

STARMASTER COUNTER GAS FRYER MODEL 401-A

GENERAL INSTALLATION DATA

The fryer is equipped for the types of gas indicated on the nameplate mounted on the inside of the front door panel.

GAS INPUT OF FRYER

FOR NATURAL GAS — 28,000 BTU/HR

FOR PROPANE GAS — 28,000 BTU/HR

NATURAL GAS UNITS are equipped with a gas pressure regulator. (See adjustment instructions.)

PROPANE GAS UNITS are not equipped with a gas pressure regulator. However, be sure that the pressure regulator on the bottle or tank of propane gas is set for 11" water column pressure and check manifold pressure when all units on the line are operating.

INSTALLATION

The installation of the appliance should conform to the
AMERICAN NATIONAL STANDARD Z223.1 - 1974,
NATIONAL FUEL GAS CODE AND ALL
LOCAL GAS COMPANY RULES AND REGULATIONS

For your protection, we recommend that a qualified installing agency install this appliance. They should be experienced in such work, familiar with all precautions required, and have complied with all the requirements of the authority having jurisdiction.

CHECKING FOR GAS LEAKS

Soap and water solution, or other material acceptable for the purpose, shall be used in locating gas leakage. MATCHES, CANDLES, FLAME, OR OTHER SOURCES OF IGNITION SHALL NOT BE USED FOR THIS PURPOSE.

LEVELING UNIT

Level unit by adjusting the (4) feet, which have an adjustment of 1". CAUTION: DO NOT REMOVE FEET.

AIR INTAKES IN BOTTOM

Make certain that the air intake opening in the bottom of the appliance is not obstructed. It is essential for proper combustion and operation of the appliance.

CONNECTING GAS SUPPLY LINE

The gas inlet on this appliance is sealed at the factory to prevent entry of dirt. Do not remove this seal until actual connection is made to the gas supply line.

EXHAUST CANOPY

It is essential that facilities be provided over the fryer to carry off fumes and gases. However, the unit should not be directly connected to a flue or stack.

GAS PIPING

Gas piping shall be new, clean, and of such size and so installed as to provide a supply of gas sufficient to meet the full gas input of the appliance. If the appliance is to be connected to existing piping, it shall be checked to determine if it has adequate capacity. Joint compound (pipe dope) shall be used sparingly and only on the male threads of the pipe joints. Such compounds shall be resistant to the action of L.P. gases. WARNING: Any loose dirt or metal particles which are allowed to enter the gas lines on the appliance will damage the automatic valve and affect its operation. When installing this appliance, all pipe and fittings must be free from all internal loose dirt.

MANUAL SHUT OFF VALVE

A manual shut off valve should be installed upstream from the fryer, within six feet of the appliance and be readily accessible.

VERTICAL CLEARANCE

A vertical distance of not less than 48" shall be provided between the top of the appliance and combustible material.

MINIMUM CLEARANCE

Minimum clearance from combustible material 6" from sides and 6" from back.

INITIAL STARTING OF FRYER

CLEAN KETTLE

Clean protective oil from interior of kettle with a solution of washing soda or equal. Drain through valve in bottom and rinse thoroughly with clear water and dry completely before filling with oil.

DRAIN VALVE

Make certain it is closed before adding fat.
CAUTION: DO NOT HEAT AN EMPTY KETTLE

ADD FAT

Kettle holds approximately 18 lbs. fat. MELT SOLID FAT, OR SHORTENING, BEFORE FILLING FRYER. Never attempt to use solid shortening to fill kettle. Fill kettle 2" above tubes. A higher fat level can be used when frying bulky foods, such as chicken or fish cakes. The level should be chosen carefully so that the foaming action of the fat does not spill out of kettle.

LIGHTING FRYER - Light fryer as per Lighting Instruction Plate, mounted on the inside of the cabinet door.

TO TURN GAS "OFF" TO MAIN BURNERS AND PILOT BURNER - Pull out locking button and turn valve handle to "OFF" position.

OVERNIGHT SHUTDOWN - Turn handle of combination control to the "PILOT" position. This will maintain the safety pilot and also prevent any gas from reaching the main burner. To activate the unit, turn the combination control handle to the "ON" position.

CAUTION: DO NOT ATTEMPT TO FORCE THE RESET BUTTON OR HANDLE ON BASOTROL VALVE UNDER ANY CIRCUMSTANCES.

CAUTION: HOT FAT IS POTENTIALLY DANGEROUS - DO NOT COME IN DIRECT CONTACT WITH HOT FAT.

GENERAL FRYING DATA

FOR BEST FRYING RESULTS

1. Strain breading and burned particles from the fat at least once a day, more often if necessary. Use filter bag, filter cone, or the "STAR" mechanical filter.
2. Do not salt foods over the fry kettle.
3. Don't hold the frying fat at frying temperatures for long periods of time without any frying taking place.
4. Always use the best frying oils.

BEFORE FRYING:

1. Have the foods free from too many loose crumbs, to help prevent build up of carbonized material in fry kettle.
2. Have the foods free from an excessive amount of moisture to eliminate too much bubbling.
3. Use the proper breading or batter to brown the foods properly. If prepared breading mixes are used, select good quality breading mix and follow the directions on the package.
4. Do not overload baskets. Pieces should not touch when frying. Shake basket to prevent food from sticking together. Fry similar size food pieces at the same time to serve uniformly finished servings.

FRYING INSTRUCTIONS

Turn the thermostat knob to the desired frying temperature.

LOWERING BASKET

When the fat has reached the proper temperature, lower the basket and food slowly into the fat. When moist food is lowered too quickly into hot fat, the fat will foam and spatter excessively.

DRAINING BASKET

After the food has finished frying, raise the baskets and hang them up to allow excess fat to drain back into kettle.

IDLING

During idle periods, lower the temperature setting of the thermostat to approximately 250°. It is not necessary to maintain full cooking temperature during idle periods, for the fat can be reheated quickly to the desired temperature. This procedure will result in longer fat life and less gas consumption.

NOTE: See the handy frying chart for recommended temperatures and time required to properly fry various foods as well as procedures and coating suggestions.

GENERAL MAINTENANCE TIPS

1. DO NOT fire with fat level below top of tubes.
2. DO NOT fry foods in excess of 385°F.
3. DO NOT overfill your fry kettle.
4. DO NOT allow burned crumbs to accumulate.
5. DO melt solid fat or shortening before filling fryer.
6. DO keep kettle filled to capacity at all times (2" above tubes.)
7. DO use correct fry fats and shortening, and follow temperature recommendations.
8. DO filter fat and clean fry kettle daily.

DRAINING KETTLE

REMEMBER - HOT OIL IS DANGEROUS -
TAKE CARE - TURN FRYER "OFF."

Drain fat from kettle only when fat is up to cooking temperature and fat under tubes is hot and liquid. A cold fryer heated up will not drain properly. Use a stick, if necessary, to stir up cold fat in bottom of kettle.

STRAINING FAT

Slip filter bag over end of drain valve nipple and tie in place with a bow knot so it will not slide off. Place a receptacle under bag and slowly open drain valve. When the kettle is empty, use a small pot to pour hot oil vigorously around sides, tubes, and bottom of kettle to wash out crumbs, etc.-- Continue to pour until all crumbs, etc. are washed into filter bag. Remove filter bag and wash for next use. Close drain valve, and pour fat back into kettle.

PROPER CLEANING OF KETTLE

1. Drain fat from fryer while it is up to cooking temperature.
2. Rinse to remove all loose residue and crumbs.
3. Fill with water. Bring to a boil and add a fryer cleaner. Boiling time will depend on condition of the fryer (30 minutes to 2 hrs., or until clean.)
4. Turn heat off, drain and rinse with clear water until clean.
5. Use a vinegar rinse (2 to 3 cups) stir, drain, and rinse thoroughly with clear water.
6. Wipe kettle with a soft cloth and allow to thoroughly dry.
7. Add fat. Melt solid fat or shortening before filling fryer. Never attempt to use solid shortening to fill kettle. The Shortening Must Be Liquid. Fill kettle a minimum of 2" above tubes.

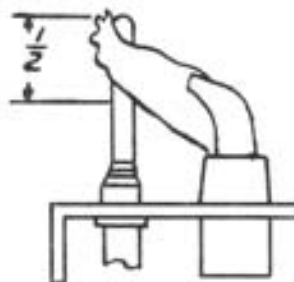
CLEANING THE EXTERIOR (Stainless Steel Only)

The exterior surface can be kept clean and attractive by regularly wiping it with a clean soft cloth. Any discoloration can be removed with a nonabrasive cleaner. Enameled parts may be washed with any good detergent.

ADJUSTMENTS

GAS SAFETY PILOT

1. If pilot flame burns yellow, clean pilot orifice and pilot burner to insure a steady blue flame. The orifice can be cleaned by washing in a solvent such as trichlorethylene and/or blowing out.
2. Flame must surround thermocouple tip for approximately 1/2".
3. Thermocouple lead connection to safety valve must be tight, clean, and free of grease. This is an electrical connection.



TO ADJUST PILOT GAS

1. Open the cabinet door panel.
2. Remove slotted screw cap adjacent to pilot gas outlet.
3. Turn inner screw to right or left to decrease or increase pilot flame. (Flame must surround thermocouple tip approximately 1/2".)
4. Replace slotted cap tightly to prevent gas leakage.

THERMOSTAT CALIBRATION

1. Pull thermostat knob forward and remove from shaft.
2. Turn screw in center of shaft to decrease or to increase temperature. NOTE: 1/8 turn of this screw will change the fat temperature approximately 15°F.
3. Replace thermostat knob.

HIGH LIMIT THERMOSTAT

This control will shut off all gas to the unit in the event the fat reaches a temperature in excess of 435°F. IT IS NOT ADJUSTABLE. The pilot will have to be lighted if this occurs. See lighting instruction plate on unit. Should high limit control activate twice in a short period of time, the primary thermostat should be checked for malfunction.

GAS PRESSURE REGULATOR

This regulator is factory set for 3-1/2" of water column pressure. If it should be necessary to check the manifold gas pressure, remove the 1/8" pipe plug from the front part of the burner manifold for attaching a pressure gauge. To adjust gas pressure, remove the cap from the pressure regulator and turn the screw to the right to increase and left to decrease the gas pressure to its proper setting and replace cap.

COMPLAINT

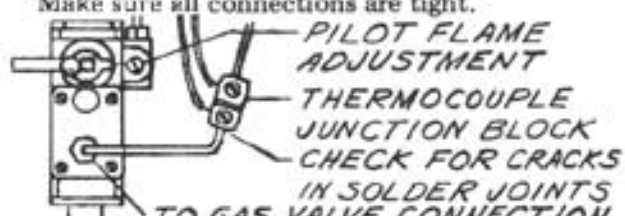
POSSIBLE CAUSE

CORRECTION PROCEDURE

1. Gas pilot light will not remain lit.

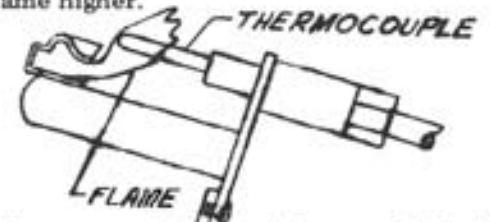
1. Flame being blown out by draft.
2. Loose connections at thermocouple junction block or thermocouple to gas valve connection.
3. High limit thermostat cycling off at less than preset temperature.
4. Cracked solder joints at thermocouple junction block.
5. Gas pilot light flame adjusted too low.

1. Check for downdraft through the fryer flue.
2. Check for updraft through front of unit and up flue with door open and exhaust system on.

1. Make sure all connections are tight.
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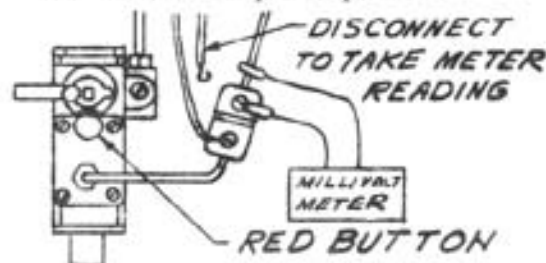
1. Check for damaged capillary bulb and tube.
2. If no damage, jumper thermocouple junction block, and relight pilot.
3. If pilot remains lit, replace high limit.
4. Be sure to remove jumper wire from thermocouple junction block after the above test. If not, the high limit thermostat will be by-passed, creating a fire hazard.

1. Check visually and resolder if questionable. Alternate method, disconnect high limit wires and check block for continuity with ohm meter.
1. Gas flame must surround thermocouple. Adjust pilot flame higher.



1. Check thermocouple for a minimum of 17 millivolt output with circuit open. Disconnect wire to high limit thermostat and connect millivolt meter as shown. Hold red button on gas control in, light pilot and keep pilot lit until highest meter reading is obtained. Replace thermocouple if less than 17 millivolt output.

6. Thermocouple output low.



COMPLAINT

POSSIBLE CAUSE

CORRECTION PROCEDURE

1. Gas pilot light will not remain lit.
(continued)

7. Wrong pilot orifice.

1. Should be drilled No. 74 (.0225) for Natural Gas and No. 80 (.013) for Propane Gas.

2. Little or no flame at burners.

1. Gas valve or thermostat turned off.

1. Turn valves to on position.

2. Wrong type gas being used.

1. Check unit rating plate on inside of door for type gas.

3. Low gas input pressure.

1. Check input to unit. Input is 28,000 BTU/hr. at 7½" W.C. for Natural Gas and 28,000 BTU/hr. at 11" for Propane Gas.

3a. Low gas supply.

1. Check supply line for size to carry volume of all units on the supply without starving this unit.

4. Safety valve not assembled properly.

1. Remove operator. Check seat for damage and reassemble properly.



5. Pressure regulator not operating properly.

1. Check manifold pressure with gas valve and thermostat turned on. Pressure should be 3½" W.C. Adjust, if necessary. Manifold pressure should be 11" W.C. for propane.

6. Regulating thermostat.

1. Check manifold pressure with gas valve and thermostat on. Pressure should be 3½" W.C.

7. Burner orifice size incorrect

1. Orifice should be drilled No. 47 (.0785) for Natural Gas and No. 56 (.0465) for Propane Gas.

3. Too high a flame at burner.

1. Wrong type gas being used.

1. Check unit rating plate on inside of door for type of gas.

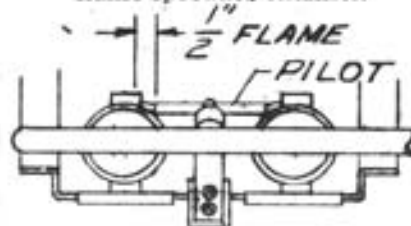
2. Burner orifice size incorrect

1. Orifice should be drilled No. 47 (.0785) for Natural Gas and No.56 (.0465) for Propane Gas.

4. Slow burner ignition or noisy burner ignition

1. Pilot flame set too low.

1. Set pilot flame to extend ½" beyond end of flame spreader channel.



COMPLAINT

5. Unit does not reach or maintain fat temperature of thermostat knob setting.

POSSIBLE CAUSE

1. High limit thermostat cycling off at less than preset temperature.
2. Regulating thermostat capillary bulb mislocated or improperly mounted.
3. Thermostat calibrated incorrectly.

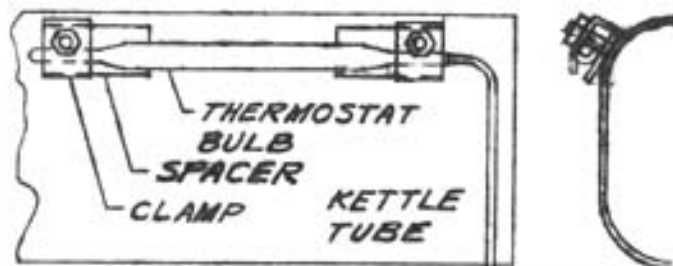
CORRECTION PROCEDURE

1. Check for damaged capillary bulb and tube.
2. Disconnect lead wires of high limit at thermocouple junction block and temporarily jumper block.
3. Place an ohm meter across the high limit leads. The meter should show continuity.
4. Heat fat in kettle to 415°F. If thermostat opens before 415°F, replace it.

Be sure to remove jumper wire from thermocouple junction block after above test. If not, the high limit thermostat will be by-passed, creating a fire hazard.

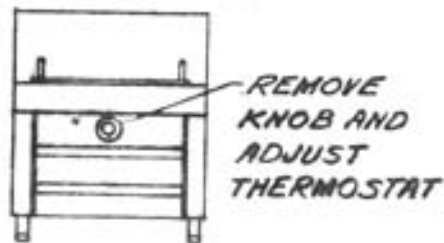
1. Check for loose or missing bulb mounting studs, clamps, and spacers.
2. Spacers must be placed between the kettle tube and thermostat bulb's largest dia. at each clamp.

Bulb must be below the mounting studs. See Sketch.

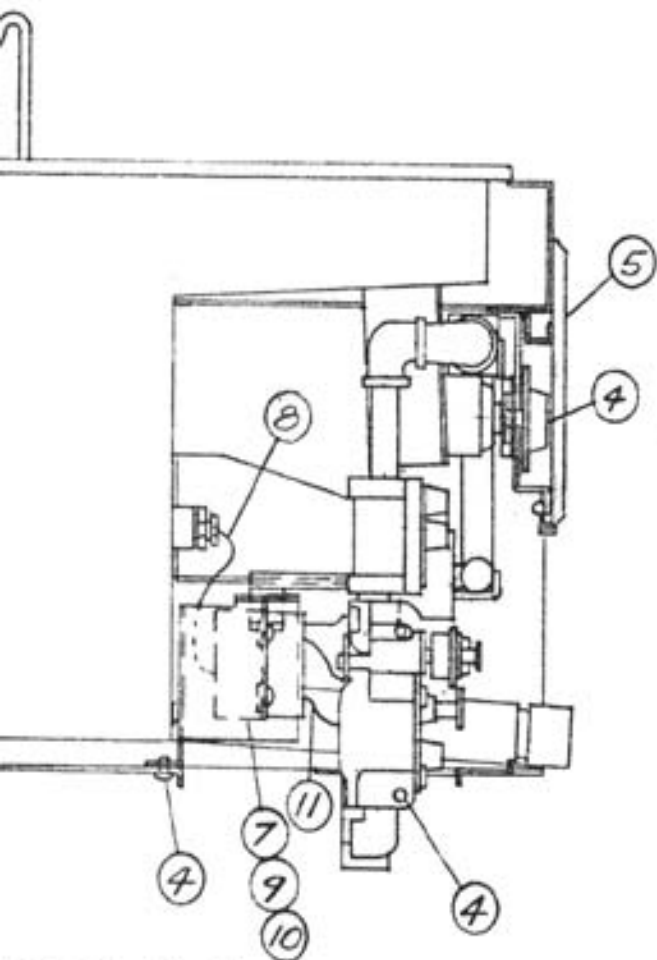


3. If studs are missing, adapter bands can be ordered (Part No. 401058).
4. Remount and recheck thermostat cycling temperature.

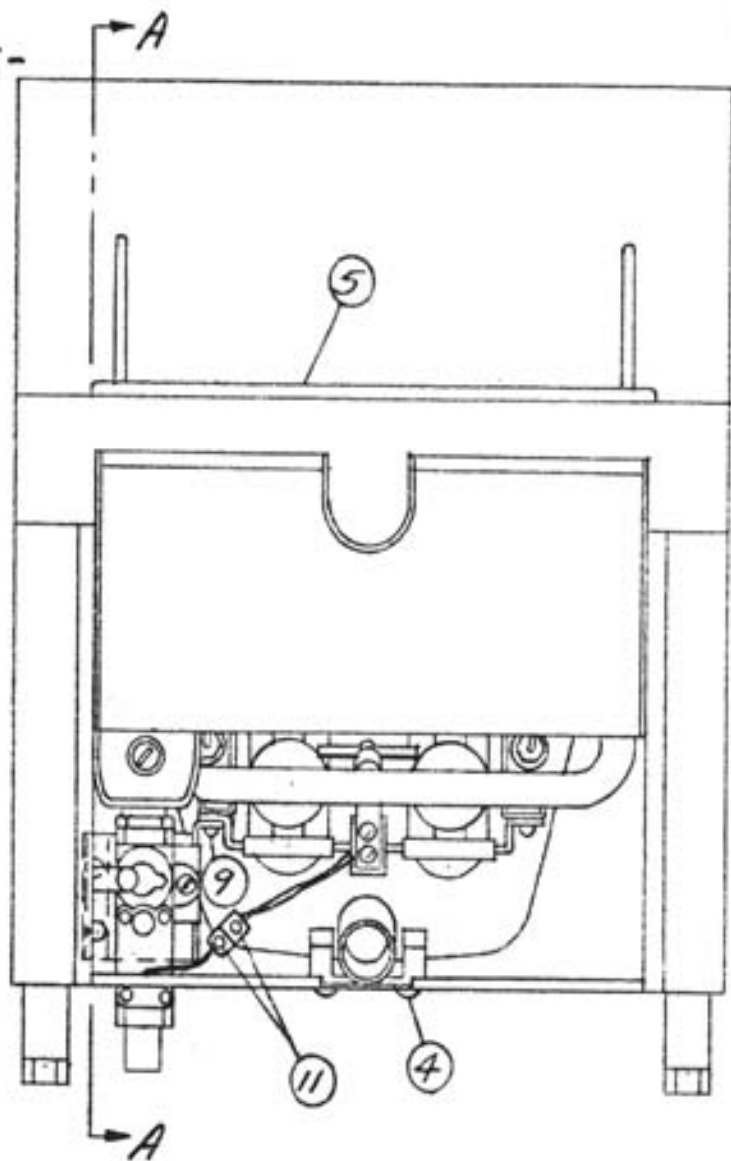
1. Recalibrate thermostat by removing knob and adjusting screw in center of the knob stem, per "Operating Instructions" manual.



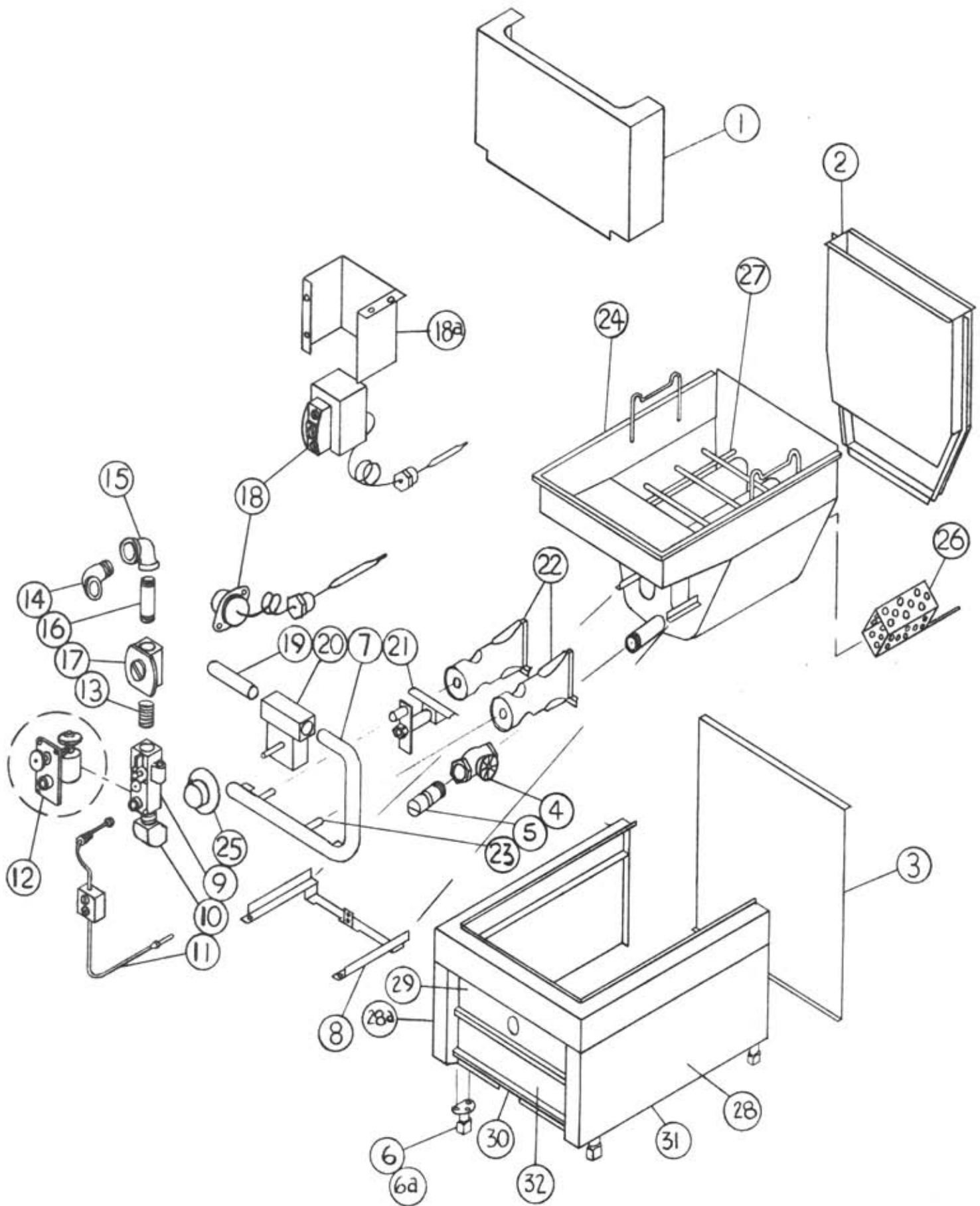
SAFETY THERMOSTAT REPLACEMENT INSTRUCTIONS FOR 401A



VIEW A-A



1. Drain fat from fryer.
2. Shut off gas supply to fryer, and disconnect fryer from supply line.
3. Remove the back panel of the fryer and the flue front cover. 2 screws, one at each side of the top of fryer at its back, hold the flue cover in place.
4. Remove the thermostat knob by pulling off. Remove four screws from the bottom center of the fryer and one screw from the gas control.
5. Open fryer's door. Lift kettle assembly from body of fryer.
6. Remove faulty thermostat
7. Fasten safety thermostat to bracket supplied with sheetmetal screws.
8. Install new thermostat bulb in kettle with new clamp provided.
9. Remove screw from left side of burner support bracket. Position thermostat and bracket assembly so screw holes in flange of bracket and in burner support bracket align.
10. Fasten brackets together with the screw removed in Step No. 9
11. Using the wires taken from the faulty thermostat, fasten one end of them to the new thermostat at its terminals marked common and normally closed. Fasten the other end of the wires to the two screw terminals on the pilot light thermo-couple junction block.



MODEL 401A

PARTS PRICE LIST

EFFECTIVE— APRIL 1, 1981

MODEL 401A
 STAR MASTER COUNTER FRYER
 SERIAL #4018901 AND UP

| KEY NUMBER | PART NUMBER | DESCRIPTION | NUMBER PER UNIT |
|------------|-------------------|-------------------------------------------------------------------|-----------------|
| 1 | 401046 | FLUE FRONT ASSEMBLY | 1 |
| 2 | Y1978 | BACK FLUE | 1 |
| 3 | Y1979 | BACK PANEL | 1 |
| 4 | 1796 | DRAIN VALVE | 1 |
| 5 | Y2459 | DRAIN FITTING (EXTENSION) | 1 |
| 6 | 115006 | LEG ASSEMBLY (LESS FOOT) | 4 |
| 6a | 7612 | FOOT | 4 |
| 7 | Y1972 | MANIFOLD | 1 |
| 8 | 401037 | BURNER SUPPORT ASSEMBLY | 1 |
| 9 | 8958 | SAFETY CONTROL (BASO H43AB-4) | 1 |
| 10 | Y1760 | FITTING - 90° STREET ELL (BRASS) | 1 |
| 11 | 2J-6726 | THERMOCOUPLE | 1 |
| | E4-404011 | Thermocouple Adaptor | |
| 12 | Y1039 | POWER UNIT N/A REPLACE W/8958 | 1 |
| 13 | 5077 | FITTING - NIPPLE 1-1/4" | 1 |
| 14 | 7760 | FITTING - 90° STREET ELL | 1 |
| 15 | 2665 | FITTING - 90° ELL | 1 |
| 16 | 7758 | FITTING NIPPLE 3/8" | 1 |
| 17 | Y1786 | PRESSURE REGULATOR (MAXITROL RV-30A) NAT. ONLY | 1 |
| 18 | #40096 | SAFETY THERMOSTAT (SERIAL #4018901 TO #4019000) | 1 |
| 18 | #2486 | SAFETY THERMOSTAT (SERIAL #401049 & UP) ROBERTSHAW | 1 |
| 18a | Y2441 | SHIELD - THERMOSTAT *REPLACES #Y2230 | 1 |
| 19 | 4849 | FITTING - NIPPLE | 1 |
| 20 | Y1973 | THERMOSTAT (ROBERTSHAW GS) | 1 |
| 21 | Y2017 | PILOT ORIFICE NAT. | 1 |
| 21 | 9159 | PILOT ORIFICE PROPANE | 1 |
| 21 | Y2294 | SAFETY PILOT | 1 |
| 22 | 401038 | BURNER ASSEMBLY | 2 |
| 23 | Y1620 | ORIFICE BURNER NAT. (DRILLED #47) | 2 |
| 23 | Y1587 | ORIFICE BURNER PROPANE (DRILLED #56) | 2 |
| 24 | 401042 | KETTLE ASSEMBLY | 1 |
| 25 | 9790 | THERMOSTAT KNOB | 1 |
| 26 | 401036 | RADIANT ASSEMBLY | 2 |
| 27 | 401043 | BASKET RACK ASSEMBLY | 1 |
| 28 | Y1982 | RIGHT SIDE PANEL | 1 |
| 28a | Y1983 | LEFT SIDE PANEL | 1 |
| 29 | 401034 | CONTROL PANEL ASSEMBLY | 1 |
| 30 | 401049 | DOOR HANDLE ASSEMBLY | 1 |

*SUGGESTED PARTS STOCKING—

PRICES SUBJECT TO CHANGES WITHOUT NOTICE.

IMPORTANT: WHEN ORDERING SPECIFY VOLTAGE OR TYPE GAS DESIRED
 INCLUDE MODEL AND SERIAL NUMBER—(1) MINIMUM PARTS ORDER—

PAGE 1
 OF 2

STAR MANUFACTURING COMPANY

DIVISION OF PEABODY INTERNATIONAL CORPORATION

9325 OLIVE BLVD., • ST. LOUIS, MISSOURI 63132



PARTS PRICE LIST

EFFECTIVE— APRIL 1, 1981

MODEL 401A
 STAR MASTER COUNTER FRYER
 SERIAL #4018901 AND UP

| KEY NUMBER | PART NUMBER | DESCRIPTION | NUMBER PER UNIT |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------|-----------------|
| 31 | 401053 | BOTTOM PANEL ASSEMBLY | 1 |
| 32 | 401032 | DOOR ASSEMBLY | 1 |
| | 401044 | MANIFOLD ASSEMBLY NAT. (LESS BURNER ASSEMBLY) | 1 |
| | 401045 | MANIFOLD ASSEMBLY PROPANE (LESS BURNER ASSEMBLY) | 1 |
| | Y1976 | PILOT TUBE (NOT SHOWN) | 1 |
| | 3796 | CATCH - BULL (NOT SHOWN) | 1 |
| | 9788 | MAGNETIC CATCH (NOT SHOWN) | 2 |
| | Y2057 | CARTON & LINERS (NOT SHOWN) | 1 |
| | E4-403031 | BASKET - SINGLE (NOT SHOWN) | 1 |
| | 2B-404012 | BASKET, TWIN - RIGHT (NOT SHOWN) | 1 |
| | 2B-404013 | BASKET, TWIN - LEFT (NOT SHOWN) | 1 |
| | 401058 | BULB CLAMP ASSEMBLY COMPLETE | 1 |
| <p>Parts to convert from NAT to LP: (2) Y1587, (1) Y6531, & (1) 9159 Parts to convert from LP to NAT: (2) Y1620, (1) Y2017, & (1) Y1786</p> | | | |

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IMPORTANT: WHEN ORDERING SPECIFY VOLTAGE OR TYPE GAS DESIRED
 INCLUDE MODEL AND SERIAL NUMBER—(1) MINIMUM PARTS ORDER— \$5.00

PAGE 2
 OF 2

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