



# Operators Manual

## Installation, Operation & Service

### Direct Steam Mixer Kettles

FOR UNITS BUILT AFTER JULY 2010

**MODELS:**

- (T) MKDL-40-T (-CC)
- (T) MKDL-60-T (-CC)
- (T) MKDL-80-T (-CC))
- (T) MKDL-100-T (-CC)
- (T) MKDL-125-T (-CC)
- (T) MKDL-150-T (-CC)



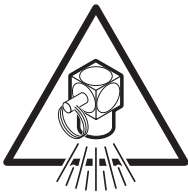
1333 East 179th St., Cleveland, Ohio, U.S.A. 44110  
Ph: 216.481.4900 Fx: 216.481.3782  
[www.clevelandrange.com](http://www.clevelandrange.com)

For a complete Service Manual  
refer to [www.clevelandrange.com](http://www.clevelandrange.com)



# For your safety

## DANGER



Keep clear of pressure relief discharge.



Keep hands away from moving parts and pinch points.

## IMPORTANT



Inspect unit daily for proper operation.



Do not fill kettle above recommended level marked on outside of kettle.

## CAUTION



Surfaces may be extremely hot! Use protective equipment.



Wear protective equipment when discharging hot product.

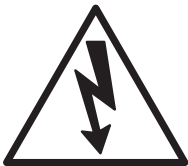


Do not lean on or place objects on kettle lip.



Stand clear of product discharge path when discharging hot product.

## SERVICING

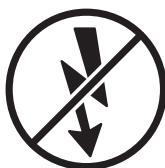


Shut off power at main fuse disconnect prior to servicing.



Ensure kettle is at room temperature and pressure gauge is showing zero or less prior to removing any fittings.

## GAS APPLIANCES



Do not attempt to operate this appliance during a power failure.



Keep appliance and area free and clear of combustibles.



Unit exhaust contains carbon monoxide. Operate only under a properly functioning hood with adequate makeup air.

# INSTALLATION

## GENERAL

Installation of the kettle must be accomplished by qualified installation personnel working to all applicable local and national codes. Improper installation of product could cause injury or damage.

This unit is built to comply with applicable standards for manufacturers. Included among those approval agencies are: UL, NSF, ASME/Ntl.Bd., CSA, ETL, CE, and others. Many local codes exist, and it is the responsibility of the owner/installer to comply with these codes.

## INSPECTION

Before uncrating, visually inspect the unit for evidence of damage during shipping. If damage is noticed, do not unpack the unit, follow shipping damage instructions.

## SHIPPING DAMAGE INSTRUCTIONS

If shipping damage to the unit is discovered or suspected, observe the following guidelines in preparing a shipping damage claim.

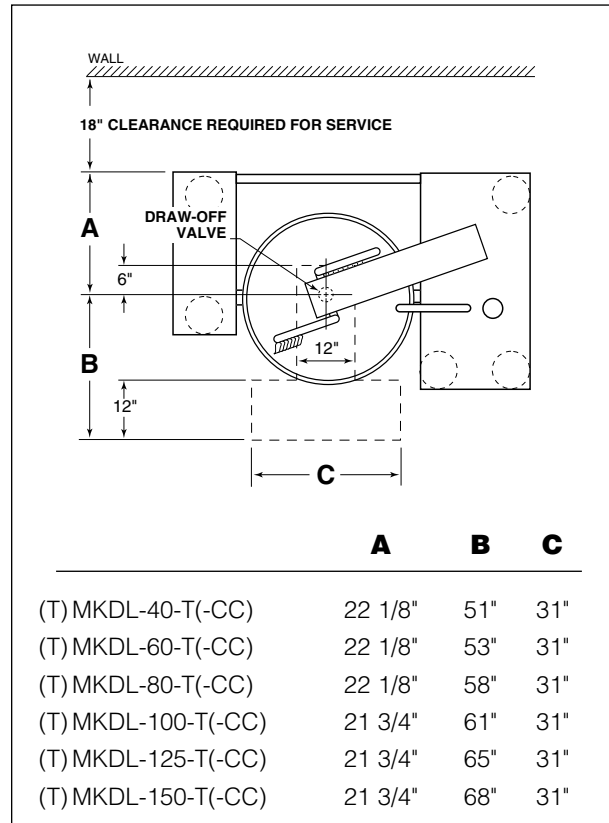
1. Write down a description of the damage or the reason for suspecting damage as soon as it is discovered. This will help in filling out the claim forms later. If possible, take a polaroid picture.
2. As soon as damage is discovered or suspected, notify the carrier that delivered the shipment.
3. Arrange for the carrier's representative to examine the damage.
4. Fill out all carrier claims forms and have the examining carrier sign and date each form.

## CLEARANCE REQUIREMENTS

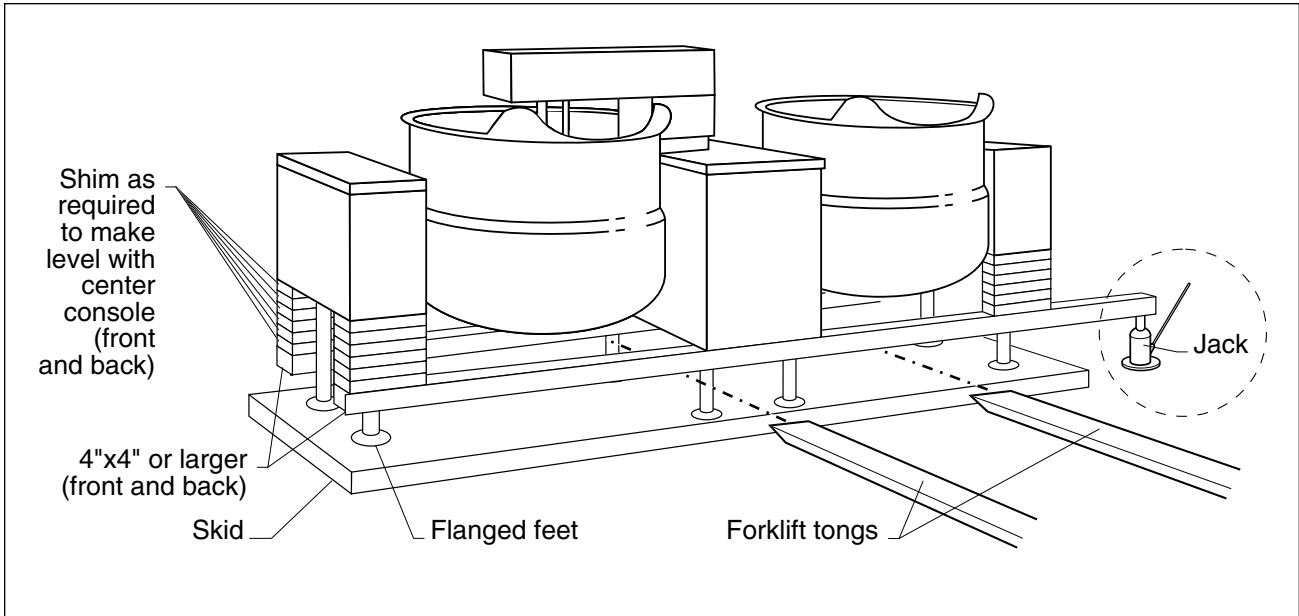
This unit must be installed in accordance with the clearances shown on the rating label which is adhered to the unit.

**FOR YOUR SAFETY.** Keep the appliance area free and clear of combustible materials.

## RECOMMENDED FLOOR DRAIN LOCATION



Recommended Floor Drain Location



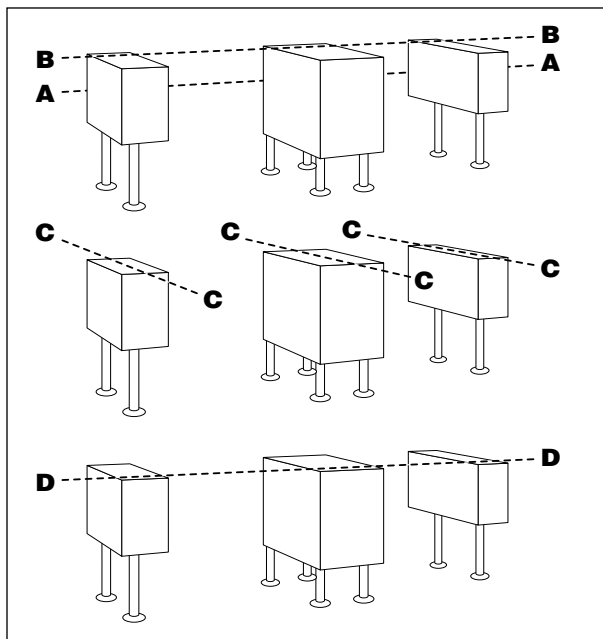
Recommended Installation Procedure

## MOVING UNIT

1. While still on skid, move unit as close to final installation position as possible.
2. Prepare unit for lifting as shown in diagram.
3. Lift gently with a forklift or jacks and remove skid.
4. Lower gently to ground and remove forklift and blocking.
5. If unit has to be re-positioned, slide gently. Do not twist or push one side of unit excessively and cause binding on trunnions.

## LEVELING

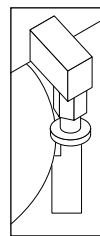
**Note:** Instructions reflect a more complicated twin mixer kettle - process for single mixer kettles is the same.



Recommended Leveling Procedure

1. With straight-edge, line the backs of the consoles up with each other (dotted line **A**).
2. Level and straight-edge backs of consoles (dotted line **B**). Adjustments are made by turning flanges on back feet only.

3. Level consoles individually from front to back (dotted lines **C**). Adjustments are made by turning flanges on front feet only.
4. Re-check that the back is level (dotted line **B**) and then the front (dotted line **D**). Adjust if necessary.



Guide Pins

5. Check that mixer bridge is level and guide pins lock smoothly without binding. If not repeat steps **1** through **4**.

**NOTE:** See Operating Instructions before operating unit.

6. Make electrical connections (see electrical service connections) and test mixer bridge as follows:

- ⇒ **A/** Raise mixer bridge.
- ⇒ **B/** Swing bridge out over center console.
- ⇒ **C/** Swing bridge to the left as far as possible.

- ⇒ **D/** Lower bridge.
  - ⇒ **E/** Bridge pins should enter pin hole on kettle perfectly, If not return to step 1 and repeat leveling steps.
  - ⇒ **F/** Raise bridge and swing to far right (for twin mixers only).
  - ⇒ **G/** Repeat steps **D** and **E** (for twin mixers only).
- 7.** Once positioned and leveled, permanently secure the kettle's flanged feet to the floor using 5/16 inch stainless steel lag bolts and floor anchors (supplied by the installer). Secure each of the flanged feet with one bolt in each hole.
  - 8.** Connect piping as described in the "PIPING CONNECTION" section.

## ELECTRICAL SERVICE CONNECTIONS

Install in accordance with local codes and/or the National Electric Code ANSI/NFPA No 70-1981 (USA) or the Canadian Electric Code CSA Standard C22.1 (Canada). A separate fused disconnect switch must be supplied and installed. The kettle must be electrically grounded by the installer.

The electric supply must match the power requirements specified on the kettle's rating plate. The copper wiring must be adequate to carry the required current at the rated voltage. Refer to the specification sheet for electrical specifications.

- 1.** Ensure main power is turned off before connecting wires.
- 2.** Remove the screws at the rear of the center console cover, and remove the cover. A wiring diagram is affixed to the underside of the console cover.
- 3.** Feed permanent copper wiring 18" through the cut-out in the bottom of the console. Connect wiring in junction box in the bottom of the console.
- 4.** Turn main power back on.
- 5.** Check for correct rotation of electric motor (access by removing top front cover on center console). If rotation is incorrect, disconnect main power and reverse any two of the three live lines.
- 6.** Replace the console cover and secure it with screws.

## COMPRESSED AIR CONNECTION

Mixer Kettles with an air activated discharge valve require a minimum of 90 PSI to operate correctly.

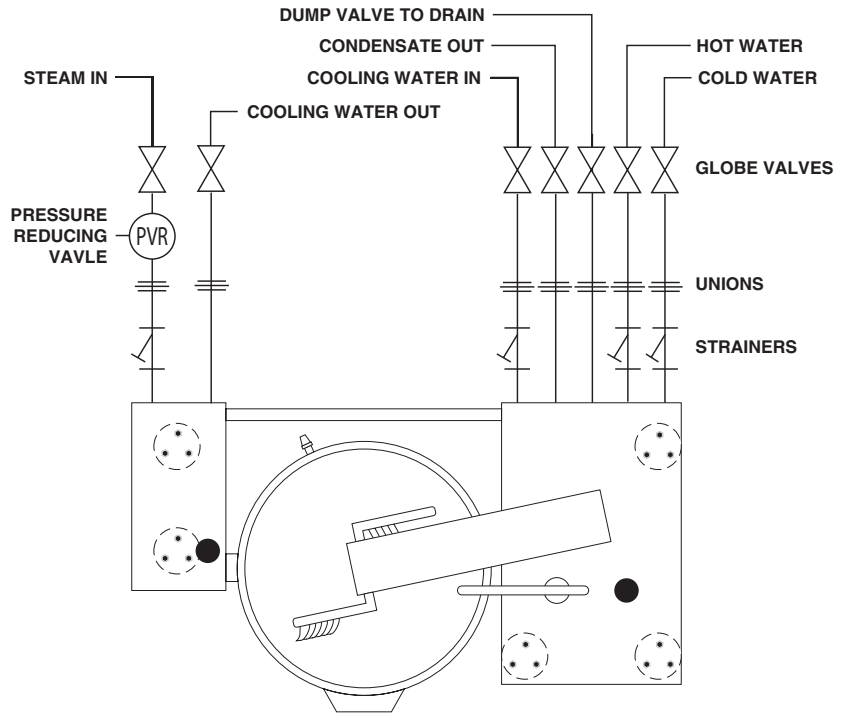
If the unit is also supplying air to a Metering Filling Station then a pressure of 100 PSI at a minimum volume of 25 CFM is required.

The air supplied to the mixer should be clean and dry. No oil should be added to the supply air. We recommend the compressed air system be equipped with a drier, filter, and automatic water dump on the air compressor receiver tank. If the distance between the tank and the unit is less than 100 feet then a minimum line size of 3/4" is required. A distance of 100 to 300 feet requires a minimum 1" line.

## PIPING CONNECTIONS

- 1.** All plumbing to and from the kettle should be thoroughly cleaned and inspected for dirt and debris before the final connections to the kettle are made.
- 2.** Connect all piping according to identification tags on unit.
- 3.** Piping between boiler and kettle should be sloped and a drip condensate trap installed at lowest point.
- 4.** Insulating steam piping is recommended for safety and higher efficiency.
- 5.** To determine the correct steam supply pipe size:
  - ⇒ **A/** Find the total steam requirement using the first chart.
  - ⇒ **B/** Use the steam requirement total in the second chart to find the correct pipe size.

# PIPING SCHEMATIC



## STEAM REQUIREMENTS FOR KETTLES

Kettle Cap. U.S. Gal.	Kettle Dia.	25 psi Steam 265°F		40 psi Steam 287°F		80 psi Steam 302°F	
		Lbs./Hr.	Hp./Hr.	Lbs./Hr.	Hp./Hr.	Lbs./Hr.	Hp./Hr.
40	26"	100	3	120	4	150	4.5
60	29.5"	150	4.5	190	5.5	230	7.0
80	33"	210	6.0	260	7.5	300	9.0
100	36"	260	7.5	320	9.5	390	11.0
125	40"	320	9.5	400	11.5	470	14.0
150	40"	390	11.0	480	14.0	570	17.0

- ❑ Steam requirements are maximum per hour.
- ❑ If more than one unit is on the same line then add the steam usage for each one to reach a total.

## STEAM PIPE SIZING

Steam Required Lbs./Kg. per hour	Required pipe length in feet/meters		
	200 Ft. 60 Meters	400 Ft. 125 Meters	600 Ft. 185 Meters
100/45 Kg.	3/4"	1"	1 1/4"
200/91 Kg.	1"	1 1/4"	1 1/2"
300/136 Kg.	1"	1 1/4"	1 1/2"
400/182 Kg.	1"	1 1/2"	1 3/4"
500/227 Kg.	1 1/4"	1 1/2"	1 3/4"
700/318 Kg.	1 1/2"	1 3/4"	2"
900/409 Kg.	1 1/2"	1 3/4"	2"

### NOTES:

- ❑ Pipe size in inches.
- ❑ Less than 50 PSI (3.4 BAR) pressure, increase pipe size by 1/4".
- ❑ 80 to 100 PSI (5.5 to 6.8 BAR), Decrease pipe size by 1/4".

# QUALITY ASSURANCE CHECKLIST

***Follow this list only after all other installation steps are completed. Some steps require the use of equipment. Follow operating instructions.***

***The following will be performed before the unit is connected to utilities:***

- 1.** Visual                      Examine unit for scratches, dents, or other defects.
- 2.** Visual                      Check flanged feet all have bolts holding them.
- 3.** General                    Check all accessible wiring, mechanical and plumbing connections by hand for secure, tight and satisfactory assembly. Remove all paper.
- 4.** Level                        Check unit has been leveled and squared correctly.

***The following will be performed with the unit connected to utilities:***

- 5.** Raise Bridge              If bridge does not raise then check motor rotation. Bridge should not raise until speed control is turned to minimum and then adjusted back up.
- 6.** Swing Bridge            Bridge when fully raised should swing without hitting any object, i.e. control housing, kettle lip. Check that hydraulic hoses are not being pinched by stops on swivel assembly.
- 7.** Tilt Kettle                Kettle tilts smoothly both down and back up. If power tilt, check that micro switches are adjusted properly (kettle is level in upright position and drains fully when tilted) and are not being crushed by gear.
- 8.** Lower Bridge            Raise bridge. Switch to mix. Turn speed control to zero to reset micro switch then set speed control to number four. Check that unit does not begin to mix until bridge has lowered part way into the kettle. Check that mixer bridge pin lowers into pin hole correctly
- 9.** Speed Control - Main      Main agitator arm not rotating when set at minimum but will start to move slowly on one. Speed control makes positive contact with micro switch.
- 10.** Speed Control - Secondary    Set main speed control to five. Adjust secondary control from minimum to maximum. Look for considerable speed variance.
- 11.** Water Faucets        Turn on hot water faucet. Turn off and check for leaks in piping and drips from faucet spout. Repeat above with cold water faucet.
- 12.** Product Discharge Valve    Add water to kettle. Check for leaks from valve. Open and close valve a few times and check for leaks again.

## OPTIONAL CONTROLS

### ***Some units may not have the following items to test***

- 13. Meter** Complete this test using markings on mixer arm or a measuring strip if there are no markings on the unit. Test the meter at the following values up to capacity (Should be approx.  $\pm 1/4$ "). During this test check that the (interrupt) switch stops the water flow and the (continue/reset) when switched to "continue" resumes the flow without resetting the meter.

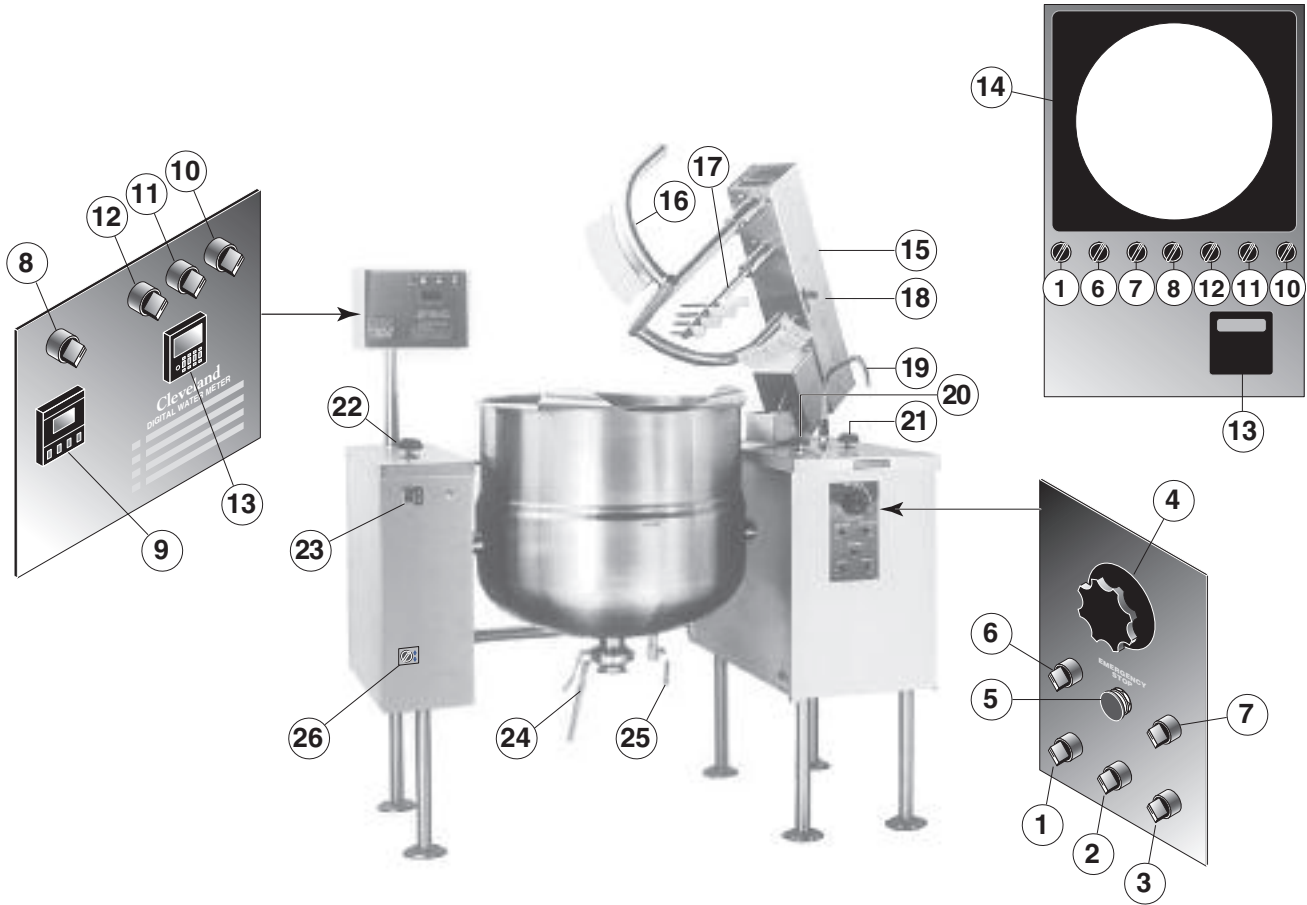
GALLONS	LITERS
5	20
20	80
40	160
80	320
100	400

When the (continue/reset) switch is turned to "reset" the displayed quantity on the meter should be erased and the count begins at zero.

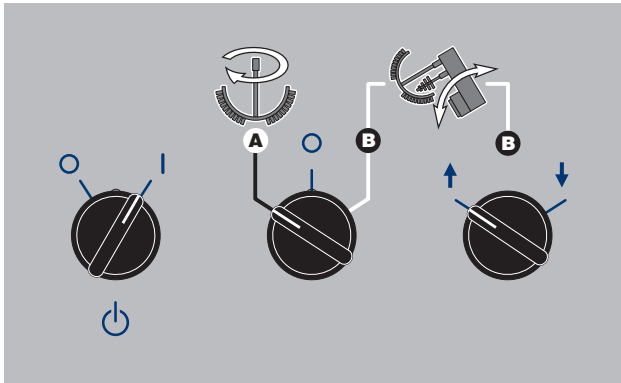
### ***For the following test fill the kettle 3/4 full of water. Have the mixer rotating with the speed control setting at three to five.***

- 14. Heating Manual** (Active/Bypass) switch in "Bypass" position. (Heat/Off/Cool) switch in "Heat" position. Open manual steam valve, steam enters kettle and condensate escapes from steam trap.  
For units equipped with water cooling -  
1./ Automatic drain opens and discharges water from jacket,  
2./ Automatic drain closes when steam starts exiting,  
3./ Condensate drain opens and discharges hot water.  
Close manual steam valve and you should hear steam entering kettle slow to a stop.
- 15. Cooling Manual** Turn (Heat/Off/Cool) switch to "Off". Open manual steam valve. Turn (Heat/Off/Cool) switch to "Cool". Cooling water enters kettle from large console and exits from side console.
- 16. Heating Automatic** (Heat/Off/Cool) switch in "Off" position. Open manual steam valve. Follow operating instructions on label to set the temperature to 180°F/ 90°C. Turn (Active/Bypass) switch to "Active", you should hear steam entering kettle and condensate should escape steam trap.  
For units equipped with water cooling -  
1./ Automatic drain opens and discharges water from jacket,  
2./ Automatic drain closes when steam starts exiting,  
3./ Condensate drain opens and discharges hot water.
- 17. Chart Recorder** a) Seal chart recorder on the inside all around to the panel with silicone.  
b) Seal pipe penetration where cables enters panel from console with silicone all around.

# OPERATING INSTRUCTIONS



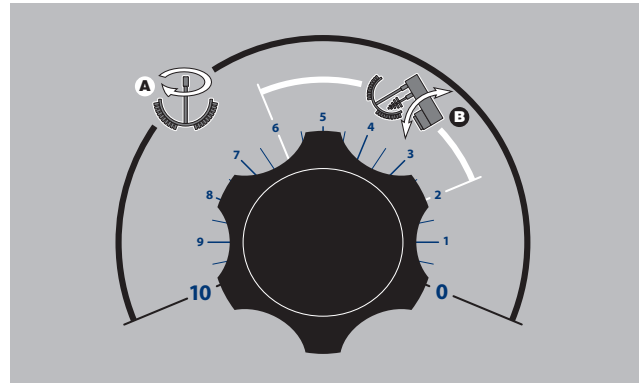
ITEM #	DESCRIPTION	FUNCTION
1	MAIN POWER SWITCH	Power switch for unit.
2	MIX/LIFT SWITCH	Sets hydraulics to mix or lift mode.
3	UP/DOWN SWITCH	When unit is in lift mode, mixer bridge can be raised or lowered with this switch.
4	MIXER SPEED CONTROL	Controls speed of agitators and mixer bridge lift.
5	EMERGENCY STOP BUTTON	Stops hydraulic system (agitators and mixer bridge lift).
6	HEAT/COOL SWITCH	Switches left hand kettle from heating to cooling.
7	HEAT/COOL SWITCH	Switches right hand kettle from heating to cooling.
8	ACTIVE/BYPASS SWITCH	Switch to activate or bypass (manual operation) the controller.
9	TEMPERATURE CONTROLLER	Digital temperature control and indicator.
10	WATER METER POWER SWITCH	Power switch for water meter.
11	WATER METER START SWITCH	Starts water flow to kettle.
12	WATER METER INTERRUPT SWITCH	Interrupts flow without resetting water meter.
13	WATER METER CONTROL	Display and settings for water meter.
14	TIME/TEMPERATURE CHART RECORDER	Documents cooking information.
15	MIXER BRIDGE	Encloses agitator motors.
16	MAIN AGITATOR ARM	Provides most of the product movement.
17	SECONDARY AGITATOR ARM	Provides reverse agitation and product lift in kettle.
18	SECONDARY SPEED CONTROL KNOB	Controls speed of secondary agitator arm.
19	FAUCET SPOUT	Delivers water to the kettle.
20	HOT WATER VALVE	Turns on hot water.
21	COLD WATER VALVE	Turns on cold water.
22	STEAM CONTROL VALVE	Manually controls the amount of steam entering the kettle.
23	POWER TILT CONTROL SWITCH	Used for tilting the kettle up or down. Replaced by hand tilt wheel on manual tilt units.
24	BUTTERFLY VALVE	Discharge valve for product in the kettle.
25	DRAIN COCK	Used to manually drain condensate from kettle.
26	AIR REGULATOR SWITCH	Used to open and close the air valve (optional/not shown).



MAIN POWER SWITCH

MIX/LIFT SWITCH

UP/DOWN SWITCH



MIXER SPEED CONTROL SWITCH

## Operating Suggestions

Cleveland Range Mixer Kettles are simple and safe to operate. The following tips will allow you to maximize the use of your new mixer.

1. To achieve optimum performance on tilting kettles;  
Before applying steam to a cold kettle, open the DRAIN COCK to drain condensate from the kettles jacket. Close drain cock when unit is fully drained.
2. Allow unit to preheat before addition of product to kettle. However when cooking egg and milk products, the kettle should NOT be preheated, as products of this nature adhere to hot cooking surfaces. These types of foods should be placed in the kettle before heating is begun.
3. An important part of kettle cleaning is to prevent foods from drying on. For this reason, cleaning should be completed immediately after cooked foods are removed. Refer to the "Care and Cleaning" instructions for detailed kettle washing procedures.
4. If a mixer bridge is equipped with a temperature probe for a controller or thermometer, the probe must be submerged a minimum of three inches in the product for accurate readings.

## Safety

1. Close PRODUCT DISCHARGE VALVE before filling the kettle.
2. When raising or lowering MIXER BRIDGE, insure FAUCET SPOUT is not in the way of MAIN AGITATOR ARM or damage to spout will result.
3. As a safety precaution the MIXER SPEED CONTROL must first be turned to zero before unit will start to mix.
4. Always remember, like a cooking pot the kettles become very hot when cooking. Avoid contact with bare skin.

## General Operation

1. Turn MAIN POWER SWITCH on.
2. Turn STEAM CONTROL VALVE to control heat kettle.

## Lifting & Lowering Bridge

WARNING: Insure FAUCET SPOUT is out of way before raising or lowering bridge.

1. Turn MIX/LIFT SWITCH to lift icon "A".
2. Turn MIXER SPEED CONTROL to "0" and back up to "5".
3. Turn and hold UP/DOWN SWITCH to up arrow to raise or down arrow to lower.

## Mixing

1. Turn MIX/LIFT SWITCH to mix icon "B".
2. Turn MIXER SPEED CONTROL SWITCH to "0" and slowly adjust to desired speed.
3. Adjust SECONDARY SPEED CONTROL KNOB to desired speed.

## Tilting Kettle

1. Raise MIXER BRIDGE and swing to side.
2. For manual tilt: Turn HANDWHEEL.
3. For power tilt: Turn POWER TILT CONTROL SWITCH.

WARNING: Do not tilt kettle when mixer agitators are in kettle bowl.

## Product Discharge Valve

1. For butterfly valve: Push handle in and pull upwards to open.
2. For air valve: Turn AIR REGULATOR SWITCH to open or close.

## Adding Water Manually

1. Locate FAUCET SPOUT over desired kettle.
2. Turn on HOT or COLD WATER VALVES.




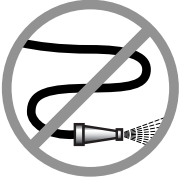

# CLEANING INSTRUCTIONS



## CARE AND CLEANING

Cooking equipment must be cleaned regularly to maintain its fast, efficient cooking performance and to ensure its continued safe, reliable operation. The best time to clean is shortly after each use (allow unit to cool to a safe temperature).

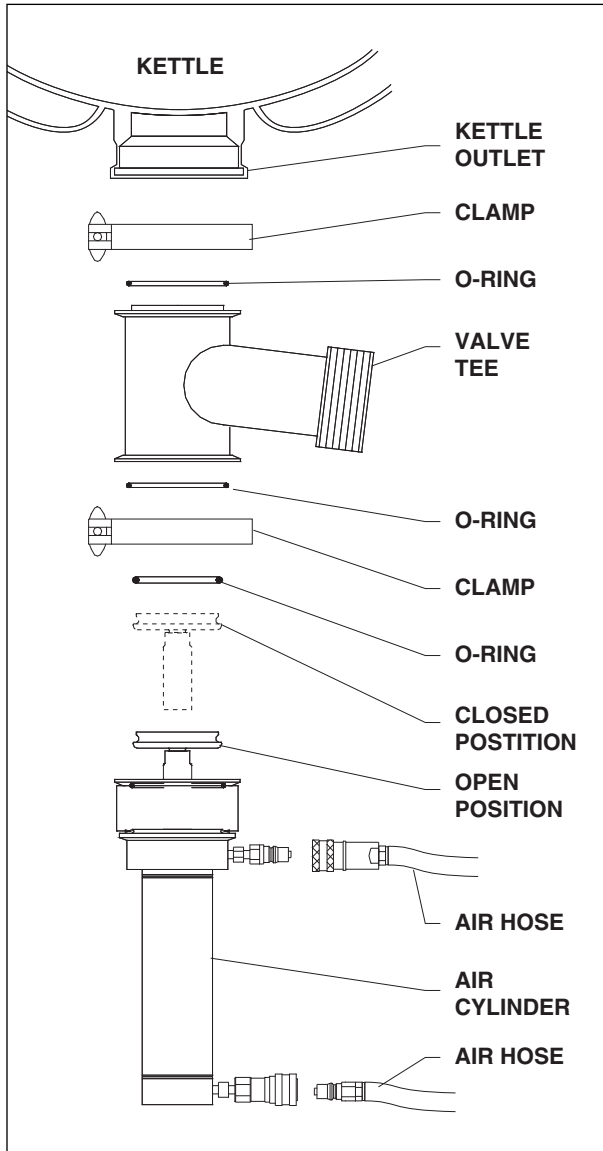
## WARNINGS

- ⇒  Do not use detergents or cleansers that are chloride based or contain quaternary salt.  
**Chloride Cleaners**
- ⇒  Do not use a metal bristle brush or scraper.  
**Wire Brush &**
- ⇒  Steel wool should never be used for cleaning the stainless steel.  
**Steel Pads**
- ⇒  Unit should never be cleaned with a high pressure spray hose.  
**High Pressure Spray Hose**
- ⇒  Do not leave water sitting in unit when not in use.  
**Stagnant Water**

## CLEANING INSTRUCTIONS

1. Turn unit off.
2. Remove drain screen (if applicable). Thoroughly wash and rinse the screen either in a sink or a dishwasher.
3. Prepare a warm water and mild detergent solution in the unit.
4. Remove food soil using a nylon brush.
5. Loosen food which is stuck by allowing it to soak at a low temperature setting.
6. Drain unit.
7. Rinse interior thoroughly.
8. If the unit is equipped with a **Tangent Draw-Off Valve**, clean as follows:
  - a) Disassemble the draw-off valve first by turning the valve knob counter-clockwise, then turning the large hex nut counter-clockwise until the valve stem is free of the valve body.
  - b) In a sink, wash and rinse the inside of the valve body using a nylon brush.
  - c) Use a nylon brush to clean tangent draw-off tube.
  - d) Rinse with fresh water.
  - e) Reassemble the draw-off valve by reversing the procedure for disassembly. The valve's hex nut should be hand tight only.
9. If the unit is equipped with a **Butterfly Valve**, clean as follows:
  - a) Place valve in open position.
  - b) Wash using a warm water and mild detergent solution.
  - c) Remove food deposits using a nylon brush.
  - d) Rinse with fresh water.
  - e) Leave valve open when unit is not in use.

- 10.** If the unit is equipped with a **Air Valve**, clean daily as follows:



- a)** Open product valve.
- b)** Disconnect air hoses.
- c)** Remove air cylinder.
- d)** Remove valve tee.
- e)** Remove all O-rings.
- f)** Clean air cylinder, do not submerge in water. Wipe clean and sanitize.
- g)** Clean and sanitize tee and O-rings.
- h)** Grease and reinstall O-rings.
- i)** Reinstall tee to kettle outlet.
- j)** Reinstall air cylinder to bottom of tee.
- k)** Reconnect air hoses.
- l)** Close valve and check for alignment.

- 11.** Clean the scraper blades as follows:

- a)** Remove retaining ring and slide scraper blades off agitator arm.
- b)** Place parts in a pan of warm water to soak.
- c)** Clean in a sink, using a warm water and mild detergent solution.
- d)** Rinse with fresh water.
- e)** Allow to dry thoroughly on a flat, clean surface.

- 10.** Using mild soapy water and a damp sponge, wash the exterior, rinse, and dry.

### NOTES

- ⇒ For more difficult cleaning applications one of the following can be used: alcohol, baking soda, vinegar, or a solution of ammonia in water.
- ⇒ Leave the cover off when the kettle is not in use.

# STAINLESS STEEL EQUIPMENT CARE AND CLEANING

(Supplied courtesy of Nafem. For more information visit their web site at [www.nafem.org](http://www.nafem.org))

## Contrary to popular belief, stainless steels ARE susceptible to rusting.

Corrosion on metals is everywhere. It is recognized quickly on iron and steel as unsightly yellow/orange rust. Such metals are called "active" because they actively corrode in a natural environment when their atoms combine with oxygen to form rust.

Stainless steels are passive metals because they contain other metals, like chromium, nickel and manganese that stabilize the atoms. 400 series stainless steels are called ferritic, contain chromium, and are magnetic; 300 series stainless steels are called austenitic, contain chromium and nickel; and 200 series stainless, also austenitic, contains manganese, nitrogen and carbon. Austenitic types of stainless are not magnetic, and generally provide greater resistance to corrosion than ferritic types.

With 12-30 percent chromium, an invisible passive film covers the steel's surface acting as a shield against corrosion. As long as the film is intact and not broken or contaminated, the metal is passive and stain-less. If the passive film of stainless steel has been broken, equipment starts to corrode. At its end, it rusts.

## Enemies of Stainless Steel

There are three basic things which can break down stainless steel's passivity layer and allow corrosion to occur.

1. Mechanical abrasion
2. Deposits and water
3. Chlorides

**Mechanical abrasion** means those things that will scratch a steel surface. Steel pads, wire brushes and scrapers are prime examples.

**Water** comes out of the faucet in varying degrees of hardness. Depending on what part of the country you live in, you may have hard or soft water. Hard water may leave spots, and when heated leave deposits behind that if left to sit, will break down the passive layer and rust stainless steel. Other deposits from food preparation and service must be properly removed.

**Chlorides** are found nearly everywhere. They are in water, food and table salt. One of the worst chloride perpetrators can come from household and industrial cleaners.

## So what does all this mean? Don't Despair!

Here are a few steps that can help prevent stainless steel rust.

### 1. Use the proper tools.

When cleaning stainless steel products, use non-abrasive tools. Soft cloths and plastic scouring pads will not harm steel's passive layer. Stainless steel pads also can be used but the scrubbing motion must be in the direction of the manufacturers' polishing marks.

### 2. Clean with the polish lines.

Some stainless steel comes with visible polishing lines or "grain." When visible lines are present, always scrub in a motion parallel to the lines. When the grain cannot be seen, play it safe and use a soft cloth or plastic scouring pad.

### 3. Use alkaline, alkaline chlorinated or non-chloride containing cleaners.

While many traditional cleaners are loaded with chlorides, the industry is providing an ever-increasing choice of non-chloride cleaners. If you are not sure of chloride content in the cleaner used, contact your cleaner supplier. If your present cleaner contains chlorides, ask your supplier if they have an alternative. Avoid cleaners containing quaternary salts; it also can attack stainless steel and cause pitting and rusting.

### 4. Treat your water.

Though this is not always practical, softening hard water can do much to reduce deposits. There are certain filters that can be installed to remove distasteful and corrosive elements. To insure proper water treatment, call a treatment specialist.

### 5. Keep your food equipment clean.

Use alkaline, alkaline chlorinated or non-chloride cleaners at recommended strength. Clean frequently to avoid build-up of hard, stubborn stains. If you boil water in stainless steel equipment, remember the single most likely cause of damage is chlorides in the water. Heating cleaners that contain chlorides have a similar effect.

### 6. Rinse, rinse, rinse.

If chlorinated cleaners are used, rinse and wipe equipment and supplies dry immediately. The sooner you wipe off standing water, especially when it contains cleaning agents, the better. After wiping equipment down, allow it to air dry; oxygen helps maintain the stainless steel's passivity film.

### 7. Never use hydrochloric acid (muriatic acid) on stainless steel.

### 8. Regularly restore/passivate stainless steel.

## Recommended cleaners for specific situations

Job	Cleaning Agent	Comments
Routine cleaning	Soap, ammonia, detergent, Medallion	Apply with cloth or sponge
Fingerprints & smears	Arcal 20, Lac-O-Nu Ecoshine	Provides barrier film
Stubborn stains & discoloration	Cameo, Talc, Zud, First Impression	Rub in direction of polish lines
Grease & fatty acids, blood, burnt-on-foods	Easy-off, De-Grease It Oven Aid	Excellent removal on all finishes
Grease & oil	Any good commercial detergent	Apply with sponge or cloth
Restoration/Passivation	Benefit, Super Sheen	

## Review

1. Stainless steels rust when passivity (film-shield) breaks down as a result of scrapes, scratches, deposits and chlorides.
2. Stainless steel rust starts with pits and cracks.
3. Use the proper tools. Do not use steel pads, wire brushes or scrapers to clean stainless steel.
4. Use non-chlorinated cleaners at recommended concentrations. Use only chloride-free cleaners.
5. Soften your water. Use filters and softeners whenever possible.
6. Wipe off cleaning agent(s) and standing water as soon as possible. Prolonged contact causes eventual problems.

To learn more about chloride-stress corrosion and how to prevent it, contact the equipment manufacturer or cleaning materials supplier.

Developed by Packer Engineering, Naperville, Ill., an independent testing laboratory.

# ***MAINTENANCE***

## **INSPECTION AND MAINTENANCE CHECK LIST**

Cleveland Range equipment requires little preventative maintenance. We do however provide the following chart as a guide line for inspection and maintenance to keep your unit functioning at 100%.

### MONTHLY INSPECTIONS

<b>Item</b>	<b>Inspection</b>
Item Switches	Inspect switches for damage and correct operation. Replace as required.
<u>Product Drain Valves</u>	
Tangent Draw-Off Valve	Inspect parts for damage. Test valve for leakage. Replace as required.
Butterfly Valve.	Inspect parts for damage. Test valve for leakage. Replace as required.
Air Valve	Inspect parts for damage. Test valve for leakage. Check valve seals for air leakage. Inspect supply hose and fittings. Replace as required. Inspect air filter and replace if required.

### SIX MONTH MAINTENANCE

Lubrication	Grease trunnion housings. Grease bridge swivel assembly. Use "Never Seize" on tilt worm and gear.
Strainers	Clean strainers in steam in and cooling water supply lines.

### YEARLY MAINTENANCE

Lubrication	Drain hydraulic oil and remove filter. Replace oil and filter (see Hydraulic Oil Replacement Procedure.
Solenoid Valves	Inspect solenoid valves for proper operation. Clean or replace as required.

## **WARRANTY**

Our Company supports a worldwide network of Maintenance and Repair Centers. Contact your nearest Maintenance and Repair Center for replacement parts, service, or information regarding the proper maintenance and repair of your cooking equipment

In order to preserve the various agency safety certification (UL, NSF, ASME/Ntl. Bd., etc.), only factory-supplied replacement parts should be used. The use of other than factory supplied replacement parts will void warranty.