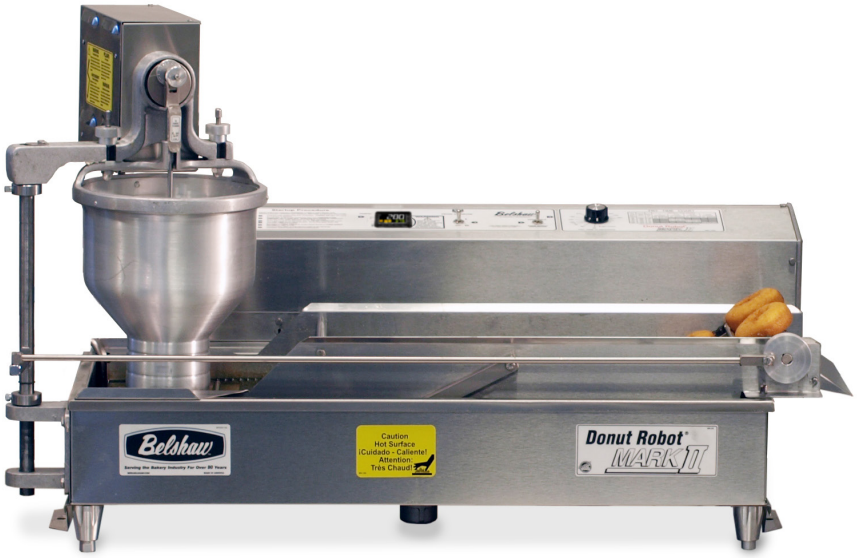
Donut Robot®

Mark II Gas / Mark II GP Gas



OPERATION AND MAINTENANCE MANUAL

ITEM NUMBER

☐ **22501** Mark II Gas, 120V, Propane (Star)
☐ **22503** Mark II GP Gas, 120V, Propane (Mini)
☐ **22592** Mark II Gas, 120V, Propane (1¾" Plain)

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MN-1017EN | 043025

EQUIPMENT RECORD

Please provide information below when corresponding with Belshaw about your machine.

Purchased by _____

Installed by _____

Date of Installation _____

Model number _____

Serial number _____

IN CASE OF DAMAGE TO EQUIPMENT

In case of damage to the equipment upon delivery, follow these steps immediately.

1. Inform the freight carrier. The phone number will be on the shipping receipt or label.
2. Take photographs of the equipment, both inside and outside the box or crate.
3. Do not throw away any packaging.
4. Report damage to the distributor (or other party) from whom you bought the equipment.
5. Email your photos to the distributor (or other party) AND to Belshaw Customer Service at service@belshaw.com. Include a Belshaw Order Number in your communications.

IN CASE OF MISSING ITEMS

1. If possible, note the missing items on the delivery receipt of the freight carrier.
2. Take photographs of the entire shipment.
3. Follow steps 2 – 5 above.

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PREFACE

The Donut Robot® Mark II Gas is designed to automatically deposit and fry cake and yeast-raised donut products. It is not designed to deposit or fry any other products. Your Mark II Gas is used with either propane gas or natural gas (not both).

The Donut Robot® is designed to be used on a flat, stationary table or countertop, with the operator standing opposite the control panel of the machine. The operator must work safely at all times and read this manual and follow its instructions and warnings.

The Donut Robot® produces only 71.5 dB(A) of equivalent A-weighted sound pressure at work stations. This has been determined during a dry run of the machine, using a Bruel & Kjaer sound level meter, type 2236.

Study the instructions and warnings in this manual carefully. A thorough understanding of how to install, maintain, and safely operate the Donut Robot® will prevent production delays and injuries.

To use the Donut Robot® safely, heed the following warnings and all other warnings that appear in this manual:

- Ensure the machine is secured to the work surface. Doing so will prevent the machine from moving or falling, which could cause serious injury.
- Never let water and hot shortening come in contact with each other. Moisture causes hot shortening to spatter, which may cause serious burns.
- Do not overfill the kettle with shortening. If shortening overflows, it could cause serious burns or cause someone to slip on the floor and be seriously injured.
- Hot shortening can cause serious burns. Ensure that the system and shortening are cool before attempting adjustment, repair, disassembly, or cleaning.
- To avoid electrocution or injury, unplug machine before attempting adjustment, repair, disassembly, or cleaning.
- To avoid damaging the machine, never use force to assemble, disassemble, operate, clean, or maintain it.
- Be careful never to get shortening, water, or other materials on the floor. If anything spills, clean the area immediately. Materials on the floor can cause people to slip or fall, resulting in serious injury or fatality.
- To prevent unintentional startup and possible fire, unplug the machine if there is a power outage. When power is restored, it is safe to plug the machine in.
- To avoid fire and personal injury, always shut the machine down completely and wait at least five minutes before igniting the pilot again.
- To avoid electrocution, ensure all electrical cords are not frayed or cracked and that they do not pass through any water or shortening.
- Ensure that all electrical cords are routed so that no one will trip over them.
- To avoid serious injury or fatality, always keep the fryer area free and clear from combustible materials.

WARNING

All combustible materials must be at least 18" (46 cm) from your Donut Robot®.

INSTALLATION

Before you unpack and install the fryer, you should first select a work station. The work station should allow at least 2" (5 cm) clearance between the machine and all objects, whether combustible or noncombustible.

To provide for proper operation and servicing, you should allow 2 ft (0.6 m) clearance at the outfeed end of the fryer.

In a prominent location, post instructions to be followed in the event the user smells gas. Obtain this information by consulting your local gas supplier.

Unpacking Your Donut Robot®:

Two people are required to unpack and transport the Donut Robot® to the work station. Follow these steps:

1. Remove the foam and other packing materials from the two boxes.
2. Carry the hopper, plunger, and swing column to the work station.
3. Coil the cutter head power cord and carry the cutter head to the work station.
4. Carry conveyor assembly to work station.
5. Move the fryer to the work station.

WARNING

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

WARNING

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

Conforming to Codes

The installation of this fryer must conform with local codes, or in the absence of local codes, with the National Fuel Gas Code (NFPA 54/ANSI Z223.1), with the Natural Gas Installation Code (CSA B149.1), or with the Propane Installation Code (CSA B149.2), including:

- The fryer and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.45 kPa).
- The fryer must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig (3.45 kPa).

The fryer, when installed, must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, or with the Canadian Electrical Code, CSA C22.1, as applicable.

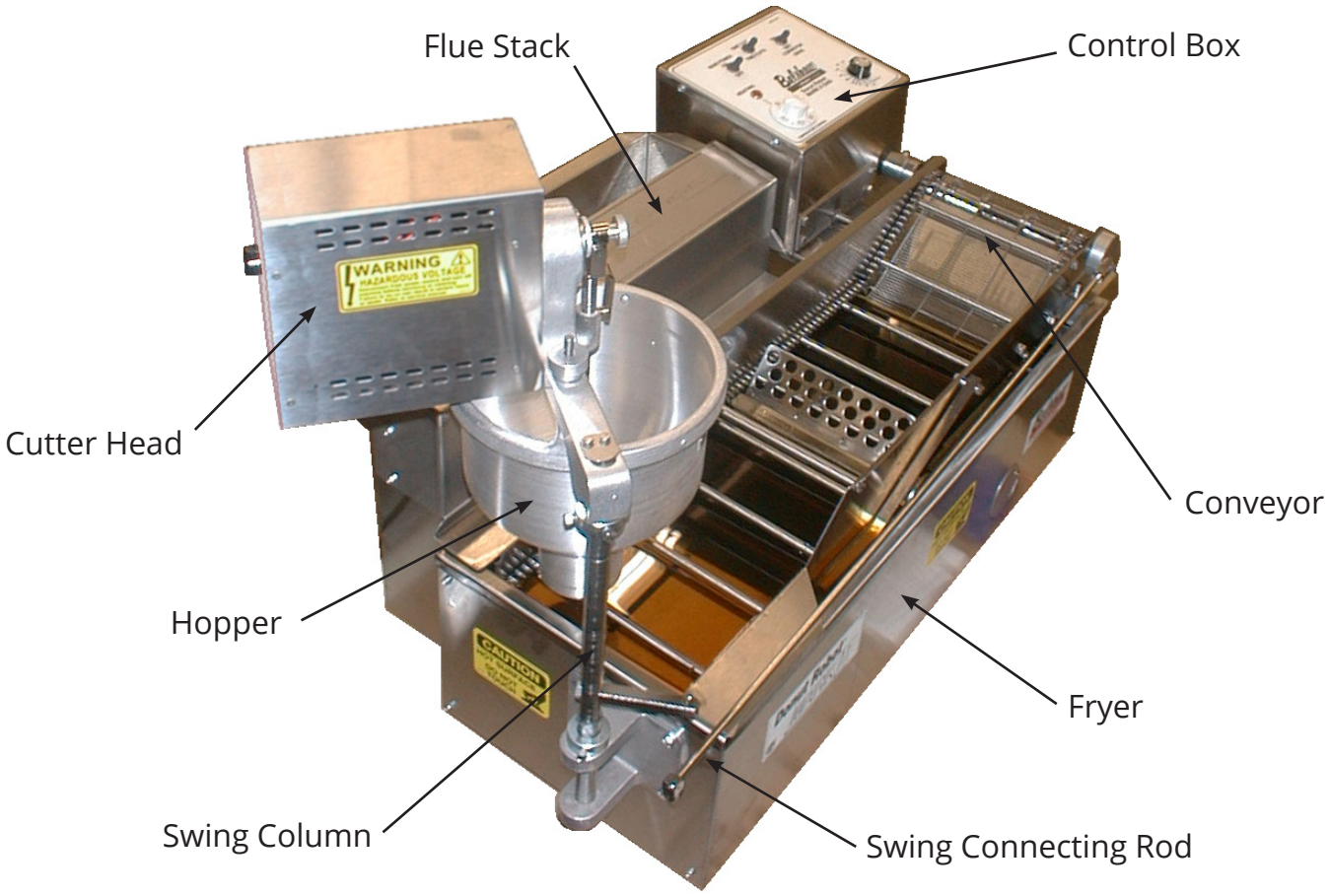
INSTALLATION

After unpacking, you should also be familiar with the major parts of your Donut Robot® Mark II Gas. To help familiarize yourself with these parts, please study Figure 1 below.

WARNING

This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from the plug.

Figure 1
Donut Robot® Mark II Gas, top view



INSTALLATION

Initial Cleaning

Thoroughly clean your Donut Robot® before using. Use a household dishwashing detergent. Do not use strong alkali cleaners. Thoroughly dry and lubricate parts to prevent rusting. Full cleaning instructions are found in the "Cleaning" section of this manual.

WARNING

To avoid electrocution or damaging the machine, never allow water, steam, cleaning solution, or other liquid to enter the cutter head or the control box.

WARNING

Never let water and hot shortening come in contact. Moisture causes hot shortening to spatter, which may cause serious injury. Prior to use, ensure any parts you have washed are dry.

Assembling the Fryer

1. Place the fryer case on a flat, stationary surface.
2. Screw the fryer's legs in as far as possible.
3. Set the kettle into the fryer case. The end of the kettle that has the locating pin must be placed at the outfeed end of the fryer case. The lip of the kettle should fit securely over the edge of the case.
4. Install the control box as follows:
   a. Align the holes in the control box mounting flanges with the holes in the mounting brackets.
   b. Slide the bolts through the holes.
   c. Tighten the nuts onto the bolts.
5. Lower control box assembly into position so the thermostat bulb bracket rests on or very near the bottom of the kettle.
6. Install the conveyor assembly as follows:
   a. Hold the conveyor at the angle shown in Figure 2 and slide conveyor drive coupling over the main drive shaft coupling. The conveyor coupling has a notch in it. Turn the conveyor coupling until the head of the socket head screw in the drive coupling can slide into this notch.
   b. Lower the front side of the conveyor assembly so the hole in the conveyor flange fits over the locating pin on the lip of the kettle.

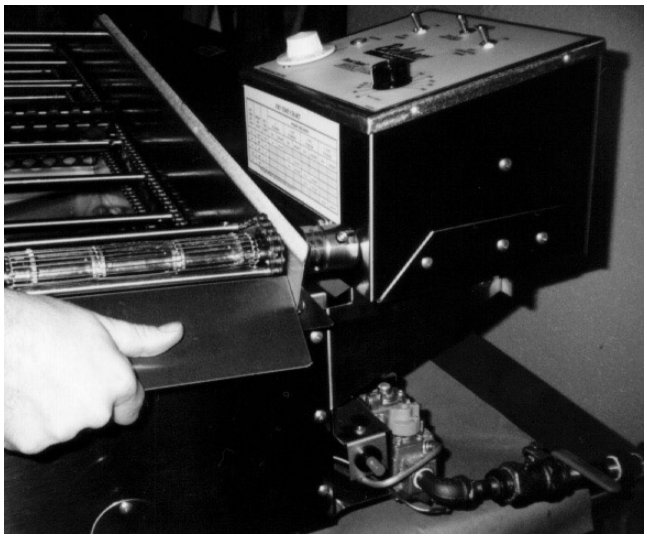


Figure 2 Joining the couplings

INSTALLATION

If you are preparing the make yeast-raised donuts, skip steps 7 and 8 and proceed to 9.

7. Insert the swing column into the swing column mounting bracket. Ensure the spacer washer is on the swing column between the set collar and the swing column mounting bracket. See Figure 3.

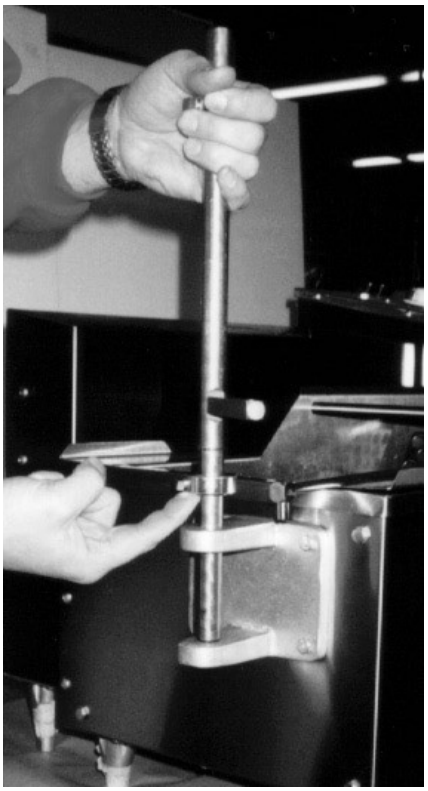


Figure 3
Inserting the swing column

8. Connect the swing connecting rod to the throw arm of the swing column. A locating pin on the swing connecting rod rests in a hole in the throw arm. See Figure 4.
9. Ensure your power source matches the specifications on the machine. Connect the machine to the power source.
10. Turn on the conveyor only and check to see that it operates smoothly. The power switch for the conveyor drive is on the control box.

Figure 4
Connecting the swing connecting rod

Assembling the Cutter

Read this section only if you are preparing to make cake donuts.

1. Set the cutter head assembly onto the swing column. See Figure 5.
2. Mount the hopper by sliding the two mounting studs on the hopper arch into notches on the bearing strut. Secure the hopper with thumb nuts. See Figure 6.
3. Install the plunger as follows:
   a. Pull the plunger connecting rod up and out of the way.

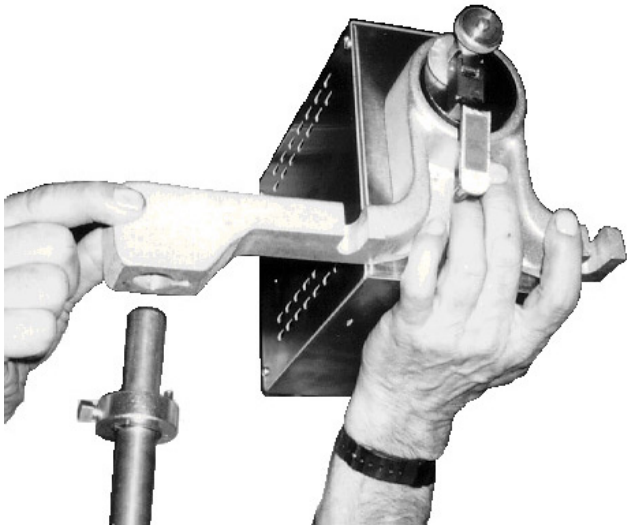


Figure 5
Mounting the cutter head assembly

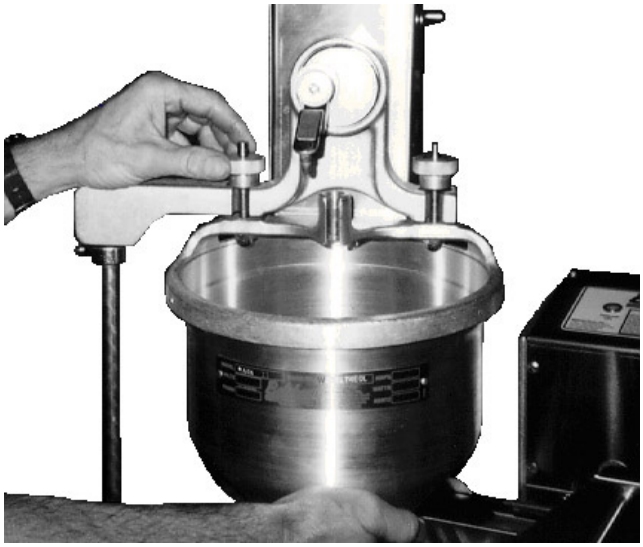


Figure 6
Mounting the hopper

b. Put the narrow part of the plunger's center rod through the slot in the center of the hopper arch.

c. Lower the plunger until the wider part at the top of the center rod enters the round opening in the hopper arch and the plunger's piston just enters the hopper cylinder.

d. Lower the connecting rod and insert the pin into the hole near the top of the plunger center rod. See Figure 7.

Figure 7
Installing the plunger

4. Plug the power cord from the cutter head assembly into the outlet on the back of the control box.
5. Test the cutter head to ensure that it is operating properly. Turn it on using the prime switch on the cutter head. The cutter should run continuously. Turn off the cutter.

INSTALLATION

Adjusting the Hopper

WARNING

To avoid injury, always disconnect the machine from the power source before making adjustments.

1. The bottom of the hopper should be 1" (2.5 cm) above the flight bars. To set the height of the hopper:
   a. Hold the depositor from below to prevent from dropping suddenly.
   b. Loosen the set screw in the lower set collar on the swing column.
   c. Raise or lower the swing column as needed.
   d. Tighten the setscrew. See Figure 8.

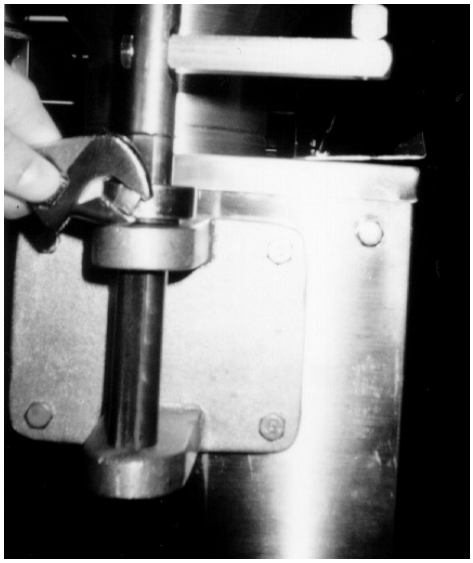


Figure 8
Adjusting the height of the hopper

2. As the hopper swings back and forth over the kettle, the hopper cylinder should stop the same distance away from either side of the kettle at each end of the swing.

   To check the swing of the hopper, turn on the conveyor. If you need to center the swing of the hopper, follow these steps:

   a. Turn off the conveyor.
   b. Loosen setscrews in upper set collar.
   c. Swivel the depositor as needed.
   d. Tighten the setscrews. See Figure 9.
   e. Double-check the swing of the hopper by turning on the conveyor, then turn off the conveyor.

Figure 9
Adjusting the swing of the hopper

INSTALLATION

Leveling and Securing the Fryer

Check to see if the fryer is level. If it is not, adjust the heights of the legs. Ensure all six legs rest on the work surface when leveled.

The fryer must be restrained to prevent it from tipping over and splashing hot liquid on the operator. Bolt the fryer to the work surface as follows:

1. There are brackets on the ends of the fryer case. Each has a hole in it. Mark the locations of the holes on the work surface.
2. Drill holes through the work surface.
3. Insert bolts through the holes.
4. Tighten nuts onto the bolts to ensure that the Donut Robot® will not move.

Connecting Fryer to the Gas Supply

1. Ask your local gas company to advise you on the size of pipe and gas meter to use.
2. Connect the fryer to the gas supply.
3. Seal all threaded joints between gas pipes with pipe joint compound. You must use a compound that resists the action of liquefied petroleum (LP) gases.
4. Bleed the gas lines of all air.
5. Check gas connections and fittings for leaks using a gas leak detector, a soap solution, or similar substance. When such a substance is applied to connections and fittings, bubbles indicate gas leaks. Repair any leaks before continuing.

Moving the Fryer

If you ever want to move the fryer to a different work station, follow this procedure:

1. Turn off the machine and disconnect it from the power source. Unplug the cutter head power cord.
2. Turn off the gas supply. Disconnect the machine from the gas supply.
3. Allow machine and shortening to cool

WARNING

Do not touch hot shortening. It can cause serious burns.

4. Remove and set aside plunger, hopper, and cutter head, in that order.
5. Disconnect the swing connecting rod.
6. Remove shortening from the fryer as explained in “Removing the Shortening” section.
7. To avoid dropping the machine or getting shortening on the floor, wipe excess shortening off of the fryer and conveyor.

WARNING

Thoroughly clean and dry the floor if shortening is spilled. Materials on the floor can cause people to slip or fall, resulting in serious injury or fatality.

8. Set aside the conveyor.
9. Remove the nuts and bolts that hold the control box in place. Remove the control box from the fryer.

INSTALLATION

10. To prevent tripping, coil the power cord. Move the control box to the new work station.
11. Move the fryer to its new location.
12. Install the control box.
13. Move and install the conveyor.
14. Move and install the swing column. Connect the swing connecting rod.
15. To prevent tripping, coil the cutter head power cord. Move and install the cutter head.
16. Move and install the hopper and plunger.
17. Level and secure the fryer.
18. Connect the fryer to the building's gas supply, and seal all pipe joints with joint compound.

OPERATION

Taking Safety Precautions

Contact your local gas supplier and obtain information about what to do if there is a gas leak. **Post this information in a prominent location. Make sure that all employees know what to do.**

WARNING

To avoid possibility of fire, explosion, property damage, serious burns, and even fatality, never store gasoline or any other flammable liquid or vapor near the fryer.

If you want to restart the machine after you have shut it down, do the following:

1. Move the power switch on the control box to the OFF position.
2. Move the gas control valve to the PILOT position.
3. Lightly press down on the valve and turn it to the OFF position.
4. Wait five minutes.
5. Relight the pilot.

WARNING

Failure to wait five minutes for the gas to dissipate could result in a fire or an explosion when you relight the pilot.

WARNING

To avoid serious injury or fatality, if you smell gas or suspect a gas leak, proceed as follows: 1. Turn off the gas. 2. Evacuate the building. 3. Do not touch any electrical switch or telephone until you are sure no spilled gas remains.

The fryer is bolted to the work surface to prevent it from tipping over and splashing hot liquid on the operator.

WARNING

To avoid serious burns, injury, or fatality, never move the fryer when liquid is inside.

If you want to move the fryer, follow the instructions in "Moving the Fryer" in the Installation section of this manual.

OPERATION

Making Cake Donuts

WARNING

To avoid serious injury or fatality, ensure there is no combustible material in the area of the fryer before you begin working.

1. If necessary, install the swing column, connect the swing connecting rod, install the cutter head, and install the hopper and the plunger.
2. Connect the machine to an appropriate power source.
3. Check connection of the machine to the gas source to make sure that it is tight.
4. When the shortening reaches the correct frying temperature, it should reach the top of the flight bars.

   Shortening expands as it increases in temperature. Unless the shortening is at frying temperature when you put it in the kettle, you should put it in gradually. Let the shortening in the kettle heat up before adding more.

   Add shortening to the kettle using one of the these methods.

   - Melt shortening in a pan on the stove. Heat only slightly to liquefy the shortening, and then carefully pour it into the kettle.
   - Put solid shortening into the kettle, packing it tightly around the thermostat bulbs.

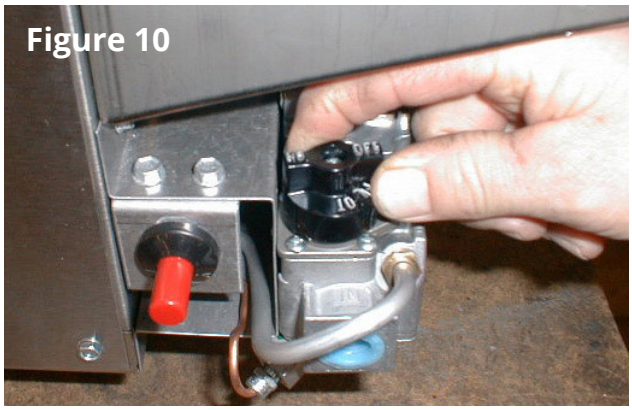
WARNING

Hot shortening causes severe burns.

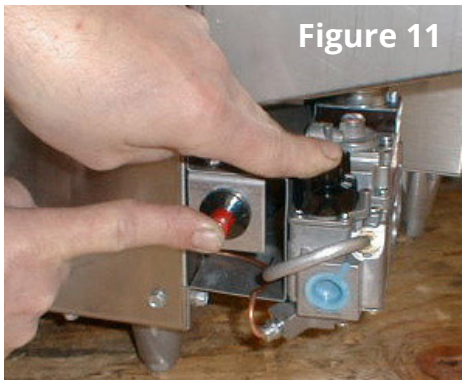
WARNING

Air spaces can cause the shortening to overheat and catch on fire.

5. Turn the combination gas control valve knob to the PILOT position. See Figure 10.



6. Press and hold down the valve knob. At the same time, push the red ignition button until you see a flame through the opening on the outfeed end of the fryer. See Figure 11.



7. Continue holding the valve knob down for about 20 seconds. When you release it, make sure the flame is still on the pilot.

   If the pilot is out, do the following:

   a. Turn the combination gas control valve knob to the PILOT position.
   b. Lightly press down on the valve knob and turn it to the OFF position.
   c. Wait five minutes.
   d. Relight the pilot.

WARNING

Failure to wait five minutes for the gas to dissipate could result in a fire or an explosion when you relight the pilot.

8. Move the valve knob switch to the ON position. See Figure 12.

Figure 12

9. Set the thermostat to the desired setting. The pilot light on the control box will come on, indicating that the shortening temperature is lower than the desired temperature.

Note: If the high temperature limit control breaks the circuit, push the red reset button on the back of the control box.

10. Wait for the shortening to reach the desired temperature. When it does, the pilot light will go out. DO NOT run the conveyor until all shortening has melted.
11. If using the Shortening Reserve Tank, fill it with shortening. Position it on the conveyor side panels either ahead of or behind the turner, but not above it. The heat of the fryer will melt the shortening in the tank.
12. Disengage the swing connecting rod from the swing column throw arm and swing the hopper away from over the fryer.
13. Adjust the size selector dial on the cutter head's crankshaft assembly. This dial regulates the donut weight. The higher the setting, the larger the donuts will be. Adjust the dial setting as follows:

    a. Unscrew the dial lock nut 1/2 turn.
    b. Turn dial to desired position, as indicated by marks on the crank plate.
    c. Tighten the dial in place with the lock nut. Tighten using your fingers only.

14. Put dough into the hopper. Prime the hopper to expel any air that may be trapped in the bottom. To prime:

    a. Hold a mixing bowl under the cutter.
    b. Hold down the prime switch on the cutter head and run it until it drops two or three donuts into the bowl.

       Note: Holding down the prime switch causes the cutter to run continuously without the normal delay between cuts.

c. Put the dough from the bowl back into the hopper.

15. Return the hopper into position over the fryer and reconnect the swing connecting rod to the swing column throw arm.
16. Choose the appropriate fry time for your product using the fry time control knob on the control box.
17. Using the switch on the control box, select the number of donuts–one or two–you want to cut during each swing cycle of the hopper.
18. Turn on the cutter using the power switch on the cutter head.
19. Turn on the conveyor drive using the power switch on the control box.

Note: If the conveyor becomes jammed, a warning buzzer will sound about a minute later and stop when the conveyor is turned off. The conveyor drive motor is impedance-protected so it will not burn out due to jamming.

If the conveyor becomes jammed:

a. Turn off conveyor drive and heater.
b. Allow the system to cool down.
c. Determine the cause of the jamming.
d. Clear it.
e. Restart the system.

WARNING

Hot shortening is dangerous and causes severe burns.

20. Continue adding shortening to the kettle to maintain the proper shortening level. There are three ways to do this:
    - Melt shortening in a pan on the stove and carefully pour it into the kettle.
    - If you are using the optional EZMelt, transfer more shortening from it. See your EZMelt manual.
    - If you are using the optional Shortening Reserve Tank, push open the supply valve.
21. Continue adding dough to the hopper as needed. You can add dough to the hopper without priming it again as long as it does not become empty. If the hopper does become empty, you must prime it again.
22. When you fill the hopper for the last time, you will want to use all of the dough inside. To do so, push the dough to the bottom of the hopper using a rubber scraper or spatula. Be careful not to jam the scraper in the donut cutter.
23. To shut down the machine when you are finished:
    a. Move the power switch on the control box to the OFF position.
    b. Turn the combination gas control valve knob to the PILOT position. Lightly press down the valve knob and turn it to the OFF position.

WARNING

To avoid injury, never put your hand in or under the hopper while the machine is on.

Making Yeast-Raised Donuts

WARNING

To avoid serious injury or fatality, ensure there is no combustible material in the area of the fryer before you begin working.

1. Remove the hopper and plunger, the cutter head, and the swing column, if they are installed.
2. Connect the machine to an appropriate power source.
3. Check connection of the machine to the gas source to make sure that it is tight.
4. When the shortening reaches the correct frying temperature, it should reach the top of the flight bars.

   Shortening expands as it increases in temperature. Unless the shortening is at frying temperature when you put it in the kettle, you should put it in gradually. Let the shortening in the kettle heat up before adding more.

   Put shortening in the kettle using one of the these methods.

   - Melt shortening in a pan on the stove. Heat only slightly to liquefy the shortening and then carefully pour it into the kettle.
   - Use the optional EZMelt to melt shortening and transfer it to the kettle. See your EZMelt manual.
   - Put solid shortening into the kettle, packing it tightly around the thermostat bulbs.

WARNING

Hot shortening causes severe burns.

WARNING

Air spaces can cause the shortening to overheat and catch on fire.

5. Turn the combination gas control valve to the PILOT position.
6. Press and hold down the valve. At the same time, push the red ignition button until you can see a flame through the opening on the outfeed end of the fryer.
7. Continue holding down the valve for about 20 seconds. When you release it, make sure the flame is still on the pilot.

   If the pilot is out, do the following:

   a. Turn the combination gas control valve knob to the PILOT position.
   b. Lightly press down on the valve knob and turn it to the OFF position.
   c. Wait five minutes.
   d. Relight the pilot.

WARNING

Failure to wait five minutes for the gas to dissipate could result in a fire or an explosion when you relight the pilot.

8. Move the power switch to the ON position.

9. Set the thermostat to the desired setting. A pilot light on the control box will come on, indicating that the shortening is heating up to the desired temperature. It will go out if the high temperature limit control breaks the circuit.

   Note: If the high temperature limit control does break the circuit, push the red reset button on the back of the control box.

10. Wait for the shortening to reach the desired temperature. When it does, the pilot light will go out. DO NOT run the conveyor until all shortening has melted.

11. If are using the optional Shortening Reserve Tank, fill it with shortening. Then position it on the conveyor side panels either ahead of or behind the turner, but not above it. The heat of the fryer will melt the shortening in the tank.

12. Install your Feed Table and load proof cloths on it. Refer to the Accessories section of this manual for complete installation and operation instructions for the Feed Table.

13. Choose the appropriate fry time for your product using the fry time control knob on the control box.

14. Turn on the conveyor drive using the power switch on the control box.

    Note: If the conveyor becomes jammed, a warning buzzer will sound about a minute later and stop when the conveyor is turned off. The conveyor drive motor is impedance-protected so it will not burn out due to jamming.

    If the conveyor becomes jammed:

    a. Turn off conveyor drive and heater.
    b. Allow the system to cool down.
    c. Determine the cause of the jamming.
    d. Clear it.
    e. Restart the system.

WARNING

Hot shortening is dangerous and causes severe burns.

15. Continue adding shortening to the kettle to maintain the proper shortening level. There are three ways to do this:
    - Melt shortening in a pan on the stove and carefully pour it into the kettle.
    - If you are using the optional EZMelt, transfer more shortening from it. See your EZMelt manual.
    - If you are using the optional Shortening Reserve Tank, push open the supply valve.

16. Continue loading proof cloths onto the Feed Table as needed.

17. To shut down the machine when you are finished:

    a. Move the power switch on the control box to the OFF position.
    b. Turn the combination gas control valve to the PILOT position. Lightly press down the valve and turn it to the OFF position.

CLEANING

WARNING

Thoroughly clean and dry the floor if shortening, water or other materials are spilled. Materials spilled on the floor can cause serious injury or fatality.

WARNING

To avoid electric shock or damage to the machine, never allow water, steam, shortening, cleaning solution, or any other liquid to enter the control box or the cutter head assembly.

Cleaning the Hopper and Plunger

You must clean the hopper and the plunger daily, or after each use. Follow these general guidelines:

- Use household dishwashing detergent. Do not use strong alkali cleaners, as these discolor and corrode aluminum.
- Wash, dry, and lubricate parts thoroughly to prevent rusting.
- When washing parts by hand, wash each part separately. Do not put any other untensil or dish in the sink with the part being washed.

Cleaning Method

1. Unplug the cutter head power cord.
2. Remove the plunger and hopper by reversing the procedures found in the "Assembling the Cutter" step in the Installation section of this manual.
3. Presoak the parts, if necessary, to loosen stubborn or dried-on deposits.
4. Wash the hopper and the plunger separately in hot water and a detergent recommended for aluminum. Use a non-scratching plastic scouring cloth to remove soil and restore luster.
5. Rinse the hopper and the plunger separately in clean, hot water at around 170-190°F (77-88°C).
6. Dry each part completely.
7. Dip the plunger and the hopper cylinder in vegetable oil or shortening to prevent rust and sticking.
8. Wipe the cutter head assembly with a soft cloth dampened with hot water and an appropriate cleaner. Wipe with another damp cloth to remove cleaner. Wipe dry.

WARNING

Never immerse the cutter head assembly in water. This may cause an electric shock and/or damage to the machine.

CLEANING

Cleaning the Conveyor and Kettle

There are four basic steps to cleaning the conveyor and the fryer kettle: removing the shortening, washing, rinsing, and drying. You must perform all four steps and perform them in the order listed.

Removing the Shortening

WARNING

To avoid being burned or electrocuted, disconnect the machine from the power source before cleaning the fryer.

1. Disconnect machine from power source.
2. Let the shortening cool to 100°F (38°C).
3. Unplug the cutter head power cord.
4. Lift the cutter head off the swing column.
5. Remove the conveyor assembly as follows:
   a. Obtain two pieces of wood, at least 1" x 1" x 15" (2.5 cm x 2.5 cm x 38 cm).
   b. Lift off the swing connecting rod.
   c. Lift the conveyor assembly from the conveyor locating pin and pull it away from the control box to disengage the main drive shaft coupling from the conveyor drive coupling.
   d. Lift the outfeed end of the conveyor. Slide one piece of wood under the conveyor and lay it across the top of the kettle. Lift the other end of the conveyor and do the same thing with the other piece of wood. The conveyor will now be resting on the two pieces of wood. Let the shortening drain off of the conveyor and into the kettle. See Figure 13.

Figure 13
Draining the shortening off the conveyor

6. Remove the turner assembly as follows:
   a. Move the flight bars of the conveyor until the turner is in the middle of a flight pocket.
   b. Swing the turner cam weight up out of position.
   c. Lift up and pull out on the turner cam assembly. See Figure 14.

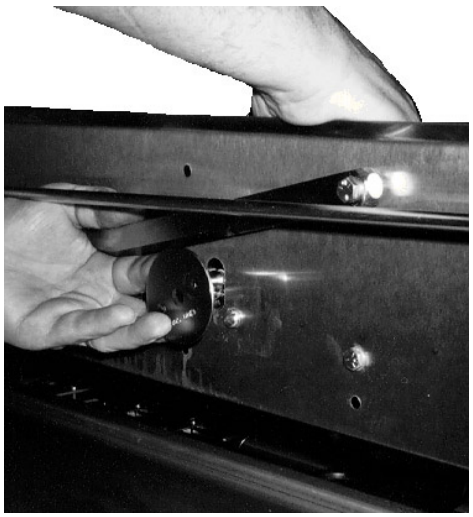


Figure 14 Removing turner cam assembly

d. Lift out the turner assembly. See Figure 15.

e. To reassemble, reverse this procedure.

7. Remove the drop plate at the infeed end of the conveyor by lifting the forward end and sliding it toward the rear of the conveyor. (See Figure 16) Wipe it clean with a damp cloth. Do not clean the drop plate with an abrasive cleaner, this will cause donuts to stick to it.

Figure 15
Removing the turner assembly

8. After the shortening has drained off of the conveyor assembly, set the conveyor assembly aside.
9. Check again to see that the shortening in the kettle has cooled to 100°F (38°C).

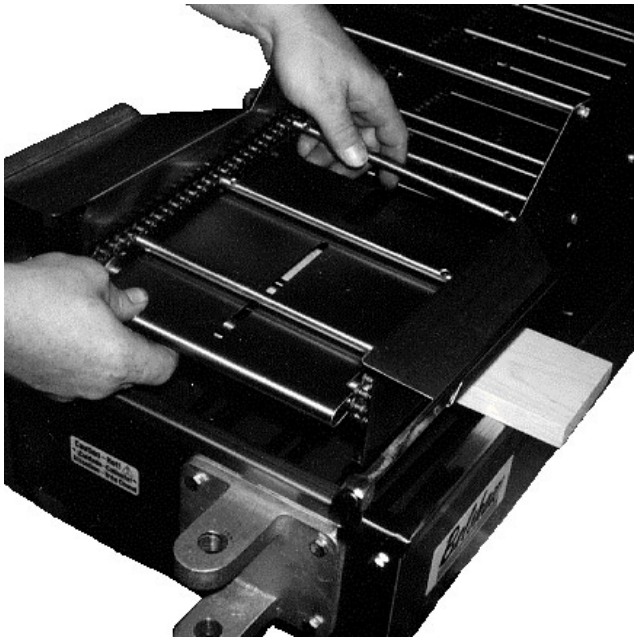


Figure 16
Removing the drop plate

10. Remove the shortening from the kettle using one of these methods:
    a. Use an optional Filter-Flo Siphon to siphon shortening into one or more large metal buckets. Be careful to not disturb the sediment accumulated in the bottom of the kettle.
    b. Tilt the control box assembly back, raising the thermostat and high limit out of the kettle. Lift the kettle out of the fryer case and carefully pour shortening into one or more large metal buckets. Be careful to not disturb the sediment accumulated in the bottom of the kettle.
    c. Using a small saucepan or metal pitcher, scoop as much shortening as possible into metal buckets. Then lift the kettle out of the fryer case and

carefully pour the rest of the shortening into a metal bucket. Be careful to not disturb the sediment accumulated in the bottom of the kettle.

WARNING

Do not use plastic buckets. If the shortening is not cool enough, the buckets will melt, possibly causing you to be burned and shortening to get on the floor.

WARNING

Do not allow the shortening to overflow the buckets. Shortening will get on the floor, and if shortening is not cool enough, you may be burned.

WARNING

Thoroughly clean and dry the floor if shortening spills. Shortening on the floor can cause serious injury or fatality.

11. Return the kettle to the fryer case, if you have removed it.
12. Tilt the control box assembly back, raising the thermostat and high limit out of the kettle.
13. Lift the kettle out of the fryer case. Remove and dispose of the remaining shortening and the accumulated sediment. Dry the outside of the kettle
14. Put the kettle back in the fryer case.
15. Tilt the control box assembly down.
16. Put the drop plate and the turner assembly back on the conveyor assembly
17. Install the conveyor assembly.

Washing

1. Pour hot water into the kettle, up to the normal level of the shortening. Add about 2 oz (59 ml) of appropriate cleaner.
2. Connect the machine to the power source. Heat the solution to 200°F (93°C). Turn on the conveyor. Keep the solution at this temperature for 15-20 minutes.
3. Turn off the conveyor and scrub the soiled parts while the solution is under heat. Do not use any abrasive cleaners or scrapers.
4. Turn off the heater and disconnect machine from the power source. Allow cleaning solution to cool to 100°F (38°C).
5. Remove the conveyor and tilt the control box back as you did before.
6. Remove the cleaning solution from the kettle using one of these methods:

    a. If you have an optional Filter-Flo Siphon, remove its filter assembly. Then use the Filter-Flo to siphon the cleaning solution into metal buckets. When the cleaning solution has stopped draining, carefully carry the buckets to the sink and slowly pour the solution out.

    b. Lift the kettle out of the fryer case, carefully carry it to the sink, and slowly pour the cleaning solution out.

c. Using a small saucepan or metal pitcher, scoop as much cleaning solution as possible into large metal buckets. Then lift the kettle out of the fryer case and carefully pour the rest of the cleaning solution into a metal bucket. Carry the buckets to the sink and slowly pour the solution out.

WARNING

Do not use plastic buckets. If the cleaning solution is not cool enough, the buckets will melt, possibly causing you to be burned and solution to get on the floor.

WARNING

Do not allow cleaning solution to overflow the buckets. Solution will get on the floor, and if the solution is not cool enough, you may be burned.

WARNING

Thoroughly clean and dry the floor if solution spills. Liquid on the floor can cause serious injury or fatality.

7. Lift the kettle out of the fryer case, if you have not done so already.
8. Rinse the kettle thoroughly and dry the outside.
9. Install the kettle, tilt the control box assembly down, and install the conveyor assembly as before.

Rinsing

1. Pour clean water into the kettle, up to the normal level of the shortening.
2. Connect the machine to the power source. Heat the water to 200°F (93°C).
3. Run the conveyor for 5-10 minutes.
4. Turn off the heater and disconnect the machine from the power source. Allow the water to cool to 100°F (38°C).
5. Lift the conveyor assembly out of the fryer case. Tilt control box assembly back.
6. Remove the water from the kettle using one of these methods:
   a. If you have an optional Filter-Flo Siphon, remove its filter assembly. Then use the Filter-Flo to siphon the water into metal buckets. When the water has stopped draining, carefully carry the buckets to the sink and slowly pour the water out.
   b. Lift the kettle out of the fryer case, carefully carry it to the sink, and slowly pour the water out.
   c. Using a small saucepan or metal pitcher, scoop as much water as possible into large metal buckets. Then lift the kettle out of the fryer case and carefully pour the rest of the water into a metal bucket. Carry the buckets to the sink and slowly pour the water out.
7. Lift the kettle out of the fryer case, if you have not done so already.

CLEANING

WARNING

Do not use plastic buckets. If the water is not cool enough, the buckets will melt, possibly causing you to be burned and water to get on the floor.

WARNING

Do not allow the water to overflow the buckets. Water will get on the floor, and if it is not cool enough, you may be burned.

WARNING

Thoroughly clean and dry the floor if water spills. Water on the floor can cause serious injury or fatality.

Drying

1. Thoroughly dry all parts, including the conveyor, the heating element(s), the inside of the kettle, and the drain.
2. Assemble the Donut Robot® as before.
3. Ensure no water is in the drain or the drain tube.

WARNING

All parts must be dried thoroughly. Failure to dry the kettle, conveyor, and all parts of the Donut Robot® completely will cause spattering or an eruption. Shortening will spatter or overflow the fryer and may result in fire, injury, or fatality.

WARNING

To avoid being burned, electrocuted, or otherwise injured, always unplug the machine and allow it to cool before making adjustments, clearing obstructions, lubricating, cleaning, or disassembling.

Taking Care of the Plunger, Hopper, and Cylinder

The plunger, hopper, and cylinder of your Donut Robot® are precision equipment. With proper care, they will perform well for years. Follow these guidelines:

- Clean these parts only in the manner explained in this manual.
- Handle these parts with care. Avoid dropping them on hard surfaces.
- Do not force the machine if it becomes jammed. To avoid damaging the plunger, disassemble the machine and remove any obstructions.

Lubrication

Daily

Before using the machine each day, apply several drops of food grade mineral oil to the plunger connecting rod. The oil should penetrate the ball lock and the spring socket. See Figure 17.

Figure 17 Lubricating connecting rod

Weekly

Apply a few drops of SAE 30 machine oil to the swing column where it contacts the swing column bracket. See Figure 18.

Figure 18 Lubricating the swing column

MAINTENANCE

Checking the Thermostat

If the quality of your product decreases, check the accuracy of the thermostat. Heat some shortening in the fryer, measure the temperature of the shortening using a thermometer you know to be accurate, and compare this reading to the thermostat setting. It is important that you put the thermometer in the top 1" (2.5 cm) or so of shortening, because this is where the donuts fry, and this is where the temperature should be consistent.

If you need to calibrate the thermostat, want to test the continuity of the thermostat or any of the switches on your Donut Robot®, consult the "Electrical Components" section of this manual.

TROUBLESHOOTING

The following section is designed as an aid in troubleshooting to help you identify and solve some basic problems. It does not cover every possible problem that might arise, and is not a substitute for a qualified technician. Follow all warnings to ensure your safety.

If you have a problem with your Donut Robot® that you cannot solve, call your dealer or another qualified technician.

If your dealer cannot help you, please call Belshaw.

When you call, please specify the following:

- The model name of the machine.
- The serial number of the machine.
- The voltage, phase, and frequency of the machine.

WARNING

If you perform repairs yourself or have them performed by anyone other than a service technician authorized by Belshaw, you do so at your own risk.

WARNING

To avoid getting burned, electrocuted, or otherwise injured, unplug the machine from the power source before disassembling, repairing or wiring.

TROUBLESHOOTING

WARNING
To avoid being burned, turn off the machine and allow the shortening to cool.

WARNING
To avoid injury, turn off the machine and remove the hopper.

The donuts ball or blister	
Possible Causes	**What To Do**
The dough is too cold.	See "Donut Making Tips" section.
The shortening is too hot.	Decrease the temperature setting.
The dough is overmixed.	Review the mixing procedure.
The donuts are too large.	Adjust the dial on the depositor to produce smaller donuts.
The shortening is old or contaminated.	Replace the bad shortening with fresh.

The donuts are shaped imperfectly	
Possible Causes	**What To Do**
The shortening level is too low.	Add shortening to reach the proper level.
The drop plate is out of position.	Reposition the drop plate.
The tip of the cylinder is dirty.	Clean the cylinder.
The tip of the cylinder is nicked.	Replace the hopper.
The size-selection dial is not tightened.	Tighten the thumb nut.
The dough is overmixed.	Review the mixing procedure.

TROUBLESHOOTING

The donuts are undercooked	
Possible Causes	**What To Do**
The shortening is not hot enough.	Increase the temperature setting.
The conveyor is moving too quickly.	Decrease the speed of the conveyor.
The dough is too cold.	See "Donut Making Tips" section.
The dough has not had enough floor time.	See "Donut Making Tips" section.
The thermostat reads inaccurately.	Calibrate the thermostat.

The donuts are overcooked	
Possible Causes	**What To Do**
The shortening is too hot.	Decrease the temperature setting. The temperature setting should never exceed 375°F (191°C).
The conveyor is moving too slowly.	Increase the speed of the conveyor.
The thermostat reads inaccurately.	Calibrate the thermostat.

The cutter swing column chatters	
Possible Causes	**What To Do**
The nylon thrust washer is missing.	Install the nylon thrust washer between the swing column bracket and the set collar.
There is not enough lubrication between the swing column and the swing column mounting bracket.	Lubricate the upper and lower legs of the bracket with SAE 30 machine oil.

TROUBLESHOOTING

The conveyor bites the donuts	
Possible Causes	**What To Do**
The donuts are not cooking enough.	See "the donuts are undercooked" section on the previous page.
The shortening level is too low.	Add shortening to reach the proper level.
The turner is bent or packed with cooked food particles.	Straighten and/or clean the turner.
The cam weight is sticking due to accumulation of varnish.	Clean to remove the cooked-on varnish.
The fryer is not level.	Level the fryer.

The cutter operates continuously	
Possible Causes	**What To Do**
One of the microswitches is defective.	There are three microswitches in the conveyor drive assembly and one in the cutter head. Test and replace any defective microswitches.
Something is interfering with the nylon brake dog in the depositor.	Clear away the cause of the interference.
The brake spring in the cutter head is weak or broken.	Replace the spring.

TROUBLESHOOTING

The donuts drop at the wrong time	
Possible Causes	**What To Do**
The hopper swing is adjusted incorrectly.	Adjust the hopper swing. See "Adjusting the Hopper" in the Installation section.

The heating element fails to maintain the proper temperature	
Possible Causes	**What To Do**
The input voltage is incorrect.	Supply the correct power as specified on the data plate.
Sediment has accumulated around the thermostat bulb.	Clean to remove the sediment. Clean the Donut Robot® regularly and thoroughly.
The thermostat has been calibrated incorrectly.	Recalibrate the thermostat.
The thermostat is defective.	Replace the thermostat.

The motor overheats	
Possible Causes	**What To Do**
The power requirements of the machine do not match the power source.	Supply the correct power as specified on the data plate.
The motor is binding.	Repair or replate the motor.
The motor is defective.	Repair or replace the motor.

TROUBLESHOOTING

The conveyor is jammed	
Possible Causes	**What To Do**
Food particles are wedged between a chain opening and sprocket tooth.	Clean to remove the particles. Clean the Donut Robot® regularly and thoroughly.
The turner slot is packed with cooked food particles.	Clean to remove the particles.
The drop plate is out of position and is interfering with the conveyor.	Reposition the drop plate.
Something is interfering with the free movement of turner cam and cam weight.	Remove the obstruction.
The heating element is bent and is interfering with the turner.	Straighten the heating element.
The turner is out of position and is catching on a flight bar below.	Lift and move the outfeed end of the conveyor to disengage the conveyor coupling from the conveyor drive shaft. Turn the conveyor back 2-3 pockets. The turner will return to the correct position.
The conveyor drive shaft and the drive motor shaft are out of alignment.	Remove the cover of the drive assembly. Loosen the four mounting spacers so the drive assembly can be moved. Align the motor shaft with the conveyor shaft. When they are aligned, tighten the mounting spacers. Replace the cover.

WARNING

To avoid getting burned, electrocuted, or otherwise injured, unplug the machine from the power source before disassembling, repairing or wiring.

TROUBLESHOOTING

The cutter cuts double when you have selected one cut per pocket	
Possible Causes	**What To Do**
The nylon brake dog is binding on the depositor brake motor.	Loosen the brake dog. If the spring is missing or weak, replace it. If the brake dog is worn, replace it.
An internal wire is interfering with the nylon brake dog.	Move the wire.
The arm on the cutter head microswitch is bent.	Bend the arm back into position or replace the microswitch.
The wires on the microswitch are reversed.	Make the correct connections.

The cutter will not operate, but the conveyor runs	
Possible Causes	**What To Do**
The cutter head power cord is not plugged in to the outlet on the back of the control box.	Connect the cutter head power cord to the correct outlet.
Set screws in cutter head cam are loose.	Tighten the set screws.
The cutter head power cord is broken.	Replace the cutter head power cord.
The cutter motor is defective.	Replace the cutter motor.
One of the microswitches is defective.	There are three microswitches in the conveyor drive assembly and one in the depositor. Test and replace any defective microswitches.
The cutter head power switch is defective.	Replace the cutter head power switch.
The circuit breaker on the back of the heater head is defective.	Replace the circuit breaker.

TROUBLESHOOTING

The cutter will not operate, but the conveyor runs (continued)	
Possible Causes	**What To Do**
The cutter head assembly's wiring harness is not connected.	Check the connection between the pin housing in the conveyor drive assembly and the socket housing in the heater head. Ensure the pins are securely seated in the pin housing.
The cuts-per-pocket switch is defective.	Replace the cuts-per-pocket switch.

The pilot will not ignite, and the conveyor will not run	
Possible Causes	**What To Do**
The power cord is not plugged in, or the outlet has no power.	Connect the machine to a good power source.
The gas is not turned on or the connection to gas source is loose.	Turn on gas and reconnect to gas source.
The power cord is defective.	Replace the power cord.
The ignite sensor is dirty or broken.	Clean sensor and tighten if necessary or replace sensor if broken.
The system safety lockouts.	Follow these steps: 1. Close the first main valve. 2. Close the first main pilot valve gas control. 3. Set fryer thermostat to below 200°F (93°C). 4. Move the on/off switch to OFF. 5. Wait at least five minutes before trying to light the pilot again.

WARNING
Failure to wait at least five minutes for gas to dissipate could result in a fire or explosion when the pilot is lit again.

TROUBLESHOOTING

WARNING

To avoid being burned, electrocuted, or otherwise injured, turn off the machine, allow shortening to cool, and disconnect the machine from the power source.

The pilot will not ignite, but the conveyor runs	
Possible Causes	**What To Do**
The gas is not turned on or the connection to gas source is loose.	Turn on gas and reconnect to gas source. Leak test the connection.
The high temperature limit control switch has been tripped.	Push the red reset button on the back of the control box.
The thermostat has been calibrated incorrectly.	Recalibrate the thermostat.
The high temperature limit control is defective.	Replace the high temperature limit control.
The thermostat is defective.	Replace the thermostat.

The gas system heats, but the conveyor will not run	
Possible Causes	**What To Do**
The input voltage is incorrect.	Supply correct power as specified on data plate.
There is a short circuit.	Find it and repair it.
The wiring harness in the conveyor drive assembly is not connected.	Check the connection of the pin connector from the conveyor drive assembly to the socket connector in the heater head enclosure. Make sure the pins in the pin housing are securely seated in the housing.

TROUBLESHOOTING

The gas system heats, but the conveyor will not run (continued)	
Possible Causes	**What To Do**
The conveyor drive power switch is defective.	Replace the switch.
The nylon brake dog is binding on the conveyor brake motor.	If the brake dog is worn, replace it. If it is too tight, loosen it. If the spring is weak or missing, replace it.
The brake motor is defective.	Replace the brake motor.
An internal wire is interfering with the nylon brake dog.	Move the wire.
A fan blade is caught on a wire.	Move the wire.
The conveyor is jammed.	Clear the obstruction.
The couplings are not engaged.	Engage the couplings.
The conveyor drive coupling is slipping.	Tighten the two set screws.

TROUBLESHOOTING

FT-42 Feed Table

The following is a troubleshooting chart to help identify and solve problems with the FT-42 Feed Table.

WARNING

To avoid getting burned, electrocuted, or otherwise injured, unplug machine and allow it to cool before disassembling, repairing or wiring.

The conveyor chains do not advance when main power is on or when the prime switch is pressed, and the pilot light does not come on	
Possible Causes	**What To Do**
The power cord is not connected.	Plug in the power cord.
The circuit breaker for the gear box outlet on the Donut Robot®'s heater head is tripped.	Push the white reset button near the outlet.
The black or white wire in the power cord is broken or poorly connected.	Repair the cord and/or make the proper connection. Replace if broken.
The fuse on the Feed Table is blown.	Replace the fuse.
The fuse for the Donut Robot®'s conveyor is blown.	Replace the fuse.

The conveyor chains do not advance when the main power is on, but they do advance when the prime switch is pressed	
Possible Causes	**What To Do**
The red wire in the power cord is broken or poorly connected.	Repair the cord and/or make the proper connection. Replace if broken.
The microswitch in the power head is defective.	Replace the microswitch.
The microswitch in the Donut Robot®'s signal circuit is defective.	Replace the microswitch.

TROUBLESHOOTING

The conveyor chains do not advance at all, do not advance far enough, or do not advance the same distance during each cycle, but the pilot light does come on	
Possible Causes	**What To Do**
The cam in the power head is loose.	Tighten the cam set screw.

The conveyor chains advance continuously when main power is on	
Possible Causes	**What To Do**
The brake is defective.	Repair or replace the brake.
The cam in the power head is loose.	Tighten the cam set screw.
The microswitch in the power head is defective.	Replace the microswitch.
The microswitch for the Donut Robot®'s signal circuit is defective.	Replace the microswitch.

Two rows of donuts are advanced during each cycle	
Possible Causes	**What To Do**
The brake is defective.	Repair or replace the brake.
The cam in the power head is loose.	Tighten the cam set screw.

DONUT MAKING TIPS

Tips on Making Quality Cake Donuts

1. **Use the correct batter temperature.**

   In general, the correct batter temperature is 75-80°F (24-27°C). Check the mix manufacturer's instructions, as the recommended ranges may vary.

   If the batter is too warm, the donuts will lack volume and may "ring out" or be misshapen. If the batter is too cold, the donuts will stay under the shortening too long, fry too slowly, and crack open or ball up. They may also absorb excess shortening and lose volume.

2. **Use the correct floor time.**

   A floor time of 10 minutes between mixing and cutting allows the baking powder to react with the water. This helps the donuts attain the proper volume for the proper level of shortening penetration.

   If the floor time exceeds 30 minutes, the mix will gas off, the donuts will lose volume and shape, and will absorb too much shortening.

3. **Use the correct frying temperature.**

   The correct shortening temperature for frying is 370-380°F (188-193°C).

   If the shortening is too hot, the donuts will fry too quickly on the outside and will lose volume. The donuts may also become dense inside.

   If the shortening is too cold, the donuts will spread too rapidly, form large rings, tend to crack open, be too light in appearance, and absorb too much shortening.

4. **Maintain the proper shortening level.**

   We recommend a distance of 1¼" between the cutter and the shortening.

   If the shortening is too deep, the donuts may not turn over when they reach the turner, causing them to cook unevenly.

   If the shortening is too shallow (too far below the cutter), the donuts may not drop flat, turn over while submerging and surfacing, and become irregular, cracked, or rough-crusted.

5. **Ensure that the donuts absorb the right amount of shortening.**

   Donuts should absorb 1½ to 3 oz (42 to 85 g) of shortening per dozen, depending on their weight. You can achieve proper absorption by following tips 1-3.

   If the donuts do not absorb enough shortening, they will not keep well.

   If they absorb too much shortening, they will lose volume and may become misshapen. If this happens, mix the batter a little longer than usual, turn the donuts as soon as they become golden brown, and turn the donuts only once.

DONUT MAKING TIPS

Calculating Correct Water Temperature

The following is an example of how to calculate the correct water temperature. You must use your actual room temperature, dry mix temperature, desired batter temperature, and, if you are making yeast-raised donuts, estimated temperature increase during mixing.

	Cake Donuts		Yeast-Raised Donuts	
	°F	**°C**	**°F**	**°C**
Room temperature	72	22.2	72	22.2
Dry mix temperature	+70	+21.1	+70	+21.1
Total **A**	142	43.3	142	43.3
Desired batter temperature	75	23.9	80	26.7
	x 3	x 3	x 3	x 3
Total **B**	225	71.7	240	80.1
Total **B**	225	71.7	240	80.1
– Total **A**	- 142	- 43.3	- 142	- 43.3
Desired water temperature for cake donuts	**83°F**	**28.4°C**	98	36.8
			↓	↓
Figure from above			98	36.8
Temperature increase during mixing (average: 30°F/17°C)			- 30	-17
Desired water temperature for yeast-raised donuts			**68°F**	**19.8°C**

DONUT MAKING TIPS

Ratios of Plunger Sizes to Donut Weights

The weights given are for donuts without icing or other toppings. They are provided for reference only, as weights vary according to the density of the batter.

Plunger Size	Donut Weight per Dozen
1"	5-8 oz / 142-227 g
1 5/8"	14-17 oz / 397-482 g
1 3/4"	16-20 oz / 454-567 g
1 7/8"	19-24 oz / 539-680 g
2"	22-27 oz / 624-765 g

Temperature Conversion

To convert temperatures from Fahrenheit to Celsius, subtract 32 from °F and divide the result by 1.8. For example, 212°F - 32/1.8 = 100°C.

To convert temperatures from Celsius to Fahrenheit, multiply °C by 1.8 and add 32 to the result. For example, (100°C x 1.8) + 32 = 212°F.

°F	°C	°F	°C
55	12.8	340	171.1
60	15.6	345	173.9
65	18.3	350	176.7
70	21.2	355	179.4
75	23.9	360	182.2
80	26.7	365	185.0
325	162.8	370	187.8
330	165.6	375	190.6
335	168.3	380	193.3

ACCESSORIES

This section contains information about accessories that can be used with your Donut Robot®.

- Feed Table
- Roto Cooler
- Filter-Flo Siphon
- Shortening Reserve Tank

FT-42 Feed Table

The FT-42 Feed Table is designed to supply proofed yeast-raised donuts to the Donut Robot®. It produces less than 70 dB(A) of equivalent A-weighted sound pressure at work stations. This has been determined while running the machine, using a Bruel & Kjaer sound level meter, type 2236. The Feed Table is meant to be used on a flat, stationary table or countertop, positioned end-to-end with the Donut Robot®. The operator is expected to read and follow these instructions.

Figure 19
FT-42 Feed Table with Feed Table Cloth

SPECIFICATIONS				
Dimensions	**Shipping Weight**	**Electrical Data**	**Construction**	**Standard Equipment**
L = 52" (132 cm) W = 19" (48 cm) H = 11¾ (30 cm)	73 lb (33.1 kg)	115 V 1 Phase 50 or 60 Hz	Stainless steel, nickel-plated mild steel, and aluminum alloys.	Complete conveyor assembly, including drive system and controls. Does not include proofing cloths or proofing boards.

Installation

1. Unplug the depositor power cord of your Donut Robot®.
2. Release the plunger from the depositor.
3. Unscrew and lift off hopper assembly.
4. Lift off the depositor and swing column.
5. Lift the outfeed end of the Feed Table and set the brace under the trip shelf over the edge of the kettle.
6. Plug the Feed Table power cord into the outlet on the end of the heater head.
7. Set the Donut Robot® to cut one cut per pocket.

WARNING

To avoid injury, ensure that the Feed Table is turned off before proceeding.

Operation

1. Test to make sure that the automatic timing for the Feed Table is working. Follow these steps:
   a. Turn on the Donut Robot®'s conveyor drive.
   b. Turn on the Feed Table's conveyor drive.

      The Feed Table should receive a signal from the Donut Robot®, move forward the distance needed to supply one pocket of donuts, and stop until it receives the next signal.
2. Proof your donuts on the proofing cloths from the Feed Table.
3. Put a proofing tray, with a proofing cloth on it, on the Feed Table.
4. Press the prime switch on the power head assembly. The hooks on the Feed Table will grab the proofing cloth off of the proofing board. Allow the cloth to advance to the front of the Feed Table.
5. Release the prime switch and turn on the main power. Remove the proofing board.

   When the Feed Table is on, the Feed Table automatically advances donuts when the Donut Robot® is ready to accept them. After the donuts go into the fryer, the proofing cloths are carried underneath the Feed Table and fall onto the work surface.
6. Continue putting proofing cloths on the Feed Table.

WARNING

To avoid damage, never use force to assemble or operate the Feed Table.

Maintenance and Cleaning

After each use, use a soft, damp cloth for cleaning.

WARNING

To avoid electrocuting yourself or damaging the machine, never allow any liquid to enter the power head.

If you ever need to adjust the tension of the conveyor chains, follow these steps:

1. Loosen the hex head bolts that hold the roller shaft at the outfeed end of the conveyor.
2. Pull the shaft until the chains reach the correct tension. The tension is correct when you can lift the chains about 1" (2.5 cm) above the surface of the Feed Table. Each chain should have the same tension.
3. Tighten the hex head bolts that hold the roller shaft.

ACCESSORIES

Roto Cooler

Figure 20
Roto Cooler

SPECIFICATIONS				
Dimensions	**Shipping Weight**	**Electrical Data**	**Construction**	**Standard Equipment**
Dia.=24" (61 cm) H=6-5/8" (17 cm)	16 lb (7.3 kg)	120 V 1 Phase 50 Hz	Basket: high-density polyethylene. Base: spun, polished, heavy-gauge aluminum.	Basket and turntable base with power cord and motor.

The Roto Cooler is designed to catch and cool donuts as they drop from the outfeed end of the Donut Robot®.

The Roto Cooler produces less than 70 dB(A) of equivalent A-weighted sound pressure at work stations. This has been determined while running the machine, using a Bruel & Kjaer sound level meter, type 2236.

The Roto Cooler is meant to be used on a flat, stationary table or countertop. The operator must read and follow these instructions.

To use the Roto Cooler:

1. Place the Roto Cooler near the outfeed end of the Donut Robot® so donuts will fall into it.
2. Connect the Roto Cooler power cord to the 120 V outlet on back of the Donut Robot®'s heater head.
3. Turn on the Roto Cooler. It will rotate and receive donuts. Remove cooled donuts from the Roto Cooler as needed.
4. When you are finished using the Roto Cooler, turn it off and unplug it.
5. Clean the Roto Cooler using soap and water and a non-abrasive cloth or scrubber.

WARNING

To avoid electrocuting yourself or damaging the machine, never submerge the base of the Roto Cooler.

Filter-Flo Siphon

The Filter-Flo Siphon is designed to drain and filter shortening from the kettle of the Donut Robot®. The operator is expected to read and follow these instructions.

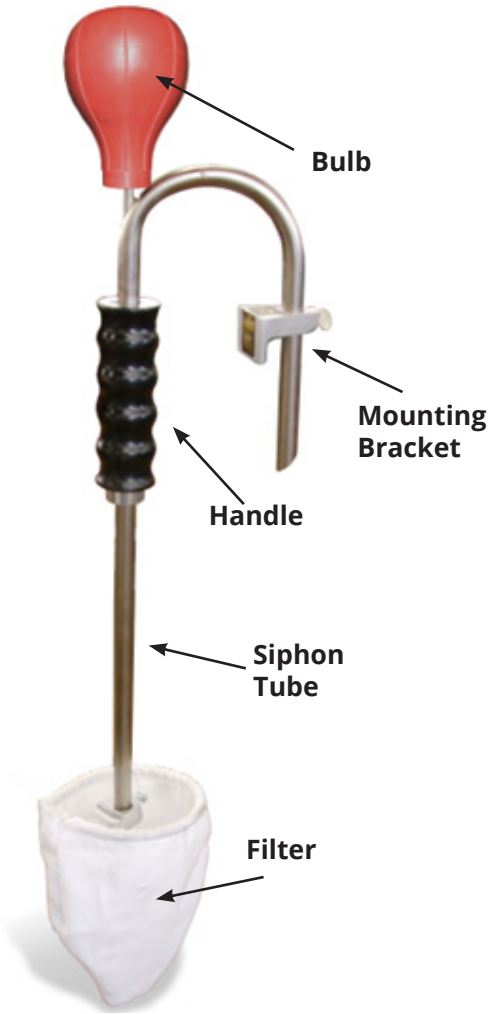


Figure 21
Filter-Flo Siphon

Installation

1. Let the shortening cool to 100°F (38°C).

WARNING

Hot shortening can cause serious burns. Never touch hot shortening. Never wear shorts while using the Filter-Flo Siphon.

2. Place the mounting bracket, with the siphon tube in it, on the lip of the kettle. You may place it on the infeed end of the kettle or on the front side. If you place it on the front side, you must disconnect the swing connecting rod from the throw arm and move it out of the way.
3. Position the opening of the siphon tube near the bottom of the kettle.
4. Tighten the thumb screw in the mounting bracket.
5. Attach the filter assembly to the lower part of the siphon tube, as shown in Figure 21. To do this:
   a. Slide the opening in the filter mounting bracket around the siphon tube.
   b. Adjust the filter mounting bracket vertically to ensure that the filter does not touch the valve assembly.
   c. Tighten the screw that holds the filter mounting bracket to the siphon tube.
   d. Tighten the screw that holds the filter retaining ring to the filter mounting bracket.

ACCESSORIES

WARNING

Ensure that both screws in the filter assembly are tight. If they are not, the filter assembly might slide off the siphon tube during operation, causing shortening to splatter.

6. Place a five-gallon metal container under the filter.

WARNING

Do not use a plastic container. Hot shortening could melt the container.

Operation

1. Compress the bulb quickly and release it quickly. Do this only once. Shortening should flow into the container.

WARNING

Do not compress the bulb more than once. Doing so could allow hot shortening to get into the bulb, damaging your equipment.

2. Watch the container as the shortening flows into it. If the shortening rises to within 2" (5 cm) of the top of the container, do the following:
   a. Hold the siphon by the handle with one hand. With the other, loosen the thumb screw that holds the siphon assembly to the mounting bracket on the lip of the kettle.
   b. Slowly lift the siphon assembly so its opening is above the shortening. Do not remove it from the mounting bracket.
   c. Tighten the thumb screw.
   d. When the shortening stops flowing and the valve closes, move the container out from under the filter.
   e. Place another five-gallon metal container under the filter.
   f. With one hand, hold the siphon by the handle. With the other hand, loosen the thumb screw that holds the siphon assembly to the mounting bracket on the lip of the kettle.
   g. Slowly lower the siphon assembly so its opening is near the bottom of the kettle.
   h. Tighten the thumb screw.
   i. Restart the siphon, as explained in step 1.
   j. Continue watching the container and repeat the procedure as needed.

WARNING

If shortening overflows the container, it could burn you and get on the floor. Shortening on the floor can cause slips, falls, injury, or fatality. If shortening spills, clean and dry the floor immediately.

3. When the shortening stops flowing, tilt up the side of the kettle opposite the siphon. Place a wedge under the side of the kettle to hold it up. The remaining shortening will now flow toward the siphon.

4. Set aside the container of shortening.
5. Remove the filter assembly.
6. Place a different container under the valve assembly and start the siphon again. Drain the remaining shortening and discard it; it will be full of sediment.

Cleaning

1. Remove the siphon from the Donut Robot®.
2. Squeeze the bulb several times to expel shortening from the siphon.
3. Wipe the siphon clean and hang it with the bulb side up so any remaining shortening will drain. Place a pan under the siphon to collect the shortening.
4. Rinse the filter bag and hang it to dry. You may launder it as needed.

WARNING

After washing, be sure the Filter-Flo Siphon is completely dry before using it again. Moisture will cause hot shortening to spatter, which may cause serious injury.

SPECIFICATIONS

Dimensions	Shipping Weight	Construction	Standard Equipment
H = 16" (41 cm) Dia. = 6¼" (16 cm)	3 lb (1.4 kg)	Siphon tube and valve: nickel-plated steel. Handle: wood. Filter ring: powder-coated. Filters: flannel. Mounting brackets: aluminum alloy.	Siphon assembly including valve, filter, filter ring, and clamp.

ACCESSORIES

Shortening Reserve Tank

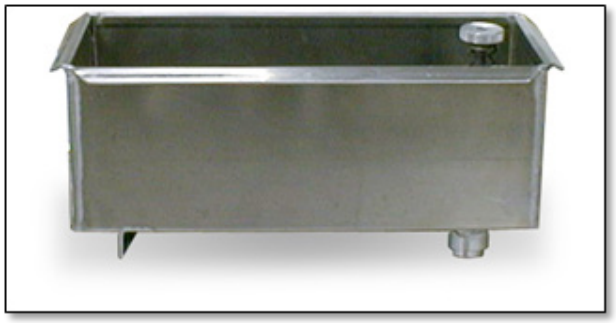


Figure 22
Shortening Reserve Tank

SPECIFICATIONS				
Dimensions	**Shipping Weight**	**Capacity**	**Construction**	**Standard Equipment**
L=11" (28 cm) W=5-1/2" (14 cm) D=4" (10 cm)	4 lb (2 kg)	4 lb (2 kg) shortening	Nickel-plated steel tank and non-corrosive self-closing valve.	Shortening reserve tank and valve assembly.

The Shortening Reserve Tank is designed to supply melted shortening to the kettle of the Donut Robot®. The operator is expected to read and follow these instructions.

To use the Shortening Reserve Tank:

1. Position the Shortening Reserve Tank on the conveyor side panels. Make sure that you do not position it above the donut turner.

WARNING

Be careful if you put hot shortening into the tank, it can cause serious burns.

2. Put shortening in the tank.
3. Turn on the Donut Robot®. The heat of the fryer will melt the shortening in the tank.
4. To supply shortening to the fryer, open the valve by pushing down on the valve assembly.
5. When you are done making donuts, drain the remaining shortening into the fryer.
6. When the shortening and equipment have cooled completely, remove the Shortening Reserve Tank and wash it.

ELECTRICAL COMPONENTS

This section explains how to check and adjust the thermostat on a Donut Robot® fryer. Do this if the temperature on the Temperature Control dial does not match the temperature reading taken by a reliable thermometer or temperature probe.

Adjusting the Thermostat "Temperature Control"

1. This procedure requires about 15 minutes if the fryer is hot. Do not perform this test while making donuts.
2. Have a reliable thermometer or temperature probe ready that reads up to 400°F (200°C).
3. If the shortening is liquid, turn on the fryer conveyor. This will circulate the heat evenly around the fryer.
4. Set the Temperature Control dial to 375°F (190°C). Allow the fryer to reach operating temperature. When the fryer reaches this point, the red light above the Temperature Control should go OFF.
5. Turn off the fryer conveyor.
6. Use thick heat resistant gloves as a precaution when performing the next step. The shortening is HOT. NEVER put your hand, fingers or other body parts under the shortening.

WARNING

Never touch shortening when it is hot, even with gloves on. It can cause serious burns. Avoid touching the surrounding metal parts.

7. Carefully insert the tip of your thermometer or temperature probe approximately 1" (25mm) below the surface, close to the middle of the fryer. DO NOT touch the shortening with your hand or fingers, even with gloves on.
8. Wait for the light above the Temperature Control to change from OFF to ON. Then, check the temperature on your thermometer or probe. If the thermostat is working properly, this temperature will show 370-375°F (188-190°C).
9. If the temperature does not show 370-375°F (188-190°C), an adjustment is needed as follows.
10. Turn off the power to the Donut Robot® by disconnecting the plug or by turning the breaker switch at the back of the fryer to the OFF position.

WARNING

To avoid the possibility of electric shock, disconnect or turn off the power source before adjusting the thermostat.

11. Carefully lift up the Temperature Control dial with your fingers or other implement until it comes off.
12. Loosen the screws that hold the thermostat in place under the dial. (See Figure 23). You should not loosen the screws all the way, or the thermostat might fall out.
13. If the temperature in step 8 was MORE than 375° (190°C), rotate the thermostat CLOCKWISE.

ELECTRICAL COMPONENTS

Figure 23

14. If the number you recorded in step 8 was LESS than 375° (190°C), rotate the thermostat COUNTERCLOCKWISE.
15. Tighten both screws again and replace the Temperature Control dial.
16. Connect power to the Donut Robot® and retest by repeating the process starting from Step 3.
17. If you are unable to rotate the thermostat far enough to make the light come on between 370-375°F (188-190°C), you should first check your thermometer. Get a 2nd thermometer and compare them
18. If necessary, go back to step 3 using the most accurate thermometer.
19. If you are still unable to rotate the thermostat far enough to make the light come on between 370-375°F (188-190°C), have a qualified technician check your fryer and, if necessary, replace the thermostat. The part number is listed on the wiring diagram in this manual.

PARTS AND ELECTRICAL DIAGRAMS

Fryer models are identified by an item number. You need your fryer's item number to find the correct parts diagrams for your fryer. The item number is located on a data tag attached to the back of the electrical panel, or inside the right side door.

Mark the item number for your fryer below.

☑	ITEM NUMBER	MODEL	VOLTS	HERTZ	PHASE
☐	**22501**	Mark II Gas	110-120V	50/60 HZ	1
☐	**22503**	Mark II GP Gas	110-120V	50/60 HZ	1
☐	**22592**	Mark II Gas	110-120V	50/60 HZ	1

Please check drawings and update if necessary.
Current drawings saved in (\\belshawfile) (M:)
> New Materials > New Manual Design > Mark II Gas > Drawings

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