S T A R M A N U F A C T U R I N G C O M P A N Y
Division of Peabody Galion Corporation
9325 Olive Blvd. - St. Louis, Mo. 63132

MODEL 401, 402 STAR-MASTER GAS FRYERS

INSTALLATION AND OPERATING INSTRUCTIONS

The Star-Master model 401, 402 Fryers are equipped for use with the types of gas specified on the nameplate.

All units are shipped from factory for use on L.P. Gas. The unit can easily be converted for use on Natural Gas. See ADJUSTING BURNER.

GENERAL INSTALLATION

The installation of the Fryer should conform to the AMERICAN STANDARD for the INSTALLATION of GAS APPLIANCES AND ALL LOCAL GAS COMPANY RULES AND REGULATIONS.

INSTALLATION

INPUT:

The gas input must not exceed the B.T.U. per hour specified on the nameplate, namely:

MODEL	B.T.U. PER HOUR
401	28,000
402	30,000

(Gas input can easily be checked by your local gas company)

WARNING

Any loose dirt or particles which are allowed to enter the gas line on this appliance will damage the automatic safety valve and affect its operation. All pipe fittings must be clean and free from internal dirt before being connected to the fryer. A minimum of pipe joint compound should be used on male threads only.

The gas inlet on this unit is sealed at the factory to prevent entry of dirt; this seal should not be removed until actual connection is made to the gas supply line.

CONNECTING THE FRYER TO GAS LINE:

For your protection we recommend that a qualified gas serviceman install this fryer. He should be familiar with proper installation of commercial cooking equipment and your local gas requirements. In any case, your gas company should be called upon to inspect and approve the final installation.

1. The supply line to the fryer must be of sufficient size to assure an adequate supply of gas. NOTE: It is recommended that flexible gas piping be incorporated, permitting movement for cleaning of unit and area.
2. We recommend that a gas shut-off cock be installed in the supply line close to the fryer.

BEFORE ANY ADJUSTMENTS ARE MADE:

1. The fryer must be leveled. This can be accomplished by turning the adjustable feet.
2. Be sure that the air intake openings in the bottom of the appliance are not obstructed.
3. Provide facilities to carry off exhaust gases and fumes. An exhaust canopy above the fryer will serve this purpose.
4. Minimum acceptable clearance from combustible materials; 6" from side and 6" from back.

CAUTION: Before lighting the burner or attempting to make any adjustments, put approximately 15 lbs. of fat in the kettle.

LIGHTING SAFETY PILOT:

An automatic safety pilot is now included as standard equipment on all units.

1. Remove lower front panel for access.
2. Push in and hold the red button on the safety valve and apply a light to the pilot tip.
3. Continue to hold in the red button until pilot flame remains lighted when the button is released. This will usually take about one minute after pilot lights.

ADJUSTING SAFETY PILOT:

1. Remove lower front panel for access.
2. Refer to Page (3) for information.

LIGHTING BURNER:

1. Turn dial to 250°.
2. Open the gas cock located between the safety pilot and the thermostat.
3. To shut off gas, turn gas cock to off position.

ADJUSTING BURNER:

This unit is equipped with an adjustable orifice hood and is shipped from the factory for use on L.P. Gas. For use with Natural Gas unscrew orifice hood until input rate to burner is obtained.

1. Set thermostat dial @ 350°. (Burner adjustment must be made before the fat temperature reaches 350°.)
2. Remove lower front panel.
3. Observing the flame, adjust the air shutter to give a soft blue flame having luminous tips, and increase to a point where the yellow tips disappear and a hard blue flame is obtained.

ADJUSTING BY-PASS (MINIMUM FLAME):

Enough gas must be by-passed through the thermostat to keep the entire burner lighted after the thermostat action has reduced the flame on the burner. To allow accurate control of temperature, be sure to set the bypass adjustment accurately. To make this adjustment, proceed as follows:

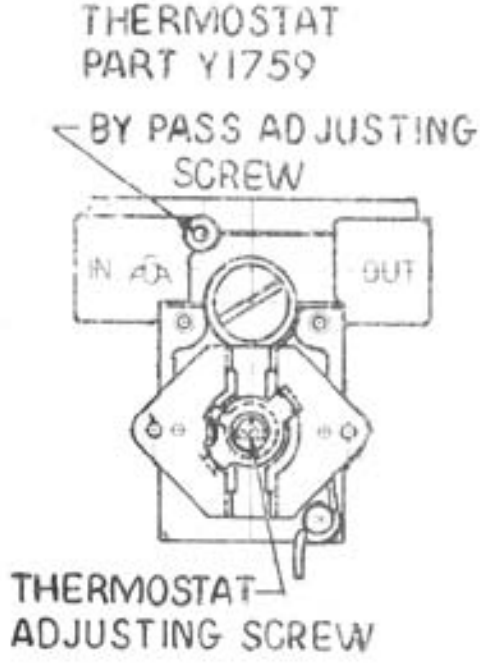
1. With approximately 15 lbs. of fat in the fryer, light the main burner.
2. Set the thermostat dial at 350°.
3. Allow the fat to heat until the thermostat action has cut down the flame on the burner. This will take about 20 minutes, and a distinct click can be heard at the thermostat.
4. The burner flame should now not exceed 1/8" in height and should come from all ports. If adjustment is needed, turn the bypass adjustment screw (see illustration on Page (3), in either direction until the flame over the entire burner is not more than 1/8" in height.
5. The by-pass adjustment screw is located at the left top front of the thermostat in line with the hole in the upper front panel.

ADJUSTING THERMOSTATS:

The thermostat is a precision instrument. It has been carefully calibrated at the factory. Field recalibration is seldom necessary, and should not be resorted to until the by-pass flame has been adjusted.

1. Fill fryer kettle with 15 lbs. of fat.
2. Light main burner with lighting taper
3. Set thermostat dial to 350°.
4. Place an accurate thermometer with a 400° range in the center of the kettle 1" below the fat surface. Allow kettle to heat until the fat temperature remains at a constant level. This can be determined when three thermometer readings taken at five minute intervals agree. This will take at least ½ hour.
5. If the dial reading does not agree with the thermometer reading, remove the dial (this is a friction fit and pulls off). Turn calibration screw clockwise to lower temperature and counterclockwise for a higher temperature.
6. Replace thermostat dial and again check the fat temperature. If additional calibration is necessary, repeat steps above.

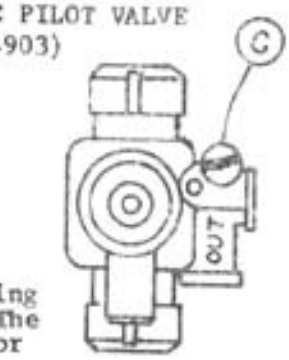
IMPORTANT: To take accurate fat temperature readings, it is important that the thermometer bulb be in the center of the kettle 1" below the fat surface.



SAFETY PILOT LIGHT ADJUSTMENT

On units equipped with a safety pilot, the pilot burner is preset at the factory. For use on 2550 B.T.U. liquified petroleum gas, the pilot burner is set for operation on 11" water column pressure. For use on 1000 B.T.U. natural gas, the pilot burner is set for operation on 5" water column pressure.

Should adjustment of the pilot burner be necessary, remove the slotted protector cap (C), which will then expose the adjusting screw. Turn adjusting screw in either direction to increase or decrease the pilot burner flame. The length of the flame should be about ½ inch. Be sure to replace the protector cap tightly.



PART #9481

FRYING:

Cold fat level lines are located on the walls of the kettle, and hot fat should be maintained slightly above this level.

(1) Set the thermostat dial at the temperature desired.
(2) Allow fat to heat to cooking temperature. The thermostat will now automatically control the burner flame to maintain the fat temperature according to the dial setting.

See "Handy Frying Chart" enclosed for recommended temperature and time required to properly fry various foods, as well as procedures and coating suggestions.

DO NOT FRY MORE FOOD PER BATCH THAN YOU CAN FRY EFFICIENTLY! Too much food per batch causes excessive temperature drop, wastes fat, and nothing is gained in capacity.

Lower the food into the fat slowly. When moist food is lowered quickly into hot fat, the fat will foam and splatter excessively. Hang the basket on the basket hanger after removing food from the fat, to allow excess fat to drain back into the kettle.

IDLING:

During idle periods, lower the temperature setting to approximately 275°. It is not necessary to maintain cooking temperature during idle periods, as the fat can be reheated quickly to desired temperature. This procedure will result in longer fat life and less gas consumption.

NOTE: This fryer is thoroughly insulated to assure a high degree of heating efficiency. Therefore, you will find that the fat temperature drops very slowly should you change the thermostat to a lower setting. With the bypass flame properly adjusted, the fat temperature will level off at approximately 275°, even though you may set the thermostat lower. We are pointing this out in order that you will not be misled into believing that the thermostat is out of calibration. Any checking of the thermostat calibration should be done at fat temperatures of 300° or higher.

CRUMB TRAY:

Because small particles of food or crumbs which fall through the basket tend to discolor and break down the fat, this fryer is equipped with a crumb tray. Slowly lift out this tray several times daily and clean it thoroughly before replacing in the kettle. This will lengthen fat life and will improve the frying operation.

DRAINING:

For best frying results, the fat should be drained from the kettle and strained or filtered daily. Be sure to turn off the gas valve before draining fat from kettle.

CLEANING:

(1) While the kettle is still warm, wipe out the inside with a clean soft cloth. If fat is allowed to accumulate on the inside of the kettle, a gummy film will form which tends to act as an insulator against the heat penetrating the kettle, and the fryer will not give full efficiency. Should this condition develop, fill the kettle with water and add a good detergent, allowing this to boil until the kettle is clean. Then rinse the kettle with clear water and wipe dry before adding fat.

(2) Clean the outside of the fryer daily, using a clean, damp cloth and a nonabrasive cleaner.

(3) Be sure the drain valve is closed before adding fat.

CAUTIONS FOR ALL DEEP FAT FRYERS

NEVER LEAVE AN OPERATING FRYER UNATTENDED

REMEMBER HOT OIL IS DANGEROUS – RESPECT IT!

WARNING – INSTALLATION

- Locate your fryer in a protected place so that it cannot be tipped over or knocked off its support. A mechanical restraint should be installed to prohibit the fryer from tipping or moving. Consult your local codes for allowable methods of restraint.
- Install an automatic fire extinguisher over the fryer and in the exhaust duct.
- Be sure your power supply is installed properly and in accordance with the local and national codes.
- Install a shut-off switch or gas valve close to the fryer. It must turn off the fryer immediately.
- Failure to add a mechanical restraint can result in oil splashing out and contacting the skin, leading to serious injury or death!

WARNING – HOT OIL

- Hot oil is dangerous – Severe burns can result when hot oil contacts the skin.
- Hot oil is flammable – Keep open flames away from hot oil and its vapors.
- Never allow water or ice to get in hot oil. **IT CAN EXPLODE!**

WARNING - ENVIRONMENT

- Keep your floors clean and free of grease and all other substances so no one slips accidentally and contacts the hot fryer.
- Keep areas and filters clean above your fryers – Oil soiled lint or dust can ignite easily and flames will spread rapidly.

WARNING – MAINTENANCE

- Have your equipment checked regularly to insure its safe and properly functioning.
- If your fryer starts to smoke or boil abnormally, cut off the power supply immediately and determine the reason for the smoking or boiling before attempting to use it again.

WARNING – TRAINING

- Train all personnel to understand the hazards of hot oil. Instruct them on the proper action to take if something does not seem to be acting properly.
- Instruct your personnel on what to do if there is an oil fire. Do not use water on an oil fire! Use only fire extinguishers of the approved type and never direct such extinguishers so as to blow the oil out of the oil container.

CARE OF FAT

In three to six months you may spend as much for fat as you paid for your kettle. So fat is an item you want to know all about; how to select it; how to manage it. The more production you can get from each pound of fat, the more profitable your frying operation will be.

To get a high rate of production per pound of fat you have to avoid two things. One is early breakdown and spoilage of the compound so that you have to throw it away before it does enough work to "earn its keep." The other is excessive sponging up of fat by the food being fried.

The main cause of fat breakdown is excessive heat. On the other hand abnormal absorption is caused by frying too long at too low temperatures. One answer to both problems is exact control of heat — so that fat neither smokes up nor soaks up.

Of course, no fat "keeps" forever. Not only heat, but air and moisture, salt particles and crumbs of food work to break it down. But you can slow up fat deterioration by maintaining proper temperatures and by draining your kettle, filtering or straining the fat once or twice a day and by keeping the kettle itself absolutely clean.

A number of commercial devices and materials are available to aid in eliminating fat impurities. There are several excellent models of pressure filters as well as strainer-type filters, which, if used regularly, will prolong life of fat.

However, no purification device will renew broken down or rancid fat or put new life into it. Once you have allowed fat to break down it becomes unsuitable for frying — in fact browning is impossible.

In addition to filtration, you can prolong the usefulness of fat by sweetening it with fresh compound every day - replacing about 15% of the bulk you started with. If you do enough frying so that normal absorption of fat in food amounts to 15% to 20% of the capacity of your kettle every day - then you can call that your turn-over food. It means you can add the recommended 15% of fresh fat without discarding any of the old.

10 POINT PROGRAM
TO PRESERVE FAT AND PRODUCE THE FINEST FRIED FOODS

1. Choose a fat that does not break down quickly. Hydrogenated shortening, corn, and peanut oils are less likely to break down under high temperatures.

2. Do not fry foods at temperatures above those recommended. The higher the fat temperature, the more rapid the rate of fat deterioration. Above 400°F fats quickly deteriorate.

3. During short intervals between frying, turn the heat down. Do not keep heat on for long periods between batches.

4. Keep fat clean. Strain or filter daily or at end of each shift. Add at least 15% fresh fat to your kettle daily.

5. At least once a day, cool a small amount of fat and taste it to see if it has picked up foreign flavors.

6. Discard fat that tends to bubble excessively before food is added.

7. Do not overload baskets-pieces should not touch when frying. Shake baskets to prevent food from sticking together. Fry similar sizes together.

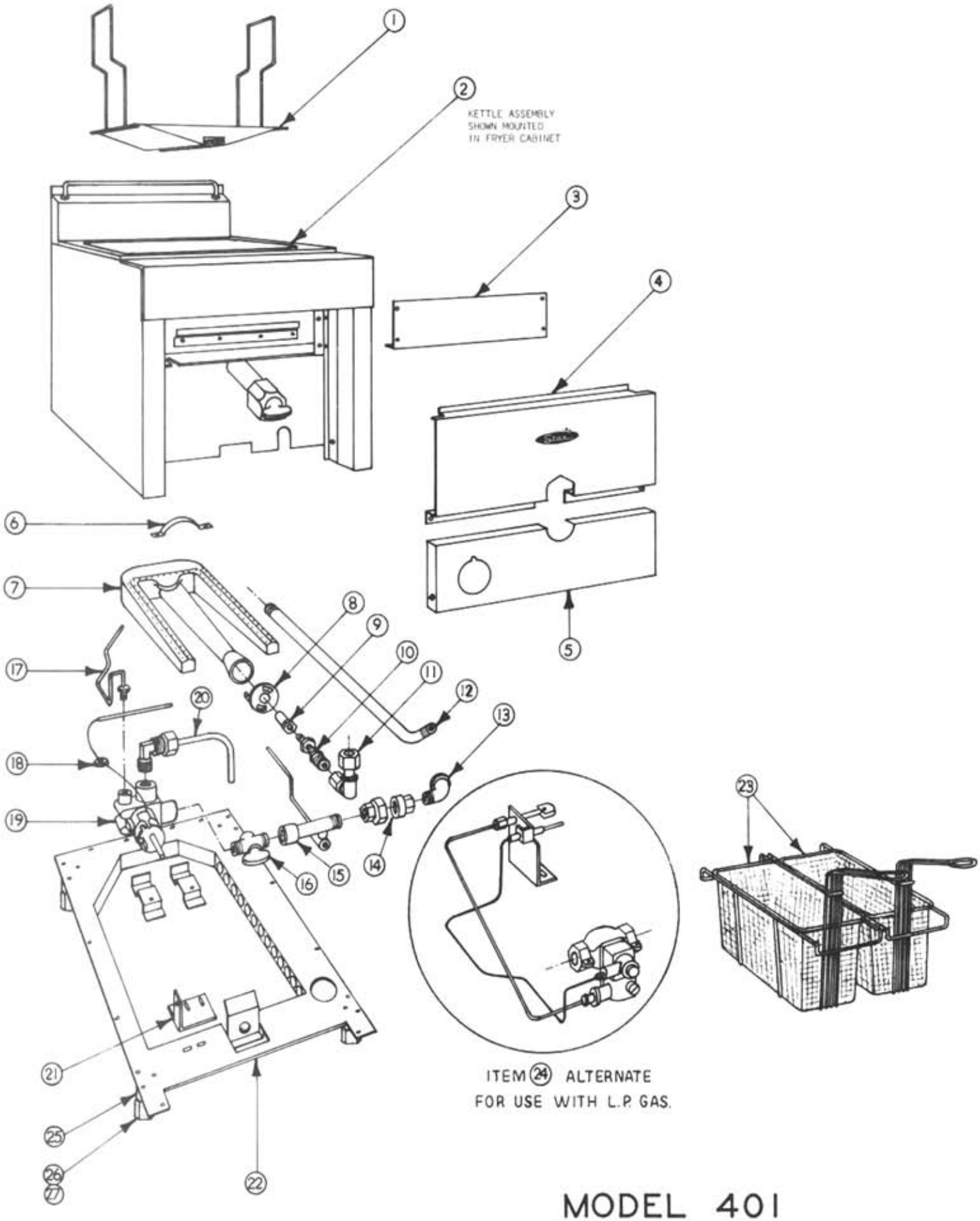
8. Never salt foods directly over fat, salt in fat reduces its life.

9. Raw, wet foods, such as potatoes and oysters, should be drained or wiped dry before frying to extend the life of the frying fat. Have foods to be fried at room temperature.

10. Keep fat temperatures below smoking point to minimize frying odors.

HANDY FRYING CHART

FOOD	COATING	PROCEDURE	TEMP	TIME IN MINUTES
POTATOES				
Standard French Fries		Cut in uniform pieces 1/2"	350°	5-7
Blanch Only		square the long way	350°	3-1/2
Brown Only			350°	3-1/2
Long Branch		Cut in uniform pieces 3/4" square the long way	350°	7-10
Julienne (shoe string)		Cut in uniform pieces 1/8" to 1/4" square the long way	350°	3-6
Chips		Soak in cold running water until water does not run milky	350°	2-3
CHICKEN				
Large Pieces	Batter or	Some prefer rolling in	325°	9-1l
Small Pieces	Breading	seasoned flour, dipping in egg	340°	7-10
Pre-cooked		wash, and frying	350°	3-4
FISH				
Fillets (Large)	Breading	Select fillets of uniform	350°	4
Fillets (Small)	or Batter	size, skin out and dry.	350°	3
Oysters	Breading or Batter	Use Oyster liquor in batter or breading	350°	5
Clams	Batter		350°	1
Scallops	Breading		350°	4
Shrimp	Batter	Some prefer soaking 1/2 hour in cold seasoned milk	350°	3
Smelts	Breading	Cut spinal cord several places to prevent curling	350°	4
MEATS				
Chicken Fried Steak	Breading	Sever all connecting membranes at one inch intervals to prevent curling	360°	3-4
Cutlets	Breading		350°	3-4
Chops	Breading		340°	3-4
Meat Balls	Breading or rolled in flour		340°	4-6
Brains	Breading		340°	3-5
VEGETABLES				
Asparagus	Batter or crumbs	Pre-cook in salted water	350°	3
Cauliflower	Batter or crumbs	Pre-cook and separate flowers	350°	3
Egg Plant	Crumb Breading	Peel, cut cross-wise into 1/4" slices	350°	3
Onions	Light batter	Slice thin, soak in milk for two hours	350°	3
FRITTERS				
Fruit (bananas, pineapples, apricots, berries)		Serve with fruit juice	350°	3-5
Corn	Batter	Serve with syrup or jelly	350°	3-5
Vegetable (peas, green beans)		Serve with tomato cheese sauce	350°	5-8
MISCELLANEOUS				
Croquettes	Breading		360°	3
Chinese Noodles			375°	1-2
French Toast			375°	1
DOUGHNUTS				
Cake			375°	1-1/2 - 2
Yeast, raised			375°	1



MODEL 401

STAR MANUFACTURING COMPANY
DIVISION OF HERCULES GALION PRODUCTS INC.
9325 OLIVE BLVD., • ST. LOUIS, MISSOURI 63132

PARTS PRICE LIST

EFFECTIVE – ~~NOVEMBER 1, 1974~~

MODEL #401
STAR MASTER COUNTER GAS FRYER - TWIN BASKETS
UP TO SERIAL #4018901

KEY NUMBER	PART NUMBER	DESCRIPTION	NUMBER PER UNIT	PRICE (1) EACH
	~~401028~~	~~THERMOSTAT REPLACEMENT KIT (UP TO SERIAL #4016304)~~		
19	~~Y2093~~	~~THERMOSTAT LESS KNOB (SERIAL #4016304 TO #4018900)~~	1	
2	~~201004~~	~~KETTLE ASSEMBLY~~	1	
	~~8846~~	~~KNOB - THERMOSTAT~~	1	
			/	
21	8819	THERMOSTAT BRACKET	1	
11	9369	ORIFICE FITTING (SPECIFY TYPE OF GAS)	1	
9	9550	ORIFICE HOOD (#43 DRILL - NAT. GAS)	1	
9	~~6695~~	~~ORIFICE HOOD (#53 DRILL - L.P. GAS)~~	1	
8	1063	AIR MIXER CAP	1	
	3863	DRAIN VALVE BODY CASTING	1	
	3864	DRAIN VALVE PLUG CASTING	1	
	~~1820~~	~~WASHER - DRAIN VALVE (NEOPRENE)~~	1	
	6165	WASHER - METAL (DRAIN VALVE)	1	
16	9825	GAS VALVE W/5077 NIPPLE	1	
12	9388	MANIFOLD PIPE	1	
	6671	PILOT VALVE (NAT. GAS ONLY)	1	
1	~~201013~~	~~CRUMB TRAY COMPLETE~~	1	
	6201	CRUMB TRAY HANDLE	2	
5	~~401006~~	~~ACCESS PANEL ASSEMBLY (DOOR)~~ NOT AVAILABLE		
25	115006	LEG ASSEMBLY (LESS FOOT)	4	
26	7612	FOOT	4	
	9347	FOOT EXTENSION	4	
	~~4945~~	~~BACK GUARD~~	1	
	~~4946~~	~~BACK GUARD PANEL~~	1	
	4899	BASKET HOLDER ROD	1	
23	4225	BASKET - TWIN	2	
	~~4226~~	~~BASKET - SINGLE (9" x 12")~~	1	
	7633	SCREEN - PERFORATED FINE MESH FOR TWIN BASKET	2	
	7634	SCREEN - PERFORATED FINE MESH FOR SINGLE BASKET	1	
	5083	SAFETY PILOT BURNER	1	
	~~4063~~	~~SAFETY THERMOCOUPLE~~	1	
	~~4903~~	~~SAFETY PILOT VALVE~~	1	
	201016	SAFETY PILOT CONVERSION KIT (NAT. GAS TO L.P. GAS)	1	
	401050	SAFETY THERMOSTAT KIT	1	

PRICES SUBJECT TO CHANGES WITHOUT NOTICE.

(1) MINIMUM PARTS ORDER – $3.00

IMPORTANT: WHEN ORDERING SPECIFY VOLTAGE OR TYPE GAS DESIRED
INCLUDE MODEL AND SERIAL NUMBER

PARTS PRICE LIST — EFFECTIVE

MODEL #402
STAR MASTER COUNTER FRYER - TWIN BASKETS JUNE 80
(GAS)

KEY NUMBER	PART NUMBER	DESCRIPTION	NUMBER PER UNIT
	402009	THERMOSTAT REPLACEMENT KIT - UP TO SER. #4020673	1
	Y1759	THERMOSTAT LESS KNOB - ABOVE SERIAL #4020673 N/A	1
	402004	KETTLE ASSEMBLY N/A	1
	4720	BURNER CASTING N/A	1
	Y2093	THERMO. (IF 402009 PURCHASED PREVIOUSLY)	1
	8846	KNOB - THERMOSTAT FOR #Y1759	1
	9369	ORIFICE FITTING (SPECIFY TYPE OF GAS)	1
	9550	ORIFICE HOOD - NAT. GAS - #43 DRILL	1
	3663	ORIFICE HOOD - L.P. GAS - #52 DRILL	1
	9825	GAS VALVE W/3670 NIPPLE (REPLACES 4931)	1
	1063	AIR MIXER CAP	1
1796	~~Y1623~~	DRAIN VALVE	1
	213007	SAFETY PILOT CONVERSION KIT (NAT. GAS TO L.P. GAS	
	201013	CRUMB TRAY COMPLETE N/A	1
	6201	CRUMB TRAY HANDLE N/A	2
	213003	DOOR COMPLETE N/A	1
	1161	DOOR CATCH	1
	3675	DOOR HANDLE	1
	6671	PILOT VALVE	1
	191037	FOOT HOUSING ASSEMBLY N/A	4
	7649	FOOT (GRAY PLASTIC) N/A	4
	4945	BACK GUARD N/A	1
	4946	BACK GUARD PANEL N/A	1
	4899	BASKET HOLDER ROD N/A	1
	4225	BASKET - TWIN (4" x 12")	2
	4226	BASKET - SINGLE (9" x 12") N/A	1
	7633	PERFORATED FINE MESH SCREEN FOR TWIN BASKET	2
	7634	PERFORATED FINE MESH SCREEN FOR SINGLE BASKET	1
	5082	SAFETY PILOT BURNER N/A	1
	4063	SAFETY THERMOCOUPLE	1
	4903	SAFETY PILOT VALVE	1
	213009	INSULATION SET N/A	

PRICES SUBJECT TO CHANGES WITHOUT NOTICE.

(1) MINIMUM PARTS ORDER – $3.00

IMPORTANT: WHEN ORDERING SPECIFY VOLTAGE OR TYPE GAS DESIRED.
INCLUDE MODEL AND SERIAL NUMBER

STAR MANUFACTURING COMPANY
DIVISION OF HERCULES GALION PRODUCTS INC.