Emery Thompson

INSTALLATION – OPERATION
CLEANING – MAINTENANCE

12NW & 12LA
24NW & 24 LA
44BLT & 44LA

<<< WARNING >>>

1) STATE LAW REQUIRES THAT THE ELECTRICAL POWER TO THIS MACHINE BE INSTALLED <u>ONLY</u> BY A LICENSED ELECTRICIAN.

<u>FAILURE TO HAVE A LICENSED ELECTRICAN INSTALL THIS MACHINE WILL VOID YOUR WARRANTY.</u>

2) IF THE MACHINE IS WATER COOLED, DO NOT TURN ON THE MAIN POWER UNTIL THE WATER LINES ARE CONNECTED AND TURNED ON. THE COMPRESSOR WILL START IMMEDIATELY WHEN ELECTRICITY IS CONNECTED. SERIOUS DAMAGE COULD OCCUR TO THE COMPRESSOR IF IT IS RUN WITHOUT THE WATER PROPERLY CONNECTED!

<u>YOUR WARRANTY WILL BE NULL AND VOID IF THE MACHINE IS RUN WITHOUT WATER!</u>

3) SECURE ALL PANELS TO THE MACHINE BEFORE TURNING ON THE ELECTRIC.

4) THE OCCASIONAL CYCLING OF THE COMPRESSOR ON AND OFF IS NORMAL AND IS DESIGNED TO EXTEND THE LIFE OF THE CONDENSING UNIT.

TABLE OF CONTENTS

Section 1 – WARRANTY

Emery Thompson Machine and Supply Company, Inc.
12 Month Limited Warranty on New Freezers

Notice: The machine warranty starts when you receive your machine.

Except as limited and conditioned hereafter, The Emery Thompson Machine and Supply Company, Inc. (hereinafter referred to as the "Company") warrants to the original purchaser and user only, the said machine and all parts thereof to be free from defects in material and workmanship for a period of twelve (12) months from the ***date of receipt*** from the Company's factory if it is proved to our satisfaction to be inoperative due to defects in material or factory workmanship. Caution: This warranty is valid only if required service is provided by an authorized agent of Emery Thompson Machine and Supply Company or person or persons directly authorized by Emery Thompson to perform the necessary repairs. Emery Thompson can be reached at 718-588-7300-factory, 352-796-0720-fax or **STEVE@EMERYTHOMPSON.COM** electronic mail.

Definitions. The term "original purchaser" as used herein, shall be deemed to mean that person, firm, or association, or corporation for whom the equipment referred to herein is originally sold to. The term "Company and or Factory" shall mean the plant of the company located at 15350 Flight Path Drive, Brooksville, FL 34604 U.S.A.

Labor and Transportation Charges. Emery Thompson Machine and Supply Company assumes no liability under the warranty for any transportation charges or labor expenses incident to its work under this warranty, such transportation expenses and labor costs to be assumed and paid by the Purchaser.

Use and Care of Machine. Purchaser shall only use the machine in accordance with the operator's manual provided by the Company and no liability under this Warranty or otherwise shall attach by reason of a defect caused by negligence, abnormal use, misuse or abuse of said machine, or for any accident that may occur to said machine or any part thereof after said machine has left the factory of the Company, nor for any defect that may arise by placing any part in said machine which has not been manufactured

or approved by the Company. Misuse of the machine includes owner's failure to: (1) clean, lubricate and assemble per the Operator's Manual; (2) replace damaged or worn "wear items", including but not limited to o-rings, gaskets, front bearing, rear bearing, scraper blades, drive shaft, water valve. (3) handle parts properly, resulting in breakage; or (4) use unauthorized service agencies.

Purchaser shall not remove, alter or deface the serial number on said machine and there shall be no liability of Emery Thompson Machine and Supply Company if any of same shall occur.

Repair or Replacement of Defective Parts. The Company's obligation under this warranty is limited to the repair of defective parts at the Brooksville, Florida plant or replacement from the Company's own inventory. In the event the Company ships a replacement part prior to the return of the defective part, payment will be required for said part and credit issued or reimbursement made **only if the defective part is returned within thirty (30) days from replacement date.**

WARNING: The use of alternate refrigerants will void your warranty. Use only the refrigerant specified on this unit's data plate (located on rear panel of machine).

Emery Thompson Machine and Supply Company, Inc. reserves the right to make design changes, or to make additions to, or improvements on its products without imposing any obligation on itself to make such changes on its products previously manufactured.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES UNDER THE LAW, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE ORIGINAL OWNER'S SOLE REMEDY WITH RESPECT TO ANY EMERY THOMPSON FREEZER SHALL BE REPAIR OR REPLACEMENT OF DEFECTIVE COMPONENTS UNDER THE TERMS OF THIS WARRANTY.

WHAT IS NOT COVERED BY THIS WARRANTY Emery Thompson Machine's sole obligation under this warranty is limited to either repair or replacement of parts, subject to the additional limitations below. This warranty neither assumes nor authorizes any person to assume obligations other than

those expressly covered by this warranty. NO CONSEQUENTIAL DAMAGES. EMERY THOMPSON IS NOT RESPONSIBLE FOR ECONOMIC LOSS; PROFIT LOSS; OR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOSSES, OR DAMAGES ARISING FROM FOOD OR PRODUCT SPOILAGE REGARDLESS OF WHETHER OR NOT THEY RESULT FROM REFRIGERATION FAILURE. WARRANTY IS NOT TRANSFERABLE; this warranty is not assignable and applies only in favor of the original purchaser/user to whom delivered. ANY SUCH ASSIGNMENT OR TRANSFER SHALL VOID THE WARRANTIES HEREIN AND SHALL VOID ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR LABOR COVERAGE FOR COMPONENT FAILURE OR OTHER THE WARRANTY AS PROVIDED IN OUR INSTRUCTION MANUAL WITH THE UNIT AND AT www.emerythompson.com. EMERY THOMPSON will not be held responsible for the following external factors: ALTERATION, NEGLECT, ABUSE, MISUSE, ACCIDENT, DAMAGE DURING TRANSIT OR INSTALLATION, FIRE, FLOOD, ACTS OF GOD, OR IMPROPER ELECTRICAL CONNECTIONS. EMERY THOMPSON IS NOT RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF FAILED OR DAMAGED COMPONENTS RESULTING FROM ELECTRICAL POWER FAILURE, THE USE OF EXTENSION CORDS, LOW VOLTAGE, OR VOLTAGE DROPS TO THE UNIT. THERE ARE NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

NO DISTRIBUTOR, DEALER OR OTHER PERSON IS AUTHORIZED TO MAKE ANY COMMITMENT OR ASSUME ANY LIABILITY ON BEHALF OF EMERY THOMPSON MACHINE AND SUPPLY COMPANY, INC. BEYOND THIS WARRANTY. THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

Section 2 – SAFETY

First, be sure to read and understand this machine manual, and familiarize yourself and other operators with the machine features, its operation, cleaning, and maintenance.

Your machine is equipped with several important safeguards that should never be removed or altered. DO NOT remove the following items:

- Inlet spout combination lid and gate – restricts fingers from coming in contact with moving blades/dasher.
- Door discharge guard – restricts fingers and utensils from coming in contact with moving blades/dasher. Also, in combination with the discharge chute, funnels product into smaller containers neatly.

On an air cooled machine, the sides, front, and rear section of the machine have ventilation openings in them. All but the rear panel are louvered to deflect food and splashing liquids away from the inside. Never spray water directly at/into these openings.

If your machine is set up with a plug on the end of its cord, make absolutely sure your hands are dry when plugging it in, or unplugging it.

When operating the machine, avoid distractions such as conversations, television, small children, etc.

The door and the dasher are heavy parts and are slippery when wet. Use extreme care handling them. Keep the floor and work area neat and dry to avoid slippage. Do not use the top of the machine as a storage spot.

In addition to the above:

- DO NOT operate your machine unless it was wired, grounded, and properly fused by a licensed electrician.

- DO NOT put fingers, hands or any utensils in either the inlet spout or door outlet.

- DO NOT operate the machine unless it is properly assembled, and all guards are in place.

- DO NOT force any of the (washable) parts together or into/on the machine. All parts should fit together easily.

- DO NOT operate the machine with the freezing cylinder empty.

- DO NOT turn on the machine's FREEZE button with only water in the freezing cylinder.

- DO NOT let your product over-freeze during production. This is the most common mistake a new operator makes.

Section 3 – UNPACKING

Carefully inspect the pallet and shipping carton for any signs of damage during shipment; if damage is suspected, have the freight company note it on the bill of lading, and if possible, take photographs.

12- and 24-quart machines are shipped with a corrugated shipping carton over the top of the machine*. The corrugated carton is nailed to two wooden runners inside the carton at the bottom. Using a razor knife, cut the carton down the two long sides just above the nails. When the carton is free, lift the carton up over the machine and set it aside.

44-quart machines are shipped with a wooden crate over the top of the machine. To remove the wooden crate, you will need to disassemble it. Begin by removing the screws circled in red in the top panel of the crate and then each of the four sides.

<<< IMPORTANT >>>

Make sure to keep the pallet, the corrugated carton or the wooden crate that covers the machine during shipment and the hardware that secures the machine to the pallet until you have successfully tested and ran the machine for several weeks. If the machine needs to be returned, it must be shipped back in the same manner it was received. If the machine must be returned and these items have been discarded, you will be charged for these items and for the shipping of these items to you.

You will find a small box of parts that will be explained in subsequent sections; set them, as well as all paperwork, aside in a safe place.

The machine is bolted to the pallet it was shipped on from the underside. There are four 3/8”-16 hex bolts (9/16” head) that go through the upper planks of the pallet, and through holes in the machine frame. Remove all four bolts and unscrew all the wooden runners from the pallet. The machine will now be free from the pallet. Save all components; they will be needed later.

For 12- and 24-quart machines, locate the box marked WHEELS and remove the casters from the box. Notice that there are two different types of casters; one pair has a brake and one pair does not have a brake. The pair with the brake should be installed at the front of the machine, and the pair without the

brake should be installed at the back of the machine. (The 44-quart machines do not come with casters as they are not safe on a machine of that size.)

Carefully slide the machine to the edge of the pallet. With a helper steadying the machine, slide one leg of the machine just off the edge of the pallet. It may be necessary to tilt the machine back slightly. Insert the screw portion of the caster through the hole in the bottom of the leg and install the washers and nut. Tighten the nut. Repeat this process for each of the remaining legs until all four casters are installed.

Now you can roll the machine to its desired location.

* If your 12- or 24-quart machine was exported outside of North America, it will have a wooden crate like the 44-quart machine. Follow the step on the previous page for the 44-quart machine.

Section 4 – INSTALLATION & COMMISSIONING

The protective plastic film on most outer surfaces of the machine protects the finish during shipping. For air-cooled machines, this film MUST be removed prior to operation of the machine to allow proper airflow and heat dissipation. An air-cooled machine MUST be able to pull in cool, clean room air from its rear intake. It requires a minimum of 18 inches of clear, unobstructed space on all 4 sides. Failure to allow adequate spacing and/or not removing the protective plastic film may result in poor performance, overheating, and shutdown.

ELECTRICAL CONNECTION: The 12-, 24- and 44-quart machines come with a 72-inch-long flexible power cord that has no plug on it. This is because there are many ways to connect a large machine like these to an electrical supply and electrical codes vary by location. Consult with your licensed electrician to decide what the proper connection is for your location.

You will find the electrical requirements for your machine located on the serial number tag on the back of the machine. Your electrician will need this information to install the proper electrical circuit for the machine.

IMPORTANT NOTE: This machine will not work if it is connected to a GFCI circuit. If the local electrical code requires that the machine be connected to a GFCI circuit, contact Tech Support at Emery Thompson for further instructions.

WATER CONNECTION: If your machine is water cooled, as opposed to air-cooled, you will need to provide a water supply and a drain. The water supply should be a minimum of ½" pipe with a ¾" male garden hose fitting on the end. A valve is not necessary but is highly recommended.

All of the machines come with two 6-foot-long washing machine hoses with ¾" female garden hose fittings on both ends. The SUPPLY and DRAIN fittings are clearly marked on the back of the machine. Using one of the washing machine hoses, connect the fitting marked SUPPLY to the water pipe. Using the remaining washing machine hose, or any other type of hose you want to use, connect the DRAIN hose to a floor drain, a wall drain, a sink, or whatever drain you want to use. Remember, the length of the drain line is not important, it can be as long or as short as you need it to be.

COMMISSIONING: After removing the plastic film from all of the panels of your air-cooled machine, connecting the supply and drain lines for your water cooled machine and turning on the water, you can now turn on the main power to the machine.

Upon turning on the main power you will hear the refrigeration compressor start immediately. If your main power supply is single-phase you can move on to RUNNING THE FREEZE TEST. If your main power supply is three-phase, you must confirm that the refrigeration compressor is operating correctly. If the refrigeration compressor is very loud and makes a rattling noise when it runs, it is probably running backwards. This is common when starting up a new three-phase machine. To correct this problem, have your electrician swap the black and the white wires where the machine is connected to the main power.

RUNNING THE FREEZE TEST: We recommend that the first thing you do is run a freeze test to make sure that your new machine is operating properly. When we test machines in our facility, we use sugar water because we run a lot of tests and it would not be practical to use dairy mix. We know that if the machine performs in a certain way with sugar water, it will perform in a similar manner with dairy mix. The only difference being the amount of time it will take to make a batch of sugar water is longer than a batch of dairy mix.

To learn how to run a freeze test, go to the GET HELP, TROUBLESHOOTING, PERFORMING THE FREEZE TEST section of your touchscreen and watch the video.

Section 5 – CLEANING & SANITIZING

NOTE: Your local or state health inspector will always have jurisdiction over the methods and cleaners he/she prefers for the proper cleaning and sanitizing of this type of equipment. Our instructions are based on industry standard methods but should be discussed with your inspector.

The first step toward insuring a clean and sanitary machine is to understand the various parts that will or could come in contact with the food product. Please see the figures on pages 34 through 38 to familiarize yourself with these parts.

All of these parts are dishwasher safe, so the easiest way to clean them is to carefully arrange them in a dishwasher, positioning them so that open holes, pockets, and internal areas face down and stand the best chance of being hit with hot soapy water. Any of these parts can also be cleaned with liquid dish detergent and hot water, so long as they are thoroughly rinsed. The inside of the cylinder will have to be manually wiped out with warm soapy water and thoroughly rinsed.

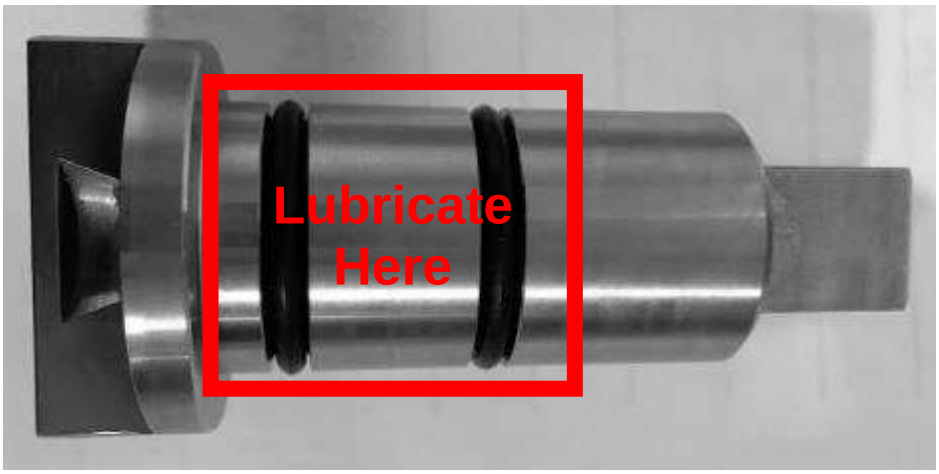
The following list of components should be cleaned at the end of the day/shift, or if food product has sat in the machine for one hour or more:

- Parts 9, 10, 11, 12 and 13 on page 37
- Parts 9, 10, 11, 12 and 13 on page 38
- All parts on page 39
- Parts 4, 5, 6, 7 and 8 on page 40
- All parts on page 41

Prior to each use your machine must be sanitized. The purpose of sanitization is to kill any bacteria that may have grown on any food-contact part or surface.

To properly sanitize your machine, it must first be reassembled after cleaning. Before putting the center-shaft back into the machine, note the center-shaft has two o-rings on it. These two o-rings, and the circumference of the shaft just forward and rearward of the o-rings should have a generous coating of

food-grade grease wiped on them. Once installed, any grease pushed off the center-shaft can be wiped off with a paper towel.



12- & 24-Quart Center-Shaft

44-Quart Center-Shaft

When the machine is fully assembled, with the door in place, and the four knobs hand tightened (do NOT use any tools to tighten the knobs), it is ready to be sanitized.

We recommend using a commercially available sanitizer/cleaner made by Purdy Products Company called “Stera Sheen Green Label”, although other brands exist as well. Carefully follow the manufacturer’s instructions on mixing and use of their product.

To learn how to sanitize the machine, go to the GET HELP, OPERATION, SANITIZING THE MACHINE section of your touchscreen and watch the video.

Section 6 – OPERATION

Your new batch freezer is very easy to operate, with only two controls on it, the touchscreen, and the freeze button. The machine was shipped fully assembled, and its' parts and features should be learned and understood.

On the upper left corner of the front of the machine is the touchscreen. Section 7 of this manual fully explains how to operate the touchscreen.

On the upper right corner of the front of the machine is the freeze button. This energizes the refrigeration condensing unit. Push in on the button for "on" and push in on the button for "off". In the "on" position, the button will illuminate blue. Ensure that the button is in the "off" position.

When electrical power is first applied to the machine, the compressor will immediately start, regardless of the position of the freeze button. The compressor will also start occasionally and run briefly, even if the machine sits idle if there is power connected to it. This is a normal function, and actually helps prolong the life of the compressor.

Section 7 – OPERATING THE TOUCHSCREEN

The touchscreen is a powerful device filled with intuitive operating screens and helpful videos. This section will explain how to navigate the screens for safe and proper operation of the machine.

The SCREEN SAVER

After applying power to the machine, the SCREEN SAVER screen displays the rotating ET symbol. To begin operating the machine or to watch a help video, touch the screen. The screen saver will appear after 1 minute of the screen not being touched, unless the RUN screen is active.

The I WANT TO: Screen (Also called the HOME screen)

After touching the screen, the I WANT TO:/HOME screen is displayed. You can choose to MAKE ICE CREAM or GET HELP. Press the MAKE ICE CREAM button.

The CHOOSE RECIPE Screens

If you selected MAKE ICE CREAM from the I WANT TO:/HOME screen, the next screen you will see is the CHOOSE RECIPE screen. This screen allows the operator to choose the desired amount of overrun by the product name. (See the Overrun/Product/Speed chart on page 17.) This is the first screen of two CHOOSE RECIPE screens. Press the MORE RECIPIES button to go to the second screen or press the HOME button to go back to the I WANT TO:/HOME screen.

When you are on the second CHOOSE RECIPE screen, you can press the PREVIOUS RECIPIES button to return to the first CHOOSE RECIPE screen or you can press the HOME button to go back to the I WANT TO:/HOME screen. Press the button that corresponds to the product you want to make on either screen and you will be taken to the START screen for that product.

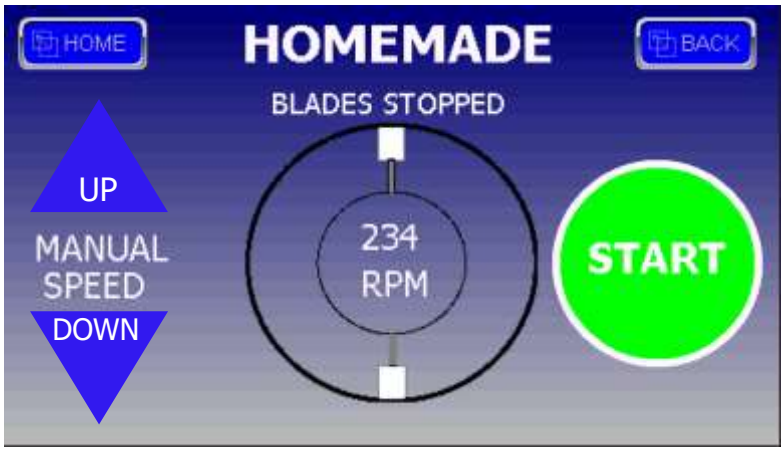
The OVERRUN/PRODUCT/SPEED Chart

OVERRUN/PRODUCT/SPEED

Desired Overrun (%)	Product Name	Dasher Speed (RPM)
100	Homemade	234
65	Super Premium	165
65	Frozen Yogurt	160
50	Gelato	140
40	Cream Ice	200
40	Sherbet	200
35	Custard	135
30	Dairy Free	160
15 – 17	Italian Ice	234
15 – 17	Sorbet/Sorbetto	234
15	Frozen Lemonade	234

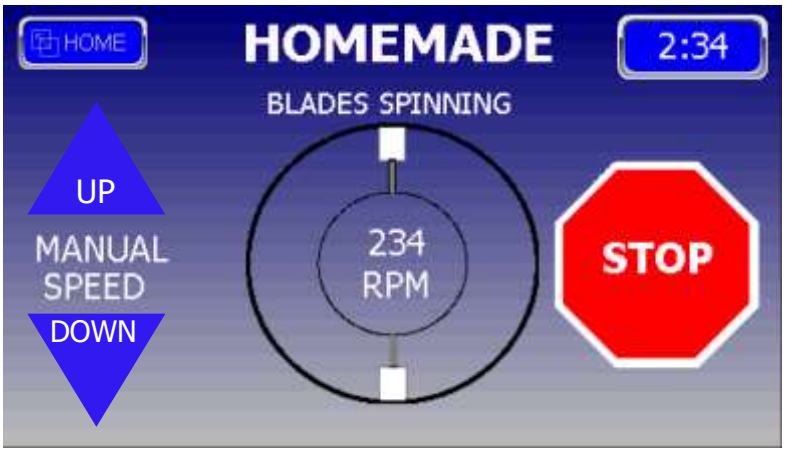
The START Screen

On the START screen you will find the name of the product you have selected at the top, and the speed that the dasher will turn in the middle of the two circles, when the START button is pressed. You will also find the MANUAL SPEED UP and DOWN buttons. These buttons can be used to adjust the dasher speed up and down as desired. The speed will change in 5 RPM increments each time the button is pressed. You will also see the status of the blades where it says BLADES STOPPED. The HOME button will take you back to the I WANT TO:/HOME screen and the BACK button will take you back to the CHOOSE RECIPE screen.



The RUN Screen

When the START button is pressed, the RUN screen is displayed, and the dasher and scraper blades begin to spin. You will see that the START button changes to a STOP button, the blades animation begins spinning, and the BLADES STOPPED message changes to BLADES SPINNING. The MANUAL SPEED UP and DOWN buttons can be pressed to change the speed of the dasher if desired. Once the FREEZE button is pressed, the BACK button in the upper right-hand corner of the screen changes to a timer and begins to count up. This timer can be used to monitor the time that a batch has been running. The timer stops and resets to 0:00 when the FREEZE button is turned off. When the STOP button is pressed, the dasher stops and the screen changes back to the START screen.



The GET HELP Screens

From the I WANT TO:/HOME screen, press the GET HELP button, which will take you to the SELECT YOUR MACHINE screen.

The SELECT YOUR MACHINE Screen

Touch the picture of the machine that matches the machine you want to get help with, and you will be taken to the HELP VIDEOS menu for your machine. If you want to go back to the I WANT TO:/HOME screen, press the HOME button.

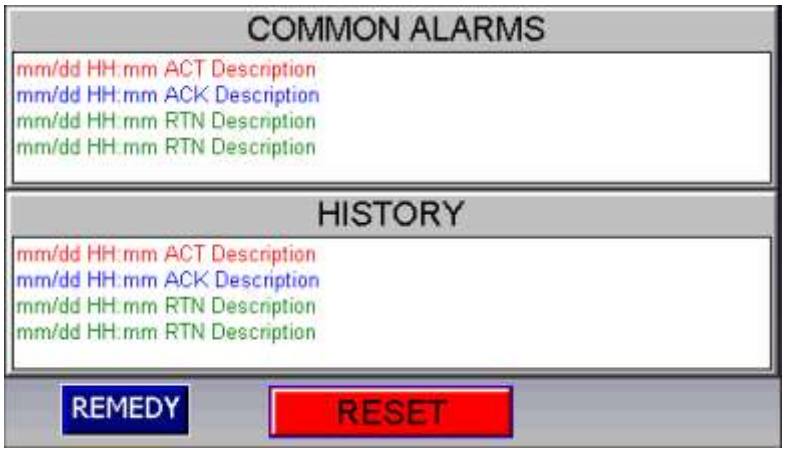
The HELP VIDEOS Screen

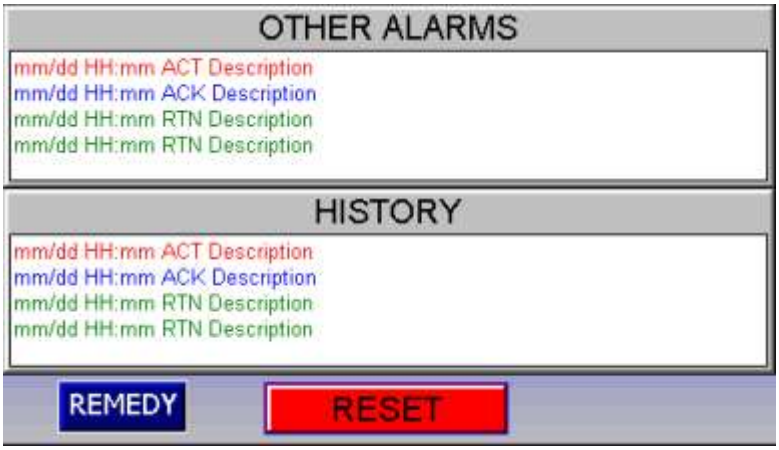
From the HELP VIDEOS menu, you can select the category of help you need. You can choose SETUP, OPERATION, MAINTENANCE and TROUBLESHOOTING topics. Also, you can press the HOME button to be taken back to the I WANT TO:/HOME screen or the BACK button to go back to the SELECT YOUR MACHINE screen.

The rest is self-explanatory and very easy to navigate. Simply choose a topic, press the button for the video of your choice, and watch the video.

The ALARM Screens

If the dasher motor speed controller experiences a problem, an alarm screen will be displayed. There are two different alarm screens that may be displayed: COMMON ALARMS and OTHER ALARMS. Some alarms can be cleared by pressing the RESET button, while others may cause the dasher to stop turning, and soon thereafter, the refrigeration system to shut down. Pressing the REMEDY button will provide information for resolving the problem that caused the alarm. If the machine stops due to one of these alarms, it is important to take note of the alarm and call Tech Support at Emery Thompson if the alarm persists. If the alarm cannot be cleared by pressing the RESET button, turn off the power to the machine for 30 seconds and turn it back on.





The WARNING Screen

As the product mixes in the cylinder, the product gets constantly thicker. As the product gets thicker, the power required to drive the dasher motor increases. As the power to drive the dasher motor increases, the IOC monitors its output power to ensure that it does not rise to a level that will damage the dasher motor. If the output power reaches the preset high level, the WARNING screen will be displayed, and an audible alarm will begin to sound. If this happens you should press the ACKNOWLEDGE button, turn off the FREEZE button and begin to extract the product. Pressing the ACKNOWLEDGE button will cause the screen to display the RUN screen and cause the audible alarm to stop. If the product is not extracted the WARNING screen will come back on 30 seconds after the ACKNOWLEDGE button was pressed. This will continue to happen until the IOC shuts itself off.

The SYSTEM Screen

The touchscreen requires an operating system just like a computer. There is no reason for the user to access the SYSTEM screens, but you should be aware that they exist as it is possible to call up the screens accidentally. The SYSTEM screens will appear if you touch the screen in the upper right-hand corner. If the system screen is accidentally displayed, touch the screen anywhere outside the SYSTEM screen area to close the screen, or wait 1 minute and it will go off on its own.

Section 8 – CARE & MAINTENANCE

One of the best features of an Emery Thompson batch freezer is the small amount of maintenance and the ease of care required. The materials we use are the best available for their intended purpose and designed for maximum longevity.

The outer casing of your machine is all heavy-gauge stainless steel, and will only require a daily wipe down, using a mild detergent and warm water. A stainless-steel cleaner/polish can also be used to keep it bright.

Performing regular maintenance on your Emery Thompson batch freezer will keep it running at its peak performance for many years. The maintenance required is based on how frequently you run the machine and how long you run the machine. It is easiest to think of this as how many hours per week (HPW) you run the machine. Example: If you run the machine 3 days a week for 4 hours each day, the machine is actually running 12 hours per week. The more hours per week you run your machine the more frequently you should perform maintenance. See the chart below for routine maintenance subjects and the frequency with which they should be performed.

	0 to 15 HPW	**15 to 30 HPW**	**30 to 45 HPW**	**More Than 45 HPW**
Lubricate the Center Shaft O-rings	Every time you run the machine or after 8 hours of continuous operation	Every time you run the machine or after 8 hours of continuous operation	Every time you run the machine or after 8 hours of continuous operation	Every time you run the machine or after 8 hours of continuous operation
Lubricate the Door O-ring	Never	Never	Never	Never
Replace the Center Shaft O-rings	Once each year	Every 9 months	Every 6 months	Every 3 months
Replace the Door Seal	Only if it leaks	Only if it leaks	Only if it leaks	Only if it leaks
Replace the Blade Springs	Every 2 years	Every 18 months	Once each year	Every 6 months
Replace the Door Gate Spring(s)	Only if it leaks	Only if it leaks	Only if it leaks	Only if it leaks
Sharpen the Scraper Blades	Every 5 to 7 years	Every 4 to 6 Years	Every 3 to 5 years	Every 2 to 4 years

Replace the Scraper Blades	After sharpening 1 to 3 times	After sharpening 1 to 3 times	After sharpening 1 to 3 times	After sharpening 1 to 3 times
Inspect/Clean the Drip Tray	Once each Year	Every 9 months	Every 6 months	Every 3 months
Drain the Water(1)	Every year prior to possible freeze	Every year prior to possible freeze	Every year prior to possible freeze	Every year prior to possible freeze
Clean the Cooling Coils(2)	Once each year	Every 9 months	Every 6 months	Every 3 months

(1) Water cooled machines only
(2) Air cooled machines only

If your batch freezer has been stored in an unheated area and is brought into a warmer area for use, allow it to sit for at least 24 hours in the warmer temperature; condensation can build up on cold surfaces, including inside the speed controller, touchscreen, contactor, and overload relay, which could lead to malfunctions.

Never transport, store or use your machine in any position other than upright on its feet. Oil in the refrigeration compressor could travel into areas of the machines piping where it will remain trapped.

Your machine has been tested and is rated to run in ambient air temperatures as high as 104º F, and as low as 40º F. Operation in temperatures at the high end of the temperature range may slightly increase the freezing time of your product, and at the low end of the temperature range may slightly decrease the freezing time of the product.

Section 9 – Description of Function

The purpose of this section is to explain how the machine is supposed work so that anyone working on the machine will have a thorough understanding, which should make troubleshooting easier. Please refer to the electrical drawing on the next page for the reference numbers in parentheses.

With main power present at the machine, the touchscreen (1) should be active, and the freeze button (2) should be in the off position.

When a product is selected on the touchscreen and the start button is pressed, the dasher motor speed controller (3) sends power to the dasher motor (4) and the dasher motor runs at the speed pre-programmed for that product. Also, the auxiliary contacts COM and NO on the dasher motor speed controller (3) close completing that portion of the circuit that is in series with the freeze button (2).

With the dasher motor running and the freeze button turned on, the solenoid valve (5) on the high-pressure side of the refrigeration system is energized and CR-1 (11) is energized. When the contacts in CR-1 close, the freeze button lights up and input Q1 on the touchscreen becomes true, which starts the timer on the touchscreen.

When the solenoid valve opens, and the pressure builds above 40 psi on the low-pressure side and the pressure controller energizes the coil in the contactor in the pressure controller. When the contactor closes, the refrigeration compressor comes on.

As the condensing unit runs, the refrigeration coils wrapped around the product cylinder begin to get cold.

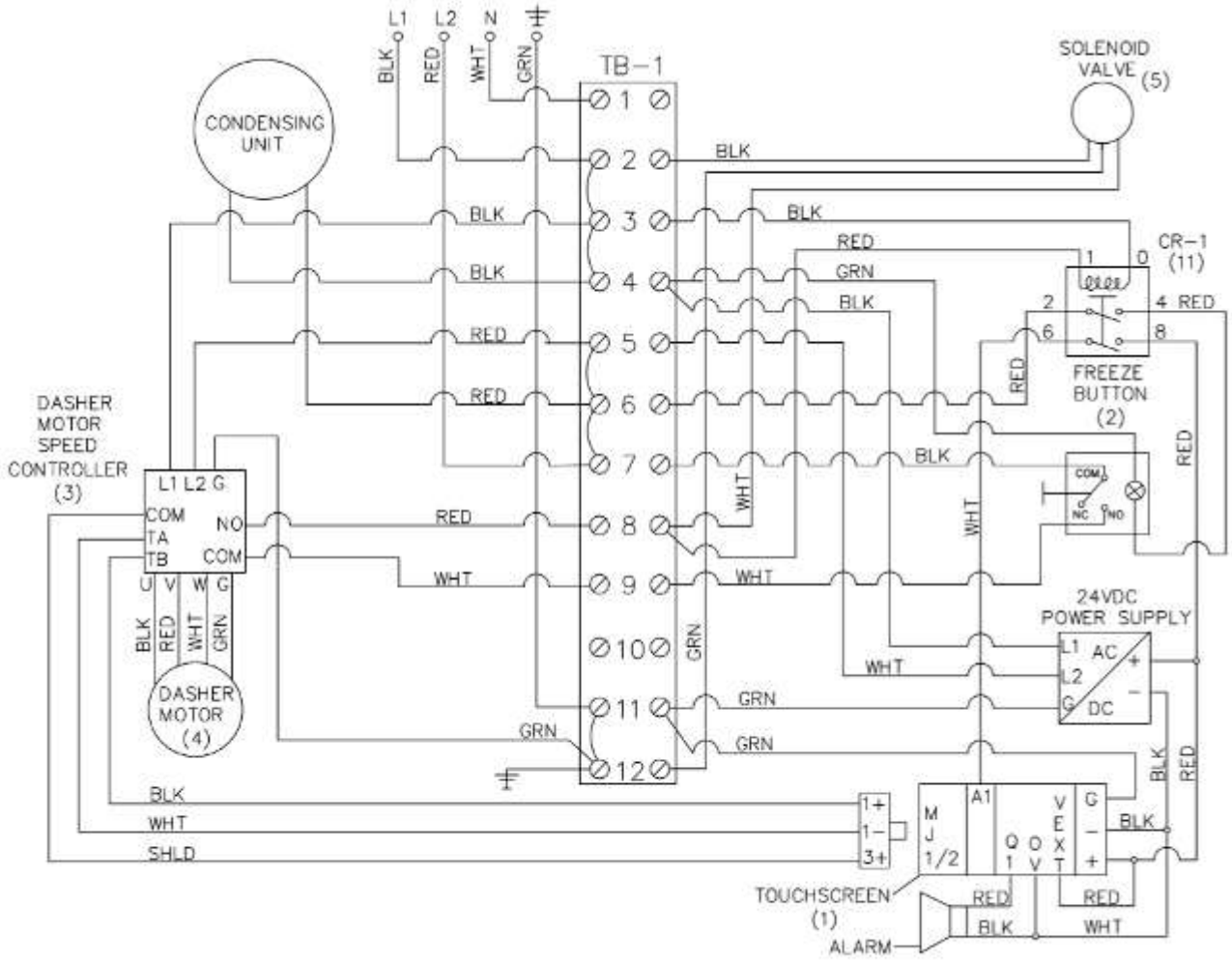
Ideally the low-pressure side should drop to 28 to 32 psi and the high-pressure side should run at 275 to 325 psi. During the last several minutes of a batch you may see the low-pressure side drop again by about 2 psi.

When the product is ready, the refrigeration button is turned off and the solenoid valve closes and the contacts in CR-1 open. The compressor continues to run until the low-pressure side of the refrigeration system drops

below 10 psi and the pressure controller turns off the power to the contactor coil and the contactor turns off the power to the refrigeration compressor.

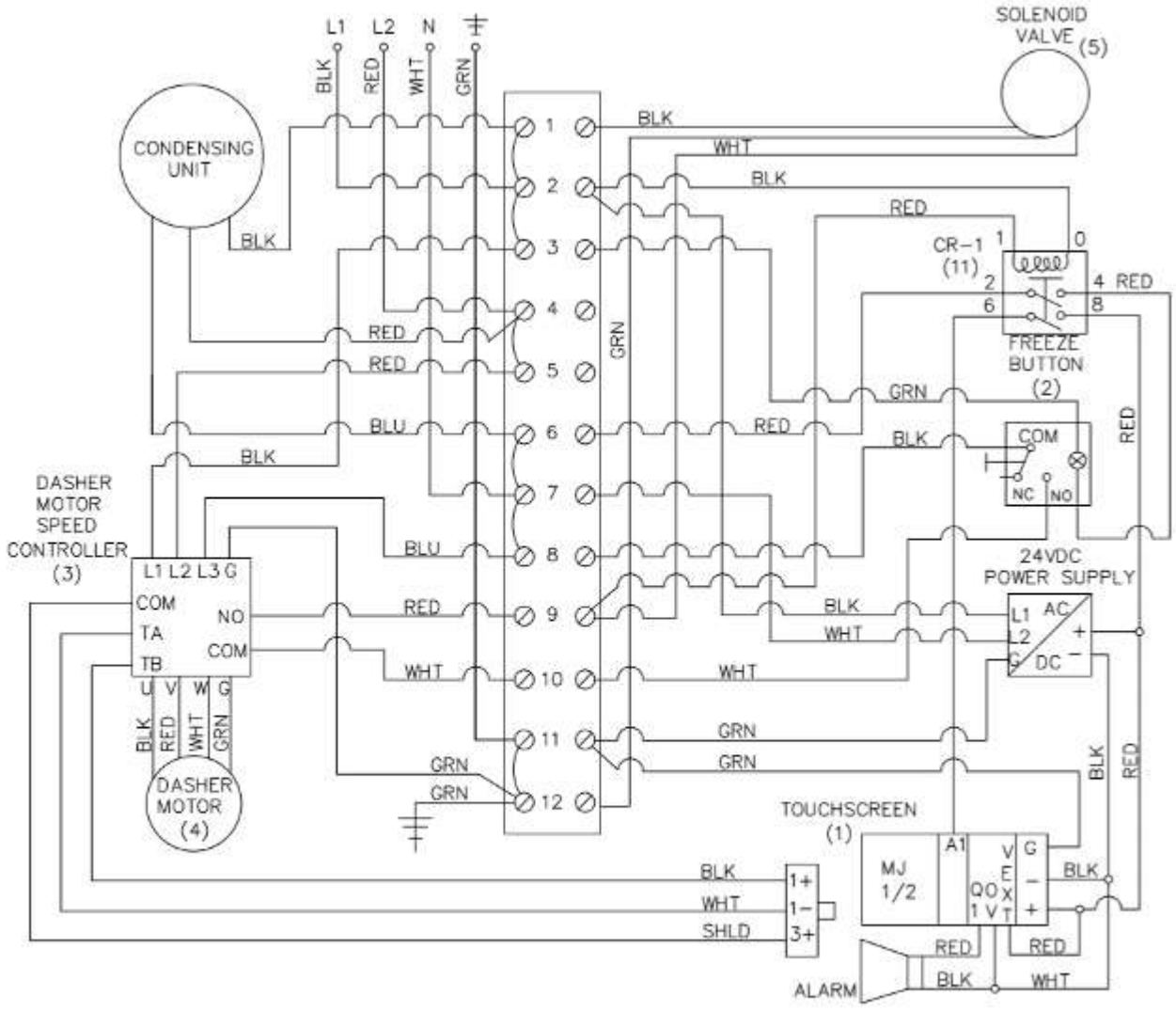
When the STOP button on the touchscreen is pressed, the dasher motor speed controller stops sending power to the dasher motor and the motor stops.

Section 10 – ELECTRICAL DIAGRAM



12-, 24- & 44-QUART BATCH FREEZER
208-230V/1PH/60HZ

If your machine is 3-Phase, see the following page.



12-, 24- & 44-QUART BATCH FREEZER
208-230V/3PH/60HZ & 380/440V/3PH/50/60HZ

Section 11 – TROUBLESHOOTING

Problem	Possible Solutions
Dasher not spinning	Contents frozen too stiff – allow to thaw and soften or remove bulk of product. Push “stop” button, and attempt restart.
Dasher spins, but refrigeration will not run. (refrigeration switch illuminated)	Compressor has tripped off. Turn off switch; allow unit to cool for 1 hour minimum; attempt restart.
Unit runs, but takes too long, or longer than usual to freeze product.	Airflow restricted or coils dirty/blocked. Provide adequate airflow and/or clean coil area.
Squeaking noise when dasher runs.	Ensure that dasher shaft has been lubricated properly at o-ring area.
Grinding noise while making product; build-up on cylinder walls.	Blades installed incorrectly; one or more blade springs missing.
Sliding gate is leaking	Gate springs are old and need to be replaced.
Door will not pull back on studs; blades sticking out beyond face.	Rear of dasher is not engaged into drive motor socket. Rotate dasher and push backward.
Machine sways/shakes while running	Feet or mounting surface uneven; adjust feet so that each has equal pressure.
Door is leaking around edge(s)	Door gasket uneven/not fully seated in its groove. Remove and reinstall or replace.

Section 11.1 – RESETTING THE PRESSURE CONTROLLER

The pressure controller is the device that causes the condensing unit to operate correctly. The presser controller is programmed to CUT IN at 40 psig and CUT OUT at 10 psig. It also shuts off the refrigeration compressor to prevent it from becoming damaged when the pressure on the low-pressure side of the refrigeration system gets too low or too high, or when the pressure on the high-pressure side of the refrigeration system gets too high.

Common issues that cause the pressure controller to go into FAULT:

All Units

- Long period of time between uses.
- Cleaning the cylinder with hot water.

Water Cooled Units

- Cooling water not turned on.
- Cooling water line kinked or crushed (SUPPLY line and/or DRAIN line).

Air Cooled Units

- Heat exchanger blocked or covered.
- Heat exchanger too close to the wall.
- Not enough clearance around unit.
- Room temperature exceeding 100^{o} F.

To reset the pressure controller:

1. Remove the stainless-steel panel that covers the pressure controller.
    a. For 12- and 24-quart machines, remove the front bottom panel.
    b. For 44-quart machines, remove the right-side panel closest to the front.
2. Press and hold the “START” button for 3 seconds. (See photo on next page.)
3. Release the “START” button briefly.
4. Press and hold the “START” button for 3 seconds, again.
5. The digital display should read “RST”.

6. If the digital display shows “POF” instead of “RST”, press and hold both the up arrow and the down arrow for more than 3 seconds and the display should read “PON”.
7. Repeat steps 2, 3 and 4. The display should read “RST”.
8. If it does read “RST” replace the stainless-steel panel. If it doesn’t read “RST”, call Emery Thompson Tech Support at (718) 588-7300.

PRESSURE CONTROLLER

Section 11.2 – ADJUSTING THE DISCHARGE WATER TEMPERATURE

Water cooled machines require a supply line (where the water enters the machine) and a discharge line (where the water exits the machine). The discharge water temperature is critical and should be checked several times a year to insure it is set correctly. It is best to check it in the middle of the summer and the middle of the winter as those times will typically be the most extreme.

To adjust the water valve, perform the following steps:

1 – Remove the side cover to access the water valve. The water valve is behind the right-side cover on the model 12 and 24, and behind the left rear side panel on the model 44.

12- & 24-Quart Water Valve

44-Quart Water Valve

2 – Make sure that the water supply line is turned on.

3 – With mix in the machine, turn on the dasher and turn on the refrigeration switch.

4 – After about 5 minutes, insert a thermometer in the stream of discharge water. The discharge water temperature should be 108ºF (+/- 2ºF) for the 12 and 24 quart machines, and 113ºF (+/- 2ºF) for the 44 quart machines.

5 – If the discharge water temperature is set properly, there is nothing else to do. If the discharge water temperature is outside the acceptable range, it

should be adjusted. Turn the stem on top of the water valve counterclockwise to increase the discharge water temperature or turn the stem on top of the water valve clockwise to decrease the discharge water temperature.

6 – Continue to adjust the water valve until the correct water temperature is achieved and maintained.

7 – If it is not possible to adjust the water valve so the discharge water temperature is set properly, it may be necessary to replace the water valve.

Section 11.3 – REPLACING THE DRIVE COUPLING

The drive coupling, which connects the center shaft (at rear of cylinder) to the speed reducer, is designed to last the life of your machine. However, as a safety feature this coupling will break if excessive torque is applied to the center shaft. This will occur if the machine is operated incorrectly and the product in the cylinder is allowed to over-freeze; e.g. If a batch of product is started freezing and the machine is left unattended and allowed to run indefinitely, the product will eventually freeze solid causing the dasher to stop spinning and break the coupling. Never run your machine unattended!

REMOVAL:

1) Disconnect power to the machine.

2) Remove the dasher and the center shaft.

3) Remove the side panels and the top lid.

4) Remove the plastic Delrin chain and the square-bored drive sprocket. A damaged coupling will have one or more of the following issues: a) a broken or cracked plastic chain, b) a broken or cracked square-bored drive sprocket, or c) a broken or cracked speed reducer output shaft coupling sprocket.

5) Loosen and remove the two set screws in the speed reducer output shaft coupling sprocket. Spray penetrating lubricant into both set screw holes, and around the shaft on both sides of the sprocket.

5) To remove the speed reducer output shaft coupling sprocket, tap around the backside of the sprocket in several places with a small hammer until it is driven off the shaft. If the sprocket won't come off by tapping with a hammer, insert a wooden block and a tapered chisel between the face of the speed reducer and the face of the sprocket hub. Tap firmly on the end of the chisel with a hammer and the sprocket should slide off the shaft.

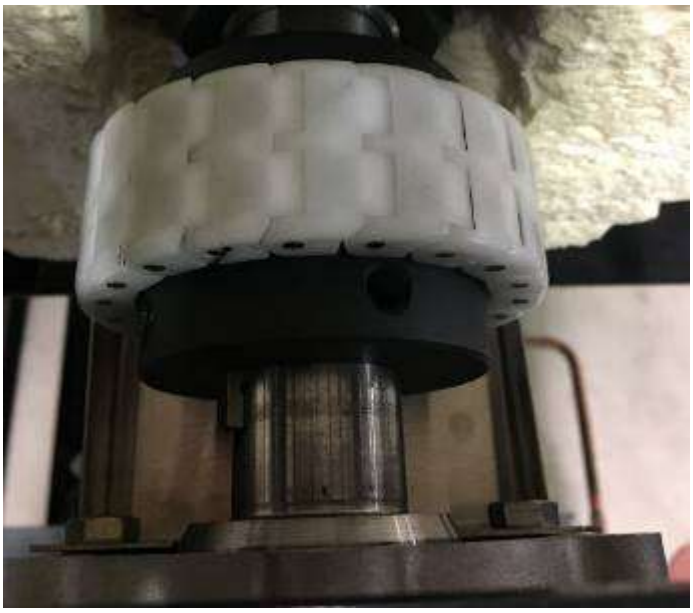
REPLACING:

1) Carefully inspect the speed reducer output shaft and its keyway. Both must be free of rust, scale, and burrs. The old key can be used over in the new installation, but again - check its condition - it may need cleaning and/or filing. Regardless if you use the old key or a new one, it must fit into the keyway on the speed reducer shaft. Insert it into the keyway, flush to the end of the shaft.

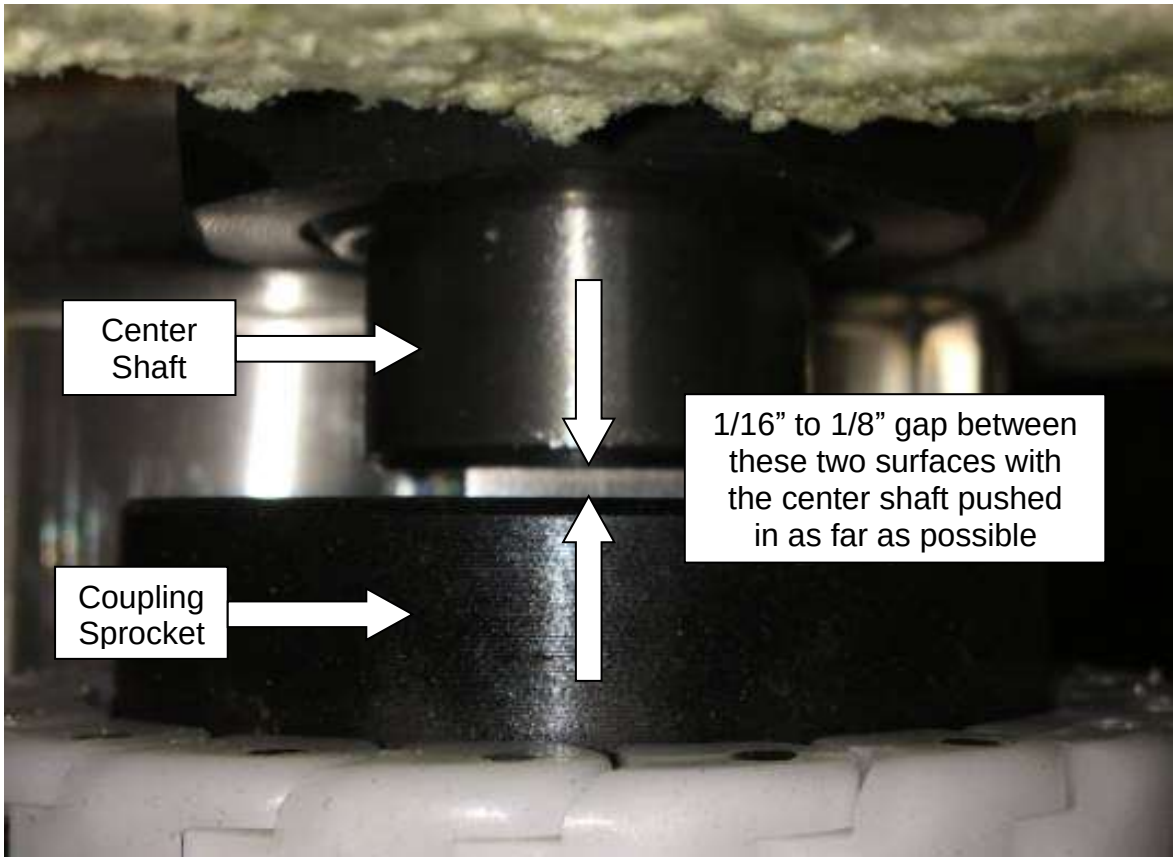
2) The speed reducer output shaft coupling sprocket is the one with the round bore. The toothed side of the sprocket will face the freezing cylinder of the machine (NOT THE SPEED REDUCER). Be sure that both set screws are backed far enough out of the sprocket that they don't make contact with the shaft while sliding the sprocket into position.

3) Lubricate the bore of the sprocket and the speed reducer shaft, and start the new sprocket onto the shaft, lining up the keyway in the sprocket to the key. It may be necessary to tap the sprocket onto the speed reducer. If it cannot simply be tapped on, take it back off, and carefully sand/file the shaft until the sprocket can be tapped on. Set the sprocket deep enough onto the shaft so that the end of the shaft is flush with the face of the sprocket. Do not tighten the set screws yet!

4) Remove any link pin from the new plastic chain by pressing the pin out of the link with a pin punch, or something similar, like a nail. Hold the square-bored sprocket in place and wrap the chain around both sprockets. Make sure the chain meshes with the teeth on both sprockets and wraps all the way around until the two end links align, and the link pin can be inserted through the two links.

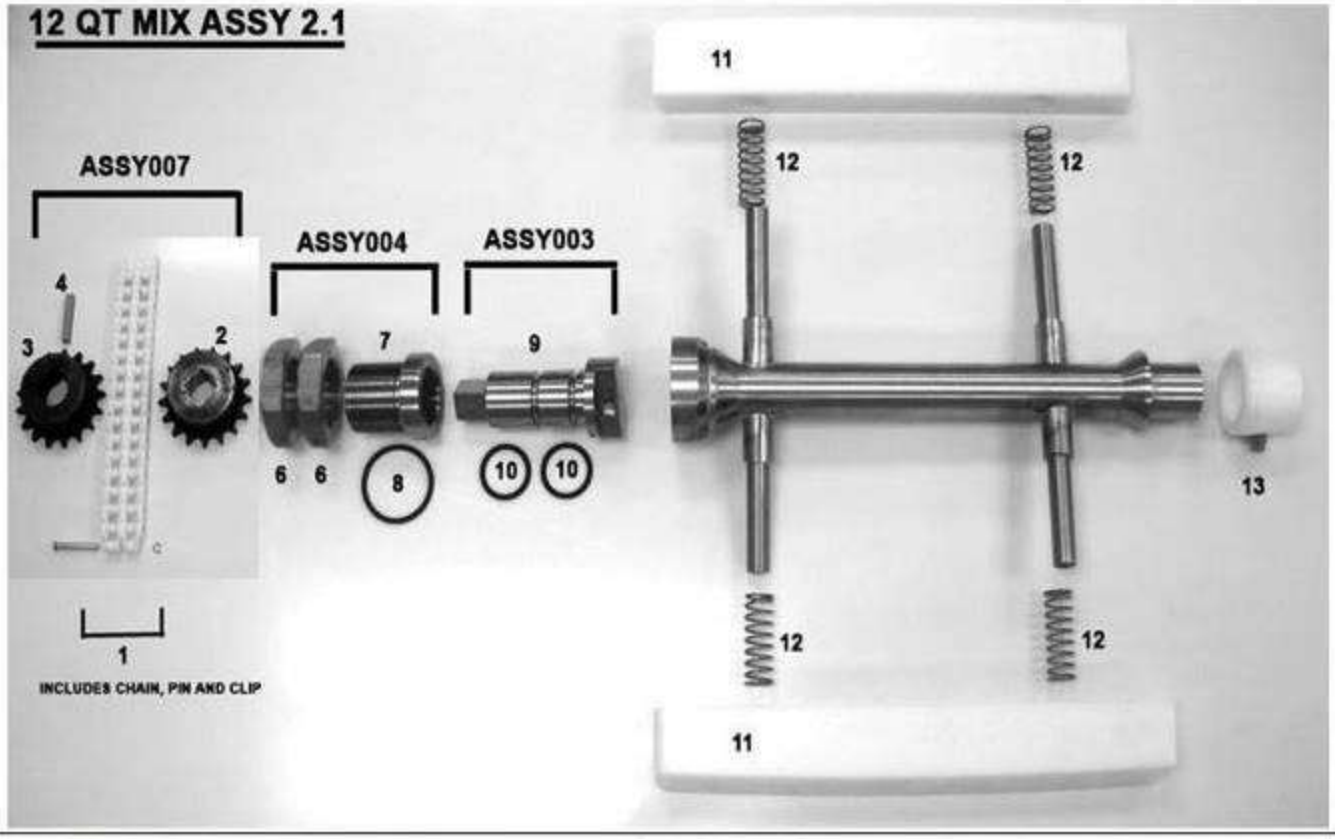


5) Before tightening the set screws in the speed reducer output shaft coupling sprocket, be sure to check and set the gap between the face of the center shaft and face of the square-bored drive sprocket. Refer to the photo below, making sure that the center shaft is pushed back as far as it will go. There should be between 1/16” and 1/8” of a gap between the shoulder of the center shaft and the face of the coupling sprocket. Once this gap is correct, tighten both set screws.

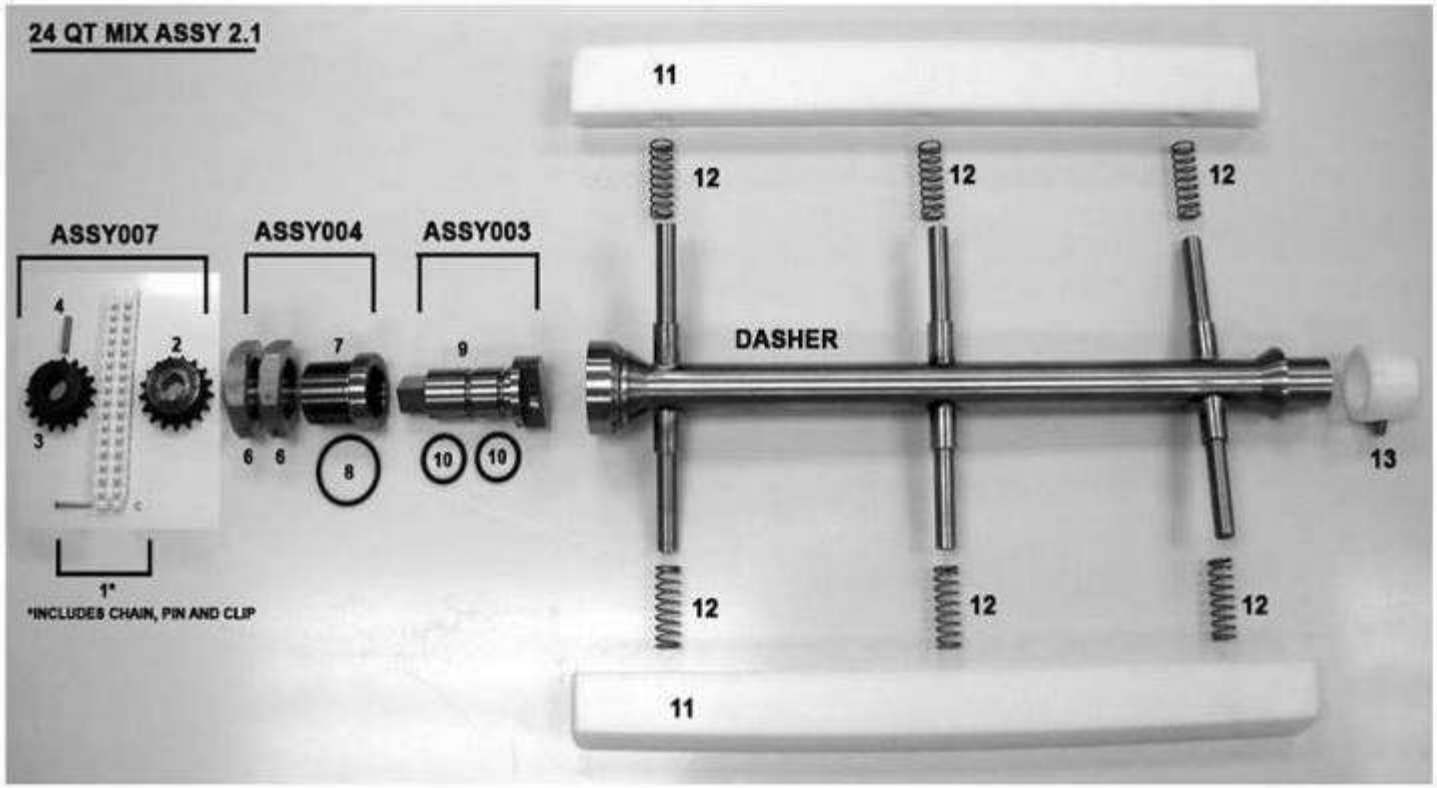


6) With the installation now complete, clean and grease the o-ring area of the center shaft prior to final assembly.

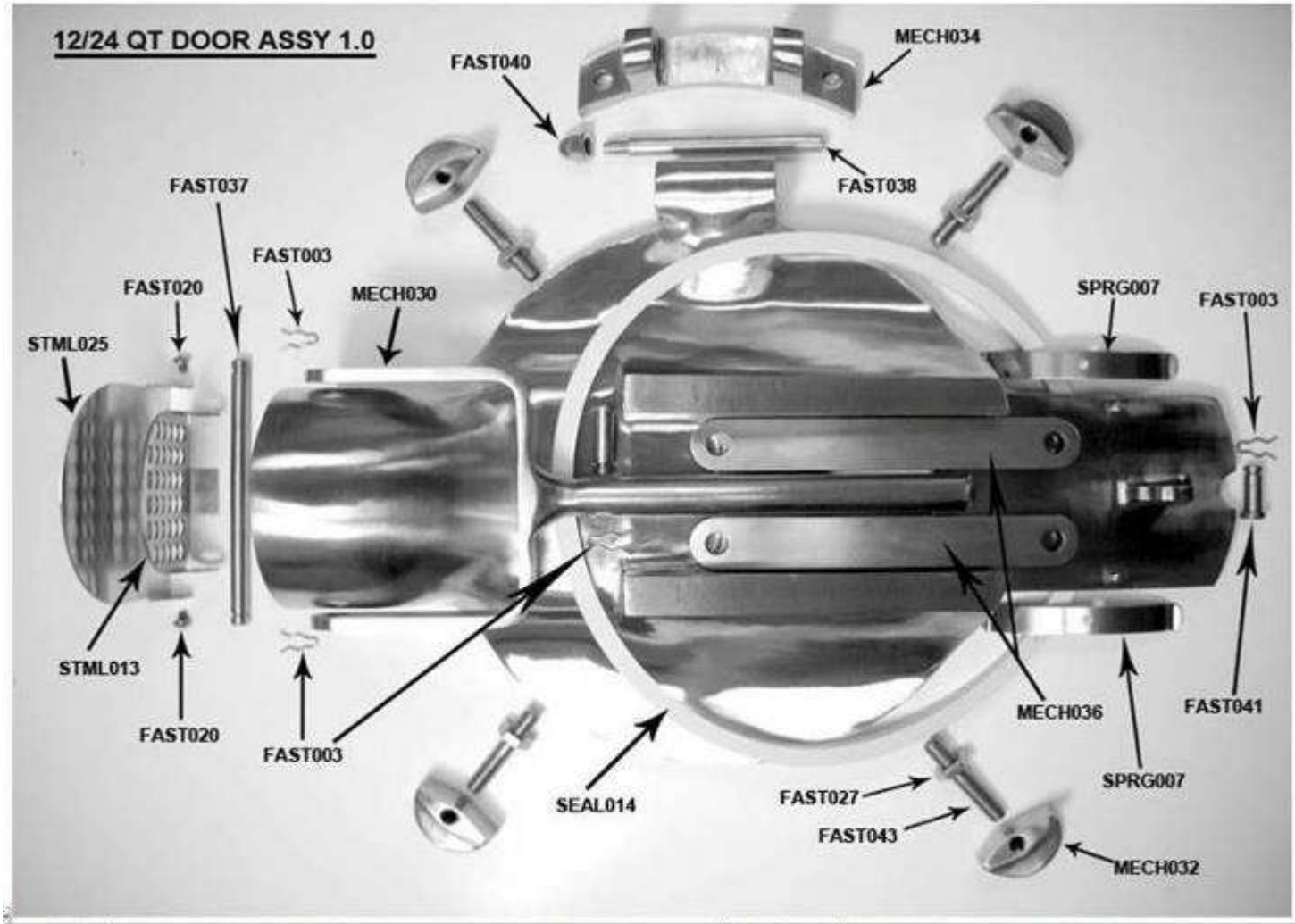
Section 12 – PARTS DIAGRAMS



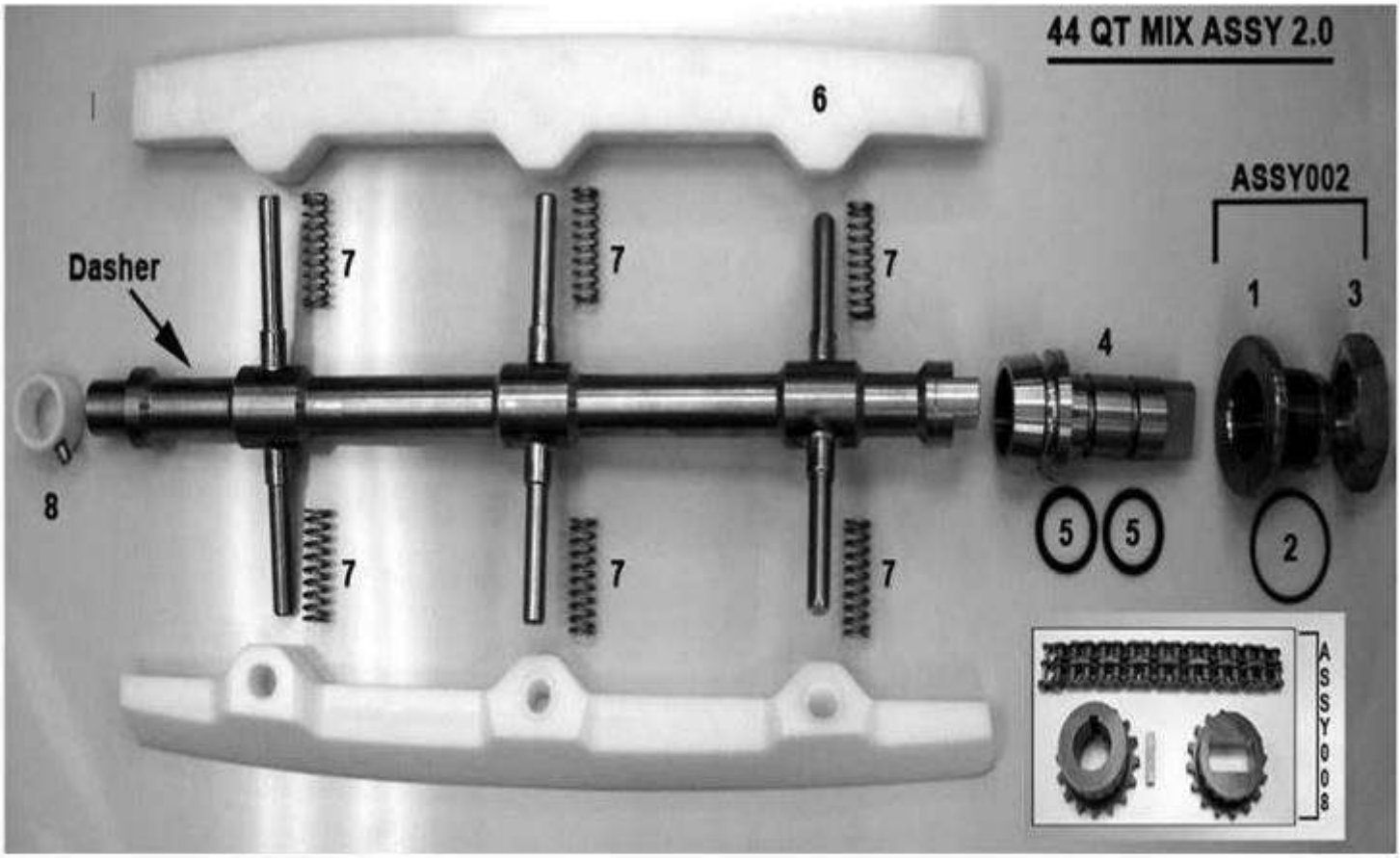
	ASSY003	kit, 12 and 24 quart centershaft replacement	11	BLAD002	blade, solid Delrin, 12 quart machines (2X PER MACHINE)
	ASSY004	kit, 12 and 24 quart back jacket bushing replacement	12	SPRG002	blade spring, 12 and 24 quart machines (4X PER MACHINE)
	ASSY007	kit, 12 and 24 quart coupling replacement, new-style	13*	BUSH001	bushing, dasher front, 1 1/2" long (* SEE NOTE BELOW)
1	COUP005	chain, new-style 12 and 24 quart coupling	13*	BUSH002	bushing, dasher front, 1 9/16" long (* SEE NOTE BELOW)
2	COUP007	sprocket, centershaft side, new-style 12/24 quart coupling	13*	BUSH003	bushing, dasher front, 1 5/8" long (* SEE NOTE BELOW)
3	COUP006	sprocket, speed reducer side, new-style 12/24 quart coupling	13*	BUSH004	bushing, dasher front, 1 11/16" long (* SEE NOTE BELOW)
4	MECH004	key, 1/4" square	13*	BUSH005	bushing, dasher front, 1 3/4" long (* SEE NOTE BELOW)
5		NOT USED	13*	BUSH006	bushing, dasher front, 2" long (* SEE NOTE BELOW)
6	FAST007	nut, 12 and 24 quart back jacket bushing retaining			
7	BUSH007	bushing, back jacket, 12 and 24 quart			
8	SEAL005	o-ring, 12 and 24 quart and CB350 back jacket bushing			
9	MECH002	centershaft, 12 and 24 quart, fabricated			
10	SEAL004	o-ring, 12 and 24 quart centershaft (2X PER MACHINE)	* CUSTOMER MUST MEASURE LENGTH TO DETERMINE CORRECT BUSHING		



	ASSY003	kit, 12 and 24 quart centershaft replacement	11	BLAD003	blade, solid Delrin, 24 quart machines **(2X PER MACHINE)**
	ASSY004	kit, 12 and 24 quart back jacket bushing replacement	12	SPRG002	blade spring, 12 and 24 quart machines **(6X PER MACHINE)**
	ASSY007	kit, 12 and 24 quart coupling replacement, new-style	13*	BUSH001	bushing, dasher front, 1 1/2" long **(* SEE NOTE BELOW)**
1	COUP005	chain, new-style 12 and 24 quart coupling	13*	BUSH002	bushing, dasher front, 1 9/16" long **(* SEE NOTE BELOW)**
2	COUP007	sprocket, centershaft side, new-style 12/24 quart coupling	13*	BUSH003	bushing, dasher front, 1 5/8" long **(* SEE NOTE BELOW)**
3	COUP006	sprocket, speed reducer side, new-style 12/24 quart coupling	13*	BUSH004	bushing, dasher front, 1 11/16" long **(* SEE NOTE BELOW)**
4	MECH004	key, 1/4" square	13*	BUSH005	bushing, dasher front, 1 3/4" long **(* SEE NOTE BELOW)**
5		NOT USED	13*	BUSH006	bushing, dasher front, 2" long **(* SEE NOTE BELOW)**
6	FAST007	nut, 12 and 24 quart back jacket bushing retaining			
7	BUSH007	bushing, back jacket, 12 and 24 quart			
8	SEAL005	o-ring, 12 and 24 quart and CB350 back jacket bushing			
9	MECH002	centershaft, 12 and 24 quart, fabricated			
10	SEAL004	o-ring, 12 and 24 quart centershaft **(2X PER MACHINE)**	* CUSTOMER MUST MEASURE LENGTH TO DETERMINE CORRECT BUSHING		

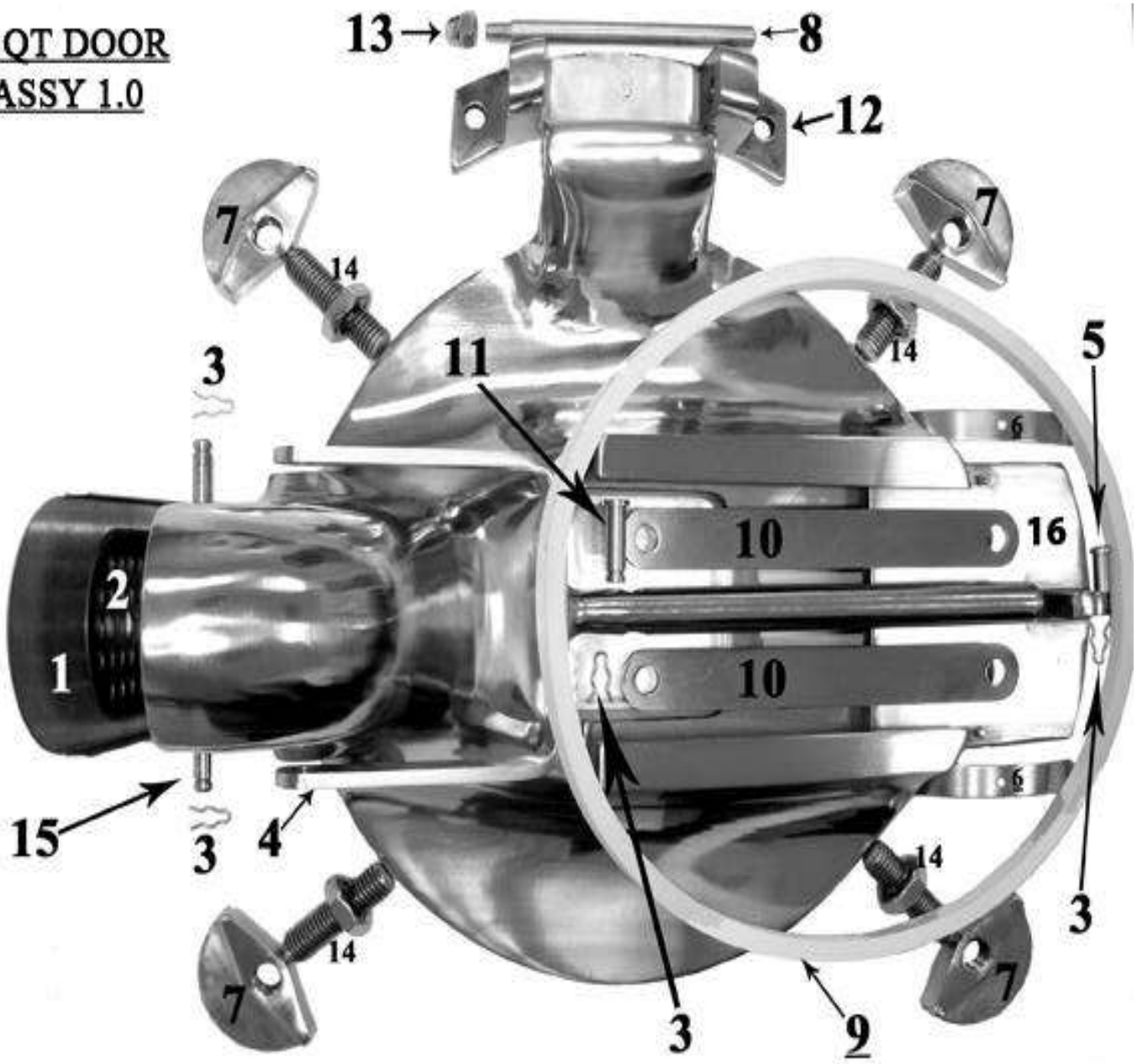


FAST003	clip, bladeholder pin, 12 or 24 quart machines (small "A")	MECH030	handle, gate operating, 12 and 24 quart
FAST020	screw, #10-24 x 1/2" long, 18-8 SS phillips head	MECH032	knob, cast 12 and 24 quart (waukesha)
FAST027	nuts, jam 3/8"-16 18-8 ss per 10	MECH034	hinge, 12 and 24 quart (waukesha)
FAST037	pin, handle pivot, 12, 24 and 44 qt machines, w/ groove each end	MECH036	linkage bar, 12 and 24 quart, stainless, gate-to-handle
FAST038	pin, hinge, 12 and 24 quart brass	SEAL014	door seal, 12 and 24 quart, 3/8" x 3/8" white EPDM
FAST040	nut, acorn, 3/8"-16 stainless, 12, 24 and 44 quart hinge pin top	SPRG007	spring, gate pressure, 12, 24 and 44 qt gates
FAST041	pin, handle linkage, gate end (shorter) 12, 24 and 44 quart	STML013	guard, door throat, 12 and 24 quart machines
FAST042	pin, handle linkage, handle shaft end (longer) 12, 24 and 44 quart	STML025	dust cover (lid) 12/24 qt spout opening
FAST043	stud, knob mounting, 12 and 24 quart, threaded 303 stainless, 3/8"-16		



	ASSY002	kit, 44 quart back jacket bushing replacement	8*	BUSH003	bushing, dasher front, 15/8" long (* SEE NOTE BELOW)
	ASSY008	kit, 44 quart chain coupling	8*	BUSH004	bushing, dasher front, 111/16" long (* SEE NOTE BELOW)
1	BUSH008	bushing, back jacket, 44 quart	8*	BUSH005	bushing, dasher front, 13/4" long (* SEE NOTE BELOW)
2	SEAL003	o-ring, 44 quart back jacket bushing	8*	BUSH006	bushing, dasher front, 2" long (* SEE NOTE BELOW)
3	FAST008	nut, 44 quart back jacket bushing retaining			
4	MECH003	centershaft, 44 quart fabricated			
5	SEAL001	o-ring, 44 quart centershaft (2X PER MACHINE)			
6	BLAD004	blade, solid Delrin, 44 quart machines (2X PER MACHINE)			
7	SPRG003	blade spring, 44 quart machines (6X PER MACHINE)			
8*	BUSH001	bushing, dasher front, 11/2" long (* SEE NOTE BELOW)			
8*	BUSH002	bushing, dasher front, 19/16" long (* SEE NOTE BELOW)	* CUSTOMER MUST MEASURE LENGTH TO DETERMINE CORRECT BUSHING		

44 QT DOOR ASSY 1.0



1	STML043	dust cover (lid) 44 qt spout opening	9	SEAL015	door seal, 44 quart, 3/8" x 3/8" white EPDM
2	STML014	guard, door throat, 44 quart machines, perforated	10	MECH037	linkage bar, 44 quart, stainless, gate-to-handle (x2)
3	FAST003	clip, bladeholder pin, 12 or 24 quart machines (small "A") (x4)	11	FAST042	pin, handle linkage, handle shaft end (longer) 12, 24 and 44 quart
4	MECH031	handle, gate operating, 44 quart	12	MECH035	hinge, 44 quart
5	FAST041	pin, handle linkage, gate end (shorter) 12, 24 and 44 quart	13	FAST040	nut, acorn, 3/8"-16 stainless, 12, 24 and 44 quart hinge pin top
6	SPRG007	spring, gate pressure, 12, 24 and 44 qt gates (x2)	14	FAST044	stud, knob mounting, 44 quart, threaded 303 stainless, 5/8"-11 (x4)
7	MECH033	knob, cast 44 quart (x4)	15	FAST037	pin, handle pivot, 12, 24 and 44 qt machines, w/ groove each end
8	FAST039	pin, hinge, 44 quart brass	16	MECH048	Gate, cast 44 quart

Section 13 – RECIPES

The following recipes are very basic, and require few ingredients, but are a good starting point to familiarize yourself with freezing times and consistencies, as well as begin to form a production routine. Again, NEVER put undissolved sugar into your machine for any recipe.

Lemon Ice

- 4 quarts of cool tap water
- 2 pounds of sugar
- Zest grated from 2 large lemons
- 20 ounces of fresh-squeezed lemon juice

Mix the sugar with the water in a clean container until the sugar is dissolved. Slowly pour this into your CB350 machine. Add the lemon juice and lemon zest; start the dasher and set at 234 RPM. Then turn on the refrigeration and freeze for 8-10 minutes, depending on desired consistency. Store and serve at 16 degrees F.

Coffee Ice Cream

- 3 quarts 14% ice cream mix
- 1 ounce of vanilla extract
- 2 ounces Taster's Choice instant coffee crystals
- Hershey's chocolate syrup to taste

Pour first three ingredients into machine and start dasher. Turn on refrigeration and freeze for 10-12 minutes. Add chocolate syrup approximately one tablespoon at a time to taste (takes away bitterness of coffee).

Bordeaux Wine Sorbet

- 2 pounds of sugar
- 2 bottles (750 ml) red Bordeaux wine
- Two 750 ml bottles of tap water
- Three 12-ounce bags of red raspberries
- (optional) 4 grams of stabilizer

Mix the sugar with the water in a clean container until the sugar is dissolved. Slowly pour this and the remaining ingredients into the machine; start dasher, then the refrigeration. Freeze for approximately 10 minutes (makes ¾ of a batch)

Fresh Mango Sorbet

- 2 pounds of sugar
- 4 Quarts of tap water
- 3 pounds of fresh mango
- juice of one lemon

Mix the sugar with the water in a clean container until the sugar is dissolved. Slowly pour this and the remaining ingredients into the machine; start dasher, then the refrigeration. Freeze for approximately 12 minutes.