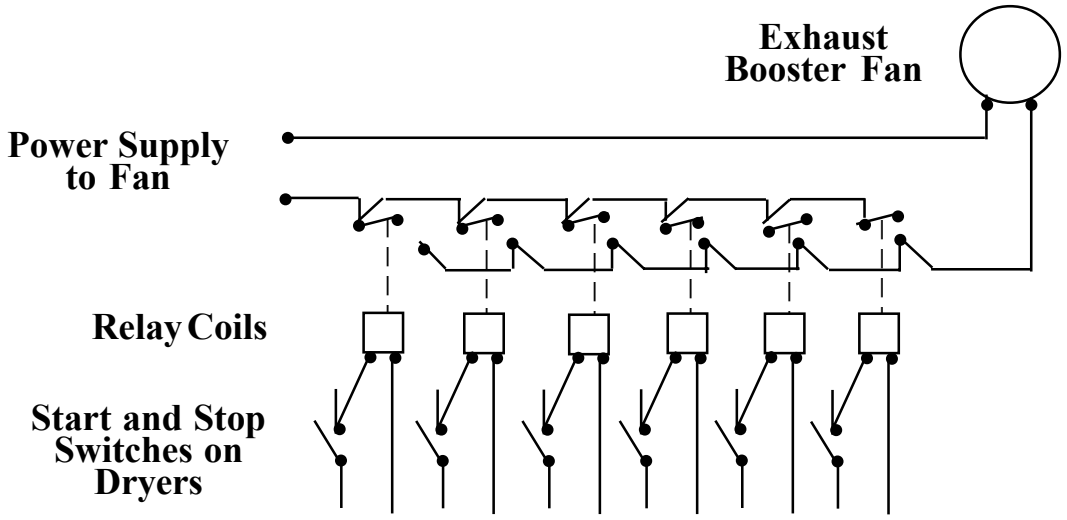
No. of dryers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Duct diameter (in inches)	8	12	14	16	18	20	22	23	24	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
(in cm)	20	30	25	41	46	51	56	58	61	66	68	71	73	76	78	81	84	86	89	91	94	97	99	100

MODELS: L44CD42, L50CD42

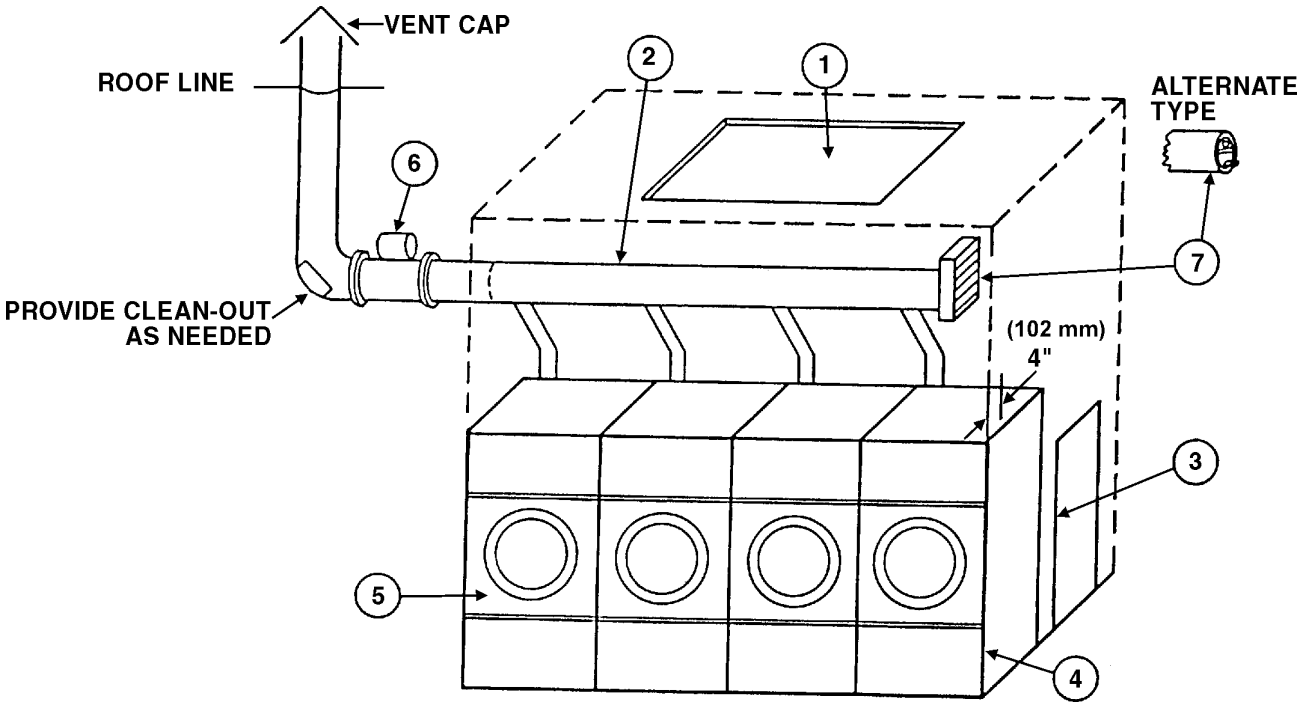
No. of dryers	1	2	3	4	5	6	7	8	9	10	11	12
Duct diameter (in inches)	12	17	21	24	27	30	32	34	36	38	40	42
(in cm)	30	43	53	61	68	76	81	86	91	97	100	106

AUTOMATIC ELECTRICAL CONTROL FOR EXHAUST FAN

For one or more dryers to start fan.



Dryer Installation with Multiple Exhaust (Illustration)



EXHAUST INSTALLATION— MULTIPLE MANIFOLD DUCT

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

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

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.

   EXAMPLE: 110 lb. dryer, 2000 cfm (3400 m^3/h) = 50,000 Btu/h (12,600 kcal/h) loss.

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 foot.

6. Flange mounted, belt driven tube-axial fan. Fan must run when one or more dryers are running**.** *See suggested Automatic Electrical Control Wiring Diagram on page 23.* 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 within 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.**

CAUTION
Never exhaust dryers with other types of equipment.

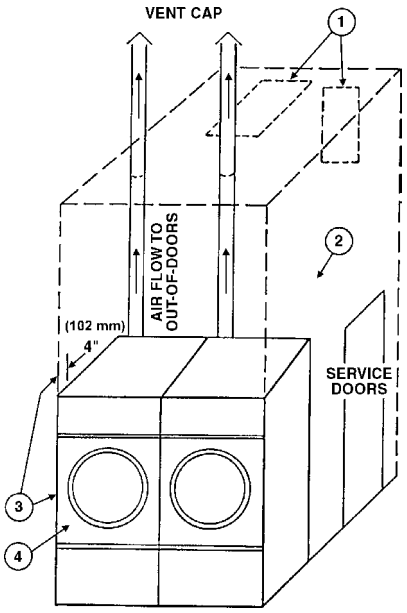
Suggested Minimum Dryer Make-up Air Requirements

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
C 30 ST	30	13.6	450	765	6	153	87	561
C 75 ST	75	34	1000	1700	12	305	192	1240
C 110	110	50	2200	3740	12	305	422	2723
C 110 E/S	110	50	850	1445	8	203	163	1052
C 125	125	56.7	2000	3400	12	305	384	2477
C 150	150	68	2250	3825	12	305	432	2787
HD175	175	79.4	2780	4726	12	305	534	3445
HD190	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 C 30 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 C 75 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 C 30 ST and the C 75 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) (Illustration)



DRYER INSTALLATION WITH SEPARATE EXHAUST (PREFERRED)

DRYER INSTALLATION WITH SEPARATE EXHAUST (PREFERRED)

For Exhaust Duct less than 14 feet (5 m) and 2 elbows equivalent and less than 0.3 (8 mm) inches 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, the heat loss can be another 25 Btu/h (6.3 kcal/h) for each cubic foot per minute (cfm) used. **EXAMPLE:** A 125 lb. dryer with 2000 cfm (3400 m^3/h) = heat loss of 50,000 Btu/h (12,600 kcal/h).
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 fronts *only* is about 60 Btu/h (15.2 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 a fluid air flow to the inlet of the dryer, if there is to 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, size and length of which allows flow through the dryer with no more than 0.3 inches water column (.8 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 saving models.

EXHAUST DUCT

FOR BEST DRYING:

1. Exhaust duct maximum length 14 feet (5 m) of straight duct and maximum of two 90° bends.
2. Use 45° and 30° 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 water column (.8 mbar) static pressure in the exhaust duct without a booster fan.
7. Inside surface of the duct must be smooth.
8. Recommend pop rivets for duct assembly.

MAKE-UP AIR

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 TROUBLESHOOTING

Other Recommendations

To assure compliance, consult local building code requirements.

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 DRYER

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**
   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.
   Always keep the lint screen clean.
   Never use heat to dry items that contain plastic, foam or sponge rubber, or rags coated with oils, waxes or paints. 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 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 can remain in the dryer and could cause skin irritation if they become mixed into other fabrics.

8. **Reference**
   Lighting and shut-down 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.

ENERGY SAVING TIPS

1. Install dryer so that you can use short, straight venting. Turned elbows and long vent tubing tend to increase drying time. Longer drying 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 light-weight fabrics separately from heavy fabrics. You will use less energy and get more even drying results by drying fabrics of similar weight together.

4. Clean the lint screen area daily. A clean lint screen helps give faster, more economical drying.

5. **Do not** open the dryer door while drying. You let warm air escape from the dryer into the room.

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

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.

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.

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.

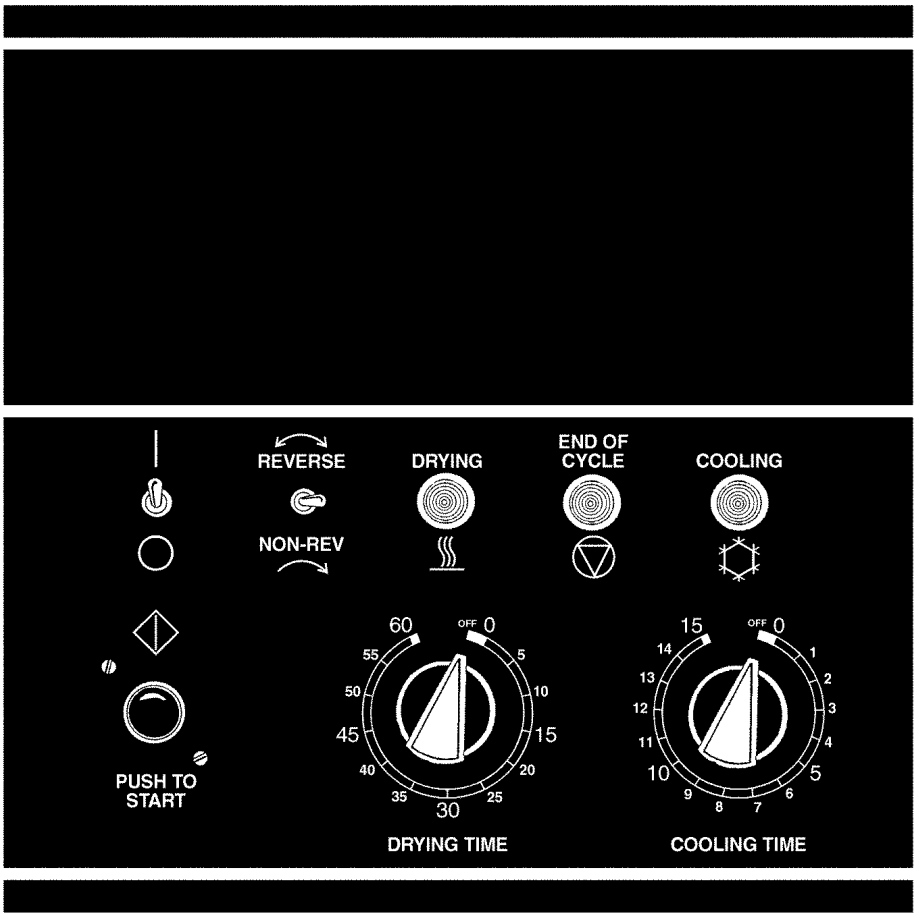


Fig. 1

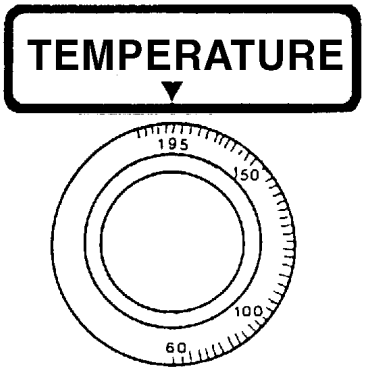


Fig. 2 Temperature Selection

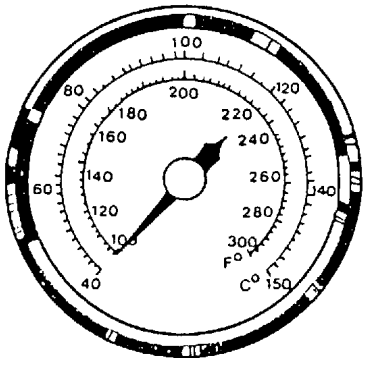


Fig. 3 Thermometer

OPERATING INSTRUCTIONS—TWO TIMER MODELS

OPERATING INSTRUCTIONS—TWO TIMER MODELS

1. After loading the dryer with the water washed clothes load, 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. (figure 1 on page 31.)

3. Turn the 15-minute cooling cycle timer to the desired cool down time. 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. (figure 1 on page 31.)

4. **Temperature Selector**—Select temperature per type of load being dried in the dryer. (figure 2 on page 26.)
   High Heat—Mixed and heavy fabrics, set dial to 195°F (77°C).
   Normal—Cottons and linens, set dial to 170°F (77°C).
   Permanent Press Heat—Poly knit synthetics, blends, light-weight fabrics, set dial to 150°F (66°C).
   Low Heat—Delicate, sheer fabrics, easy-to-dry, set dial to 135°F (58°C).

5. **Thermometer**—Use this with your temperature selection. Note what temperature is too hot or too cold. (figure 3 on page 31.)

6. Turn switch to "ON" or "I" position. (figure 1 on page 31.)

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. (figure 1 on page 31.)

OPERATING INSTRUCTIONS—TWO TIMER MODELS

OPERATING INSTRUCTIONS—TWO TIMER MODELS (continued)

What is happening to the drying operation:

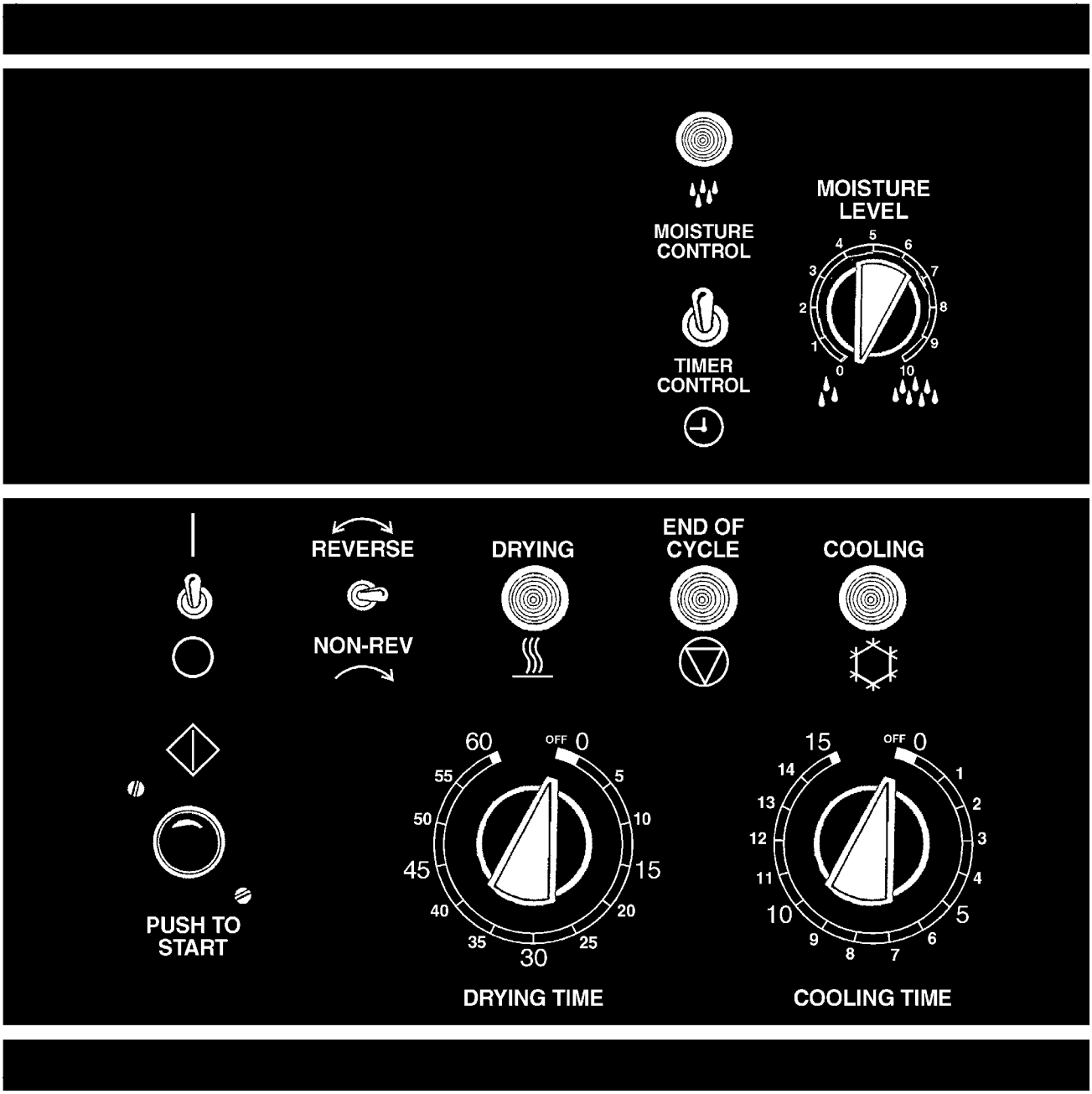
a. The fan motor will operate.
b. The basket will rotate.
c. The heat source will be energized.
d. The heated air will mix with the water washed clothes to evaporate the moisture from the garments.
e. The thermostats will function to maintain a safe temperature throughout the drying cycle.
f. The heat 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 timer completes its time, the cooling light will turn “Off” 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.

Moisture Control (Illustration)



OPERATING INSTRUCTIONS - MOISTURE CONTROL MODELS (OPTIONAL)

NOTE:
Machines with Moisture Control option can be used like regular two-timer models. To dry with Two Timer method, flip switch on Control Panel to "Time Drying". To dry with the Moisture Control method, flip the switch to "Automatic Drying". The indicator light will be on while the machine is in operation.

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

2. Select desired moisture level to remain in "the load from the selector switch on the Control Panel (see page 26). The numbers are relative with "10" being the most wet and "0" being the most dry. After a number of loads have been run and desired moisture level has been determined, record and reuse the same setting on similar loads.

3. Turn the 15-minute cooling cycle timer to the desired cool down time. 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 page 26.)

4. **Temperature Selection** - Select temperature per type of load being dried in the dryer. (See page 23.)
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. **Digital Temperature Read Out** - Use this with your temperature selection. Note what temperature is too hot or too cold. (See figure 1 on page 23.)

6. Turn switch to "ON" or "I" position. (See page 26.)

7. Close the dryer door. The basket **will not rotate** until the **PUSH-TO-START BUTTON** is pressed. Press the **PUSH-TO-START BUTTON** until the dryer starts running (approximately 2 seconds) and then release button. (See figure 1 on page 26.)

8. The machine cycle will stop drying and switch to cool-down when the desired set moisture level has been reached. The machine will run for the amount of time set on the cool-down timer.

TROUBLESHOOTING

To help you troubleshoot the dryer, listed below are 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

1. Is the door completely closed?
2. Are the controls set to the **"ON"** or **"I"** 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

1. Is the dryer set for **"cooling time"** rather than **"drying time"**?
2. Are the gas valves 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

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 problems.)*

GAS DRYER IGNITION

The dryer has a safety device which automatically shuts off the gas if the burner fails to light in a short time. If this happens, turn the dryer off. Check and see if the manual gas valve is open. Wait 5 minutes for the safety device to reset. Then reset the dryer controls. If the dryer still fails to heat, call for service. 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 and serial number.

TROUBLE	CAUSE	REMEDY
Motor 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 tripping on thermal overload.	Low voltage.	Check voltage at motor terminals. Voltage must be within + 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 housekeeing.	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" (10mm) with cover in place.
	Defective Door Switch.	Replace switch.
	Defective Basket Motor Contractor.	Replace contactor.
Motor runs, but basket will not revolve.	V-Belt broken. V-Belt loose.	Replace V-Belt. 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.	Occcasionally 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.

TROUBLE	CAUSE	REMEDY
Dryer runs, but no heat.	Incorrect voltage.	Check for correct control voltage - 24V.
	No voltage.	Check power supply, check secondary voltage on transformer and 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.
	Line fuse or heater circuit fuse blown to unit.	Replace fuse.
	Defective door switch.	Replace door switch.
	Spark igniter not igniting gas.	Check ground.
	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 operating. 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 over in winter. Never install a screen on the exhaust outlet. Vacuum within dryer drops to .09 inches or water column, or less, for normal operation of dryer, 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 Manual.
	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.
	Defective relay.	Replace relay.
	Defective thermostat.	Replace thermostat.
	Defective safety Overload Thermostat.	Replace thermostat.
	Lint compartment door open.	Open door.

TROUBLE	CAUSE	REMEDY
Main burners burning improperly.	Dirt in burner.	Blow out.
	High gas pressure.	Adjust gas pressure per rating plate.
	Orifice too large.	Send to factory for correct orifices.
	Restricted or blocked exhaust.	Clean exhaust.
Main burner cycles on and off.	Defective ground.	Check ground.
Low or high gas flame.	Incorrect main burner orifices.	Replace orifices. Check factory for correct size.
Dryer too hot.	Incorrect main burner orifice.	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.
	High gas pressure.	Adjust gas pressure as specified on Rating Plate.
	Partially restricted or inadequately sized exhaust system.	Check Service section for recommended sizes. Remove obstructions or lint build up from duct work. NEVER use smaller size exhaust duct. ALWAYS use larger size.
	Defective thermostat.	Replace thermostat.
Dryer does not stop at end of time period (6).	Defective timer.	Replace timer.
Dryer runs 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, thermostat controls 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 neccessary.
	Strainer clogged.	Remove plug and blow down Strainer or remove and clean thoroughly if heavily clogged.
Water in steam line.	Steam piping in-stalled 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.

DIRECT SPARK IGNITION OPERATION

NOTE: Some models are equipped with a dual ignition system. The dual ignition system contains two Direct Spark Ignition modules in parallel. Each module has its own Flame Sense circuit and acts independently of the other. If either Bonnet Limit Thermostat opens because of high heat or flame impingement, the entire ignition system will shut down.

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 for 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 ignition period. This will continue until the number of retries has been used up. At that time, the module will go into safety lockout.

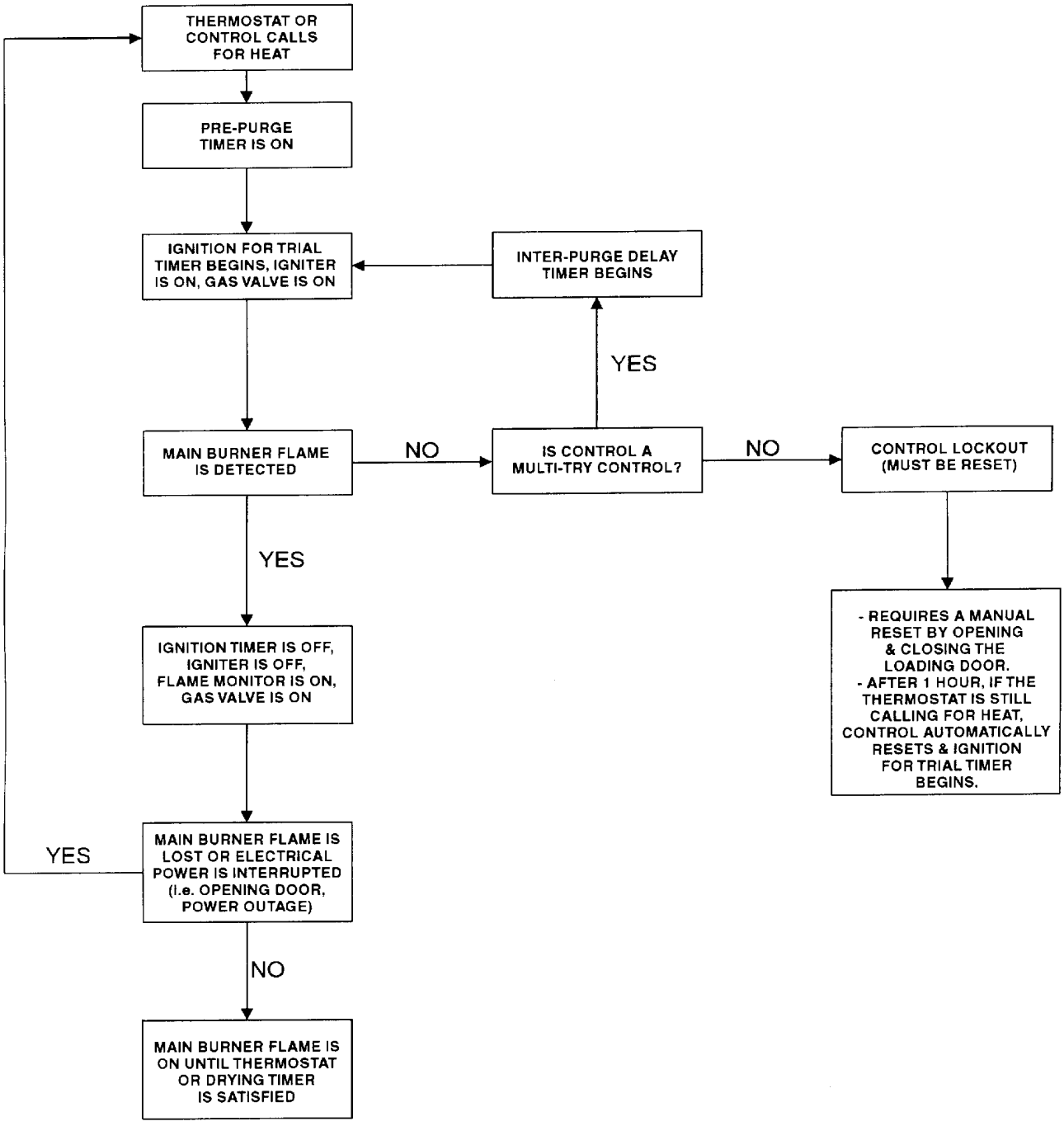
4. Recovery from safety lockout requires one of the following:
   a. A manual reset by opening and closing the loading door.
   b. After one hour if the control thermostat is still calling for heat, the module will automatically reset and the trial for ignition period will start over.

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

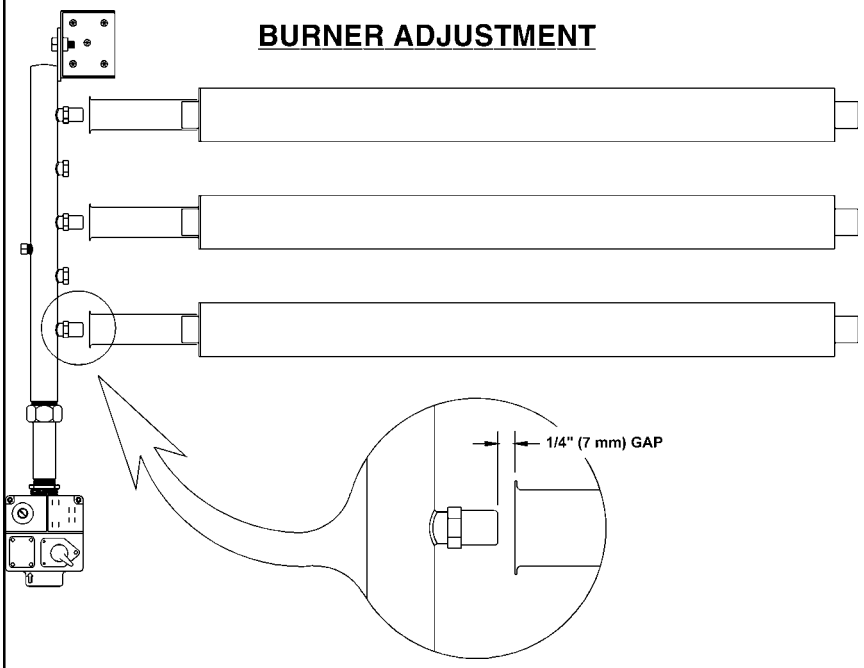


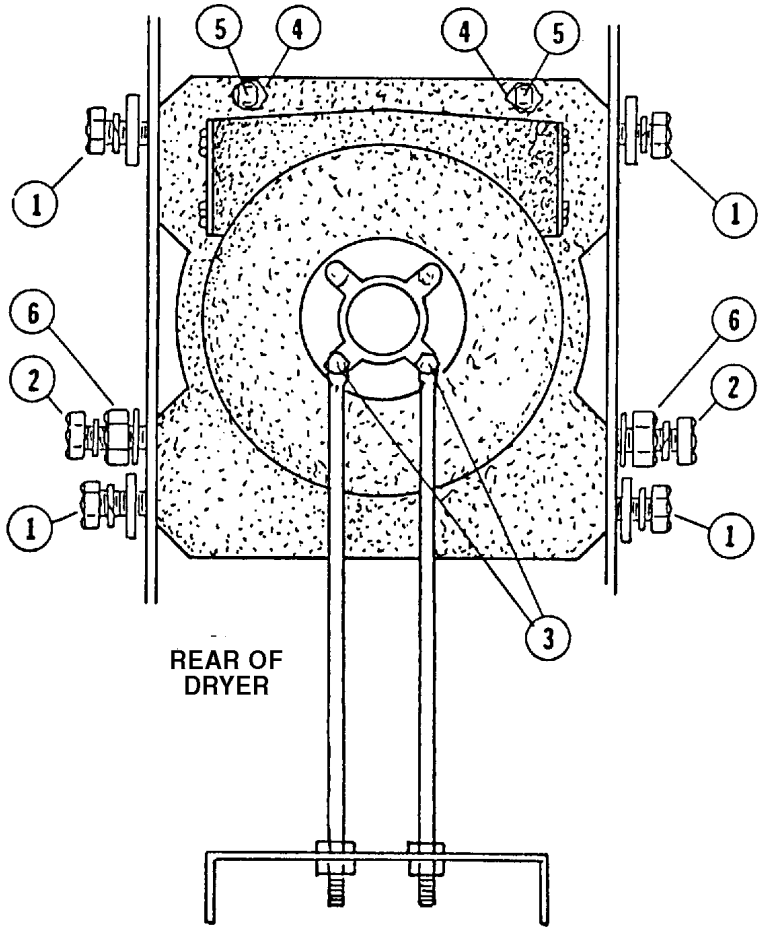
MAINTENANCE

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 one-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.
6. **STEAM HEATING 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 periodically and clean often.
8. **EXHAUST SYSTEM.** Periodically check and clean.
9. **CLEAN OUT PANEL.** (Energy Saver Gas Models) Remove this panel, located on the heating unit, and clean the inside area of lint and dirt on a regular basis.
10. **DRYER AREA.** Keep dryer area clean and free from combustible materials, gasoline and other flammable vapors and liquids.
11. **MAKE-UP AIR.** Do not obstruct the flow of combustion (make-up) air and ventilating air.
12. **GAS PRESSURE.** Periodically check gas pressure.
13. **DRYER VOLTAGE.** Periodically check dryer voltage per dryer Rating Plate.

BURNER AIR INLET ADJUSTMENT

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REAR OF
DRYER

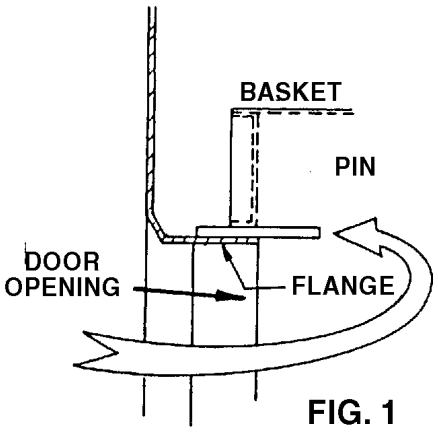

BASKET
PIN
DOOR
OPENING
FLANGE

FIG. 1

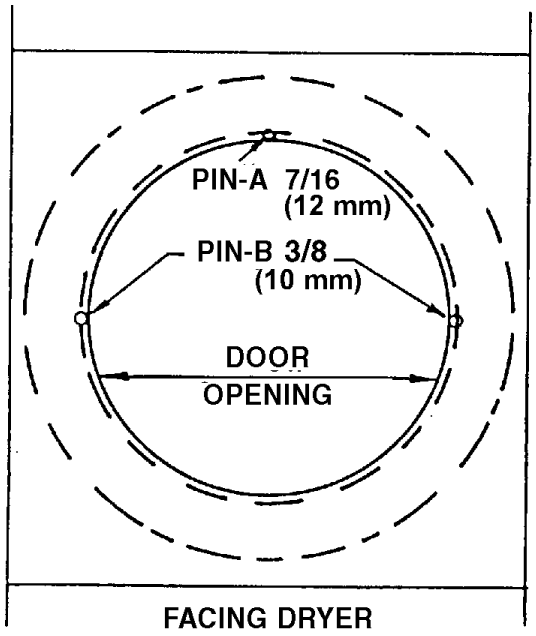

PIN-A 7/16
(12 mm)
PIN-B 3/8
(10 mm)
DOOR
OPENING
FACING DRYER

FIG. 2

INSTRUCTIONS FOR ALIGNING BASKETS ON 110 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.

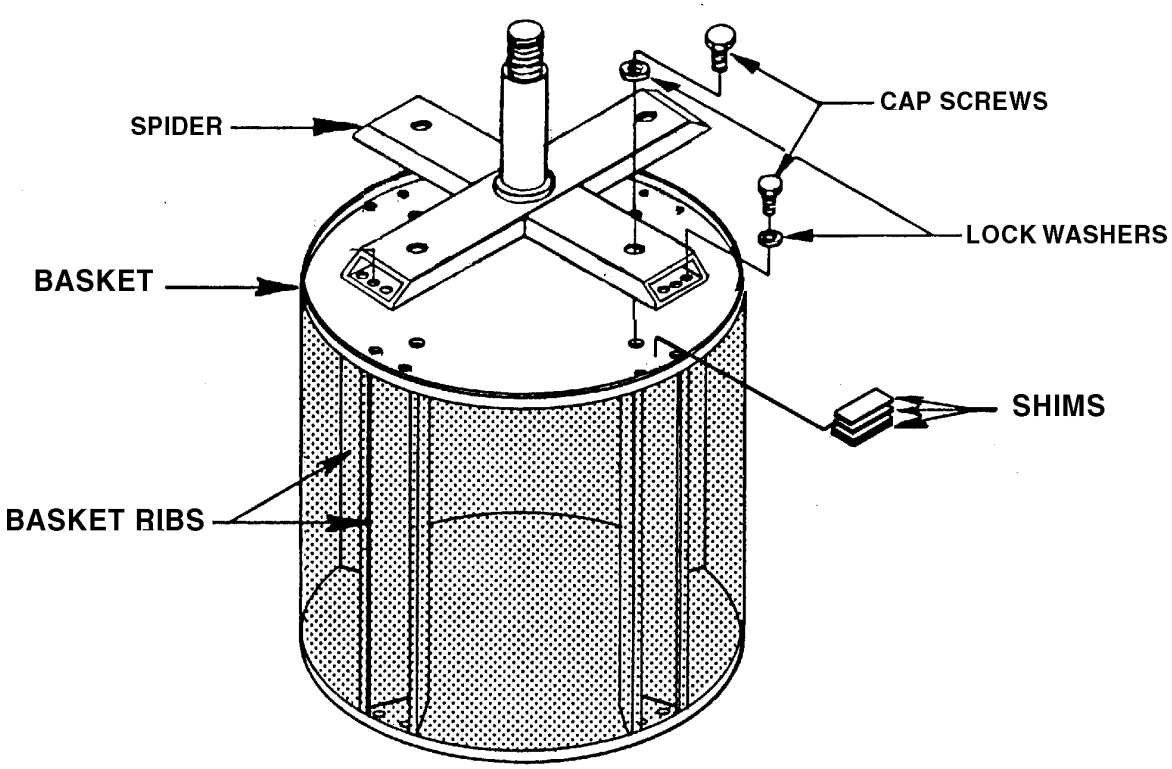
5. When clearance at pin “B” is correct, tighten bolts #1 in the following order, as viewed from rear of dryer, top right, bottom left, top left and bottom right.

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.



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 are 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.

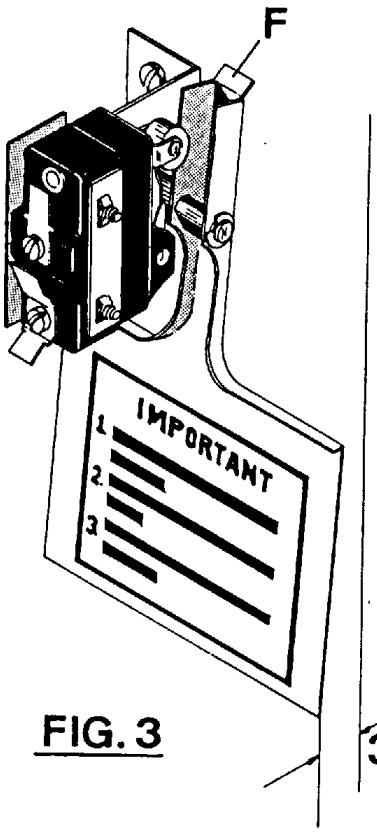


FIG. 3

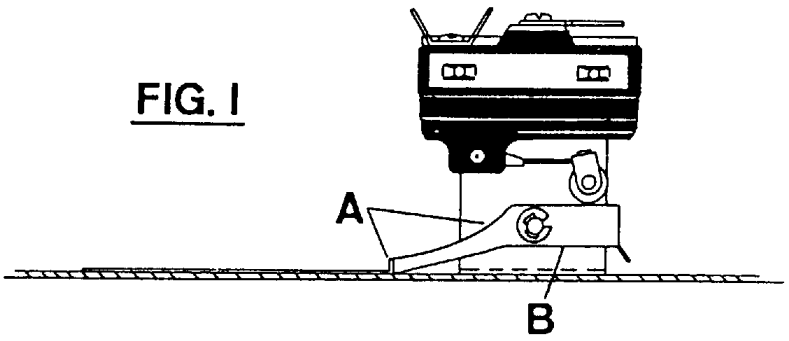


FIG. I

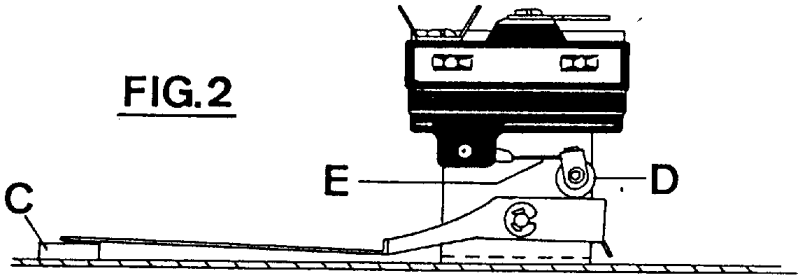


FIG.2

3/4" (20 mm)

AIR SWITCH 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.

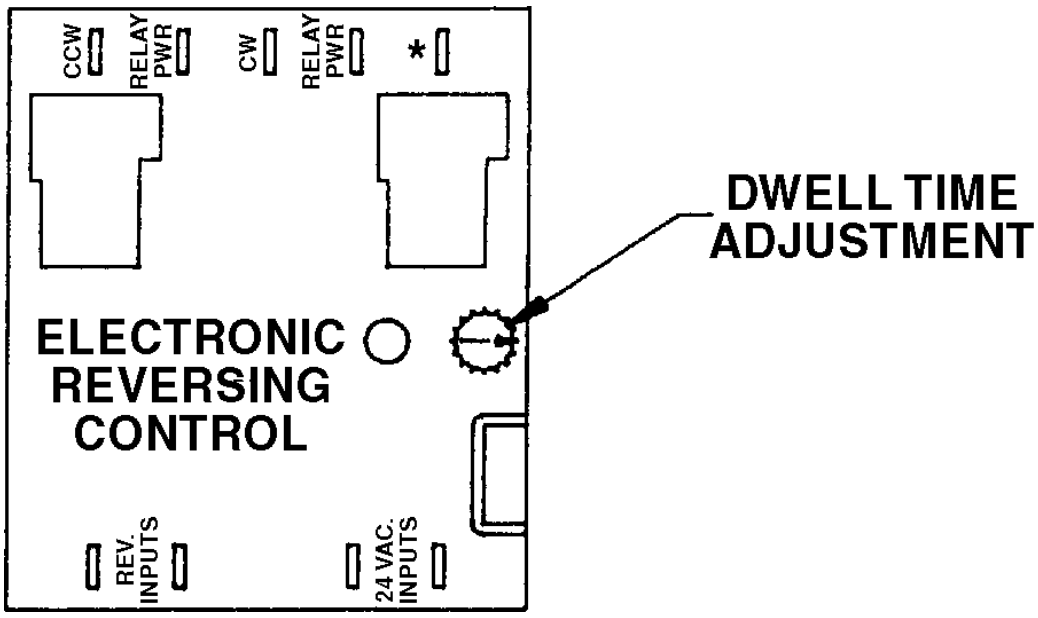
The dwell time is the time from when the motor turns "off", to when it turns "on" again in the opposite direction.

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 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

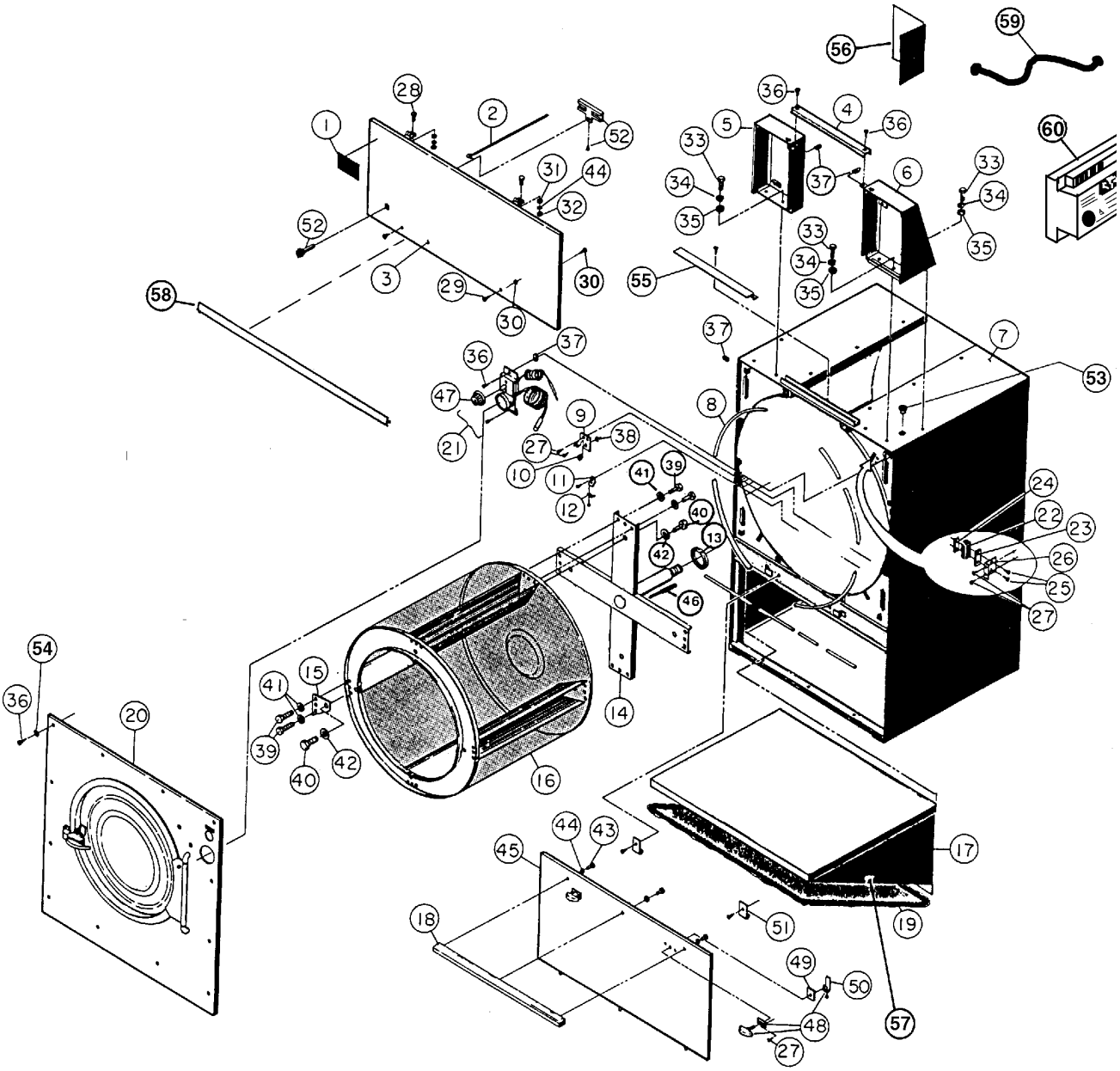
LARGE GEAR REDUCER MAINTENANCE

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 pop-off valve at the top of the gear reducer and add as needed.

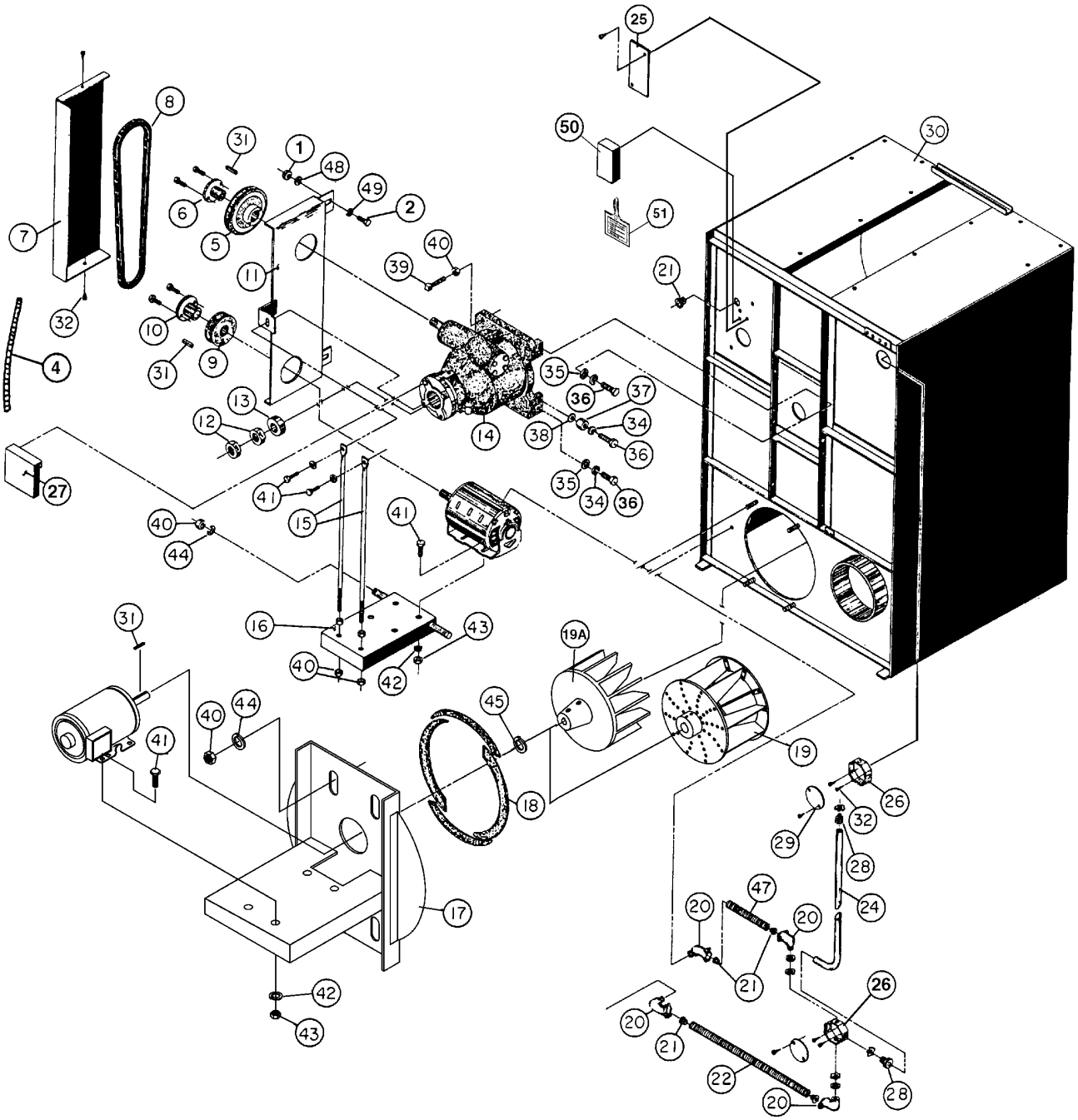
CHANGE OIL ONCE EVERY 6 MONTHS.

WARNING:
Oil level shall not exceed 52 oz.
Please drain oil to oil level plug if required.



1	TU8013	Cissell Nameplate
2	TU5739	Support Rod
*3	TU14157	Access Panel
4	TU5674	Control Box Brace
5	TU7159	Left Control Box
6	TU14056	Right Control Box
7	TU13803	Jacket Weldment
8	TU5302	Gasket Set
9	TU2486	Thermostat Bracket
10	TU2477	Thermostat
11	TU5337	Thermostat Bulb Support
12	F646	5/16” Clamp
13	TU5290	Felt Seal
14	K109	Spider “C” and “F”
	K348	Spider “K” and “R”
15	TU5397	Outside Rib Plate
16	TU6469	Basket “C” and “F”
	K421	Basket and Spider “C” & “F”
17	TU10345	Lint Screen Hood
18	TU7473	Door Handle
19	K368	Lint Screen ONLY
	K121	Wire Frame ONLY
*20	TU13807	Front Panel & Door Assy.
21	TU6030	Temperature Control
22	TU1979H	Door Switch
24	TU1771	#6 Twin Speed Nut (Pkg. of 12)
25	TU3219	#6 x 1” Screw
26	TU2373	Mounting Bracket
27	TU7733	#8 x 1/2” Screw (Pkg. of 6)
28	TU3479	#10 - 32 x 7/16” Truss Screw
29	FG343	Screw Fastener
30	FG345	Retaining Washer
31	P104	1/4” Cut Washer (Pkg. of 6)
32	TU2842	#10 - 32 Hex Nut (Pkg. of 6)
33	TU3246	3/8” - 16 x 1” Hex Head Screw (Pkg. of 6)
34	VSB134	3/8” Lockwasher (Pkg. of 6)
35	IB140	3/8” Cut Washer
36	TU6854	#14 x 3/4” Screw
37	LB74	#14 Speed Nut without Barbs
	TU7848	#14 Speed Nut with Barbs
38	TU3801	Push On Speed Nut
39	TU2662	1/2” - 20 x 1 1/2” Cap Screw
40	TU2664	5/8” - 18 x 1 1/2” Cap Screw
41	OP251	1/2” Lockwasher
42	TU5801	5/8” Lockwasher
43	F557	#10 - 24 x 3/8” Screw
44	FB187	#10 Lockwasher
*45	TU7804	Lint Door (with Insulation), Handles, and Hardware
46	TU9975	Basket Shaft Key
47	TU490	Thermostat Knob (Fahrenheit)
	TU491	Thermostat Knob (Centigrade)
48	K169	Handle Assembly
49	TU6025	Cam Stop
50	TU3811	Cam
51	TU6159	Support Clips
52	TU14025	Reset Button Assembly
53	TU9209	Snap Bushing
54	RC349	1/4" Lockwasher
55	TU7719	Conduit Channel Cover
56	TU8036	Left Control Box Shield “C”
57	TU6160	Lint Screen Clip
58	TU11568	Door Trim
59	TU13629	Cable, Hi-Voltage DSI
60	TU13409	Spark Ignition Mount, 3-Trial (Gas only)
	TU13627	Spark Ignition Mount, 1-Trial (Gas only)

*** Specify Color**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1	TU4934	1/4” - 20 x 7/16” Hex Nut (Pkg. of 6)
2	FB189	1/4” - 20 x 1” Hex Head Screw
3	TU8206	Air Switch**
4	CFB3000	1/2” Greenfield Cable - 30”
5	TU3806	Gear Sheave
6	TU3807	Sheave Bushing
7	TU5668	Outside Belt Guard
8	TU2363	“V” Belt 5L500
9	TU2832	Motor Sheave 60 Cy.
	TU6081	Motor Sheave 50 Cy.
10	TU2833	Sheave Bushing
11	TU9615	Belt Guard Welded Asm.
12	TU470	Large Hex Nut (2 required)
13	TU6633	2-3/4” O.D. x 1- 13/32” I.D. x 3/4” Thick Washer
14	TM200	Gear Reducer**
15	TU5328	Belt Adjusting Rod
16	TU4626	Basket Motor Mount Asm.
*17	TU5658	Motor and Fan Mount (60 Cycle)
18	TU2473	Self-Sticking Gaskets (2 sets required)
*19	TU403	Fan Wheel (50 Cycle)
19A	TUX220	Fan Wheel (60 Cycle)
20	TU4791	90 Degree Angle Connector
21	TU2372	Snap Bushing
22	CFB2800	1/2" Greenfield Cable (specify 28”)
23	TU6026	Top Motor Conduit
24	TU6027	Back Motor Conduit
25	TU5507	Blanking Plate “C” Model (Steam Only)

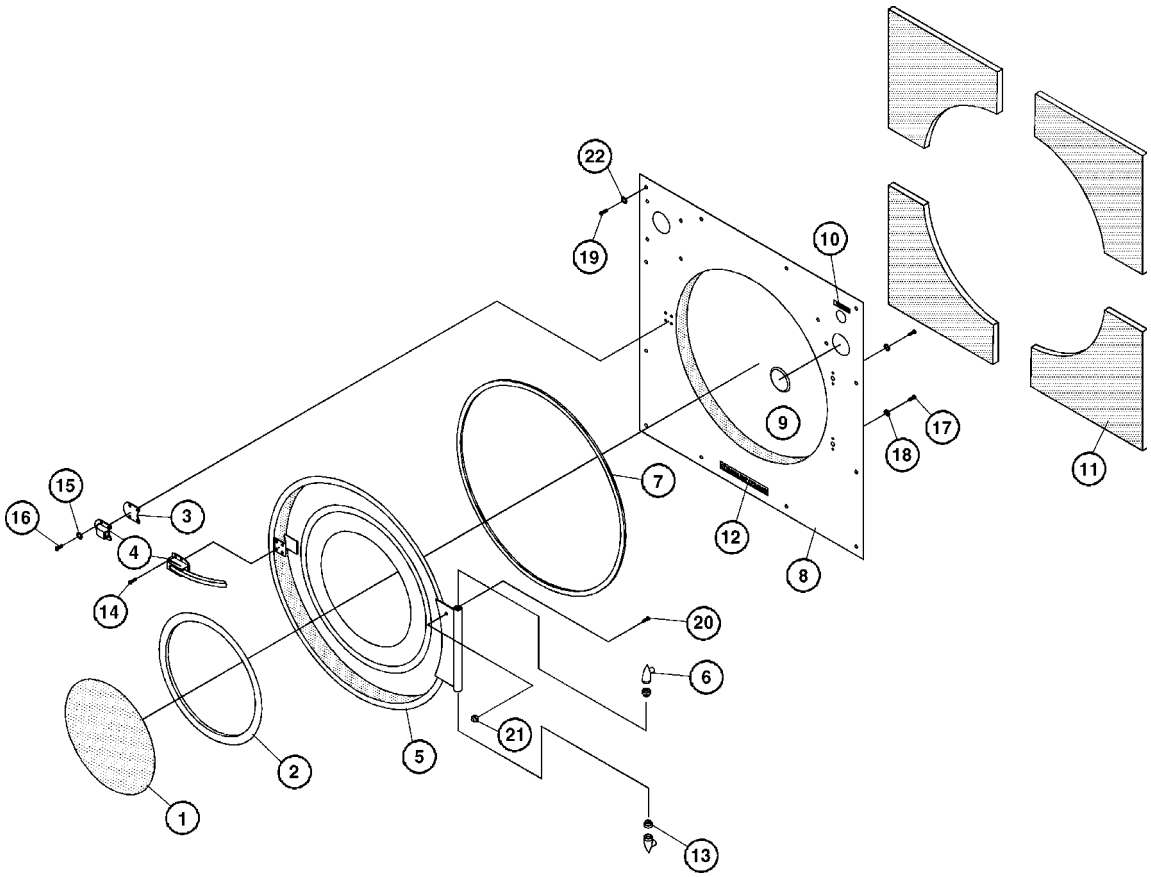
* For 50 Cy. Motor Mount Assembly

** See separate page for parts breakdown

26	500300644	Junction Box
27	TU7517	Basket Shaft Cover
	TU10732	Prompter Housing Assembly**
28	TU7131	3/4” Straight Connector
29	SB170	Junction Box Cover
30	TU13803	Jacket Welded Assembly
31	TU14057	Key
32	TU7733	#8 x 1/2” Self Drinning Screw (Pkg. of 6)
33	RC347	1/2” - 13 x 1 1/4” Hex Head Cap
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” Internal Tooth Lockwasher
39	TU5312	3/8” - 16 x 3” Square Head Set Screw
40	TU4787	3/8” - 16 Hex Nut (Pkg. of 6)
41	TU5439	5/16” - 18 x 3/4” Hex Head 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	TU2831	3/8” Split Lockwasher (Pkg. of 6)
45	TU108	Felt Seal
46	F1116	Serial No. Nameplate
47	CFB0650	1/2” Greenfield Cable (specify 6 1/2”)
48	TU2846	1/4” Split Lockwasher (Pkg. of 6)
49	TU2847	1/4” Flat Washer (Pkg. of 6)
50	TUX415	Air Switch Box
51	TU8206	Air Switch Assembly

CAUTION

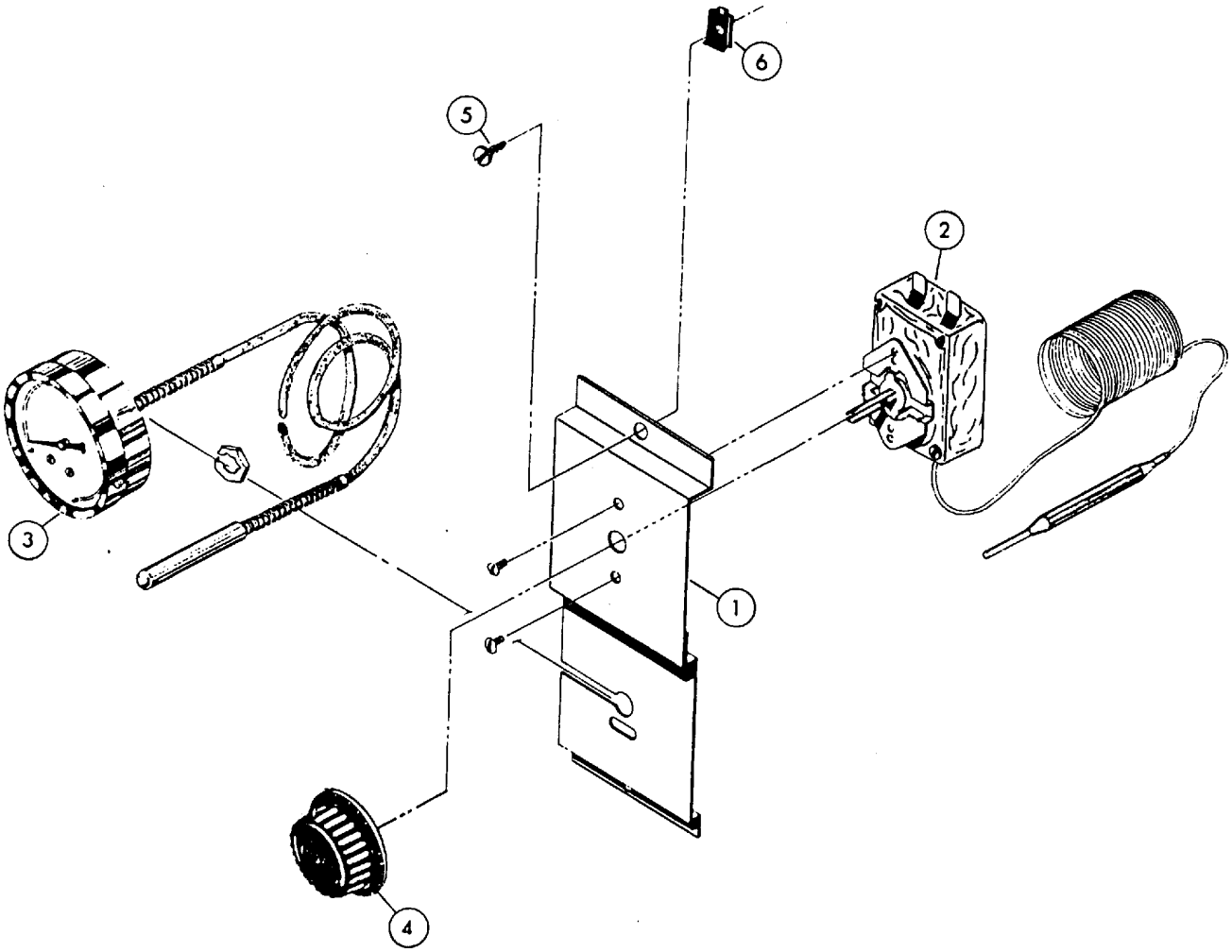
Grease to be applied to all bearing shafts, #42-032-6015 grease Lubriplate #310, 1 lb. cans OR 14 1/2 ounce tubes - Lubriplate No. 930-2, multi-purpose grease #10098.



***TU13807 Front Panel Assembly w/Door**

1	TU7862	Door Glass 20 - 1/4”
2	TU7169	Door Glass Gasket
3	TU5503	Door Latch Spacer
4	TUA2319H	Door Latch with Keeper
5	TU14483	Door (specify color)
6	TU2236	Hinge Post
7	TU5288	Door Seal
8	TU13809	Front Panel
9	TU2641	Thermometer Gasket
10	TU5458	Temperature Label
11	TU10673	Insulation
12	TU7858	“Clean Lint Compartment” Nameplate
13	PIF172	Hinge Post Bearing
14	TU2687	#8 - 1/2” Phillips Head Screw
15	TU3785	#8 Cup Lockwasher
16	TU2686	#8 - 32 x 3/8” Phillips Head Screw
17	TU2836	5/16” - 32 x 3/8” Hex Head Screw
18	TU3212	5/16” I.T. Lockwasher
19	TU3209	#14 x 5/8” Pan Head Screw
20	TU4839	#10 - 32 x 3/8” Hex Head Screw
21	TU4840	#10 - 32 Crown Nut
22	RC347	1/4” Lockwasher
	*TU7856	Door w/Glass Assy. (Parts 1-5)
	*TU9318	Door w/Solid Panel Assy. (Parts 3-5)

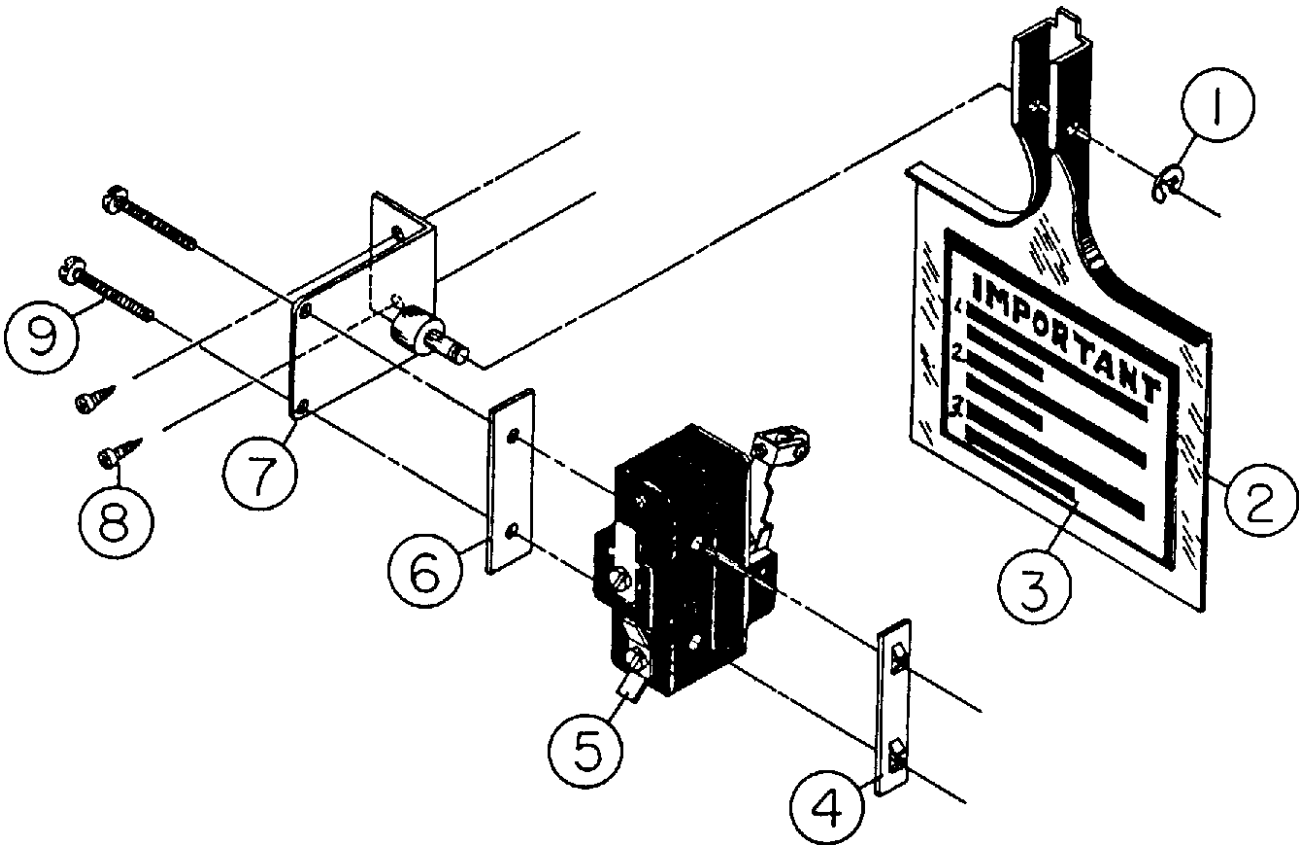
*** Specify Color**



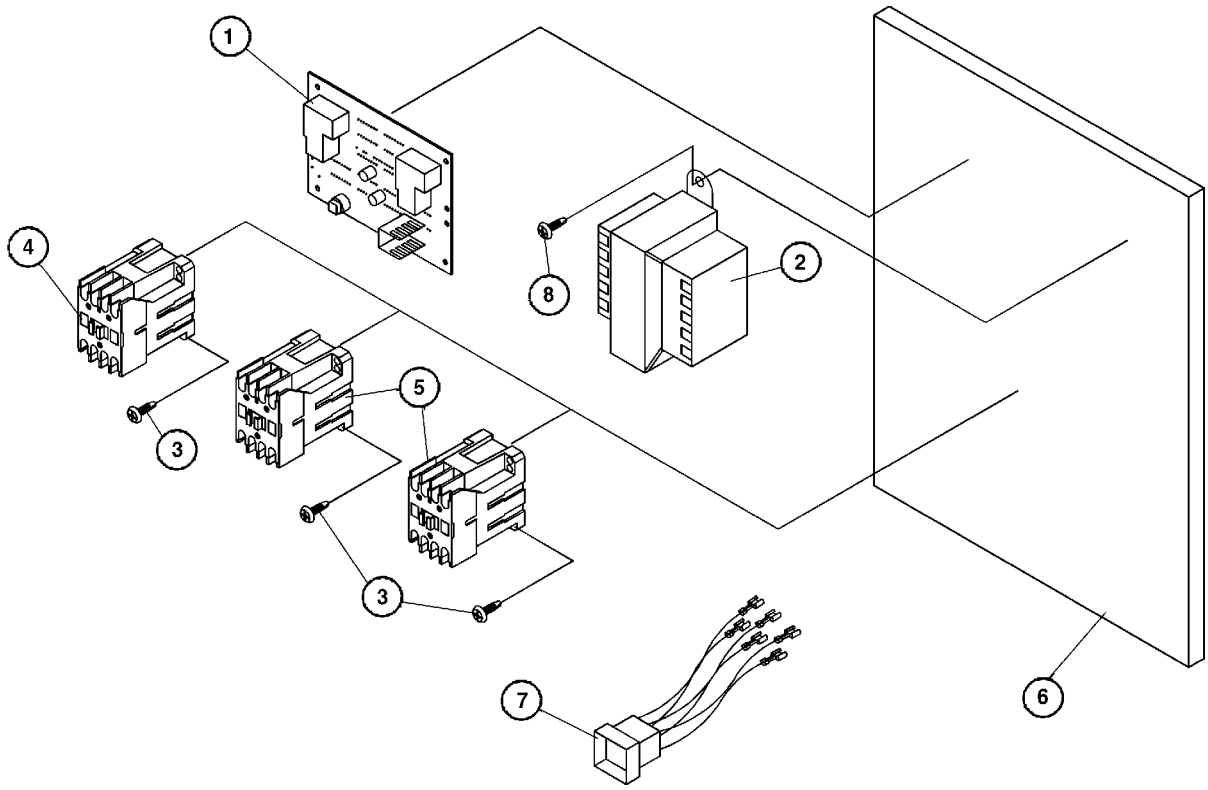
TU6030 Front Panel Assembly w/Door

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.
6	TU7848	#14 Tinnerman Clip

AIR SWITCH ASSEMBLY (Gas Only)
TU8206

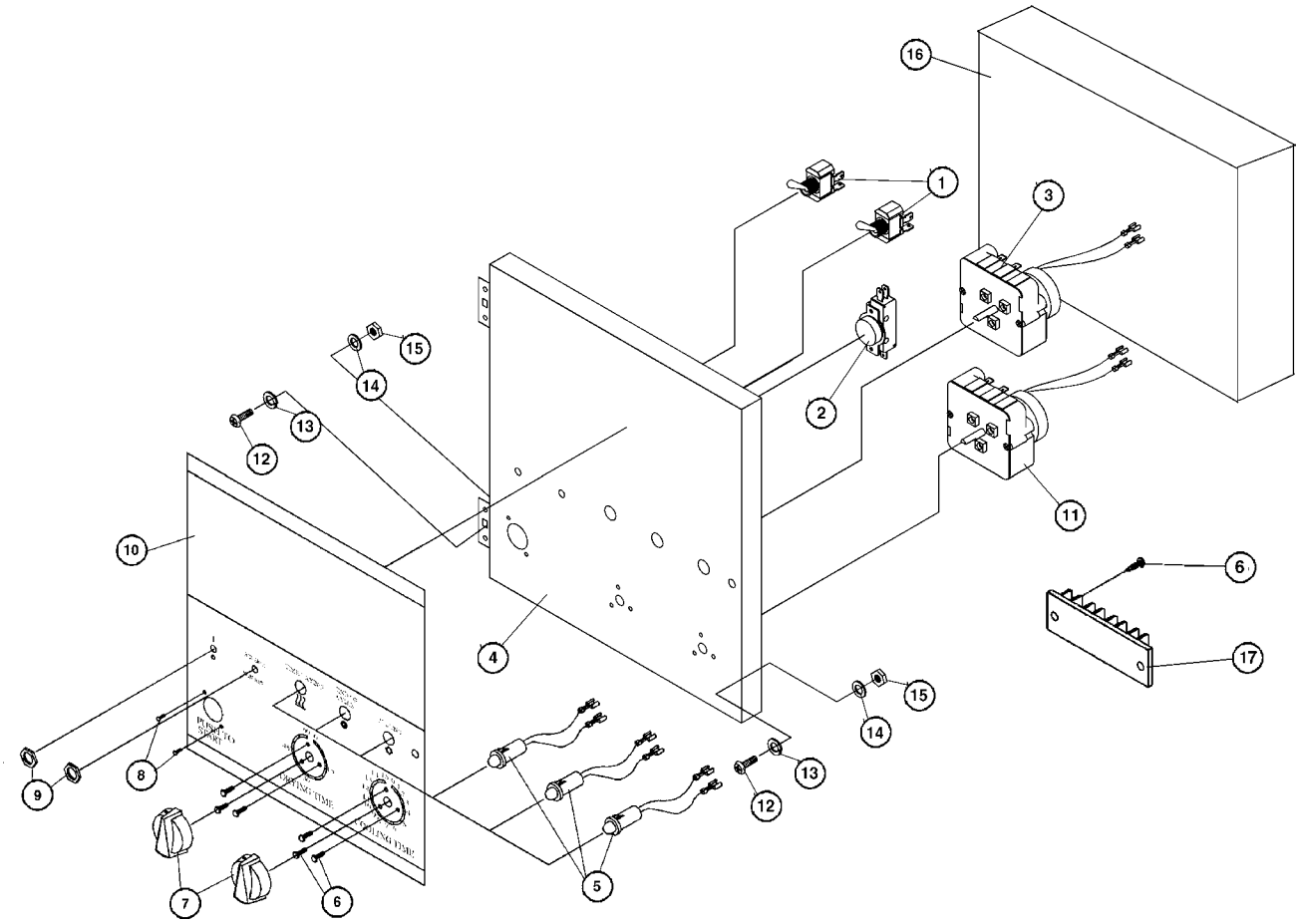


1	F888	"E" Ring
2	TU2463	Actuator Arm
3	TU3476	Air Switch Decal
4	TU1771	#6 Tinnerman Nut
5	TU8155	Air Switch
6	TU1770	Insulator
7	TU8171	Air Switch Bracket
8	TU7733	#8 - 18 x 1/2" Self Drilling Screw
9	TU3219	#6 x 1" Round Head S.M.S.



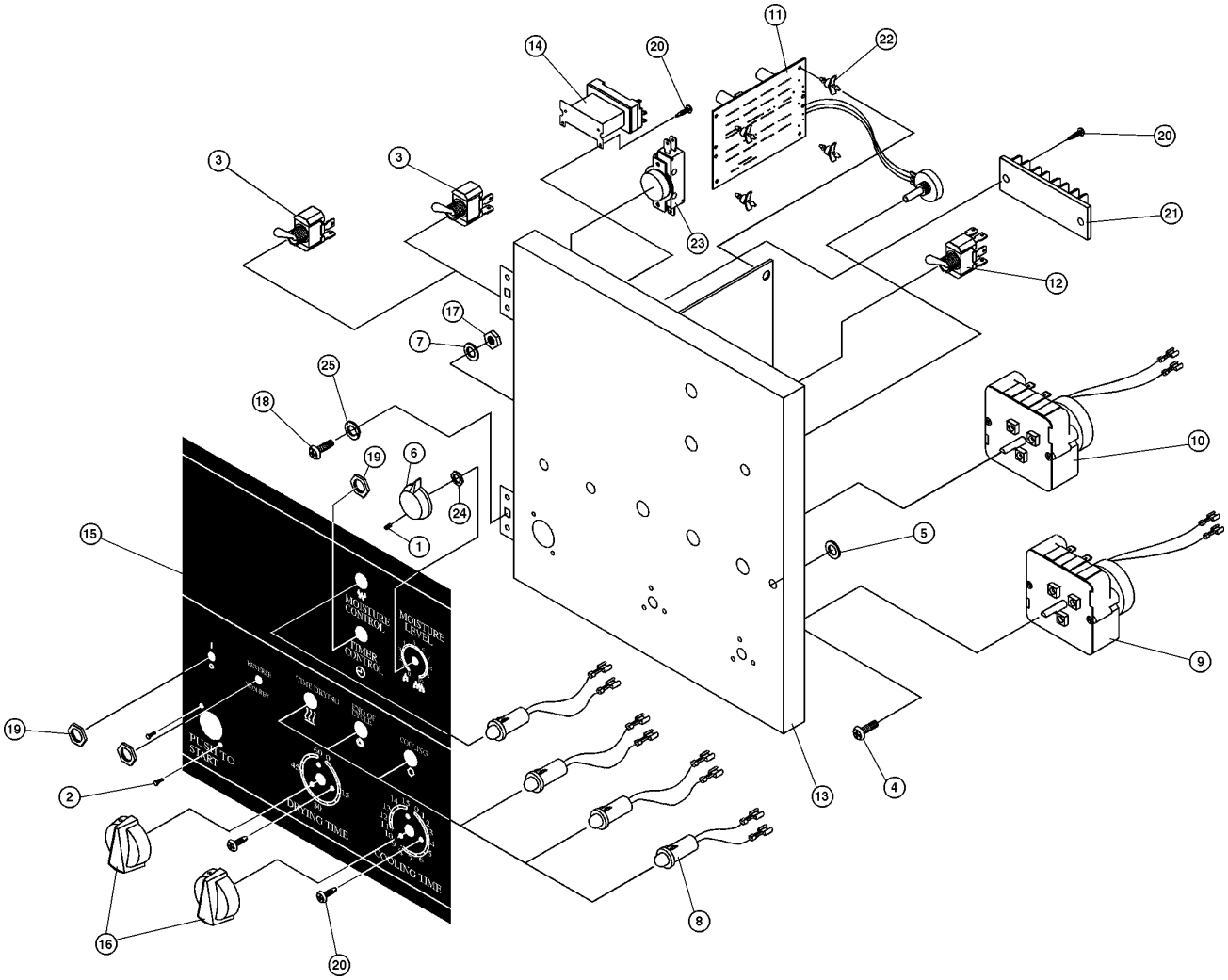
1	TU12874	Timer, Solid State Reversing
2	TU13480	Transformer 200-240V/24V w/Reset
	TU13514	Transformer, 480/24V w/Reset
3	F540	#6 x 5/8" Phillips Head Screw
4	TU13516	Contactor, 24V
5	TU13526	Contactor Assembly, 24V
6	TU14026	Motor Control Plate
7	WH1797	Wire Harness
8	TU7733	8 - 18 x 1/2" Self-Drill Screw (Pkg 6)

TU13859 - Permanent Press Control Panel Assembly

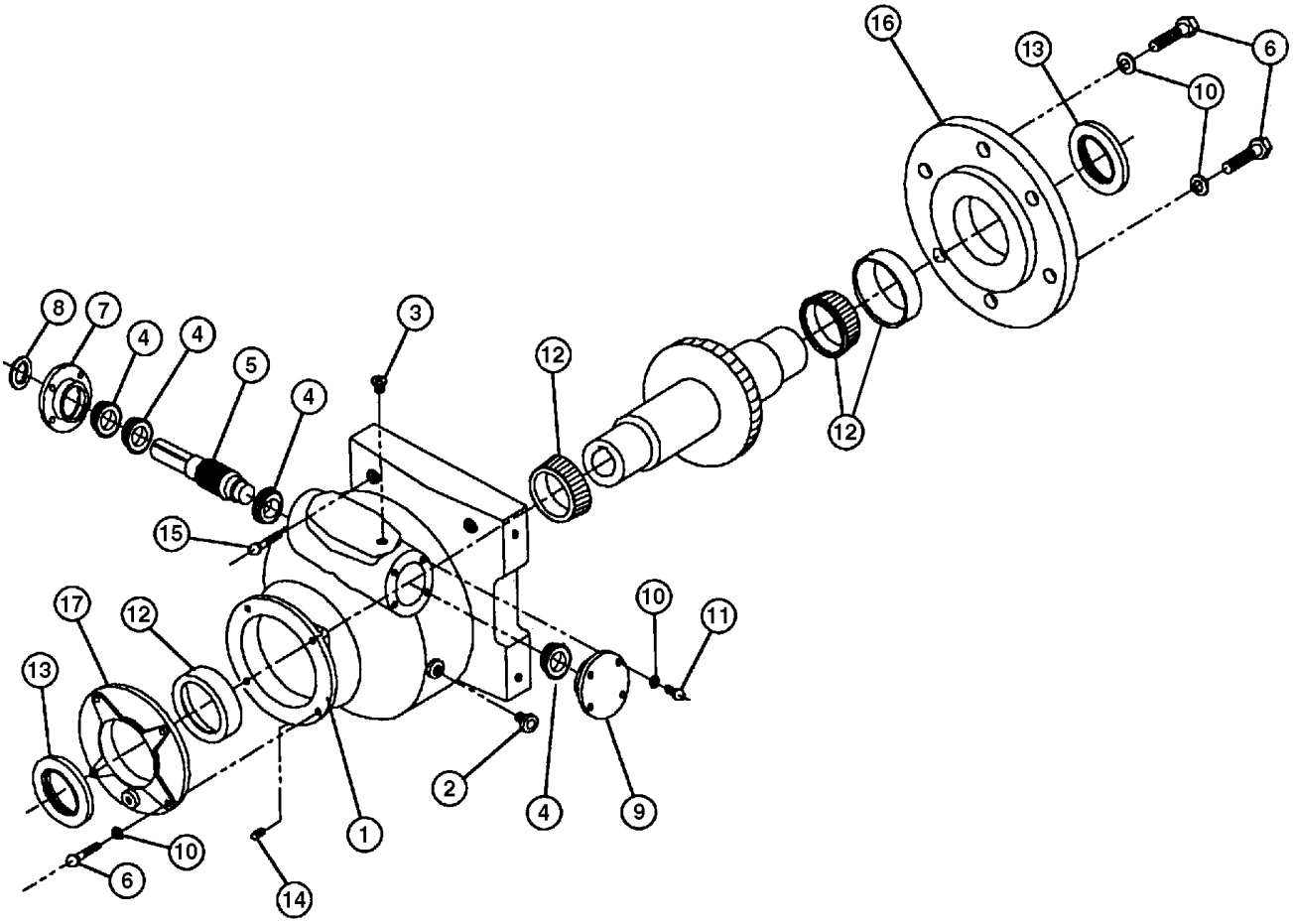


1	FG147	Toggle Switch	9	TU3805	Hex Nut
2	TU9028	Push Button Switch	10	TU13825	Control Panel
3	TU12933	Timer (0-15 Minutes)	11	TU12932	Timer (0-60 Minutes)
4	TU13620	Control Panel Weldment	12	TU3479	Pan Head Machine Screw
5	TUT316	LED	13	FB187	#10 Split Lock Washer
6	TU7733	#8 - 18 x 1/2" Self-Drill Scr.	14	P104	1/4" Brass Washer
			15	TU2842	#10 - 32 Hex Nut (Pkg 6)
7	TU2555	Knob Assembly	16	TU13621	Control Box Timer Assy
8	ET208	#6 - 32 x 1/4" Binding Head Screw	17	F325	Terminal Block

Moisture Control Panel Assembly - TU14253



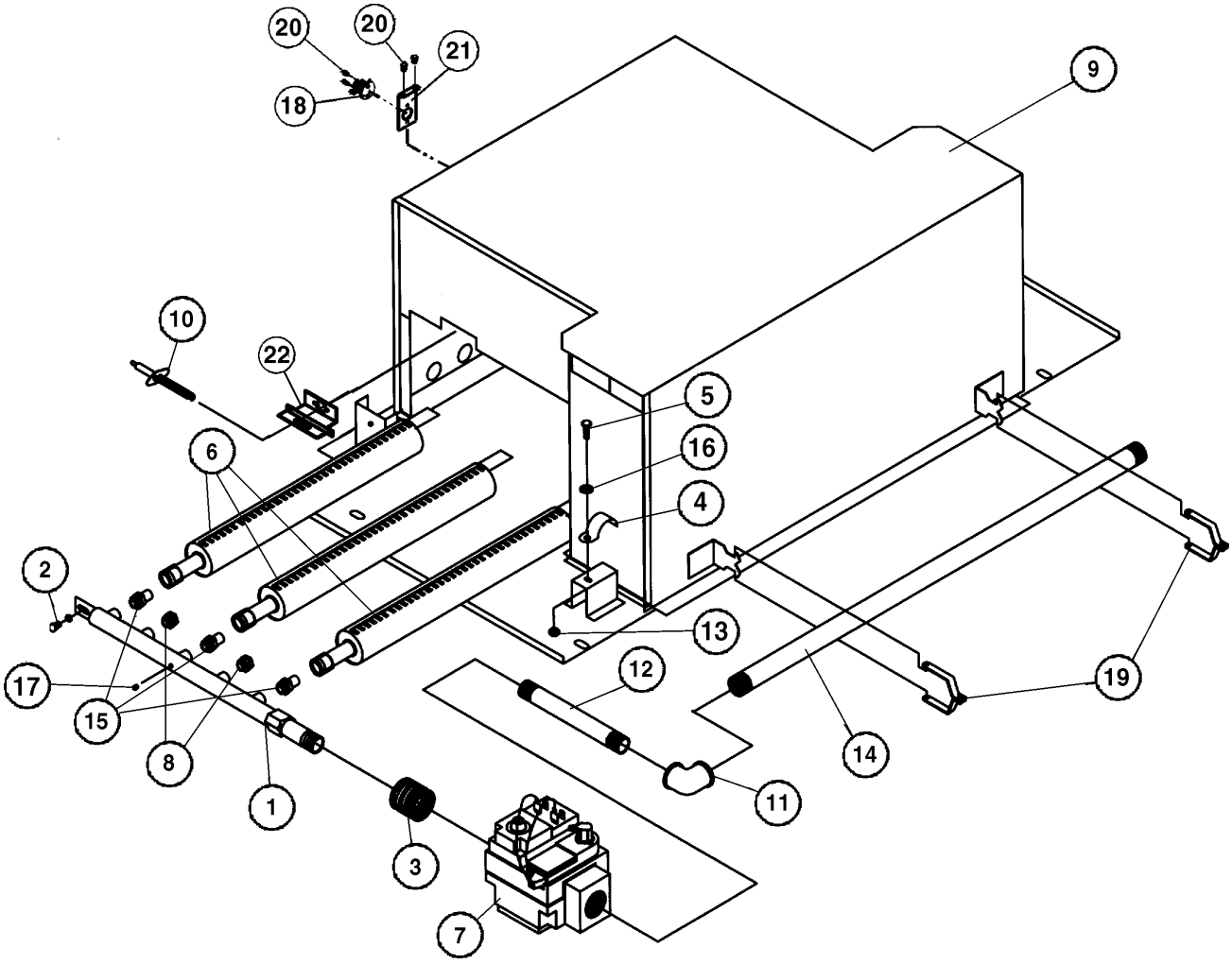
1	C196	#8-32 x 5/16” Socket Set Screw
2	ET208	6-32 x 1/4” Binding Head Scr.
3	FG147	Toggle Switch
4	FG343	Steel Screw
5	FG345	Steel Washer
6	PT118	M/C Knob
7	P104	1/4” Brass Washer (Pkg. 6)
8	TUT316	24V LED Light
9	TU12932	Timer (0-60 Min.) Drying
10	TU12933	Timer (0-15 Min.) Cooling
11	TU13229	24V Humidity-Based Controller
12	TU13345	DPDT Switch
13	TU13620	Timer Control Weldment
14	TU13646	24V Coil Relay
15	TU14251	Front Panel 125# ICC
16	TU2555	Knob
17	TU2842	10-32 Hex Nut (Pkg. 6)
18	TU3479	10-32 x 7/16” Machine Screw
19	TU3805	15/32-32 Hex Lock Nut
20	TU7733	#8-18 x 1/2 Self-Drill Screw
21	FG325	Terminal Block
22	TU9347	PC Board Support
23	TU9028	Push Button Switch
24	TU3243	3/8” Int. Tooth Lockwasher
25	FB187	#10 Split Lockwasher



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			

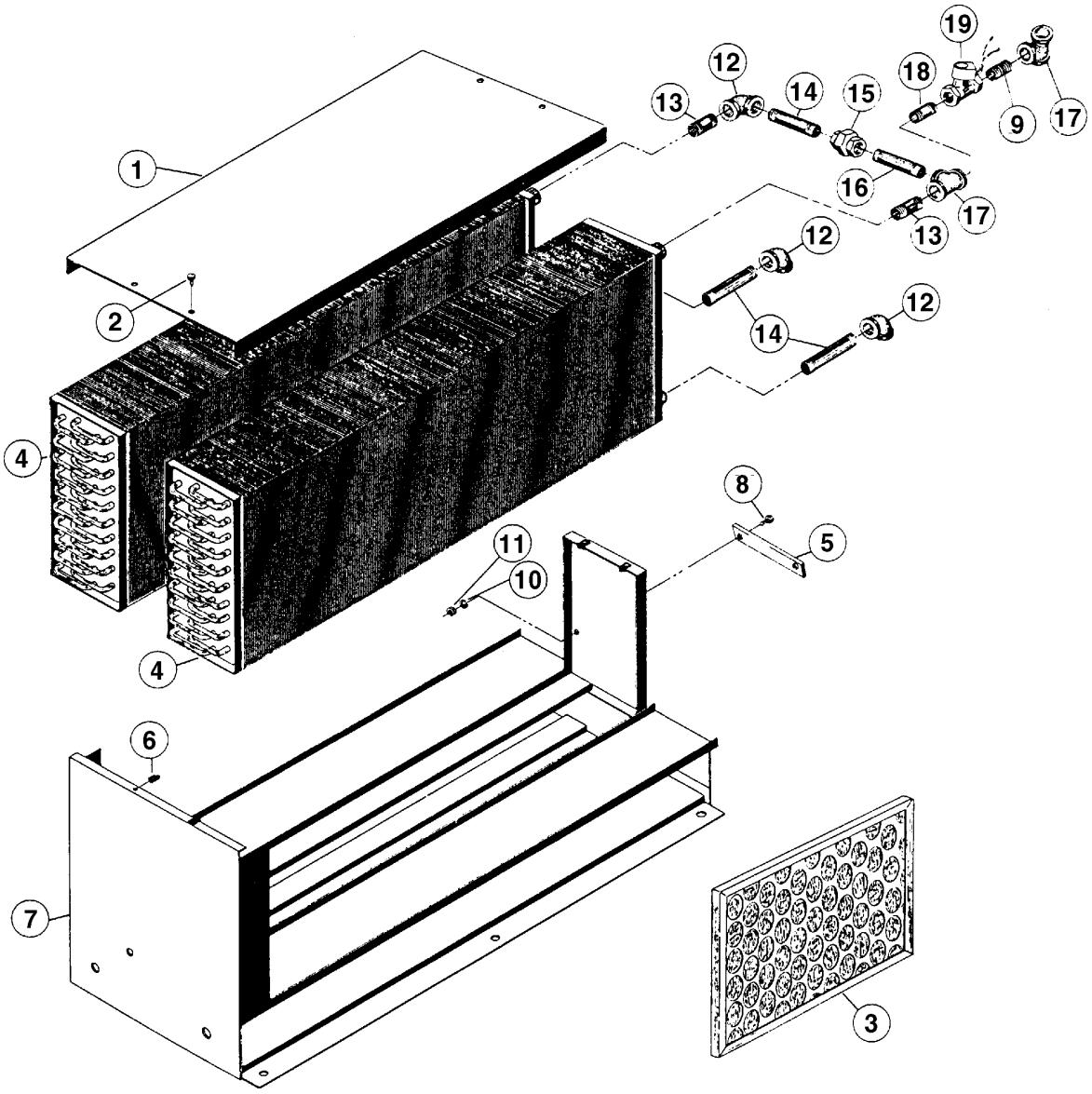
TM225 Worm and Worm Gear Set (for TM200 ONLY) (only sold as set)

Not Illustrated—TU3465 one pint of Cissell Transmission Oil



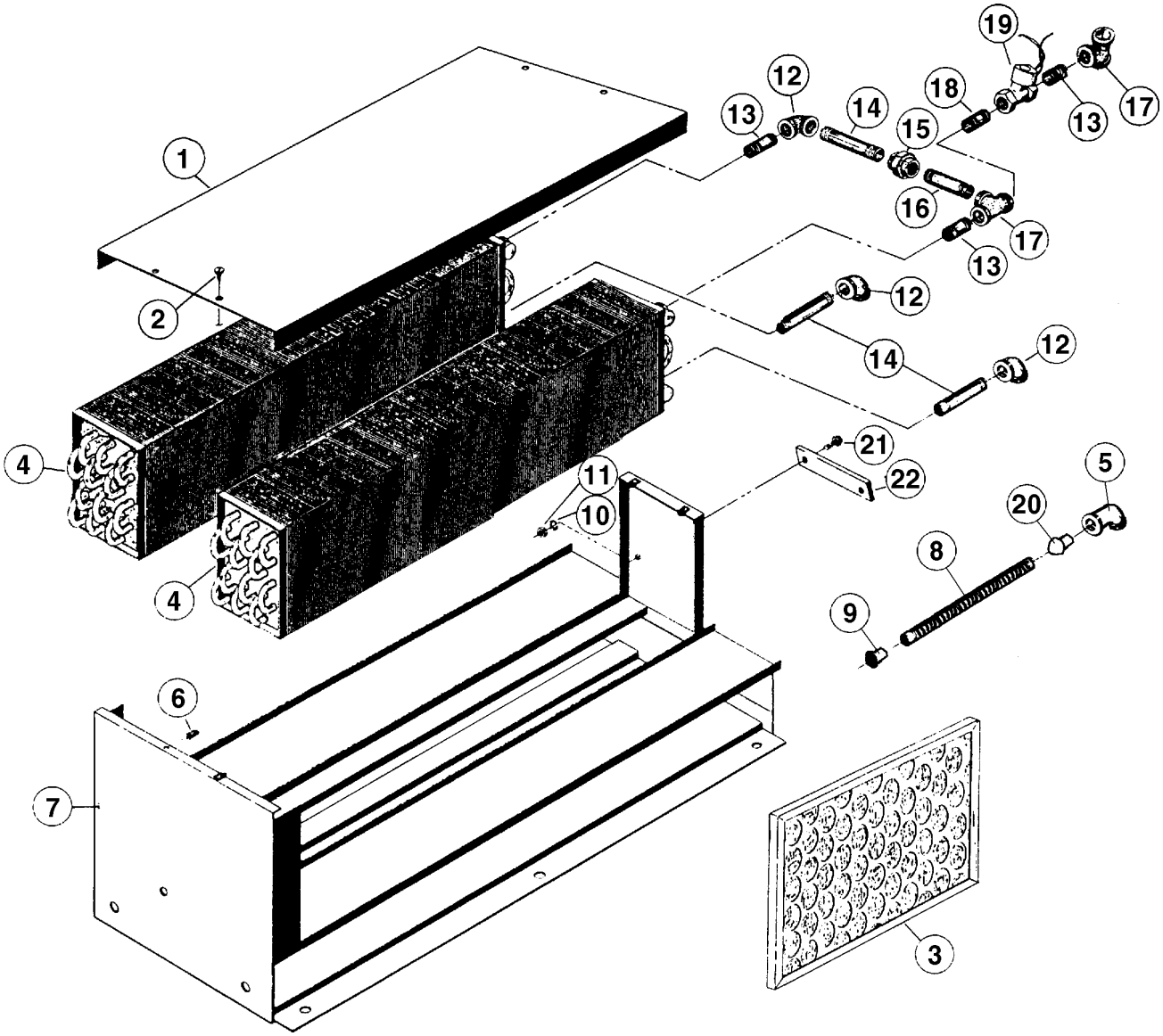
1	TU9614	Gas Manifold	12	TU4606	3/4” x 4” Nipple
2	CB36	1/4” - 20 x 1/2” Hex Head Screw	13	TU4934	1/4” - 20 Hex Nut (Pkg 6)
			14	TU13823	3/4” x 36” Nipple
3	OP267	3/4” x 1/2” Steel Bushing	15	TU3539	Burner Orifice
4	PT196	3/4” Strap	16	TU4606	1/4” Lock Washer (Pkg 6)
5	RC344	1/4” - 20 x 3/4” Hex Head Screw	17	TU2224	1/8” Pipe Plug
			18	TU13678	Thermostat, Man. Reset 300°
6	TUX387	BSI Asm. Burner			
7	TUX352	3/4” Natural Gas Valve	19	TU2226	Manifold Mounting Bracket
	TUX435	3/4” LP Gas Valve			
8	TU10946	Pipe Plug	20	TU7733	#8 - 18 x 1/2” Self-Drill Screw (Pkg. of 6)
9	TU13613	Bonnet Assembly			
10	GA-00764-0	Direct Spark Ignition Electrode	21	TU13695	Bonnet Thermostat Bracket
			22	TU13647	Mounting Bracket
11	TU4605	3/4” Elbow			

TU14001—Steam Bonnet (14FPI) (Illustration)



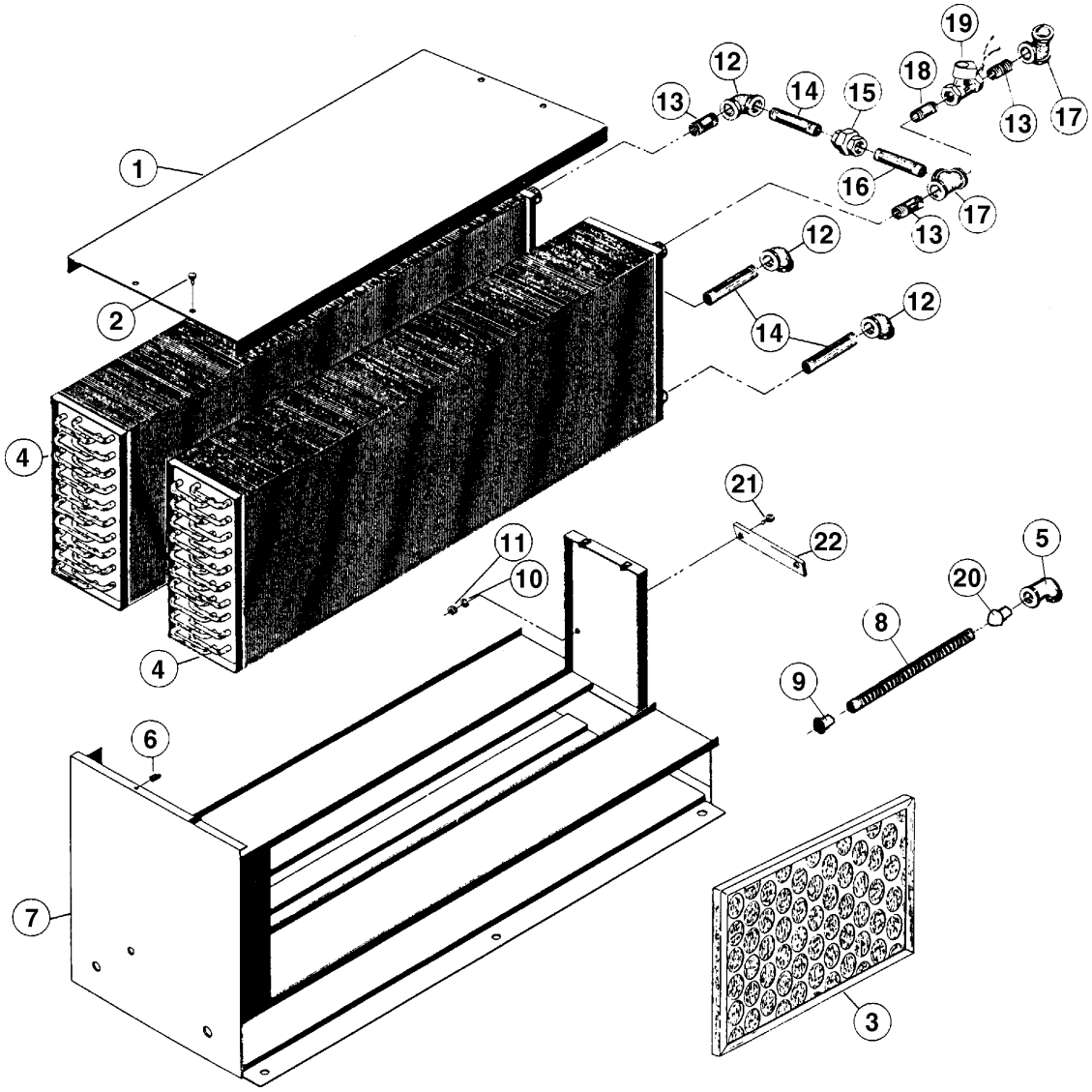
1	TU7393	Top Plate	13	TU4608	3/4” x 2” Nipple
2	TU3209	#14 x 5/8” Sheet Metal Screw (Pkg. of 6)	14	TU4610	3/4” x 5” Nipple
			15	TU4600	3/4” Union
3	TU6080	Air Filter (4 required)	16	TU4620	3/4” x 4 1/2” Nipple
4	TU13936	Steam Coil (14FPI)	17	TU4597	3/4” Tee
6	LB74	#14 Speed Nut	18	TU5914	3/4” x 3 1/2” Nipple
7	TU8083	Bonnet Weldment	19	TU13517	Solenoid Valve (24V)
10	TU2846	1/4” Lockwasher (Pkg. of 6)	20	390401031	3/4” x Close Nipple
11	TU4934	1/4” - 20 x 7/16” Hex Nut (Pkg. of 6)	24	FB189	1/4” - 20 x 1” Hex Head Screw
			25	TU5726	Rear Coil Holder
12	TU4605	3/4” Elbow			

TU13691—24V Steam Bonnet (4 Coil) (Illustration)



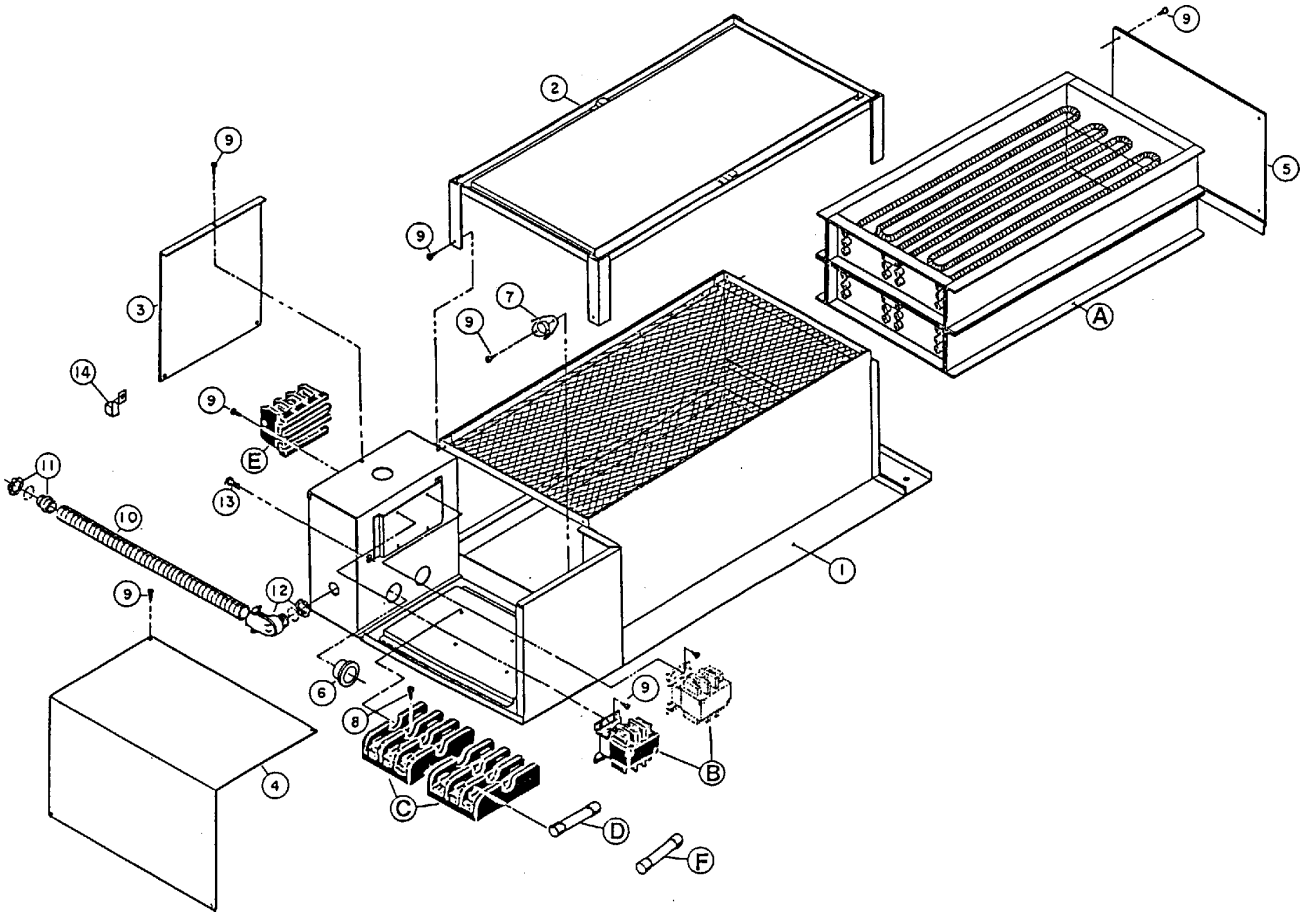
1	TU7393	Top Plate	12	TU4605	3/4” Elbow
2	TU3209	#14 x 5/8” Sheet Metal Screw (Pkg. of 6) (4 each)	13	TU4608	3/4” x 2” Nipple
			14	TU4610	3/4” x 5” Nipple (3 each)
3	TU6458	Air Filter (4 required)	15	TU4600	3/4” Union
4	TU1699	Steam Coil (4 Coil) (2 each)	16	TU4620	3/4” x 4 1/2” Nipple
5	TU4790	1/2” Angle Connector	17	TU4597	3/4” Tee (2 each)
6	LB74	#14 Speed Nut (4 each)	18	TU5914	3/4” x 3 1/2” Nipple
7	TU8082	Bonnet Weldment	19	TU13517	Solenoid Valve 24V
8	CFB7200	Greenfield Cable 72”	20	TU5431	Bushing
9	TU4790	1/2” Straight Connector	21	FB189	1/4” - 20 x 1” Hex Head Screw (2 each)
10	TU2846	1/4” Lockwasher (Pkg. of 6) (2 each)	22	TU5726	Rear Coil Holder
11	TU4934	1/4” - 20 x 7/16” Hex Nut (Pkg. of 6) (2 each)			

TU13692—24V Steam Bonnet (6 Coil) (Illustration)



1	TU7393	Top Plate	12	TU4605	3/4” Elbow
2	TU3209	#14 x 5/8” Sheet Metal Screw (Pkg. of 6) (4 each)	13	TU4608	3/4” x 2” Nipple (3 each)
			14	TU4610	3/4” x 5” Nipple
3	TU6080	Air Filter (4 required)	15	TU4600	3/4” Union
4	TU2808	Steam Coil (6 Coil) (2 each)	16	TU4620	3/4” x 4 1/2” Nipple
5	TU4791	1/2” Angle Connector	17	TU4597	3/4” Tee (2 each)
6	LB74	#14 Speed Nut (4 each)	18	TU5914	3/4” x 3 1/2” Nipple
7	TU8083	Bonnet Weldment	19	TU13517	Solenoid Valve 24V
8	CFB7200	Greenfield Cable 72”	20	TU5431	Bushing
9	TU4790	1/2” Straight Connector	21	FB189	1/4” - 20 x 1” Hex Head Screw (2 each)
10	TU2846	1/4” Lockwasher (Pkg. of 6) (2 each)	22	TU5726	Rear Coil Holder
11	TU4934	1/4” - 20 x 7/16” Hex Nut (Pkg. of 6) (2 each)			

Electric Heating Unit (Illustration)



1	TU7098	Bonnet Weldment (480V and up)
	TU11785	Bonnet Weldment
2	TU7113	Top Weldment
3	TU7122	Terminal Cover (480V and up)
	TU9908	Terminal Cover
4	TU7121	Rear Cover (480V and up)
	TU9909	Rear Cover
5	TU7118	Front Cover
6	TU5958	Bushing
7	TU7089	Thermostat (300° F)
8	TU2793	#8 x 5/8" Screw (Pkg. of 6)
9	TU7733	#8 x 1/2" Screw (Pkg. of 6)
10	CFB1500	1/2" Greenfield Cable (15" Long)
11	TU4790	Straight Connector
12	TU4791	90° Connector
13	CB36	1/4" - 20 x 1/2" Screw (Pkg. of 6)
14	TU7737	Grounding Lug

Rated Heater Input	Heater Amps, Motor Amps, Controls Amps, Total Amperes at Rated Voltage	HZ.	Minimum Size Supply Wire Based on 60° C (140° F) Insulated Copper Conductor	Circut Minimum Conduit Trade Size	Branch Circuit Maximum Fuse Size
60kW @ 208V/3Ph.	177 Amps	60	000 AWG	2 1/2	200
60kW @ 208V/3Ph.	153 Amps	60	00 AWG	2	175
60kW @ 480V/3Ph.	77 Amps	60	3 AWG	1 1/4	80
60kW @ 240/415V/3Ph.	154/88 Amps	60	000/2 AWG	2/1 1/4	175/90
60kW @ 575V/3Ph.	63 Amps	60	4 AWG	1 1/4	70
80kW @ 208V/3Ph.	232 Amps	60	300 MCM	2 1/2	250
80kW @ 240V/3Ph.	201 Amps	60	250 MCM	2 1/2	225
80kW @ 480V/3Ph.	100 Amps	60	1 AWG	1 1/2	100
80kW @ 240/415V/3Ph.	202/116 Amps	50	250 MCM/ 0AWG	2 1/2/2	255
80kW @ 575V/3Ph.	84 Amps	60	4AWG	1 1/4	90

Electric Bonnet Description	Ref. No. (A) Electric Heater Elements	Ref. No. (B) Contactor	Ref. No. (C) Fuse Holder	Ref. No. (D) Fuses, Heater	Ref. No. (E) Terminal Block	Ref. No. (F) Fuse, Motor and Controls
TU11807, 60kW 208V/60/3	HE11080(2 each) 30kW/240V	TU6963 (4 each)	TU8201 (5 each)	TU11627 (12 each)	TU8734	TU819712 (3 each)
TU11808, 60kW 240V/50/60/3	HE10810(2 each) 40kW/240V	TU6963 (4 each)	TU8201 (5 each)	TU11627 (12 each)	TU8734	TU819709 (3 each)
TU11790, 80kW 240V/50/60/3	HE11080(2 each) 30kW/240V	TU6963 (4 each)	TU11096 (4 each) TU8201 (1 each)	TU7223 (12 each)	TU8734	TU819709 (3 each)
TU7096, 60kW 480V/3	HE10810 (2 each) 40kW/240V	TU9169 (1 each)	TU9141 (1 each)	TU7090 (3 each)	TU8734	
TU7097, 60kW 480V/3	HE10810(2 each) 40kW/240V	TU9170 (1 each)	TU9141 (2 each)	TU7071 (6 each)	TU8734	
TU11806, 80kW 240/415/50/3	HE10810 (2 each) 30kW/240V	TU6963 (4 each)	TU11096 (4 each) TU8200 (1 each)	TU7223 (6 each)	TU8734	TU819907 (3 each)
TU11809, 60kW 240/415/50/3	HE11540 (2 each) 30kW/275V	TU6963 (4 each)	TU8201 (4 each) TU8200 (1 each)	TU11627 (12 each)	TU8734	TU819907 (3 each)
TU8866, 60kW 550V/3	HE10610 (2 each) 40kW/275V	TU9169 (1 each)	TU9141 (1 each)	TU7090 (3 each)	TU8734	
TU9351, 80kW 550V/3	HE10610 (2 each) 40kW/208V	TU9170 (1 each)	TU9141 (2 each)	TU7071 (6 each)	TU8734	
TU11789, 80kW 208V/60/3	HE10610(2 each) 40kW/208V	TU6963 (4 each)	TU11096 (4 each) TU8201 (1 each)	TU7224 (12 each)	TU8734	TU819712 (3 each)