



Cissell

30 lb.

Laundry Dryer

MODELS

GAS HEATED

L28US30

L28UR30

OWNER'S MANUAL

Cissell Manufacturing Company

831 South First St.
P.O. Box 32270, Louisville, KY 40232-2270
502/587-1292

Pacific Coast Office: 4823 West Jefferson Blvd.
Los Angeles, CA 90016 213/731-2196

Foreign Distributors write Export Dept.
Telex No. 204158 FAX No. 502-585-3625

European Head Office: Pantex-Cissell B.V., P.O. Box 53,
9670 AB Winschoten, Holland Telex No. 53535

MAN 310

9/88

2M 9-88 B&K

- WARNING: The Dryer Must Be Used Only For Water Washed Fabrics.
- WARNING: To Avoid Fire Hazard, Do Not Dry Articles Containing Foam Rubber Or Similarly Textured Rubber-like Materials.
- CAUTION: A Clothes Dryer Produces Combustible Lint And Should Be Exhausted Outside.
- CAUTION: A Clothes Dryer Produces Combustible Lint And The Area Around The Clothes Dryer Should Be Kept Free Of Lint.
- CAUTION: Remove Clothes From Dryer As Soon As It Stops. This Keeps Wrinkles From Setting In And Reduces The Possibility Of Spontaneous Combustion.

FOR YOUR SAFETY - CAUTION

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE. NOTE: PURCHASER TO POST THIS CAUTION NOTICE IN A PROMINENT LOCATION!

For optimum efficiency and safety, we recommend that you read the owner's manual before operating your Cissell commercial clothes dryer.

RETAIN THIS MANUAL FOR FUTURE REFERENCE. STORE MANUAL IN A FILE OR BINDER.

POST INSTRUCTIONS TO BE FOLLOWED IN THE EVENT THE USER SMELLS GAS IN A PROMINENT LOCATION. INFORMATION TO BE POSTED CAN BE OBTAINED BY CONSULTING THE LOCAL GAS SUPPLIER.

CAUTION

"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 A PADDING OR BACKING." RUBBER EASILY OXIDIZES CAUSING EXCESSIVE HEAT AND POSSIBLE FIRE. FLAMMABLE ITEMS SHOULD BE AIR DRIED.

DO NOT DRY ITEMS CONTAINING FOAM RUBBER OR ANY RUBBER-LIKE MATERIALS IN THIS DRYER.

RUBBER EASILY OXIDIZES CAUSING EXCESSIVE HEAT AND POSSIBLE FIRE. ALL ITEMS CONTAINING RUBBER SHOULD BE AIR DRIED.

CAUTION

Synthetic solvent fumes from drycleaning 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 drycleaning 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

BE SAFE - SHUT MAIN POWER OFF EXTERNALLY TO MACHINE BEFORE SERVICING.

WARRANTY

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 one (1) year 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 one (1) year due to normal wear and tear, including, but not limited to, cloth goods, valve discs, hoses and iron cords, and with respect to all new repair or replacement parts for Cissell equipment for which the one (1) 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, effaced, 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.

REPLACEMENTS PARTS ARE AVAILABLE FROM DISTRIBUTORS OR:



P.O. Box 32270
Louisville, KY
40232-2270
502/587-1292

Pacific Coast Office:
4823 W. Jefferson Blvd.
Los Angeles, CA 90016
213/731-2196

Foreign Distributors
write Export Dept.,
Cable Code "Cissell"
Telex No. 204158

European Headquarters:
Pantex-Cissell B.V.
P.O. Box 53, 9670 AB
Winschoten, Holland
Telex No. 53535

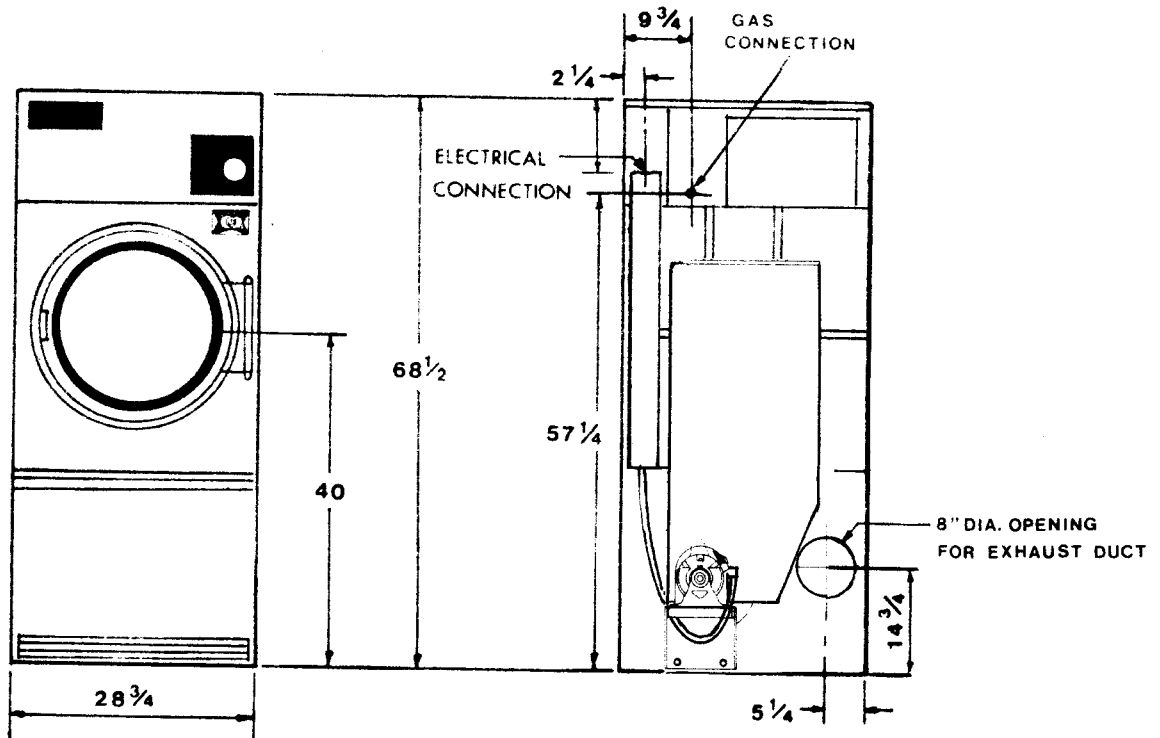
30 Lb. UR, US LAUNDRY DRYERS

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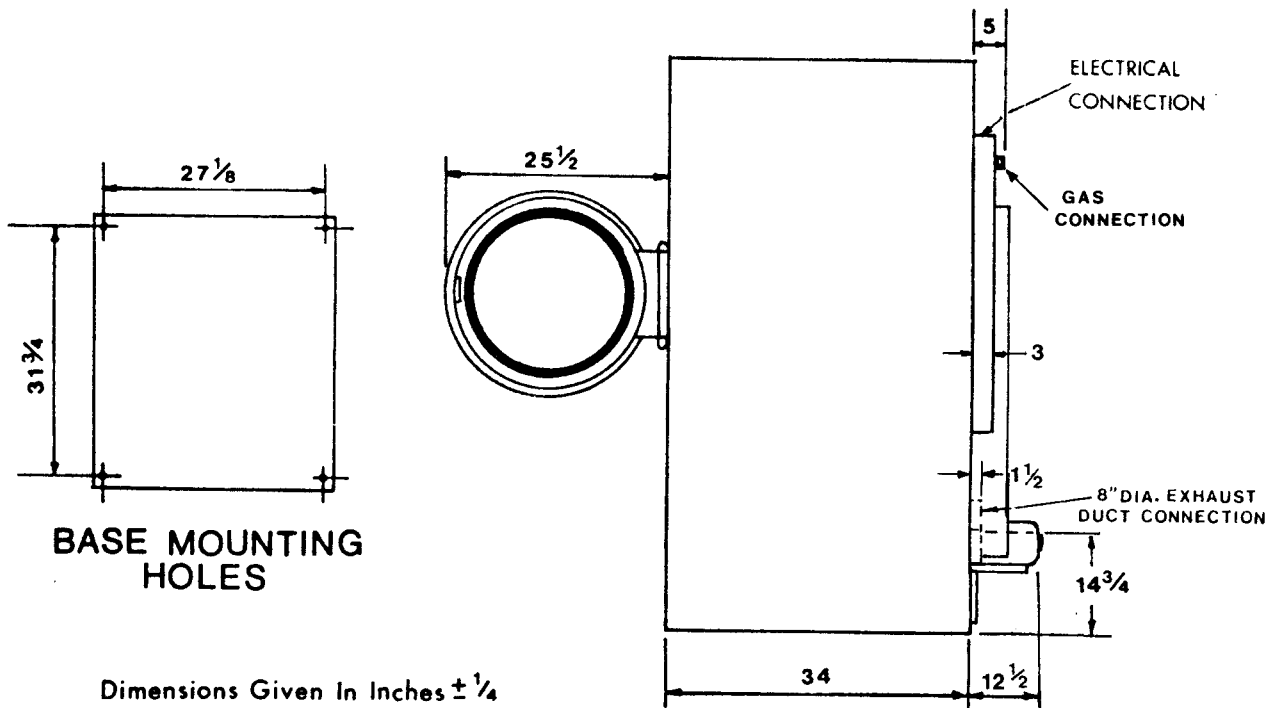
OUTLINE DIMENSIONS L28UR30G

30 LB. DRYERS



FRONT VIEW

REAR VIEW



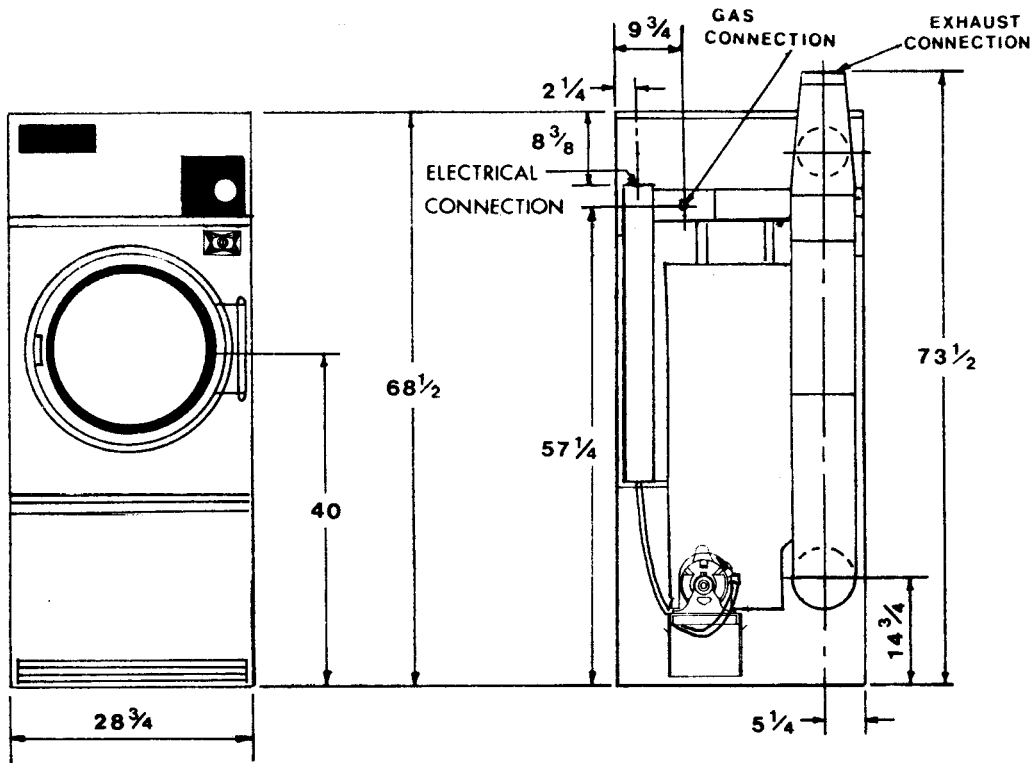
BASE MOUNTING HOLES

SIDE VIEW

Dimensions Given In Inches $\pm \frac{1}{4}$

OUTLINE DIMENSIONS L28US30G

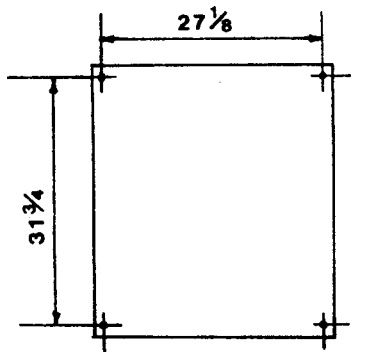
30 LB. DRYERS



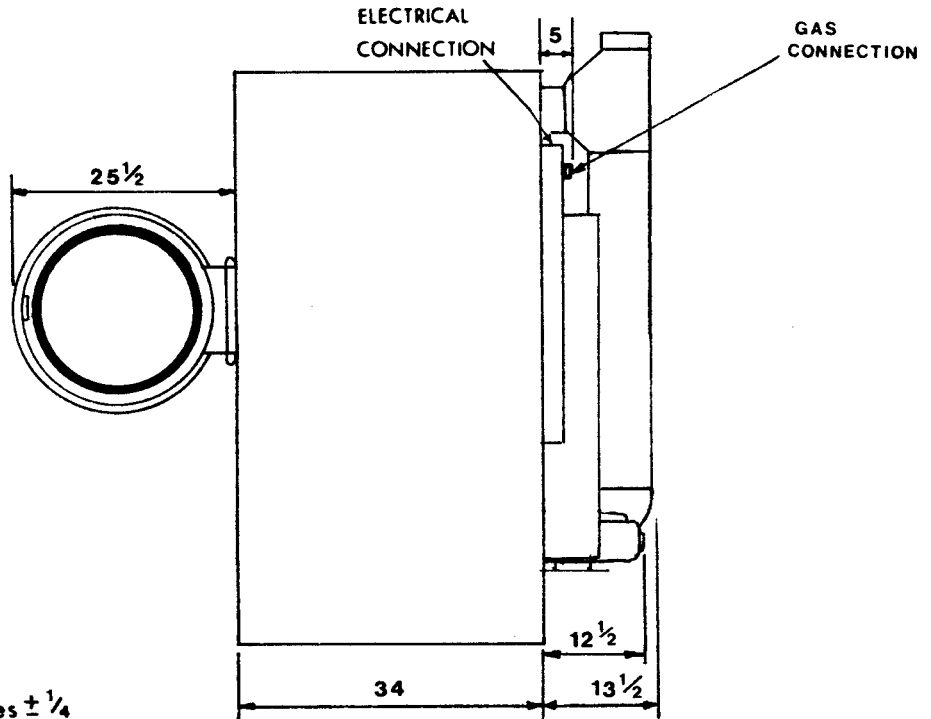
FRONT VIEW

REAR VIEW

6" VERTICAL EXHAUST DUCT



BASE MOUNTING HOLES



Vertical Exhaust factory standard

SIDE VIEW

Dimensions Given In Inches $\pm \frac{1}{4}$

GENERAL SPECIFICATIONS - MODELS L28UR30G & L28US30G

Basket Load Capacity.....30 lb. (13.61KG) dryweight
 Basket Size.....28"(72CM) Dia. x 30"(76CM) deep
 Total Amps, Voltage, Cycle.....Refer to Rating Plate on Dryer
 Floor Space UR Models US Models
 68½"H(174CM) x 28 3/4W(73CM) 68½"H(174CM) x 28 3/4W(73CM)
 x 46½"D(118CM) x 47½"D(121CM)
 Exhaust Air Duct Size....."UR" - 8"(20CM) Dia.
 Pressure Maximum,.3" Static Pressure "US" - 6"(15CM) Dia.

MAIN DRIVE MOTOR

<u>Motor No.</u>	<u>Voltage</u>	<u>Hz</u>	<u>Phase</u>	<u>H.P.</u>	<u>Basket/Fan</u>	<u>Amperes</u>	<u>R.P.M.</u>
MTR200	115/208-230	60	1	1/2	Basket/Fan	6.2/3.1	1725
MTR115	120	50	1	1/2	Basket/Fan	8.2	1425
MTR127	240	50	1	3/4	Basket/Fan	6.0	1425
MTR214	208-230/460	60	3	1/2	Basket/Fan	2.2/1.1	1725
MTR189	240/415	50	3	1/2	Basket/Fan	2.1/1.2	1425

MODEL L28US30G ENERGY SAVER SPECIFICATIONS

Maximum Air Displacement.....350 C.F.M. (10 M³/Min.)
 *B.T.U. Input.....80,000 B.T.U. per hour (Nat. & L.P. gases)
 Dryer Gas Burners (set at factory) built-in 3.5 inches regulated pressure
 (natural gas only).
 L.P.Gas Pressure 11" W.C.
 Gas Supply.....1/2"(1.27CM) Pipe Connection
 Drying Time (approximate).....10 lbs.(4.5KG) dry weight (Indian Head)
 70% moisture retention - 10 minutes.
 Net Weight.....495 lbs. (225KG) (approximate)
 Domestic Shipping Weight (1 carton).....526 lbs. (239KG) (approximate)
 Export Shipping Weight (1 box).....664 lbs. (301KG) (approximate)

MODEL L28UR30G - GAS FIRED - SPECIFICATIONS

Maximum Air Displacement.....700 C.F.M. (19.8 M³/Min.)
 Recommended Operating Range.....530-630 C.F.M. (17.8 - 19.8 M³/Min.)
 Gas Supply.....1/2" (1.27CM) Pipe Connection
 *B.T.U. Input.....100,000 B.T.U. per hour (natural gas
 and liquid petroleum gases)
 Electronic Ignition.....Silicon Carbide Ignition System
 Drying Time (approximate).....10 lbs. (4.5KG) dry weight (Indian Head)
 70% moisture retention - 10 minutes.
 Net Weight.....452 lbs. (205KG) (approximate)
 Domestic Shipping Weight (1 carton).....507 lbs. (230KG) (approximate)
 Export Shipping Weight (1 box).....621 lbs. (282KG) (approximate)
 Export Shipping Dimensions.....74"L(188CM) x 31"W(78CM) x 52"H(132CM)

*Input ratings as shown are for elevations up to 2000 ft. (609.6M). For elevations above 2000 ft., ratings should be reduced 4% for each 1000 ft. (304.8M) above sea level.

UNPACKING

All Cissell Dryers are packed in a protective (heavy-duty) plastic bag. Upon arrival of the equipment, any damage in shipment should be reported to the carrier immediately.

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

See Outline Clearance drawings for correct dimensions.

Remove all packing material such as tape, skids, manuals, etc.

Leveling; Use spirit level on top of dryer. Adjust leveling bolts on dryer (See Maintenance Section for correct leveling procedure.).

Check voltage and amperes on rating plate before installing dryer.

GENERAL INSTALLATION - ALL DRYERS

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

Before operating dryer, open basket door and remove blocking between the front panel and basket. Read all instruction tags, labels, etc.

Important: Opening the clothes loading door will de-activate the door switch to shut off the fan, motor, and gas. To re-start the dryer, close the door and press the "Push-to Start" button for about two seconds.

Important: This dryer is designed for a maximum capacity load. Overloading it will result in a longer drying time and damp spots on some clothes.

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

GENERAL INFORMATION

The Cissell Dryer is so designed that when an operator opens the dryer door, the basket and exhaust fan stops. You can expect fast drying from a Cissell Laundry Dryer. Hot, dry air is properly and effectively moved through basket and exhausted through a lint trap to atmosphere. The Cissell Dryer comes equipped with an inclined self-cleaning lint screen. In this system, lint accumulates on the underside of the screen until a blanket approximately 1/4" thick is formed. This 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 over accumulation.

CISSELL "COOL-DOWN" CYCLE

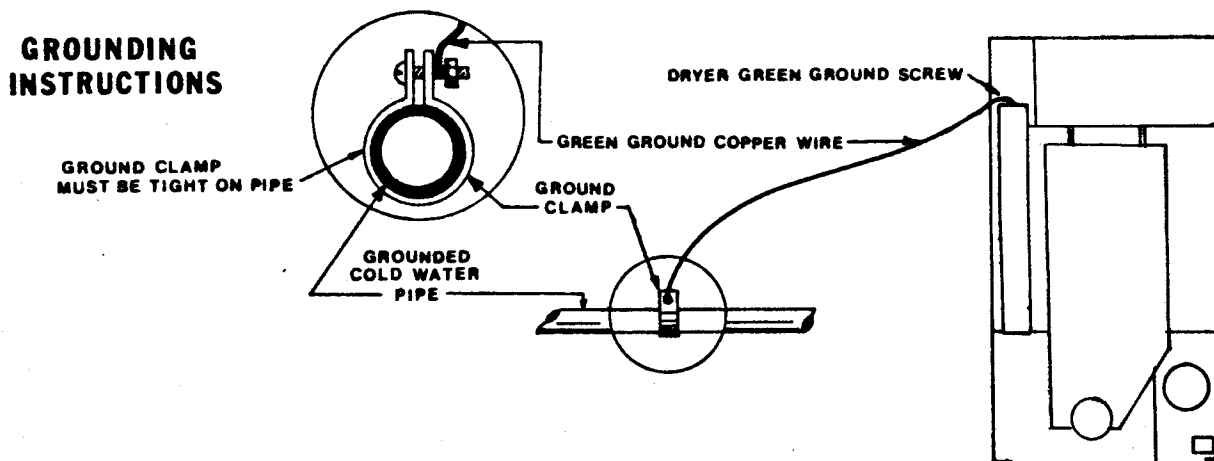
Permanent press, durable press and other modern day fabrics require the care that your Cissell Laundry Dryers now provide.

At the end of the drying cycle, a timed "cool-down" control automatically takes over and continues the rotation of the fan and basket without heat until the garment load reaches a safe cool temperature. This function is performed at the end of each drying cycle and continues for two minutes.

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, or through the fourth green wire properly grounded and connected to the grounding terminal. 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 as ANSI/NFPA No. 70-1987.

See wiring diagram furnished with dryer. Your Cissell 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 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).



GAS PIPE SIZE FOR 1000 BTU NATURAL GAS AT 7" W.C. PRESSURE

TOTAL BTU/HR (for L.P. gas correct total BTU/HR below by multiplying by .6)	In figuring total length of pipe, make allowance for tees and elbows.					
	25 Ft.	50 Ft.	75 Ft.	100 Ft.	125 Ft.	150 Ft.
60,000	3/4	3/4	3/4	3/4	3/4	3/4
80,000	3/4	3/4	3/4	1	1	1
100,000	3/4	3/4	1	1	1	1
120,000	3/4	1	1	1	1	1
140,000	3/4	1	1	1	1	1 1/2
160,000	3/4	1	1	1 1/2	1 1/2	1 1/2
180,000	1	1	1	1 1/2	1 1/2	1 1/2
200,000	1	1	1 1/2	1 1/2	1 1/2	1 1/2
300,000	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
400,000	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2
500,000	1 1/2	1 1/2	1 1/2	2	2	2
600,000	1 1/2	1 1/2	2	2	2	2
700,000	1 1/2	2	2	2	2	2 1/2
800,000	1 1/2	2	2	2	2 1/2	2 1/2
900,000	2	2	2	2 1/2	2 1/2	2 1/2
1,000,000	2	2	2	2 1/2	2 1/2	2 1/2
1,100,000	2	2	2 1/2	2 1/2	2 1/2	2 1/2
1,200,000	2	2	2 1/2	2 1/2	2 1/2	2 1/2
1,300,000	2	2 1/2	2 1/2	2 1/2	2 1/2	3
1,400,000	2	2 1/2	2 1/2	2 1/2	3	3
1,500,000	2	2 1/2	2 1/2	2 1/2	3	3
1,600,000	2	2 1/2	2 1/2	3	3	3
1,700,000	2	2 1/2	2 1/2	3	3	3
1,800,000	2 1/2	2 1/2	3	3	3	3
1,900,000	2 1/2	2 1/2	3	3	3	3
2,000,000	2 1/2	2 1/2	3	3	3	3 1/2
2,200,000	2 1/2	3	3	3	3 1/2	3 1/2
2,400,000	2 1/2	3	3	3	3 1/2	3 1/2
2,600,000	2 1/2	3	3	3 1/2	3 1/2	3 1/2
2,800,000	2 1/2	3	3	3 1/2	3 1/2	3 1/2
3,000,000	2 1/2	3	3 1/2	3 1/2	3 1/2	4
3,200,000	3	3	3 1/2	3 1/2	3 1/2	4
3,400,000	3	3 1/2	3 1/2	3 1/2	4	4
3,600,000	3	3 1/2	3 1/2	3 1/2	4	4
3,800,000	3	3 1/2	3 1/2	4	4	4
4,000,000	3	3 1/2	3 1/2	4	4	4

GAS PIPING INSTALLATION

The installation must conform with local codes or, in the absence of local codes, with the National Fuel Gas Code as ANSI Z223.1-1984.

Check gas rating plate for type of gas to equip the dryer.

Check for altitude elevation of the dryer.

Check utilities for proper installation of gas supply line and gas pressure.

NATURAL GAS ONLY.

Check the gas pressure inlet supply to dryer, 11 inches W.C. Pressure maximum.

Check the manifold pressure 3.5 inches W.C. Pressure (Natural Gas)

L.P. GAS ONLY - 13 inches W.C. Pressure Maximum

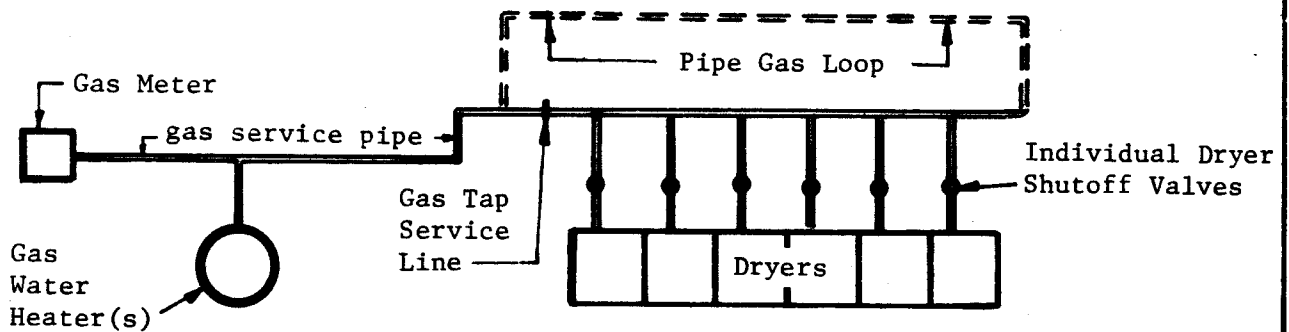
CAUTION: Low gas pressure and intermittent gas will cause gas ignition problems and inadequate drying of the clothes load.

GAS SERVICE INSTALLATION INFORMATION

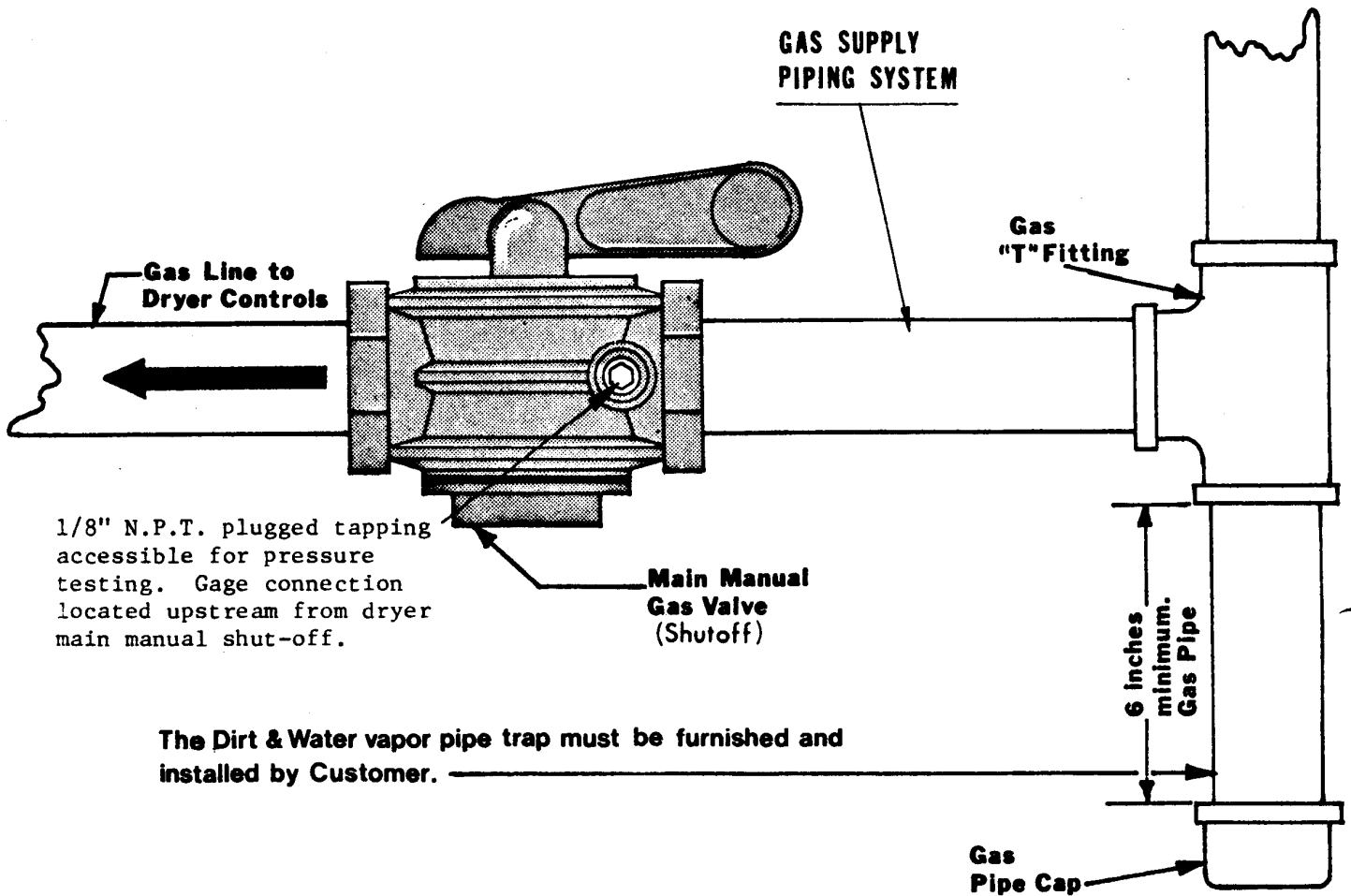
The size of the gas service pipe is dependant upon many variables, such as tees, lengths, etc. Specific pipe size should be obtained from the gas supplier. Refer to the "Gas Pipe Size" chart in this manual for general gas pipe size information.

Caution: Gas loop piping must be installed as illustrated 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: If the dryer is to be connected to liquified petroleum (L.P.) gas, a vent to the outdoors must be provided.



The dryer and it's 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 $\frac{1}{2}$ psig.

The dryer must be isolated from the gas supply piping system by closing it's individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than $\frac{1}{2}$ psig.

DRYER INSTALLATION WITH SEPARATE EXHAUST (PREFERRED)

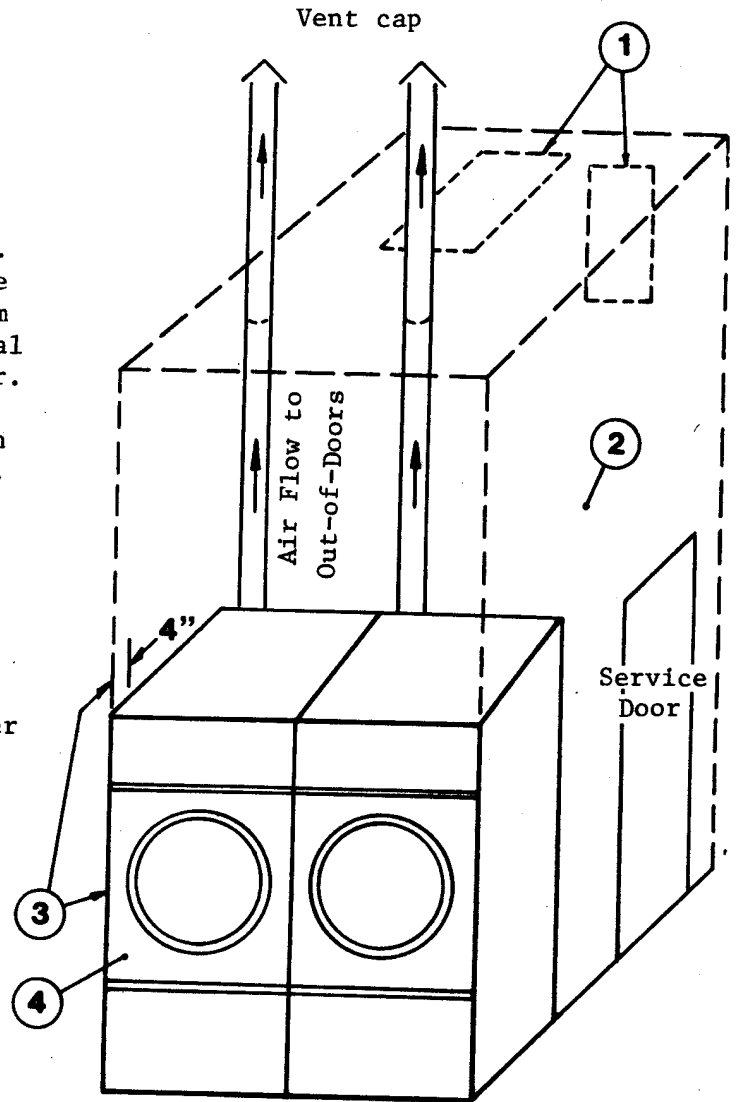
For ductwork less than 14 ft. and 2 elbows equivalent and less than 0.3 in. static pressure.

Never exhaust the dryer into a chimney.

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

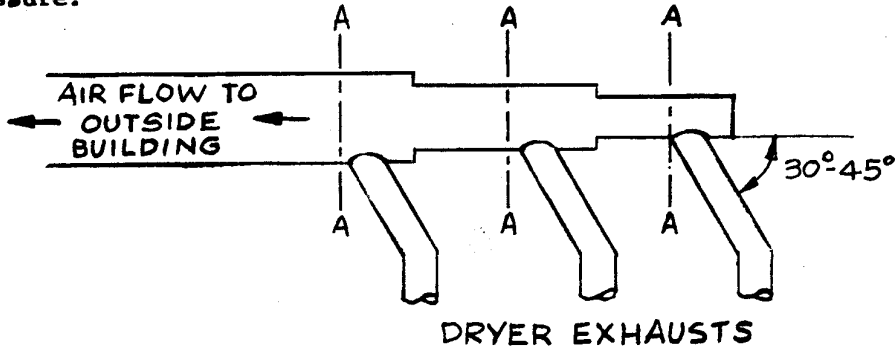
Never exhaust into a wall, ceiling, or concealed space.

1. Make-Up Air opening from outside the building may enter the enclosure from the top or side walls. The area of the opening should be equal to 4 to 6 times the sum of the dryer duct areas. Provide 1 sq. ft. for each 6 in. diameter; 2 sq. ft. for each 8 in. diameter; and 4 sq. ft. for each 12 in. diameter.
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 B.T.U./hr. for each cubic foot per minute (CFM) used. Example: a 110 lb. dryer with 2000 CFM = heat loss of 50,000 B.T.U./hr.
3. Zero inches clearance to combustible material allowed on sides and at points within 4 inches of front on top.
4. Heat loss into laundry room from dryer front panels is about 60 B.T.U./hr. per square foot.



DRYER INSTALLATION WITH MULTIPLE EXHAUST

For Exhaust Duct less than 14 ft. and two elbows equivalent and less than 0.3 in. static pressure.



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

MODELS: L28FD30G, L28US30G, L36FD30G, L36FD36G, L36US30G.

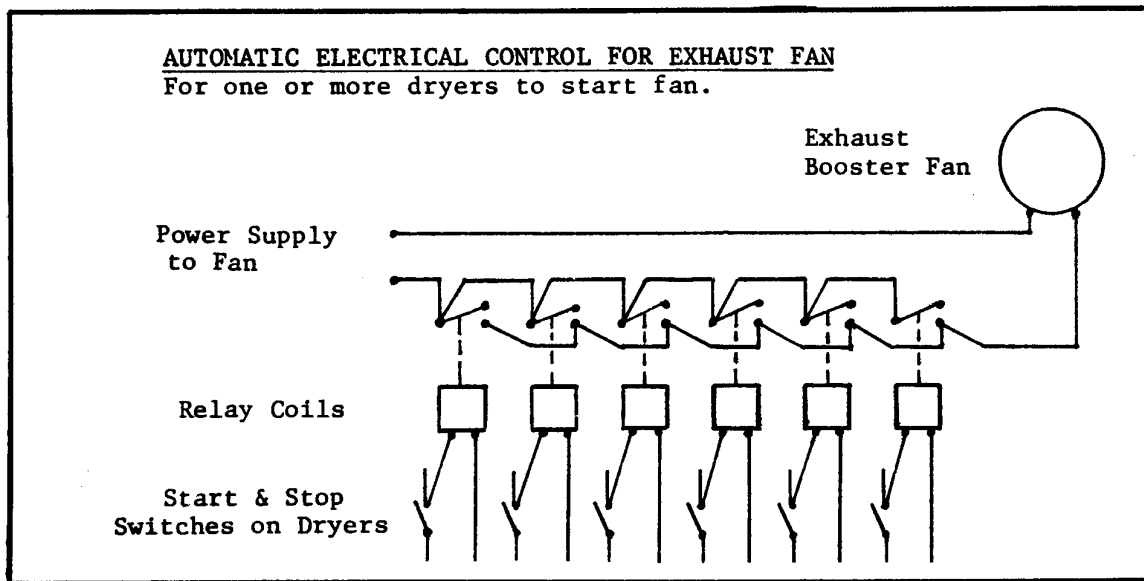
NO. OF DRYERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
DUCT DIAMETER in inches	6	9	11	12	14	15	16	17	18	19	20	21	22	23	23	24	25	26	26	27	28	28	29	30

MODELS: L28CD30G, L28UR30G, L36CD30G, L36UR30G, L36CD36G, L44FD42G.

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

Models: L44CD42G, L50CD42G.

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



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 to 6 times the combined areas of the air outlet) and an exhaust duct size and length which allows flow through the dryer with no more than 0.3 inches water column static pressure in the exhaust duct.

Energy-saving dryer models require less inlet air area and smaller exhaust ducts than the regular dryers because there is about half as much air flow through the dryer. However, the importance of the proper inlet air area and the correct exhaust duct size is twice as important on energy saving models. The huge savings of an energy-saver dryer is offset only by the attention required to provide the proper air flow. Once this proper air flow is provided, it lasts for the life of the installation.

CISSELL WILL PROVIDE FREE ENGINEERING ADVICE FOR ANY SPECIFIED INSTALLATION.

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.

EXHAUSTING DUCT

For best drying:

1. Exhaust duct maximum length 14 feet of straight duct and maximum of two 90 degree bends.
2. Use 45 deg. and 30 deg. elbows wherever possible.
3. Exhaust each dryer separately.
4. Use 2 feet of straight duct on dryer before installing an elbow, on Energy Saver models only.
5. Do not install wire mesh or other restrictions in the exhaust duct.
6. Use clean-outs in the exhaust duct and clean periodically when needed.
7. Never exceed 0.3 inches water column static pressure in the exhaust duct.
8. Inside surface of the duct must be smooth.
9. 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 -
6" dia. exhaust req. 1 sq. ft. make-up air
8" dia. exhaust req. 2 sq. ft. make-up air
12" dia. exhaust req. 4 sq. ft. make-up air
2. Use barometric shutters in the inlet air opening to control air when dryers are not running.

Other Recommendations

To assure compliance, consult local building code requirements.

FOR HELP, consult Cissell Engineering on tough installations.

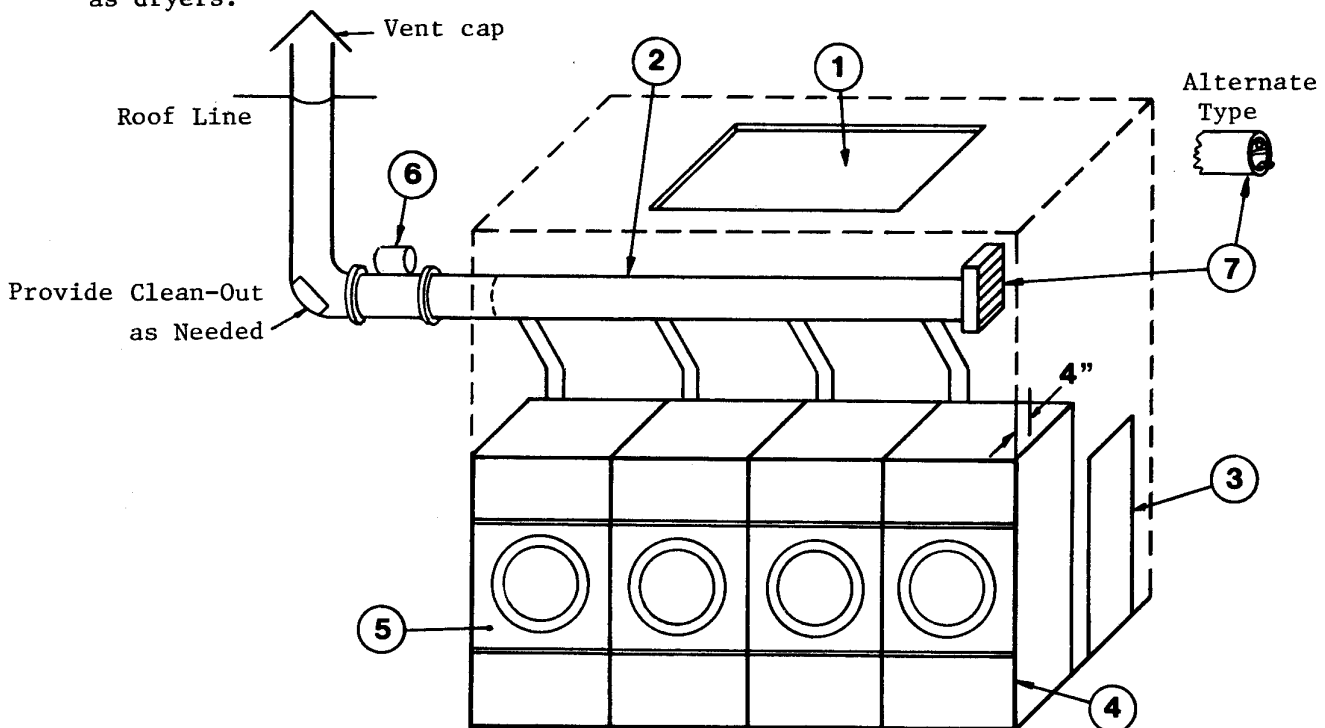
Trouble Shooting: Hot dryer surfaces, scorched clothes, slow drying, lint accumulations, or air switch mal-function are indicators of exhaust duct and/or make-up air problems.

DRYER INSTALLATION WITH MULTIPLE EXHAUST

For Exhaust Duct more than 14 ft. and 2 elbows equivalent and more than 0.3 in. static pressure.

1. Make-Up air from outside building may enter enclosure from top or side walls. Area of opening should be equal to 4 - 6 times the sum of dryer duct areas. Provide 1 sq. ft. for each 6 in. diameter; 2 sq. ft. for each 8 in. diameter; and 4 sq. ft. for each 12 in. diameter.
2. Use constant diameter duct with area equal to the sum of dryer duct areas. Example: 6 - 8 in. diameter duct = 1 - 19.6 in. diameter duct in area. Use 20 in. 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 B.T.U./hr. for each cubic foot per minute (CFM) used. Example: 110 lb. dryer, 2000 CFM = 50,000 B.T.U./hr. loss.
4. Zero inches clearance to combustible material allowed on sides and at points within 4 inches of front on top.
5. Heat loss into laundry room from dryer fronts only is about 60 B.T.U./hr. per sq. ft.
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 previous page. Must meet local electrical codes. Fan air flow (CFM) is equal to sum of dryer air flows, but static pressure (S.P.) is dependent on length of pipe and number of elbows.
7. Barometric By-Pass Damper - adjust to closed flutter position with all dryers and exhaust fan running. Must be located within enclosure.

CAUTION: No two installations are the same. For assistance, consult factory (502) 587-1292. 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.



RULES FOR SAFE OPERATION OF YOUR CISSELL 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:
 - (A) Never use drycleaning solvents: gasoline, kerosene, or other flammable 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 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 shutdown instructions and wiring diagrams are located on the rear wall of the dryer cabinet.
- (9) Replacement parts are available from Distributors or:

**CISSELL
MANUFACTURING COMPANY**

P.O. Box 32270
Louisville, KY
40232-2270
502/587-1292
Pacific Coast Office:
4823 West Jefferson Blvd.
Los Angeles, CA 90016
213/731-2196

Foreign Distributors
write Export Dept.,
Cable Code "Cissell"
Telex No. 204158
European Headquarters:
Pantex-Cissell B.V.
P.O. Box 53, 9670 AB
Winschoten, Holland
Telex No. 53535

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 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.

Service Savers

To help you trouble shoot 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:

1. Is the door completely closed?
2. Are the controls set to a drying position and not to off?
3. Did you push the start control?
4. Has a fuse blown or a circuit breaker tripped? Are fuses tight?
5. Check for low voltage.

DRYER WON'T HEAT:

1. Is the dryer set for a heat rather than an air only position?
2. Is 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:

1. Timed cycle - Did you allow enough heating time before the cooldown 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).
4. Venting, air switch closing and make up air for each dryer.

GAS DRYER IGNITION:

Refer to Norton Ignition System section of this manual, "Instructions for the Direct Ignition System Operation." Check and see if the manual gas valve is open. Then reset the dryer controls. If dryer stills fails to heat call for service. All panels, covers and doors must be in place and closed before starting dryer.

VERY IMPORTANT:

When calling the factory for service, always refer to the model number and serial number.

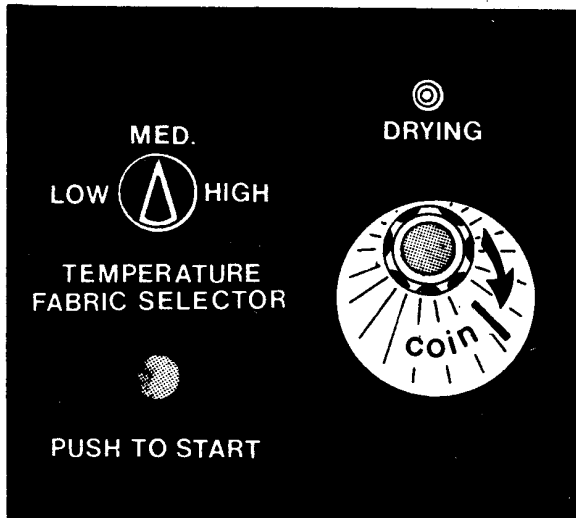
OPERATING INSTRUCTIONS - COIN METER MODELS

After loading the dryer with water washed clothes, close the loading door.

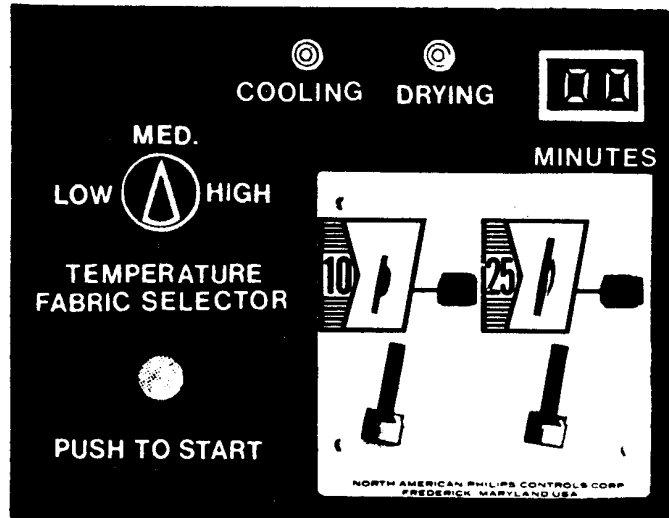
Insert proper coin(s) in slot and turn knob until it stops. For "Computerized" models, the amount of dry time will appear on the digital display. Maximum time is 99 minutes. Additional coins may be vended any time during the cycle.

Turn Temperature Fabric Selector to desired setting. "LOW" is for delicate, sheer, and easy dry fabrics. 130°-140°F exhaust temperature. "MEDIUM" is for synthetics and permanent press fabrics. 155°-165°F exhaust temperature. "HIGH" is for cottons, linens, and heavy fabrics. 170°-180°F exhaust temperature.

Press "PUSH TO START" button holding about 2 seconds until dryer is running.



ELECTRO/MECHANICAL COIN METER



COMPUTERIZED COIN METER

What is happening after Step 4:

1. Digital Display will count down time remaining in cycle (Computerized Coin Meter)
2. The fan motor and basket will revolve.
3. The heat source will be energized.
4. The heated air will mix with the wet clothes and evaporate the moisture.
5. The thermostats will operate at a safe temperature.
6. The heat will shut off and the cooling cycle will begin.

IMPORTANT

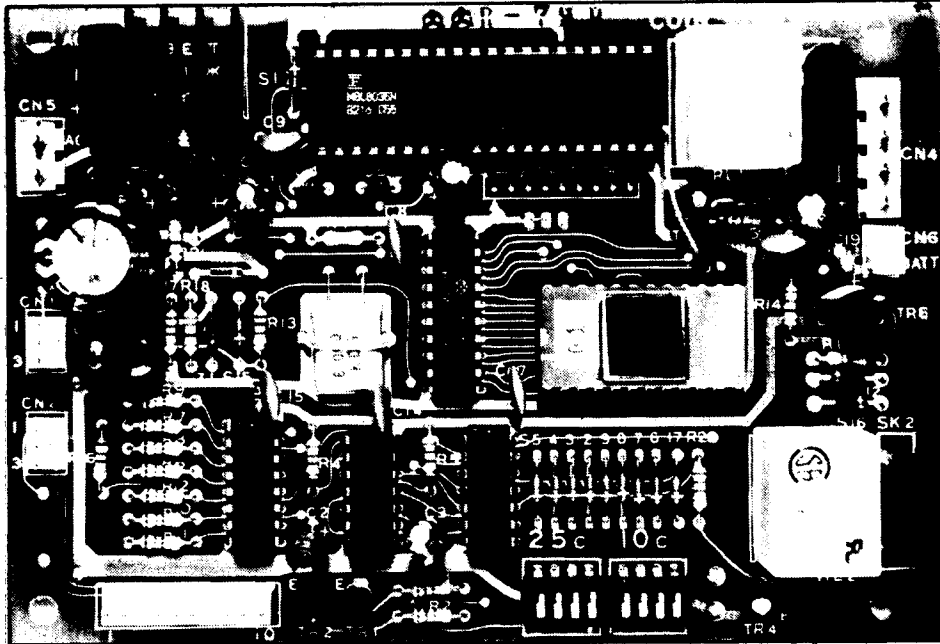
If the tumbler door is opened during the drying cycle, the fan and heat will shut off. Press "PUSH TO START" button to resume the cycle.


This dryer is designed for a capacity maximum load. Overloading it will result in longer drying time and damp spots on some of the load.

Maximum operating efficiency depends on proper air flow. The lint screen must be kept clean daily to insure proper circulation of air throughout the dryer.

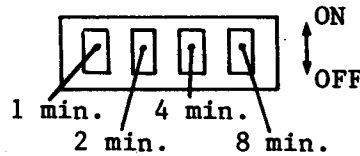
This commercial dryer has keys for the lint door and access door to burners and controls. This is for the safety of the user.

INSTRUCTIONS FOR SETTING TIME ON "COMPUTERIZED COIN METER" CONTROL BOARD



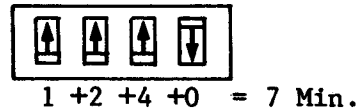
DIP Switch Banks are located here 

1. This dryer is equipped with 2 separate DIP switch banks for setting drying time. One is for 10¢, one for 25¢.
2. Each DIP switch bank consists of 4 small switches each with a specified amount of time (minutes), as shown:



3. To set the time on the 10¢ DIP: Simply set the appropriate switch to the "on" (up) position to total the desired amount of time:

Example: 10¢ for 7 min.

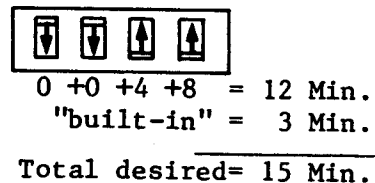


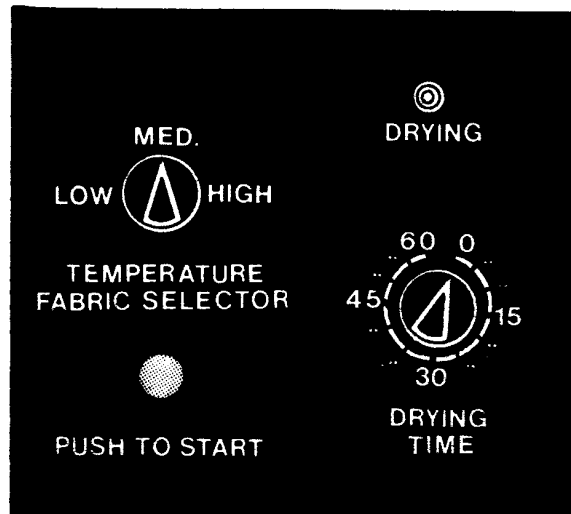
Note: "Off" (down) position equals 0 minute.

4. To set the time on the 25¢ DIP: The same method is used as the 10¢ DIP, except, there are 3 min. already built in the 25¢ DIP only. So, subtract 3 min. from your desired total time, and set the switches to equal the remainder.

Example: 25¢ for 15 min.

15 min. (desired total time)
 -3 min. ("built-in" time)
 12 min. (set switches for remainder)





SINGLE TIMER W/THERM-O-COOL
OPERATING INSTRUCTIONS

- Step 1. After loading the dryer tumbler with the washed clothes load, proceed to close the loading door.
- Step 2. Turn timer knob to the desired drying time.
- Step 3. Turn Temperature Fabric Selector to desired setting. "LOW" is for delicate, sheer, and easy dry fabrics 130°-140°F exhaust temperature. "MEDIUM" is for synthetics and permanent press fabrics 155°-165°F exhaust temperature. "HIGH" is for cottons, linens and heavy fabrics 170°-180°F exhaust temperature.
- Step 4. Push "PUSH TO START" button holding about 2 seconds until dryer is running.
- Step 5.
 1. The fan motor and basket will be energized and revolve.
 2. The heat source will be energized (gas burners will operate).
 3. The heated air will mix with the wet clothes and evaporate the moisture from the garments.
 4. The thermostats will operate at a safe temperature.
 5. The heat will shut off and the cooling cycle will begin (motor will operate only to cool the clothes load for desired handling temperature.)
 6. The light will stay on until the therm-o-cool thermostats cools below 135°F. before the contacts open to shut off dryer.

IMPORTANT

If tumbler door is opened during the drying cycle, the fan and heat will shut off. Press "PUSH TO START" button to resume cycle.

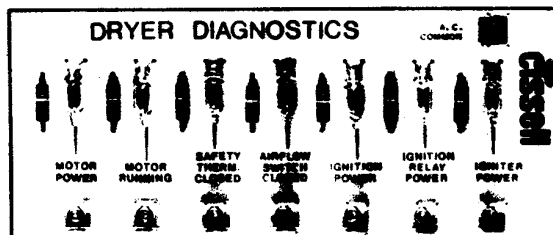
This dryer is designed for a capacity maximum load. Overloading it will result in longer drying time and damp spots on some of the load.

Maximum operating efficiency depends on proper air flow. The lint screen must be kept clean daily to insure proper circulation of air throughout the dryer.

DRYER DIAGNOSTICS

The lamps on the Dryer Diagnostics Board are a valuable aid in detecting problems in the dryer. You can tell at a glance whether motor, safety and/or ignition circuits are malfunctioning.

The Diagnostic lamps are sequenced from left to right. If a lamp is not lit, no lamp to the right of that lamp should be lit.



A. DRYING LIGHT ON CONTROL PANEL

This light glows when the coin meter or timer is activated and indicates the dryer is ready for use.

1. Motor Power

This light glows when the door is closed. Power is available to start the dryer.

2. Motor Running

This light glows when the push-to-start switch has been pushed the motor is running and a centrifically operated back contact switch in the motor is closed.

The motor is running and power to the safety-control circuit is available.

3. Safety Thermostat Closed

This light glows when the safety thermostat is closed which is the first element in the safety-control circuit. Power is available to the air-flow switch.

4. Air-Flow Switch Closed

This light glows when the air-flow switch is closed and it blinks when the air-flow switch is fluttering.

Power is available to the control thermostats when the air-flow switch is closed.

5. Ignition Power

The light glows when a control thermostats circuit is closed and whenever the timer is not in the cool-down cycle.

The control thermostat circuit is either low, medium or high and is control by the setting of the Temperature Fabric Selector.

Power is flowing through all of the previous elements as indicated by the lights and power is flowing to the safety gas valve and power is available for ignition.

6. Ignition Relay Power

This light glows when the ignition relay coil is energized.

This light is the key to trouble shooting of the ignition components.

First, when the radiant sensor is cool, it indicates that the radiant sensor switch is closed and that the normally closed (NC) contacts of the relay are now open and that the normally open (NO) contacts of the relay are now closed.

Which indicates that the relay coil is o.k, and the relay is operating.

At this time, when radiant sensor is cool, the igniter should be glowing and the Igniter Power light should be lit. Second, when the radiant sensor is hot, it indicates that the NO contacts of the relay are now closed and power is available for the operating gas valve. At this time, when the radiant sensor is hot, the operating gas valve should be energized and the gas should be burning.

7. Igniter Power

This light indicates that power is flowing to the igniter through the radiant sensor and the igniter should be glowing red hot.

If this light is not lit and the Ignition Relay Power light is lit, then the gas should be burning which means that the operating gas valve has been energized by means of a circuit through the non-glowing igniter.

Proper Operation of Diagnostic (● - off, 0 - On)

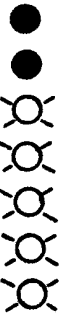

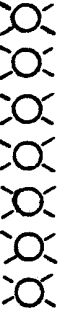


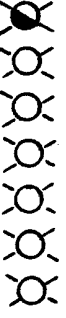






● ● ● ● ● ● ●	Dryer Off
0 ● ● ● ● ● ●	Coin Meter Energized - (Dryer Off)
0 0 0 0 0 0 0	Dryer Started (Glo-Bar On)
0 0 0 0 0 0 ●	Dryer Running (Gas On)
0 0 0 0 ● ● ●	Thermostat Cycled (Gas Off)
0 0 0 0 ● ● ●	Thermocool (Gas Off)
● ● ● ● ● ● ●	Dryer Off

TROUBLE	DIAGNOSTICS*	CAUSE	REMEDY
Motor will not start (panel light off)	● ● ● ● ● ● ● ●	No Power Coin Meter or Timer Off Loose Wire Connection	Check fuses or circuit breakers. Make sure main control switch is on Deposit coin and rotate knob CW. Turn On Timer Check wire connections in electrical box on rear of dryer.
Motor will not start (panel light on)	● ● ● ● ● ● ● ●	Loading Door Open Door Switch Out Of Adjustment Defective Door Switch	Close door. Adjust switch by removing front panel and bend actuator lever to clear switch button 3/8" with panel in place. Replace door switch.
Motor Tripping on thermal protector (motor runs for short time.)	⊗ ● ● ● ● ● ● ● ● ⊗ ● ● ● ● ● ● ● ●	Defective Motor Basket Overloaded Low Voltage	Replace Motor Remove some of the heavy load. Check voltage at motor terminals. Voltage must be within +10% of voltage shown on motor rating plate. If not, check with local power company.
Motor runs but basket will not revolve.	⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗	Inadequate Wiring Poor Housekeeping Belt Broken Belt Loose Idler Wheel Broken Motor Pulley Loose	Check with local power company to insure that wiring is adequately sized for load. Clean lint accumulated on and around motor. Replace Basket Drive Belt Adjust Belt Tension Replace Idler Wheel Tighten Set Screws


* ⊗ On ● Off ⊗ Cycling

TROUBLE	DIAGNOSTICS*	CAUSE	REMEDY
Dryer does not stop at end of cycle.		Defective Coin Meter/Timer	Replace Coin Meter or Timer
Dryer runs but no heat		Defective Coin Meter/Timer	Replace Coin Meter or Timer
		Defective Safety Thermostat	Replace safety thermostat
		Defective Centrifugal Switch In Motor	Replace or repair motor.
		Air Switch Open Or Teetering.	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 over in winter. Never install a screen on the exhaust outlet. Vacuum within dryer drops to .09 inches of water column, or less, for normal operation of dryer, vacuum reading (in inches of water column) should range between .15 and .3 inches. 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
		Defective Thermostat or Coin Meter	Check each temperature to determine defective thermostat. If ignition power light does not light on all temperature selections, replace coin meter.

* On ● Off Cycling

TROUBLE	DIAGNOSTICS*	CAUSE	REMEDY
Dryer runs but no heat		Defective Radiant Sensor	Replace Radiant Sensor
		Defective Ignition Relay (Ignition Relay & Igniter Power Light Cycle On & Off At Same Time.	Replace Ignition Relay
		Defective Igniter (Igniter Does Not Glow)	Replace Igniter (Check for 120V. to ignition system).
		Defective Radiant Sensor (Igniter Does Not Go Off)	Replace Radiant Sensor
		Defective Gas Valve (Igniter Cycles)	Replace Gas Valve (Check if gas is turned "on").
Silicon Carbide Igniter Not Igniting Gas.		Low Gas Pressure	Adjust gas pressure as specified on rating plate.
		Incorrect Main Burner Orifices.	Replace orifices - check factory for correct size.
Main Burner cycling on & off.		Radiant Sensor	Clean window or move sensor 1/4" closer to ignitor.
		Defective Thermostat	Replace Thermostat
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.

*  On ● Off  Cycling

TROUBLE	DIAGNOSTICS*	CAUSE	REMEDY
Dryer too hot	 ● ● ● ● ● ● ● ●	Exhaust Duct Dampers Gas Pressure Too High Partially Restricted Or Inadequately Sized Exhaust System.	Must be full open or replace Adjust gas pressure as specified on rating plate. Check installation sheet in service manual 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.
Dryer noisy or vibrating	N/A	Not Levelled Fan Out of Balance Basket Rubbing Foreign Objects	Check manual for proper leveling procedure. Damage to the fan blade can change the dynamic balance. Damaged fans should be replaced. Align basket (check manual instructions). Occasionally screws, nails, etc. may hang in the basket perforations and drag against the sweep sheets around the basket. Such foreign objects should be removed immediately.
Main burners burning improperly	N/A	Belt Burner Air Shutters Closed Dirt in Burner Gas Pressure Too High Orifice Too Large Restricted or Blocked Exhaust	Check belt alignment and Tension Open for blue flame Blow out. Check rating plate for correct gas pressure. Check factory for correct orifice size. Clean exhaust.

*  On ● Off  Cycling

TROUBLE SHOOTING CHART

TROUBLE	CAUSE	REMEDY
Motor will not start	No Power	Check fuses on circuit breakers. Make sure main control switch is <u>on</u> .
	Incorrect power	Check power source; voltage, phase, and frequency must be the same as specified on electrical rating plate.
	Time off	Check timer for proper setting or check coin meter for proper vending.
	Loose wiring connections	Check wire connections in electrical box on rear of Dryer.
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--it 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 manual for recommended make up air openings.
	Poor housekeeping	Clean lint accumulation on and around motors.
Basket will not turn	Loading door open	Close door.
	Door switch out of adjustment	Adjust switch by removing front panel and bend actuator lever to clear switch button 3/8" with front panel in place.
	Defective door switch	Replace switch.
	Defective basket motor contactor	Replace contactor.

TROUBLE	CAUSE	REMEDY
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	Occasionally 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.
Dryer runs but no heat	Incorrect voltage	Check for correct control voltage - 120V.
	No voltage	Check power supply, check secondary voltage on transformer and check wiring and wiring diagram.
	Silicon carbide igniter will not glow - red	Broken or defective igniter--replace.
	Light red silicon carbide igniter	Check for 2.5 minimum amperage. Low amperage not hot enough.
	Defective igniter time delay relay	Heater No. 1 and No. 6 open circuit, if above occurs replace time delay relay.
	Lint door open	Close lint door.
	Defective gas valve	Replace coil assembly.
	Gas turned off	Turn manual gas valve "on."

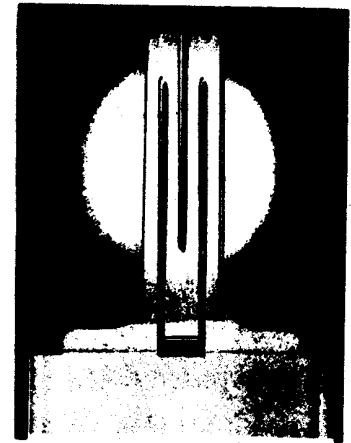
TROUBLE	CAUSE	REMEDY
Dryer runs but no heat		
	Defective door switch	Replace door switch.
	Silicon carbide igniter not igniting gas	Must be 3/16 to 5/16 above burner, Replace radiant sensor.
	Air switch not operating	Clean out lint compartment daily. Check back draft damper for foreign objects, lint 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 over in winter. Never install a screen on the exhaust outlet. Vacuum within dryer drops to .09 inches of water column, or less, for normal operation of dryer, vacuum reading (in inches of water column) should range between .15 and .3 inches. 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.
Line fuse or heater circuit fuse blown to unit	Replace fuse.	

TROUBLE	CAUSE	REMEDY
Dryer runs but no heat	Defective relay	Replace relay.
	Defective electric elements	Replace elements.
	Defective thermostat	Replace thermostat.
	Defective safety overload thermostat	Replace thermostat.
	Lint compartment door open	Close door.
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.
Main burner cycling on and off	Radiant Sensor	Replace
Low gas flame 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.
	Gas pressure too high	Adjust gas pressure as specified on rating plate.
	Partially restricted or inadequately sized exhaust system	Check installation sheet in service manual 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
Dryer does not stop at end of time period	Defective timer	Replace timer.



Silicon Carbide Ignition System



- New radiant sensor.
- TWO gas valves and pressure regulator provide additional safety.
- New igniter
 - Combines unique HIGH PHYSICAL and THERMAL Strength with stable electrical properties.
 - Can be relied upon to give premium performance at operating temperatures up to 2600° F and respond on command.
 - Clean, straightforward design insures easy handling, minimum chance of breakage; dependable, trouble-free operation.

Cissell's NEW Silicon Carbide Ignition System is better than ever!

- More reliable
- Less costly to replace
- Easier to service

Cissell's system reduces gas consumption 6% on the average over dryers with standing pilots based on 40-hour per week usage. There's no standing pilot to burn constantly; no electronic pilot to consume gas before burner ignites. . . either/both of which add high energy costs to your operation.

CISSELL's silicon carbide ignition system saves you up to 53% (dependent upon model dryer and other factors) additional gas costs over certain previous Cissell and competitive dryers of the same type WITHOUT sacrificing drying rate! A MUST — in times of fuel shortages/high costs.

LOOK TO CISSELL for better energy-saving features!



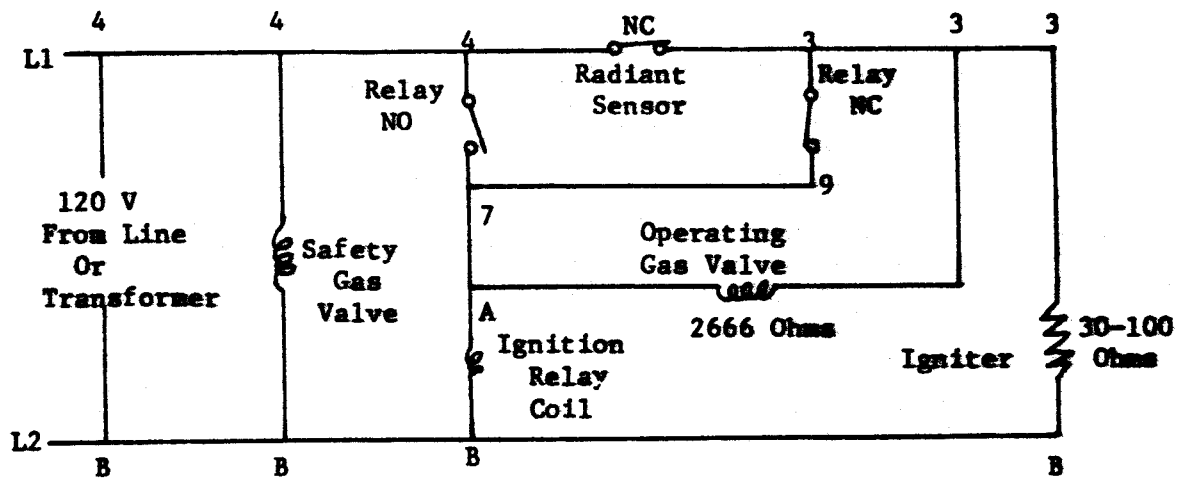
ASK YOUR DISTRIBUTOR

OPERATION OF THE NEW NORTON SILICON CARBIDE IGNITION SYSTEM

Power to the ignition system is 120 volts. It is rated voltage or on higher voltage machines the 120 volts is from a transformer. The ignition system is powered through a timer or coin meter and a thermostat which calls for heat.

The two gas valves are plumbed into a single gas line and both must open before the gas can flow into the burners.

The following diagrams are line to line schematics of the ignition system. The numbers 4, 7, 3, 9, and letters A and B are terminals on the ignition relay.

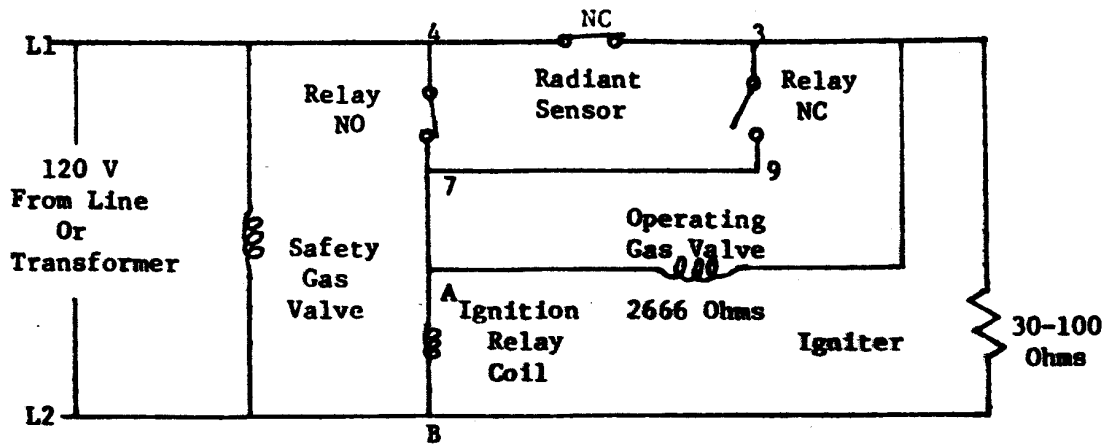


NEW NORTON SILICON CARBIDE IGNITION SYSTEM

Fig. 1 (Start of Cycle)

Step #1 (Start of Cycle), see Fig. 1

- a. The safety gas valve is connected across the lines and opens immediately as soon as a need for heat is indicated by the thermostat.
- b. The ignition relay coil is energized through the normally closed (NC) contacts of the radiant sensor and the NC contacts of the relay. Note! Fig. 1 shows the electrical circuit of the relay just before it is energized. Fig. 2 shows the circuit a moment later.
- c. The igniter is energized through the NC contacts of the radiant sensor.
- d. The operating gas valve is connected such that the same 120 volts is applied to both sides of the gas valve and the valve stays closed.

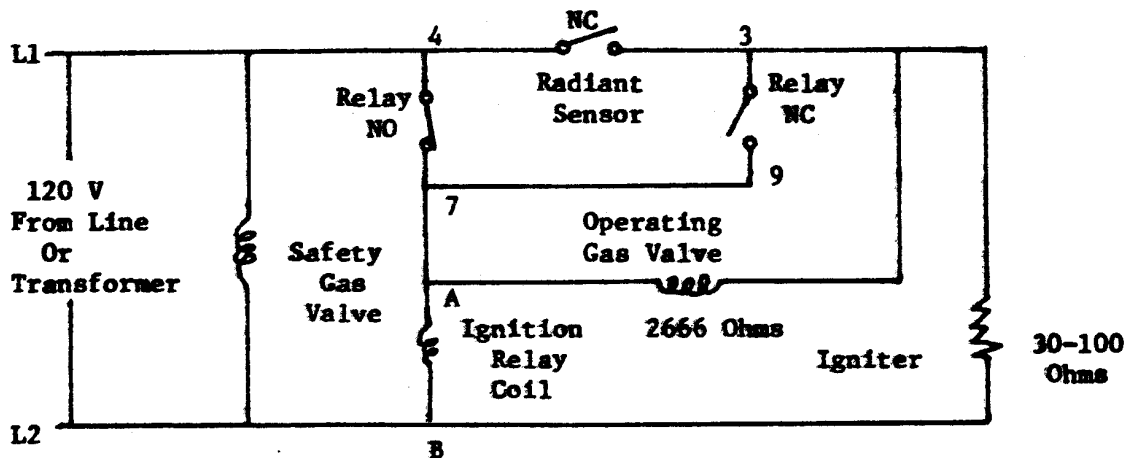


NEW NORTON SILICON CARBIDE IGNITION SYSTEM

Fig. 2 (An Instant Later)

Step #2 (A moment after Step #1), see Fig. 2

- a. The ignition relay closes now and the relay coil stays energized by being powered through the normally open (NO) contacts of the ignition relay which close before the NC contacts open.
- b. The operating gas valve still has the 120 volts applied to both sides of the gas valve and the valve stays closed.



NEW NORTON SILICON CARBIDE IGNITION SYSTEM

Fig. 3 (About 20 Seconds Later)

Step #3 (About 20 seconds after Step #2), see Fig. 3

- a. The igniter glows red hot which causes the radiant sensor to open its NC contacts which de-energizes the igniter.
- b. As the radiant sensor NC contacts open, the 120 volt to one side of the operating gas valve coil is removed and an electrical circuit is formed through the NO contacts of the ignition relay,

through the gas valve and through the igniter, and the gas valve opens. The relatively low resistance of the igniter allows nearby full voltage to be applied to the operating gas valve and nearby zero voltage to the igniter and the igniter is de-energized for all practical purposes.

- c. As the raw gas flows against the red hot igniter, ignition takes place. The radiant gas flame replaces the radiant glowing of the igniter and the radiant sensor NC contacts remain open.

The flame will burn until the thermostat opens the circuit or until the time on the timer or coin meter expires.

The following summarizes the ignition operation.

Start machine drying cycle. Carbide igniter will get red hot. Then gas valve will open. The gas burners are ignited by the carbide igniter. Igniter will shut off and burners will remain on during drying cycle.

Opening tumbler door will cause gas to extinguish. Shut door and gas will not light until flame sensor cools and normal ignition cycle begins.

Note! Push start switch after door is shut.

If gas does not light, then the sensor will cool down and restart the ignition cycle.

Safety Features

Power Interruptions During Burning of the Gas

Both gas valves are de-energized and the gas is shut off. The ignition relay is also de-energized and returns the contacts to the NO and NC positions. Even with resumption of power, the operating gas valve stays closed until the NC contacts of the radiant sensor close (about 30 seconds from time of power interruption). A normal ignition cycle begins at this time.

Burner Doesn't Light Because of Low Voltage or Low Gas Pressure

The operating gas valve will be energized for about 30 seconds and then the NC contacts of the radiant sensor will be closed. 120 volts is applied to both sides of the operating gas valve and it closes to shut off the gas. A normal ignition cycle begins at this time.

NORTON IGNITION SYSTEM

Test Procedure

- 1) Igniter will glow red.
If Igniter does not glow red, then check the following:
 - (a) Disconnect Igniter wiring from dryer - test with separate 120V. Replace if it does not glow red.
 - (b) Also replace Igniter if cracked, broken or does not light burner in 25 seconds.
- 2) Unit must be wired correctly.
 - (a) Front gas valve must always be wired to "A" and "3" on the relay.
 - (b) Side or rear gas valve must be wired to "B" and "4" on the relay.
- 3) Rear or side gas valve must open (click) when dryer is energized.
- 4) Front gas valve will open and gas will flow to burners after 12 to 25 seconds, when Igniter is glowing red. Red Igniter will light gas from burners.
- 5) Igniter will go out when flame is burning.
 - (a) If both gas valves do not open (click), then replace.
 - (b) If unit does not operate correctly, then replace the relay.
 - (c) If Igniter does not shut-off, then replace radiant sensor. Also, if the radiant glass is broken, replace.

NORTON IGNITION SYSTEM

- 6) Parts in unit:
Norton Igniter TU8596
Ignition Radiant Sensor TU8598
Ignition Relays TU8599
Two Gas Valves TU6557
Wiring Diagram TWL1144
- 7) Open and close loading door after gas is burning and Igniter is shut-off. Gas should not flow when door is reclosed until radiant sensor has cooled and Igniter recycles.

TROUBLE SHOOTING ON EACH NORTON IGNITION PART

- A) Igniter TU8596
 - 1) No Igniter red - Check voltage (120V)
 - Cracked or broken, replace
 - Check wiring TWL1144. Must be connected to No. "B" and No. "3" on relay.

Radiant Sensor TU8598

- 1) **No Igniter red** - Contacts failed open position, replace.
 - Sensor N.C. (cold position)
 - Sensor open (hot position)
 - Glass broken, replace.
- 2) **Fails to open after 25 seconds**
 - Low voltage on Igniter
 - Not in correct location
 - Glass broken, replace
 - Failure of contacts to open, replace.

C) Relay (Igniter) TU8599

- 1) **Front gas valve does not turn on.**
 - Relay is wired incorrectly
 - Relay solenoid not operating
 - Relay contacts not operating correctly
- 2) **Relay contacts should make before break** - when the relay coil is energized, the contacts "4 & 7" should close before contacts "3 & 9" open.

B) Gas Valve TU6557

- 1) **If valve does not open when 120V is applied to it, then replace the coil assembly TU3832 (120V).**
- 2) **The two gas valves must be wired correctly TWL1144. Front gas valve wires connected to "A and 3" on relay. Side or rear gas valve wires connected to "B and 4" on relay.**

INSTRUCTIONS FOR THE DIRECT IGNITION SYSTEM OPERATION

1. **Turn on manual gas valve; handle should be parallel with gas line.**
2. **Start machine's drying cycle. Carbide igniter will get red hot; then gas valve will open. The gas burners are ignited by the carbide igniter. Igniter will shut off and burners remain on during heat cycle.**
3. **Opening tumbler door will cause gas to extinguish. Shut door and gas will not flow until flame sensor cools and normal cycle begins.
NOTE! Push start button after door is closed.**
4. **If gas does not light, the sensor will cool down and restart the ignition cycle.**
5. **To shut off dryer, turn off manual gas valve. Handle should be at right angle to pipe. Turn off main electrical supply switch.**
6. **If gas burners fail to ignite, please wait 5 minutes for a complete shut-off period before next attempt.**

TROUBLE ANALYSIS FOR ENERGY SAVER DRYERS AND
THE ELECTRONIC SILICON CARBIDE GAS IGNITION SYSTEM

CAUTION: Problems with the electronic silicon carbide ignition can also be the result of the following.

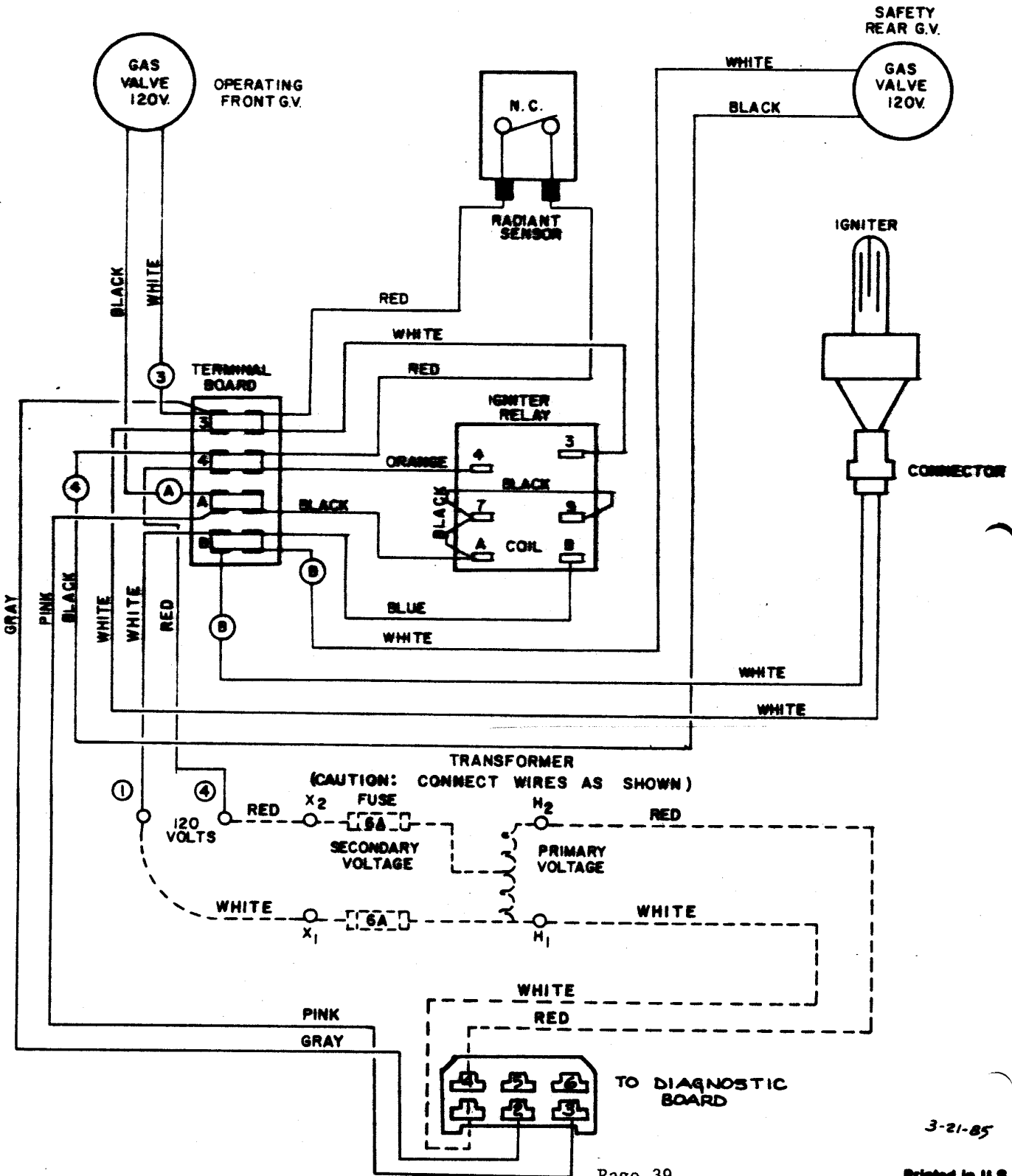
1. Exhaust air flow restriction. Exhaust pipe size must be larger than the exhaust opening. Refer to chart in manual.
2. Dryer inlet air is a must for each unit. It must be 4 to 6 times the combined areas of the dryer exhaust outlet. Refer to chart in manual.
3. All dryer panels must be in place and on machine for proper operation.
4. Gas pressure must be 7-9½ inches W.C. for natural gas and 11 inches W.C. for propane or butane (bottled) gases.
5. Refer to chart for correct gas pipe sizes and lengths. The ¾ inch gas pipe must be the minimum gas supply pipe for the dryer and over 50 ft., 1 inch pipe size.
6. Main burner orifices must be correct size, they are calculated with the following information:
 - (A) Your locality heating value of gas, B.T.U./cu. ft.
 - (B) Local specific gravity of gas.
 - (C) Gas manifold pressure inches of water column.
 - (1) 3.5 inches water column pressure for natural gas
 - (2) 11 inches water column pressure for propane or butane gases.
 - (D) Gas input rate per each burner orifice.
7. Voltage must be the identical as on the electrical rating plate. Prevent low voltage; it causes longer drying operation.
8. Back draft damper must swing full open to prevent air flow restrictions. (Check for full open operation every 6 months). Non-operative or erratic operation of exhaust dampers will cause air flow switches to shut off gas and will result in longer drying time.

The above should be checked and corrected before attempting to trouble shoot the electronic silicon carbide gas ignition system.

WIRING DIAGRAM

TWL 1144

NORTON SILICON CARBIDE GAS IGNITION SYSTEM
 120 VOLTS: 50/60 HZ: 1 PHASE
 GAS DRYERS



3-21-85

GENERAL MAINTENANCE

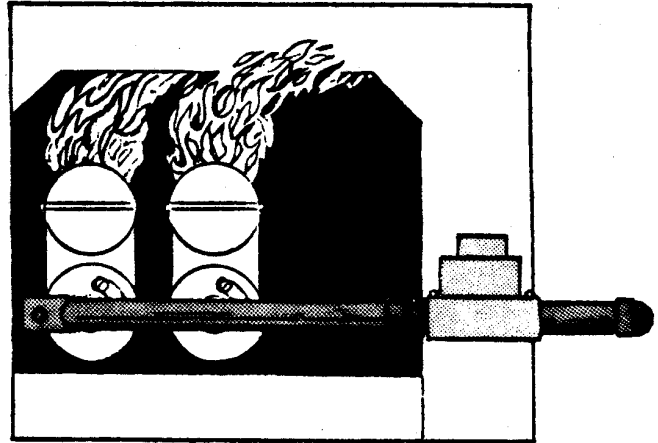
1. Clean lint trap daily. Remove lint before or after each day of operation. A clean lint trap will increase the efficiency of the dryer and the moisture laden air will be exhausted outside more quickly.
2. Keep basket and sweep sheets clean. Clean periodically as often as needed. The basket and sweep sheets within the dryer are easily accessible by removing the front panel of the dryer.
3. Gas burners, steam coils, electric coils. Check periodically and keep clean often.
4. Pulleys and belts. Keep clean as oil and dirt will shorten the life of a belt. Check periodically for alignment. Pulley shafts must be parallel and the grooves must be aligned. Check belt tension periodically. Adjust tension by movement of idler bracket.
5. Electric motor. Keep motor clean and dry. Motors are packed with sufficient grease for 10 years normal service. After that, bearings and housing should be cleaned and repacked one third full with Chevron Grease No. SRI-2. See label on motor for further information.

If motor overheats, check voltage and wiring. Low voltage, inadequate wiring and loose connections are the main cause of motor failures.
6. Adjustable leveling bolts. One at each corner permits accurate alignment of dryer.
To adjust: Block one corner of dryer up off the floor, loosen hex nut. With wrench, turn bolt clockwise to raise dryer, opposite to lower. Rear bolts are outside of dryer and front bolts are inside lint trap compartment.
7. Periodically clean and examine exhaust system.
8. Keep dryer area clean and free of gasoline, combustible materials and other flammable liquids or vapors.
9. Do not obstruct the flow of combustion (make-up) air and ventilating air.
10. Check gas pressure periodically.
11. Gas burners air inlet shutters can be adjusted for proper flame by following instructions outlined on separate page of this manual.

**BURNER AIR INLET SHUTTERS ADJUSTMENT
MAIN GAS BURNER FLAME PATTERN**

Burners Air Inlet Shutters are correctly adjusted when the flame is primarily blue.

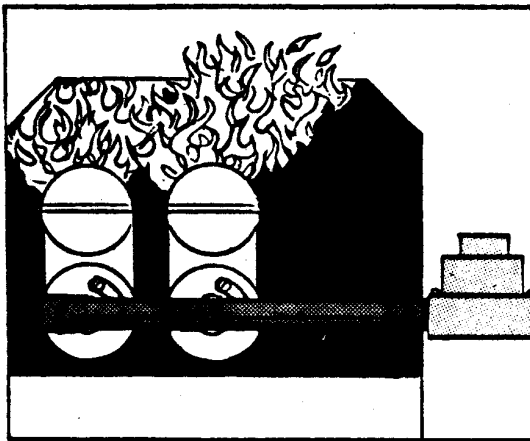
<u>TYPE OF GAS</u>	<u>BURNER AIR INLET SHUTTERS ADJUSTMENT</u>
Natural Gas	1/2 Open
Liquid Petroleum	1/4 Open
Manufactured Gas	1/16 Open



CORRECT

AIR SHUTTERS ADJUSTMENT

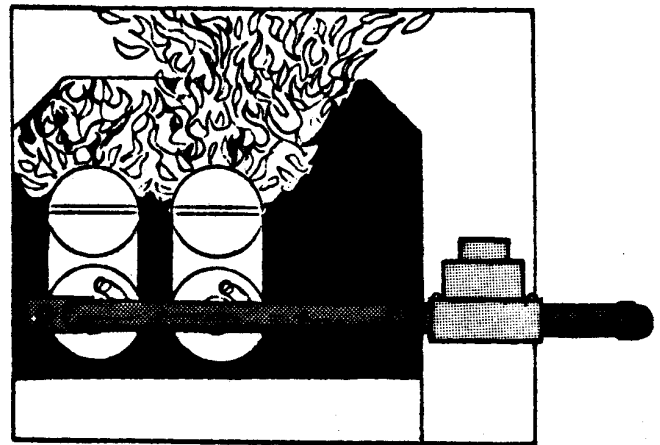
Proper Method: Close air shutters to yellow tip, then open air shutters to blue flame tip. Orange tips are impurities in the air such as lint, dust, etc.



Burners Air Inlet Shutters are adjusted closed. Insufficient air is admitted through the burner. Flame pattern is straight up and flame is yellow.

WRONG NEED TO ADJUST SHUTTER

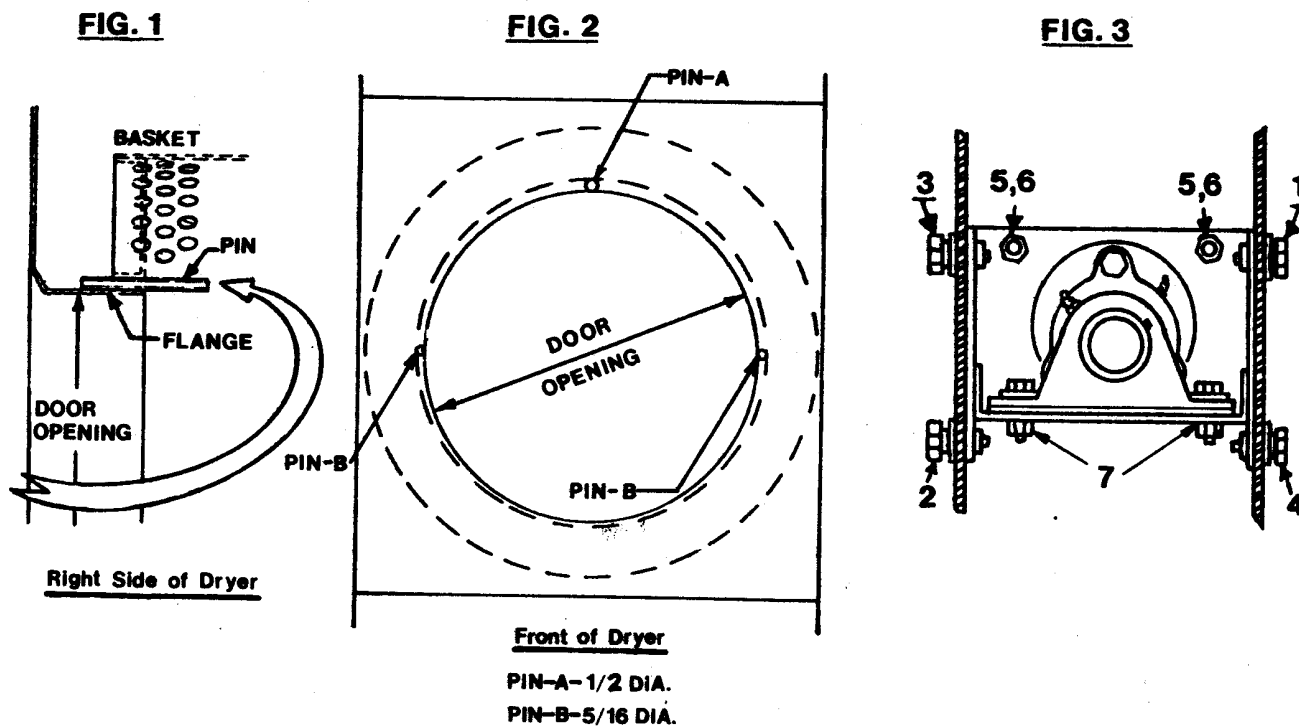
This flame pattern indicates the burner air inlet shutters are correctly adjusted, but air through the dryer is insufficient. This condition indicates excessive lint in the lint compartment, lack of make-up air in the room, restricted exhaust duct, or a vacuum in the room caused by a exhaust fan.



WRONG
NEED TO PROVIDE CORRECT
AIRFLOW THROUGH THE DRYER

Instructions for Basket Alignment
UR & US Models Dryers

- Step 1 Loosen both eccentric locking collars on the two basket bearings (flange and pillow block types). Loosen the set screws and turn clockwise. If necessary, use a punch and mallet, striking the punch hole in a clockwise direction to break it loose.
- Step 2 Loosen the four side bolts, "1, 2, 3, 4," on the basket bearing bracket (See Fig. 3). Loosen the two adjusting bolts and locknuts "5, 6," inside the bracket. And loosen the bolts "7," on the pillow block bearing.
- Step 3 Place one "A" and two "B" diameter pins inside the drying compartment between the rim of the basket opening and the rim of the door opening in the positions shown in Figs. 1 & 2. Check the two "B" pins for equal clearance.
Note: Push the basket toward the rear.
- Step 4 With the pins in position, lock the collar nearest the rear wall of the dryer on the shaft by striking the punch hole in a counterclockwise direction. Tighten the set screw.
- Step 5 Tighten the side bolts "1, 2, 3, 4," in numerical order. Tighten the bolts "7" on the pillow block bearing. And tighten the bolts "5" and locknuts "6".
- Step 6 Remove the aligning pins and if alignment is O. K., then tighten the collar on the pillow block bearing the same as in Step 4.
Caution: Check to see that the set screws are wrench tight on the locking collars.

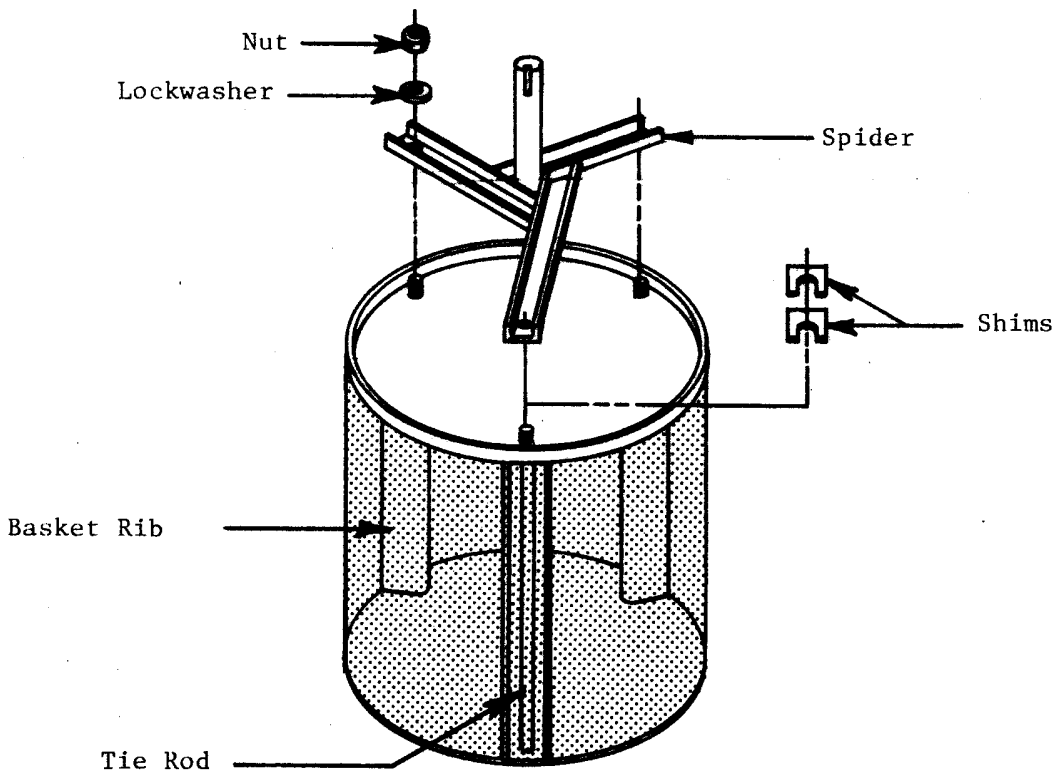


INSTRUCTIONS ON THE SHIMMING OF A CISELL
BASKET AND SPIDER ASSEMBLY

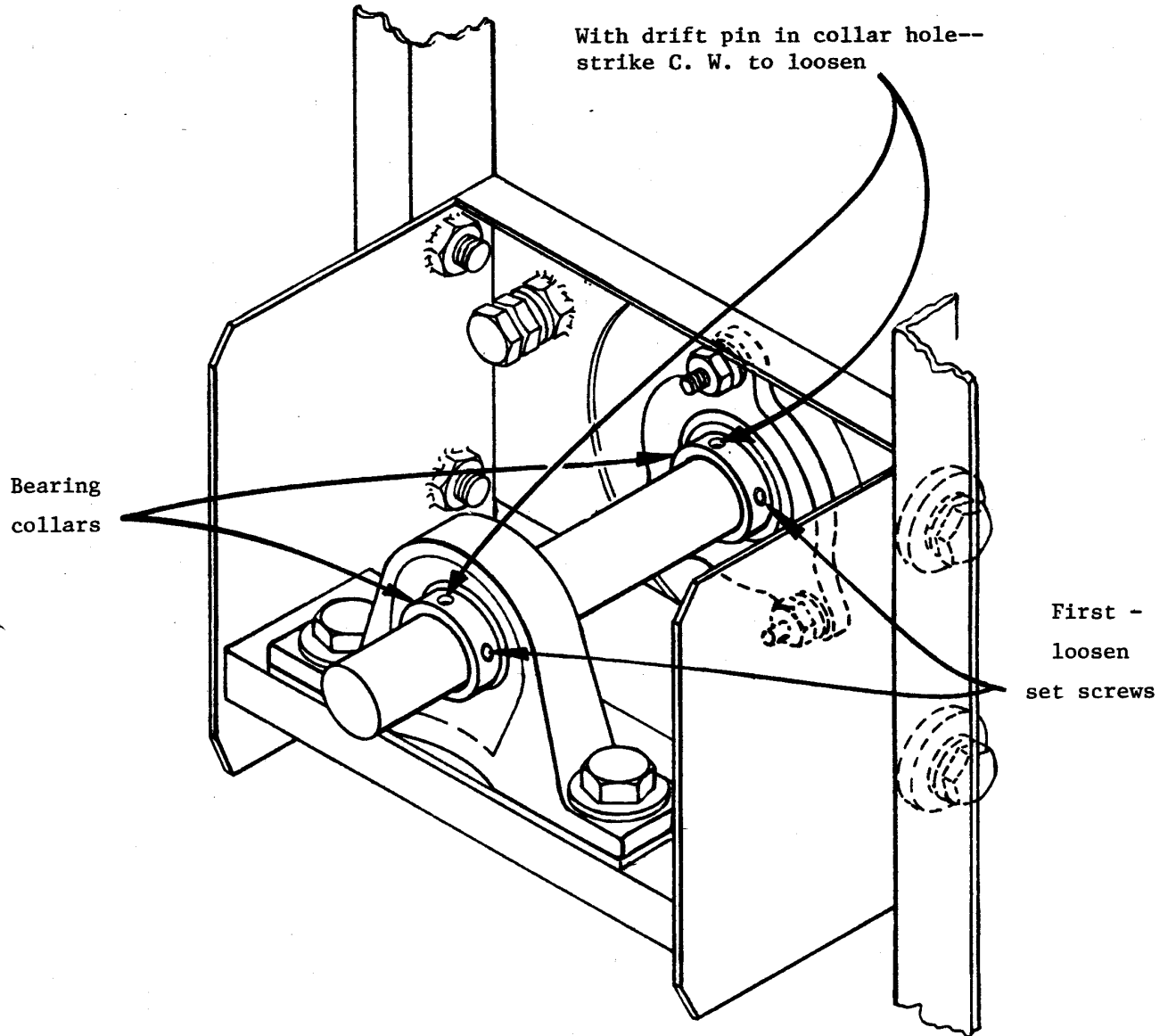
This procedure is normally necessary when replacing either the basket or the spider assembly on any Cissell tumbler. The alignment of these two parts are crucial in assuring a true running basket.

- A. Align the basket as per instructions in manual.
- 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.
- D. Remove the basket (do not loosen the alignment bolts).
- E. With the basket on the floor (spider up), place one or two shims between the spider leg and the back of the basket at the marked rib position. (See drawing)
- F. Re-insert spider and basket assembly and re-check cylinder.
- G. If at this point, basket is still out of round, procedure must be repeated starting with step "B".
- H. Upon completion of shimming process, re-alignment of basket is necessary.

NOTE: If the point mentioned in step #B is between two ribs, both ribs might have to be shimmed.



INSTRUCTIONS TO REMOVE ECCENTRIC
LOCKING BEARING COLLARS



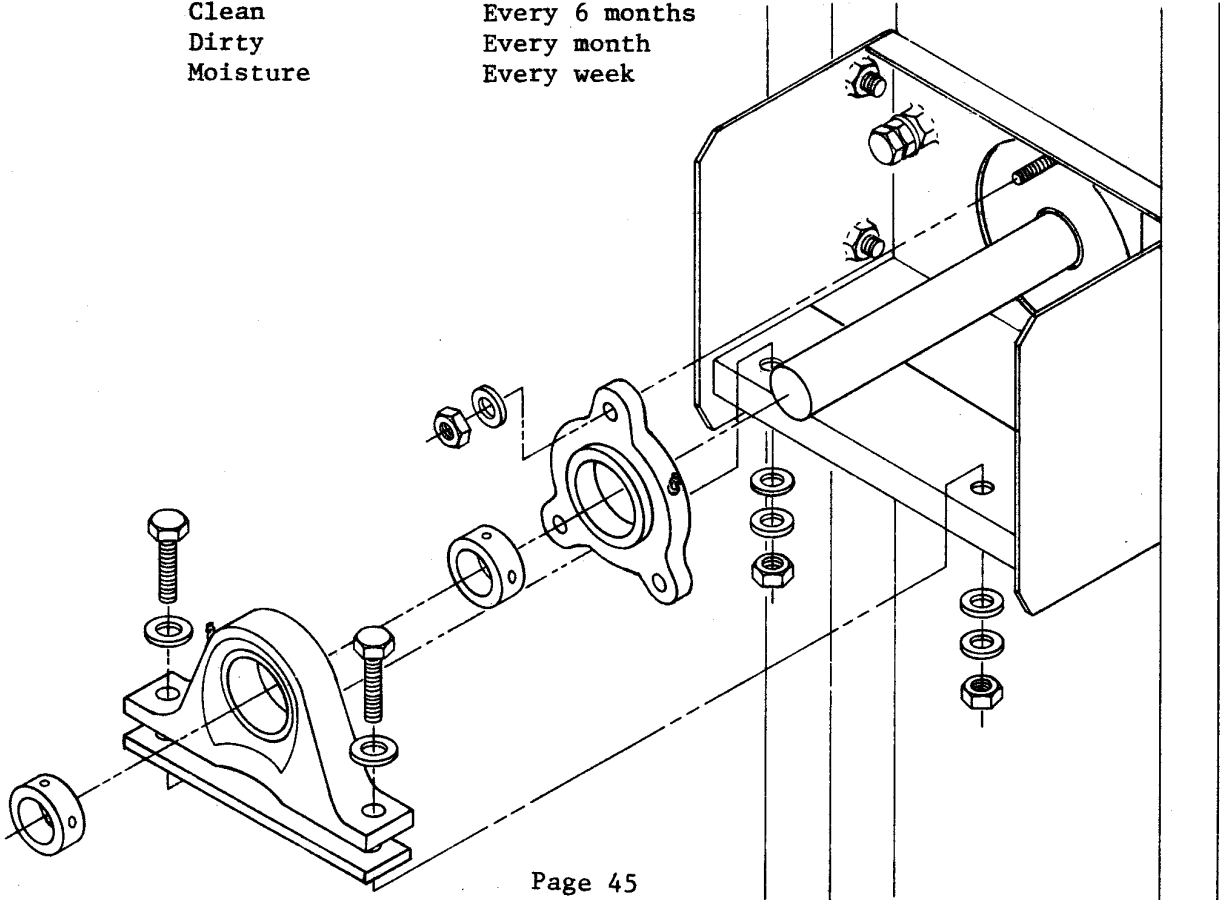
Rear View
of Dryer

**Instructions for Replacing Bearings & Collars
(Dryers Equipped with Pillow Block and Flange Basket Bearings)**

- Step 1: Remove belt guard, V-Belt, spacer and basket sheave.
- Step 2: Loosen set screw in first locking collar and remove from shaft by rotating clockwise. If necessary, use punch and mallet, hitting in clockwise direction to break collar loose.
- Step 3: Remove the two bolts holding the pillow block bearing and take it off the shaft.
- Step 4: Remove the second locking collar in the same manner as in Step 2.
- Step 5: Remove the three nuts and washers holding the flange basket bearing and take it off the dryer.
- Step 6: Inspect the bearings and collars for damage and replace as necessary in reverse order of removing them. Before tightening securely, align basket per instructions on separate instruction sheet.
- Step 7: Lubrication Guide - Grease bearings at regular intervals shown below. Use #42-032-6015 Lubriplate #310 1 lb. can or 14.5 oz. tube, Lubriplate #930-2 Multi-purpose grease #10098.

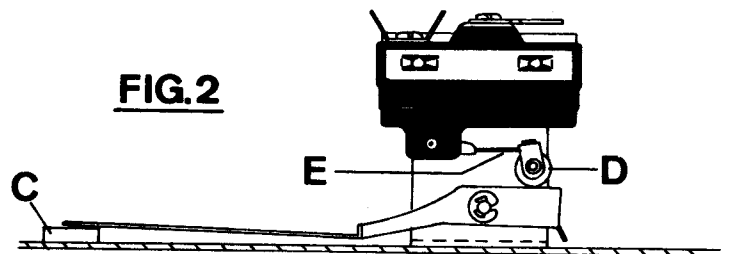
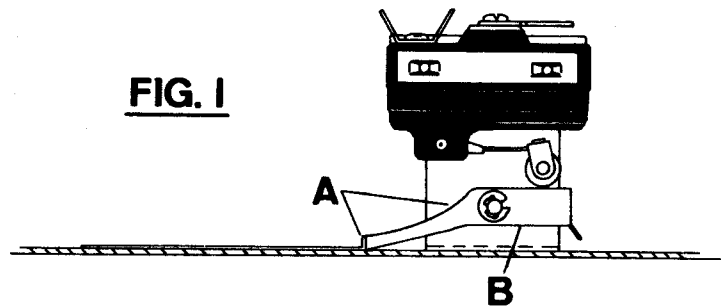
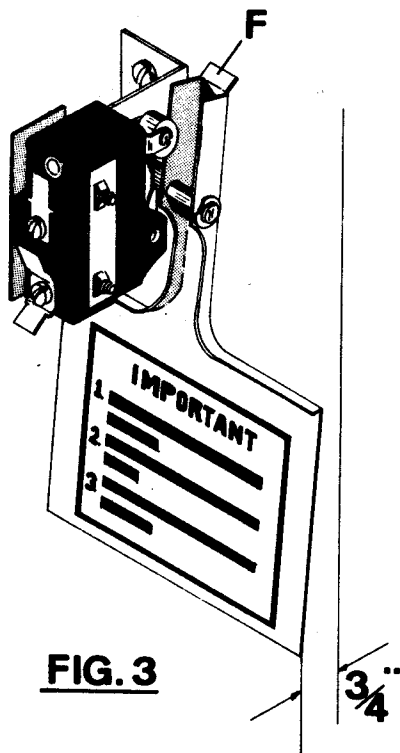
Bearings are factory lubricated and ready for use. They are equipped with fittings for lubricating. Add grease slowly; when grease begins to come out of the seals, the bearing will contain the correct amount.

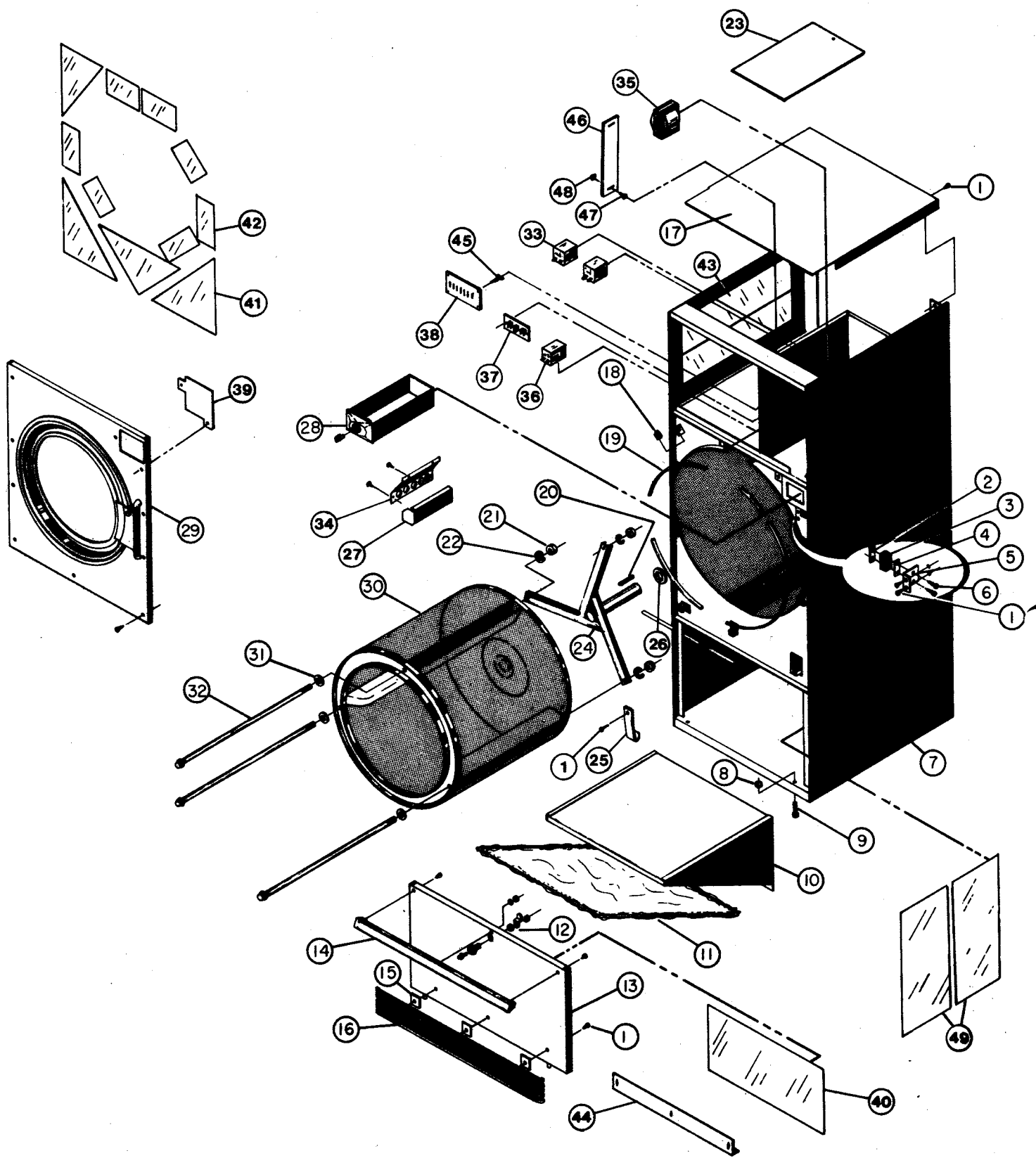
<u>Operating Conditions</u>	<u>Grease Intervals</u>
Clean	Every 6 months
Dirty	Every month
Moisture	Every week



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" (fig. 1) so that air blade lays flat and surface "B" is parallel to the flat surface.
3. Place 3/8" x 5/8" spacer bar or equivalent "C" (fig. 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" (fig.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.

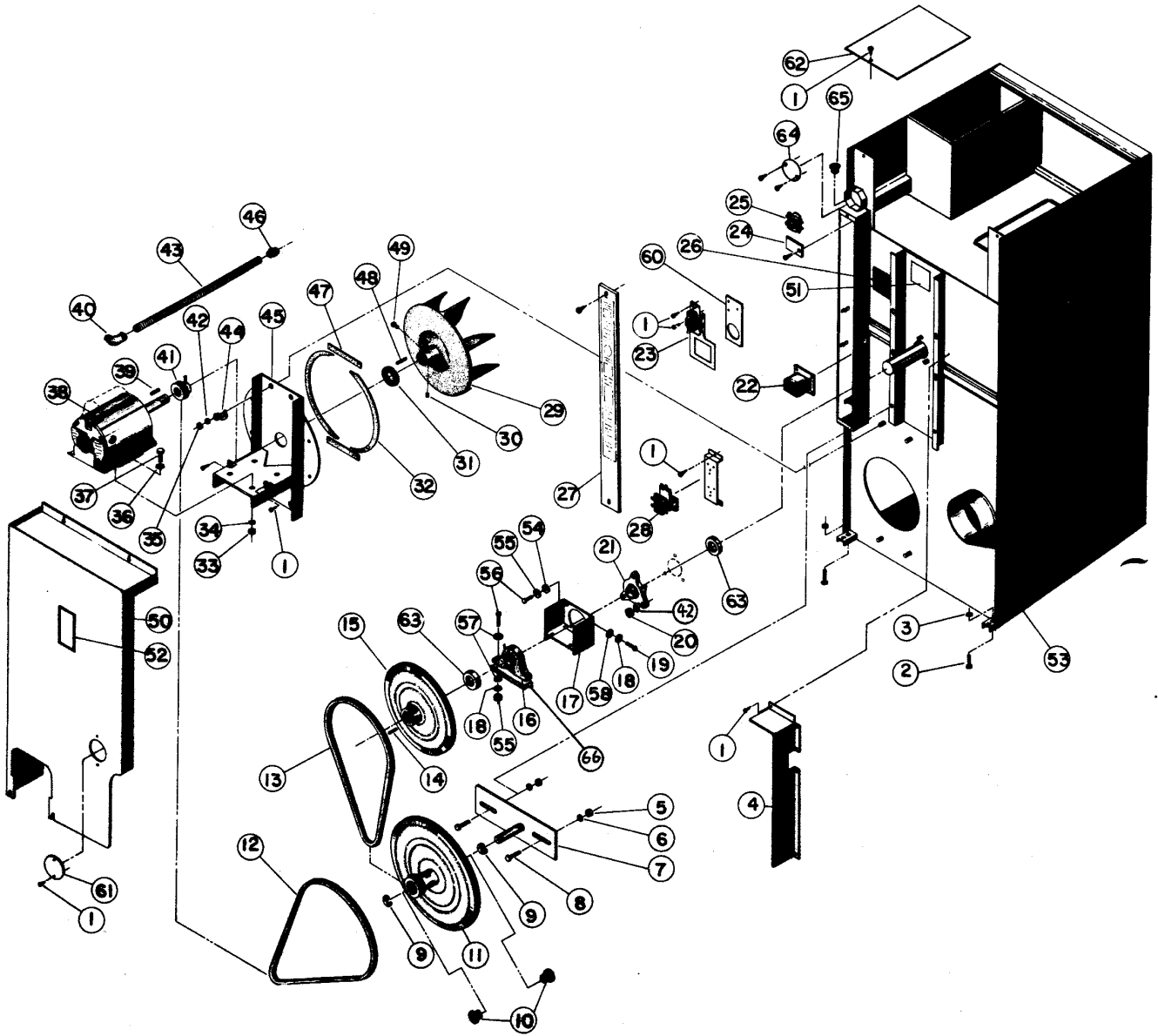




FRONT VIEW

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU7733	#8X $\frac{1}{2}$ " Self Drill Screw	31	TU2883	$\frac{1}{2}$ " Cut Washer
2	TU1771	#6 Twin Nut	32	TU2313	Tie Rod
3	TU1979	Door Switch	33	TU9325	Relay (2) Computerized Coin Meter Only
4	TU1770	Insulator			
5	TU2373	Switch Bracket	34	TU9111*	Thermostat Asm. (Coin Meter Model Only)
6	TU3219	#6X1" S. M. S.		TU10285*	Thermostat Asm. (Timer Model Only)
7	TU10010	Jacket Welded Asm.			
8	TU4937	3/8"-16 Jam Nut			
9	TU3211	3/8"-16X2 $\frac{1}{2}$ " Leveling Bolt	35	TU8737	Transformer(208 or 230V Primary-120V Secondary)
10	TU10290	Lint Screen Housing			
11	TU10362	Lint Screen Only		TU8738	Fuses
	TU5225	Frame Only	36	TU8599	Relay 120V (Igniter)
12	TU9035	Lock - JWC2	37	TU8629	Terminal Board (Igniter)
	TU2844	Key - JWC2	38	TU8933	Diagnostic Board
	TU8928	Cam		TU10434	Diagnostic Board (Steam or Elec. Dryers)
13	TU9511	Lint Door			
14	TU7472	Lint Door Handle	39	TU6336	Filler Plate (Timer Model Only)
15	TU2710	Trim Holder			
16	TU2384	Bottom Trim	40	TU8152	Insulation (US Models Only)
17	TU2620	Solid Top (Gas Only)			
18	TU2877	#10 Speed Nut	41	TU7735	Insulation (US Models Only)
19	TU2483	Sweep Sheet Gaskets			
20	TU5887	Key	42	TU8108	Insulation (US Models Only)
21	TU2882	$\frac{1}{2}$ "-20 Hex Nut			
22	TU2831	$\frac{1}{2}$ " Split Lockwasher	43	TU7736	Insulation (US Models Only)
23	TU10651	Cover Plate (Steam)			
24	K337	Spider Replacement Kit	44	TU9512	Adjustment Strip
25	TU10284	Lint Trap Front Support	45	TU9347	P.C. Board Support
26	TU10177	Spacer	46	TU9384	Adjustment Strip
27	TU8457	Thermostat Cover	47	TU3479	#10-32X7/16 Truss Hd.Scr.
28	TU9225	Coin Vault Lock Assembly	48	TU2842	Hex Nut
29	TU9033*	Front Panel & Door Asm.	49	TU8104	Insulation (US Models Only)
30	TU2083	Basket Welded Assembly			

*See Separate Page for Exploded View

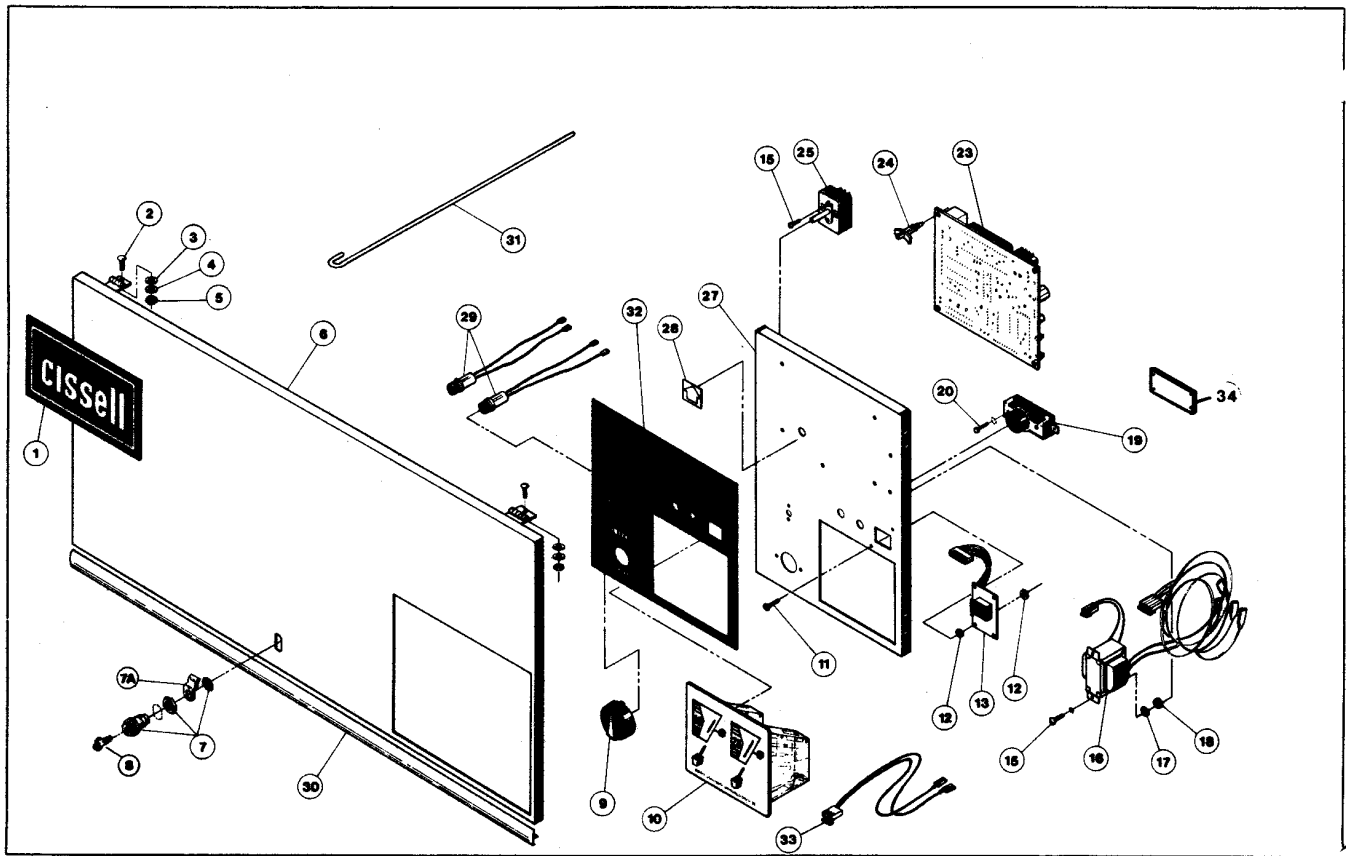


REAR VIEW

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	TU7733	#8X $\frac{1}{2}$ Self Drill Screw	34	TU2814	5/16 Split Lockwasher
2	TU3211	3/8-16X2 $\frac{1}{2}$ Leveling Bolts	35	TU4787	3/8-16 Hex Nut
3	TU4937	3/8-16 Jam Nut	36	VSB130	5/16 Cut Washer
4	TU10131	Right Rear Cover	37	TU5439	5/16-18X3/4" Hex Hd. Scr.
5	TU3188	3/8-16 Nylok Hex Nut	38	---	Motor(Specify Motor No., Voltage,Cycle&Horsepower
6	TU1851	$\frac{1}{2}$ " Cut Washer			
7	TU10272	Idler Bracket	39	TU5241	Key
8	TU4936	3/8-16X3/4" Carriage Bolt	40	TU4791	90-Degree Connector
9	TU3247	Retaining Ring	41	TU6559	Motor Sheave - 60 Hz.
10	TU7184	Sleeve Bearings	42	VSB134	3/8" Lockwasher
11	TU5217	14" Idler Sheave(50/60 Cy.)	43	504641292	Cable (Specify 32")
12	TU3395	V-Belt (4L580)	44	TU6486	Cable Strap
13	TU3395	V-Belt (4L580)	45	TU5850	Motor Mount
14	TU5887	Key	46	TU4790	Straight Connector
15	TU7016	15" Basket Sheave(50/60 Cy.)	47	TU2474	Gasket (2 Req'd.)
16	TU10003	Pillow Block Bearing**	48	TU4684	Key
17	TU10674	Bearing Support Bracket	49	F819	5/16 Sq. Hd. Set Screw
18	TU2831	$\frac{1}{2}$ " Split Lockwasher	50	TU10134	Rear Guard "US" Only
19	RC347	$\frac{1}{2}$ -13X1 $\frac{1}{2}$ Cap Screw		TU5079	Rear Guard "UR" Only
20	TU4787	3/8-16 Hex Nut		TU9296	Rear Guard (Double Capacitor Motor Only)
21	TU10002	Flange Basket Bearing**			
22	TU9760	Transformer	51	TU10433	Locking Collar Label
23	TU8206*	Air Switch Assembly	52	TU10418	Lubrication Label
24	TU2726	Strain Relief Plate	53	TU10010	Jacket Welded Assembly
25	M155	Wire Harness Clamp	54	OP251	$\frac{1}{2}$ " Int. Tooth Lockwasher
26	TU9672	Rating Plate	55	OP233	$\frac{1}{2}$ " Hex Nut
27	TU5890	Control Box Cover	56	TU2195	$\frac{1}{2}$ -13X 1-3/4" Cap Screw
28	TU1984	Relay-120V/50/60,2 Pole	57	TU2883	$\frac{1}{2}$ Flat Washer
	TU1985	Relay-120V/50/60,2 Pole	58	TU1851	$\frac{1}{2}$ X $\frac{1}{4}$ Cut Washer
	TU3495	Relay-208V or 240V,50/60,3 Pole	59	TU6220	Relay Mounting Bracket
	TU10669	Relay-480V.	60	TU10403	Air Switch Plate
	TU3496	Relay-120V/50/60, 3 Pole	61	TU7467	Cover Plate
29	TU8746	Fan, 60 Hz.W/Set Screws	62	TU10651	Mechanism Box Cover (Steam Dryer Only)
	TU5874	Fan, 50 Hz.W/Set Screws			
30	TU9272	5/16 Nylon Patch Set Screw	63	TU10177	Spacer
31	TU2476	Felt Seal	64	SB170	Junction Box Cover
32	TU2473	Side Gasket(2 Req'd.)	65	TU2372	Snap Bushing
33	C249	5/16-18 Hex Nut	66	TU10879	Bearing Support Bracket

*See Separate Page for Exploded View.

**Eccentric Locking Collar W/Set Screws Included



ACCESS DOOR & CONTROL PANEL - COMPUTERIZED COIN METER

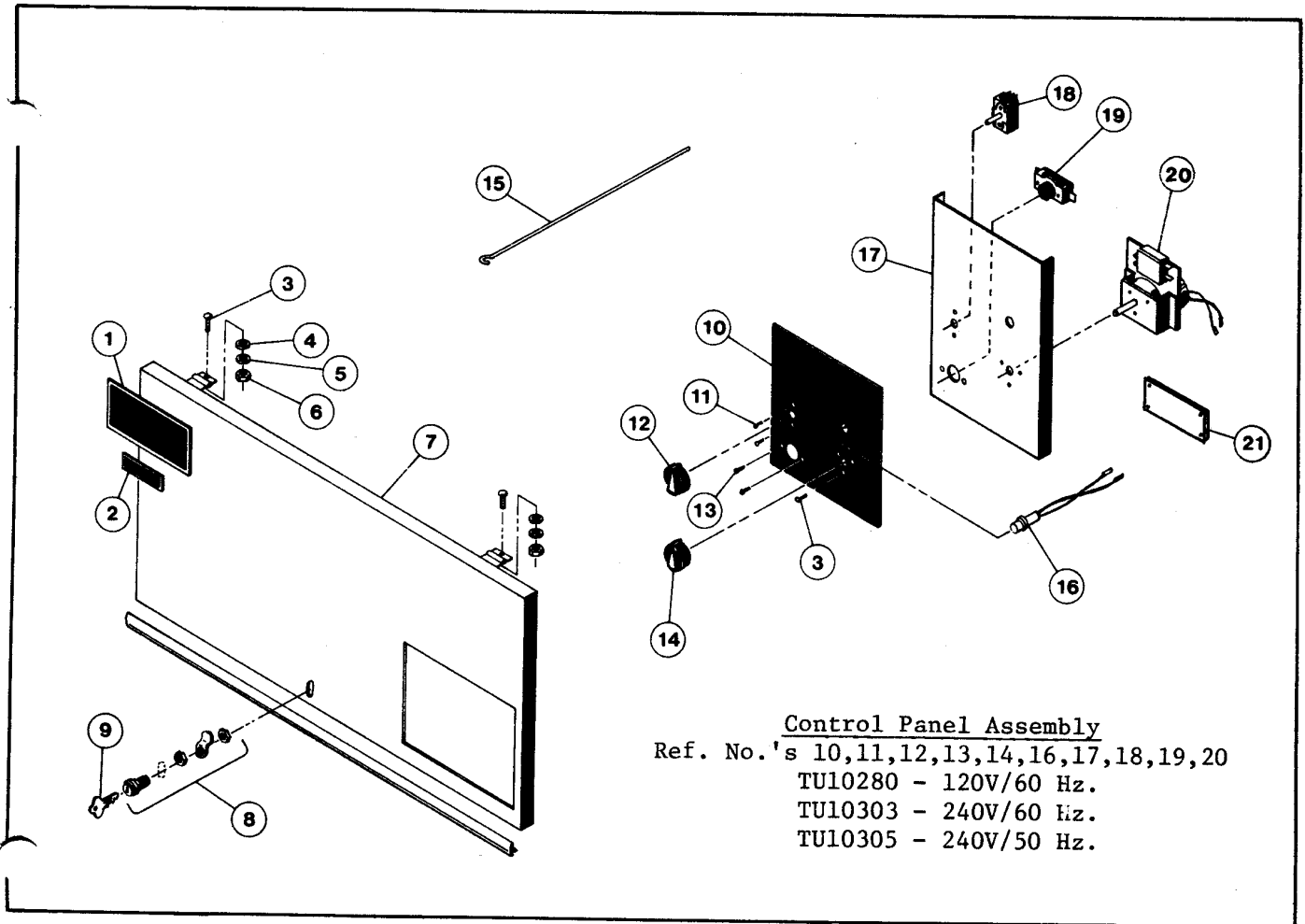
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	TU8013	Cissell Nameplate	16	TU9327	Transformer & Wire Assy.
2	TU3479	#10-32x7/16" Tr. Hd. Screw	17	M270	#6 I.T. Washer
3	P104	1/4" Cut Washer	18	TU3400	#6-32 x 5/16 Hex Nut
4	FB187	#10 Lock Washer	19	TU9028	Push Button Switch
5	TU2842	#10-32 Hex Nut	20	TU9525	#6-32x $\frac{1}{2}$ Tamper Proof Screw
6	TU9391	Access Door W/A*	21		
7	TU9386	Lock - JWC3	22		
7A	TU8995	Cam	23	TU9329	Computerized C/M Control
8	TU9387	Key - JWC3	24	TU9347	P.C. Board Support
9	TU8935	Knob	25	TU9030	Temp. Selector Switch
10	- - -	** Coin Rejector (Specify Denomination & Number of Coins)	26		
11	TU9426	4-40x5/8 Machine Screw	27	TU9286	Control Panel
12	TU9427	4-40 Hex Nut	28	TU9514	Reset Label
13	TU9328	Digital Display Assembly	29	TU5421	Neon Indicator Lamps 110V
14	TU9326	Battery Pack	30	TU7959	Chrome Trim
15	TU3624	#6-32x $\frac{1}{2}$ Rd. Hd. Screw	31	TU5739	Door Support Arm
			32	TU9302	Control Panel Nameplate
			33	TU9448	Wire Harness - 10¢ Coin Switch
				TU9449	Wire Harness - 25¢ Coin Switch
			34	TU8629	Terminal Board

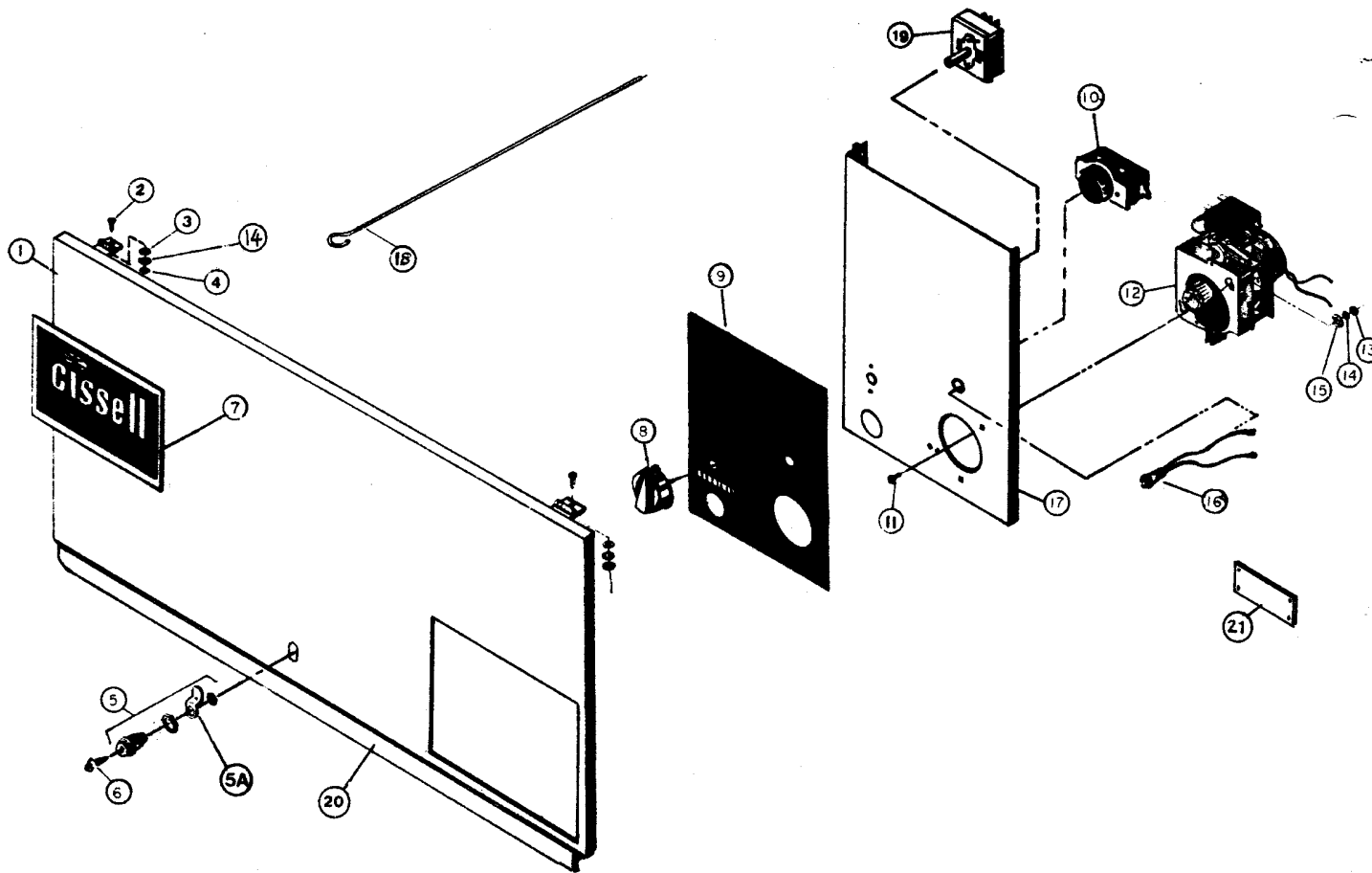
*TU10011 - Access Door Asm. Consists of Ref. No. - 1,6,7,7A,8,30,31

**TU9897 - 10¢ Coin Switch Replacement
 TU9898 - 25¢ Coin Switch Replacement

SINGLE TIMER CONTROL PANEL & ACCESS DOOR PARTS

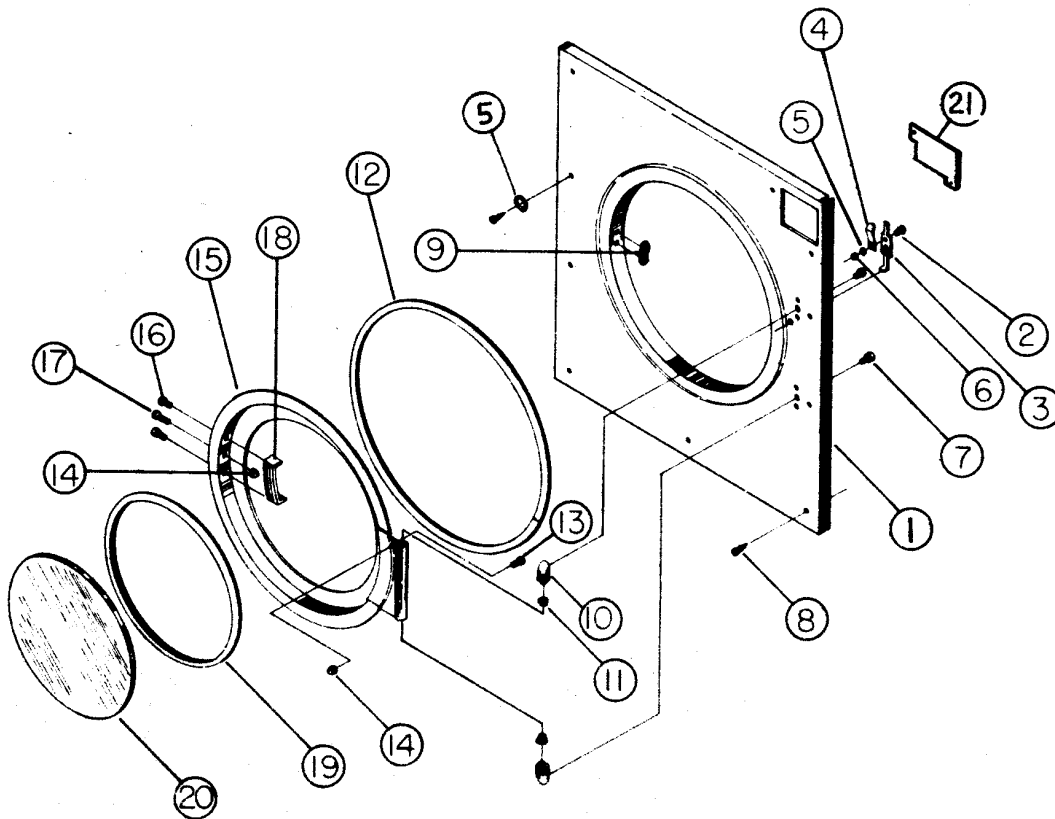
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	TU8013	Cissell Nameplate	14	TU2555	Timer Knob
2	TU8014	Therm-O-Cool Nameplate	15	TU5739	Support Rod
3	TU3479	#10-32x7/16" Tr. Hd. Screw	16	TU5421	Pilot Light - 120V.
4	P104	1/4" Cut Washer		TU5639	Pilot Light - 240V.
5	FB187	#10 Lock Washer	17	TU10278	Control Panel Plate
6	TU2842	#10-32 Hex Nut	18	TU9030	Temp. Selector Switch
7	TU9391	Access Door W/A	19	TU9028	Push Button Switch
8	TU9386	Lock Asm. JWC3	20	TU6109	Timer, 120V., 60 Hz.
9	TU9387	Key JWC3		TU5842	Timer, 240V., 60 Hz.
10	TU10279	Control Panel Nameplate		TU6083	Timer, 240V., 50 Hz.
11	TU3624	#6-32x1/4 Rd. Hd. Screw	21	TU8629	Terminal Board
12	TU8935	Selector Knob			
13	TU9525	#6-32x1/4 Tamper Proof Screw			





ACCESS DOOR & CONTROL PANEL - ELECTRO-MECHANICAL COIN METER

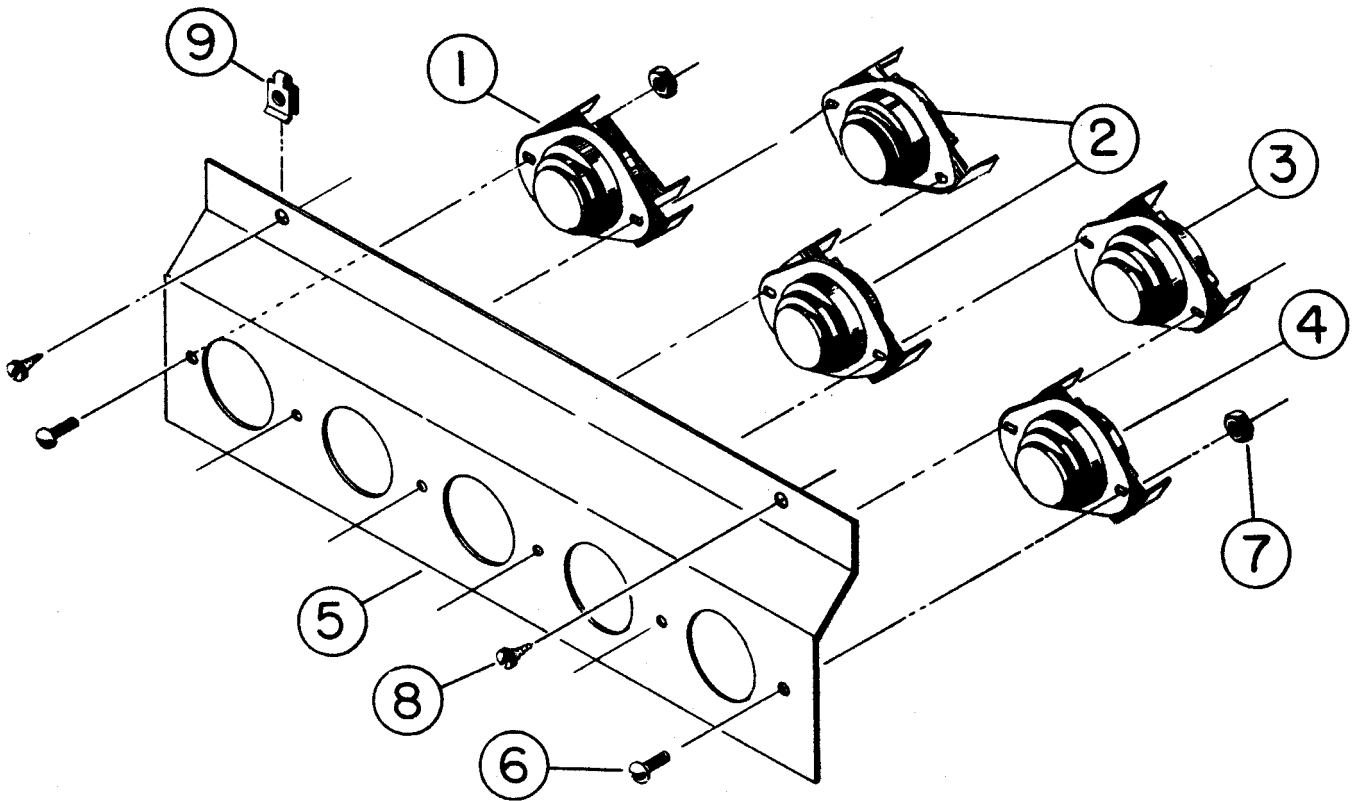
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	TU9391	Access Door Weldment	12	---	Coin Meter (Specify Voltage, Coin Denomination, Single or Double Slot).
2	TU3479	#10-32x7/16" Tr. Hd. Screw	13	TU3266	#8-32x11/32 Hex Nut
3	P104	1/4" Cut Washer	14	FB187	#10 Lock Washer
4	TU2842	#10-32 Hex Nut	15	P104	1/4" Cut Washer
5	TU9386	Lock-JWC3	16	TU5421	Indicator Lamp - 120V.
5A	TU8995	Cam		TU5639	Indicator Lamp - 240V.
6	TU9387	Key - JWC3	17	TU8941	Control Panel Weldment
7	TU8013	Cissell Nameplate	18	TU5739	Support Rod
8	TU8935	Knob Assembly	19	TU9030	Temperature Select Switch
9	TU9034	Control Panel Nameplate	20	TU7959	Chrome Trim
10	TU9028	Push Button Switch	21	TU8629	Terminal Board
11	TU4958	#8-32x3/8 Machine Screw			



FRONT PANEL & DOOR ASSEMBLY

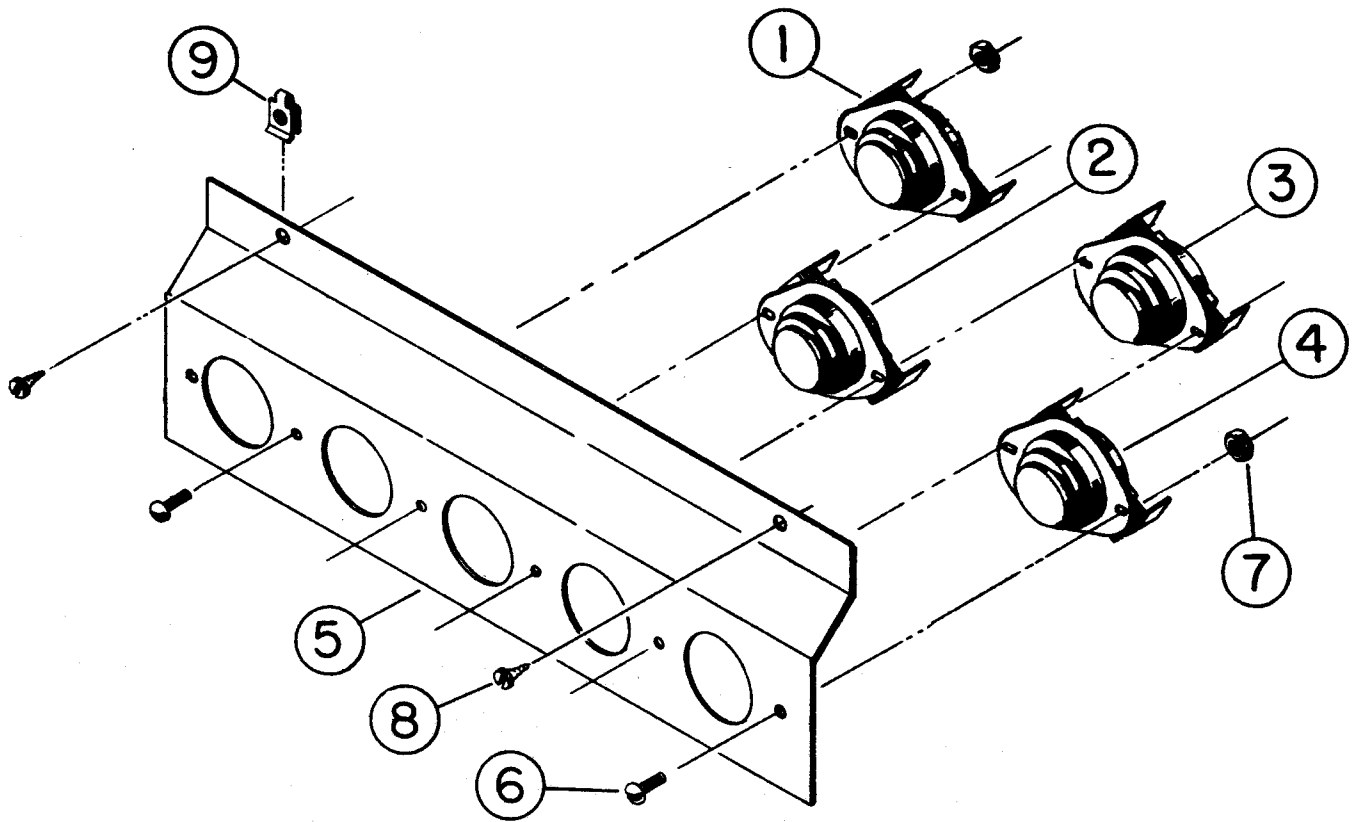
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	TU10763	Front Panel W/Door Catch	12	TU8994	Basket Door Seal
2	M262	#8-32x3/8" Truss Hd. Screw	13	TU4839	#10-32x3/8" Machine Screw
3	TU2194	Door Switch Actuator	14	TU4840	#10-32 Hex Crown Nut
4	TU2105	Door Switch Spring	15	TU7171	Basket Door
5	FB187	#8 Split Lockwasher	16	TU3215	#10-32x3/8 Taptite Screw
6	TU3266	#8-16 Hex Nut	17	TU3163	Catch Pin
7	TU2836	5/16"-18x1/2" Hex Hd. Screw	18	TU2874	Basket Door Handle
8	TU2878	#10x5/8" S.M.S.	19	TU10184	Rubber Gasket
9	TU7456	Door Catch Asm.	20	TU7862	Door Glass
10	TU2236	Hinge Post	21	TU6336	Filler Plate (Timer Model Only)
11	PIF172	Delrin Bearing			

Note: TU4827 - Actuator Asm. Consists of Ref. No. 2, 3, 4, 5, & 6.
 TU7172 - Door Asm. Consists of Ref. No. 11-20.



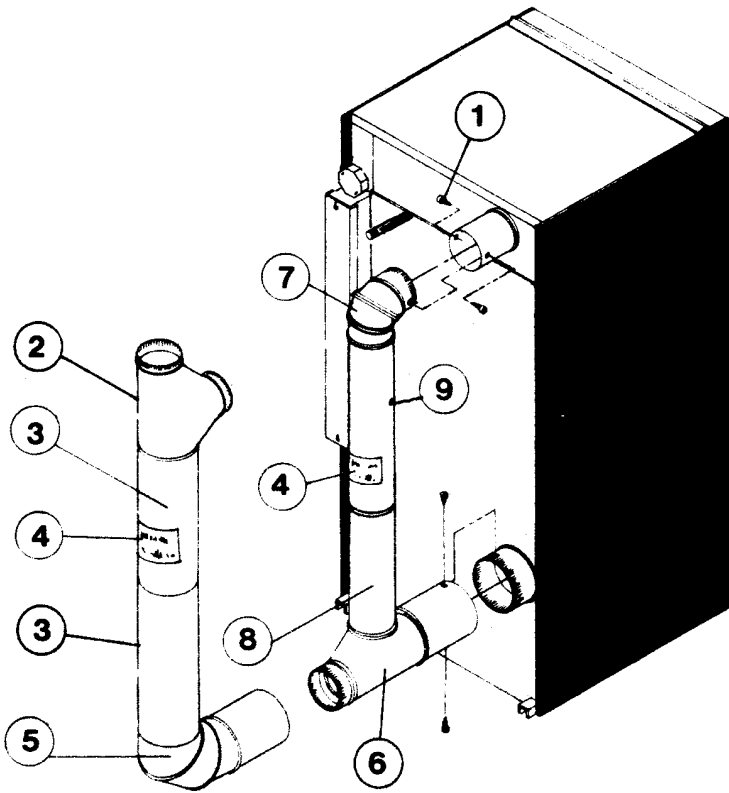
TU10285 - THERMOSTAT ASSEMBLY (TIMER MODELS)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU2045	Cool-Down Thermostat
2	TU3240	185°F. Thermostat (2 ea.)
3	TU5150	150°F. Thermostat
4	TU7244	135°F. Thermostat
5	TU5143	Mounting Bracket
6	TU3624	#6-32x1/4" Rd. Hd. Screw (6 ea.)
7	TU3400	#6-32 Hex Nut
8	TU7733	#8x1/2" Self Drill Screw
9	TU6067	#8 Speed Nut (2 ea.)



TU9111 - THERMOSTAT ASSEMBLY (COIN METER MODELS)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU3240	Safety High Limit Thermostat
2	TU3240	185°F. Thermostat
3	TU5150	150°F. Thermostat
4	TU7244	135°F. Thermostat
5	TU5143	Mounting Bracket
6	TU3624	#6-32x $\frac{1}{2}$ " Rd. Hd. Screw (6 ea.)
7	TU3400	#6-32 Hex Nut
8	TU7733	#8x $\frac{1}{2}$ Self Drill Screw
9	TU6067	#8 Speed Clip (2 ea.)

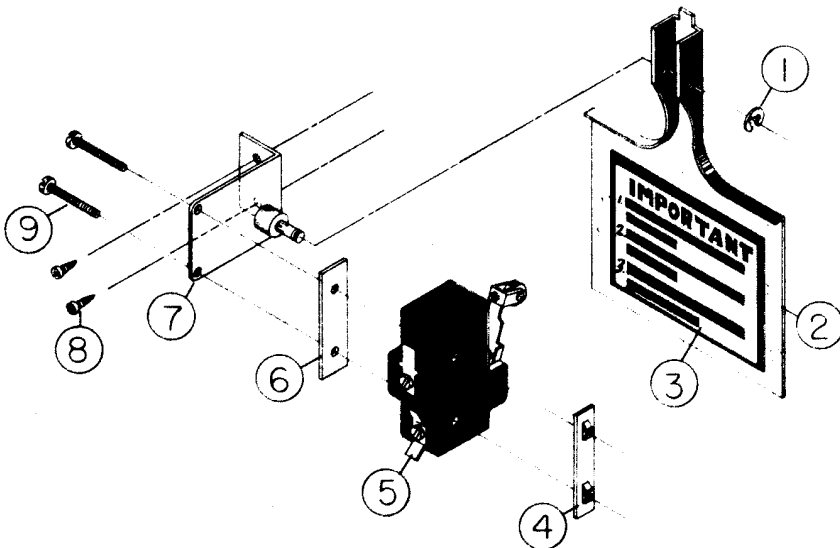


RECIRCULATING DUCT ASSEMBLY
 TU-10269 - VERTICAL ASSEMBLY COMPLETE
 TU-10336 - HORIZONTAL ASSEMBLY COMPLETE

REF. NO.	PART NO.	DESCRIPTION
1	TU-7733	#8X1/2" SELF DRILL SCR
2	TU-8052	TEE - 8"X6"X6"
3	TU-8176	PIPE - 8"X 17 1/2"
4	TU-9161	INSTALLATION LABEL
5	TU-10268	ELBOW - 8"
6	TU-10335	TEE - 8"X6"X6"
7	TU-8053	ELBOW - 6"
8	TU-8054	PIPE - 6" X 15 1/2"
9	TU-8055	PIPE - 6" X 23 1/2"

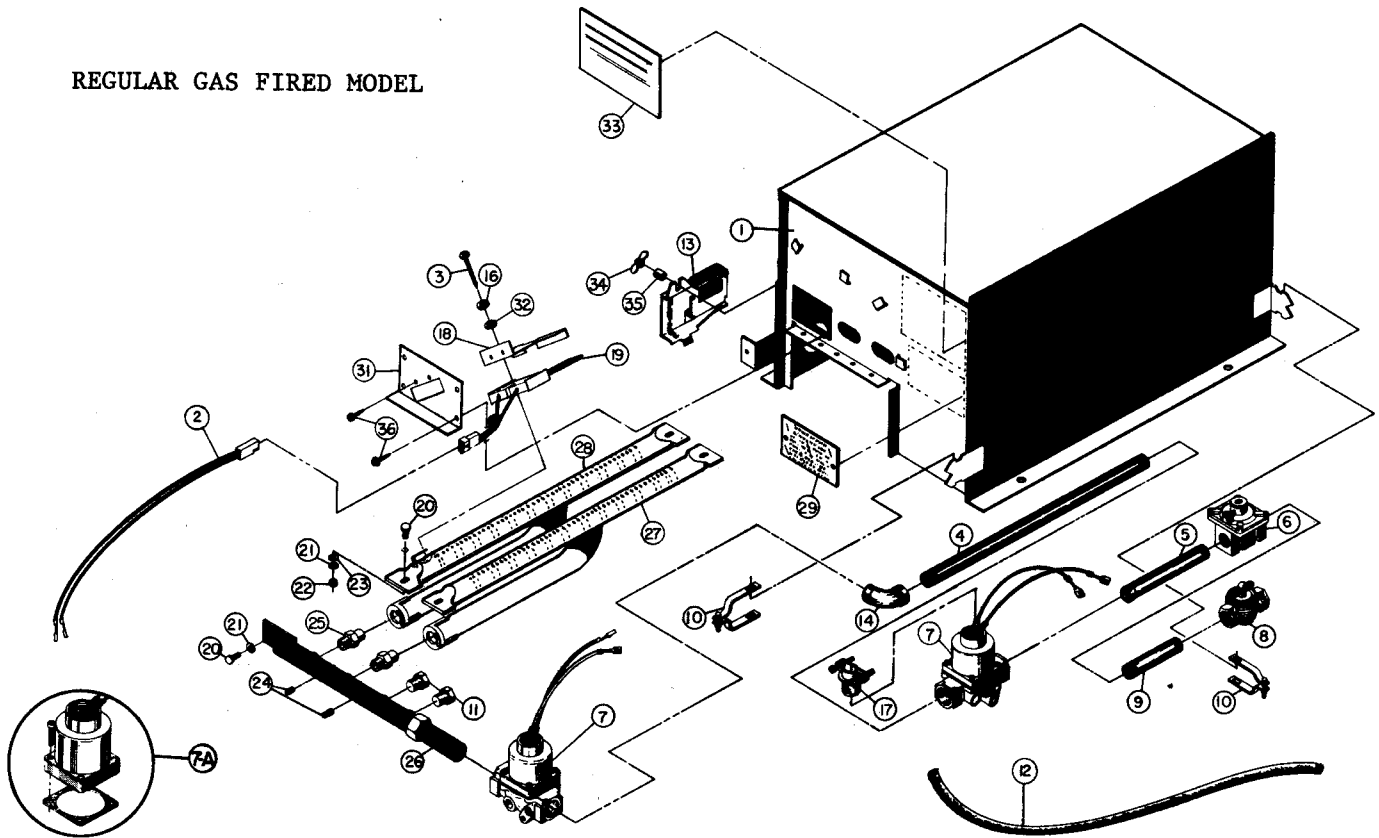
TU8206 AIR SWITCH ASS'Y.

REF PART DESCRIPTION
 NO. NO.



1. F888 "E" RING
2. TU2463 ACTUATOR ARM
3. TU3476 AIR SWITCH DECAL
4. TUI771 #6 TINNERMAN NUT
5. TU8155 AIR SWITCH
6. TUI770 INSULATOR
7. TU8171 AIR SWITCH BRACKET
8. TU7733 #8-18X 1/2" SELF-
DRILLING SCREW
9. TU3219 #6X1" ROUND HD. S.M.S.

REGULAR GAS FIRED MODEL

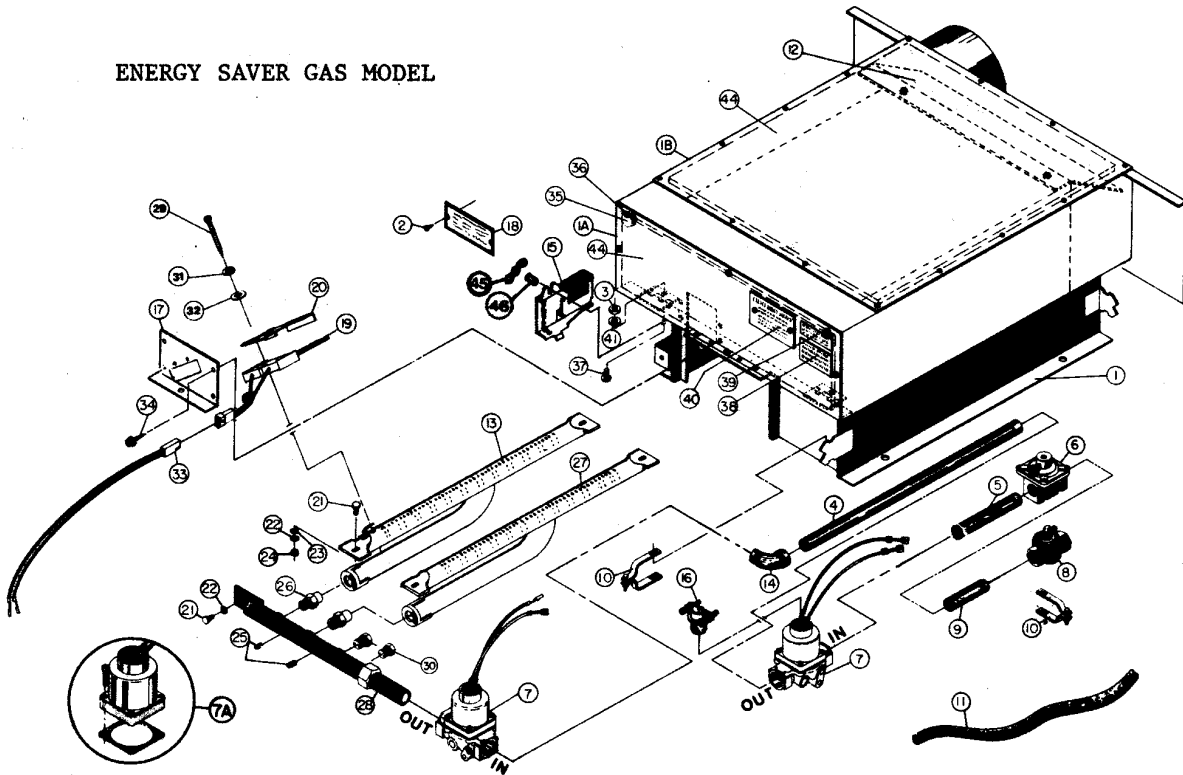


GAS BONNET & BURNER ASSEMBLY- TU8781 (Natural Gas)
 GAS BONNET & BURNER ASSEMBLY- TU8834 (L.P. Gas)

All Hardware Sold Only in Packages of 6

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	TU8631	Bonnet Welded Assy.	20	CB36	1/4"-20 x 1/2" Hex Hd. Screw
2	TU8605	Molex Connector	21	TU2846	1/4" Split Lockwasher
3	TU3416	#8x1 1/2 S.M.S.	22	TU4934	1/2"-20 Hex Nut
4	TU2724	1/2" Pipe Nipple- 25"	23	TU2847	1/2" Flat Washer
5	OP308	1/2" Pipe Nipple- 4"	24	TU2224	1/8" Pipe Plug (for manifold test hole)
6	TU7935	Regulator(nat'l gas only)	25	TU3539	Gas Burner Orifice(Specify Size)
7	TU6557	Baso Gas Valve	26	TU8288	Manifold Assembly
7A	TU3832	Baso Gas Valve Coil Assy.	27	TU7840	Burner Assy.(right hand)
8	TU6321	Gas Cock	28	TU8760	Burner Ignition(left hand)
9	OP290	1/2" Nipple- 2"	29	TU8613	Norton Igniter Instructions
10	TU2226	Manifold Mounting Bracket	30	OP290	1/2" Pipe Nipple- 2"
11	TU10946	Manifold Plug	31	TU8690	Norton Igniter Plate
12	136067752	Fiberglass Tubing	32	TU4820	3/16 x 1/2 x .047 Cut Washer
13	TU8598	Radiant Sensor	33	TU8645	Installation Instructions
14	OP291	1/2" Street Elbow	34	TU10292	Wing Nut
15	TU3266	#8-32 Hex Nut	35	TU10286	Spacer
16	M271	Lockwasher-Brass	36	602102180	8x1/2 Hex Hd. Slot Screw
17	Cl356	Connector T & B			
18	TU9540	Heat Shield			
19	TU8596	Norton Igniter			

ENERGY SAVER GAS MODEL



GAS BONNET & BURNER ASSEMBLY- TU9110 (Natural Gas)

GAS BONNET & BURNER ASSEMBLY- TU9157 (L.P. Gas)

All Hardware Sold Only in Packages of 6

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	TU9048	Bonnet Welded Assy.	21	CB36	1/2"-20 x 1/2" Hex Hd. Screw
1A	TU8651	Door & Hinge W/A	22	TU2846	1/2" Split Lockwasher
1B	TU7775	Top Panel (for TU8640 order separately)	23	TU2847	1/2" Flat Washer
2	TU7733	#8 x 1/2" Self- Drill Screw	24	TU4934	1/2"-20 Hex Nut
3	TU2842	#10-32 Hex Nut	25	TU2224	1/8" Pipe Plug
4	TU2724	1/2" Pipe Nipple-25"	26	TU3539	Gas Burner Orifice (Specify Size)
5	OP308	1/2" Pipe Nipple-4"	27	TU7840	Burner Assembly
6	TU7935	Regulator (nat'l gas only)	28	TU8288	Manifold Assembly
7	TU6557	Baso Gas Valve	29	TU3416	#8x1 1/2 S.M.S.
7A	TU3832	Baso Gas Valve Coil Assy.	30	TU10946	Manifold Plug
8	TU6321	Gas Cock	31	M271	Lockwasher Brass
9	OP290	1/2" Pipe Nipple-2"	32	TU4820	3/16 x 1/2 x .047 Cut Washer
10	TU2226	Manifold Mtg. Bracket	33	TU8605	Molex Connector
11	136067752	Fiberglass Tubing	34	602102180	8x1/2" Hex Hd. Slot Screw
12	TU7294	Upper Rear Air Deflector	35	TU2877	#10 Tinnerman Nut
13	TU8760	Burner (Ignition, Left Hand)	36	TU2878	#10x5/8" S.M.S.
14	OP291	1/2" Street Elbow	37	TU3479	#10-32x7/16" Truss Hd. Screw
15	TU8598	Radiant Sensor	38	TU8613	Norton Igniter Instructions
16	C1365	Co-connector T & B	39		Gas Rating Plate
17	TU8690	Norton Igniter Mtg. Plate	40	TU8645	Installation Instructions
18	TU7373	Clean Out Panel Nameplate	41	P104	1/2" Cut Washer
19	TU8596	Norton Igniter	42	TU3266	8-32 Hex Nut
20	TU9540	Heat Shield	43	AT383	8-32 x 1/2" Truss Hd. Scre
			44	TU2853	Gasket Material
			45	TU10292	Wing Nut
			46	TU10286	Spacer

