We invented the popcorn machine
THEN JUST KEPT GOING!

176 MITTEL DRIVE, WOOD DALE, IL 60191

DIGITAL GIANT POPCORN MACHINE SERVICE MANUAL

120/208 Volt,
Single and Three Phase, 60 Hz

120/240 Volt,
Single and Three Phase, 60 Hz

230 Volt,
Single Phase, 50/60 Hz

400 Volt,
Three Phase, 50 Hz.

100/200 Volt
Single Phase, 50/60 Hz

Included in this manual:
***One Pop Option**
***Salt/Sugar Option**

READ and **UNDERSTAND** these operating and safety instructions before operating this popcorn machine!

TABLE OF CONTENTS

I. SAFETY ALERT SYMBOL

The symbol shown below is used to call your attention to instructions concerning your personal safety and the safety of others. Watch for this symbol. It points out important safety precautions and procedures. It means **"ATTENTION! Become Alert! Your personal safety is involved!"** Read the message that follows and be alert to the risk of personal injury or death.

II. SAFETY FIRST

The information in this manual is essential for the safe installation and service of your Cretors popcorn machine. The manual must be read and understood before installing, or maintaining equipment, or equivalent training must be provided.

"The employer must instruct each employee in the recognition and avoidance of unsafe conditions, regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury". Ref.: 29 CFR 1926.20 (b)(4)(a)(2)

It is understood that safety rules within individual companies vary. If a conflict exists between the safety procedures contained in this manual and the rules of a using company, the more stringent rule should take precedence.

III. INTRODUCTION

This manual is filled with time-saving and money-saving information regarding your Cretors popcorn machine. There is nothing, however, more important than the safety aids and warnings that are found throughout this document. The Safety Alert Symbol is used to identify topics of primary safety concern wherever they appear. A separate section has been included which deals exclusively with operation and accident prevention.

If, after reviewing this manual, anything is unclear or technical problems are encountered, contact the distributor from whom you purchased your machine. For assistance and if there are any additional questions, feel free to contact our Customer Service Department at the address and/or phone number listed on the last page of this manual. Always have the model and serial number of your machine available to assist in obtaining the correct information.

IV. SPECIFICATIONS

Giant Models: G20EP, G32EP, G48EP, G60EP

A. Electrical Specifications:

Giant Models are available in the following electrical configurations:

100/200 Volt, Single Phase, 60 Hz
120/208 Volt, 120/240 Volt, Single and Three Phase, 60 Hz
230 Volt, 230/380 Volts, Single and Three Phase, 50/60 Hz

B. Size Specifications:

MODEL G20EP	GIANT 20 OZ. ELECTRIC WITH PUMP
Capacity:	20 oz. All-Steel Kettle, 400 one-ounce servings per hour.
Wattage:	3800 watts
Dimensions:	10-5/8″D x 10-1/2"W x 27-1/2" H - - - - 27 cm D x 26 cm W x 70 cm H
Net Weight:	63 lbs. (28.6 kg)
	Available in Stainless Steel

MODEL G32EP	GIANT 32 OZ. ELECTRIC WITH PUMP
Capacity:	32 oz. All-Steel Kettle, 640 one-ounce servings per hour
Wattage:	5200 watts
Dimensions:	10-5/8"D x 10-1/2"W x 31-3/4" H - - - - 27 cm D x 26 cm W x 81 cm H
Net Weight:	74 lbs. (33.6 kg)
	Available in Stainless Steel

MODEL G48EP	GIANT 48 OZ. ELECTRIC WITH PUMP
Capacity:	48 oz. All-Steel Kettle, 960 one-ounce servings per hour
Wattage:	6800 watts
Dimensions:	10-5/8"D x 10-1/2"W x 31-3/4"H - - - - 27 cm D x 26 cm W x 81 cm H
Net Weight:	74 lbs. (33.6 kg)
	Available in Stainless Steel

MODEL G60EP	GIANT 60 OZ. ELECTRIC WITH PUMP
Capacity:	60 oz. Stainless- Steel Kettle, 1200 one-ounce servings per hour.
Wattage:	6800 watts
Dimensions:	10-5/8″D x 10-1/2"W x 31-3/2" H - - - - 27 cm D x 26 cm W x 81 cm H
Net Weight:	74 lbs. (33.6 kg)

V. PURPOSE OF MANUAL

This instruction manual is intended to familiarize owners with the servicing and safety procedures associated with your Cretors popcorn machine.

This manual should be kept available to maintenance personnel.

VI. INSTALLATION INSTRUCTIONS

A. Location

Choose a location for your Cretors popcorn machine that maximizes the ease of operation and maintenance procedures. Giant pedestal popcorn machines are designed to be installed on the customers counter or custom design cabinet. OEM option machines are supplied with components that permit them to be installed into a user's cabinet and control the cornditioner, lights and exhaust in the cabinet (see details below). Be sure to check your local building and fire codes for location restrictions.

B. Power Supply

1. Check the nameplate to determine the required power supply.

Connect your popcorn popper only to the correct power source. Failure to do so may result in personal injury or death and may damage your popper.

2. C. Cretors and Company recommends dedicated circuits for the Giant model popcorn machine. The Giant model poppers require a dedicated circuit to avoid a voltage drop in the supply wiring. Check your local electrical codes regarding fuse or circuit breaker requirements.

Make certain your popcorn machine is properly grounded. Failure to do so may result in damage to your equipment or present a shock hazard.

C. Connecting Machine to Power Supply

1. Make certain that power supply circuit breakers are in the off position.

2. Locate the pedestal and bolt it down securely using the four bolt holes provided in the base of the pedestal.

3. Power should be connected through one of the four large holes in the base of the pedestal.

4. Giant is supplied with a power cord. Be sure to follow the wiring diagram that was provided with this machine.

D. OEM Option Pedestals

1. OEM OPTION machines are designed to supply power to the components normally associated with the popcorn machine. The primary features are a power cord with plug and a flexible armored cable to be connected to the user's cornditioner assembly (15 amps). In addition, a terminal strip inside the pedestal provides a connection point to a switch (15 amps) that will control a user's exhaust fan.

2. EXHAUST FAN CONTROL machines may be equipped with a time delay fan control. This control provides a timer controlled switch that will turn on a customers exhaust fan when the kettle heat is turned on. When the heat is turned off the fan will continue to run for the time set on the timer in the pedestal. This circuit only provides a switch, it does not supply any power.

All electrical connections outside the pedestal must be done in accordance with appropriate electrical codes and requirements.

E. Pump Installation & Timer Adjustment for Salt/Sugar Machines

Refer to the Service Manual included with the pump to be installed in the machine. When the Giant is equipped with the salt/sugar option, also see below for additional information.

1. For the Salt/Sugar machine the pump timers are located in the machine not in the pump. One timer is marked "Salt", the other "Sugar". The timers are located in the pedestal.

2. To adjust the pump time, use the following procedure:

   a. There are two adjustments on the timer. The small adjustment knob sets the maximum time the timer can run. Cretors will normally set this adjustment for 10s.

      10s = 0-10 seconds
      1m = 0-1 minute
      10m = 0-10 minutes

   b. The larger adjustment knob sets the actual run time (percentage of time allowed by the small adjustment knob). Example: If the maximum setting is set for 10s and the large knob is set at .9, the timer will run for 9 seconds. Adjust to taste for both timers.

VII. SERVICE INSTRUCTIONS

In the case of improper operation, only a qualified person should perform the following diagnostic checks, and, if necessary, corresponding adjustments and repairs. Many of the following procedures present an electrical shock hazard and can cause serious injury or death.

Perform work only on de-energized circuits. Failure to do so may lead to electrical shock resulting in personal injury or death.

A. Parts

When ordering parts, refer to the parts diagram and/or wiring diagram included in this manual. Always supply the serial number, model number, and voltage of your popcorn machine.

B. Kettle Temperature Control

1. TEMPERATURE CONTROL OPERATION

   a. The temperature control is installed as a safety device to prevent overheating of the kettle if the machine should be left unattended momentarily while in operation. The kettle indicator light indicates the operation of the temperature control. If equipped, the indicator light is located on the switch plate. The indicator light will turn off 10-20 seconds before the corn finishes popping and the kettle is dumped. If the indicator light turns off 30 seconds or more before the corn finishes popping, the temperature control is set too low and in need of adjustment. If the indicator light remains on after corn has finished popping the digital temperature control is set too high.

   b. Salt/Sugar Option: The indicator lights on the switchplate will reflect whether the Salt/Sugar switch is in the sugar mode or salt mode. When the Salt/Sugar switch is in the sugar mode, the digital temperature control alone controls the heat. When the switch is on the salt side the digital temperature control works the same way with one exception. When the digital temperature control opens, it activates a timer which allows the heat to stay on for extra time allowing the salted corn to pop.

   c. Digital Control does not have a thermostat but a thermocouple on the bottom of the pan.

   d. Cretors "CE" marked machines have been supplied with high limits for years to comply with the European Directives but these high limits are not resetting. Once they trip, they need to be replaced. This has not changed.

Beginning in May of 2006, Cretors and Company has started implementing auto-resetting high limits into kettles and repair kettles as well. Again, the end customer/user will not see any difference in the operation of their machine but there is now an added level of safety so that the kettle temperature will not be able to exceed a safe level, even if the normal operating thermostat or temperature controller is adjusted to an unsafe level. This high limit is preset and is NOT to be adjusted for any reason. New wiring diagrams will be sent out with the new kettle assemblies for reference.

2. DIGITAL TEMPERATURE CONTROL ADJUSTMENT

CAUTION: If the corn has dried out, it may not finish popping at normal temperatures, and the light may appear to go out early**.** DO NOT ADJUST KETTLE TEMPERAUTRE BASED ON POOR QUALITY CORN.

If set too high (over 500°F 260°C), the digital temperature control can cause a serious fire hazard.

CAUTION: If the machine is equipped with the Salt/Sugar option, the temperature control should **only** be adjusted when the switch is in the sugar mode. When in salt mode, refer to "Salt timer adjustment" section.

a. Press the "set" button.

b. Use the up or down arrow buttons to adjust the temperature up or down.

c. Press the "set" button again. (Note that for safety, this range is limited)

d. The display will show the temperature go up or down.

e. You should only raise or lower the temperature 5-10 ^{o}F at a time.

f. Set temperature so that the power to heat elements is cut off at the correct temperature.

KETTLE	SALTED CORN	SUGAR CORN
20-60 OZ.	400-410^{o} F. (204-210^{o} C)	375-385^{o} F. (190-193^{o} C)

3. CHECKING TEMPERATURE CONTROL

There are two ways of checking that the temperature control is set correctly.

a. Place the pyrometer over the thermocouple position and turn the kettle heat on. Watch to see that the kettle heat shuts off at the correct

temperature. Make adjustments as needed.

b. The temperature control may be adjusted by observing the operation of the indicator light as described in the "Temperature Control Operation" section. Adjust the temperature control so that the kettle heat is turned off 10 to 20 seconds before the corn finishes popping and the kettle is dumped.

Do not adjust the temperature so high that the pan smokes at the end of the popping cycle. If set too high (over 500°F or 260°C), the kettle can become a serious fire hazard.

c. Observe two or three cycles of correct operation to be certain everything is working correctly. Your final setting should allow the indicator light to cycle off 10 to 20 seconds prior to dumping the kettle.

4. SALT TIMER ADJUSTMENT (For machines supplied with Salt/Sugar Option only)

When the Salt/Sugar switch is in the sugar mode, the thermostat alone controls the heat. When the switch is in the salt mode, the temperature control works the same way with the exception that when the temperature control opens, it activates a timer, which allows the heat to stay on for an extended period of time allowing the salted corn to pop. The salt timer is located in the pedestal of all Giants marked "Salt Timer". In salt mode:

a. If the indicator light turns off 30 seconds or more before the corn finishes popping, the timer is set too low and is in need of adjustment.

b. There are two adjustments on the timer. The small adjustment knob sets the maximum time the timer can run. Cretors will normally set this adjustment for 1m.

10s = 0-10 seconds
1m = 0-1 minute
10m = 0-10 minutes

c. The larger adjustment knob sets the actual run time (percentage of time allowed by the small adjustment knob). Example: If the maximum setting is set for 1m and the large knob is set at .5, the timer will run for 30 seconds. In this case, the heat will stay on 30 seconds after the temperature control opens.

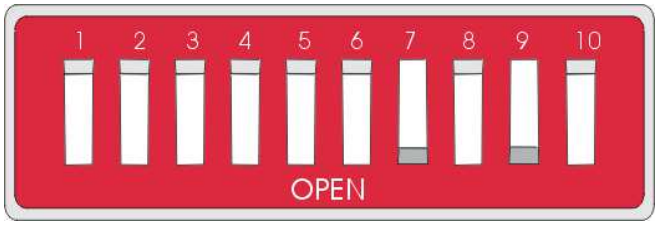
5. SALT/SUGAR WITH ONE POP ADJUSTMENT

a. If the Salt/Sugar switch is in the sugar position, use the "Digital Temperature Control Adjustment" section.

b. If the Salt/Sugar switch is in the salt position, the temperature is adjusted on the One Pop Timer/Relay.

c. On the Relay there are dip switches very similar to the timer in our 7700-7900 pumps.

d. From the factory the dip switches 7 and 9 will be on. To turn the dip switches ON the dip switch needs to be pressed down to the number side opposite of the open side.



Switch #6 = 5 seconds
#7 = 10 seconds
#8 = 20 seconds
#9 = 40 seconds

Example: If you turn #7 and #9 on, the time delay will be 50 seconds.

C. Kettle Removal

To remove the kettle assembly, perform the following operations:

1. Unplug the popcorn machine from the power supply. Make sure the kettle is not hot.

2. Remove the cover on the terminal box between the pan support legs.

3. Disconnect the three power leads, observing the color of the wires. Correct color code is: Left to right, BLACK, RED, WHITE. (For 400V units BLUE, BROWN, WHITE on front terminal left to right, Black on back terminal.)

4. Remove the two bolts on the side of the aluminum pan legs.

Using proper lifting techniques, when removing the kettle by lifting it straight up.

5. Turn the kettle upside down and remove the bolts that hold the dump handle and retainer and lift the retainer off the kettle.

6. When removing nuts and spacers from the threaded studs on the bottom of the pan, do not wipe off the silver lubricant. Without this lubricant (NEVER SEEZ) the nuts may freeze on the studs and cause the studs to break when the nuts are turned in an attempt to remove them.

D. Kettle Installation

1. When re-assembling the kettle, be sure all nuts and bolts are tight. Check to make sure that all electrical connections are secure. A loose connection can heat up and burn off the wires.

2. Set the kettle back in place and replace the two bolts in the pan legs.

3. Locate the kettle so that the clutch dog lines up with the motor drive head, and tighten the two front bolts that hold the pan leg plate, then tip the kettle and tighten the other two bolts.

4. Connect the three power leads, observing the color of the wires. Again, correct color code is left to right, BLACK, RED, WHITE. (For 400V units BLUE, BROWN, WHITE on front terminal left to right, Black on back terminal.)

5. Replace the terminal box cover.

6. Turn on the agitator motor and dump the kettle. If the drive shaft does not engage and dis-engages freely, readjust the kettle.

E. Kettle Spring Adjustment

The purpose of the kettle counter balance springs is to reduce the force required to dump the kettle. The spring collars are held in place by set screws that fit into holes drilled on the bottom of the cross shaft. The spring collars have five holes that the spring fits into. By turning the collar around, there are five different adjustment positions for spring tension adjustment.

When correctly adjusted the springs will neutralize the weight of the kettle. To set the springs raise the kettle to a point where it is balanced. The long leg of the 1902 spring should be just beginning to touch the bar on the bottom edge of the hinge casting and the 1903 spring will begin to move away from the bar. If the springs press against the bar too soon the kettle will seem lighter but the springs are fighting each other. This condition will shorten the life of the springs.

An important part of this assembly are the two washers between the 1902 spring and the plate welded to the cross shaft. They act as both bearings and spacers; without them the spring may have a short life.

VIII. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	ACTION
Popping is slow.	Incorrect amount of corn and oil is used.	Refer to the chart located in the Operations Manual.
	Kettle indicator light goes out more than 30 seconds before the corn finishes popping.	Temperature is set too low. (Refer to "Digital Temperature Control Adjustment"). If machine is equipped with salt/sugar option and popping in salt mode, timer may be set low. (Refer to the "Salt Time Adjustment" or the "Salt/Sugar One Pop Adjustment" sections.
	Voltage may be low.	Check the voltage at the circuit breaker with the kettle heat on. Extension cords or inadequate wiring will provide full voltage, if no load is applied. Once the kettle heat and auxiliaries are turned on, the voltage may drop 5 to 10 volts.
Indicator light stays on. Digital Control never reaches temp.	One of the elements in a multi-element pan may have failed.	Use an ammeter to diagnose.
		Check the amperage draw of the heating elements, by using a clamp-on ammeter. 1. Remove the front cover by removing the screws that hold the front cover to the pedestal. 2. Turn on the kettle heat. 3. If machine has one-pop option shut off the oil switch and press the one-pop button. 4. Place the ammeter around the lead to the popper kettle as listed. The following current draws are normal. 120/208-240V and 100/200V machines black or red 230V machines-blue or brown 400V machines-black or brown.

CAUTION: If the corn has dried out, it may not finish popping at normal temperatures, and the light may appear to go out early. DO NOT ADJUST KETTLE TEMPERATURE BASED ON POOR QUALITY CORN.

CAUTION: Do not adjust the temperature so high that the pan smokes at the end of the popping cycle. If set too high (over 500°F or 260oC), the kettle can become a serious fire hazard.

KETTLE SIZE	AMPS @ 200V	AMPS @ 208V	AMPS @ 230V	AMPS @ 240V
20 oz.	12.5	13.0	10.8	11.2
32 oz.	19.6	20.4	17.0	17.7
48/60 oz.	26.8	28.1	23.4	24.4

380V – Place the ammeter around the black or brown lead to the popper kettle

KETTLE SIZE	AMPS @ 380V Brown	Black
32 oz.	8	9
48/60 oz.	11	13.2

PROBLEM	POSSIBLE CAUSE	ACTION
A low reading may indicate a problem in the kettle. One or more of the heat elements may not be functioning properly. If the element is not functioning, the possible causes are: 1. The element has burned out. 2. A lead wire has burned off one of the element terminals due to a loose connection.		In either case the kettle must be removed and the problem identified. 1. Remove kettle. (See section Kettle Removal for instructions.) 2. Check for short circuits inside the kettle. 3. If wires must be replaced, be sure to use nickel wire supplied by Cretors Conventional copper or "stove wire will have limited life. 4. Make a visual check for broken, loose, burned or heat damaged wires. If there are no obvious broken or loose wires shorting out on the kettle, the elements must be checked. 5. Perform a continuity test on the elements. It is possible that one of the elements has burned through the insulation and the casing is shorting out directly to the kettle bottom.

Continuity Test and Ohms Test

When checking Ohms, make sure that the meter probes are making good contact on the terminals. Remove the nickel buss bars that connect the electrical terminals on the heat elements.

Using a multimeter, check each element between the following points:

Terminal to terminal	Ohm readings should match chart listed below. If Ohm readings are not close, replace.
First terminal to element case	Continuity to case from terminal indicates a grounded element; replace. No continuity – functioning properly.
Second terminal to element case	Continuity to case from terminal indicates a grounded element; replace. No continuity – functioning properly.

Do not attempt electrical repairs on the power supply circuit unless you are qualified to do so. The electrical shock associated with line voltages can cause serious injury or death.

The following procedures are performed with the power on. As with any electrical repairs, there is a shock hazard present.

Elements	**Coil**	**Relay (top to bottom)**	
		BAD	**GOOD**
200 Volts	100 Volts	200 Volts	0 Volts
208 Volts	120 Volts	208 Volts	0 Volts
230 Volts	230 Volts	230 Volts	0 Volts
240 Volts	120 Volts	240 Volts	0 Volts
400 Volts	230 Volts	230 Volts (same pole)	0 Volts (same pole)

20 oz. - **208V** elements	1983-D	900 Watt – 48.1 Ω
	1447-D	1800 Watt – 24.0 Ω
		2700 Watt - 16.0 Ω (total)
20 oz. – **240V** elements	1983-C	900 Watt – 64.0 Ω
	1447-C	1800 Watt – 32.0 Ω
		2700 Watt - 21.3 Ω (total)

Replace failed heat elements with identical units available from your local dealer or from Cretors. Reassemble and reinstall kettle assembly onto the machine.

32 oz. – 208V elements	16336-4-D	750 Watt – 57.7 Ω
	16336-3-D	1500 Watt – 28.8 Ω
	16336-1-D	2000 Watt – 21.6 Ω
		4250 Watt - 10.2 Ω (total)
32 oz. – 240V elements	16336-4-C	750 Watt – 76.8 Ω
	16336-3-C	1500 Watt – 38.4 Ω
	16336-1-C	2000 Watt – 28.8 Ω
		4250 Watt - 13.6 Ω (total)
48 oz & 60 oz.. – 208V elements	16336-4-D	750 Watt – 57.7 Ω
	16336-2-D	3050 Watt – 14.2 Ω
	16336-1-D	2000 Watt – 21.6 Ω
		5800 Watt - 7.5 Ω (total)
48 oz. & 60 oz. – 240V elements	16336-4-C	750 Watt – 76.8 Ω
	16336-2-C	3050 Watt – 18.9 Ω
	16336-1-D	2000 Watt – 28.8 Ω
		5800 Watt - 9.8 Ω (total)

PROBLEM	POSSIBLE CAUSE	ACTION
Kettle will not heat.	The motor, light or any of the other components do not work.	Check power supply: 1. Is it plugged in? 2. Is the receptacle live? 3. Is the machine plugged into the proper voltage? (Measure with voltmeter and compare to specification on nameplate of machine.)
	Problem is in the machine.	Check the relay/contactor. The Giant temperature control uses a relay/contactor to control the power to the popper pan heat elements. To check the relay/contactor, perform the following operations: 1. To gain access to the relay/contactor, remove the front switchplate by removing the six screws on the sides of the switchplate. 2. Using a voltmeter, check the power to the relay coil, that are the small terminals in the center. 3. With the popper switch on, at room temperature, the temperature control should be calling for heat and providing power to the relay/contactor. If the coil reading is not 120 volts. (230 volts on 230V and 400V, 50Hz machines) the problem is in the temperature control. 4. If the coil reading is 120 volts, (230 volts on 230V and 400V machines) check the voltage between the output terminal with wire #1 and the output terminal with wire #3 from the kettle support. If this does not have a reading of 208 or 240 volts, the relay/contactor is not functioning and needs to be replaced.
	If machine has the one-pop option.	Use the same procedure as above. Then check the one-pop circuit. 1. With the power OFF. Check the one-pop switch for continuity by pressing and holding it down. Remove wires (mark wires for proper re-installation) from switch and press and hold. Using a multimeter, check for continuity from top to bottom of switch. If no continuity, replace switch. 2. Check the input (com) and output (no) on timer/relay.
Digital Temperature Control display shows EO	Thermocouple has bad connections.	Check all connections.
	Thermocouple is bad. Should read 3-5 ohms if good.	Replace thermocouple.

PROBLEM	POSSIBLE CAUSE	ACTION
Corn Burns	Agitator is not working.	Check to be certain the stirrer blade is on the bottom of the pan and is stirring the corn.
	Check motor connections.	Loose wire.
	The motor is bad.	Replace.
	The correct amount of corn and oil were not used.	See Operations Manual for correct amounts.
	Temperature is set too high.	Adjust temperature.
Kettle leaks oil at agitator.	If the kettle is not cleaned on a regular basis the popping oil will build up and turn to carbon on the inside of the blade center. When this happens the clearance between the blade center and the pan center is reduced from 1/8" (3mm). As this clearance is reduced, the oil will "wick" up the narrow space and run down the rotating shaft and it will appear that the kettle is leaking for 20 oz. kettles.	When reassembling, lightly coat the clutch dog shaft with moly grease or a comparable high temperature lubricant.
Pump will not heat.	Pump switch is on.	Check pump switch. Remove wires from switch (mark wires for proper re-installation.) Using a multimeter, check for continuity from top to bottom of switch. If no continuity, replace switch.

If you have any questions, contact your local distributor and if there are any additional questions, feel free to contact the Customer Service Department at C. Cretors and Company.

Additional copies of this manual can be obtained from C. Cretors and Company at the address listed below. Please provide model and serial number when requesting additional copies of this manual. There will be a nominal charge for additional copies.

Cretors guarantees this machine to be free of defects in parts, materials and workmanship for two years. Please take this time to fill out the factory registration card and return it to the factory to activate your warranty. If you have any questions concerning the Cretors' warranty, please contact your local distributor or the Customer Service Department at C. Cretors and Company.

C. CRETORS AND COMPANY
176 MITTEL DRIVE
WOOD DALE, IL 60191
PHONE (773) 588-1690, (800) 228-1885, FAX (847) 616-6970
WEB SITE: http://www.cretors.com *Email:* postmaster@cretors.com