

IMPORTANT FOR FUTURE REFERENCE Please complete this information and retain this manual for the life of the equipment:
Model #: _____
Serial #: _____
Date Purchased: _____

Installation & Operation Manual

Modular Base Electric Tilting Kettles MT-25EO & MT-40EO



MT-40EO

 **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 this equipment.

CROWN FOOD SERVICE EQUIPMENT

 **MIDDLEBY** A Middleby Company

70 Oakdale Road, Downsview (Toronto) Ontario, Canada, M3N 1V9

Telephone: 919-762-1000

www.crownsteamgroup.com

Your Service Agency's Address:

Model

Serial number

Kettle installed by

Installation checked by

SAFETY PRECAUTIONS

Before installing and operating this equipment, be sure everyone involved in its operation is fully trained and aware of precautions. Accidents and problems can be caused by failure to follow fundamental rules and precautions.

The following symbols, found throughout this manual, alert you to potentially dangerous conditions to the operator, service personnel, or to the equipment.



This symbol warns of immediate hazards that will result in severe injury or death.



This symbol refers to a potential hazard or unsafe practice that could result in injury or death.



This symbol refers to a potential hazard or unsafe practice that could result in injury, product damage, or property damage.



This symbol refers to information that needs special attention or must be fully understood, even though not dangerous.

IMPORTANT NOTES FOR INSTALLATION AND OPERATION

WARNING

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

WARNING

FOR YOUR SAFETY:

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

WARNING

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

NOTICE

This product is intended for commercial use only. NOT FOR HOUSEHOLD USE.

NOTICE

This manual should be retained for future reference.

IMPORTANT

PURCHASER: Instructions to be followed in the event the operator of this appliance smells gas must be posted in a prominent location. This information shall be obtained by consulting the local gas supplier.

The information contained in this manual is important for the proper installation, use, and maintenance of this kettle. Adherence to these procedures and instructions will result in satisfactory baking results and long, trouble free service. Please read this manual carefully and retain it for future reference.

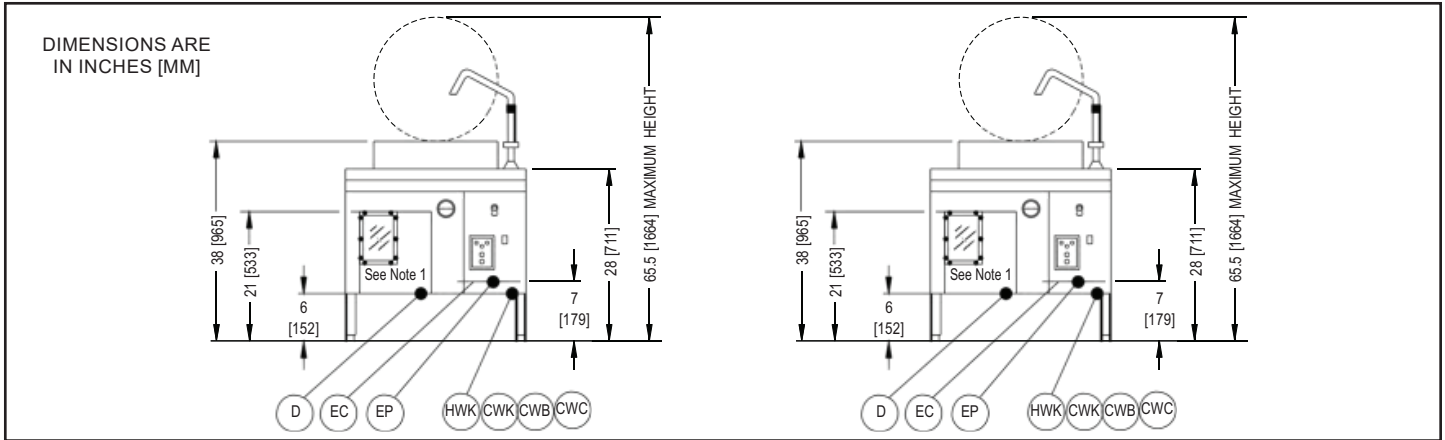
ERRORS: Descriptive, typographic or pictorial errors are subject to correction. Specifications are subject to change without notice.

RETAIN THIS MANUAL FOR FUTURE REFERENCE.

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SERVICE CONNECTIONS



SERVICE CONNECTIONS

SYMBOL	DESCRIPTION
EP	Power Supply - Use wire suitable for at least 90°C, Nominal amps per line wire at 24 KW:
EC	Electrical Controls - 115 Volts Ac, 60Hz, 40 watts, 1/2" (13mm) conduit connection or equivalent. Use wire suitable for at least 90°C. Draws less than 1 AMP with power lift.
D	Drain - Pipe full 2" (51mm) NPT to floor drain. DO NOT MAKE SOLID CONNECTION TO FLOOR DRAIN. PVC and CPVC are not acceptable materials for drains.
HWK	Hot Water - 3/8" (10mm) NPT Female for Hot Water to Kettle Faucet (See Note 3)
CWK	Cold Water - 3/8" (10mm) NPT Female for Cold Water to Kettle Faucet (See Note 3)
CWB	Cold Water - 3/8" (10mm) NPT Female for Cold Water to Boiler. Water may be filtered (See Note 3).
CWC	Cold Water - 3/8" (10mm) NPT Female for Cold Water Condenser (See Note 3)

CAUTION

Before connecting water to this unit, have water supply analyzed to make sure hardness is no greater than 2.0 grains and pH level is within the range of 7.0-8.5. Water which fails to meet these standards should be treated by installing a filter or conditioner. **EQUIPMENT FAILURE CAUSED BY INADEQUATE WATER QUALITY IS NOT COVERED UNDER WARRANTY.**

ELECTRICAL CHARACTERISTICS AND WEIGHT INFORMATION

MODEL	VOLTS	PHASE	AMPS
MT-25EO	208	3	66.6
MT-40EO	240	3	57.7
	480	3	28.8

MODEL	SHIPPING WEIGHT
MT-25EO	410 lbs (186 kg)
MT-40EO	430 lbs (195 kg)

NOTES

1. Recess area for kettle draw-off must be kept free of all piping and connections.
2. The only available space to supply utilities to the unit is the 6" (152mm) height between the floor and the cabinet.
3. Water pressure max 50 PSI (3.5kg/cm2) and min 25 PSI (1.8kg/cm2).

CAUTION

REMOTE KETTLE OPERATION

If this boiler is feeding a remote kettle that will be more than 5 feet (1.5 meters) away, consult factory before ordering.

WATER SUPPLY AND DRAIN SPECIFICATIONS

Good quality water feed is the responsibility of the owner. Water quality must be within the following general guidelines.

TDS: 40-125 ppm Hardness: 35-100 ppm pH: 7.0 - 8.5 Silica: <13 ppm Chlorides: <25 ppm Chlorine: <0.2 ppm Chloramine: <0.2 ppm

The best defense against poor water quality is a water treatment system designed to meet your water quality conditions.

DISCLAIMER

Terry System Cartridge Changes / Installation – “2-3 gallons of water MUST be purged at each cartridge change or new installation prior to water supply being fed to the steamer. Failure to do so can result in component damage within the steamer which is not covered under warranty. For additional guidance on proper installation, refer to install documentation provided with each Terry System and Replacement Cartridge Set.”

As continued product improvement is a policy of Market Forge, specifications are subject to change without notice.

INTRODUCTION

DESCRIPTION

Market Forge model MT-25EO (25-gallon) and MT-40EO (40-gallon) are self-contained tilting electric steam jacketed kettles. Each kettle has a jacket of double-wall construction forming a sealed reservoir around the lower two-thirds of the kettle.

The stainless steel kettle is enclosed in a cabinet base containing a 24 kW electrically powered boiler for kettle operation.

BASIC FUNCTIONING

The kettle becomes operational when the power switch is placed in the ON position. At this point, the boiler reservoir begins to fill with water automatically until the water level reaches a factory preset, high water level. At the high water level, incoming water flow is shut off.

Once the water level is sufficiently above the heating elements, the heater rest switch is momentarily placed in the ON position. The action releases closing contactors to heating elements.

After steam pressure builds up to proper operating pressure, the steam control valve on the cabinet top can then be manually operated. This open valve allows steam to flow into the kettle jacket, heating both the kettle and contents. As water level drops due to steam conversion, the automatic water level control system opens and closes the incoming water valve to maintain constant water level. If the level control system fails, and automatic low water cut off switch turns off power to heating elements.

SERVICE

Required service, both repair, replacement, and adjustment is explained in Adjustments section of this manual. Other service help can be found in the Trouble Shooting and Maintenance sections of this manual. Should repairs be required, a network of Authorized Service Agents is available to assist with prompt service. A current list of Authorized Service Agencies may be obtained by contacting Market Forge direct or going on our website <http://www.mfii.com>.

The model and serial number must be referenced when corresponding with Market Forge. These numbers can be found on the data plate located on the upright frame behind the cabinet base door. If you require further assistance in obtaining these numbers, please contact us directly.

OPERATION

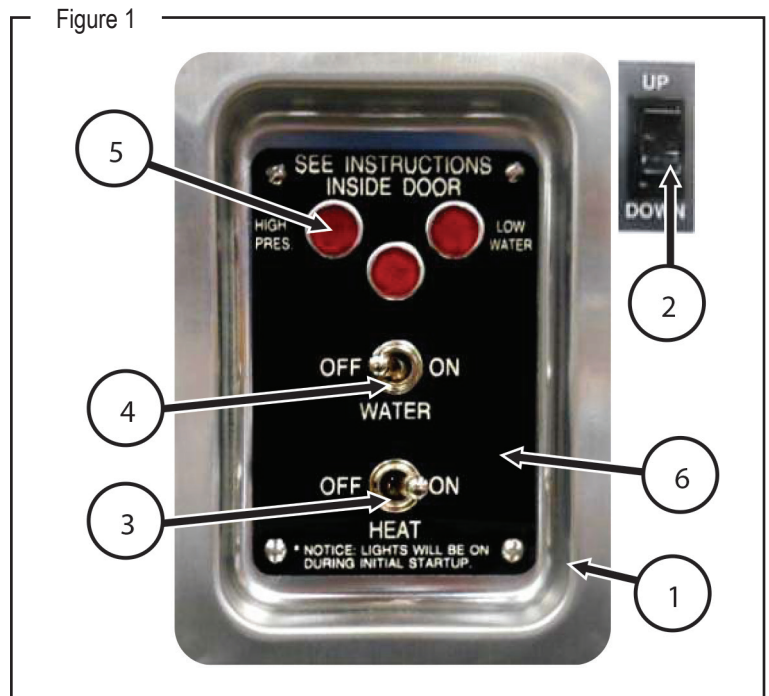
OPERATING INSTRUCTIONS

START-UP

Before beginning start-up procedure, ensure that power and water supplies are available. Also, ensure that the kettle drain is functional.

CONTROL PANEL

1. DISH
2. SWITCH, UP/DOWN (optional power tilt)
3. HEAT SWITCH
4. SWITCH, ON/OFF
5. LIGHT
6. SWITCH PLATE



OPERATING INSTRUCTIONS FOR STEAM BOILER

First be sure to check that

1. Water switch is in the OFF position.
2. Water supply valve is open.
3. Electricity is connected to all units.
4. Then proceed with daily operating procedures.

DAILY OPERATING PROCEDURE:

1. Flip water switch from OFF to ON.
2. Wait 5-10 minutes for water to fill in steam boiler (bullseye sight glass should be visible as half full.)
3. Flip heat switch from ON to OFF and release back to on when the low water light goes off. Red indicator light will come on. (This is necessary to manually reset the unit.)

DAILY SHUT DOWN

1. STEP 1 - Press water switch OFF. This will drain the steam boiler.
2. STEP 2 - After steam boiler has completely drained repeat.
3. STEPS 1 & 2 of daily operating procedure. (Water to remain in steam boiler until next daily use).

NOTICE

This shut-off procedure must be performed daily to ensure proper functioning of the kettle.

COOKING

1. Check pressure to ensure that boiler is up to operational pressure of 10-12 PSI (0.7-0.8kg/cm²).
2. Check that draw-off valve is tightly closed by turning it clockwise.
3. Place solid disc or perforated disc in drain opening inside kettle.

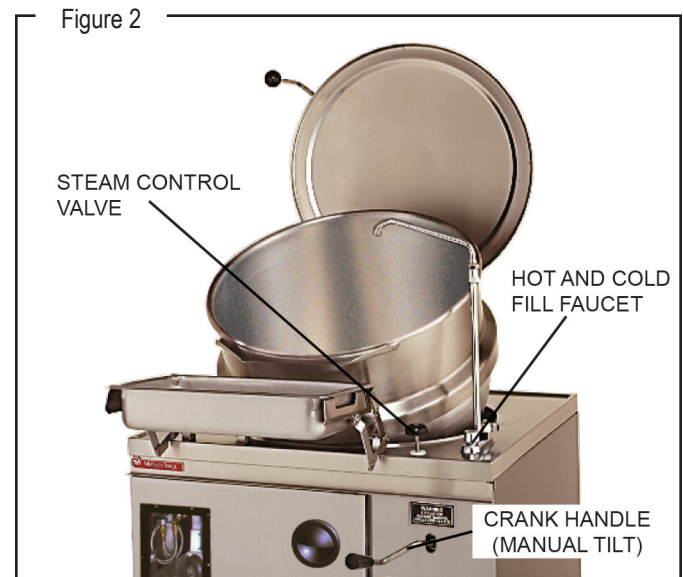
NOTICE

Use solid disc if liquid is to be retained; use perforated disc if liquid is to be discarded.

4. Fill kettle to desired level with food to be cooked or water from hot and cold fill faucet. See "Figure 2".

NOTICE

Refer to Cooking Guide for cooking procedures that address individual food products.



5. Turn kettle steam control valve counterclockwise to full ON position for faster results. See "Figure 2".

NOTE: The volume of steam going into the kettle jacket can be controlled at any time by adjusting the kettle steam control valve in either direction.

6. When food is cooked, turn steam control valve clockwise to stop steam flow. Remove food immediately to prevent over cooking.
7. Prior to removing foods from kettle, the pan support should be placed in a position to establish a firm support for receiving pan.

INSTALL PAN SUPPORT

1. With both hands, hold pan support in front of upright supports. Cutouts on each side must be facing upward and jointed links must be allowed to fall free.
2. Place stud – located on left hand upright support – into hole in left hand side of pan support. After engaging left hand side, push right hand side in until spring loaded pin on right hand side of pan support engages hole in pan support.
3. Rotate pan support up to near vertical position. Shifts both hands to lowermost links and simultaneously engage their slotted ends to studs at base of each upright support.
4. Allow pan support to drop back to horizontal position where it will automatically lock. Pan support should now be firmly in place.

NOTICE

When removing pan support, reverse the above installation sequence.

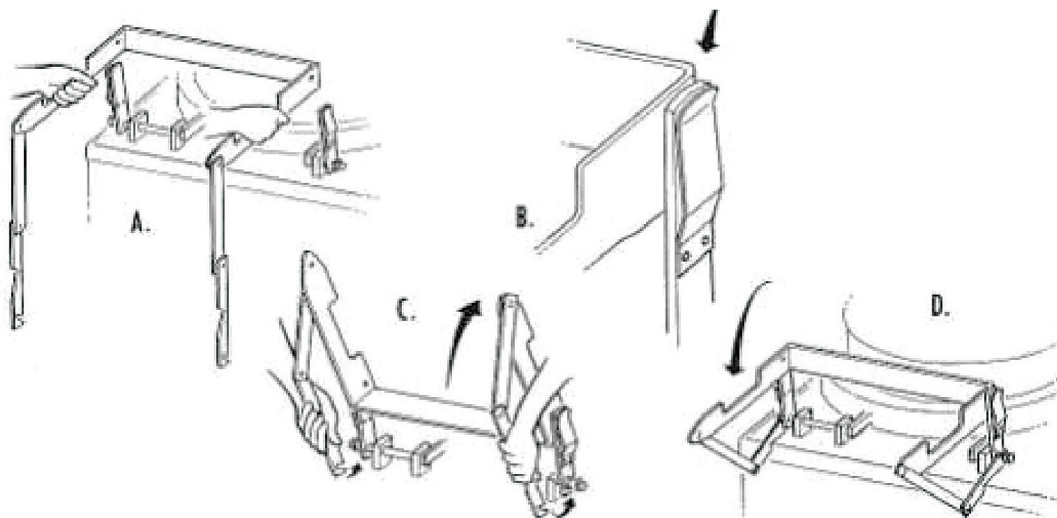
5. To tilt kettle, remove crank handle from its stored position inside of cabinet door.
6. Insert crank handle into tilt kettle mechanism.
7. Pour out finished product from kettle by turning crank handle clockwise to tilt kettle. Liquids may be drawn off through draw-off valve to a stock pot. Lower kettle by turning crank handle counterclockwise.

NOTICE

Crank handle turning may be stopped at any point without kettle setting back. Full 110° tilt is obtained in approximately 42 turns of the crank.

8. Add water to kettle for cleaning purposes.
9. Wash kettle thoroughly, see Daily Cleaning Instructions.

Figure 3



COOKING FACTS FOR STEAM JACKETED KETTLES

A Steam Jacketed Kettle is a stainless steel kettle jacketed or encapsulated by a second outer kettle, creating a space between the two kettles. Cooking is achieved by allowing steam to flow within this space. The jacket or outer kettle usually covers 2/3 of the inner kettle, although some kettles are fully jacketed

The steam flowing in the space between the kettles condenses on the cold inner kettle wall and releases heat through the wall to the food in the kettle. The condensate drains to the bottom of the kettle and is released through a steam trap without any loss or variation in steam pressure. The amount of steam allowed to flow into the Jacket controls the heat of the kettle. In use, the Steam Jacketed Kettle provides consistent heat distribution and is energy efficient using steam only to maintain pressure, unlike top of the range cooking in which energy (gas or electricity) is used during the entire cooking process.

Steam Jacketed Kettles can sauté, simmer, or boil a wide variety of products, such as soups, gravies, sauces, pasta, stews, mixed casserole type dishes, vegetables, shellfish, cereals, hot beverages, and puddings. A Steam Jacketed Kettle will not burn foods. However, foods that caramelize at relatively low temperatures, such as eggs and milk based products, will coat and cook onto the sides of the kettle. Care should be taken to use the smallest flow of steam, to lessen the possibility of scorching these products. To achieve this, allow products to come up to desired temperature, stirring frequently, then turn off steam flow and gradually turn on a small flow of steam - just enough to allow food to cook.

Steam Jacketed Kettles eliminate much range top cooking and greatly reduce the number of pots and pans required. Because they are made of stainless steel, they are durable, non-porous and easy to clean.

- Estimate actual cooking capacity of Steam Jacketed Kettles at 3/4 of its volume, to allow stirring without spillage.
- Plan an adequate drain arrangement. This is very important for ease of use and to minimize wet floors. A grated gutter type drain located in front of the kettles is preferred as it eliminates the hazards of tripping over a curb or stumbling into a recessed drain area.
- Locate a source of water (swivel faucet or flexible hose type) near the kettle to facilitate filling and cleaning.
- Cover products whenever possible to save energy. Covered water boils 25 to 30% faster.
- Use the tangent draw off valve to drain off products from the kettle such as sauces and puddings, or cooking liquids that are being discarded (as in the case of the water used to cook pasta)
- Remove the tangent draw off valve after each use for cleaning, using a brush to clean draw off as bacteria will readily multiply in this area if it is not thoroughly cleaned.
- Use the optional solid kettle disk when product is not going to be dispensed through the draw off valve, and the perforated disk when draining off liquids through the draw off valve and retaining the solid product in the kettle.

MODULAR BASE ELECTRIC TILTING KETTLES

COOKING CHART

ITEM	COOKED PORTION SIZE	KETTLE SIZE	
		25 gallon (95 liters)	40 gallon (150 liters)
BEVERAGES			
Cocoa or Coffee	6 oz or 3/4 cup (180 ml.)	Yield: 20 gal. (75 l.) Portions = 425	Yield: 35 gal. (132 l.) Portions = 745
BREAKFAST FOODS			
Cereal	6 oz or 3/4 cup (180 ml.)	Amt. Raw: 20# (9 kg.) Portion = 270	Amt. Raw: 36 # (16.3 kg) Portion = 480
Scrambled Eggs	4 oz or 2 eggs each (115 g.)	Eggs: 90 dz. 18 gal. (120 l.) Portions = 540	Eggs: 160 dz., 32 gal. (166.5 l.) Portions = 960
DESSERTS			
Cornstarch Pudding	4 oz. or 1/2 cup (120 ml.)	Yield: 17 gal. (64.3 l.) Portions = 545	Yield: 30 gal. (113.5l.) Portions = 960
Gelatin	4 oz. or 1/2 cup (120 g.)	Yield: 20 gal. (75 l.) Portions = 640	Yield: 35 gal. (132 l.) Portions = 1120
MAIN ENTREES *			
Macaroni, Beef and Tomato	6 oz. or 3/4 cup (170 g.)	Yield: 17 gal. (65 l.) Portions = 360	Yield: 30 gal. (113 l.) Portions = 640
Baked Beans	5 oz. or 2/3 cup (140 g.)	Yield: 20 gal. (75 l.) Portions = 500	Yield: 32 gal. (120 l.) Portions = 800
Beef Stew	8 oz. or 1 cup (225 g.)	Yield: 17 gal. (65 l.) Portions = 270	Yield: 30 gal. (113 l.) Portions = 480
Macaroni and Cheese	5 oz. or 2/3 cup (140 g.)	Yield: 17 gal. (64 l.) Portions = 425	Yield: 30 gal. (113 l.) Portions = 750
Turkey A La King	4 oz. or 1/2 cup (115 g.)	Yield: 17 gal. (64 l.) Portions = 545	Yield: 30 gal. (113 l.) Portions = 960
MISCELLANEOUS			
Gravy/Sauce	2 oz. or 3/4 cup (60 ml.)	Yield: 20 gal. (75 l.) Portions = 1200	Yield: 35 gal. (132 l.) Portions = 2000
MACARONI AND RICE			
Noodles	4 oz. or 3/4 cup (115 g.)	Amt. Raw: 20 gal. (9kg.) Portions = 220	Amt. Raw: 35 # (15.8kg.) Portions = 385
Rice	3 oz. or 1/2 cup (85 g.)	Amt. Raw: 20 gal. (9 kg.) Portions = 320	Amt. Raw: 35 # (15.8 kg.) Portions = 560
Spaghetti or Macaroni	4 oz. or 3/4 cup (115 g.)	Yield: 20 gal. (9 kg.) Portions = 320	Amt. Raw: 35 # (15.8kg.) Portions = 385
SOUPS			
Basic Cream Soup	6 oz. or 3/4 cup (180 ml.)	Yield: 20 gal. (75 l.) Portions = 400	Yield: 35 gal. (132 l.) Portions = 700
Broth Type Soup	8 oz. or 1 cup (240 ml.)	Yield: 20 gal. (75 l.) Portions = 325	Yield: 35 gal. (132 l.) Portions = 560
VEGETABLES			
Fresh	4 oz. or 1/2 cup (115 g.)	Amt.Raw: 80#. (36.3kg.) Portions = 335	Amt. Raw:120 # (54.4 kg.) Portions = 500
Frozen Loose Pack	4 oz. or 1/2 cup (115 g.)	No. Of Packages: 50 Portions = 550	No. Of Packages: 80 Portions = 880
Frozen Solid Pack	4 oz. or 1/2 cup (115 g.)	No. Of Packages: 25 Portions = 275	No. Of Packages: 40 Portions = 440

* All main entree figures are given in terms of raw ingredients

MAINTENANCE

DAILY KETTLE CLEANING

The most important preventive maintenance operation on the steam jacketed kettle is the daily cleaning procedure after each use.

All kettle cleaning procedures should be faithfully completed by the end of each day's operation. In addition, cabinet doors, top, fixtures, kettle lid, etc., should be washed and rinsed to remove all food spills.

1. Fill kettle with water and mild detergent immediately after removing food from kettle.
2. Scrub kettle interior with a nylon brush.

NOTICE

NEVER SCRAPE KETTLE INTERIOR WITH METAL TOOLS, STEEL SCOURING PADS OR ABRASIVE CLEANERS. Scratches will result, which will ruin the kettle's general appearance and make it harder to clean and maintain in a sanitary condition.

3. Loosen food which is stuck to kettle by allowing it to soak. Also, a small amount of steam may help.
4. Position swing drain under draw-off valve. Open draw-off valve to drain soapy water.
5. Wipe down exterior, rinse and dry. Avoid getting water into electrical controls.

WARNING

DO NOT HOSE DOWN UNIT AS IT MAY CONTAIN ELECTRICAL COMPONENTS.

6. Remove strainer from inside kettle. Wash and rinse thoroughly.
7. Disassemble draw-off valve by first turning valve handle counterclockwise. Then, turn hex nut counterclockwise until valve handle and stem are free.
8. Wash inside of draw-off valve with a nylon brush.
9. Rinse kettle valve interior and reassemble valve.

NOTICE

Leave draw-off valve open when kettle is not in use. your gasket.

10. Remove swivel drain and its strainer. Wash, rinse and replace.

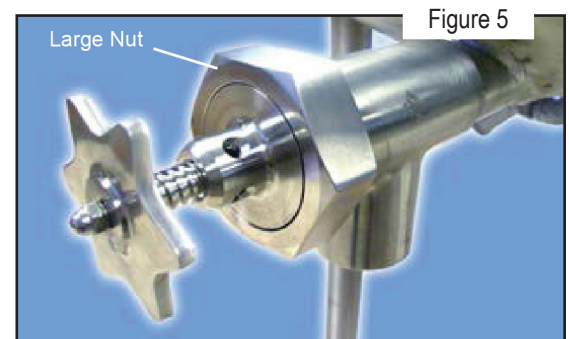
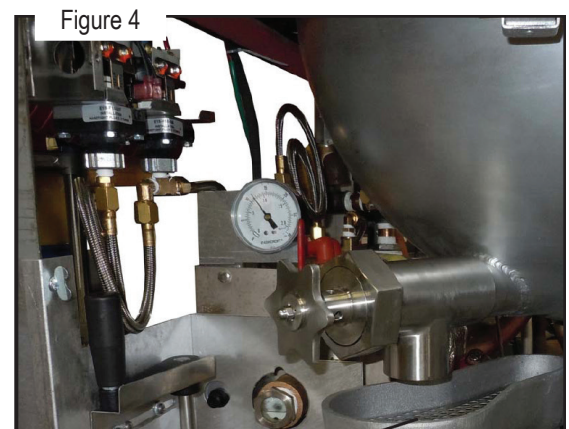
WEEKLY CLEANING

In addition to the daily cleaning it is necessary to clean the air intakes on a weekly basis. Air intakes provide necessary cooling air to the internal components. They are generally located on the rear and sides of the equipment.

TILTING MECHANISM LUBRICATION

Lubrication of the tilting mechanism is the only required preventive maintenance other than daily cleaning.

1. Inspect the screw of the tilting mechanism annually for adequate lubrication.
2. If screw appears "dry", apply good grade bearing grease directly on the threads so that the threads appear to be barely damp.



CLEANING THE BOILER

Replacement parts needed to complete this procedure:

PART NUMBER	DESCRIPTION	QUANTITY
91 - 8756	Front Cover Gasket	1
08 - 0034	Market Forge Zinc Anode	1
81 - 8660	Heating Element Gasket	2

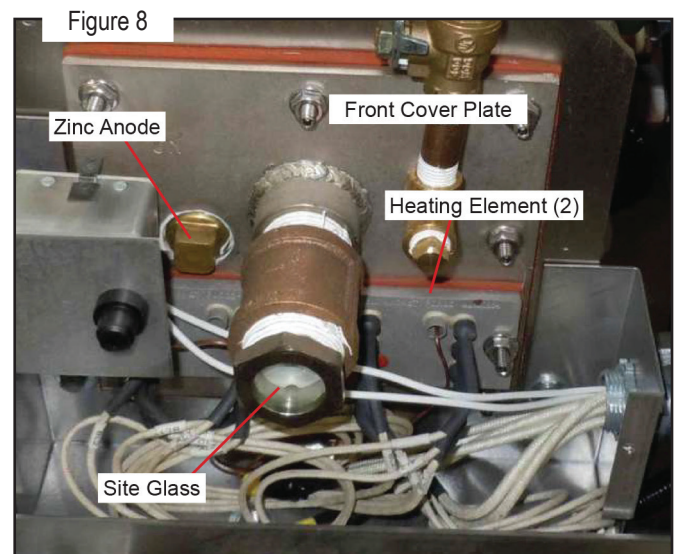
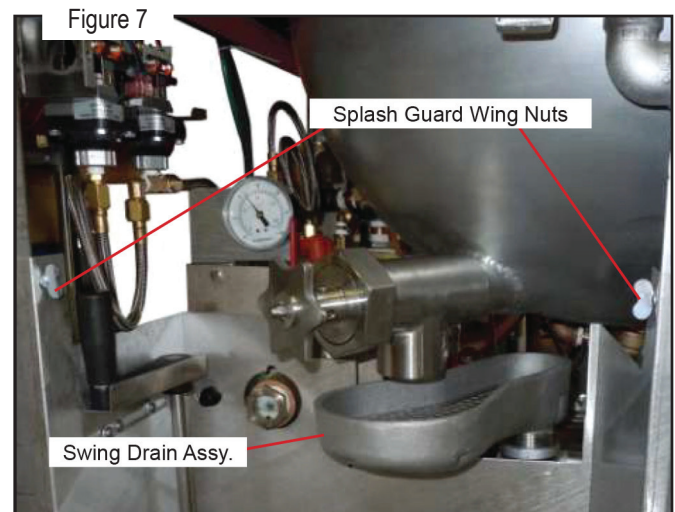
1. Move the heat and power switch to their off positions. This will allow the boiler to empty.

⚠ WARNING

DISCONNECT THE MAIN POWER SUPPLY.

2. Remove the swing drain assembly shown in “Figure 7” and move it safely out of the way.
3. Remove the splash guard as shown by removing the (2) wing nuts and move it out of the way.
4. Remove the front cover to the contactor box.
5. Remove the front cover plate with elements shown in “Figure 8” as follows:
 - a. Using a 1/4” socket head wrench, back off the (10) Hex-Nuts, counterclockwise.
6. Clean rust, scale and lime deposits from the inside of the boiler with a wire brush.
7. Remove all debris; flush out with clean water through the opening created by removing the front cover plate with elements and drain.
8. Remove the heating elements from the front cover plate. Take care to not damage the heating elements, brush lightly.
9. Clean the front cover plate and element flanges with a wire brush and wash. Be sure the areas that will come in contact with the gaskets and are clean and smooth.

To protect against further scale and corrosion remove the old cathodic anode. Install a New Market Forge Zinc Anode.



APPLICATION INSTRUCTIONS FOR TOTAL CONCEPT DESCALER

Market Forge has two basic types of boilers; one has an automatic drain valve, the other has a manual drain valve. To determine which type you have, open cabinet doors and you will see a control box with two switches and an indicator light.

The instruction label on the control box will identify the boiler as being either automatic or manual. Those boilers designated as being automatic must be energized in order to close the drain valve.

Total Concept is designed to be used with water between 160°F to 200°F.

Preheating is required on both automatic and manual boilers to raise the water temperature to the acceptable range (160 °F to 200 °F)

For manual boilers, make certain drain valve is tightly closed.

APPLICATION DIRECTIONS

1. Energize boiler and fill to operating level.
2. Energize heating circuit to preheat unit.
MANUAL: After unit is preheated, place the power switch in the OFF position.
DO NOT DRAIN THE UNIT.
AUTOMATIC: After unit is preheated, cycle the power switch from the ON position to the OFF position and immediately back to the ON position.
3. Remove the shipping cap, replace it with the pouring cap. Cut the tip of the pouring cap at the first notch to a 45° angle.
4. Install the tubing firmly over the tip of the pouring cap.
5. Cycle steam to kettle jacket. This releases steam pressure to “0” PSI in boiler, prior to step #7.
6. Disconnect terminals to forward probe. Remove the forward probe from the top or in front of the boiler shell. This orifice becomes the access port to the boiler chamber.

CAUTION

BOILER SHELL AND PROBE ARE HOT.

7. Feed the tubing through the access port into the boiler compartment.

NOTICE

A minimum of 4 inches must be inserted into the boiler.

8. Tilt the container, pour the contents into the unit.
9. When empty, refill the container with hot tap water and add to boiler for cleaning. Replace the probe in access port and tighten. Reconnect terminals by re- versing removal procedure.
10. After rinsing the container, place the tubing inside the bottle, cover with the shipping cap, dispose of properly. **DO NOT RE-USE CONTAINER.**
11. **DO NOT ENERGIZE HEATERS** - Allow 2 hours for cleaning.
12. After time has elapsed, drain the boiler.
13. Refill the boiler and drain. Repeat this step twice.
14. Bring the boiler to temperature and cycle steam to the kettle to purge cleaner/descaler from the steam supply lines. Repeat this step twice.
15. Unit is now ready for use.

NOTES

MT-25EO & MT-40EO Modular Base Electric Tilting Kettles



A product with the Market Forge name incorporates the best in durability and low maintenance. We all recognize, however, that replacement parts and occasional professional service may be necessary to extend the useful life of this appliance. When service is needed, contact a Market Forge Authorized Service Agency, or your dealer. To avoid confusion, always refer to the model number, serial number, and type of your appliance.



CROWN FOOD SERVICE EQUIPMENT

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