COOK/CHILL OPERATOR'S MANUAL

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Cleveland

COOK/CHILL
OPERATOR'S MANUAL

INDEX

The Cleveland Range Cook/Chill Operator's Manual provides general information for Cleveland Range Cook/Chill customers. A Cleveland Cook/Chill Specialist can provide training specific for your needs.

Contract: Cleveland Range, LLC at 216-496-9082 and ask for Cook/Chill

Cleveland

CONVERSION TO CLEVELAND COOK/CHILL OPERATOR'S MANUAL

The Cleveland Cook/Chill Food Production System process is an USDA approved system of food production where food is cooked, pasteurized, packaged and chilled for long term storage and distribution. Below is a list of suggested topics to consider when converting from a conventional food production operation to a Cleveland Range, Inc., Cook/Chill Food Production System.

I. MENUS

Cook/chill expands the opportunity to provide new or additional menu items that previously could not fit into the food production day due to limited equipment, time or skilled labor. The Cleveland Cook/Chill Food Production System process is an USDA approved system of food production where food is cooked, pasteurized, packaged and chilled for long term storage and distribution. Instead of freezing food which can alter the texture of freshly cooked foods, the cook/chill process maintains the integrity and quality of food.

Options for menu changes include but are not limited to:

1. Increasing menu choices and variety: Offer more than one entrée, soup, salad dressing, etc. to the customer.
2. Offering the menu around the clock in food service industries such as healthcare, hotel room service, or cruise lines.
3. Dealing with an inadequate source of skilled food service staff. (See Section VII. Personnel regarding financial savings using cook/chill)

II. COOK/CHILL TECHNIQUES

Cooking: Cook food to a minimum of 165F in the kettles to assure safe food production and pasteurization. Food will continue to cook while being pumped and additional cooking will occur when food is being heated for service. This should be taken into consideration when determining length of cooking time. Overcooking may result in breakdown of some products during tumble chilling or retherming.

The sequence of adding ingredients depends on the texture you want to achieve in the finished product. Usually ingredients that need a longer cooking time will be added first. Ingredients that cook quickly are added after the product has reached temperature. Bring the product back up to temperature and pump immediately.

Cooling: Cool products to below 40° as rapidly as possible. The average cooling time may be 45 minutes. Longer and shorter cooling periods depend upon the texture of the product, the temperature of the hot product and cold water, the volume of product, the volume of cold water, agitation and packaging.

Kettle pressure: Cook/chill direct steam kettles operate at approximately 45 to 50 psi. Standard kettles operate at 25 to 30 psi. The higher operating pressure results in fast high heat and rapid food production. Recipes previously prepared in standard kettles will need to be adjusted to prevent overcooking and scorching. Cooking with the cover on the kettle will reduce the amount of evaporation of liquid.

Cook tank: This cook/chill process is most often used for roasts and can also be used for rice, root vegetables, chicken, meatloaf, and less tender cuts of meats and chops. Food is slow cooked at a low temperature to tenderized meats, maximize yields and produce a consistent quality product.

Advantages in using a Cook Tank are:

1. Increased yields
2. Improved food safety (HACCP)
3. Reduced amounts to purchase
4. Reduced labor and handling
5. Improved quality consistency
6. Reduced loss from crumbling while slicing
7. Reduced cost of finished goods
8. Increased shelf life

The **Cook Tank** slow-cooking method reduces shrinkage and loss of meats as shown below:

Meat Product	Oven-Yield	Cook Tank-Yield	Increase in Yield
Roast Beef	70%	90%	26%
Roast Pork	60%	80%	33%
Meat Loaf	70%	95%	36%
Chicken	65%	75%	15%
Swiss Steak	66%	80%	21%
Meatballs	60%	80%	33%

Cook Tank savings when purchasing raw meat:

	Oven	Cook Tank
Amount needed	1000 lbs.	1000 lbs.
Yield	70%	90%
Amount to buy	1428 lbs.	1111 lbs.
Cost to purchase if $1.50/lb.	$2142	$1667
Savings:	**$475 for 1000 lbs.**	

Cold foods: Salad dressings, slaws, and meat salads can be mixed and pumped while remaining cold at below 49°F. Ice water can be circulated* in the jacket of the kettle to keep ingredients cold while mixing ingredients. Refrigerate all ingredients 24 hours ahead of time and keep them refrigerated until they are needed to optimize food safety. Since many cold foods are not pasteurized in a cook/chill process, their shelf life may be 7 to 10 days.

* Installed under standard equipment specification. Ice water should be 33F to 35F.

Agitator speed: Determine the desired speed of the scrapers and agitator and write this information on recipes. Slow mixing is used on delicate products. Fast mixing helps suspend solids in thin liquids. Slow or stop the agitator when adding ingredients.

Temperatures: The following temperatures are suggestions and may need to be adjusted for each recipe.

35F for cold foods
120F for gelatin, then cool to 45 F to suspend fruit in gelatin
160 F for delicate foods like milk and cheese
165 F to kill pathogens
190 F to bloom some starches, check with manufacturer

III. RECIPE MODIFICATIONS

Recipe information from Cleveland Range Inc. Cook/Chill is provided as a guideline. As you develop and test recipes, determine the procedures and techniques that best work to provide the quality that you have established.

Ingredients must be clean, wholesome, free from soil and spoilage and must be prepared under sanitary conditions. Refrigerate all ingredients 24 hours ahead of time and keep them refrigerated until they are needed to optimize food safety.

A. Spices

Generally, you will use less spices, herbs, and salt. As the product sits in the food bank, the flavor will continue to intensify. Mix pasteurized spices and herbs with other ingredients before adding them to the kettle to prevent lumping of spices and ensure adequate distribution.

B. Starches

When a flour or regular cornstarch gravy has been refrigerated, it is common for water to weep or separate from the gravy. Modified cornstarches, like National 465, arrow root, amazio, rice flour or tapioca flour, prevent sauces from weeping water while in the food bank or when cold plating a meal.

Hot dishes (gravy): use 10 – 25% modified starch by weight to replace regular starches.
Cold dishes (pudding): use 30 – 50% modified starch by weight to replace regular starches.

C. Sauces with Starch

Determine the appropriate sauce preparation that meets your standard of quality for each recipe. Different methods will yield different results depending on the type of recipe and ingredients that are incorporated.

Roux: Melt the fat, add flavor-contributing vegetables (onions, celery, etc.), add starch and flour and cook about 5 minutes or until roux is shiny in appearance. Add liquid and other ingredients. Cook at 165°F stirring constantly until product is thickened, then pump immediately.

Slurry: Mix the starch with 1/4th or more of the liquid (cold or room temperature) to make a slurry. Add slurry to hot product towards the end of the cooking process. Bring product to temperature to thicken sauce.

Milk sauces: Best results seem to be with powdered milk. To prevent scorching the milk, reserve 1/4th of the liquid and mix with powdered milk. Bring product to temperature and add milk mixture at the end of the process. Bring to temperature and pump immediately.

D. Pastas

1. Use high protein pasta that is durable and holds well.
2. When pasta is being added to a hot sauce and comprises 50% or more of the recipe (Chile Mac), cook the pasta to 50% of doneness, add to hot sauce, bring temperature to 165°F and pump immediately. Avoid overcooking pasta. The sauce recipe may need additional liquid to compensate for the liquid which the pasta will absorb. Pasta can also be added dry, then pumped immediately.
3. When pasta is in a soup recipe, add the uncooked pasta after the other soup ingredients have reached 165°F, bring the temperature back up to 165°F and pump immediately.
4. If the pasta is a poor quality and easily becomes soft and mushy:
    a. Add raw pasta to a very thin cooked sauce and pump immediately or
    b. Add one gallon of oil for 100 gallons of partially cooked pasta, drain, pour into a very thin sauce and pump immediately or
    c. Cook pasta and add to sauce at the point of service.
5. Prepare pasta and sauces separately. Combine at the time of service.

<u>Pasta Kettle Cooking</u>

Procedures:

1. Loading the Basket
    - Have the basket in the water
    - Bring water to a boil
    - Pour in pasta
    - Cook – initially stirring to make sure pieces do not stick together.
    - It is recommended that you add the spaghetti carefully to hot water since it can run through the holes in the basket when it is stiff.

2. Length of cook time will vary depending on:
    - Type of pasta, which should be a high protein, durable pasta.
    - Size and thickness of pasta
    - Will it be mixed with sauce?
    - Will it be packaged cold separately?
    - A general recommendation is to cook the pasta approximately 50% of the time listed on the package.

3. Chilling depends upon:
    - Ice water in the jacket to cool the kettle jacket.
    - Temperature of the water filled from bottom and from faucet at top.
    - If you do not have an ice water fill, you may want to pour ice on the pasta to stop the cooking action.

    Chilling Procedure:

- Drain all hot water out and turn on jacket water cooling while hot water is draining.
- Add water from bottom and top at the same time.
- If you are adding pasta to a sauce, do not wait to rinse and cool the pasta. Lift to drain and immediately add to the cooked sauce.
- If you are hand packing pasta separately, you need to rinse thoroughly, chill, dump on a table, and hand pack.

Rice Procedure in Pasta Kettle

Long grain rice is best because of the kettle basket perforation size. Rice can also be cooked in Cleveland Range, Inc. Cook Tank, Steamers, Combi's and Tilting Skillets.

Procedure:

1. With basket in kettle, add cold water, then add rice to the basket.
2. Stir to separate grains.
3. Bring to a boil. Cook about 10 minutes with lid closed.
4. Rinse and cool as shown above.
5. Lift, drain, empty on an unload table for hand packing.

Suggestions for Cooking and Pre – Cooking in the Pasta Basket

Rice for Spanish rice and casseroles

Potatoes for Potato Salad
- Au Gratin
- Fried/Hash Brown and America
- O'Brien
- Oven Baked

Beans for Burrito Filling
- Baked Beans
- Refried Beans
- Chili

Pasta
- Spaghetti
- Macaroni
- Rotatelli

Hard cooked eggs in mesh bags
Scrambled eggs in the bag

Vegetables
- Corn on the Cob
- Fresh Squash
- Vegetables for Stew

Stock for soups and sauces
- from bones
- meat scraps
- vegetables

D. Vegetables

Undercook vegetables to help maintain their shape, color, texture, and nutrients. Delicate vegetables often are the last ingredient added, brought to temperature and pumped immediately.

E. Meats in the Kettle or Cook Tank

1. Ground meats: braise in the kettle, drain or siphon off fat and proceed the recipe. See Ground Meat Procedure.
2. Stew meat: braise in the kettle to develop flavor, add a small amount of liquid to simmer and tenderize stirring slowly.
3. Roasts: vacuum seal and place in cook tank.

Ground and Stew Meat Procedure:

a. Add meat to the kettle without heat. Mix slowly to soften and break up the product.
b. Set the temperature for 140 F and continue to mix slowly to soften and break up the product.
c. Increase the temperature to 160 F and continue to stir slowly.
d. Stop mixing and turn off steam.
e. Drain the fat using one of the methods listed below.
f. Add other ingredients and mix 15 minutes to blend flavors and bring the mixture to 165 F.

Draining Fat from Ground Meat:

1. Non tilting kettle with horizontal, inclined or vertical agitator

a. Before adding the ground meat to the kettle, note the position of the agitator such that a scraper blade covers the drain opening.

b. After cooking the meat turn off the steam, position the agitator as noted earlier.
c. Place a colander in a pan under the drain.
d. Partially open the air operated valve and allow the fat and juices to drain. Change pans as needed. This process may take 20 to 30 minutes.
e. Return any cooked meat that fell out in the colander into the kettle. Juices may also be returned to the kettle to maximize the meat flavor.

2. Tilting kettle

a. Turn off steam (vertical mixer – lift arm out of kettle and swing aside).
b. Attach strainer to kettle rim. (If a rim strainer is not available, place a colander in a pan on the ground under the kettle rim.)
c. Place container under the pouring lip.
d. Tilt kettle slowly to drain fat off the top. Do not drain meat juices.
e. After fat is drained, place kettle in the upright position.
f. Remove strainer (vertical mixer - it may be necessary to work the agitator into the product by briefly switching "up" to ease the agitator into the product. Adding liquids from the recipe will make this easier to accomplish)

3. Alternate methods to remove fat:

Push a colander or china cap strainer into the cooked meat allowing the fat to collect in the strainer and keeping the meat out of the strainer. Next:
a. Ladle out the fat or
b. Pump or siphon the fat using a transfer pump or other similar equipment.

COOK TANK PRODUCTION

When cooling foods in Cook Tanks, FDA requires cooling potentially hazardous food from:

140 – 70 degrees Fahrenheit within 2 hours
70 – 40 degrees Fahrenheit or below within 4 hours
Cool from 140 – 40 degrees Fahrenheit in less than 6 hours total

USDA requires cooling of muscle meats from 120 – 55 degrees Fahrenheit in 6 hours for safety.

Cooking in the Cook Tank

It is important to have the weight of the food in each casing no more than 2 pounds difference in weight. This will give you even doneness from one roast to the next.

To cook the product with the probe thermometer, set the probe temperature for the internal temperature you want the product to reach. Set the water temperature 7-10 degrees Fahrenheit higher than the probe temperature and set the timer for a minimum of

15 minutes if cooking above 140 °F. When the product is cooking it will reach the temperature that has been set on the probe and the timer will start. After timing out, the Cook Tank will automatically turn off the steam, discharge the hot water, fill with tap water and begin to chill.

For products where the desirable temperature is below 145 degrees Fahrenheit, set the timer for the additional minutes listed on the chart to assure pasteurization of the product.

Less tender cuts can be made tender by holding the roast at the preset internal temperature for up to 4 hours before cooling.

With some products you will not be able to use a probe because of the size and shape of the particular roast. Use the time and temperature guidelines given in Cleveland Range, Inc., Cook/Chill Systems, Culinary Solutions Guide. The water temperature that you will be using will range from 150-180 degrees Fahrenheit with a cooking time range of 2 ½ - 8 hours depending upon the product being cooked.

Meat Tank Guidelines

The USDA requires the following listed additional minutes after the roast has reached its desired internal temperature on roasts that are 10# or more.

Minimum Internal Temperature °F	**Minimum Process Time** After Minimum Temperature is Reached (Minutes)
130	121
131	97
132	77
133	62
134	47
135	37
136	32
137	24
138	19
139	15
140	12
141	10
142	8
143	6
144	5
150	72 Seconds
160	7.2 Seconds

IV. PRODUCTION SCHEDULE

A. Review the menu to summarize your cook/chill production.

1. List all cook/chill menu items and their portion sizes required in a four week period separating components that make up a menu item. (Meatloaf, 4 oz. and brown gravy, 2 oz.)
2. List the volume required each time the item is on the menu.
3. Combine volumes of similar items. You may want to consider some options. Do you want to produce a finished product or produce a basic cream soup and add different vegetables during retherm when each flavor appears on the menu?
4. Determine the optimum shelf life
5. Consider the food bank size and volume of inventory to keep on hand.
6. Determine the volume of production and the frequency. What is the volume to produce the item once a month, every week or every day?
7. Determine the cooking times of each recipe including the amount of time it may take to add ingredients, drain fat, pump the product, and clean between batches.
8. Determine which items may not require chilling in the tumble chiller (gelatins, coleslaw) and can be produced prior to or during hot food production.
9. Line up the daily production by food color and texture. Daily kettle production is more efficient by producing recipes from clear, white, brown to red and from thin broth to thick sauces. Try to produce similar foods the same day to reduce cleaning time.

A sample production schedule has been included in the operations manual.

B. Cook/Chill Production

1. Plan lead times to have ingredients measured or weighed; frozen items should be pulled 3 to 5 days ahead to thaw; fresh produce should be cleaned and cut under optimum conditions.
2. Plan 20 minutes to sanitize the kettles and food pump hoses before cooking the first batch of food.
3. Plan to cook 2 products per kettle and work up to 3 or 4 products per kettle as staff gains experience. If there are 2 or more kettles, production can alternate between kettles during the day and staff can be more productive. It usually takes 2 people to manage production for 2 kettles.
4. Have adequate numbers of cook/chill bags, labels and clips available.
5. Allow 45 minutes to 1-1/2 hours for a total cleaning of equipment during every 8 hours of production.

V. INGREDIENT CONTROL

One way to maintain a consistent quality product and control the cost of the product is through ingredient control. Proper measuring and weighing of ingredients and using the same ingredients on the recipes each time are key elements to product consistency. Proper temperatures must also be maintained while ingredients are being handled. Keep ingredients cold until time of use.

VI. PURCHASING

Because cook/chill operations increase the volume of food each time a product is made, there are purchasing opportunities to buy larger quantities at better prices. Written food specifications are often used to assure that the same products are provided each time an item is ordered from a vendor so that food quality can be maintained. If an ingredient is substituted during the purchasing stage, that ingredient may affect the quality of the food that is being produced or the product might remain on the shelf because it does not fit into the recipes.

Purchasing changes the customer might consider:

1. Bulk purchases, ie. Instead of 1 pound spices, 25 pound cartons of spices
2. Purchase in quantities where the prices break
3. Purchase by pallets or truck loads
4. Purchase through bids or contracts that secure prices for a period of time

VII. FOOD BANK/STORAGE

A Food Bank is the refrigerated storage area for cook/chill foods. The temperature may range from 28-32° F but 28° F is recommended for optimum food bank storage. At this temperature most foods will not freeze so no thawing is necessary before retherming cook/chill products. If food freezes in the food bank, you can adjust the temperature slightly. However, for every 2 degrees over 35°F, the shelf life of the food is decreased 2 days. The length of storage depends not only on the food bank temperature but also on how well practices are followed for pasteurization of food, packaging materials, ingredients, and sanitation.

Cook/chill products are produced to store in inventory for food safety and for food quality. Food quality varies according to the special characteristics of the food being stored. The color, texture and taste of a cook/chill product can change over time affecting the desirable food quality, thereby reducing the storage life even though food safety is not a concern. Cook/chill operators should evaluate their cook/chill products to determine optimum storage of quality products. Store cooked products at 38°F for safety and 32°F for quality. For short term holding, refrigerate between 34 – 38°F and for longer term holding, 28 – 32°F which is our recommended Food Bank Temperature

When first starting a cook/chill system, it is recommended that you plan to cook for at least one full week to build up the food bank before shipping food for use. Plan food bank inventory levels according to the needs of your menu and the volume of your production. You may determine that you will produce some foods every day or week and some foods only once a month. Keep inventory rotated so that product will not be on hand too long.

Proteins and ingredients that are alkaline or have a high PH, such as milk, eggs, and meat, have a shorter shelf life than ingredients that are more acidic or have a low PH like tomatoes, lemons and vinegar. Foods and recipes that are high in sugar or salt also have longer shelf lives.

STORAGE GUIDELINE:

More than 6 weeks:	Foods high in acid, sugar, or salt
Examples:	BBQ sauce, cake, icing, plain gelatin, salad dressing
6 weeks:	Tomato with meat products, modified starch (50/50)
Examples:	Chili, taco meat, cook tank meats, pie filling, pudding
4 weeks:	Simple milk products with low amount of modified starch (20/80) (see 5-7 days)
Examples:	Cream sauce, cream soups, cream gravy
3 weeks:	High water or high amount of sauce where color and flavor may leach between vegetables and sauce
Examples:	Vegetable Beef Stew
Also:	Whipped potatoes (iron in potatoes may oxidize) Purees and food for mechanical soft diets
14 days:	Gelatins with fruit, cook tank rice
10-14 days:	Quick breads
Example:	Cornbread
7-10 days:	Cold salads with acid dressing
Example:	Tomato and Cucumber Salad
5-7 days	Recipes with Cabbage, broccoli, onion or other gas-forming vegetables

VIII. PERSONNEL TRAINING AND SCHEDULING

Cook/chill systems provide the benefit of savings in labor by efficient, large volume food production. For example: with two 200 gallon horizontal mixer kettles, generally speaking, two people can usually produce a at least three batches of food in each kettle in an eight hour day or 1200 gallons of food. The job title and skill level of these two people may vary according to local practices.

A sample production schedule has been included in the operations manual. Production schedules vary according to the types of recipes being produced, number of staff, preparation of ingredients and other factors. As the cook/chill staff works with the equipment, they will become more proficient and experienced.

Training by Cook/Chill Operations Specialists can be provided when a Cleveland cook/chill system is purchased. Plan several days of cook/chill production including equipment orientation, cleaning and break down of equipment, production of simple sauces with progression to more complicated recipes that have proteins, milk or cheese. During this training period all cook/chill staff and supervisors should attend the training and work with the equipment and recipes to familiarize themselves with operation, cleaning, and maintenance of the equipment. Knowledge of HACCP, sanitation, and food quality standards is recommended.

BATCH COOKING FOR KETTLES

1. Begin each production day by sanitizing the equipment that was cleaned the previous day as described in AM SANITIZING PROCEDURE.
2. Cook menu items in the kettle.
3. Between kettle batches
   a. As the last of the product is pumped out of the kettle, add water and rinse the inside of the kettle to stop the cooking action.
   b. Scrub the inside of the kettle with a brush to remove food
   c. Pump the liquid to flush the metering filling station.
   d. Continue to pump and rinse out the kettle until the water runs clear.
   e. You are ready to begin pumping the next batch without taking the metering filling station apart.
4. At the end of the day, clean as usual.

HOW TO MODEL A COOK CHILL SYSTEM

Materials and equipment needed:

1. Ring stand to hold casings (bags) open while filling. Available from Cleveland Range, Inc.
2. Casing for cook/chill product
3. Scale or measurer
4. Lots of ice
5. Large container to hold ice and bagged product
6. Wire or plastic ties to close casings
7. Thermometer
8. Insulated glove

Procedure:

1. Cook at least 3 gallons of your recipe.
2. Maintain product to at least 165°F
3. Ladle or pour product into casings
4. Measure or weigh product in casings to volume you desire
5. Gather top of casing with gloved hand and carefully squeeze all air out of bag.
6. Tie off about 3 inches above your hand with little or no air in the bag
7. Label and date casing.
8. Plunge into ice water, stirring every few minutes until product is 40°F or lower.
9. Remove from ice water and refrigerate at 35°F or lower.
10. Sample product at least one week later and compare to the same recipe freshly prepared.
11. Compare changes in color, texture, and flavor. Make note of changes that should be made so that cook/chill product will be the same as the original recipe.
12. Continue this process until you have matched the profile of the original recipe.

TRAINING CHECKLIST AND ITINERARY FOR COOK-CHILL IMPLEMENTATION:

One of the most critical challenges are the tasks prior to implementation. The following is a general checklist to review before confirming the arrival of your Cleveland training representative:

1. Review the cook-chill food production objectives and goals.
2. Provide food service staff who are familiar with the goals of the operation.
3. Develop a forecast for building a food bank inventory.
4. Order ancillary equipment 4 to 6 weeks prior to the arrival of your trainer.
5. Meet with suppliers to establish specifications for new products required for new formulated recipes.
6. Evaluate the readiness of the facility for cook-chill food production.
7. Arrange for supervisors and the Food Service Director to be involved in production during implementation.

A sample training agenda is as follows:

Day 1:
- Equipment review and testing.
- Orientation session with administration and staff.
- Review and discussion of HACCP safety principals regarding safe handling of food.
- Menu meeting
- Gathering of ingredients and Mise en Place should be set up one day in advance of cook/chill production for each production day.
- Assemble and disassemble equipment.
- Clean and sanitize equipment.
- Prepare a simple recipe if time allows.

Day 2:
- Prepare a soup, sauce, salad dressing, and cook tank roast item.

Day 3:
- Prepare stew, mashed potatoes, and packaged individual proteins in the cook tank.

Day 4:
- Prepare rice, vegetable, desserts, salad or other common menu items.
- Review finishing presentation standards.
- Suggest a small meal for staff and administration.

Day 5:
- Full production, director's choice.
- Program review. Celebrate accomplishments. Determine future training goals and follow-up dates.
- Checkout with administration.

COOK/CHILL TRAINING

Cook/Chill training by a Cleveland Range, Inc. Operations Specialist is usually conducted over a period of 4 to 5 days including travel. During the training period, staff should be scheduled for uninterrupted work with the cook/chill equipment. Staff should plan to take notes and ask questions while they are being trained. If this is a new facility, make certain that everything that is needed to function in a regular kitchen is available (lights, water, refrigeration, scales, cleaning supplies, etc.). Make certain staff knows where utilities and switches are located.

Before the training:

1. Check with the installer, your maintenance department or equipment dealer to be certain that all utilities have been turned on and all equipment is operable.
2. Review menu and recipes to determine which recipes will be produced during training period.
3. Determine volume of food to be produced. It is best to plan to have kettles at least half full if not completely full. Several batches of food can be prepared in cook/chill equipment each training day except the first day which will involve orientation to the equipment and cleaning.
4. Order all food, ingredients and supplies.
5. Schedule cook/chill staff and supervisors to be actively involved with cook/chill training.
6. Schedule pre-preparation of ingredients to be ready for immediate cooking (ie: onions chopped, cans opened, dry ingredients measured, etc.)
7. Schedule cleaning of facility after each day of training.

Suggested Accessories and Equipment:

- Storage crates are available from Cleveland Range, Inc.
- Storage dollies to hold stacks of storage crates are available from Cleveland Range, Inc.
- Mobile Carts and Racks: To store and transport ingredients, to store and transport food pump and kettle parts during cleaning and to hold filled casings for transport to tumble/chiller if necessary. Landing Table from Cleveland Range, Inc. can be used for transporting casings and cleaning large kettle parts.
- Food grade grease or gel for “O” rings. One tube is shipped with original equipment order. Use a multipurpose food grade grease specifically designed for the food and beverage industry. It must meet requirements of FDA regulation 21 CFR, section 178.3570 for food machinery use. This is used to lubricate all “O” rings on the meter fill station (food pump) and the kettle.
- Digital thermometers
- Gloves that are cotton, insulated or heavy vinyl to protect hands from heat while pumping hot products.
- Label materials: Many types are used in cook/chill to attach to casings. Many are water resistant and printed with waterproof ink, 2-1/2” roll for clipping or individual adhesive backed. Labels are also used in the ingredient room.

- Graph chart paper: For recorders on the cook tank and kettle control panel, must record 24hours from 30 degrees F to 230 degrees F.
- Pens – Red and green for recorders, extras are shipped with original equipment purchase.
- Clips: For the clipper on the Metering Filling Station ((food pump) and Vacuum Clipper.
- Casings and bags: Casings for kettle products should be a multi-layered nylon and polyethylene, 4.5 mils thick. Sizes vary. Bags for cook tank products should be multi-layered, shrink nylon and polyethylene, 1.5 mils and handle a temperature from 0 to 250 degrees F.
- Brushes for cleaning kettles and other equipment. A brush kit is available from Cleveland Range, Inc. specifically for cook/chill.
- Cups, spoons, ladles for tasting food.
- Large plastic sheets or bags to cover controllers during cleaning process.
- Wire ties or plastic wrap to close casing around meat probe.
- Silicone baking paper for some meat tank products.
- Kneeling pad
- Sanitizer: Chlorine bleach, Sodium Hypochlorite or Quantinary
- All purpose kitchen materials such as aprons, hairnets, disposable gloves, detergent, paper towels, mops, and buckets.

Work area should include:

- Dedicated 2,3 or 4 compartment sink, according to local code, for cleaning and sanitizing equipment.
- Hand washing sink equipped with paper towel dispenser, soap dispenser, fingernail brush
- Food Bank – a refrigerated area to hold cook/chill inventory at temperatures of 28°-32°F
- Vegetable prep
- Meat prep room
- Ingredient room

A.M. Sanitizing Procedure

Sanitize the kettle and metering filling station (MFS or food pump) before daily production begins.

- Assemble kettles. Lubricate the gaskets and O rings.
- Assemble the MFS (food pump) and lubricate all "O" rings.
- Attach the MFS to one of the kettles.
- Put water into the kettle to fill it half way, or to the top of the scrapers.
- Put sanitizing solution in the kettle; bring the solution to 80 degrees Fahrenheit. Check instructions on sanitizing solution label.
- Pump solution through the MFS. This sanitizes all food contact surfaces. Check for leaks and to see that it is assembled correctly.
- Finish emptying the kettle by disconnecting the MFS and let the sanitizing solution drain to the floor trough or continue to pump to empty the kettle. Make sure the transport hose does not drag on the floor.
- Flush with clean water.

Sanitizing Solution Chart

Amount of Water in the Kettle		Amount of 5.25% Bleach to Add	
U.S.	Metric	U.S.	Metric
20 Gal.	76L	5 Tbsp.	75ml
30 Gal.	114L	7 1/2 Tbsp.	113ml
40 Gal.	151L	5/8c	150ml
50 Gal.	190L	3/4c + 1 Tbsp.	188ml
60 Gal.	227L	1 Cup	225ml

Tear Down and Cleaning

Schedule time to tear down the equipment and thoroughly clean Cook/Chill equipment. Disassemble and wash equipment with hot soapy solution just as you would wash dishes. Rinse with clear water and air dry. Sanitizing should be the next morning. When there is a second shift, at least every 8 hours.

1. Kettles
    - Rinse out food debris.
    - Close valve and fill with water and detergent. Scrub kettle with nylon pad or towel removing all traces of food.
    - Remove scraper blades and agitator arm. These pieces may be washed in a dish sink or dishwasher.

- Remove valve and kettle thermometer. Disassemble, remove O rings, and wash thoroughly.
- Rinse kettle and let air dry overnight.

2. Food Pump
   - Disassemble and remove O rings. Wash and rinse.
   - Let air dry overnight.
   - Do not assemble.

3. Tumble Chiller
   - Put on cleaning cycle for 30 minutes
   - Add non-sudsing detergent.
   - Drain and rinse out with water (from hose if available)
   - Scrub all stainless steel surfaces with a brush or nylon pad and hot soapy water, rinse and wipe dry.
   - Leave open to air dry.

Finishing or Reheating Hot Foods

Heat precooked foods to 165 degrees Fahrenheit or higher and hold for 15 seconds. Heat ready-to-eat hermetically sealed foods to 140 degrees Fahrenheit or higher. Heating should be done rapidly or at least within 2 hours.

The FDA requirement is to bring product from less than 41 degrees Fahrenheit to greater than 130 degrees Fahrenheit in no more than 6 hours.

Hold cooked product at 140°F or above for safety. With items such as soups and casseroles, heat to 165°F for quality acceptance.

Critical Control Temperatures in HACCP Process

Local health authorities may require a written HACCP plan for food production. The following information is provided to assist you with writing your HACCP recipes but should not be considered complete. Please refer to other HACCP information sources for assistance.

<u>Temperatures for Ingredient Handling</u>

Receive Food: At less than 41°F (limit 45 – 50°F)

Hold Raw Ingredients: At less than 41°F. Many ingredients are best held at 36 – 40 degrees Fahrenheit to maintain quality.

Prep Ingredients: Keep under refrigeration until ready to use. Pull out small batches as needed and do not allow temperature to rise above 50° before placing them back into the refrigerator to minimize Listeria.

Holding Prepared Ingredients: Hold at below 41°F (often 36 – 40°) where they are staged for production.

Cooking

Prepared ingredients are cooked to their peak of doneness and packaged above pasteurization temperature of 165°F.

For thick meats cooked in a cook tank, the required temperature is heat from 40 to at least 130°F in six hours to control perfringens.

CRITICAL CONTROL TEMPERATURES FOR HACCP PROCESS

INGREDIENT HANDLING

Receive food: less than 41°F
Hold raw and prepared ingredients: less than 41°F
Preparing ingredients: do not exceed 49°F

COOKING

Cook ingredients to peak of doneness
Package above pasteurization temperature of 165°F
Cook Tank meats: cook from 40°F to 130°F in six hours to control perfringens which is killed at 127°F

COOLING

FDA requires cooling potentially hazardous food from:

140°F to 70°F within 2 hours
70°F to 40°F or below within 4 hours
140°F to 40°F in less than a total of 6 hours

USDA requires cooling of muscle meats from 120°F to 55°F in 6 hours for safety.

Cooling thin products to less than 41°F in one hour for quality and extended shelf life.

COLD STORAGE OF COOK/CHILL PRODUCTS

Less than 38°F for safety
Less than 32°F for quality
34°-38°F for short term holding
28°-32°F for long term holding

HOLDING TEMPERATURES

According to research, the growth of dangerous pathogens can be delayed by holding food at temperatures listed below. However, check with local, state and federal regulations to be in compliance. The effect of holding temperatures on quality should also be addressed.

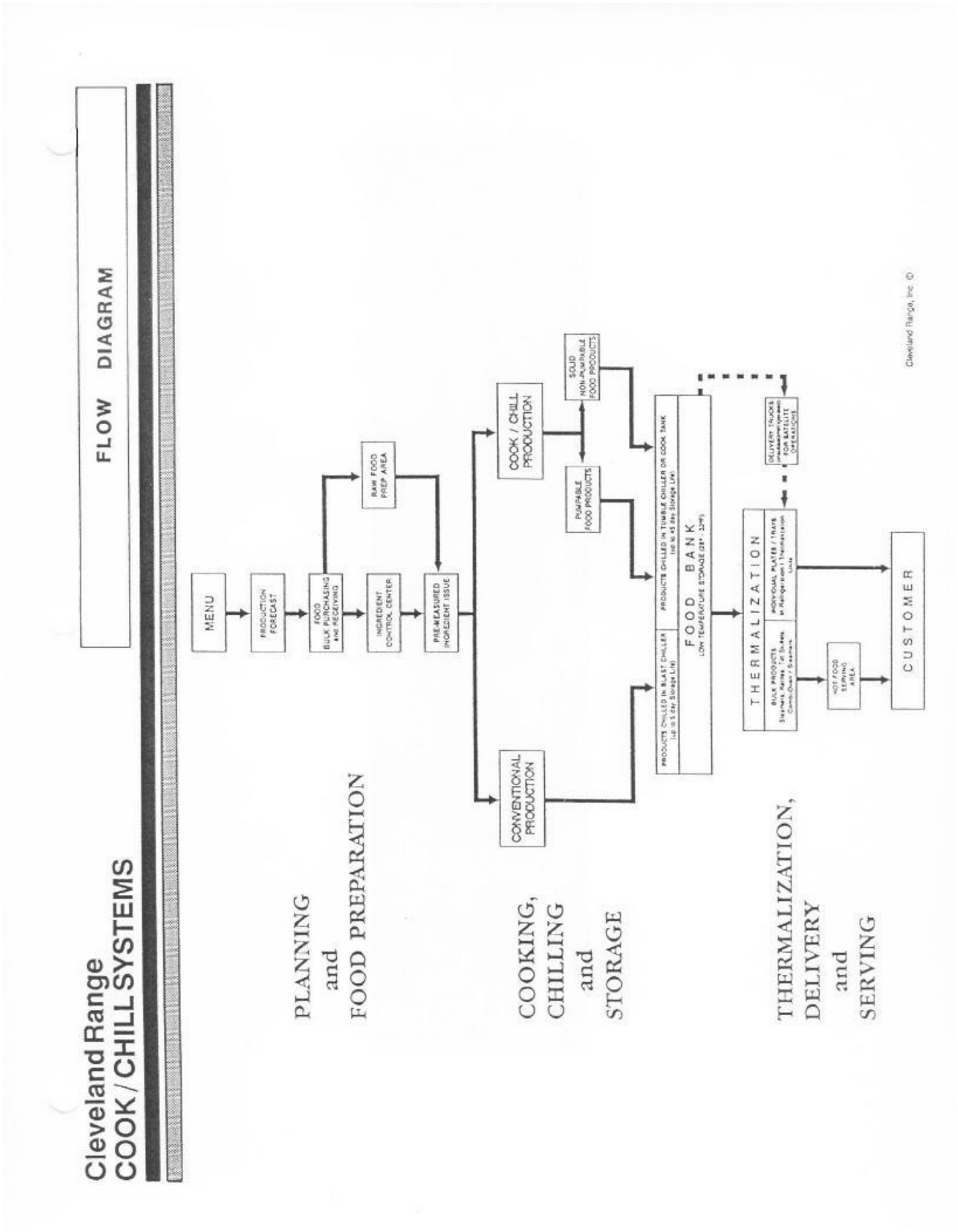
Fahrenheit	Length for holding
28°-32°	food can be held until spoiled
32°-35°	9 days
36°-40°	5 days
41°-45°	3 days
46°-50°	2 days
51°-60°	8 hours
61°-80°	4 hours
81°-130°	2 hours
above130°	food can be held until spoiled

REHEATING OR RETHERMING

Heating must be done rapidly to minimum temperatures within 2 hours.
Heat precooked foods to at least 165°F and hold for 15 seconds.
Heat hermetically sealed foods to at least 140°F.
FDA requires heating from less than 41°F to at least 130°F in less than 6 hours.

Hold cooked product at 140°F or above for safety. It is suggested that soups and casseroles should be at least 165°F for quality acceptance.

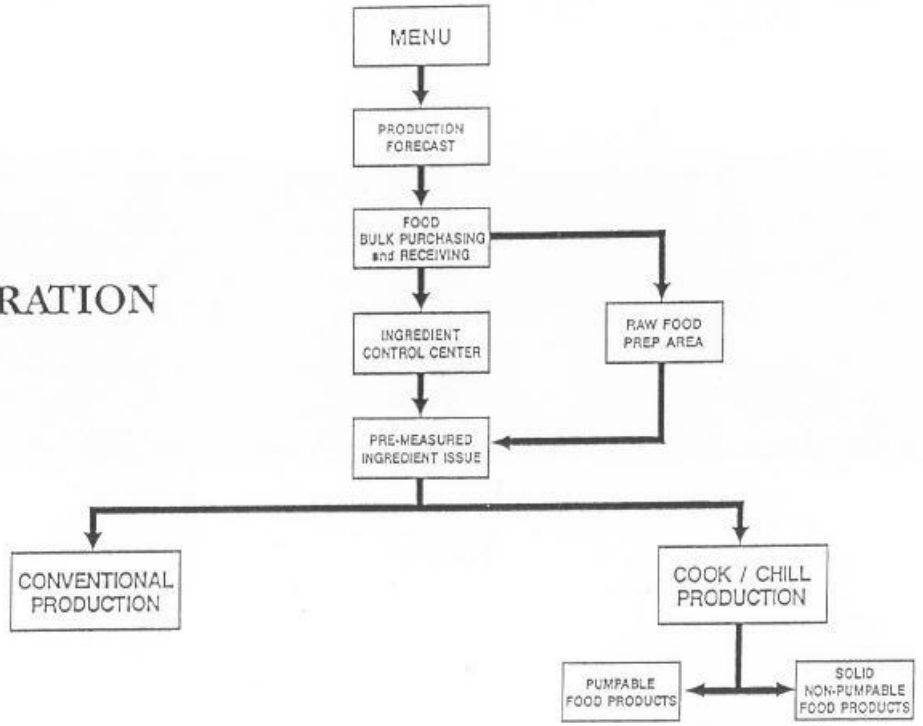
FDA mandatory temperature is 140°F°


Cleveland Range
COOK / CHILL SYSTEMS
FLOW DIAGRAM
PLANNING and FOOD PREPARATION
COOKING, CHILLING and STORAGE
THERMALIZATION, DELIVERY and SERVING
MENU
PRODUCTION FORECAST
FOOD BULK PURCHASING AND RECEIVING
INGREDIENT CONTROL CENTER
PRE-MEASURED INGREDIENT ISSUE
RAW FOOD PREP AREA
CONVENTIONAL PRODUCTION
COOK / CHILL PRODUCTION
PUMPABLE FOOD PRODUCTS
SOLID NON-PUMPABLE FOOD PRODUCTS
PRODUCTS CHILLED IN BLAST CHILLER
PRODUCTS CHILLED IN TUMBLE CHILLER OR COOK TANK
FOOD BANK
LOW TEMPERATURE STORAGE
THERMALIZATION
BULK PRODUCTS
INDIVIDUAL PLATES / TRAYS
HOT FOOD SERVING AREA
CUSTOMER
Cleveland Range, Inc. ©

Cleveland Range
COOK / CHILL SYSTEMS

FLOW DIAGRAM

PLANNING
and
FOOD PREPARATION



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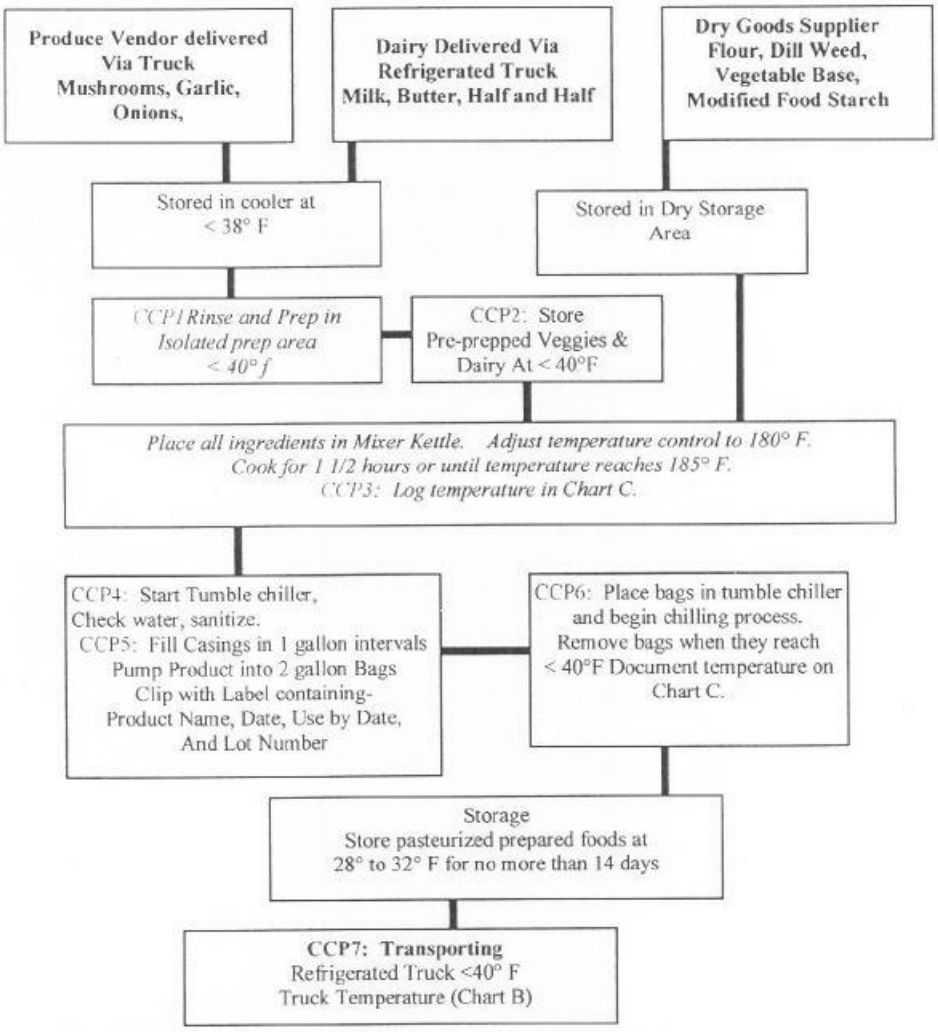
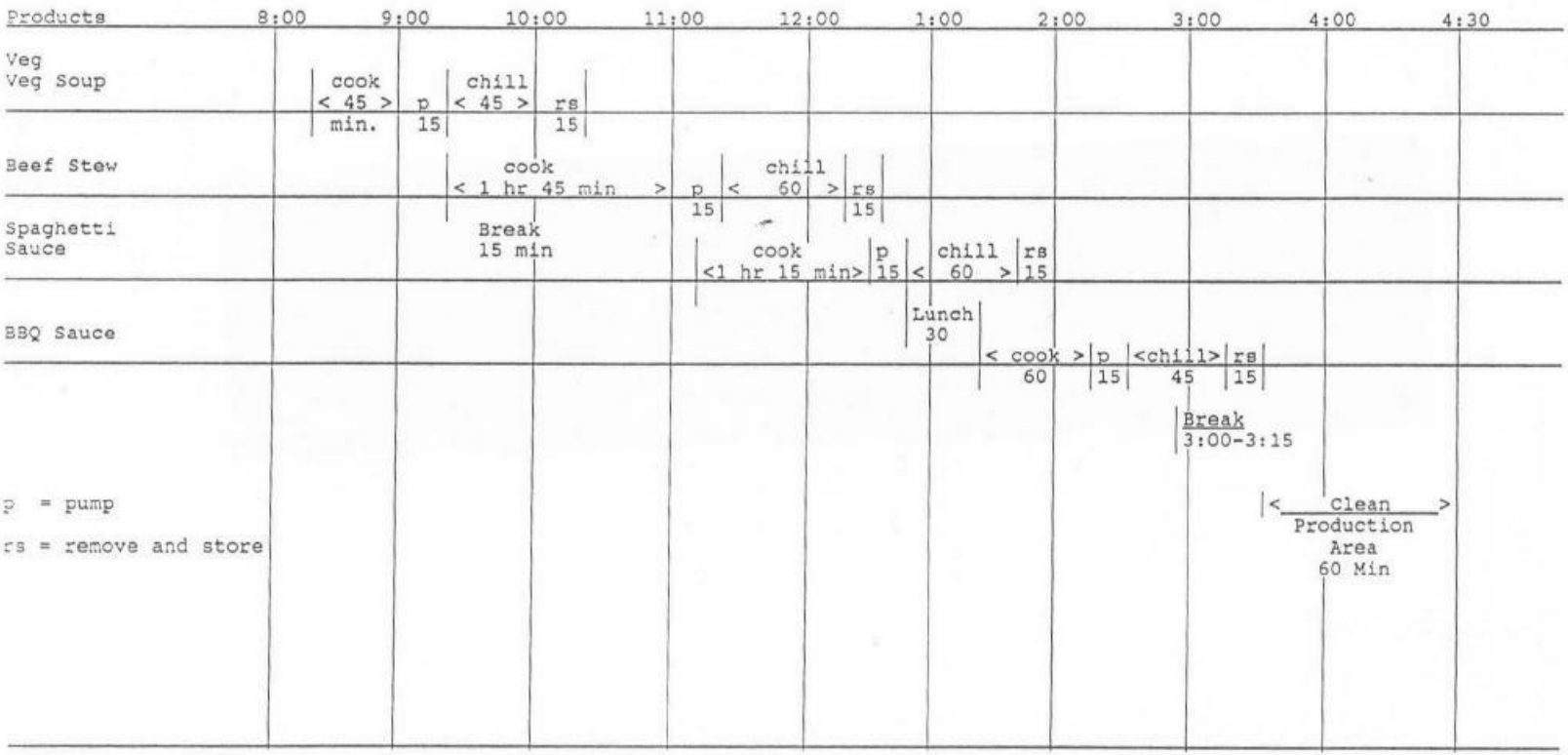
Hungarian Mushroom HACCP Flowchart



Standard Operating Procedures: Measure all internal product temperatures with a cleaned and sanitized thermocouple or thermometer. Properly wash hands and exposed parts of arms before handling food, after handling raw food, and after any interruption that might contaminate hands. Wash, rinse, and sanitize all equipment and utensils before and after use. Return all ingredients to Refrigerated Storage if preparation is interrupted.
Italics represent areas of possible physical contamination.

Cleveland Range
COOK/CHILL SYSTEMS

FIGURE 3 - AN EXAMPLE EIGHT HOUR PRODUCTION SCHEDULE



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Cleveland Range
COOK / CHILL SYSTEMS

Table 4. Production Schedule

Department of Dietetics

Production Programming Schedule

Amounts in Gallons

DAY:	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F
DATE:																														
Chicken Gumbo Soup															55															55
Cream of Potato Soup		50															50													
Cream of Tomato Soup				60										60										60					60	
Augratin Sauce w/Ham																									60					
Beef Cubes with Mushrooms					62																									
Beef Stew									52										52										52	
Chili		50															50													
Macaroni & Cheese	70										70										70									
Seafood Newburg																												50		
Sweet Potato Glaze					62																									
Tuna Pot Pie								52																				52		
Unsalted Sloppy Joe												55																		
Beef Gravy	80					80					80					80					80					80				

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Cleveland

Cleveland

CLEVELAND RANGE COOK/CHILL SYSTEMS
THE MOST PRODUCTIVE SYSTEMS ON THE MARKET

Cleveland Range, Inc. provides a wide range of cook/chill equipment to meet the customers' needs. We make equipment that is safe to use that will produce high quality food products for your customer. In addition we provide the most complete kettle systems and the most productive cook chill systems on the market that minimize cooking and cleaning labor.

A. The features and benefits of the Cleveland Cook/Chill system components that make it the safest and most productive system begin with the "heart" of the system - the kettle.

The **Horizontal Agitator Mixer Kettle** - 60 gallon to 400 gallon kettles (with 112% operating capacity). - is a superior mixing kettle for the following reasons:

1. The horizontal mixer **lifts and folds, heavy, delicate, chunky, thick or thin product** - with 100% mixing capability.
   (The inclined agitator has a 20% dead spot in the middle, which will mix, but at the expense of time (i.e. lower productivity) and the possibility of over mixing the product at the outer edge.)

2. **Agitator blades are spring loaded** to hold them tight against the kettle surface for effective scraping action. They are made from heavy durable Teflon and require only one stainless steel spring to hold each blade in place, as opposed to four separate pieces. The blades are arranged so all of the heat exchange surface is completely scraped.

   The mixer **paddles are well below the kettle rim** so you do not need to turn the mixer off during the addition of ingredients. This reduces prep time, increases productivity, and reduces the chance of scorching.

3. **Mixer Paddles scoop and fold the product,** moving the cold center to the heated surface, providing total mixing, quickly and gently. This mixing style reduces production time by a minimum of 30% over inclined agitation.

4. The Agitator has a **variable speed** control with a **speed indicator**:
   3 to 18 rpm 100 gal kettle
   3 to16 rpm200 gal kettle

5. The **electrical or hydraulic** drive is mounted on the side of the kettle out of the splash zone. The hydraulic drive is covered with a protective stainless steel housing, and the electric drive has a totally enclosed fan cooled motor.

6. **Spiral baffling for ice water circulation in the kettle jacket** promotes a cold kettle for safely mixing chilled products such as Salads and Dressings.

7. The **temperature probe** is located at the **bottom of the kettle** so it can read the product temperature down to the final emptying of the product.

8. The **stainless steel cover is hinged** which allows ease of use. The mixer paddles are well below the kettle rim.

   The **cover increases productivity**:

   a. It **holds the heat** in the kettle, reducing cook time and **holds the cold** while mixing chilled products;
   b. Since the cover helps maintain the heat during packaging, the operator can turn the steam off once the product is below the kettle jacket steam line. This prevents overcooking and scorching and yet **maintains the critical packaging temperature**.
   c. There is **less steam evaporated** into the air from the surface of the product, the result is:

      - less loss of volatile flavor compounds;
      - less steam for the hood to carry away;
      - less water to add back which involves guess work;
      - less nutrient loss (due to faster cook and lower evaporative loss).

   The cover increases safety because:

   - it can be closed and locked reducing chances of airborne contaminants and foreign objects from entering the product and;
   - the operator is protected from any splash from movement of the agitator arm.

9. **Ease of cleaning increases productivity**.

   a. **Completely smooth stainless steel surface** including **flush drain valve** and **temperature thermocouple**. To clean between products,

flush the kettle with pressure hose and , if necessary, use a long handled brush.

b. **Rotate the agitator paddles** to easily clean them and remove agitator blades.

c. The Agitator Arm is **removable without tools. T**he Kettle can then be used with a Pasta Basket when cooking Pasta, Potato, Rice, etc.

d. **Hydraulic agitator drive** enclosed in **stainless steel housing** for ease of clean up and maintenance of sanitary conditions.

e. **Agitator Drive** located **away** from the **splash zone.**

10. **316 stainless steel on all wetted surfaces** for maximum resistance to high acid ingredients.

Inclined Agitator Kettle comes in a variety of sizes with an electric driven, inclined agitator mixer arm. Like the Horizontal Agitator Mixer Kettle, the Inclined Agitator has spring-loaded agitator blades and variable speed. The mixer stirs and slightly lifts the food. A heavy-duty removable breaker bar helps " break" the stirring action.

Sweep/Fold Vertical Agitator Mixing Kettle has hydraulic power sweep/fold mixer arm, bridge lift and operates at variable speeds. Finger-like blades scrape the surface of the kettle that remove for easy cleaning.

B. The **Kettle Control** can be located where it is most convenient for the operator. It can be mounted on the wall, on the floor, or on the kettle above the drive motor. It has a NEMA 12 stainless steel, water proof, splash proof enclosure. The features are:

1. **Large volume flow faucet** located on the kettle with **water meter** to automatically measure the volume of water required for a product.

2. **Temperature control** and **monitoring** with **a chart recorder** and **digital readout** for both preset and actual temperature.

3. **Large volume and low volume steam flow** (e.g. gentle heat switch) for both brazing meats and preparing cream sauce.

C. The **Metering Filling Station** is especially designed for **safety, speed and accuracy**. The key features are:

1. **Pneumatic Pump** - only one air connection required, no electricity, no electronics. Equipment can be cleaned without the worry of water damage.

2. The kettle contents can be **emptied** at the **rate of 15 gallons/minute** (100 gal - 10-12 min., 200 gal 20-24 min.). It is important to empty the kettle quickly to prevent over cooking the product. However, because the product being handled is 165F to180F, we encourage safe handling of hot products. Two people are recommended to package the contents of a 200 gallon or larger kettle in the fastest possible time.

   The **suction and dispensing speed** can be **controlled independently**. You can draw slowly from the kettle for thick heavy products and discharge quickly to fast fill bags. When pan filling instead of bag filling, the dispensing speed can be slowed to reduce splashing.

3. The **filling process is hand actuated** at the filling head, **no foot switch** is necessary. The operator can stand or sit where it is comfortable for their particular height at the front, back, or side of the pump.

4. **Stainless steel sink with stainless steel grid top** and a drain to floor.

5. **Bag holders** mounted on the pump.

6. **Both hot and cold products** can be pumped with the same piston without the need to change rotors that are specific to high or low temperature.

7. A **wide range of delicacies and densities** of product can be pumped without damage to the integrity of the product or without the necessity of thinning the product to assure flow (e.g. beef cubes, macaroni and cheese, stir-fry vegetables, chicken noodle soup, mashed potatoes and taco meat).

8. **Measures accurately and with repetition** from 32-128 oz. in one stroke with no concern for electronics getting wet and stopping mid run.

9. **Ease of cleaning and maneuverability** – narrow and lightweight, easily movable on mounted on large casters:

   - can be hosed down since there are no electrical components.

- has only one air connection with all pump components enclosed within stainless steel cabinet with hinged access doors and lift out panel on back.. Open at the bottom to eliminate a warm moist place to harbor insects.

- comes with a clean out hose which attaches to the fill head that goes to the floor. Use when flushing out the kettle between batches and at the end of the day without the need for buckets.

- easily disassembled for cleaning at the end of the day.

D. **Tumble chillers** - 220 gal / 320 gal - are designed to **increase product safety and quality** through fast cooling in a large chilled (32 to 34°F) water bath which allows for good water circulation around the moving bags. The key features are:

1. **Stainless steel construction throughout** with polished exterior finish.

2. **Matching the kettle to the tumble chiller size** and large inner drums for maximum capacity.

3. **Ice builders** with large enough capacity to constantly provide 32 to 34°F water.

4. **Pumps** to carry the water at the required gpm from the ice builder to the tumble chiller. (sized by your mechanical engineer)

5. **Heat exchangers** to meet the chilling load requirement.

6. **Providing automatic dispensing** of chlorine into the water circulating around the bags (5 ppm free chlorine is the desired level).

7. **Door locks and locked controls** to prevent opening the chiller at an inappropriate time.

8. **Digital temperature readout (Temperature Chart Recorder optional).**

9. **Water conservation tanks** where the water is re-used throughout the day and emptied at the end of the production run.

10. For the most functional layout we may recommend a mobile, stainless steel conveyor. This is recommended when the tumble chiller is not close to, opposite or at right angles to the kettles.

E. Cook Tanks

Size and shape of meat will vary the results of weight you can cook in any of the tanks. All piping, pumps and valves are totally enclosed in stainless steel. The control panel has a stainless steel lockable cover. The tank is completely insulated. The wire dividers in the racks are movable to allow for better water circulation around different size cuts and types of meat. The tank is lockable for safe overnight cooking. Constantly circulated water allows for only +/- 0.5 degree within any part of the tank providing excellent even heating or cooling. Heating is accomplished through steam tubes at the bottom of the tank. Cooling results with ice water circulating in the Cook/Tank walls. No exterior heat exchanger is required.

F. Tumble Chiller/Cook Tank Combination

1. The Tumble Chiller is sized to match the size of your largest kettle batch of 60 gallons or 120 gallons.
2. Cook tank capability is 300# and 750# of product (size and shape of meat cooked will vary the amount that can be cooked) for the 60 and 120 gallon systems.
3. Double-jacketed tank provides steam heat (50 psi steam pressure rating) and the enclosed heat exchanger provides chilled water circulation during the chilling process. This construction means the heat exchanger does not need to drain between heating and cooling which conserves chilled water from the ice builder.
4. Construction: 10 gauge stainless steel for durability and years of performance.
5. Clean out screen is accessible from inside the tank. The operator does not have to drain down the tank before removing any food product which may have collected. A visual check is all that is necessary.
6. The tank provides a water conservation reservoir - i.e. cold water does not need to be emptied between batches. The cold water can be used for a full day's production and then emptied. With the upright-style tumble chiller an exterior tank for water conservation needs to be purchased. Note that this not only helps conserve water usage but also reduces sewage service needs.
7. Operator adjustable water level for half and full loads.
8. All electrical and plumbing components are enclosed in a stainless steel housing

and the equipment is 6" off the floor to allow for ease of cleaning.

9. A spring-assisted hinged cover totally encloses the rotating inner cylinder.
10. A safety interlock switch stops the cylinder rotation when the cover is lifted.
11. The controls provide:

- two (2) pen chart recorders for permanent record of time and temperature for water bath and product;
- selector switch for timed or meat probe operation;
- digital temperature displays;
- soak timer for thawing frozen product before cooking;
- preprogrammed power failure controls for safety;
- controls for inner cylinder rotations.

G. Ice Builder

1. Provides the most energy efficient way to produce chilled water for cooling because this piece of equipment builds ice at off peak times when electricity is less expensive, and melts the ice down during the production day.
2. Provides adequate ice for full days production with 50% increased capacity for expansion.
3. Piping is weatherized for outdoor installation.
4. Install on cement pad with curbing and drain.
5. Automatic water level control.
6. Automatic ice thickness control.
7. Time clock for programming ice-building schedule.
8. Indicator panel in production area for ease of monitoring.
9. To reduce corrosion inside the tank, a chemical treatment and filtering program is recommended by Cleveland Range, Inc.

H. Cleveland provides a full line of support equipment which is fully integrated with all components.

Ice Builder Refrigeration System
Boiler
Air Compressor/Refrigerated Air Dryer
Hoist and Rail/Batch Buckets
Conveyor
Baskets and Dollies
Food Bank recommendations
Blast Chillers
Steamers

Combination Ovens
Others

I. The Cleveland Cook/Chill Systems Customers are provided with:

- ✓ Operations Manual
- ✓ Recipe Manual
- ✓ HACCP instructions;
- ✓ One (1) year warranty for parts and labor;
- ✓ Training for service personnel;
- ✓ Start-up and back-up support

HORIZONTAL AGITATOR KETTLE
OPERATIONS AND CLEANING INSTRUCTIONS

CLEANING INSTRUCTIONS

As with all equipment that has electrical components, care must be exercised when using water and chemicals to clean food service equipment. Use a mild detergent following instructions of the chemical manufacturer. Do not spray water on electrical control panel or components. Do not use harsh or caustic chemicals, especially on o-rings and gaskets.

1. Rinse out food debris from the kettle and flush through the metering filling station (MFS or food pump) if they are still connected. If the kettle is not connected to the food pump, open the valve and allow rinse water to flush into the floor drain.
2. Remove agitator arm:
   a. Rotate the agitator until the quick release pull pin is on the top.
   b. Turn power to OFF as a safety precaution.
   c. Pull pin out.
   d. Slide coupling toward side of kettle.
   e. Carefully lift end of agitator, pull back and lift out.
   f. Remove bushing from shaft holder.
   g. Remove scraper blades from agitator by using the spring removal tool provided with the kettle.
   h. Wash agitator arm, scraper blades, and springs with mild dish detergent or in dish machine. Air dry.
3. Wash the inside of the kettle with a mild dish detergent as you would any pot or pan. Flush liquid through MFS or by opening the valve. Rinse thoroughly.
4. Remove the valve and tee from the bottom of the kettle by removing the clamp. Remove o-rings. Wash and dry thoroughly. When re-installing the valve, apply USDA approved food grade grease (Chesterton 622 or equal) to o-rings. Gently push tee and valve body in place and secure with clamps.
5. Clean outer drive shaft seal on the side of the kettle by removing thumb screws. Slide seal retainer plate and quad ring away from the kettle or shaft housing. Clean the shaft, seal and quad ring. Before re-installing, apply a liberal amount of USDA approved food grade grease to the opening around the shaft and slide quad ring back in place. Push the seal retainer place back in place and tighten with thumb screws.
6. Remove temperature sensor probe by removing clamp. Slide sensor out of seal holder. Remove o-rings. Clean sensor, seal and o-rings. Before re-installing, apply a liberal amount of USDA approved food grade grease on o-rings.

DAILY PRE-START UP

1. The operator must check the kettle, springs and scraper blades for proper installation before turning kettle on.
2. Make sure the connecting coupling from the drive shaft to the agitator is properly installed with the quick release pin fully engaged.
3. Label and place clean chart on chart recorder.

If the above cannot be achieved, call your maintenance supervisor or service contractor before proceeding.

OPERATING INSTRUCTIONS
HORIZONTAL MIXER KETTLE

Your kettle has been equipped with a control panel that has some or all of the following functions:

1. Main POWER switch
2. Temperature control
3. 24 hour chart recorder
4. KETTLE RUN push button
5. Agitator speed control with variable settings
6. Agitator STOP/START
7. Potable water meter with OFF/ON switch and push button to add water
8. Manual COOL water switch
9. Kettle selector switch for CONTINUOUS, OFF, COOK
10. SIMMER switch
11. Product VALVE OPEN/CLOSED

Operating the Kettle

1. To operate the system the main power switch on the control panel must be turned on. The temperature control computer will run through its diagnostics for about one minute.
2. To set desired temperature, turn switch to COOK. This activates the temperature controller. The temperature displayer and the actual temperature will appear. To change the temperature set point, press the push button with “+” to raise or increase the temperature or press the button with “-“ to decrease or lower the temperature.
3. Push the button marked KETTLE RUN and the steam will come on to heat the kettle and its contents until the set point temperature is reached. It will cycle off and on to maintain the set point temperature.
4. To start the agitator, press the button marked AGITATOR START and a green light will indicate the agitator is on.
5. To stop the agitator, press the red AGITATOR STOP mushroom button.
6. To change the speed of the agitator, turn the SPEED CONTROL knob to the right to increase the speed or to the left to decrease the speed. As a safety precaution, always turn the speed to “0” when kettle is not in use and before use.

7. To add ingredients to the kettle, push AGITATOR STOP button. Steam heating will continue in the jacket and the agitator must be started again as soon as possible or product might burn on the surface of the kettle.
8. CONTINUOUS STEAM is a manual override allowing steam into the kettle but with no temperature control.
9. SIMMER allows maintenance to the set point temperature but gently introduces heat into the kettle.

Ready to pump food out of kettle

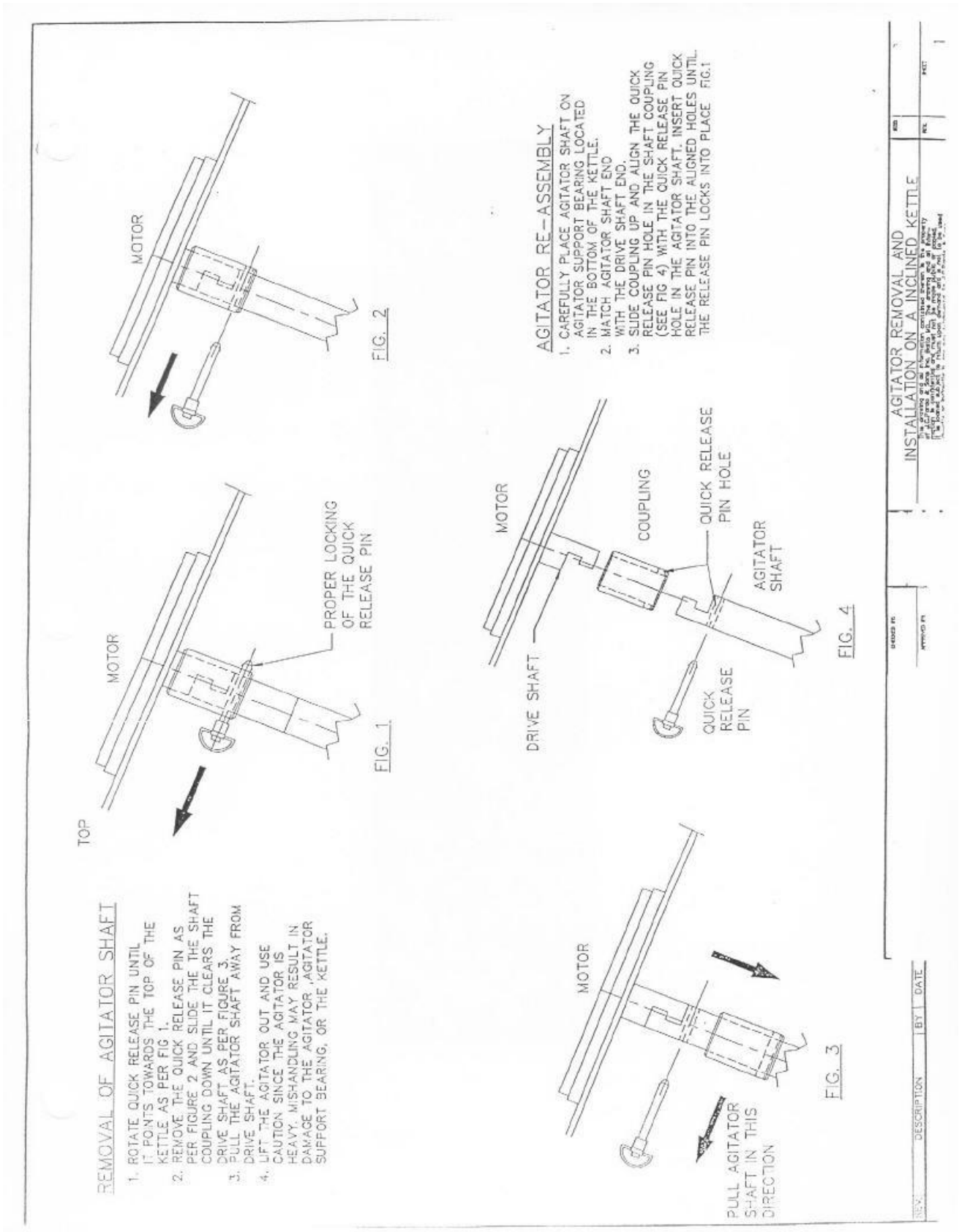
1. Foods must be cooked to a minimum of 165°F to kill dangerous pathogens and must be at least this temperature when it casings are filled. Set temperature on the control panel to at least 165°F before pumping.
2. Pump food through MFS to heat hoses and MFS parts until at least 165°F can be maintained when product exits the MFS. Product may be poured back into the kettle for reheating before pumping.
3. Put down cover of kettle to maintain heat and to maintain a moist atmosphere in the kettle which will make cleaning easier.
4. Empty the kettle as quickly as possible to prevent over-cooking of product and to maintain quality, consistency and temperature.
5. Temperature may be turned OFF or placed on SIMMER when kettle product reaches the steam jacketed area to reduce chances of burning while pumping.

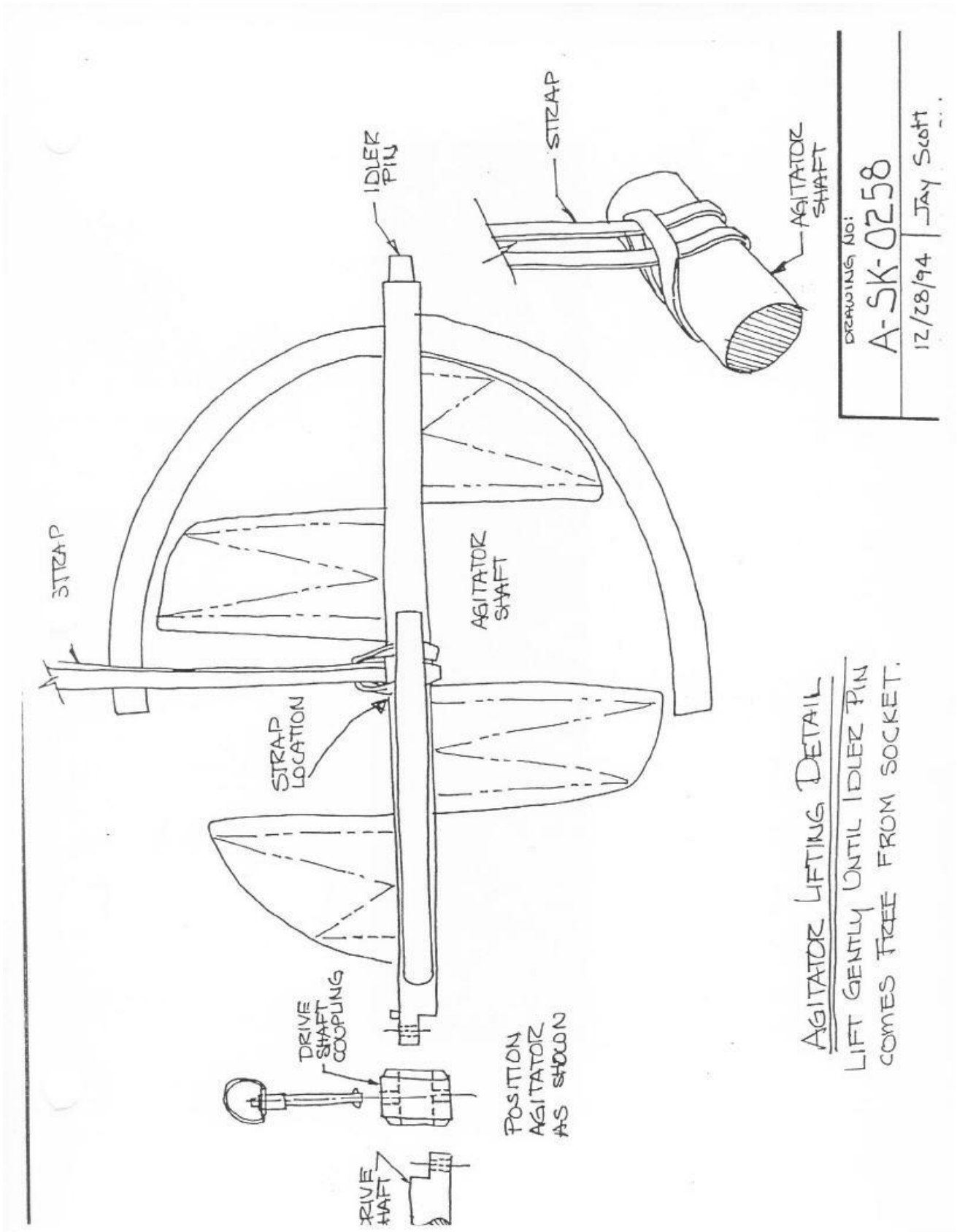
To cool and blend products without heat

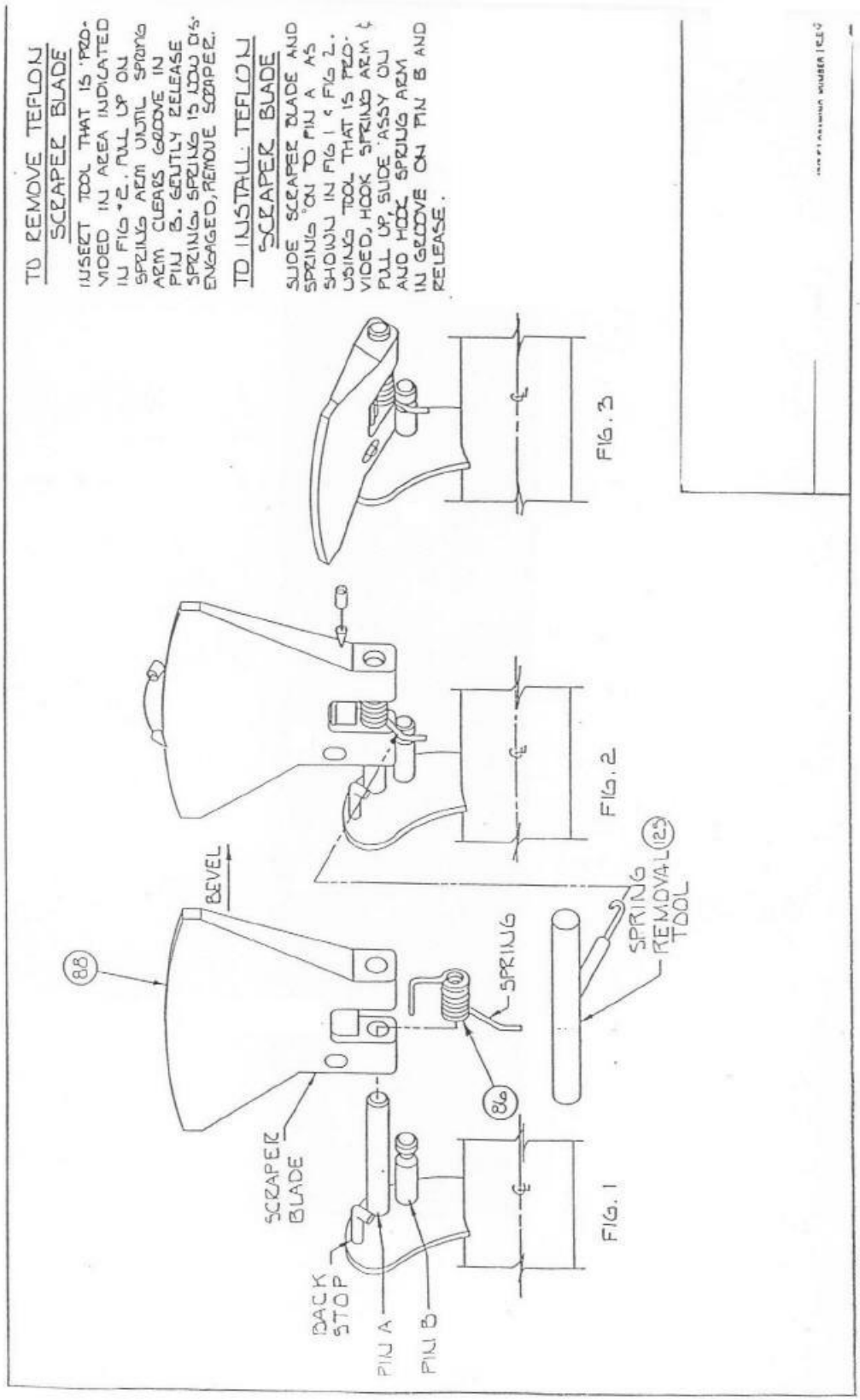
1. Turn the main power switch to ON.
2. Turn the MANUAL WATER COOLING switch to ON. This will start the flow of cold water from the ice builder into the jacket of the kettle. When in this mode the temperature controller will read the temperature of the product only and serve no other function.
3. When cooking a product that is too hot, MANUAL COOLING can be used. Turn on MANUAL COOLING. When sufficient cooling has been achieved, turn the switch off. The kettle jacket will drain and steam will automatically come on to continue cooking if the set point has not been lowered.

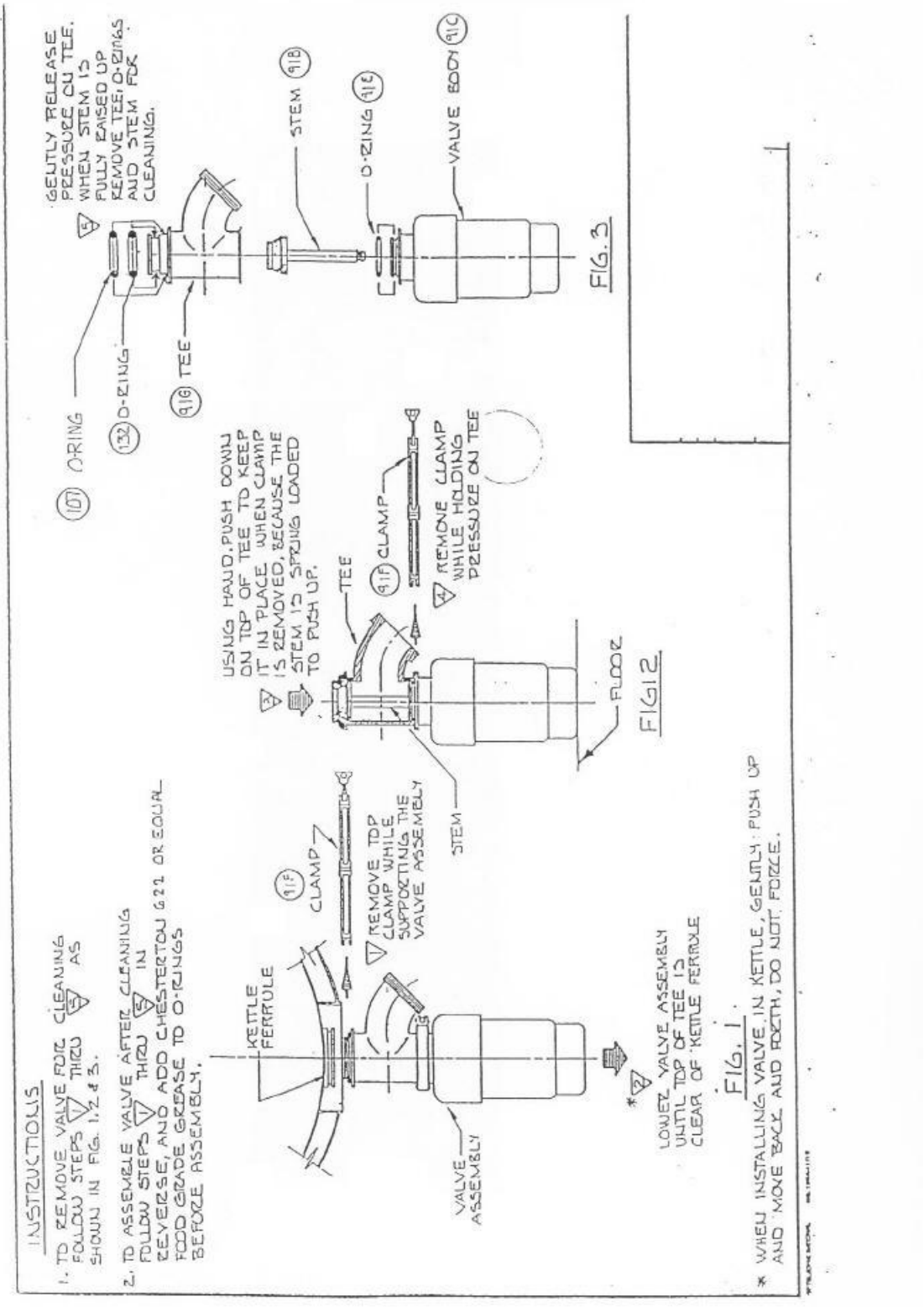
To add Potable water to the kettle

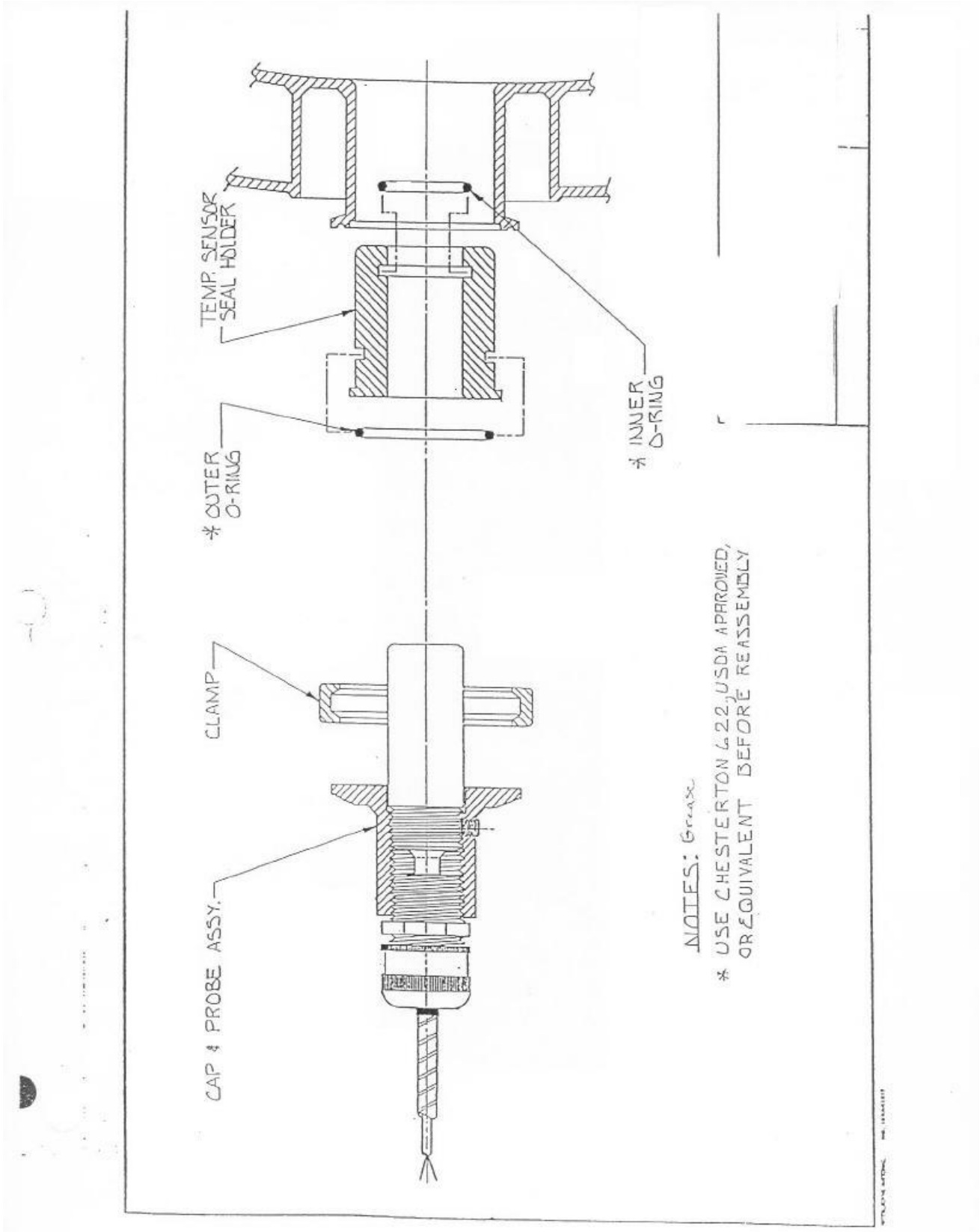
1. Faucet handle must be completely open and the main power must be on.
2. Set point the volume of water needed by changing the digits on the meter.
3. Turn METERED WATER switch to ON. Water will begin filling the desired number of gallons and stop automatically. The amount of water that has been metered can be read above the set point.
4. Additional water may be metered by resetting meter and will accumulate on the meter as long as it is not turned off.
5. Additional water may be added by pressing the black button marked PUSH TO ADD MORE WATER.


REMOVAL OF AGITATOR SHAFT
1. ROTATE QUICK RELEASE PIN UNTIL IT POINTS TOWARDS THE TOP OF THE KETTLE AS PER FIG 1.
2. REMOVE THE QUICK RELEASE PIN AS PER FIGURE 2 AND SLIDE THE THE SHAFT COUPLING DOWN UNTIL IT CLEARS THE DRIVE SHAFT AS PER FIGURE 3.
3. PULL THE AGITATOR SHAFT AWAY FROM DRIVE SHAFT.
4. LIFT THE AGITATOR OUT AND USE CAUTION SINCE THE AGITATOR IS HEAVY. MISHANDLING MAY RESULT IN DAMAGE TO THE AGITATOR ,AGITATOR SUPPORT BEARING, OR THE KETTLE.
TOP
MOTOR
PROPER LOCKING OF THE QUICK RELEASE PIN
FIG. 1
MOTOR
FIG. 2
MOTOR
PULL AGITATOR SHAFT IN THIS DIRECTION
FIG. 3
AGITATOR RE-ASSEMBLY
1. CAREFULLY PLACE AGITATOR SHAFT ON AGITATOR SUPPORT BEARING LOCATED IN THE BOTTOM OF THE KETTLE.
2. MATCH AGITATOR SHAFT END WITH THE DRIVE SHAFT END.
3. SLIDE COUPLING UP AND ALIGN THE QUICK RELEASE PIN HOLE IN THE SHAFT COUPLING (SEE FIG 4) WITH THE QUICK RELEASE PIN HOLE IN THE AGITATOR SHAFT. INSERT QUICK RELEASE PIN INTO THE ALIGNED HOLES UNTIL THE RELEASE PIN LOCKS INTO PLACE FIG.1
MOTOR
DRIVE SHAFT
COUPLING
QUICK RELEASE PIN HOLE
AGITATOR SHAFT
QUICK RELEASE PIN
FIG. 4
AGITATOR REMOVAL AND INSTALLATION ON A INCLINED KETTLE
REV.
DESCRIPTION
BY
DATE


IDLER PIN
STRAP
AGITATOR SHAFT
STRAP
AGITATOR SHAFT
STRAP LOCATION
DRIVE SHAFT COUPLING
POSITION AGITATOR AS SHOWN
DRIVE SHAFT
DRAWING NO:
A-SK-0258
12/28/94
JAY SCOTT
AGITATOR LIFTING DETAIL
LIFT GENTLY UNTIL IDLER PIN COMES FREE FROM SOCKET.


TO REMOVE TEFLON SCRAPER BLADE
INSERT TOOL THAT IS PROVIDED IN AREA INDICATED IN FIG #2. PULL UP ON SPRING ARM UNTIL SPRING ARM CLEARS GROOVE IN PIN B. GENTLY RELEASE SPRING. SPRING IS NOW DISENGAGED, REMOVE SCRAPER.
TO INSTALL TEFLON SCRAPER BLADE
SLIDE SCRAPER BLADE AND SPRING ON TO PIN A AS SHOWN IN FIG 1 & FIG 2. USING TOOL THAT IS PROVIDED, HOOK SPRING ARM & PULL UP, SLIDE ASSY ON AND HOOK SPRING ARM IN GROOVE ON PIN B AND RELEASE.
FIG. 3
FIG. 2
FIG. 1
BEVEL
SPRING REMOVAL TOOL
SPRING
SCRAPER BLADE
BACK STOP
PIN A
PIN B


INSTRUCTIONS
1. TO REMOVE VALVE FOR CLEANING FOLLOW STEPS 1 THRU 5 AS SHOWN IN FIG. 1, 2 & 3.
2. TO ASSEMBLE VALVE AFTER CLEANING FOLLOW STEPS 1 THRU 5 IN REVERSE, AND ADD CHESTERTON 622 OR EQUAL FOOD GRADE GREASE TO O-RINGS BEFORE ASSEMBLY.
(10) O-RING
(13) O-RING
(91B) TEE
GENTLY RELEASE PRESSURE ON TEE. WHEN STEM IS FULLY RAISED UP REMOVE TEE, O-RINGS AND STEM FOR CLEANING.
STEM (91B)
O-RING (91E)
VALVE BODY (91C)
FIG. 3
USING HAND, PUSH DOWN ON TOP OF TEE TO KEEP IT IN PLACE WHEN CLAMP IS REMOVED, BECAUSE THE STEM IS SPRING LOADED TO PUSH UP.
TEE
(91F) CLAMP
REMOVE CLAMP WHILE HOLDING PRESSURE ON TEE
FLOOR
FIG 2
KETTLE FERRULE
(91F) CLAMP
REMOVE TOP CLAMP WHILE SUPPORTING THE VALVE ASSEMBLY
STEM
VALVE ASSEMBLY
LOWER VALVE ASSEMBLY UNTIL TOP OF TEE IS CLEAR OF KETTLE FERRULE
FIG. 1
* WHEN INSTALLING VALVE IN KETTLE, GENTLY PUSH UP AND MOVE BACK AND FORTH, DO NOT FORCE.


TEMP. SENSOR SEAL HOLDER
* OUTER O-RING
* INNER O-RING
CLAMP
CAP & PROBE ASSY.
NOTES: Grease
* USE CHESTERTON 422 USDA APPROVED, OR EQUIVALENT BEFORE REASSEMBLY

INCLINED AGITATOR KETTLE
OPERATING AND CLEANING INSTRUCTIONS

OPERATING INSTRUCTIONS

Your kettle has been equipped with a control panel that has some or all of the following functions:

12. Main POWER switch
13. Temperature control
14. 24 hour chart recorder
15. KETTLE RUN push button
16. Agitator speed control with variable settings
17. Agitator STOP/START
18. Potable water meter with OFF/ON switch and push button to add water
19. Manual COOL water switch
20. Kettle selector switch for CONTINUOUS, OFF, COOK
21. SIMMER switch
22. Product VALVE OPEN/CLOSED

Operating the Kettle

10. To operate the system the main power switch on the control panel must be turned on. The temperature control computer will run through its diagnostics for about one minute.
11. To set desired temperature, turn switch to COOK. This activates the temperature controller. The temperature displayer and the actual temperature will appear. To change the temperature set point, press the push button with “+” to raise or increase the temperature or press the button with “-“ to decrease or lower the temperature.
12. Push the button marked KETTLE RUN and the steam will come on to heat the kettle and its contents until the set point temperature is reached. It will cycle off and on to maintain the set point temperature.
13. To start the agitator, press the button marked AGITATOR START and a green light will indicate the agitator is on.
14. To stop the agitator, press the red AGITATOR STOP mushroom button.
15. To change the speed of the agitator, turn the SPEED CONTROL knob to the right to increase the speed or to the left to decrease the speed. As a safety precaution, always turn the speed to “0” when kettle is not in use and before use.
16. To add ingredients to the kettle, push AGITATOR STOP button. Steam heating will continue in the jacket and the agitator must be started again as soon as possible or product might burn on the surface of the kettle.
17. CONTINUOUS STEAM is a manual override allowing steam into the kettle but with no temperature control.
18. SIMMER allows maintenance to the set point temperature but gently introduces heat into the kettle.

Ready to pump food out of kettle (Metering Filling Station, MFS, should be connected to the kettle during the sanitation process)

6. Foods must be cooked to a minimum of 165°F to kill dangerous pathogens and must be at least this temperature when it casings are filled. Set temperature on the control panel to at least 165°F before pumping.
7. Pump food through MFS to heat hoses and MFS parts until at least 165°F can be maintained when product exits the MFS. Product may be poured back into the kettle for reheating before pumping.
8. Put down cover of kettle to maintain heat and to maintain a moist atmosphere in the kettle which will make cleaning easier.
9. Pump and empty the kettle as quickly as possible to prevent over-cooking of product and to maintain quality, consistency and temperature.
10. Temperature may be turned OFF or placed on SIMMER when kettle product reaches the steam jacketed area to reduce chances of burning while pumping.

To cool and blend products without heat

4. Turn the main power switch to ON.
5. Turn the MANUAL WATER COOLING switch to ON. This will start the flow of cold water from the ice builder into the jacket of the kettle. When in this mode the temperature controller will read the temperature of the product only and serve no other function.
6. When cooking a product that is too hot, MANUAL COOLING can be used. Turn on MANUAL COOLING. When sufficient cooling has been achieved, turn the switch off. The kettle jacket will drain and steam will automatically come on to continue cooking if the set point has not been lowered.

To add Potable water to the kettle

6. Faucet handle must be completely open and the main power must be on.
7. Set point the volume of water needed by changing the digits on the meter.
8. Turn METERED WATER switch to ON. Water will begin filling the desired number of gallons and stop automatically. The amount of water that has been metered can be read above the set point.
9. Additional water may be metered by resetting meter and will accumulate on the meter as long as it is not turned off.
10. Additional water may be added by pressing the black button marked PUSH TO ADD MORE WATER.

CLEANING INSTRUCTIONS

As with all equipment that has electrical components, care must be exercised when using water and chemicals to clean food service equipment. Use a mild detergent following instructions of the chemical manufacturer. Do not spray water on electrical control panel or components. Do not use harsh or caustic chemicals, especially on o-rings and gaskets.

7. Rinse out food debris from the kettle and flush through the metering filling station (MFS or food pump) if they are still connected. If the kettle is not connected to the food pump, open the valve and allow rinse water to flush into the floor drain.
8. Remove agitator arm:
    a. Rotate the agitator until the pull pin is visible.
    b. Turn power to OFF as a safety precaution.
    c. Pull quick release pin out.
    d. Slide coupling upward.
    e. Carefully lift agitator, pull back and lift out.
    f. Remove scraper blades from agitator by using the spring removal tool provided with the kettle.
    g. Wash agitator arm, scraper blades, and springs with mild dish detergent or in dish machine. Air dry.
9. Wash the inside of the kettle with a mild dish detergent as you would any pot or pan. Flush liquid through MFS or by opening the valve. Rinse thoroughly. Allow to air dry.
10. Open kettle valve. Remove the valve and tee from the bottom of the kettle by removing the clamp. Remove o-rings. Wash and dry thoroughly. When re-installing the valve, apply USDA approved food grade grease (Chesterton 622 or equal) to o-rings. Gently push tee and valve body in place and secure with clamps.
11. Remove temperature sensor probe by removing clamp. Slide sensor out of seal holder. Remove o-rings. Clean sensor, seal and o-rings. Before re-installing, apply a liberal amount of USDA approved food grade grease on o-rings.

REASSEMBLY

1. Install scraper blades with springs on agitator arm.
2. Lift agitator arm into kettle, set in place by the drive shaft and slide the slip collar or coupling into place and put quick release pin into both.
3. Turn Control Power on. Grease o-rings for the valve and install o-rings.
4. To assemble the valve actuator and stem: a. reconnect the air line, b. place stem in valve actuator, c. apply pressure to the tope of the stem, d. while applying pressure to the stem have someone turn the valve switch to the open position. The stem should lower into the actuator.
5. Attach tee pipe to bottom of kettle with clamp.
6. Attach valve actuator to the tee with clamp.
7. Turn product valve switch to the closed position and kettle valve will close.
8. Grease o-rings for the temperature probe and install o-rings on synthetic seal holder.
9. Slide temperature probe into seal holder.
10. Slide both into opening in kettle and attach with clamp.

DAILY PRE-START UP

4. The operator must check the kettle, springs and scraper blades for proper installation before turning kettle on.
5. Make sure the connecting coupling from the drive shaft to the agitator is properly installed with the quick release pin fully engaged.
6. Label and place clean chart on chart recorder.

If the above cannot be achieved, call your maintenance supervisor or service contractor before proceeding.

METERING FILLING STATION (MFS)

General instructions for care and operation of the Metering Filling Station (MFS) have been provided below. Please be certain to review the information before operating the equipment. The manufacturer reserves the right to make changes and improvements to equipment without notice.

Operation

1. Check oil level before operating. Fill with mineral oil if necessary.
2. Connect on end of the 3-inch diameter food hose to the kettle.
3. Position MFS for ease of operation and connect to the other end of the food hose. Additional hoses or a 90° elbow may be used.
4. Connect air hose from source to MFS.
5. Open VALVE on kettle. Food will flow into food hose.
6. Place casing over discharge nozzle.
7. Pull and hold trigger lever until pump has stopped. If a second or third stroke is required, repeat process or set STROKE SELECTION on CONSTANT PUMPING and hold trigger lever while food is being pumped.
8. Move bag over to clipper and clip bag. (refer to Tipper Tie operations manual)
9. Pump a couple of bags to check volume and speed.
10. SUCTION SPEED is the rate at which product is suctioned from kettle. Thick products should be suctioned at a slow speed. Thin products may be suctioned fast.
11. DISCHARGE SPEED is the rate at which product flows out of the discharge nozzle. Most products may discharge fast into bags. Discharge slowly into pans to reduce splashing hot food.
12. Continue to pump until all product has been emptied from the kettle.

Setting Volume

1. Open front doors of MFS.
2. Set STROKE SELECTION switch to CONSTANT PUMPING or SINGLE STROKE.
3. While another person is holding trigger lever open, reduce DISCHARGE SPEED and SUCTION SPEED until piston shaft stops in the mid-position. Release the trigger and the piston shaft should remain in place. For safety, keep hands clear of the piston shaft until it stops moving.
4. Rotate metal wheel to extend the shaft length. The longer the shaft, the smaller the volume that will be pumped. When the space between the two metal wheels is about 3 inches, approximately one gallon will be pumped per stroke. Measure and record this distance if necessary.
5. Turn both SPEED knobs to return the piston shaft to its original location

Sanitizing and flushing the MFS

1. The MFS can be sanitized during sanitation of the kettle by connecting the MFS to the kettle and flushing sanitizer from the kettle through the MFS. Remove the discharge nozzle and replace it with the green hose to direct sanitizer to a floor drain.
2. Between batches of product, keep the MFS connected to the kettle and flush contents of the kettle followed by clean water.

Disassembly and Cleaning

1. Disconnect air source for safety.
2. Disconnect small ¼" air lines from the discharge air cylinder and pump head rotary actuator.
3. Disconnect food hoses.
4. Loosen all clamps and use two-inch wrench to remove all MFS pipes.
5. Use tool provided to loosen three lug nuts and remove pump head.
6. Dismantle pump head by removing flapper valve and rotary actuator.
7. Pull cylinder off piston to remove o-ring off piston.
8. Remove all other o-rings.

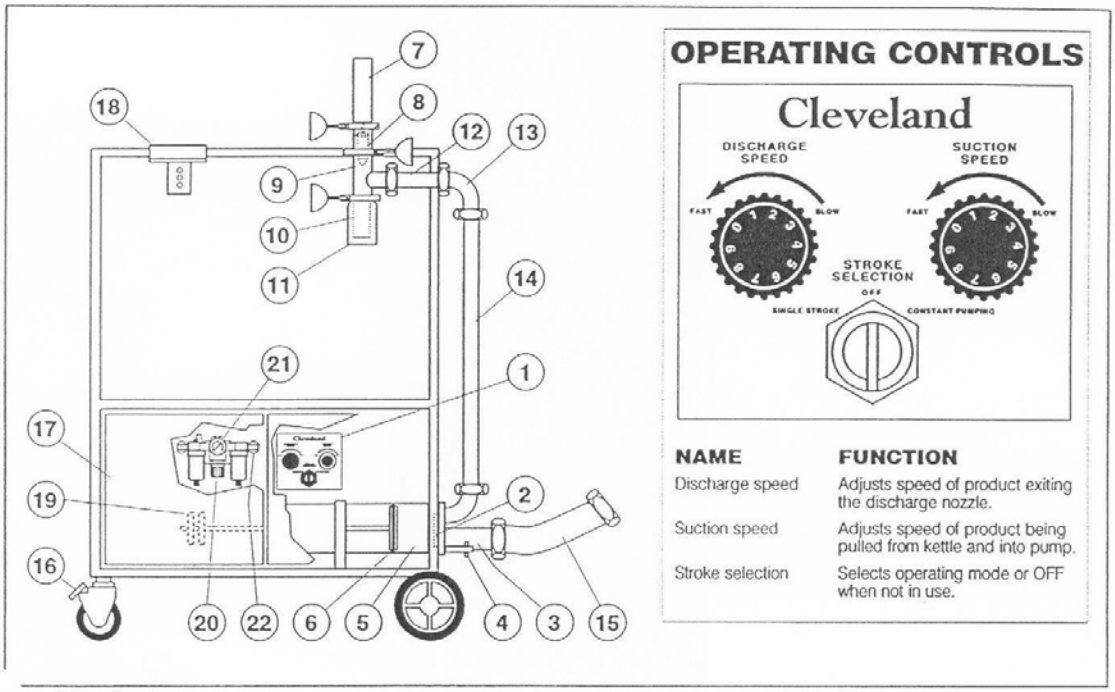
Warning: Do not put discharge air cylinder or rotary actuator in water. Damage will occur.

9. Wash and rinse all parts except discharge air cylinder and rotary actuator. These can be wiped clean.
10. Wash and rinse interior and exterior of pipes, food hoses and MFS cabinet. Allow to air dry.
11. Inspect all o-rings and gaskets for cuts and replace as needed.

Assembly

1. Lubricate all o-rings and gaskets with USDA approved food grade grease.
2. Place all o-rings where required.
3. Push product cylinder over piston head and seat firmly in place.
4. Assemble pump head and inspect clearances for flapper valve on each side.
5. Mount product cylinder and pump head fastening lug nuts to properly seat both.
6. Using gaskets, connect all pipes and tighten with two-inch wrench.
7. Assemble product discharge head. Clamp into place.
8. Attach all ¼" air lines.

Operating Instructions



neral Parts Drawing

ITEM #	DESCRIPTION	FUNCTION
1.	Control Panel	Includes: A/ speed adjusters for suction and discharge B/ stroke selection switch.
2.	Flapper Valve	Changes direction of product flow.
3.	Piston Head	
4.	Large Lug Nuts	Holds product head to product cylinder.
5.	Product Cylinder	Cylinder product is drawn into and discharged from.
6.	Product Piston	Moves product within the cylinder
7.	Product Discharge Valve	Air cylinder that opens and closes discharge opening by moving plunger
8.	Plunger	Open and closes product discharge opening
9.	Discharge Valve Body	
10.	Trigger Lever	Activates pumping action.
11.	Discharge Nozzle	Directs the flow of discharge product.
12.	2” dia. Short Connector Pipe	
13.	2” Elbow	
14.	2” dia. Long Connector Pipe	
15.	3” dia. Food Product Hose	3” dia Hose to connect Metering Filling Station hose to kettle.
16.	Brake	Locks pump in position
17.	Access Doors	
18.	Clipper Bracket	Mounting bracket for optional clipper
19.	Adjusting Wheels	Used for setting desired pumping volume
20.	Pressure Regulator Dial	Used to regulate air pressure
	Pressure Gauge	Shows operating pressure
	Main Air Shut Off Valve	Disconnects air supply to unit. Back side of Metering Filling Station

As A Safety Feature The Discharge Nozzle (11) will Automatically Close And The Pump Will Release Any Time You Release The Trigger Lever (10).

PUMPING

Note: Use 3" gaskets in all hex nut couplings on food hose.

- First, hand-tighten
- Then, snug with wrench

1. Use 3" gasket, connect one end of the 3" dia. Food Product Hose **(15)** to kettle.

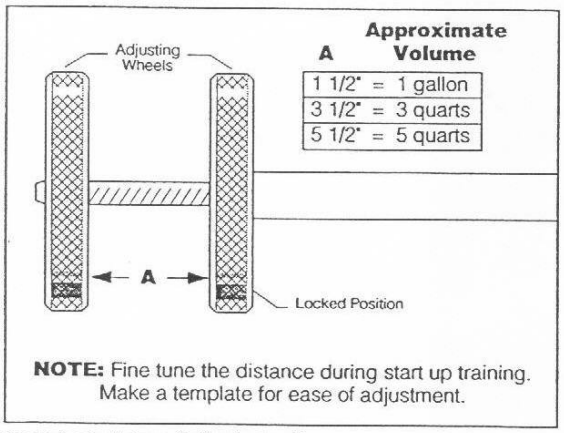
2. Position metering filling station for ease of operations and connect other end of 3" dia. Food Product Hose **(15)** – if required use 3" 90° elbow.

3. Connect air hose to kettle and metering filling station

4. Open the back Access Doors **(17)** and check that the Main Air Shut Off Valve **(22)** is pressed inwards.

5. Open front Access Doors **(17)** of metering filling station.

6. Set Stroke Selection Switch on Control Panel **(1)** for "SINGLE STROKE".



Approximate Volume Setting Instructions

7. Using a ruler, set desired quanitity by measuring between Adjusting Wheels for correct setting.

8. Open product discharge valve on kettle.

9. Place bag over Discharge Nozzle **(11)**.

10. With Stroke Selection Switch on Control Panel **(1)** set on "SINGLE STROKE", pull and hold Trigger Lever **(10)** against Discharge Nozzle **(11)** until pump has stopped; if a second stroke is required, repeat process.

11. Move bag over to clipper and clip closed (refer to clipper operating instruction manual.)

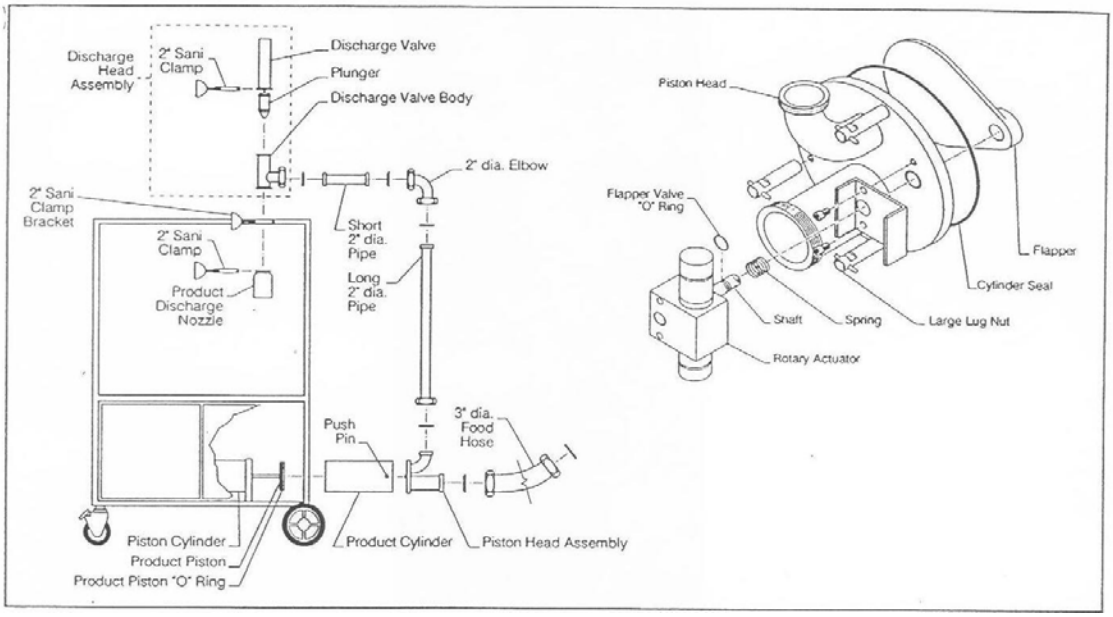
12. Pump a couple of bags to check volume and speed.

- To adjust volume, measure between Adjusting Wheels **(19)** for correct setting.
- To adjust speed, turn Discharge Speed or Suction Speed on Control Panel **(1)** as required.
- Adjust pump speed faster for thinner

products and slower for thicker.

13. Continue pumping until all product has been emptied from kettle.

CLEANING INSTRUCTIONS



PREPRODUCTION SANITIZING PROCEDURE

NOTE: The metering filling station must be sanitized prior to the daily production run.

1. Fill Kettle to hemisphere and start the agitator.

2. Add 5.25% bleach to make a 50 ppm solution – refer to chart

Amount of water In the kettle	Amount (5.25%) of bleach to add
20 gal / 76L	5 tbsp / 75ml
30 gal / 114L	7 ½ tbsp / 113ml
40 gal / 151L	10 tbsp(5/8 cup)/ 150ml
50 gal / 190L	12½ tbsp(3/4 cup+1tbsp)/ 188ml
60 gal / 227L	1 cup / 225ml

Sanitizing Solution Chart

3. Bring the temperature to 80°F (max.-100°F) or lukewarm.

NOTE: Do **NOT** allow solution to get hot.

4. Attach the metering filling station to the kettle and pump on "CONTINUOUS" setting for one minute.

5. Finish emptying the kettle by disconnecting the 3""dia. Food Product Hose and letting the contents of the Metering Filling Station and kettle drain. Make sure the 3" dia. Food Product Hose does not drag on the floor.

FLUSHING

Between Recipes

1. To clean between batches of product, flush kettle and Metering Filling Station with a warm water and mild detergent solution from kettle to loosen and remove food particles

2. Remove product Discharge Nozzle and replace it with cleaning hose.

3. Place end of cleaning hose over a drain.

4. Switch stroke selector switch to "CONSTANT PUMPING".

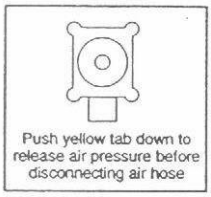
5. Pull and hold trigger lever against discharge valve nozzle until kettle has been emptied.

6. Add clean water to kettle, and repeat process to rinse units

DISASSEMBLE

Note: Remove "O" rings using a wooden or plastic poker; do **NOT** use a sharp object.

Note: Prepare a properly diluted solution of authorized cleaning solution in a plastic soak bucket taken from a freshly filled sink to receive small parts, gaskets, and "O" rings.



Air Quick Connect on Mixer Kettle

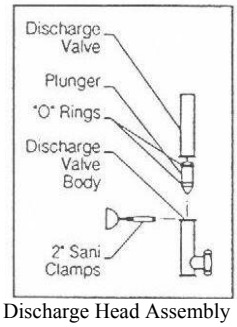
6. Move slide valve on kettle's air quick connect to down position to vent air from metering filling station.

7. Disconnect main air line from Metering Filing Station.

8. Remove air lines (quick-disconnect fittings) from Discharge Valve.

9. Undo 2" Sani-Clamp, and remove Discharge Nozzle.

10. With 2" wrench, loosen nut on Discharge Valve Body and remove Discharge Head Assembly; place 2" gasket in warm water to soak.



Discharge Head Assembly

11. To disassemble Discharge Head Assembly, follow in order;

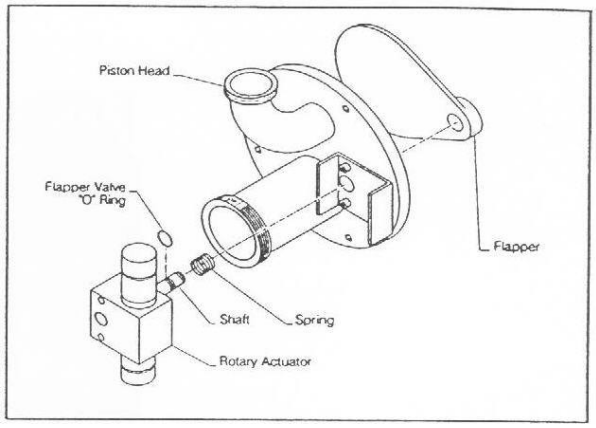
- Remove 2" Sani-Clamp that holds Discharge Head Assembly together.
- Separate parts by pulling them apart.
- Using a wooden or plastic picker, remove "O" Rings from plunger.
- Put "O" Rings in warm water to soak; do **NOT** submerge discharge valve.

12. With 2" wrench, remove Short 2" dia. Pipe, 2" dia. Elbow and Long 2" dia. Pipe. Place all gaskets in soak bucket.

13. Remove two air lines from Rotary Actuator on Piston Head Assembly.

14. Using lung wrench, unscrew three Large Lug Nuts, and remove Piston Head Assembly.

15. Dismantle Piston Head Assembly as follows in order;



- Push Rotary Actuator toward Piston Head to remove Rotary Actuator, placing small spring in soak bucket.
- Remove Rotary Actuator, placing small spring in soak bucket.
- Do **NOT** submerge Rotary Actuator.

16. Pull product cylinder off product piston.
- Do **NOT** use pliers or any other tool that could damage the inside wall of the cylinder.

17. Using plastic or wooden picker, remove "O" ring from Product Piston.

CLEANING

WARNING: Do not submerge Discharge Valve or Rotary Actuator in water, damage to air cylinders will result.

- Always turn off equipment power before using water.
- Never use steel wool for cleaning; particles may become embedded and rust.
- Cleaning unit in the following order:

A. Warm water and mild detergent solution.

B. Clear rinse.

C. Properly diluted sanitizing solution (see Sanitizing Solution Chart) to sanitize after cleaning.

- Do **NOT** use chloride cleaners; they may damage stainless steel surface.

- For difficult cleaning applications, one of the following can be used; alcohol, baking soda, vinegar, or a solution of ammonia in water.

1. Clean all parts (except Discharge Valve and Rotary Actuator) with hot soapy water or run them through the dishwasher.

2. Clean the interior of the 2" pipes and the 3" dia. Food product hose using the brushes provided.

3. Inspect "O" rings and gaskets for cuts, distortion, or wear, replace if required.

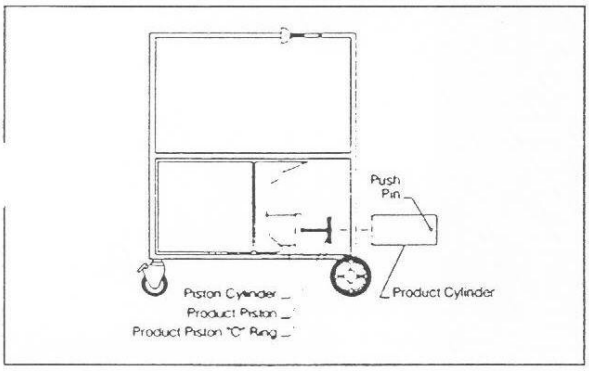
4. Leave part disassembled overnight.

ASSEMBLY

NOTE: To eliminate any chance of recontamination of units, wear sanitary disposable gloves during reassembly after cleaning.

This startup process assumes the unit is fully disassembled.

1. Attach Product Cylinder to Piston Cylinder as follows:

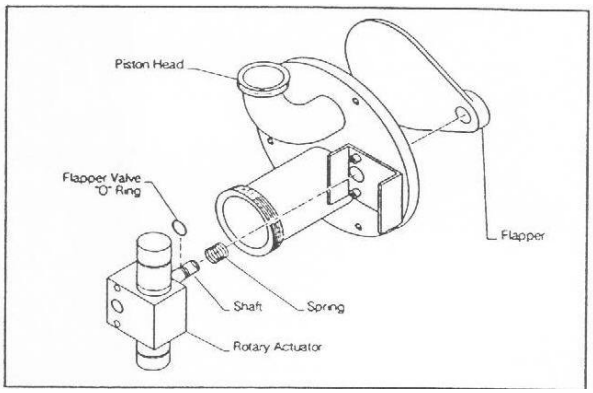


Product Piston/ Cylinder Assembly

- Inspect Product Piston "O" Ring (replace if worn) on Product Piston – lubricate with food grade grease.

- Push Product Cylinder over Product Piston and seat firmly in groove (pushpin must be located as illustrated).

2. Assemble Piston Assembly as follows in order:

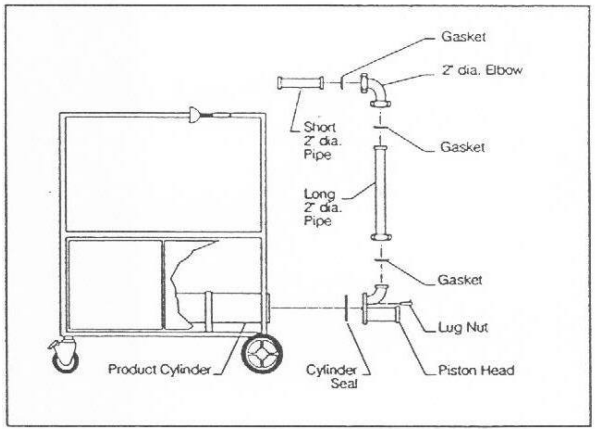


Piston Head Assembly

- Inspect Flapper Valve “O” ring on rotary actuator (replace if worn).
- Lubricate “O” ring with food grade grease and put on shaft.
- Put Spring on Shaft.
- Slide Rotary Actuator Shaft thru hole in Piston Head.
- Mount Flapper to Shaft.

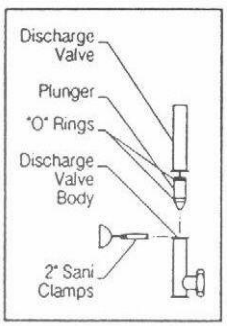
3. Assemble piston and piping as follows in order:

NOTE: Use 2" gasket in all hex nut couplings.



2" Piping Assembly

- Put Cylinder Seal in place. Lubricate exposed portion of Cylinder Seal then mount Piston Head to Product Cylinder, and fasten in place with large Lug Nuts using lug wrench for final tightening.
- Attach two ¼" air lines to Rotary Actuator (black line on top).
- Reassemble 2" piping (Long 2" dia. Pipe. 2" dia. Elbow and Short 2" dia. Pipe) on Piston Head as illustrated using gaskets shown.



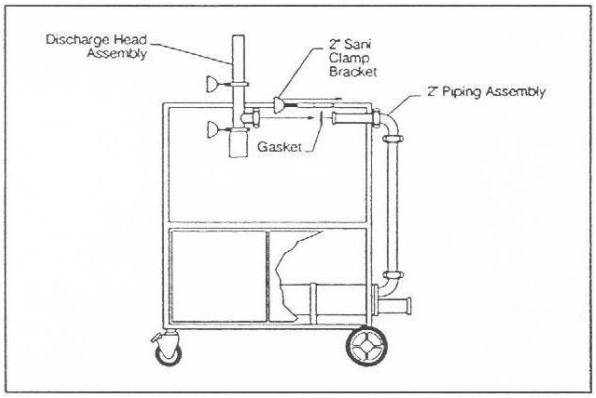
4. Assemble discharge head assembly in order as follows:

- Inspect and install "O" Rings (replace if worn) on Plunger – larger one in top groove – smaller one in bottom groove.

Discharge Head Assembly

- Push Plunger into Discharge Valve Body.
- Attach Discharge Valve to Discharge Valve Body using 2" Sani-Clamp.
- Attach Discharge Nozzle to Discharge Valve Body singe 2" Sani-Clamp.

5. Attach Discharge Head Assembly as follows:



Discharge Head/2" Piping Assembly

- Mount Discharge Head Assembly on Short 2" dia. Pipe (use Gasket).
- Rotate Discharge Head Assembly into 2" Sani-Clamp Bracket and fasten clamp.
- Attach two ¼" air lines to Discharge Valve (black on top).

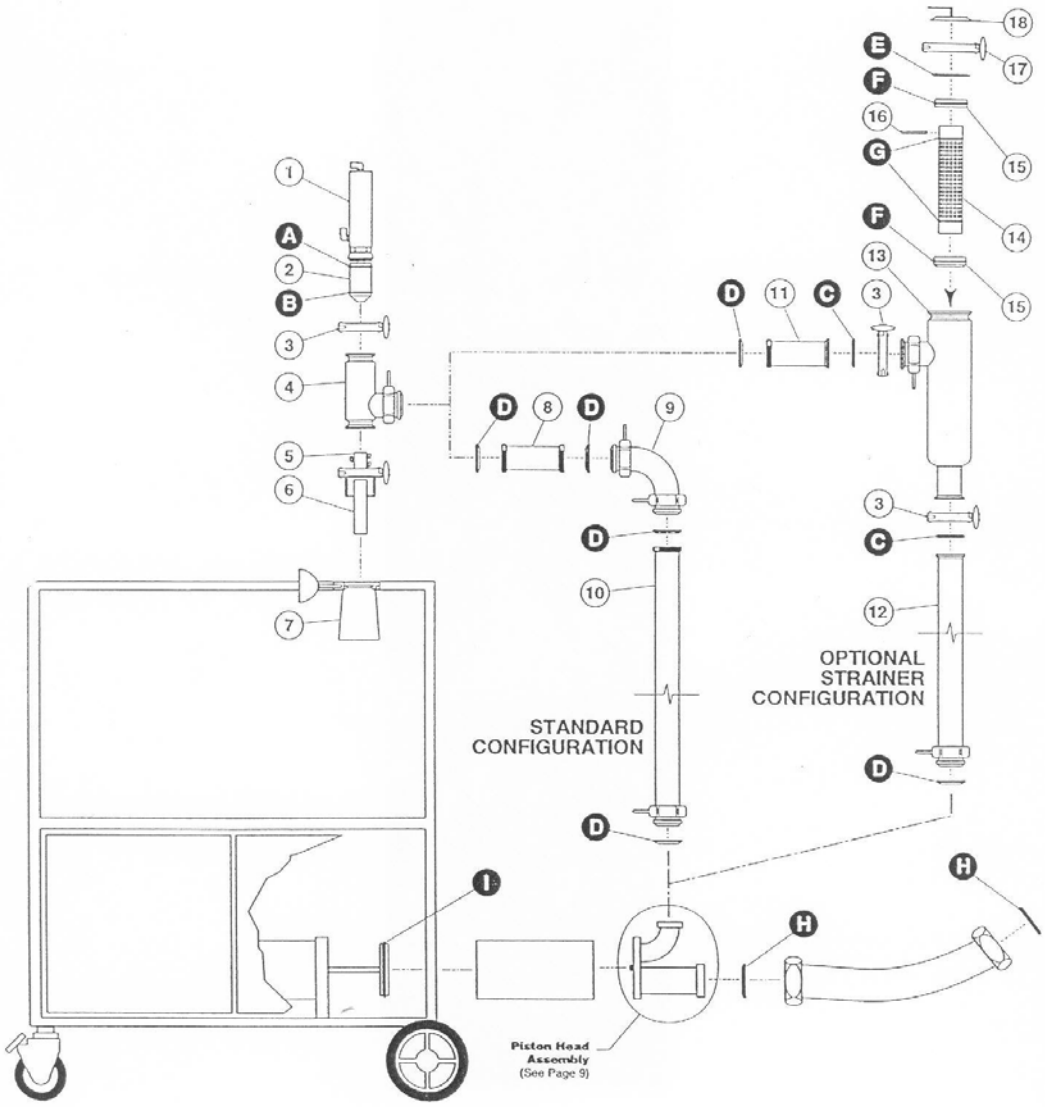
SANITIZING

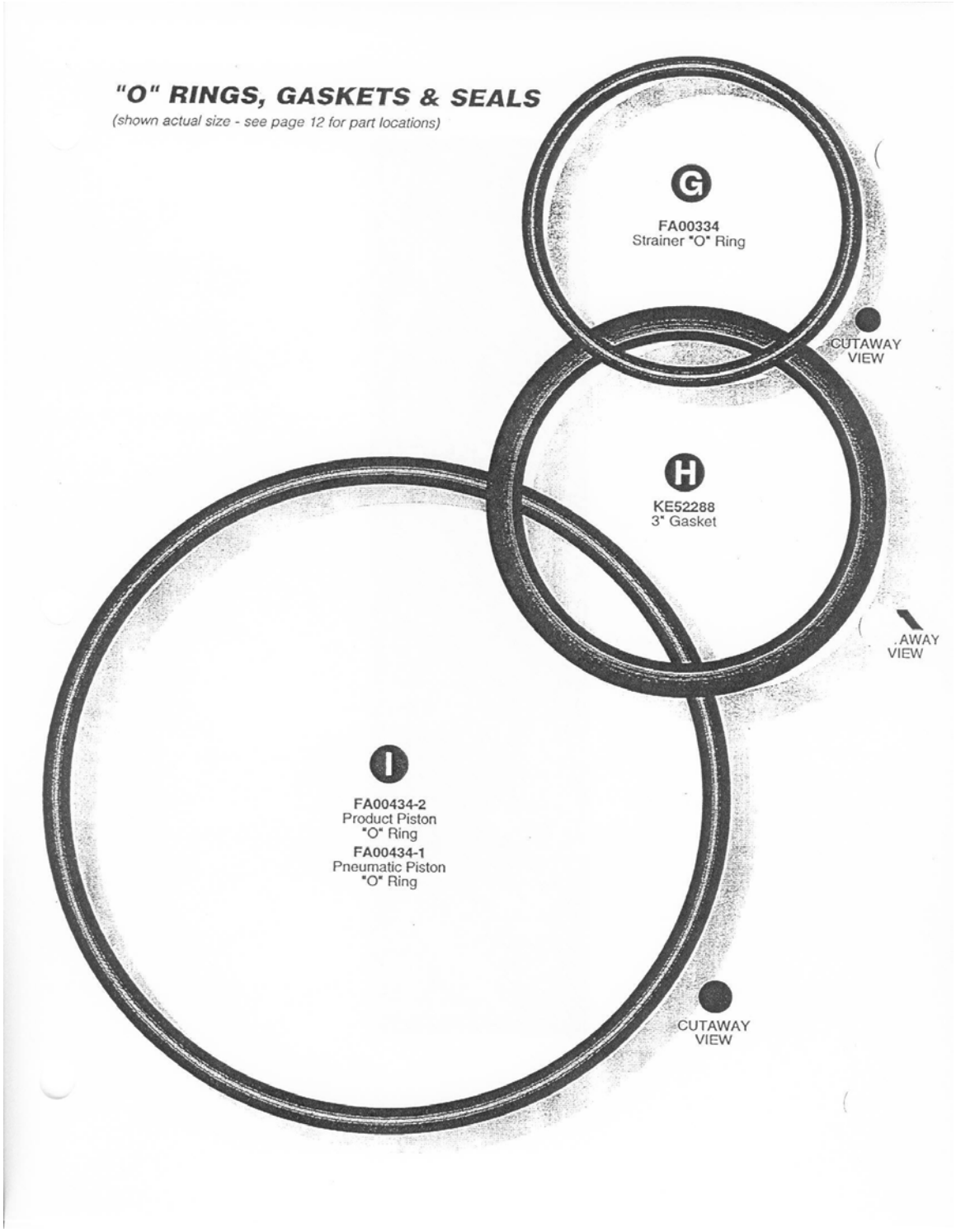
You are now ready to do the preproduction sanitizing procedure as discussed on page 5 of this manual.

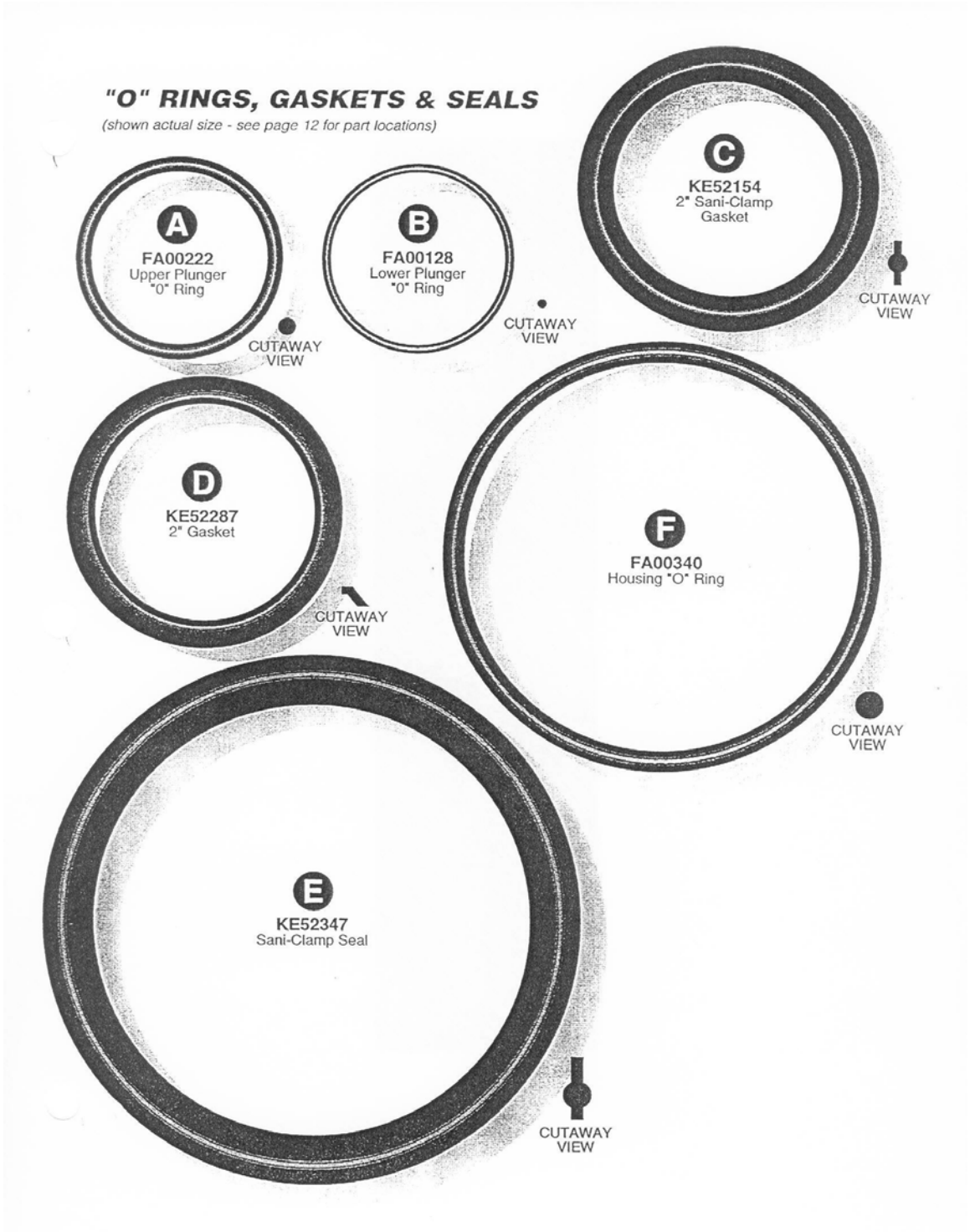
- Do **NOT** leave “O” Rings in cleaner or sanitizer.
- When worn, replace “O” Rings.

PIPING ASSEMBLIES, "O" RINGS, GASKETS & SEALS

(see pages 17-18 for actual size illustrations of "O" Rings)




"O" RINGS, GASKETS & SEALS
(shown actual size - see page 12 for part locations)
G
FA00334
Strainer "O" Ring
CUTAWAY VIEW
H
KE52288
3" Gasket
AWAY VIEW
I
FA00434-2
Product Piston
"O" Ring
FA00434-1
Pneumatic Piston
"O" Ring
CUTAWAY VIEW


"O" RINGS, GASKETS & SEALS
(shown actual size - see page 12 for part locations)
A
FA00222
Upper Plunger
"0" Ring
CUTAWAY VIEW
B
FA00128
Lower Plunger
"0" Ring
CUTAWAY VIEW
C
KE52154
2" Sani-Clamp
Gasket
CUTAWAY VIEW
D
KE52287
2" Gasket
CUTAWAY VIEW
F
FA00340
Housing "O" Ring
CUTAWAY VIEW
E
KE52347
Sani-Clamp Seal
CUTAWAY VIEW

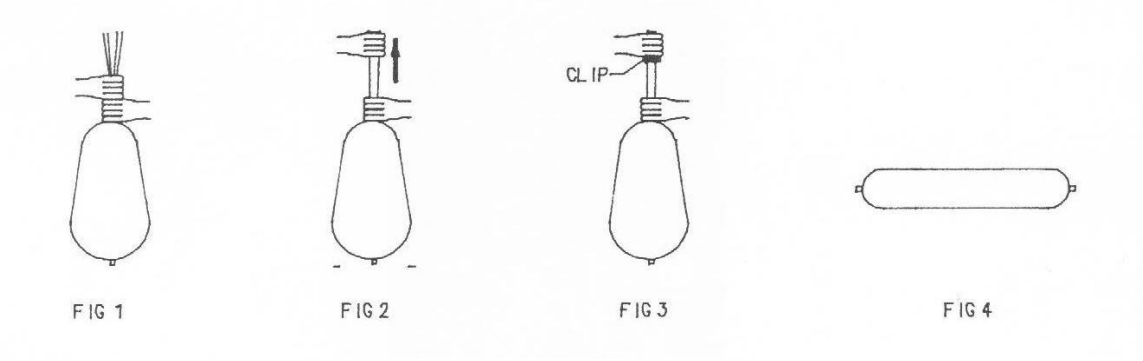
MODEL E VAC CLIPPER

OPERATION OF THE MODEL ”E” VAC CLIPPER

HOT FOOD - FILL WITH 170°F PRODUCT AND CLIPAS SHOWN BELOW.

1. GRASP F ILLED BAG WITH BOTH HANDS; ONE JUST ABOVE PRODUCT, AND SECOND JUST ABOVE FIRST. SLIP TOP HAND UPWARD —STRIPPING AIR OUT OF BAG TAIL. SEE FIG 1&2.

2. CLIP AS SHOWN. DISCARD TAIL. IT IS DESIRABLE TO HAVE A LONG FLAT BAG WHEN COMPLETE FOR MORE RAPID COOL ING. SEE FIG 4.



COLD FOOD - FILL WITH COLD PRODUCT & CLIP AS SHOWN.

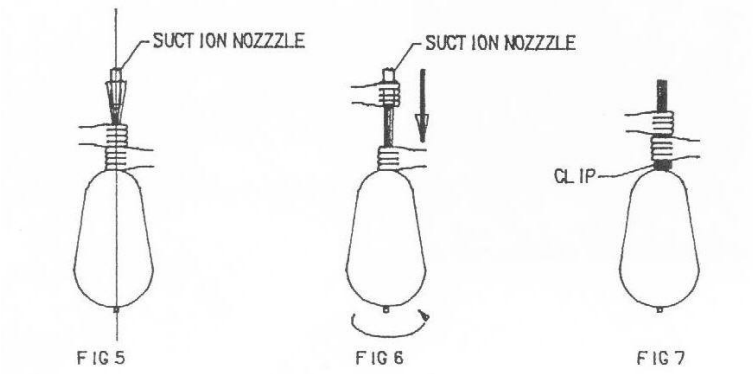
1. FILL BAG WITH DESIRED AMOUNT OF COLD FOOD.

2. GRASP FILLED BAG AS ABOVE, INSERT NOZZLE, AND STRIP AIR. SEE FIG 5.

3. PULL DOWN ON NOZZLE TO ACTIVATE VACUUM PUMP - REMOVE EXCESS AIR.

4. TWIST BAG JUST ABOVE FILL, SO AS NOT TO LOOSE VACUUM.

5. MOVE TO CLIPPER, AND CLIP JUST ABOVE FILL. SEE FIG 7.



MODEL E VAC CLIPPER

CLEANING MODEL "E"

BETWEEN EVERY PRODUCT

1. IMMERSE SUCTION NOZZLE IN SOAPY WATER, PULL NOZZLE DOWN, AND ALLOW SOAPY WATER TO BE PULLED INTO SUCTION LINE.

2. RINSE W ITH FRESH WATER - SAME PROCEDURE.

3. FLUSH WITH 50 PPM CHLORIDE SOLUT ION - SAME PROCEDURE.

END OF SHIFT CLEANING:

1. FLUSH CLEAN AS ABOVE.

2. DISSEMBLE THE NOZZLE TO CLEAN — USING "WRENCH' PROVIDED.

3. WASH ALL PARTS AND REASSEMBLE (BE CAREPULL NOT TO LOOSE SPRING).

4. CLEAN WASTE RECEPTACLE (LOCATED BELOW TABLE) -

NOTE: VACUUM MACHINE WILL NOT WORK IF WASTE RECEPTACLE IS OVER FULL.

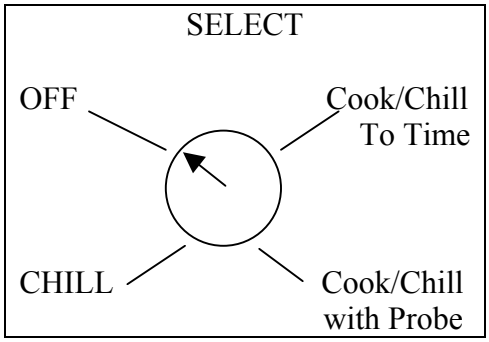
OPERATION INSTRUCTIONS FOR A TUMBLE CHILLER/COOK TANK

A. CHILLER FOR KETTLE COOKED FOODS:

Step 1 Open outer cover with Tumble Chiller/Cook Tank-120 – lift right hand cover first

Step 2 Loosen large clamps at front of innter rotating drum and raise door of drum to the open position

Step 3 Start each operation with a Power "**OFF"**



Step 4 To Start: Turn Power Switch **"ON"** or pull out Red Emergency Stop Button

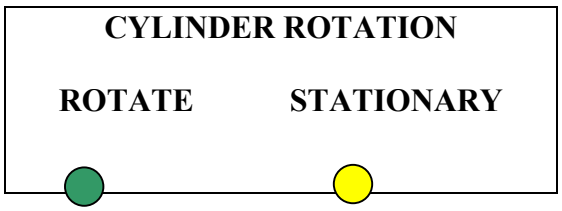
Step 5 Begin chilling cycle by

A. Set Select switch to chill
B. Push green button marked Tank Run:
This begins the filling of the Cook/Chill Tank with water up to chill water low level probe.
C. After tap water rises past the lower water level probe the water pumps come on – circulating pump moves the water from the chill tank through the heat exchanger while the chilled water pump moves water from the ice builder to the shell side of the heat exchanger.

Step 6 Load in up to 60 gallons for TCCT-60, or 120 gallons for TCCT-120 of hot pumped kettle cooked product in casings. Close the inner perforated drum cover by releasing the latch located on the right hand side of the cover. Secure all large clamps at front edge of the inner rotating drum.

Step 7 Close outer tank cover beginning with the left hand cover (TCCT-120).

Step 8 To start rotation of inner drum push green cylinder rotation button to ROTATE. Green light will turn on.



Step 9 A. Observe actual tank water temperature by digital readout located lower right hand on the Chart Recorder.

NOTE: Water temperature set control is by passed.

B. The water in tank is constantly recorded by the green pen in the Temperature Recorder.

C. Depending on product viscosity, it will take from 30-75 minutes to cool down the product from 165° to 40°F once the drum has started rotating. The red light will come on to show the tank cooling water is at 40°F. This usually means the product is 2-3° higher in temperature, but it is best to check several casings in each batch to establish a base line for this type of temperature correlation.

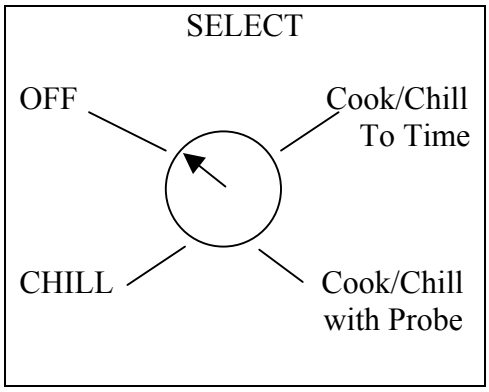
D. The chill cycle will continue until it is turned off.
IMPORTANT: A safety interlock is built into the system. Opening the cover will stop functions at once. Close the cover and rotation resumes. No other functions are effected by this safety interlock.

Step 10 To stop the chill cycle and remove chilled casings to refrigerate storage:

A. Stop drum rotation – Push Yellow STATIONARY Button. The drum will continue to the proper horizontal open point.
Yellow STATIONARY Light goes on when the drum is in the proper position to open.

B. Terminate chill cycle (pumps stop) by one of two methods:

1. If more food is going to be chilled – stop pumps by pushing in the Tumble Chiller Emergency Stop button. This will save chilled water for the next batch.
2. To empty water from the tank, if there is no more food to chill, turn select switch to OFF.



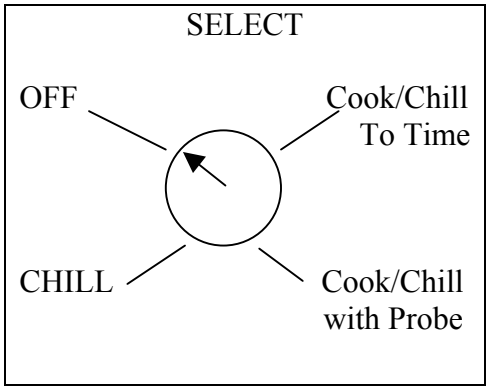
Blue

B. COOK TANK FOR OVERNIGHT COOKING USING MEAT PROBE.

Step 1 Open outer cover beginning with right hand cover first (Tumble Chiller/Cook Tank-120)

Step 2 Loosen large clamps at front of inner rotating drum and raise door of drum to the open position, will lock into place with a right hand catch.

Step 3 Start each operation with Power **OFF**



Step 4 To load cook tank:

A. Place single narrow rack in center of drum bottom – the prongs will fit into the drum holes.
Place 1-2 rows of vacuum bagged product along each side of the divider.
B. Place larger rack with risers (risers facing upward) as the next row and load product on rack.

NOTE: Do not overlap the product. It should be a *single* layer.

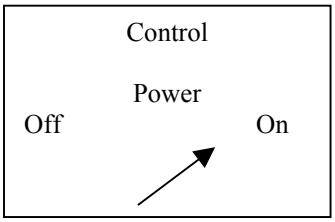
C. Place the next rack and load product.

D. Place hold -down rack slightly above the last load of product. Hold -down rack has locking pins. Push pin through drum perforations to secure in place.

Step 5 To put meat probe in product:

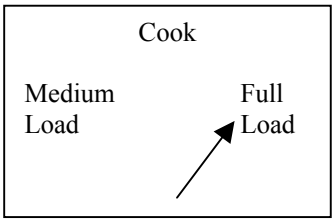
A. Wash probe with alcohol swab.
B. Insert meat probe through large hole in cook tank and through hole in drum.
C. Before putting last rack in place, put a second bag around the largest roast.
D. Puncture the vacuumed bag of the largest roast with the probe. The tip of the probe must be in the center of the muscle.
NOTE: Avoid getting the probe near a bone or fat clod.
E. Gather the second bag around the meat probe wire. Secure tightly with a wire tie or string. Place the bag through the opening of the two grids so the opening of the bag extends above the water line. This prevents meat juices from getting into the water bath.

Step 6 Check the Main Control Power is **"ON"**.



WARNING: Be sure the yellow STATIONARY light is on. ***DO NOT*** push **ROTATE.**

Step 7 Set water level switch to MEDIUM or FULL LOAD.



IMPORTANT: The water level must completely cover the cook-in-casing products or incomplete cooking will occur.

Step 8 Check to be sure the red emergency stop button is pulled out on the control panel.

Step 9 To set cooking cycle: Set select switch to **COOK/CHILL WITH PROBE**.

Step 10 Set required process time

NOTE: Maximum timer setting is **99** hours **59** minutes.

A. Press P1 to bring up 0000 on display.
B. Press button under each 0 to display a number for that digit.
C. Press (E) for Enter.
D. Press (R) for Recall to display set time. Timer will clock down to 0000.

Step 11 Set probe temperature set point. Push ↑ or ↓ buttons to change temperature setting.

Step 12 Set cook tank water temperature: Push ↑ or ↓ buttons to change/set temperature setting approximately 5-7°F higher than probe temperature set point.

Step 13 Start cooking cycle by pressing green button marked **RUN**. After cook cycle is finished, the chill cycle starts. The hot water is dumped for 5 minutes, cold tap water refills to high water level, and cooling cycle begins and runs until operator shuts down system.

Step 14 To drain tank, turn Select switch to off.

C. AS COOK TANK FOR OVERNIGHT COOKING TO TIME AND TEMPERATURE WITHOUT MEAT PROBE:

Step 1 Follow instructions for Step B

Step 2 Set cook tank water temperature set point: Push ↑ or ↓ buttons to set temperature approximately 5-7°F higher than the required product temperature. Push until  display Control, Push ↓ to lock temperature in place.

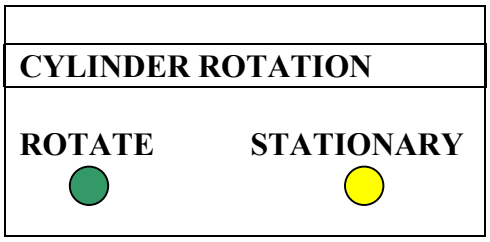
Step 3 Start cooking cycle by pressing green button marked **"RUN"**.

Step 4 Observe green pen for water temperature in tank. When water temperature is reached, timer will clock down to "0"; the unit will automatically go into the chill cycle and continue until the unit is turned off the unload.

NOTE: Put finished product into food bank as soon as possible after unloading.

D. COOK TANK FOR RETHERMALIZING OR COOKING –IN-CASING SUCH AS EGGS AND FLAKED POTATOES:

Step 1 Determine if drum shall rotate or stay stationary and press green or yellow push button.



IMPORTANT – If in **"ROTATE"** remove all hold down grids before loading. Disregard Step 4, Section C.

Step 2 Set controls as listed in steps 1-12, Section B

E. USE SOAK CYCLE WITH COOK TANK OVERNIGHT COOKING:

1. This function is provided when partially frozen meat or poultry products are to be cooked overnight. A soak or thaw period is provided by circulating tap water for a fixed time period before the cook cycle begins.

2. Set up the tank and controls by following:

SECTION C: Cook tank for overnight cooking to time and water bath temperature without meat probe.

Step 1 Start soak cycle with yellow push button marked:

V. SOAK TIMER

REMEMBER: Time does not begin until water level reaches set point.

Step 2 Set soak time by putting in time (hours and minutes) at timer marked:

W. SOAK TIMER

A. Press P1 to bring up 0000 on display.
B. Press button under each 0 to display a number for that digit.
C. Press (E) for Enter.
D. Press (R) for Recall to display set time. Timer will clock down to 0000.

When the soak cycle times out the cook cycle will begin.

Soak Timer Settings:

Small (up to 2" thick) – 1 hour soak.
Medium (2" to 5" maximum thickness) – 2 hours soak.

Large Roasts (5” to 9” thick) – 3 hours soak.

Step 3 See steps 9-14

F. CLEANING INSTRUCTIONS FOR TUMBLE CHILLER:

1. On the inside of the cook tank, there is an intake strainer for the circulating water pump. This should be checked daily to make sure it is clean. Power wash if there is a grease build-up. If the unit cannot be power washed (not available), it may be necessary to pull the drum out.

2. Keep probes clean – water temperature probe and water level indicators (white discs).

3. For removal of inner drum on tumble chiller make sure it is the **“UP”** position. Remove the two (two) bolts on the right-hand side, push center knob of the pin, remove pin, and carefully life the basket out of the tank.

When reinstalling basket, line up holes on the basket shaft and the stub shaft. Push center knob of pin and insert pin into holes.

NOTE: If the pin does not go in easily, the holes are not properly aligned. **DO NOT FORCE.**

Install the bolts and make sure they are tight.

PREVENTIVE MAINTENANCE

COOK/CHILL MIXER & PASTA KETTLES

A. AUTOMATIC DUMP VALVE

Weekly
- Check air collector regulator for moister, dirt, and proper pressure
- Check all orings and seals and gaskets
- Check valve operation
- Lubricate with light oil when needed
- Check air hose for leaks or signs of wear

B. TILT MECHANISM (Hydraulic Tilt)

Weekly
- Check for leaks
- Check for smooth operation
- Check switches

Yearly
- Change hydraulic fluid every two years. (1 1/2 gallons of **FOOD GRADE** hydraulic fluid) (Shell Telis #5)

(Electric Tilt)

Weekly
- Check for smooth operation
- Check switches

Monthly
- Check for movement in mechanism
- Grease trunnions monthly **(Food Grade Grease)**

C. AIR PRESSURE

Weekly
- 45 psi dump valve - 15 psi for jacket purge
- Air must be clean and dry
- Check all air lines & fittings for leaks

D. STEAM TRAP

Monthly
- Check proper operation

E. SAFETY VALVE

Weekly
- Check for leakage
- Steam pressure 65 psi. max.
- Safety set at 100 psi.

F. **LEAKS**

Weekly
- Check for leaks of any type (water - steam - hydraulic)

(**Leaks take away from performance and will lead to costly repair**)

G. **Control Panels**

Weekly
- Signs of water damage
- Check operation of all controls
- Water meter operation
- Temp read outs
- Temp charting
- Temp controlling
- RTD adjustments
- Mixer operation & speed control
- Gentle heat operation
- product valve operation

MFS METERING FILL STATION

A. **AIR PRESSURE**

Weekly
- 95 to100 psi.
- Air must be clean and dry
- Check air filter collector
- Check all fittings for leaks
- Oil level
- Lubricator should be adjusted to disperse 1 drop of oil per 10 cycles. (None detergent oil).
- The flapper valve assembly must removed and inspected for signs ware and proper adjustment.
- Check for loose fasteners, switches, pistons heads, ect.....
- Gaskets and oring wear

TUMBLE CHILLER

A. **MAIN CONTROL PANEL**

Weekly
- Check complete operation
- Should never spray with water.

B. **DRIVE COMPONENTS**

Weekly
- Check for loose hardware.

- Inspect motor mounting bolts.

C. **DOOR**
Weekly
- Check for proper operation of safety latch.
- Check for gasket wear and proper care

D. **MOTORS**
Monthly
- Check motors for dirt and grease.
- Check mounting bolts.
- Lubricate per manufacturer's instructions.

E. **WATER TEMPERATURE**
Weekly
- Check water temperature.
- Must reach 34 degrees.
- Compare actual temp to read outs

F. **CHLORINE DISPENSER**
Weekly
- Check supply tubing for signs of leakage.
- Check if chlorine container is full.

TUMBLE CHILLER /COOK TANK

A. **WEEKLY**
- Check complete operation, switches, lights, emergency stops
- Check panel for condensation
- No high pressure water hoses
- Check water level sensors
- Check the rotation stop switch and location
- Check controller operation, time, temp, chart rotation, ect.....
- Check quad ring for proper cleaning and greasing

B. **MONTHLY**
- Check all fasteners, and motor mounts
- Check drum and

ICE BUILDER

A. **WATER TEMPERATURE**
- Must be 34 degrees. Check regularly.

B. **AIR AGITATOR**
Weekly
- Check motor mounting for loose fasteners.
- Check water movement in tank adjust if need be

C. **ICE THICKNESS**
Weekly
- Ice thickness approximately 2 1/2" in diameter.
- Check for excessive ice build

- Check low ice circuit

D. **Water**

Weekly

- Check fill circuit
- Check water circulation
- Check all chill water strainers

E. **CLEANING**

Yearly

- Drain and clean yearly.
- Clean with high pressure hose and a none chloride based cleaner.
- We highly recommend water treatment.
- Watch closely when putting back on line.

CLIPPER (Z-4135) CLIPPER VAC (CV4100)

A. **Weekly**

- Check air pressure 80 to 100 psi.
- Check air filter
- Check oilier. (3 to 5 drops of oil per minute)
- Check for air leaks.
- Check for proper sealing and clipping

- Check knife operation (use a wet stone when sharpening).
- Check vacuum tank. (Make sure it's being cleaned properly).

Monthly

- Check gaskets and seals for ware.

Cook Tank

A. **Weekly**

- Check complete operation
- Make sure tank is being cleaned properly
- Check water level and RTD probes are clean
- Check all connections for leaks
- Check lid springs
- Check actual temps. to read outs.
- Check all line strainers

B. **Monthly**

- Check all motor mounting bolts
- Check circulation impeller and protective screen are secure
- Check meat probe cable for signs of wear
- Check safety valve operation

CIRCULATION PUMP

A. **LEAKS**

Weekly

- Check casing gasket for leaks.

B. **COMPONENT CHECK**

Quarterly

- The following components must be inspected for wear or possible lubrication.
- Impeller retaining pin. Check for damaged to threads or o-ring
- Impeller and impeller shaft
- Spacing between impeller and back plate
- Back plate seal.
- Rotating seat ring and o-ring
- Spring

C. **LUBRICATION**

- When ever inspecting or replacing components o-rings should be lubricated. (Use o-ring lube or any light oil).

D. **WEATHER PROTECTION**

- Check weather protection **weekly** during winter months
- Proper covering of components
- Heat tap if necessary

CAS7-5 AIR COMPRESSOR

A. **DAILY**

- Check oil level
- Drain condensed from tank
- Check for unusual noise and vibration
- Air leaks

B. **WEEKLY**

- Check air filter (Clean or replace).
- Operate safety valves (manually).
- Clean cylinder fins

C. **MONTHLY**

- Check oil level
- Check belt tension
- Motor bearings (Check and lubricate).
- Check for loose bolts

CHR-102 HOIST

A. **Weekly**

- Check for proper operation of hoist
- Check for smooth travel on rail

B. **MONTHLY**
- Check brake operation for slippage.
- Check control functions for proper operation.
- Check hooks for damage, cracks, twists, and excessive throat opening or latch failure.
- Check load chain for signs of wear and for proper lubrication.
- Lubricate chain Lubriplate, Bar, and Chain oil (10-R oil from Fiske Bros. Refining Co. or an equal).
- Check for loose bolts.
- Check for lubrication leaks.
- Check electrical cords and cables.

MHD-10 HP MAIN HYDRAULIC DRIVE

A. **Tilt or Mixing Option**

Weekly
- Check for any hydraulic leaks
- Check for proper operation

Monthly
- Check for loose motor mounting and other fasteners
- Check oil level
- Yearly change oil and filter (**ISO 46 20 weight Food Grade**)

CONVEYOR

A. **Daily**
- Conveyor belt should be cleaned with mild detergent
- Check to see that belt runs strait and does not rubs sides

B. **Monthly**
- Check belt for excessive slack
- Check drive chain for excessive slack
- Check all motor mounts, fasteners and adjustment bolts

C. **Quarterly**
- Grease pillow blocks
- Check motor oil level

D. **Yearly**
- Change oil in gear box