

StarMax[®]

DEEP FAT FRYER

MODEL

404F

615FF

630FF

Installation and Operation Instructions

2M-Z15997 Rev. - 5/30/2012



SAFETY SYMBOL



These symbols are intended to alert the user to the presence of important operating and maintenance instructions in the manual accompanying the appliance.

RETAIN THIS MANUAL FOR FUTURE REFERENCE NOTICE

Using any part other than genuine Star factory supplied parts relieves the manufacturer of all liability.

Star reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment.

Due to periodic changes in designs, methods, procedures, policies and regulations, the specifications contained in this sheet are subject to change without notice. While Star International Holdings Inc., Company exercises good faith efforts to provide information that is accurate, we are not responsible for errors or omissions in information provided or conclusions reached as a result of using the specifications. By using the information provided, the user assumes all risks in connection with such use.

MAINTENANCE AND REPAIRS

Contact your local authorized service agent for service or required maintenance.

Please record the model number, serial number, voltage and purchase date in the area below and have it ready when you call to ensure a faster service.

Model No. _____
Serial No. _____
Voltage _____
Purchase Date _____

Authorized Service Agent Listing

Reference the listing provided with the unit

or

for an updated listing go to:

Website: www.star-mfg.com
E-mail Service@star-mfg.com

Service Help Desk

Business Hours: 8:00 am to 4:30 p.m. Central Standard Time

Telephone: (314) 678-6303

Fax: (314) 781-2714

E-mail Parts@star-mfg.com
Service@star-mfg.com
Warranty@star-mfg.com

Website: www.star-mfg.com

Mailing Address: Star International Holdings Inc., Company
10 Sunnen Drive
St. Louis, MO 63143
U.S.A

Specifications							
Model	BTU	N.P.T. Gas Connection	Weight		Dimensions		
			Installed	Shipped	Width	Depth	Height
404F	24,000	3/8" (1cm)	64 lbs	73 lbs	12"	24"	25 5/8"
615FF	30,000		64 lbs	75 lbs			
630FF	70,000	1/2" (2cm)	110 lbs	118 lbs	24"	25 1/8"	23 3/8"

GENERAL INSTALLATION DATA



PLACE THE LAMINATED WARNING SIGN SUPPLIED WITH THE FRYER IN AN AREA VISIBLE TO THE FRYER OPERATOR.

This equipment is designed and sold for commercial use only by personnel trained and experienced in its operation and is not sold for consumer use in and around the home nor for use directly by the general public in food service locations.

Before using your new equipment, read and understand all the instructions & labels associated with the unit prior to putting it into operation. Make sure all people associated with its use understand the units operation & safety before they use the unit.

All shipping containers should be checked for freight damage both visible and concealed. This unit has been tested and carefully packaged to insure delivery of your unit in perfect condition. If equipment is received in damaged condition, either apparent or concealed, a claim must be made with the delivering carrier.

Concealed damage or loss - if damage or loss is not apparent until after equipment is unpacked, a request for inspection of concealed damage must be made with carrier within 15 days. Be certain to retain all contents plus external and internal packaging materials for inspection. The carrier will make an inspection and will supply necessary claim forms.

The installation of the Appliance should conform to the NATIONAL FUEL GAS CODE "ANSI Z223.1 - LATEST EDITION" AND ALL LOCAL GAS COMPANY RULES AND REGULATIONS.

IN CANADA INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT CAN/CGA-B149.1 NATURAL GAS INSTALLATION CODE OR CAN/CGA-B149.2 PROPANE INSTALLATION CODE AND LOCAL CODES WHERE APPLICABLE.

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing the equipment.

This appliance and control valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 PSIG (1.034 ATM). This appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 PSIG (1.034 ATM). For your protection, we recommend a qualified installing agency install this appliance. They should be familiar with gas installations and your local gas requirements. In any case, your gas company should be called to approve the final installation. In addition, there should be posted, in a prominent location, detailed instructions to be followed in the event the operator smells gas. Obtain the instructions from the local gas supplier.



FRYER SHOULD BE RESTRAINED TO PREVENT TIPPING WHEN INSTALLED TO AVOID SPLASHING OF HOT LIQUID. USE ADEQUATE TIES WHEN INSTALLING THE FRYER.



INAPPROPRIATE USE DUE TO A LACK OF COMMON SENSE MAY RESULT IN PRODUCT DAMAGE OR PERSONAL INJURY.

FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE. KEEP THE APPLIANCE AREA CLEAR AND FREE FROM COMBUSTIBLES.

AIR SUPPLY

Provisions for adequate air supply must be provided.

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.



CAUTION

DO NOT USE SPACE UNDER FRYER FOR STORAGE

LEVELING UNIT

Level unit by adjusting the (4) feet.



CAUTION

DO NOT INSTALL WITHOUT FEET PROVIDED.

CLEARANCE

Clearances from combustible and non-combustible material must be a minimum of 48" from the top of the appliance and 6" from the sides and back. Adequate clearance should also be provided for proper operation and servicing.

EXHAUST CANOPY

It is essential that facilities be provided over the fryer to carry off fumes and gases. This unit is not to be connected to a flue or stack for exhaust purposes.

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. Do not remove the seal until actual connection is made to the gas supply line.

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. Each unit is supplied with a gas pressure regulator adjusted for use with the gas specified on the nameplate. To connect gas supply, attach pipe nipple provided with unit. For pressure requirements and adjustment of regulator, see GAS PRESSURE REGULATOR.

MANUAL SHUT OFF VALVE

A manual shut off valve should be installed upstream from the union and within six feet of the appliance.

CHECKING FOR GAS LEAKS

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

GAS PRESSURE REGULATOR

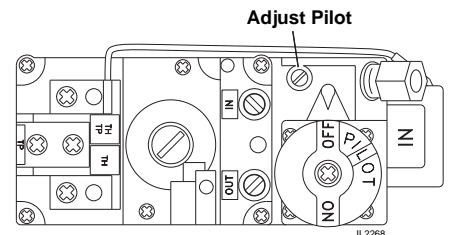
The regulator is factory set as specified on the rating plate. If it should be necessary to check the manifold pressure, remove the 1/8" pipe plug from the top part of the burner manifold and attach a pressure gauge. To adjust gas pressure, unscrew cap from pressure regulator on control valve and turn screw to the right to increase and left to decrease the gas pressure to its proper setting. Replace cap. Manifold Pressure should be no more than 9" water column for LP gas or 3 1/2" for natural gas.

LIGHTING INSTRUCTIONS

1. Wait 5 minutes before relighting pilot.
2. Open front door.
3. Turn thermostat to "OFF" position.
4. Turn valve knob to "PILOT." Push knob in completely. Light pilot through opening on front of unit. Hold button in for sixty seconds or until pilot remains lit.
5. Check if drain valve is in closed position.
6. Add liquid fat as required.
7. Turn valve knob to "ON." Set thermostat to desired temperature.
8. To turn all gas off to valve control and to pilot, turn valve knob to "OFF" position (complete shutdown).

TO ADJUST PILOT

1. Open the front door panel.
2. Turn the adjustment screw to the right or left to decrease or increase pilot flame. (Flame must surround thermocouple tips by approximately 1/2" (1.2cm).)



THERMOSTAT RECALIBRATION

1. To determine whether or not the thermostat should be recalibrated, use an accurate thermometer located approximately in the center of the kettle with the bulb 1" (2.4cm) below the top of the fat.
2. Set thermostat to 350°F (177° C) and check the thermometer reading when burner flame goes off. Temperature should be approximately 5°F (3°C) less than the thermostat dial setting.
3. If not:
 - a. Without disturbing thermostat, pull knob forward and remove from shaft.
 - b. Turn screw in center of shaft clockwise to decrease temperature or counterclockwise to increase temperature. NOTE: 1/4 turn of this screw will result in a change of approximately 30°F (17°C).
 - c. Replace knob.
4. Repeat steps 1, 2 and 3 until correct.

HIGH LIMIT THERMOSTAT

These units are equipped with a manual reset high temperature limit type thermostat. This thermostat will shut off the electric current to the magnetic gas valve, which shuts off the gas if the fat temperature reaches 450° F (232° C). The fryer will not operate until the red reset button is pushed in. Should the high temperature limit thermostat operate, the temperature regulating thermostat should be checked for malfunctions. The high limit thermostat is located inside the fryer to your right and can be reached when the door is open.



CAUTION

DO NOT REMOVE FEET!

DO NOT HEAT AN EMPTY KETTLE.

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

OPERATING INSTRUCTIONS

1. **CLEAN KETTLE** thoroughly before using. Remove baskets and crumb tray. Clean protective oil from interior of kettle with warm water & mild detergent. Drain through valve in bottom and rinse thoroughly with clear water and dry completely before filling with oil.
2. **DRAIN VALVE** - Make certain it is closed before adding fat.
3. **ADD FAT** -
Model 615FD/630FD - A fat level line on the rear of the kettle will guide you in determining the minimum fat level (12" fryers have a 15 lb. (6.8kg) fat capacity, 24" fryers have a 30 lb. (13.6kg) fat capacity). If solid fat is used, pack the solid fat carefully to the sides and bottom of the kettle before turning the temperature control knob to the "ON" position.
Model 404D - Keep level of fat 2" (5cm) above tubes. Kettle holds approximately 18 lbs. (8.2kg) of fat. If solid fat is used, melt the solid fat before filling the fryer. Never attempt to use solid shortening to fill kettle.

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 does not spill out of the kettle.

4. Turn the valve knob to "ON" position.
5. **TEMPERATURE CONTROL** - The thermostat is a combination switch and heat control. The "OFF" position will turn off the electric current which closes the gas valve. With the fat in the kettle (Note: On models 615FD/630FD, solid fat must be carefully packed to the sides and bottom of the kettle) turn the thermostat knob to 200° F (93°C).
6. **CRUMB TRAY Model 615FD/630FD** - Place the crumb tray in the kettle when the fat has melted.
BASKET RACK Model 404D - Place the rack before adding fat.
7. Turn the thermostat knob to the desired frying temperature. **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.
8. **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.
9. **DRAIN** - After the food has finished frying, raise the baskets and hang them on the handles of the kettle. Allow excess fat to drain back into the kettle.
10. **IDLING** - During idle periods, lower the temperature setting of the thermostat to approximately 200° F (93°C). 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 temperature and time required to properly fry various foods as well as procedures and coating suggestions.

11. **TO TURN THE FRYER OFF** - Turn the thermostat dial knob counterclockwise to the "OFF" position. The pilot will remain lit.
12. **STRAINING FAT** - Wait until fat is warm before 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.
13. **TO DRAIN KETTLE** - Turn thermostat dial to the "OFF" position. Remove baskets. Drain fat from kettle only when fat is warm 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. Remove crumb tray.
14. **CLEANING THE EXTERIOR** - The exterior surfaces can be kept clean and attractive by regularly wiping with a clean soft cloth. Any discoloration can be removed with a non-abrasive cleaner.
15. **REASSEMBLING** - After the kettle has been cleaned and the fryer body wiped off, replace crumb tray.
16. **OVERNIGHT SHUTDOWN** - Turn knob on combination control to the "PILOT" position. This will maintain the safety pilot and also prevent any gas from reaching the main burner. To activate unit, turn the combination control knob to the "ON" position.
17. **COMPLETE SHUTDOWN** - Turn valve knob to "OFF" position.



CAUTION

DO NOT ATTEMPT TO FORCE THE RESET BUTTON OR KNOB ON THE VALVE CONTROL UNDER ANY CIRCUMSTANCES.

GENERAL MAINTENANCE TIPS

1. DO NOT fire empty kettle or with fat or oil beneath the minimum level indicator.
2. DO NOT fry foods in excess of 385°F (196°C).
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 time.
7. DO use correct fry fats and shortening, and follow temperature recommendations.
8. DO filter fat and clean fry kettle daily.

PROPER CLEANING OF KETTLE



CAUTION

DO NOT ALLOW WATER TO GET IN HOT FAT. IT CAN EXPLODE.

1. Drain fat from fryer while the fat is warm, not hot.
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 hours or until clean).
4. Turn heat off, drain and rinse with water until clean.
5. Use a vinegar rinse (2 to 3 cups) to 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.

REPAIRS AND SERVICE

This appliance should only be repaired or serviced by the factory or factory authorized personnel.



CAUTION

Moving this fryer with hot liquid is extremely hazardous and can cause serious burns. Before moving fryer, drain oil.

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.
- Inappropriate use due to a lack of common sense may result in product damage or personal injury.

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" square the long way	350°	5-7
Blanch Only			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°	9-11
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	Use Oyster liquor in batter		
	or 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