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Introduction

Congratulations, you are the owner of a quality built item of APV Crepaco. This equipment was manufactured by the skilled personnel of a company which has served the needs of the dairy, food, and process industries for more than 100 years.

The purpose of this manual is to provide instructions for the safe installation, operation, and maintenance of your APV Crepaco equipment.

Read and understand the entire manual before removing from the crate and installing the equipment.

APV Crepaco is committed to provide quality equipment and customer satisfaction. We have a unique network of sales and service support throughout the world, which are listed on the following page. Note the office nearest you. Should you have any questions concerning any information contained in this manual, contact the nearest office or our Lake Mills, Wisconsin office for assistance.

APV Crepaco Offices

Manufacturing Facility

100 S. CP Ave.
Lake Mills, WI 53551
Tel: (414) 648-8311
Fax: (414) 648-1457

Factory Direct Service Parts Sales, Toll Free (800) 358-4100

Regional Sales Offices

Central Region

Chicago Sales Office
9525 West Bryn Mawr Ave.
Rosemont, IL 60018
Tel: (847) 678-4300
Fax: (847) 678-5037

Columbus Sales Office
6663 Huntley Rd.
Suite L
Columbus, OH 43229
Tel: (614) 846-8503
Fax: (614) 846-4932

Minneapolis Sales Office
4226 Park Glen Rd.
St. Louis Park, MN 55416
Tel: (612) 927-4910
Fax: (612) 927-6895

Sales & Service Office
1050 Remington Road - 1M
Schaumburg, IL 60173
Tel: (847) 310-1313
Fax: (847) 310-6969

Industrial Sales Group
9525 West Bryn Mawr Ave.
Rosemont, IL 60018
Tel: (847) 678-4300
Fax: (847) 678-5037

Western Region

California Sales Office
16641 Valley View Ave.
Cerritos, CA 90703
Tel: (562) 926-9700
Fax: (562) 926-1179

Seattle Sales Office
1138 Industry Drive
Seattle, WA 98188
Tel: (206) 575-8900
Fax: (206) 575-1221

Sacramento Sales Office
9767-H Business Park Drive
Suite H
Sacramento, CA 95827
Tel: (916) 361-2900
Fax: (916) 361-9399

Southern Region

Dallas Sales Office
P.O.Box 166199
2920 Skyway Circle N.
Irving, TX 75038
Tel: (972) 257-3455
Fax: (972) 594-1339

Eastern Region

New Jersey Sales Office
330 Franklin Turnpike
Mahwah, NJ 07430
Tel: (201) 529-5959
Fax: (201) 529-2676

Atlanta Sales Office
2252 Northwest Parkway
Suite B
Marietta, GA 30067
Tel: (770) 956-9110
Fax: (770) 956-8993

Buffalo Sales Office
182 Wales Avenue
Tonawanda, NY 14150
Tel: (716) 692-3000
Fax: (716) 692-6416

APV Crepaco Offices

APV Contracting Offices

Beverage Sector
9525 West Bryn Mawr Ave.
Rosemont, IL 60018
Tel: (847) 678-4300
Fax: (847) 678-3019

Dairy Sector
16601 Valley View Ave.
Cerritos, CA 90703
Tel: (562) 926-4200
Fax: (562) 926-4450

Food Sector
9525 West Bryn Mawr Ave.
Rosemont, IL 60018
Tel: (847) 678-4300
Fax: (847) 678-3019

Pharmaceutical & Healthcare
9525 West Bryn Mawr Ave.
Rosemont, IL 60018
Tel: (847) 678-4300
Fax: (847) 678-3019

Canada

APV Canada, Inc.
Central Region - Toronto
30 Whitmore Rd.
Woodbridge, Ont. L4L 7Z4
Tel: (905) 850-1852
Fax: (905) 850-1863

APV Canada, Inc.
Eastern Region - Montreal
6555 Cote De Liesse
Montreal, Quebec H4T 1E6
Tel: (514) 737-0006
Fax: (514) 737- 1310

APV Canada, Inc.
Western Region - Vancouver
Unit #10-8075 Enterprise Street
Burnaby, B.C. V5A 1V5
Tel: (604) 420-4344
Fax: (604) 420-2419

International

APV Crepaco (Far East) Inc.
Asami Bldg., 12 F
Minami Shinagawa 2-4-7
Shinagawa-ku, Tokyo 140, Japan
Tel: (81) 3 347-42171
Fax: (81) 3 347-42180

APV de Mexico
Periferico Sur 4225-106
Colonia Jarines en la Montana
CP 14210, Mexico, D.F., Mexico
Tel: 52(5)-644-2439
Fax: 52(5)-644-2730

APV Crepaco Service GmbH
Spinnereistrasse 11
D-88239 Wangen/Allgau
Germany
Tel: (49) 7522-80024
Fax: (49) 7522-80010

South America

APV Latin America
9525 West Bryn Mawr Ave.
Rosemont, IL 60018
Tel: (847) 678-4300
Fax: (847) 678-4407

APV South America
Rua Joao Daprat, 231
Caixa Postal 5111
Sao Bernardo do Campo - SP
CEP 09740-030
Brazil
Tel: (55) 11 457-9222
Fax: (55) 11 457-9393

STANDARD WARRANTY

Obligations of Seller

During the warranty period, Seller shall repair, or at Seller's option, replace parts determined by Seller to be defective in material or workmanship. The warranty period is one (1) year from the date of delivery to Buyer F.O.B. point of manufacture. The foregoing shall be the sole obligation of Seller under this warranty with respect to the equipment and other property included in this Agreement. With respect to equipment, materials, parts and accessories manufactured by others, Seller's sole obligation shall be to use reasonable efforts to obtain for Buyer the full benefit of the manufacturers' warranties.

Warranty Exclusions

Repair or replacement of parts required because of misuse, improper care or storage, negligence, alteration, accident, use of incompatible supplies or lack of specified maintenance are excluded from Seller's warranty obligations.

DISCLAIMER OF WARRANTIES

THE FOREGOING WARRANTY EXPRESSIONS ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND EXISTENCE OF ANY SUCH OTHER WARRANTY IS HEREBY DENIED.

Limitation of Liability and Remedies

The liability of Seller for breach of any warranty obligation hereunder is limited to:

1. The repair or replacement of the equipment on which the liability is based; or,
2. At Seller's option, the refund to Buyer of the amount paid by Buyer to Seller for said equipment.

All other liability of Seller with respect to this Agreement, or from the manufacture, installation, maintenance, repair or use of any equipment covered by or furnished under this Agreement, whether in contract or in tort, or otherwise, is limited to the amount paid by Buyer to Seller pursuant to the terms hereon: SELLER SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER. THE REMEDIES SET FORTH HEREIN ARE EXCLUSIVE.

Breach

Any breach by Seller with respect to any items or unit of equipment shall be deemed a breach with respect to that item or unit only.

Infringement

Seller will not be liable for the infringement of any patent by the Buyer's use of any equipment or materials delivered hereunder.

POLICY REGARDING AVAILABILITY OF SERVICE PARTS

APV Crepaco will attempt to remain in a position to supply replaceable service parts during the normal life of any item of APV Crepaco equipment. This will be contingent upon availability of tools, material, and facilities of our own as well as of our suppliers.

After expiration of this period, supply of service parts will be limited to available stock of completed parts. If unable to supply the service part, drawings will be furnished when available to permit local manufacturing, if desired.

APV Crepaco reserves the right to improve, change or modify the construction of its equipment or any parts thereof without incurring any obligation to provide like changes to equipment previously sold.

A Word About APV Crepaco Service Parts

We want to raise your awareness to the problem associated with purchase of parts not manufactured to the high quality specifications of APV Crepaco, INC.

In addition to our high quality, APV Crepaco parts are manufactured to meet regulatory agency authorizations, approvals and certification (3-A Sanitary Standards, USDA, ASME, BISSC and OSHA). Where applicable, materials used in construction of APV parts conform to FDA regulations.

WARNING

PARTS NOT MANUFACTURED TO OUR SPECIFICATIONS MAY CAUSE DAMAGES TO YOUR APV CREPACO EQUIPMENT AND VOID ALL WARRANTIES. USE OF PARTS THAT DO NOT MEET APV CREPACO, INC. SPECIFICATIONS MAY CAUSE PROPERTY DAMAGES AND SERIOUS BODILY INJURY.

Types of equipment include, but are not limited to, rotary pumps, centrifugal pumps, homogenizers, ice cream freezers, scrape surface heat exchangers, plate heat exchangers, ingredient feeders, process tank and contact plate freezers.

We bring this potentially serious problem to your attention in order to safeguard your best interest and those of your employees.

If you have any questions, please feel free to call 1-800-358-4100 or your local APV Crepaco Regional Sales Office.



DO NOT OPERATE OR SERVICE YOUR APV CREPACO MACHINE UNTIL YOU HAVE READ THESE SAFETY RULES AND THE INSTRUCTIONS MANUAL FOR THE MACHINE

SAFETY INSTRUCTIONS

THINK SAFETY

1. Do not operate this equipment (machine) with safety devices bypassed or guards removed.
2. Only qualified personnel should operate this machine.
3. Do not start the machine until all personnel are clear.
4. Never perform service or maintenance procedures on a machine in motion.
5. Most equipment requires a high voltage electrical system. To avoid shock or serious injury, only qualified personnel should perform maintenance on the electrical system.
6. All air hydraulic and electric power must be OFF before servicing the machine.

For maximum protection the power source should be locked out using a lock for which only you have the key. This prevents anyone from accidentally turning on the power while you are servicing the machine.



100 South CP Ave., Lake Mills, WI 53551
Tel: (414) 648-8311, Fax: (414) 648-3418

HAZARD SERIOUSNESS LEVEL IDENTIFICATION

Definitions for identifying the various hazard levels shown on warning labels or to indicate proper safety procedures in the instruction manual are provided below with their respective signal words.



The use of the word “Danger” always signifies an immediate hazard with a high likelihood of severe personal injury or death if instructions, including recommended precautions, are not followed.



The use of the word “Warning” signifies the presence of hazards or unsafe practices which could result in severe personal injury or death if instructions, including recommended precautions, are not followed.



The use of the word “Caution” signifies possible hazards or unsafe practices which could result in minor injury or damage to product or property if instructions, including recommended precautions, are not followed.



The use of the wording “Safety Instructions” signifies that the guidelines provided will assist in the safe operation of the machine or system.

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USER'S RESPONSIBILITY

The basic rules of safety set forth in this booklet are intended as a guide for the safe operation of APV machines. This general safety information, along with explicit service, maintenance and operational materials for each specific machine, make up the complete instruction manual. All personnel who will operate, service or be involved with this equipment in any way should become totally familiar with this information prior to start-up.

It is the buyer's responsibility to make certain that the procedures set forth are followed and should any major deviation or change in use from the original specifications be required, appropriate procedures should be established for the continued safe operation of the machine. It is strongly recommended that you contact APV to make certain that the machine can be converted to the new use and continue to function in a reasonably safe manner.

All installation, service, maintenance and operations must be performed in strict accordance with all applicable codes and standards, including those established by OSHA.

SAFETY FIRST

APV equipment is designed and manufactured with due consideration and care for generally accepted safety standards. However, like any mechanical device, the proper and safe performance of this equipment depends upon using sound and prudent operating, maintenance and servicing procedures under properly trained supervision.

For your protection, and the protection of others, learn and always follow the safety rules outlined in this booklet. Observe warning signs on machines and act accordingly. Form safe working habits by reading the rules and abiding by them. Keep this booklet handy and review it from time to time to refresh your understanding of the rules.

Do not take chances. The odds are stacked against you!

OPERATING ZONE

An operating zone should be established around all machines. A brightly painted guard rail or warning stripe should define the zone. Only the operator or other authorized personnel should be within the operating zone when machine control circuits are energized or the machine is running. No tools or other equipment should be kept within the operating zone.

INSTALLATION

SPECIAL NOTE - All installation, service, maintenance and operations must be performed in strict accordance with OSHA's Standard for Control of Hazardous Energy (lockout/tagout) 29 CFR 1910.147.

Power sources, such as electric, air and hydraulic, should be installed by trained and authorized personnel only. Installations must comply with all applicable codes and standards, including those established by OSHA.*

SAFETY INSPECTION

Before Starting A Machine:

1. Be absolutely positive all guards and safety devices are installed and operative.
2. Be sure all personnel are clear of the machine.
3. Remove (from the operating zone) any materials, tools or other foreign objects that could cause injury to personnel or damage the machine.
4. Make certain the machine is in operating condition.
5. Make certain all indicating lights, horns, pressure gauges or other safety devices or indicators are in working order.

After Shutdown:

Make certain all air, hydraulic and electrical power is turned off.

*OSHA is the United States Occupational Safety and Health Administration, 200 Constitution Avenue NW, Washington, DC 20001.

GENERAL OPERATING SAFETY

1. Do not operate this machine until you read and understand the operating instructions and become thoroughly familiar with the machine and its controls.
2. Never operate a machine while a safety device or guard is removed or disconnected.
3. Always wear safety glasses, hats, shoes, ear protection or any other required safety equipment.
4. Never remove "Warnings" that are displayed on the machine. Torn or worn labels should be replaced.
5. Do not start the machine until all other personnel in the area have been warned and have moved outside the operating zone.
6. Remove any tools or other foreign objects from the operating zone before starting.
7. Absolutely do not have loose clothing, neckties, necklaces or unrestrained long hair near an operating machine.
8. Do not wear gloves, rings, watches, bracelets or other jewelry near an operating machine.
9. Keep the operating zone free of obstacles that could cause a person to trip or fall towards an operating machine.
10. Never sit or stand on anything that might cause you to fall against the machine.
11. "Horseplay" around a machine at any time is dangerous and prohibited.
12. Know the EMERGENCY STOP procedure for the machine.
13. Air, hydraulic and electrical power must be off when the machine is not in use. **Note: For maximum protection, the power source should be locked out using a lock for which only you have the key. This prevents anyone from accidentally turning on the power while you are servicing the machine.**
14. Never operate the machine above specified speeds, pressures or temperatures.
15. Never manually operate limit switches with power on.
16. Keep alert and observe indicator lights and warnings that are displayed on the machine.
17. Never leave the machine unattended while in operation.
18. Do not operate faulty or damaged equipment. Make certain proper service and maintenance procedures have been performed.
19. Avoid placing fingers, hands, or any part of your body into the machine or near moving parts when control circuits are energized.
20. A safe work surface should be provided, including proper guarding of platform areas and the design and use of ladders.

SPECIAL NOTE - All installation, service, maintenance and operations must be performed in strict accordance with OSHA's Standard for Control of Hazardous Energy (lockout/tagout) 29 CFR 1910.147.

SERVICE AND MAINTENANCE SAFETY

1. Do not service a machine until you are thoroughly qualified and familiar with the tasks to be performed.
2. Never operate any controls while other persons are performing maintenance on the machine.
3. Do not bypass a safety device.
4. Always use the proper tool for the job.
5. Never open covers that house electrical components when power is on.
6. Only perform maintenance on a machine in motion when properly trained and required to do so. When directed to make adjustments on machines in motion, extreme care must be taken.
7. All air and hydraulic pressure must be relieved before performing maintenance or loosening connection on any pressurized system.
8. Air, hydraulic and electrical power are to be turned off unless they are absolutely required for the specific servicing being performed. **Note: For maximum protection the power source should be locked out using a lock for which only you have the key. This prevents anyone from accidentally turning on the power while you are servicing the machine.**
9. Replace fuses only when electrical power is off (locked out).
10. Do not enter a confined space without first checking for toxic fumes and providing standby personnel on the site.

ELECTRICAL SAFETY

1. All electrical/electronic maintenance and service should be performed by trained and authorized electricians only.
2. Always assume that power is on and treat all conditions as live. This practice assures a cautious approach which may prevent an accident or injury.
3. To remove the load from circuit or equipment, open disconnect or breaker and lock in open position. **Note: For maximum protection the power source should be locked out using a lock for which only you have the key. This prevents anyone from accidentally turning on the power while you are servicing the machine.**
4. Make certain that the circuit is open by using the proper test equipment. **Note: Test equipment must be checked at regular intervals.**
5. Capacitors must be given time to discharge, otherwise it should be done manually with care.
6. There may be circumstances where "trouble-shooting" on live equipment may be required. Under such conditions, special precautions must be taken as follows:
 - Make certain your tools and body are clear of the ground.
 - Extra safety measures should be taken in damp areas.
 - Be alert and avoid any outside distractions.
7. Before applying power to any equipment, make certain that all personnel are clear of the machine.
8. Control panel doors should be open only when checking out the electrical equipment or wiring. After closing the panel door, make certain that (on those panels where applicable) the disconnect handle mechanism is operating properly.
9. All covers on junction panels should be closed before leaving any job.
10. All electrical apparatus must be properly grounded and overload protected.
11. All electrical connections should be protected by confining them within a sealed junction box.

SPECIAL NOTE - All installation, service, maintenance and operations must be performed in strict accordance with OSHA's Standard for Control of Hazardous Energy (lockout/tagout) 29 CFR 1910.147.

HYDRAULIC SYSTEM SAFETY

1. Never operate a hydraulic system unless covers, safety devices and indicators are operating and in place.
2. Never operate a hydraulic system above the pressure specified.
3. Hydraulic fluid should never be allowed to collect on floors or equipment.
4. Skin contact with hydraulic fluid should be avoided. Always wear proper protective clothing when handling hydraulic fluid.
5. Never loosen any hydraulic connection when the system is under pressure.
6. Never operate a machine that has leaks in the hydraulic system. Most hydraulic fluids are flammable and constitute a fire hazard.
7. A hydraulic system retains the power to complete its intended motion even after the power is off. Care is required to avoid injury.

AIR SYSTEM SAFETY

1. Never operate an air system unless covers, safety devices and controls are operating and in place.
2. Compressed air retains the power to complete its intended motion even after the power is off. Care is required to avoid injury.

CLEANING SAFETY

Manual Cleaning Procedures:

1. Do not use toxic and/or flammable solvents to clean a machine.
2. Turn off air, hydraulic and electrical power (lock out) prior to cleaning a machine.
3. Keep electrical panel covers closed and power off when washing a machine. Note: For maximum protection the power source should be locked out using a lock for which only you have the key. This prevents anyone from accidentally turning on the power while you are servicing the machine.
4. Always clean up spills around machine as soon as possible.
5. Never attempt to clean a machine while it is operating.

Cleaning-In-Place Procedures:

1. Make certain that all connections in the cleaning circuit are tight to avoid contact with hot water or cleaning solutions.
2. When the cleaning cycle is controlled from a remote or automated control center, establish fail-safe procedures to avoid automatic start-up while servicing equipment in the circuit.
3. On equipment which includes manways, make certain covers are closed and latched prior to starting the cleaning cycle.

CONFINED SPACE SAFETY

1. Entering any area which meets the definition of a confined space may create a serious hazard for a worker.
2. All maintenance and service procedures must be performed in strict accordance with OSHA standard #1910.146 (permit required confined space).

SPECIAL NOTE - All installation, service, maintenance and operations must be performed in strict accordance with OSHA's Standard for Control of Hazardous Energy (lockout/tagout) 29 CFR 1910.147.

Warning labels with the following signal words will be appropriately located on APV machines. It is important that all personnel working on each machine read and understand the instructions on those labels and follow them for their own protection and safety. We are repeating the definitions of the various hazard levels as a reminder of the potential danger involved.

DANGER

NOTE

When you observe
this warning label
on a machine,
read and follow
all the instructions
based on the level
of hazard indicated
by the signal word

The use of the word "Danger" always signifies an immediate hazard with a high likelihood of severe personal injury or death if instructions, including recommended precautions, are not followed.

WARNING

NOTE

When you observe
this warning label
on a machine,
read and follow
all the instructions
based on the level
of hazard indicated
by the signal word

The use of the word "Warning" always signifies the presence of hazards or unsafe practices which could result in severe personal injury or death if instructions, including recommended precautions, are not followed.

CAUTION

NOTE

When you observe
this warning label
on a machine,
read and follow
all the instructions
based on the level
of hazard indicated
by the signal word

The use of the word "Caution" signifies possible hazards or unsafe practices which could result in minor injury or damage to product or property if instructions, including recommended precautions, are not followed.

SAFETY INSTRUCTIONS

NOTE

When you observe
this warning label
on a machine,
read and follow
all the instructions
based on the level
of hazard indicated
by the signal word

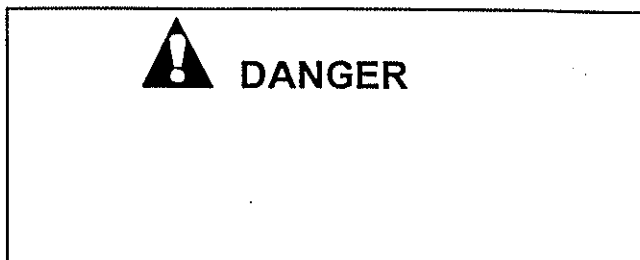
The use of the wording "Safety Instructions" signifies that the guidelines provided will assist in the safe operation of the machine or system.

Safety Information

Definitions

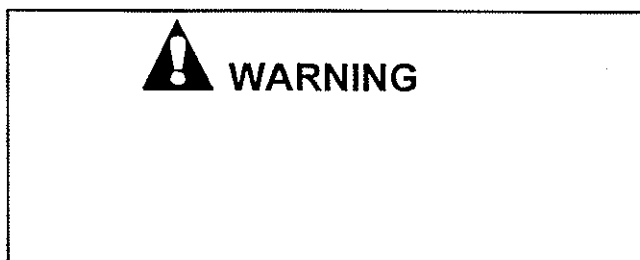
DANGER

An immediate hazard with a possibility of severe personal injury or death if instructions, including recommended precautions, are not followed.



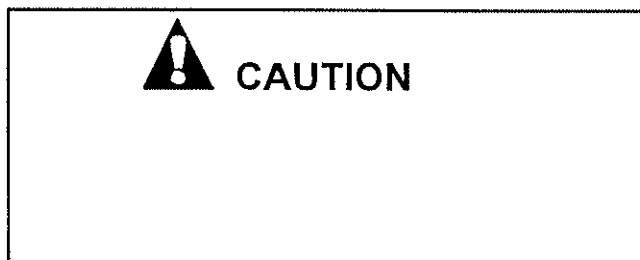
WARNING

Hazards or unsafe practices which could result in severe personal injury or death if instructions, including recommended precautions, are not followed.



CAUTION

Possible hazards or unsafe practices which could result in minor injury or damage to product or property if instructions, including recommended precautions, are not followed.



Lock Out

A positive means of securing the main electrical disconnect in the Off position, where only the person involved in the maintenance procedure has possession of the key.

The following information supplements the preceding GENERAL SAFETY INSTRUCTIONS and provides specific safety information on hazardous conditions which are inherent in the unit.

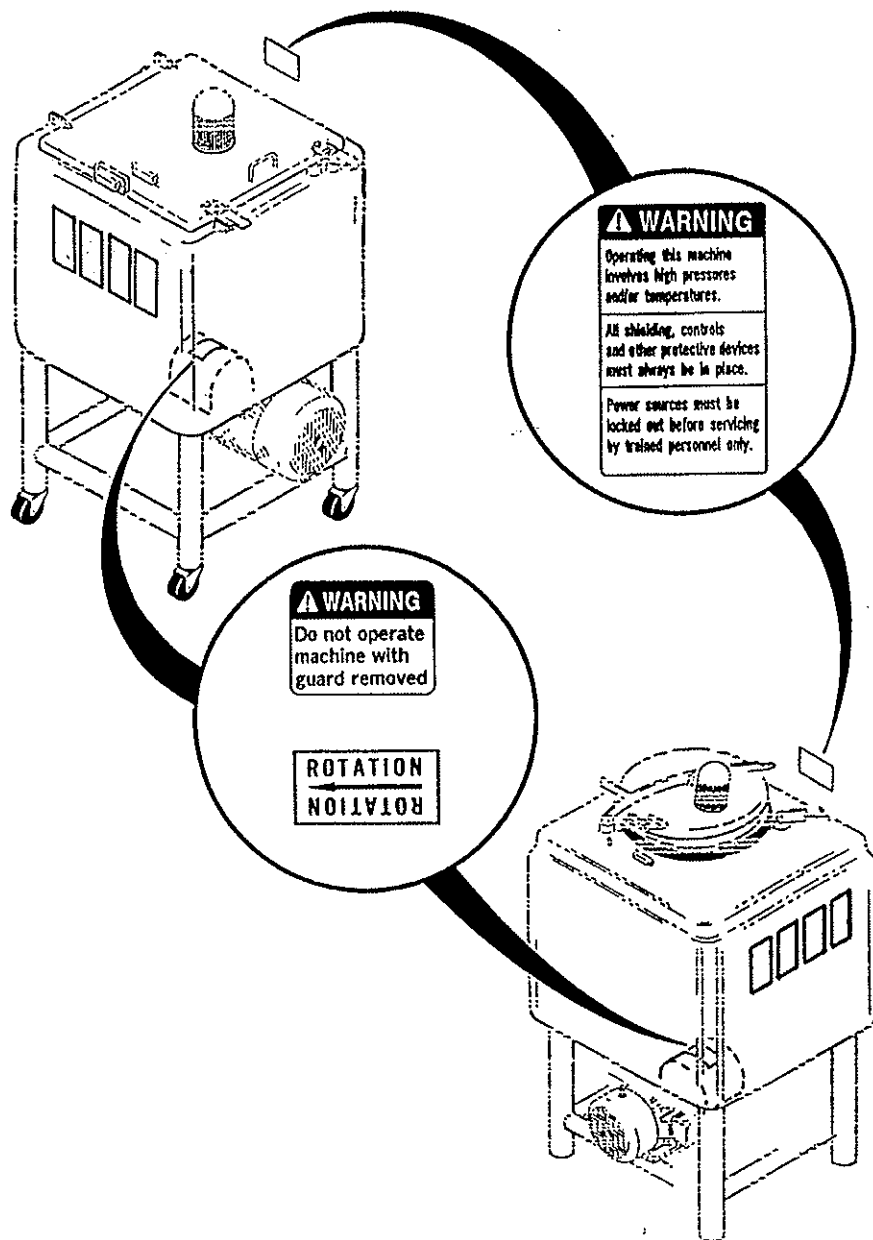
Our objective in providing instructions and warnings is to identify each area of potential hazards and its level of severity and to guide each worker for safe operation, service, and maintenance procedures.

nel. Hazardous areas are provided with guards. Various types of fasteners may be used for the guards depending on how frequently routine access is required. Regardless of the type of fastener used, the mere existence of a guard should alert the worker to the presence of a hazard. Never operate or test run the equipment with a guard removed, unless under the supervision of properly trained and authorized personnel. Then use extreme caution to avoid the hazard.

The illustration below shows the typical location of the safety information decals attached to the unit. If any decal is removed or becomes unreadable, replace it immediately with a new decal.



Safety Information

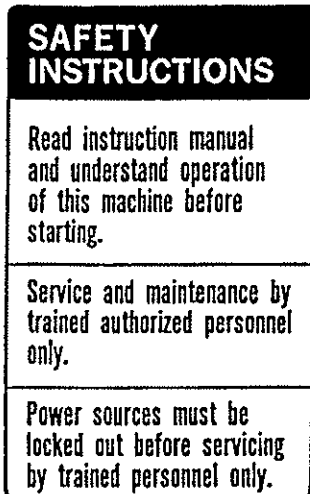


Typical Safety Decal Location

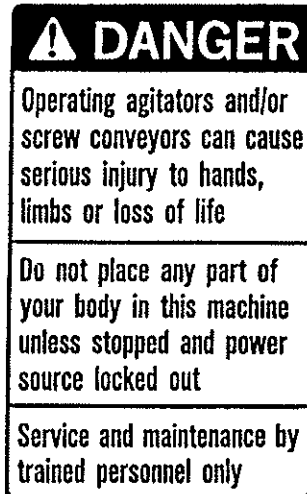
Safety Information

Safety Decals

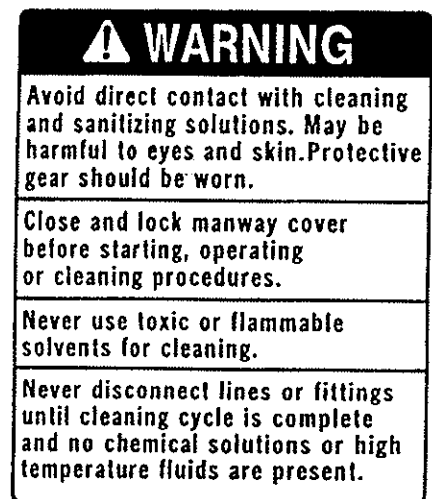
The wording of the safety decals is shown below. If any decal is removed or becomes unreadable, replace immediately with a new decal.



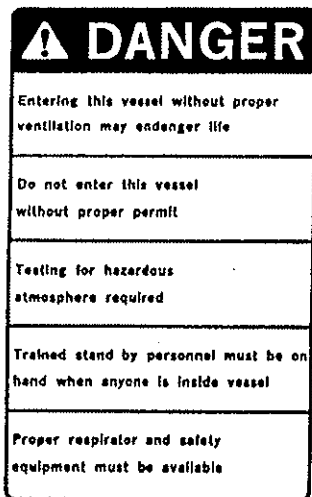
681-P-431690



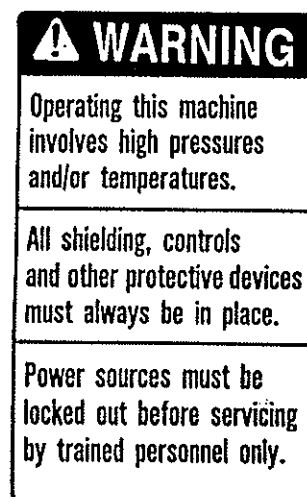
681-P-431692



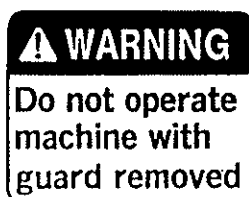
681-P-437501



681-P-357585



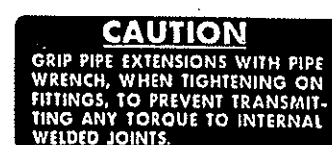
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Safety Decals

Safety Information



DANGER

Electrical Hazard



DANGER

Do Not perform any maintenance or service unless the main and control power sources have been turned off and Locked Out using a locking device for which only the person performing the work has the key.

The unit is normally powered by an electric motor and may have other electronic controls and devices. This creates a hazard of electrical shock which could cause severe injury or even loss of life.

To minimize the risk of this hazard:

1. All electric/electronic installation must comply with all applicable codes and standards including those established by the Occupational Safety and Health Administration (OSHA).
2. All electric/electronic installation, maintenance, and service must be performed by trained and authorized electricians only.
3. Install a main power disconnect On-Off switch that can be locked in the power Off position and have the key removed. This will allow maintenance or service to be performed with no possibility of the power being accidentally turned on.
4. Thoroughly read the motor manufacturer's instructions before making installation.
5. Install an emergency shutoff switch within easy reach of the operator.
6. Make the installation suitable for a wet environment, including:
 - a. Protection from flooding. Do not install in an area which could fill with water to a level which would contact the motor.
 - b. Protection of all electrical connections within a sealed junction box.
 - c. Proper grounding.



DANGER

Mechanical Hazard



DANGER

ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.

The unit has mechanical drive components. All of these components are guarded and/or enclosed. However, it is necessary to remove the guards/enclosures to perform routine maintenance, cleaning, or service procedures. These components are powered by electric motors which may start unexpectedly from a remote control signal. Should the unit start unexpectedly during these procedures, severe injury or even loss of life could result.

To minimize the risk of this hazard:

1. Only trained and authorized mechanics should perform maintenance or service work on the unit.
2. Install an emergency shutoff switch within easy reach of the operator.

Safety Information



DANGER

Confined Space Hazard



DANGER

It may be necessary to periodically enter the unit to perform maintenance or cleaning. The unit is a confined space hazard with restricted natural ventilation. It may retain dangerous air contaminants which are produced during processing or cleaning. Personnel inside may use the available air necessary for normal breathing. This creates an unavoidable hazard which endangers the life of anyone entering the unit.

Dangerous air contaminants which may result during normal food plant operations are:

1. Carbon Dioxide gas is a natural result of the fermentation processes.
2. Chlorine gas from the sanitizing chemicals.
3. Nitrous Oxide gas from the cleaning chemicals.

To minimize the risk of this hazard:

1. Qualified personnel must evaluate all processing, cleaning, sanitizing, and other operations to determine what potentially hazardous air contaminants might result and be retained inside the unit.
2. Establish well defined safety procedures for working within this confined space.
3. **The unit should not be entered unless:**
 - a. The personnel has a proper permit from the supervisor specifying the time and type of work to be done.
 - b. There is properly trained standby personnel available outside the unit.
 - c. The air inside has been tested for the presence of any potential hazardous air contaminants.
 - d. Proper rescue equipment is readily available including self-contained breathing apparatus.
 - e. All necessary steps have been taken to ensure adequate ventilation and air supply for personnel inside the unit including opening of all covers and outlets and provision of a supplementary air source.

Safety Information



DANGER

High Speed Impeller Hazard



DANGER

ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.

Routine cleaning and maintenance procedures require disassembly of the impeller. Should the impeller start unexpectedly during these procedures, severe injury or even loss of life could result.

To minimize the risk of this hazard:

1. Only trained and authorized personnel should perform maintenance or service work on the unit.
2. Install an emergency shutoff switch within easy reach of the operator.
3. Always turn off the electrical power supply and Lock Out using a locking device for which only the person doing the work has the key before performing any of the following:
 - a. Entering the unit for any purpose.
 - b. Disassembling or assembling the impeller.
 - c. Removing the guards from the motor coupling.
 - d. Performing any maintenance or service on the motor or right angle drive.
4. Keep the manway cover closed at all times during operation.
5. NEVER use a tool such as a scoop shovel, paddle, fork, or broom handle inside the unit during operation.
6. INSTALL a safe work platform for use when adding product. See Work Platform in the Installation section for specific requirements.



DANGER

Serrated Chopping Blades Hazard



DANGER

ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.

Routine cleaning and maintenance procedures may require personnel to enter the unit. Should personnel come in contact with the serrated chopping blades, severe injury may result.

To minimize the risk of this hazard:

1. Only trained and authorized personnel should perform maintenance or service work on the unit.
2. Always install the blade guard over the serrated chopping blades before entering the unit.

Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.

Safety Information



WARNING

Cleaning Chemical Hazard

To properly clean and sanitize the unit for use with food products it may be necessary to use chemical solutions. Many of the commonly used chemical solutions could cause severe injury to personnel if contacted. The hazard is especially severe for eyes, skin, or inhalation.

To minimize the risk of this hazard:

1. Thoroughly train all personnel working with cleaning/sanitizing chemicals in their safe handling and disposal following use as required by OSHA's "Hazardous Materials Standard."

Additional precautions are required during the use of cleaning or sanitizing chemical solutions to minimize the risk of personnel contact which could cause an injury.

2. During automatic cleaning/sanitizing:
 - a. Check all line connections in the cleaning circuit to be certain they are connected and tightened before starting.
 - b. Never disconnect any lines or fittings until it is known that the automatic cleaning sequence is completed and there is no chemical solutions or high temperature fluids present.

3. When using manual cleaning methods:

- a. Turn off the power source and Lock Out before disassembling the unit.
- b. Equip all personnel using cleaning/sanitizing solutions with protective clothing including eye protection.
- c. Thoroughly train all personnel using cleaning/sanitizing in their safe handling and disposal after use.
- d. Never use toxic and/or flammable solvents for cleaning.



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.

Safety Information



WARNING

High Temperature Hazard



WARNING

Some applications of the unit use steam or high temperature fluids in optional heat exchange zones for heating the contents. These high temperature heat exchange media create a hazard of burns.

When hot products are being processed, or when high temperature cleaning/sanitizing solutions are used, they create a hazard of burns.

To minimize the risk of this hazard:

1. All installation, maintenance, and service of piping, valves, and other controls must be performed by trained and authorized plumbers only. This applies to service media piping, process piping, and cleaning/sanitizing piping.
2. All plumbing installation must comply with all applicable codes and standards including those established by OSHA.
3. All high temperature lines must be labeled, leak free, and insulated or otherwise protected from direct contact.
4. Never disconnect any lines or fittings until the line is not under pressure and the fluid inside is not hot or otherwise harmful.
5. Always keep the manway covers closed during operation. This prevents contact with hot fluids in the unit. Certain mixing processes may require that products be added through the manway covers while hot fluids are present. These conditions require extreme caution.
6. Operating personnel must be authorized and trained.

Important Cautions



CAUTION

Nitric Acid

Nitric acid can attack and degrade nitrile rubber (also known as Buna-N). When nitric acid does attack nitrile, it oxidizes the rubber surface, leaving that surface soft and checked. The degraded rubber is easily eroded away by product or Clean-In-Place (CIP) flow and produces a black smear when contacted.

Nitrile rubber is the most commonly used rubber for gaskets and seals in the food industry. The damage done to the rubber by the cleaning acids can be avoided or minimized by using the following recommendations.

- Maximum recommended concentration is 1% (by weight).
- Maximum recommended solution temperature is 140 F.
- Exposure time should not exceed 30 minutes per clean up.

Precautions must be taken to be sure that the concentration does not exceed the maximum. For example, solutions must be completely diluted and mixed before admitting to the system. Acid solution must be thoroughly rinsed from the system following use.



CAUTION

NEVER use steel wool or a wire brush to clean stainless steel surfaces. Small particles of iron may rub off onto the surface and cause corrosion pits. Use nonmetallic scrub pads for stubborn soil.



CAUTION

Beware of Sanitizing Solutions

Sanitizing solutions are extremely corrosive, especially those which contain halogen compounds (chlorine, bromine, iodine). Solutions of these chemicals, will attack the surface of the unit.

To prevent serious damage:

1. DO NOT sanitize the unit sooner than 15 minutes immediately prior to starting production.
2. DO NOT leave sanitizing solutions in prolonged contact with any surface-product contact or exterior. As droplets dry out they become more concentrated and will cause corrosion pitting.

Important Cautions



CAUTION

Unit Collapse

There is a high risk of unit collapse any time a rapid pressure change occurs within the unit, especially if a vacuum is created.



CAUTION

Never spray cold water into a hot unit. A strong vacuum will result that could possibly collapse the unit. Use only tempered water 90 to 120 F for rinsing the unit following hot processing to hot cleaning treatment.

1. NEVER cover or restrict unit vents.
2. To protect the unit, install pressure relief valves or vacuum breakers at the designed rated pressure shown on the unit nameplate.



CAUTION

Distortion from Welding

NEVER weld other equipment to the unit. Welding can cause distortion and destroy the critical alignment of operating parts. Welding, if done incorrectly, can also destroy the sanitary finish of product contact areas or cause the start of corrosion pitting.



CAUTION

Foreign Objects or Tools

NEVER use foreign objects or tools (scoop shovels, paddles, forks, broom handles) inside the unit while processing. If such objects ever contact the impeller when it is operating, serious damage will result to the equipment. Do not store anything on or in an area where it might accidentally fall into the unit.



CAUTION

Mixing Chemical Solutions

Always make sure chemical solutions are completely dissolved and diluted before exposing to equipment. Do not dump concentrated chemicals into the equipment being cleaned.

General Information

Sanitary Design

Units are designed and constructed to meet the requirements of the 3-A Sanitary Standards for cleanability of dairy processing equipment.

Meeting these standards requires, in part; that materials of construction in product contact areas be stainless steel or other materials approved for food contact. All product contact surfaces must be smooth, free draining, and accessible for cleaning. The mechanical product components must be easy to disassemble for cleaning and/or inspection for cleanliness. The outer construction must prevent outside contaminants from draining or dripping into the product area.

Components and Services Furnished by the Customer

The following summarizes the services required to install and operate the unit.

Electrical Service

Provide correctly sized electrical service including overload protection and Lock Out capability. Check the nameplate on the unit for specifications.

Product Supply

A supply of product is required to the unit.

Piping

Piping must be well supported near the unit and in line with connection fittings so that no strain is put on the fittings. The use of large diameter lines and wide sweep elbows is recommended to keep pressures to a minimum level.

The purchase and installation of all piping is the responsibility of others. This includes any valves, pumps, ingredients, and cleaning solutions which are routed to and from the unit.

Piping, valves, pumps, etc., may be purchased through the APV Crepaco sales offices serving you.

Cleaning Equipment

The unit is designed for mechanical cleaning. A pressurized supply of controlled temperature rinse water and cleaning chemical is required. A nearby hose station and floor drain is also recommended to aid cleaning.

General Information

Receiving and Inspection

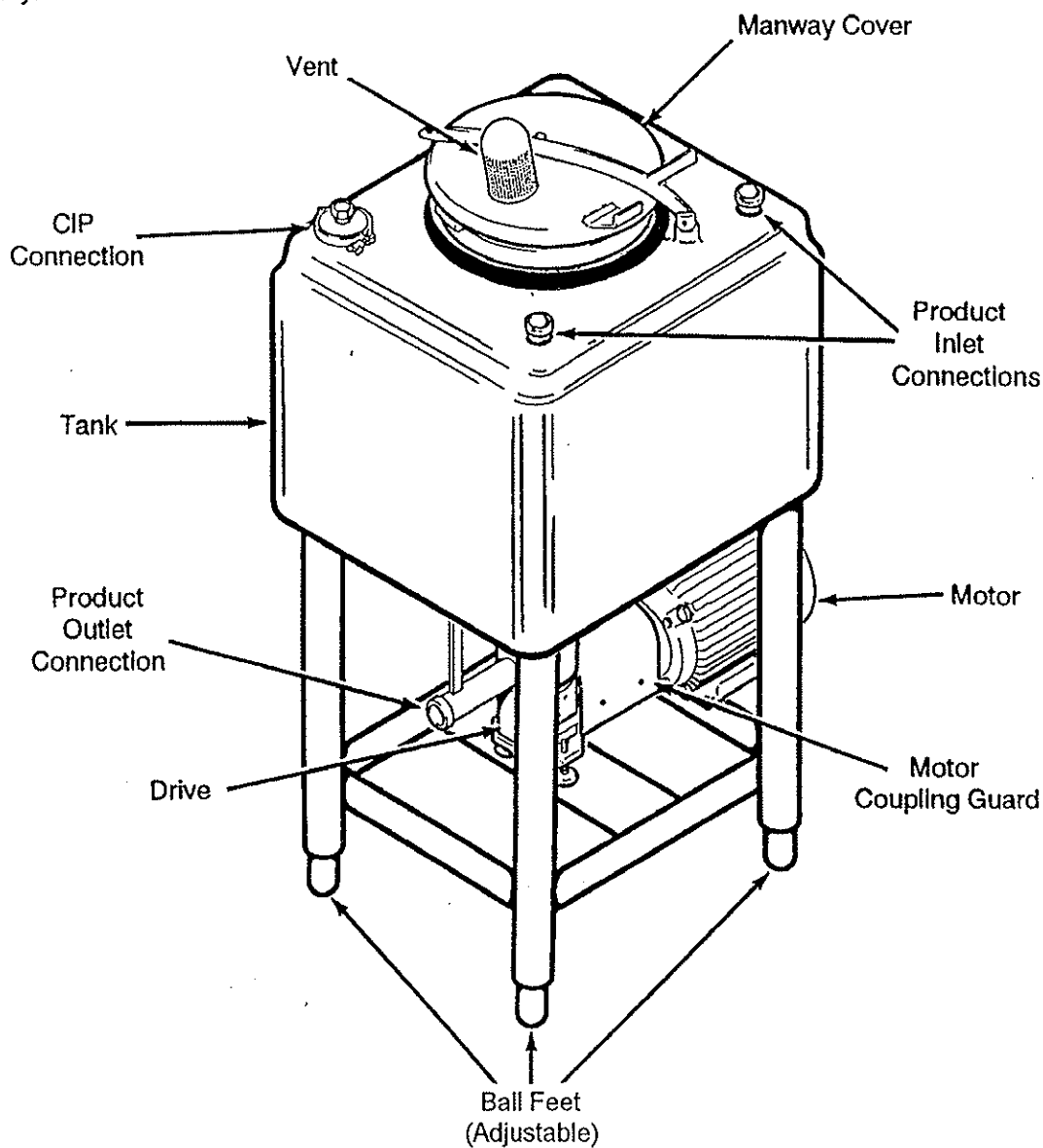
1. APV Crepaco equipment is run tested or inspected prior to shipment. When leaving the factory, it is well crated for normal transportation procedures. APV Crepaco cannot, however, guarantee safe arrival. Therefore, upon receipt of this equipment, check the received items against the packing list for damage or missing parts. Check the packing material thoroughly for small parts.
2. Visually inspect for damage or loss. Damage or loss should be reported immediately to the delivery carrier while present. Following the immediate notification of the lost or damaged parts, a detailed description including quantity, description of the loss or damage, and a cash value should be claimed against the carrier with respect to the guidelines set forth by the responsible carrier's policies. APV Crepaco's responsibility terminates F.O.B. point of manufacture unless otherwise specified per the General Terms and Conditions of Sale as published by APV Crepaco and amended from time to time. Contact APV Crepaco Order Services if shipping information is required for handling claims.
3. In the case of damage or loss to the equipment, APV Crepaco may perform three major functions:
 - a. **Manufacturer Function** - APV Crepaco manufactures quality equipment and stands behind the APV Crepaco Standard Warranty. Refer to the Standard Warranty.
 - b. **Assessor Function** - APV Crepaco offers assessment services for filing claims. The APV Crepaco assessor will accurately determine the extent of the damage (or loss), and cost of repairs to the equipment. Reimbursement for this service will be agreed upon prior to the assessment.
 - c. **Repair House Function** - APV Crepaco offers services for repairing the damage(s) or replacement of loss(es) to the equipment. APV Crepaco has the option to alter the Standard Warranty on refurbished or replacement parts. The cost of this service will be dependent upon the assessment that is made.

Installation

Selecting Unit Location

When installing the unit, consider these items before selecting a location.

1. Install the unit in a location with good lighting and clearance around it for maintenance and operation. As a general rule, a minimum of 36 in. clearance on all sides is recommended.
2. Locate with consideration for required service connections. Keep service supply lines as short and direct as possible for optimum operating efficiency.
3. Locate close to associated process equipment to minimize piping between equipment and minimize pressure build-up through lines.
4. Locate near floor drains with a hose station nearby.



Typical Component Location

Installation

Unskidding and Leveling

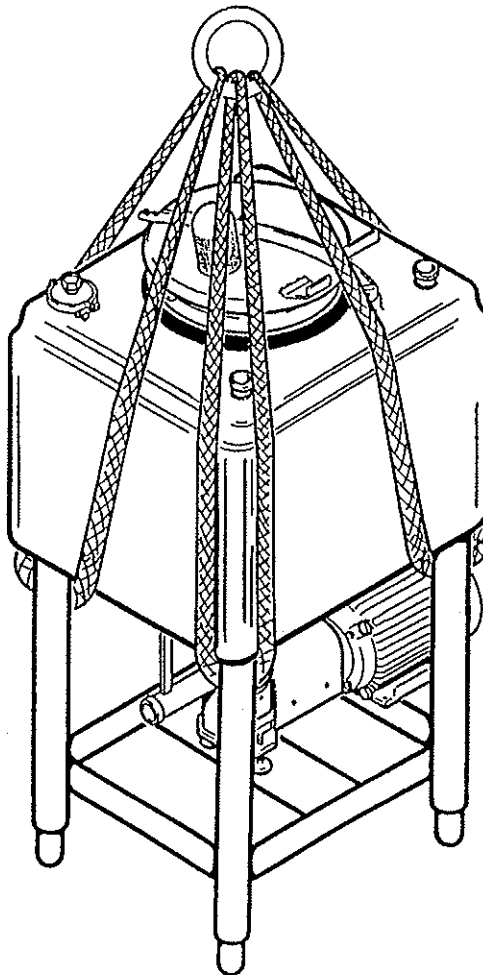
1. Move the unit to the installation site while it is still on the skid.
2. Remove all crating and shipping straps.
3. Attach the lifting sling. Use four nylon straps, one placed around each leg and secured at a common point above the center as shown below.
4. Slowly raise the unit, just enough to remove the skid from underneath.
5. Remove the skid.



WARNING

If the lifting equipment slips or breaks, severe injury may result. Make sure the lifting equipment is rated for the weight of the unit. Only trained and authorized personnel should operate the lifting equipment.

6. Lower the unit to the desired position.
7. Adjust all of the ball feet so that the horizontal frame supports are level and all feet are firmly against the floor.



Lifting Equipment Lift Points

Installation

Electrical Connections

The unit is normally powered by an electric motor. In addition, other electronic controls or devices may be added either at the APV Crepaco factory or at the installation site. See Electric Hazard in the Safety Information section.



DANGER

Incorrect electrical installation can cause an electrical shock which may result in severe injury or loss of life. All electrical/electronic installation must be performed by trained and authorized electricians only. All electrical/electronic installation must comply with all applicable codes and standards including those established by the Occupational Safety and Health Administration (OSHA).



DANGER

ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.

1. All electrical connections are to be made by a qualified electrician.
2. All electrical components should be placed away from excessive moisture conditions if possible. Consider all areas that will be hosed or steam sprayed.
3. Check the motor nameplate data to make sure that it matches the electrical supply and that all wiring, switches, starters, and overload protection are correctly sized.
5. Correct impeller rotation is counterclockwise when viewed from above.
6. Lubricate the motor bearings according to the manufacturer instructions.

Piping Connections

1. All connections and lines are to be installed in accordance with local regulatory agencies and for volume and pressure as required in this system.
2. Piping and plumbing must be well supported to prevent strain on the fittings.
3. Check all plumbing for leaks before operating with product.



CAUTION

Isolate the discharge connection with flexible piping to prevent damage due to vibration. The natural intense mixing action of the unit causes vibration. A flexible connection line or other vibration isolation should be used to prevent damage to the unit or connecting equipment.

Process Piping

All piping, whether for process or for heat exchange media (for optional heat exchange surface), is to be supplied and installed by the purchaser. This includes any valves and pumps for product, ingredients, cleaning solutions, or heating and cooling media that are routed to and from the unit. Any special valves or fittings, to be supplied with the unit by APV Crepaco factory, will be noted on the General Assembly Drawing.

Piping, valves, pumps, etc. may be purchased separately through the APV Crepaco sales office serving you.

1. Independently support and align all process piping attached to the unit. Do not support piping from the unit fittings.
2. The outlet on the unit should not be expected to pump the product. The nozzle should only be used as the bottom outlet connection.

Installation

Pressure Relief Valves

Suitable pressure relief valves must be installed by the customer to the unit and/or heat exchange surface prior to operation.

Work Platform

A work platform should be provided for operators to stand on when adding ingredients to the unit. The platform should:

1. Be in compliance with OSHA standards for railings, non-skid surfaces, and markings.
2. Be sturdy; able to support the weight of the operator and any ingredients.
3. Be a correct height; high enough to permit access, but not so high as to create a danger of falling into the unit.

Unit Preparation

Initial Hand Cleaning

Carefully hand clean all product contact surfaces prior to use to eliminate all possible foreign material which may have accumulated during manufacture, shipment, and installation. In addition, this gives personnel an opportunity to become familiar with the unit.



DANGER

When operating, do not enter the unit. The impeller can cause severe injury or loss of life for anyone inside the unit. Incorrect installation of the electric motor or controls may create an electric shock hazard which could cause severe injury or loss of life. The use of water, especially when sprayed from hand held hoses, increases the risk. ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.



WARNING

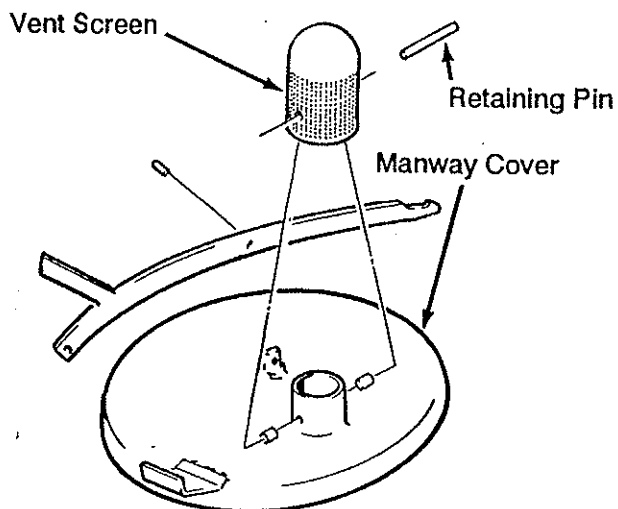
Direct contact with cleaning and sanitizing solutions may cause chemical or high temperature burns. Equip all personnel performing cleaning/sanitizing operations with protective clothing (including eye protection). Thoroughly train these personnel in the safe handling and disposal of the chemical and high temperature solutions they are using. See Cleaning/Sanitizing Chemical Hazard in the Safety Information section.



CAUTION

Before processing the product, hand clean all product contact surfaces to remove all traces of protective coating that were applied during manufacturing.

1. Use a detergent solution as described in the Cleaning and Sanitizing section.
2. Disassemble, hand clean, and reassemble the impeller and seal components. Refer to Impeller maintenance section for specific procedures.
3. Clean the interior surfaces of the unit. Hand scrub all surfaces using a brush and detergent until completely clean. Thoroughly rinse away all traces of detergent solution with clean water and allow the unit to drain.
4. Remove the manway cover gasket and clean the gasket and rim area under the gasket. Rinse with clean water and allow to dry. Before reassembling, apply a thin film of lubricant to the rim area.
5. Remove the vent screen. Squeeze the screen by hand at the base, and at right angles to the retaining pin, until it clears the pin. Clean and make sure there are no obstructions to free venting.



Vent Screen Removal

6. Clean the exterior surfaces of the unit and rinse with clear water.

Unit Preparation

Lubrication

The illustration below shows the items needing lubrication or checking prior to using the unit.

Motor and Motor Bearings

Lubricate the motor (or other type drive) and motor bearings per the manufacturer's recommended procedures.

Drive

The drive is filled with the proper level of lubricant at the factory. Prior to operation, check the level and fill per the manufacturer's recommended procedures.

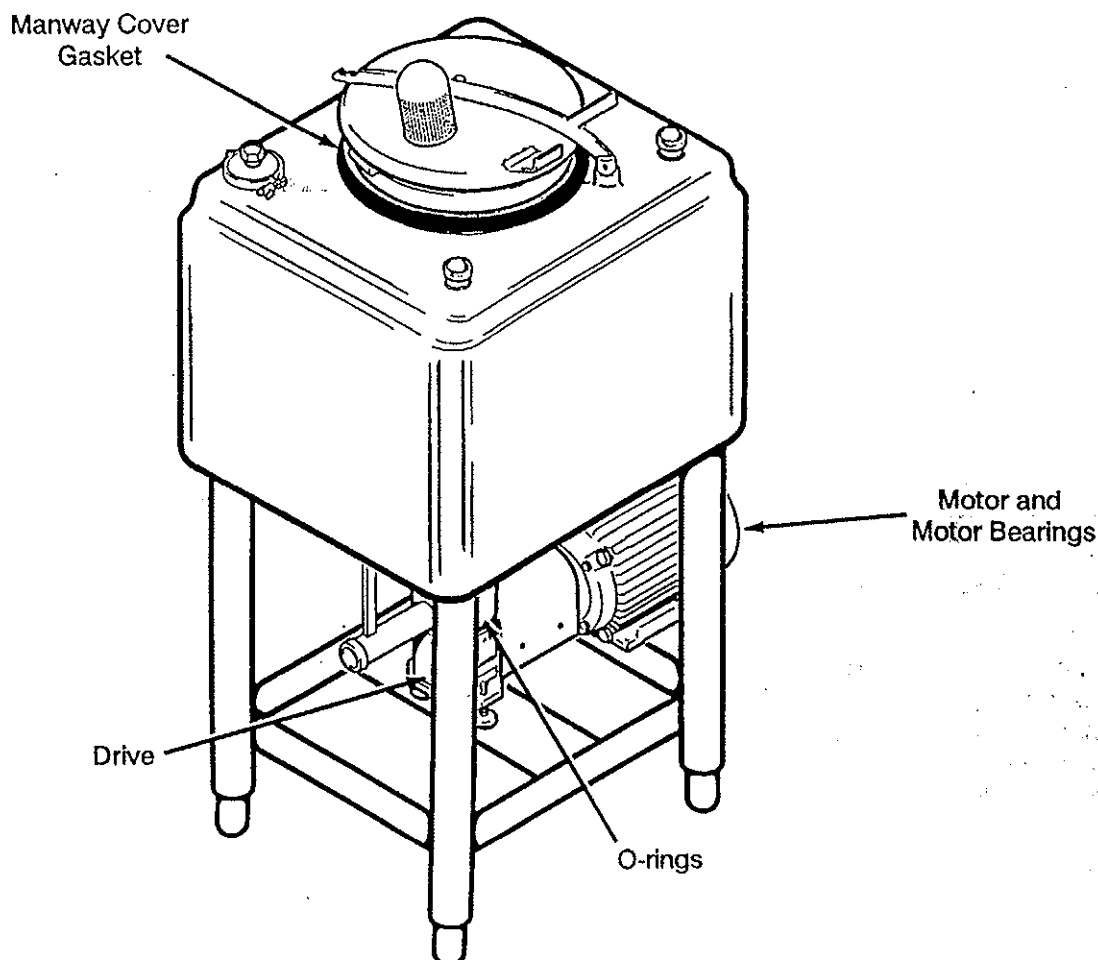
O-rings

To aid assembly, lubricate the impeller and the shaft seal assembly O-rings. See Wear Checks and Replacement, Impeller and Impeller Shaft in the Maintenance section for specific procedures.

Manway Cover Gasket

Lubricate the manway cover gasket to aid in assembly.

When processing food products, use a sanitary grade lubricant approved for incidental contact with edible products.



Items Needing Lubrication Or Checking Prior To Use

Unit Preparation

Passivation



WARNING

Passivating solution is a strong chemical solution which must be used with extreme care. Only personnel thoroughly trained in the handling and disposal of these chemicals should perform these procedures.



WARNING

Nitric acid is an oxidizing agent that must be used with extreme care. Vapors are hazardous and contact of the acid with the skin can cause severe burns. Passivation should be performed in a well ventilated area and away from personnel not properly protected from accidental contact with the acid solution. Disposal of used solution must be handled according to Local, State, and Federal regulations.

Passivation is the treatment of stainless steel with strong oxidizing chemicals. This procedure is performed to chemically clean the surface to remove any free iron or rust that may be embedded. It also improves the continuity of the oxide film which gives stainless steel its corrosion resistance. Passivation is performed as a final cleaning operation on interior surfaces only after all fabrication operations have been completed. Prior to passivation, the interior surfaces should be cleaned using detergent to remove any dirt or oil film which may be present.

1. Units manufactured from stainless steel are not passivated at the factory.
2. When field fabrication procedures are performed which may disturb the oxide film or embed iron impurities, then field passivation is recommended to prevent surface corrosion or pitting. The passivation procedure steps must be carefully followed.

Units equipped for Clean-In-Place (CIP) are to be passivated by the following method:

1. Circulate a passivating solution through the sprayball under sufficient pressure and flow rate to contact all internal product surfaces.
 - a. The maximum solution strength is 20% commercial nitric acid (specific gravity 1.42) mixed with 80% water. See the table below.
 - b. The temperature of the solution must be maintained at 130-140 F during the treatment.
 - c. The circulation must be done for a minimum of 30 minutes.

Formula	
Total Volume	100 Gallons
Water	80 Gallons
Nitric Acid(1.42 Sp. Gr.)	20 Gallons

Maximum Working Formula for the Passivating Solution

Other components in the solution circuit may not be sufficiently resistant to a passivating solution of this strength.

2. Immediately after passivation, remove the acid solution from the unit and dispose of according to Local, State, and Federal regulations. Contact your local sanitation and environmental protection authorities for disposal instructions.
3. Rinse with clean, hot water at 130 F through the sprayball for a minimum of five minutes with sufficient pressure and flow rate to thoroughly rinse all internal product contact surfaces. Do not recirculate the rinse water. Allow the rinse water to drain from the unit and dispose of properly.
4. Immediately rinse off any passivation solution from the units exterior with warm water to avoid chemical action and possible spotty appearance.

Units not equipped for CIP must be passivated by swabbing all internal product contact surfaces with the acid solution at strength and temperature as specified previously. Duration of swabbing treatment must be a 30 minute minimum. Thoroughly rinse all traces of the acid solution from all unit surfaces subjected to the passivation treatment. Use warm water and leave unit outlet open. Dispose of rinse water according to Local, State, and Federal regulations.

Cleaning and Sanitizing



ALWAYS turn off and Lock Out the electrical power supply to any electrical components associated with the unit before performing service or maintenance. Use a locking device for which only the person doing the work has the key.



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.



WARNING

Using unclean or unsanitary equipment could produce contaminated products. Always clean and sanitize equipment before producing product. See Cleaning/Sanitizing Chemical Hazard in the Safety Information section.



WARNING

Direct contact with cleaning and sanitizing solutions may cause chemical or high temperature burns. Equip all personnel performing cleaning/sanitizing operations with protective clothing (including eye protection). Thoroughly train these personnel in the safe handling and disposal of the chemical and high temperature solutions they are using. See Cleaning/Sanitizing Chemical Hazard in the Safety Information section.



WARNING

Many of the chemical solutions used for cleaning and sanitizing are corrosive. Do not use higher than recommended concentrations, or longer than recommended exposure times with cleaning/sanitizing solutions. Always rinse thoroughly immediately following the use of chemical solutions. As droplets dry out they become more concentrated and more corrosive. See Cleaning/Sanitizing Chemical Hazard in the Safety Information section.

Cleaning and sanitizing of the unit is necessary on a routine basis whenever processing products. The frequency of cleaning and the chemicals and procedures used will vary depending on the product(s) and process(es). It is the responsibility of the user to establish procedures which are suitable for the product and process.

Users should develop a well defined cleaning and sanitizing program. This program must take into consideration all applicable laws, regulations, and standards relative to the protection of public health and the safe use and disposal of chemicals. See Cleaning/Sanitizing Chemical Hazard in the Safety Information section.

The following information is presented as general guidelines only. For additional help contact your local health authority and a reputable supplier of cleaning and sanitizing chemicals for the processing industry. You may also contact your local APV Crepaco sales representative for recommendations.

Cleaning and Sanitizing

Definitions

Rinse

The purpose of rinsing is to remove excess residual product and reduce the load required for detergent removal. At the end of washing, rinsing removes residual chemical solutions. Without the rinse, the chemicals could be corrosive or react unfavorably with other chemical solutions.

Use a rinse water temperature which readily removes the excess product or residual chemical solutions. Generally, this means warm water near 100 F. Use potable water for final rinse.

Rinsing immediately after processing, before product dries, is recommended.

Detergent Solution



CAUTION

Beware of nitric acid in detergent solutions. Nitric acid in detergents may be damaging to stainless steel and to rubber gaskets and seals.

Consult your chemical supplier to determine if any nitric acid is being used.

The customer has the responsibility of using chemical solutions compatible with the grades of stainless steel used in unit construction. Select a reputable supplier of cleaning chemicals (APV Crepaco will assist you, if desired). The supplier will recommend the type of chemical, concentration, and temperature your conditions require. The type of soil (residual product) to be cleaned from the surface will determine that selection.

Difficult to remove (burned-on) soil may require two kinds of detergent solutions. First, a chlorinated caustic solution, followed by an acid cleaner.

When using alkaline detergents used to remove burned-on soil, a useful guide is to use a temperature of solution slightly higher than the processing temperature.

Acid Rinse



CAUTION

Acid rinses used incorrectly can cause corrosion. Use only a very diluted solution of a type of acid that is recommended for use on the type of stainless steel used for your unit.

Do not use acid rinse unless the unit is clear of all residual detergent solution. Combining various chemicals may create a more corrosive effect.

A low concentration of a mild acid in the final rinse water is an optional procedure used to prevent residual film. APV Crepaco recommends 200 ppm (parts per million) of a phosphoric acid preparation.

Sanitizing

Sanitizing is used to kill bacteria on product contact surfaces of the unit. When using chemical solutions, sanitizing should be performed no earlier than 15 minutes prior to processing product. The chemicals commonly used for sanitizing (chlorine or iodine containing compounds) are extremely corrosive.

Solution strength and exposure time must be closely regulated.

Whenever possible, the use of hot water is recommended for sanitizing to avoid the corrosive effect of chemical solutions.

Methods for Cleaning and Sanitizing

General Procedure

The general sequence of steps for cleaning and sanitizing includes the following steps:

1. Rinse - Preliminary removal of excess residual product.
2. Wash - Use of detergent solution to remove residual product.
3. Rinse - Removal of residual detergent solution.
4. Sanitize - Treatment with heat or chemical solution prior to product processing to kill bacteria.

Cleaning and Sanitizing

Hand Cleaning



DANGER

ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before entering the unit, or performing service or maintenance.



CAUTION

Never spray cold water into a hot unit. A strong vacuum will result that could possibly collapse the unit. Use only tempered water 90 to 120 F for rinsing the unit following hot processing or hot cleaning treatment.



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.



WARNING

Direct contact with cleaning and sanitizing solutions may cause chemical or high temperature burns. Equip all personnel performing cleaning/sanitizing operations with protective clothing (including eye protection). Thoroughly train these personnel in the safe handling and disposal of the chemical and high temperature solutions they are using. See Cleaning/Sanitizing Chemical Hazard in the Safety Information section.



CAUTION

Using the wrong cleaning tools will damage product contact surfaces. Never use steel wool or a wire brush. Use a nonmetallic brush.

Hand cleaning means that the application of rinses, detergents, and sanitizers is done by hand. For example, rinse water may be sprayed on with a hose and detergent solution may be scrubbed over surfaces with a brush or a scrub pad. Sanitizing solution may be applied by swabbing.

The following disassembly procedures can be found in the Maintenance section.

To properly hand clean the unit, do the following on a daily basis:

1. Disassemble the impeller, seal components, manway cover gasket, and vent screen.
2. Disassemble the impeller and seal components for hand cleaning outside of the unit.
3. Clean the manway cover gasket and vent screen.
4. Leave the manway cover open to air dry the inside of the unit after it has been rinsed and drained.

Cleaning and Sanitizing

Sprayball Cleaning



CAUTION

An open or unlatched manway cover will allow hazardous high temperature and/or chemical solutions to be sprayed out of the unit. If these solutions contact anyone, chemical or high temperature burns could result. Close the manway cover and put the latch in the locked position before starting any cleaning/ sanitizing operations with sprayballs.



CAUTION

A vacuum condition could damage the unit. Never restrict vent(s) during sprayball cleaning. Never spray cold water into a hot unit (use tempered water first).

The sprayball is designed to spray and clean all product contact surfaces as much as possible when supplied at the recommended pressure. It may be necessary to disassemble and hand clean some parts which are not adequately cleaned with the sprayballs.

1. Sprayball cleaning requires a recirculating pump adjacent to the unit, with piping from the product outlet connection to the pump and piping from the pump to the sprayball connection. Pump capacity must meet the sprayball volume and pressure requirements.
2. Pump warm water 90 to 120 F through the unit until all traces of the product have been removed. Rinse water should be clear as it leaves the product outlet connection.
3. Prepare a detergent solution according to supplier recommendations. Add water to a sufficient level to maintain flooded pump suction during recirculation, then add the detergent solution. If powdered detergent is used, dissolve it with water in a separate container.
4. Operate the recirculating pump to recirculate the detergent until the interior is clean.

5. Drain the detergent solution and the soil by disconnecting the piping to the pump.
6. Using clean water, rinse away all traces of detergent solution and drain the rinse water.
7. If an optional acid rinse is required, add water first, then acid, and circulate for one minute.

For best results, operate the impeller during sprayball cleaning. Do not operate the impeller dry.

The sprayball in the unit requires 20 to 30 psig supply pressure for correct operation. Too little pressure will not clean all surfaces. Too much pressure will cause atomization of the spray, making it ineffective. At the recommended pressure, the approximate flow rate through the sprayball will be 60 gpm.

The sprayball assembly is self-cleaning, self-draining, and easy to disassemble for inspection. Periodically disassemble and check for cleanliness. Hand clean if necessary.

Automatic Cleaning

1. Programmed time control cleaning systems permit uniform unattended cleaning of the unit interior. The cleaning solution is prepared in a central cleaning tank and piped to the unit to be cleaned. During all phases of the cleaning operations there must be adequate venting available. Filters or other obstructions placed on normal vent openings must be removed.
2. Rinse the unit as soon as possible after processing with three 20 second bursts at 100 F of water. Flush to drain.
3. Prepare an alkaline solution according to your cleaning material supplier recommendations and circulate at a temperature equal to the processing temperature for 15 to 30 minutes. The exact quantities and type of cleaning agents used and the temperature of recirculation will vary with the type of product processed.
4. After the above alkali wash, rinse with 100 F water for three 20 second bursts.
5. Circulate an acid solution at 140 to 160 F for 10 to 15 minutes.

Cleaning and Sanitizing

6. Rinse at 100 F for three 20 second bursts.
7. Disconnect the CIP connection and allow all lines and the unit to drain and air dry.

Semi-Automatic Cleaning

1. Semi-Automatic cleaning requires a centrifugal pump with a sufficient capacity to deliver a continuous solution of sanitary water and cleaning compound to the sprayball assembly.
2. Rinse the interior of the unit with water at a temperature of 90 to 120 F.
3. Connect the centrifugal pump to the sprayball connection at the top of the unit.
4. Fill the unit with a sufficient amount of water to keep the pump suction flooded during recirculation.
5. Use tempered clean water equal to or exceeding the processing temperature of the product. Add the cleaning agent in proportion to the quantity of water to be used as instructed by the chemical manufacturer.
6. Spray the solution for the amount of time recommended by the chemical manufacturer. Drain and rinse thoroughly.

Sanitizing



WARNING

Direct contact with cleaning and sanitizing solutions may cause chemical or high temperature burns. Equip all personnel performing cleaning/sanitizing operations with protective clothing (including eye protection). Thoroughly train these personnel in the safe handling and disposal of the chemical and high temperature solutions they are using. See Cleaning/Sanitizing Chemical Hazard in the Safety Information section.

1. Sanitizing should be performed not more than 15 minutes prior to using processing equipment. Sanitizing solutions can be very corrosive to stainless steel, especially when their concentrations are increased by drying on the unit.
2. Sanitizing should be performed by recirculating a chemical solution containing 100 ppm chlorine concentration at a temperature of 75 to 90 F for a period not to exceed three minutes. Consult the local health department for the ppm of the sanitizing solution required in your area.
3. Rinsing must be done within a period of not less than 5 minutes after sanitizing. This will ensure effective bactericidal action without corrosive effects to unit surfaces.

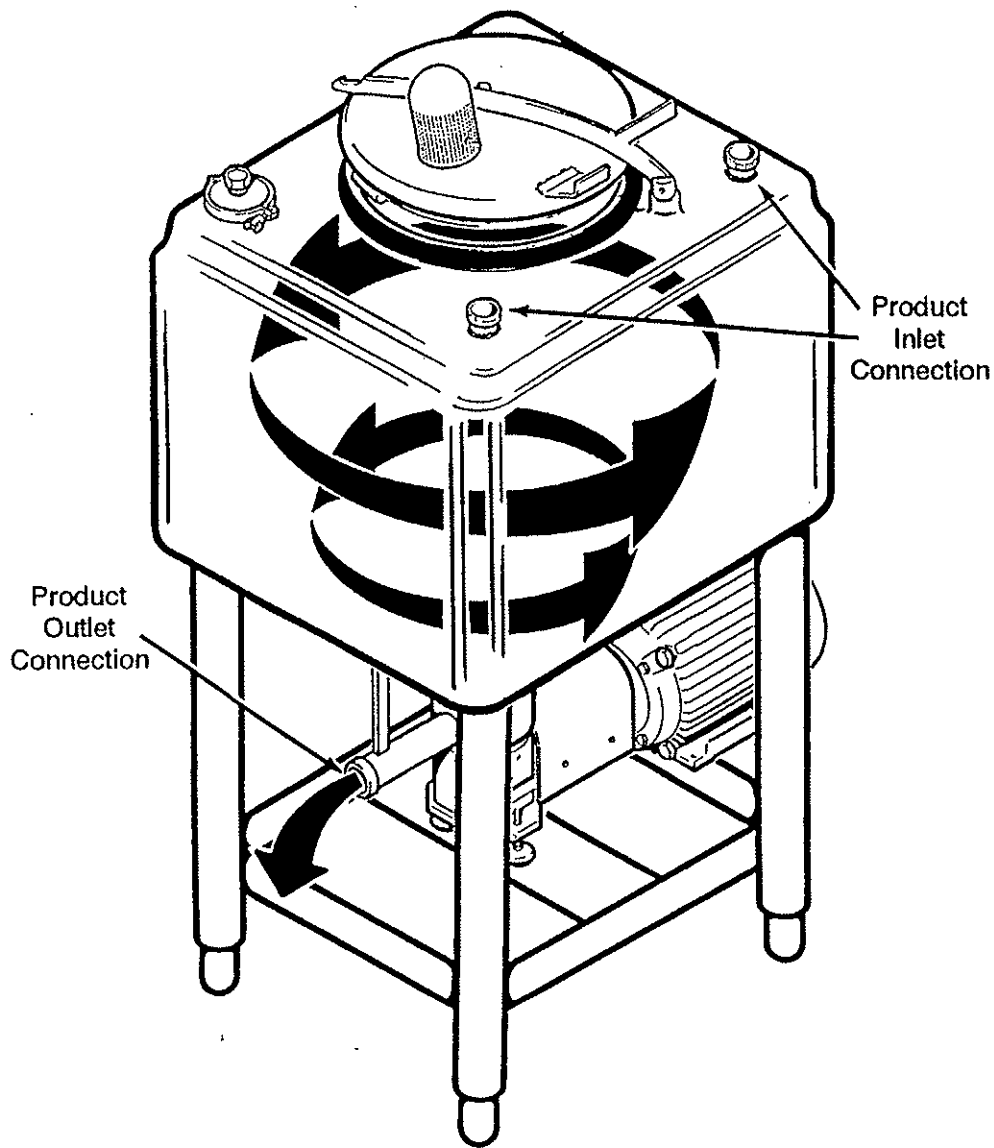
Theory of Operation

The unit is a high speed mixer/blender designed to incorporate dry solids, semi-solids or liquids into a slurry or liquid product.

Ingredients are fed into the product inlet connections at the top of the unit. Then are drawn through a liquid vortex created by a high speed, rotating impeller located at the bottom of the unit.

The mixture is propelled against the unit sidewalls for rapid incorporation of ingredients and continuous recirculation.

The product is then discharged or pumped from the product outlet connection.



Typical Product Flow Through Unit

Operation

Starting the Unit

If the unit is equipped with an optional heat exchange surface, refer to the Options section for media information.



DANGER

When the unit is operating, the impeller can cause severe injury or loss of life for anyone inside the unit. Unless absolutely necessary, do not operate the impeller without the manway cover secured. If a process requires the addition of ingredients through the manway opening, with the impeller operating, an unavoidable hazard is created. USE EXTREME CAUTION. Thoroughly train all personnel so they are aware of the hazards of operating the unit.



CAUTION

DO NOT operate the unit until the vent screen has been installed.



CAUTION

Operation with the unit "dry" causes heat build-up and seal component damage. Do not operate the impeller with the unit empty or with only solid or semi-solid products inside.

1. If processing a food product, sanitize product contact surfaces. See Sanitizing in the Cleaning and Sanitizing section.
2. Add product to the unit. Completely cover the impeller.
3. Close the manway cover, secure the latch.
4. Start the impeller drive motor.
5. Incorporation of some products may be improved by recirculation; pumping out of the outlet back into a top inlet. A separate pump is required.

Stopping the Unit

Stop the impeller drive motor and allow complete draining of the product.



CAUTION

If the unit is to remain idle for more than 30 minutes, product may dry and cause sticking and/or damage to the seal components. Immediately after use and before leaving the unit idle, rinse the seal components to prevent potential damage.

Maintenance



DANGER

Personnel will be exposed to hazardous areas of the unit while performing the recommended procedures in this manual. Individual hazard areas are described in the front of this manual. In addition, DANGER and WARNING statements appear where appropriate throughout the manual. Instruct all maintenance personnel of these hazards and the recommended procedures before they perform any maintenance. All maintenance must be performed by trained and authorized personnel only.



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.



DANGER

ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.

Lubrication

Motor

The motor should be lubricated per the manufacturer's recommended procedure.

Drive

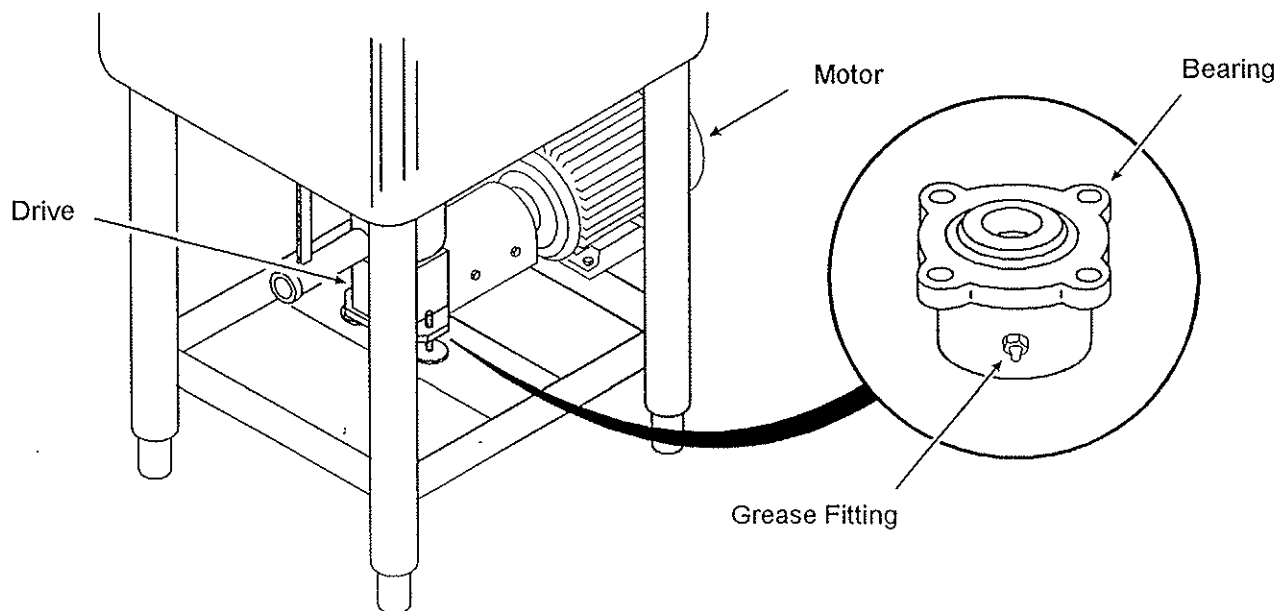
If the drive is in need of service, it should be performed by qualified personnel using the manufacturer's recommended procedures.

Bearing

The bearing should be greased on a regular basis.

Manway Cover Gasket

Check the manway cover gasket for any sign of leaking, deterioration, cracking, loss of elasticity, or change in dimension. Replace if necessary.



Motor and Drive

Maintenance

Impeller Shaft



DANGER

ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.

1. Remove the impeller retaining pin and O-ring that secure the impeller to the impeller shaft.
2. Use a feeler gauge to measure the clearance between the impeller hub and the impeller square shaft.
3. Replace the impeller and/or impeller shaft when the clearance exceeds .01 in.

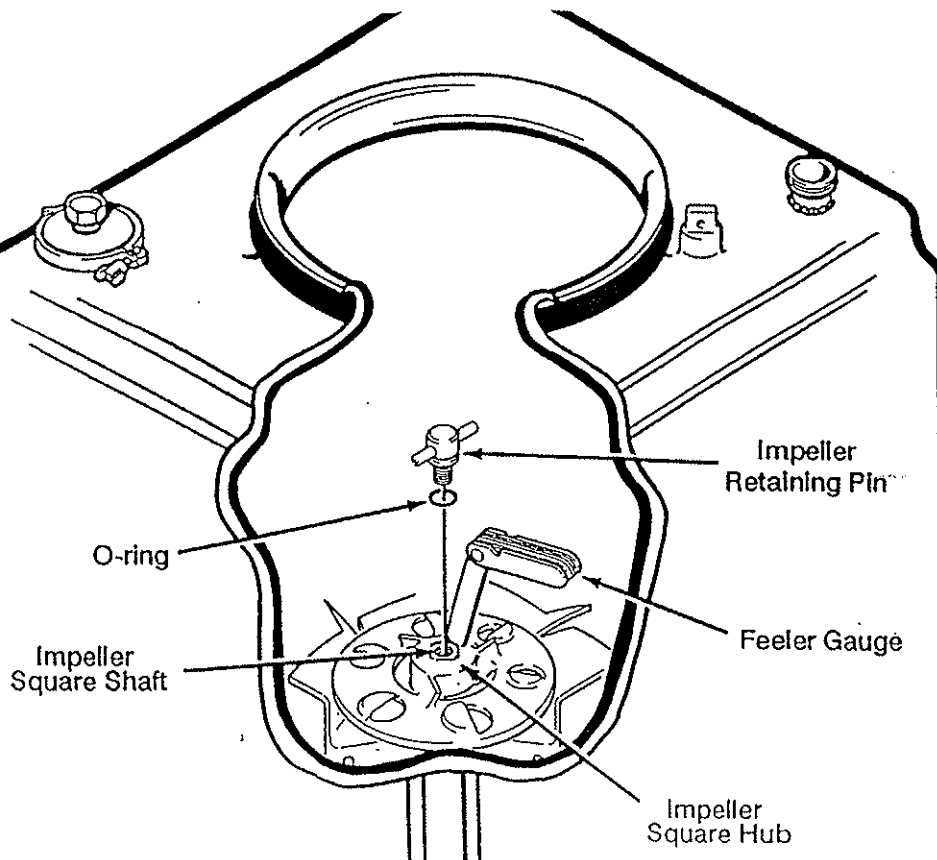


DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.

Replacement

Replacement of the impeller shaft is a critical procedure requiring precise location. **Field replacement is not recommended.** Contact your local APV Crepaco sales representative or the APV Crepaco factory for assistance.



Measuring Clearance Between Impeller Hub and Shaft

Maintenance

Impeller



DANGER

ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.

Replacement, servicing, or cleaning of the impeller requires disassembly and assembly using the following procedures.

Removal

1. Loosen and remove the impeller retaining pin and O-ring.
2. Remove the impeller. The seal retainer and spring may come out with the impeller. If not, remove the seal retainer and spring.
3. Remove the Dynamic seal and the O-ring.
Remove the dynamic seal by gripping the outside of the seal and sliding up over the shaft.
4. Remove the static seal and the O-rings carefully from the bore in the unit bottom by gripping the outside of the static seal.

The static seal and the seal are easily broken or damaged. Handle them with care. Do not drop or strike sealing surfaces with hard objects.

5. Inspect all O-rings and seals for excessive wear, nicks, or tears. If there are any signs of leaks, replace the seals and/or O-rings.

DO NOT scratch or mar the impeller shaft.

Wear Checks and Replacement

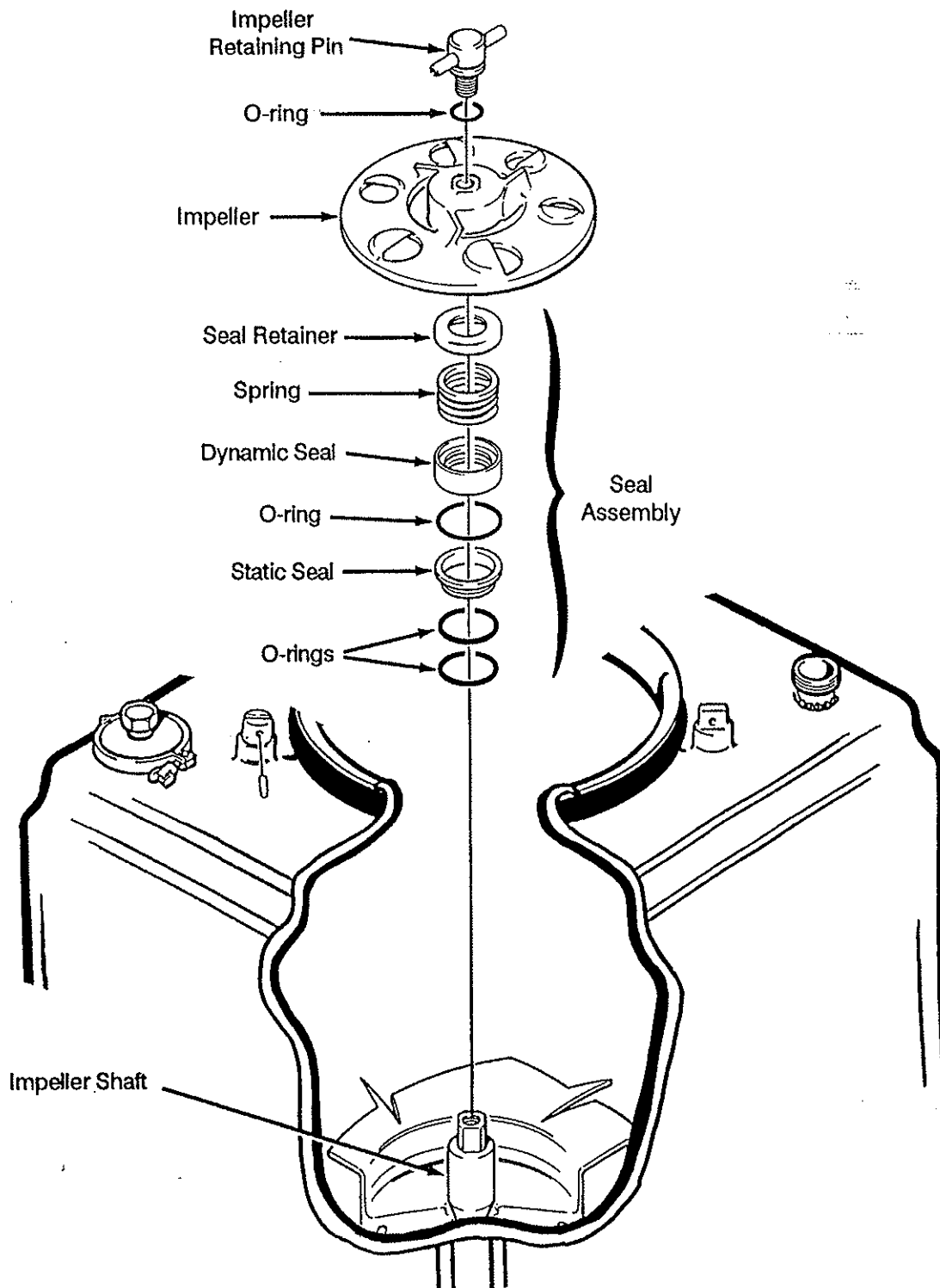
1. Check the O-rings. Replace at any sign of leaking, deterioration, cracking, loss of elasticity, or change in dimension.
2. Check the static seal and dynamic seal surfaces for wear. Replace if these surfaces show signs of wear.
3. Check the spring. Replace if it is bent, damaged, or the free length is less than 1-3/4 in.

Installation

1. Lubricate the seal assembly O-rings to aid in reassembly. Do not lubricate the flat face areas of the static seal and the dynamic seal.
2. Place the O-rings onto the static seal and slide the static seal over the impeller shaft. Line up the slot in the static seal with the locating pin in the bottom of the unit.
3. Insert the O-ring into the dynamic seal. Slide the dynamic seal and O-ring onto the shaft and down to the static seal.
4. Place the spring and the seal retainer onto the shaft. The spring must be aligned in the hole of the static seal before sliding it onto the shaft.
5. Position the impeller onto the impeller shaft.
6. Place the O-ring onto the impeller retaining pin.
7. Insert the impeller retaining pin and O-ring into the impeller shaft.
8. Secure the impeller and seal assembly by tightening the impeller retaining pin.

Seals and O-rings should be cleaned and inspected on a daily basis. Damaged or worn parts should be replaced to prevent leakage and possible gear box failure.

Maintenance



Impeller and Seal Assembly

Maintenance

Coupling Alignment

Units that are supplied with the drive coupled to the motor require an alignment check before starting.

A flexible coupling should not be used to compensate for misalignment of shafts. The purpose of a flexible coupling is to compensate for temperature changes and to permit end movement of shafts without interference with each other while transmitting power.

Couplings supplied by APV Crepaco are correctly aligned before shipment. However, all bases are somewhat flexible and shipping may cause a change in alignment. Therefore, an alignment check is necessary after the unit has been installed and leveled and any time the drive or motor are removed for service. Also, after the unit is installed and operating, recheck the alignment periodically.



DANGER

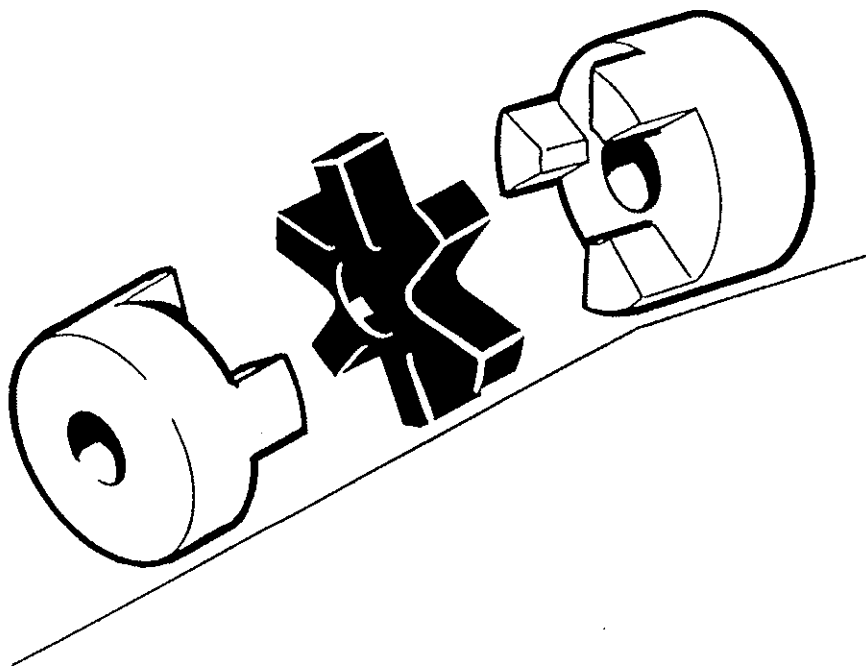
ALWAYS turn off the electrical power supply and Lock Out, using a locking device for which only the person doing the work has the key, before performing service or maintenance.

Checking for Misalignment

Coupling misalignment may be angular, parallel, or both as shown.

Angular Misalignment

Use a feeler gauge to measure the gap between coupling halves. Rotate the complete coupling 1/4 turn, 1/2 turn, and 3/4 turn. The maximum recommended difference in measured spacing is .030 in.

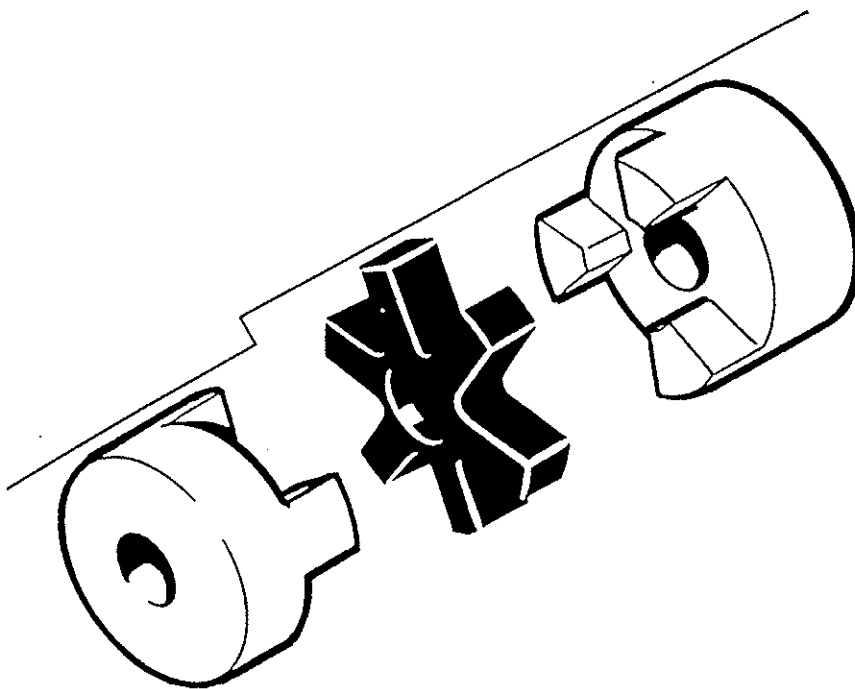


Angular Misalignment

Maintenance

Parallel Misalignment

Place a straight edge parallel to shaft axis across both coupling halves. Check at four places at 1/4 turn intervals around the coupling. Maximum recommended parallel offset is .015 in. Adjust the motor mounting, using shims where necessary, to achieve correct parallel alignment. (Be sure to maintain angular alignment when making adjustments).



Parallel Misalignment

Problem Solving Guide

Problem	Cause	Solution
Seal Leakage	Seal and/or static seal worn or damaged.	Replace.
	O-rings worn.	Replace.
	Spring bent or damaged.	Replace.
	Impeller shaft damaged or misaligned.	Realign or replace (requires factory service).

Problem	Cause	Solution
Vibration	Bottom bearings worn.	Check end play, correct if necessary.
	Impeller shaft damaged or misaligned.	Realign or replace (requires factory service).
	Impeller hub/impeller shaft wear.	Replace.
	Loose mounting bolts for bearing assembly, right angle drive, or motor.	Realign shafts and retighten bolts.
	Unit not level or all legs not touching the floor.	Relevel the unit.

Problem	Cause	Solution
Poor Heating/ Cooling	Media temperature not hot enough or cool enough.	Correct media temperature.
	Media flow rate inadequate.	Increase flow (do not exceed pressure rating of zones).
	Heat exchange zone plugged with rust or scale.	Contact APV Crepaco for factory service assistance.

Options

This section covers optional equipment that may not be applicable to all units.

- Heat Exchange Surface
- Coded Interlock Safety Switch
- Safety Grids
- Four Blade Impeller
- Serrated Chopping Blades
 - Serrated Chopping Blade Guard
- Water Flush Seal

Options

Heat Exchange Surface

1. The unit is equipped with a dimple sheet surface to allow for heating or cooling of the product while it is being blended.
2. If water is the media used, make inlet connections at the bottom on each side of the surface and out the top of each side of the unit to allow for a fully flooded condition with no air pockets.

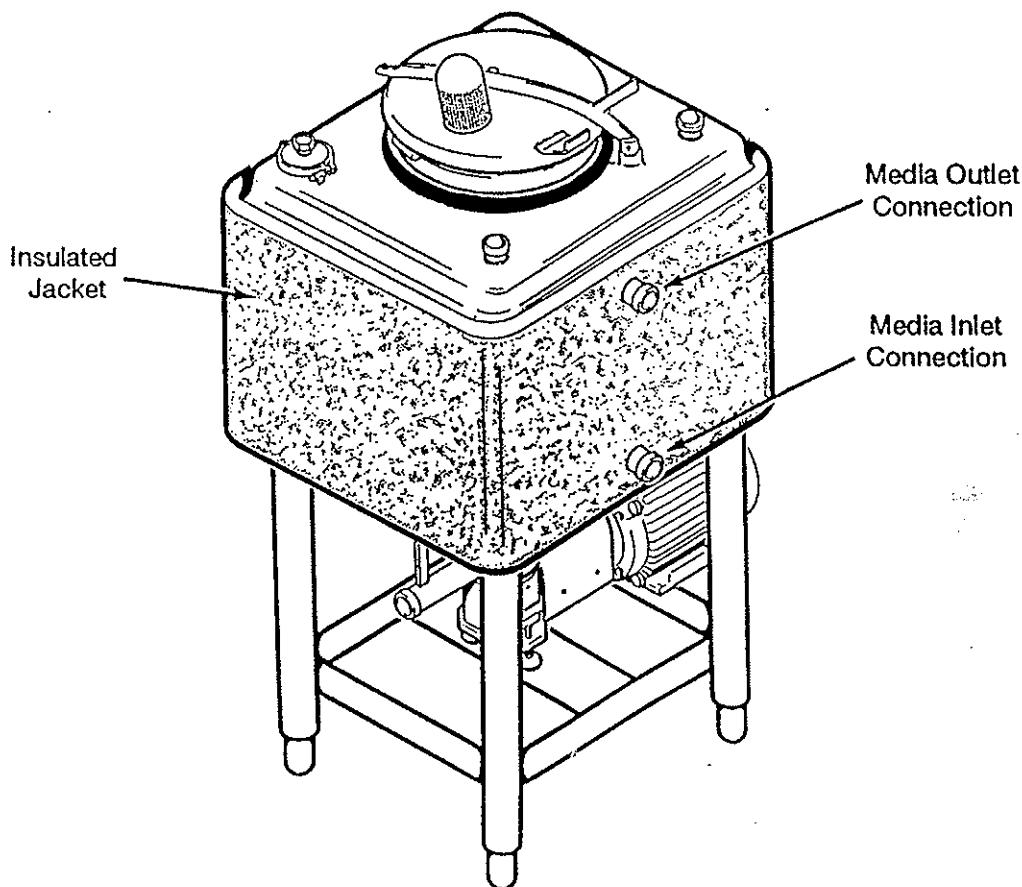
Whether heating with water or steam, or cooling with water or glycol, a pressure relief valve should be installed as close as possible to the heat exchange surface inlet. The valve should be rated at 5 psi less than the maximum allowable working pressure of the heat exchange surface.

Always operate the impeller during heating.

Cleaning the Heat Exchange Jacket

Occasional build-up of lime or foreign matter inside of the heat exchange jacket may slow heating time. Remove build-up to restore efficiency.

1. Prepare a solution of one part "Chlorodine", or equivalent de-limer, to 1-1/2 parts of warm water. Circulate the solution through the full jacket for 30 minutes.
2. Immediately drain out all of the cleaning solution.
3. Follow with a solution of 1-1/4 lbs. of Tri-Sodium Phosphate to 10 U.S. gallons of water. Circulate through the full jacket for 10 minutes.
4. Drain out solution and restore normal media flow.
5. Frequency of this treatment will be determined by the condition of local water supply.



Typical Heat Exchange Surface Piping

Options

Steam Heating Requirements

1. A pump must be installed that is capable of delivering the proper US gallons per minute of medium (water, glycol, etc.) to the heat exchange surface.
2. A pressure regulator must be installed to limit the maximum working pressure to 75 psig.
3. A properly sized relief valve, set at less than the heat exchange surface rating, must be installed to protect from over pressurizing.

Water Requirements

The recommended requirements for either heating or cooling and the boiler horsepower (hp) necessary to provide rapid heating are shown in the following table:

US Gallons	US gpm	Approximate Pressure (psig)	*Boiler hp for Heating
25	8	2	9
50	15	4	12
100	22	5	17
200	45	7	22
300	60	9	27

*Steam requirements will vary depending upon the product being heated, the range of heating, etc. The above boiler horsepower values shown represent maximum demands when heating whole milk.

Piping Connections

1. All connections and lines are to be installed in accordance with local regulatory agencies and for volume and pressure as required in this system.
2. Piping and plumbing must be well supported to prevent strain on the fittings.
3. Check all plumbing for leaks before operating with product.

Process and/or Heat Exchange Media Piping

All piping, whether for process or for heat exchange media (for optional heat exchange surface), is to be supplied and installed by the purchaser.

This includes any valves and pumps for product, ingredients, cleaning solutions, or heating and cooling media that are routed to and from the unit. Any special valves or fittings, to be supplied with the unit by APV Crepaco factory, will be noted on the General Assembly Drawing.

Piping, valves, pumps, etc. may be purchased separately through the APV Crepaco sales office serving you.



CAUTION

Independently support and align all process piping attached to the unit. Do not support piping from fittings. Make sure that the piping support is located at a distance of at least 10 times the pipe diameter from the connection to the unit, or use an expansion joint to permit thermal expansion of the piping and the unit.



WARNING

Incorrect or careless plumbing installation could cause leaks of high temperature steam or fluids or exposure of high temperature surfaces. Contact with the high temperature fluids or surfaces could cause severe burns. All installation of service piping, valves, and other controls must be performed by trained and authorized plumbers only. All plumbing installation must comply with all applicable codes and standards including those established by OSHA.

Heating/Cooling Media Service Piping

When the unit is equipped with an optional heat exchange surface with insulation and an outer jacket, the installation of heating cooling media piping, valves, and controls will vary depending on the services to be used (water, steam, glycol).

1. Install a main supply On-Off control valve in each service to be used.

Options

2. Install a pressure control valve in all media piping.



CAUTION

Failure to protect against excess pressure may cause damage to heat exchange zones. Install a pressure relief valve at the heat exchange zone inlet connection. Locate the relief valve between the media shutoff valve and the heat exchange surface. Set the valve to relieve at a pressure equal to or less than the maximum rated pressure shown on the information plate attached to the unit.

3. Install a filter in all media supplies to remove rust, scale, or other foreign matter which could plug or foul the heat exchange zone or controls.
4. Select and install all service piping in accordance with good plumbing practice to minimize pressure loss. Consult the General Assembly Drawing in the Service Parts section for location and size of all service connections. Always use line sizes equal to or larger than the connection size provided. The use of insulation on chilled water/glycol lines and steam lines is recommended to minimize temperature loss.
5. The flow path for water/glycol heat exchange media is; inlet at the bottom, outlet at the top. The flow path for direct steam heating is the opposite; inlet at the top, condensate outlet at the bottom. If both water/glycol and direct steam heating are to be used, valving of these services must provide for the reversing of flow path.
6. Install a valve to permit draining of the heat exchange surface.
7. Include connection points in the supply and return lines for pressure and temperature gauges. If necessary, gauges may be installed to help analyze heat exchange problems.

8. If direct steam heating is to be used, install the following:

Water and steam connections are marked with tags.

- a. Steam connections and jets sized to provide good heating results when steam at a pressure of 50 to 75 psig is supplied to the unit with the valve wide open.

If the pressure is under 50 psig, but not less than 40 psig, a steam supply line of one pipe size larger than the steam connection size should be installed at the unit.



CAUTION

Under no circumstances should the steam line to the unit be allowed to exceed 75 psig.

- b. If boiler pressures exceeds 75 psig, a pressure reducing valve, set to limit pressure to 75 psig, must be installed by the purchaser.
- c. If it is necessary to check the steam pressure because of unsatisfactory results, a pressure gauge should be installed between the steam strainer and the steam regulator.

If steam pressure is low, inspect the strainer screen to see if it is clogged.

9. Connect the cooling water supply to the unit at the point tagged Water In. If recirculated sweet water is to be used for cooling, connect both the city water and sweet water supply lines to the unit at the point tagged Water In.

Options

Heat Exchange Media

Heat exchange (heating and/or cooling) media (water, glycol, etc.) will vary with your specific process and product(s). The number and size of heat exchange surfaces (zones) and number of inlet/outlet cooling and/or heating connection points and their location will likewise vary with your specific process and product(s).

Refer to the General Assembly Drawing in the Service Parts section of this manual for your specific heat exchange requirements and design.

Hot Water Heating with Integral Heating Circulation Units

1. Hot water is customarily used for heating when a medium heating temperature range of control is required. The hot water is directed, under pressure, through the various zones with flow in parallel. Any individual zone or combination of zones can be used as required by opening the control valves. The valves should be either fully open or tightly closed as operation in an intermediate position will cause wear on the valve seat and result in leakage.
2. If the plant has a hot water system and method of circulation, bring hot water into the connection tagged Water In. It should return to the hot water heater through connection tagged Water Out.
3. If the unit is furnished with an integral heating circulating unit, it is only necessary to bring a steam line to the inlet connection tagged Steam. After filling the zones to be used with water, start the pump and open the supply steam valve. A self acting regulator is furnished to allow the operator to control the temperature of the heating water at the required point. The hot water thermometer furnished, shows the temperature of water entering the heating zones. The water temperature can be increased by turning the adjusting nut on the self acting regulator to the right. The maximum temperature setting is approximately 195 F.



CAUTION

The 1 in. safety relief valve set at 75 psig, furnished on every unit, should never be valved or closed in any way. Doing so could result in serious damage to the unit.

Safety Relief Valve

The jacket of the unit is designed for a maximum operating pressure of 75 psig. Set the safety relief valve to open at this pressure.



CAUTION

The discharge from this valve must, under no circumstances, be restricted or valved; otherwise, necessary protection of the unit under unusual operating conditions is lost.

Pressure Relief Valves

Suitable pressure relief valves must be installed by the purchaser to the unit and/or heat exchange surface prior to operation.



CAUTION

There is a chance of damage to the heat exchange zones if protection is not provided. Pressure surges, water hammer, and expansion and contraction from changing temperatures are all forces which can rupture the heat exchange zone(s) on the unit. Therefore, install a pressure relief valve in the media supply line between the shutoff valve and the unit surface. Set the valve to relieve at a pressure equal to or less than the maximum rated pressure shown on the information plate attached to the unit.

Options

Operation

Heating or Cooling

1. Control product heating or cooling by opening and closing the valves in the media supply lines (hot or cold water, steam).



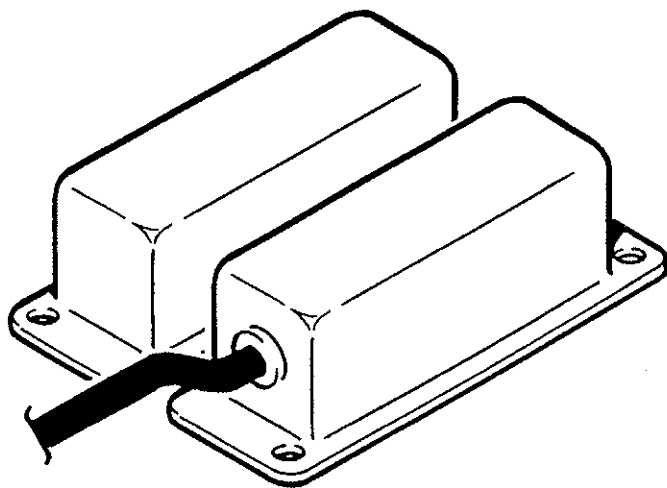
WARNING

Contact with high temperature lines or controls can cause severe burns. Incorrect installation or malfunctioning controls may cause a hazard of high temperature surfaces. Use caution when working with, or in the area of, high temperature media lines or controls.

2. Operate the impeller to maintain a maximum and even rate of heat transfer.
3. When using high temperature for heating, the following precautions will minimize product burn-on:
 - a. Maintain the product level above the heat exchange zone in the sidewall.
 - b. Use the lowest feasible media temperature.
 - c. Always operate the impeller during heating.
4. The mechanical energy used in mixing will add heat to the product during extended mixing times.

Options

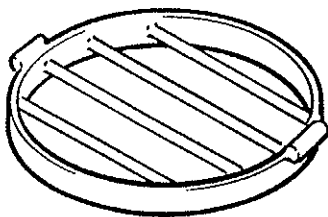
Coded Interlock Safety Switch



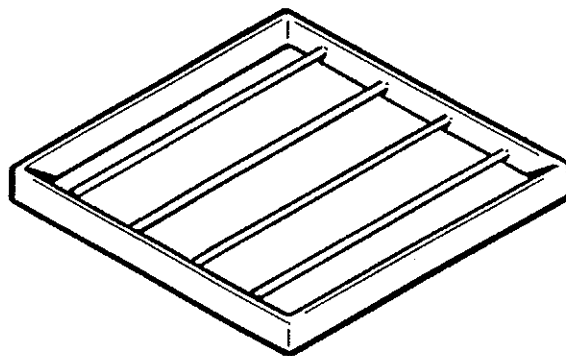
Stops impeller whenever cover is lifted.

Coded Interlock Safety Switch

Safety Grids



Round Safety Grid/ Manway Cover



Square Safety Grid/ Manway Cover

Options

Four Blade Impeller

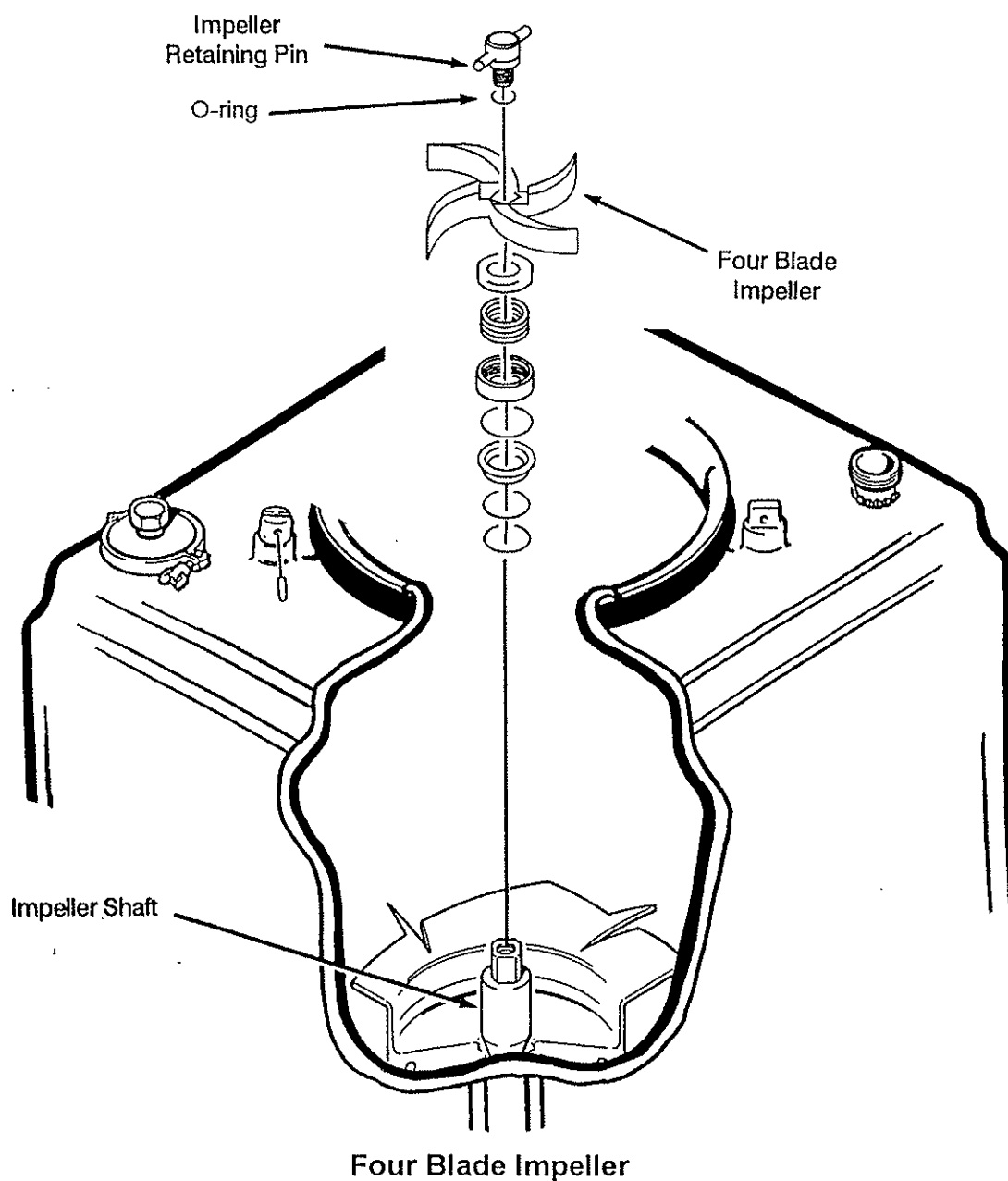
The four blade impeller is designed to maintain a liquid slurry at the bottom of the unit. This keeps small solid particles suspended in the liquid.

Removal

1. Loosen and remove the impeller retaining pin, and O-ring.
2. Remove the impeller from the impeller shaft.

Installation

1. Install the impeller on the impeller shaft.
2. Install the O-ring and the retaining pin.



Options

Serrated Chopping Blades



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury. Refer to the Serrated Chopping Blade Guard section for proper placement of the blade guard.

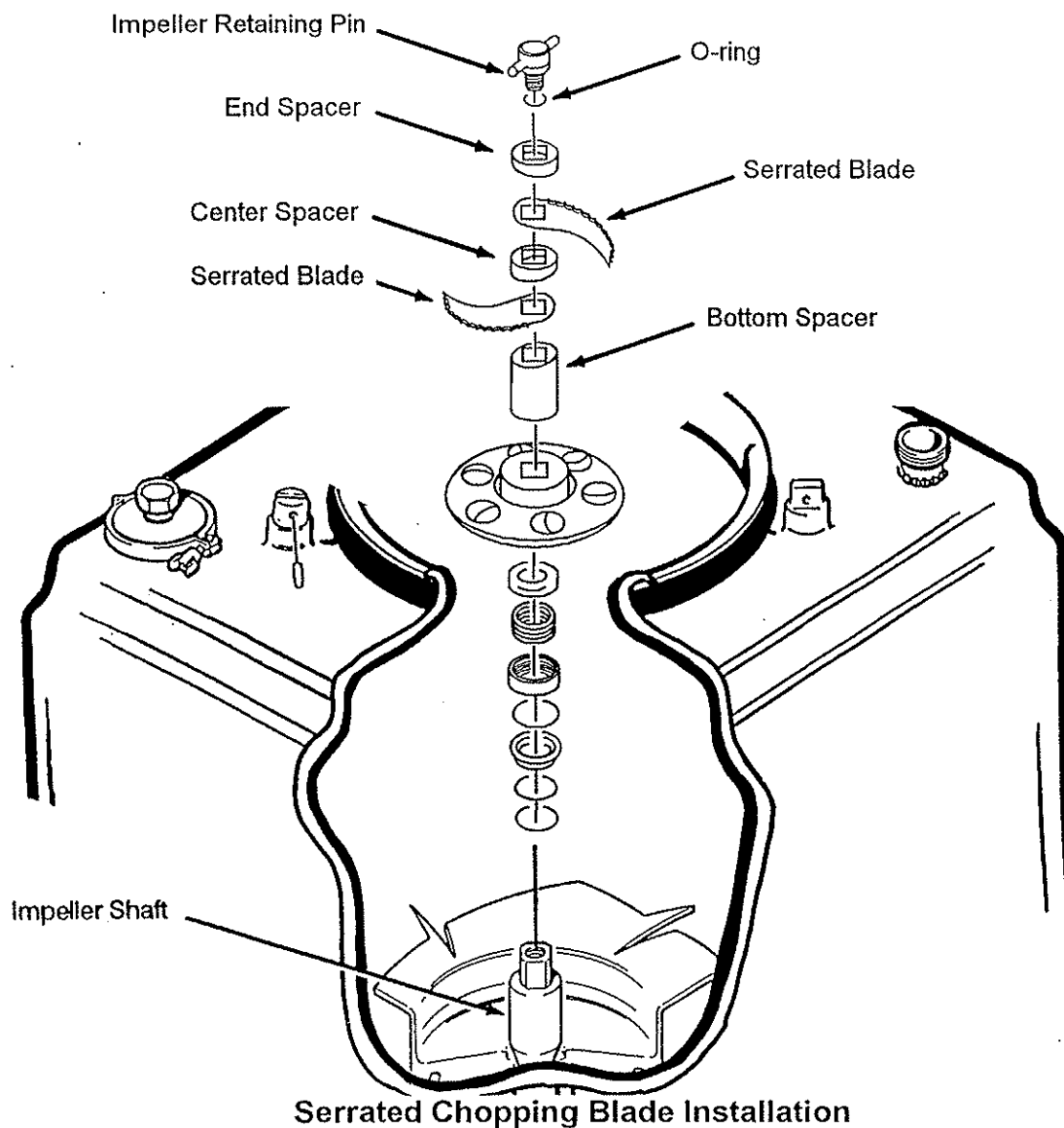
Serrated chopping blades are designed to break up and reduce chunks or blocks of solid product.

Removal

1. Remove the impeller retaining pin, O-ring, and end spacer from the impeller shaft.
2. Slide the serrated chopping blades and the center spacer up and off of the shaft.

Installation

1. Place the serrated chopping blades, center spacer, and end spacer onto the impeller shaft.
2. Install the impeller retaining pin and O-ring onto the impeller shaft.



Options

Serrated Chopping Blade Guard



DANGER

Do not enter the unit unless the blade guard has been correctly placed over the serrated chopping blades. Failure to do so may result in severe injury.

Installation

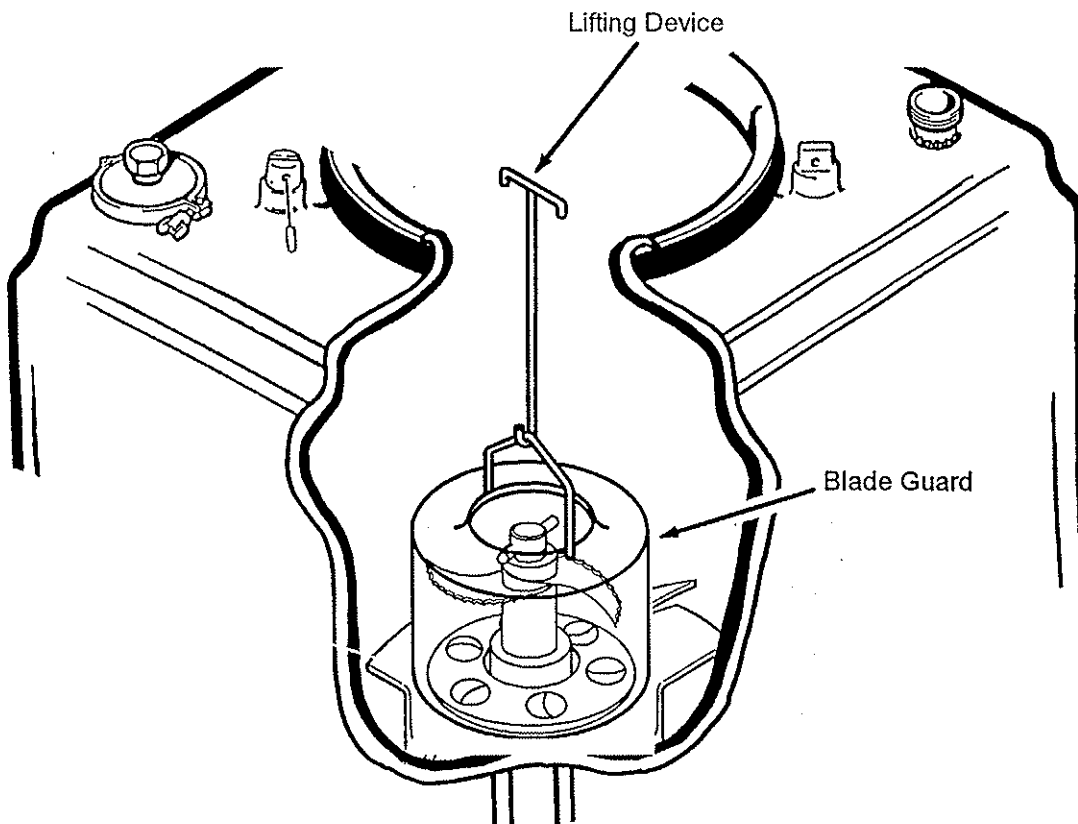
1. While remaining on the outside of the unit, lift the blade guard with the lifting device.

2. While remaining outside of the unit, lower the guard down over the serrated chopping blades as shown.

3. Remove the lifting device from the blade guard.

Removal

While remaining outside of the unit and using the lifting device, lift the blade guard up and out of the unit.

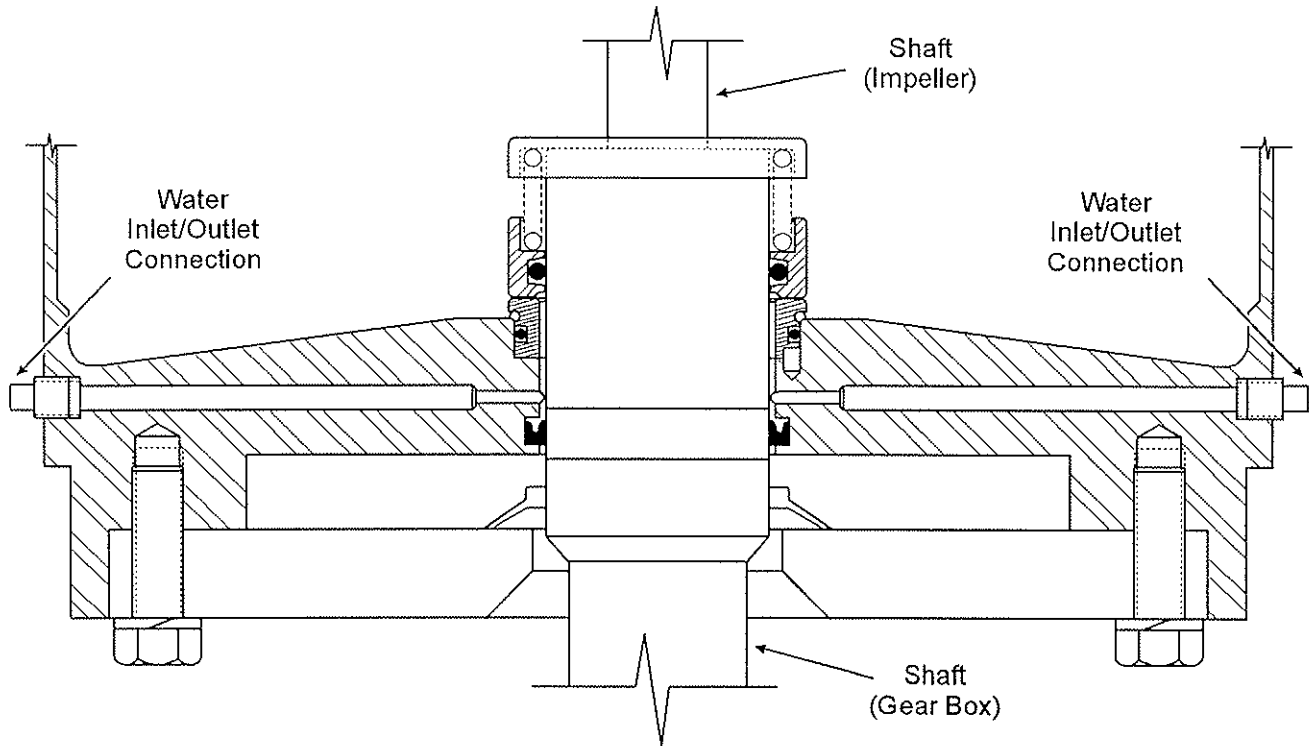


Proper Blade Guard Positioning

Options

Water Flush Seal

When water flush seals are required, the media should be piped to the unit as shown below.



Water Flush Seal Connection Location

Fahrenheit to Celsius Conversion Table

$$F=(1.8 \times C) + 32$$

$$C=(F-32) \times .556$$

Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius
-30.0	-34.5	29.0	-1.7	88.0	31.1	147.0	63.9	206.0	96.7
-29.0	-33.9	30.0	-1.1	89.0	31.7	148.0	64.5	207.0	97.3
-28.0	-33.4	31.0	-0.6	90.0	32.2	149.0	65.1	208.0	97.9
-27.0	-32.8	32.0	0.0	91.0	32.8	150.0	65.6	209.0	98.4
-26.0	-32.2	33.0	0.6	92.0	33.4	151.0	66.2	210.0	99.0
-25.0	-31.7	34.0	1.1	93.0	33.9	152.0	66.7	211.0	99.5
-24.0	-31.1	35.0	1.7	94.0	34.5	153.0	67.3	212.0	100.1
-23.0	-30.6	36.0	2.2	95.0	35.0	154.0	67.8	213.0	100.6
-22.0	-30.0	37.0	2.8	96.0	35.6	155.0	68.4	214.0	101.2
-21.0	-29.5	38.0	3.3	97.0	36.1	156.0	68.9	215.0	101.7
-20.0	-28.9	39.0	3.9	98.0	36.7	157.0	69.5	216.0	102.3
-19.0	-28.4	40.0	4.4	99.0	37.3	158.0	70.1	217.0	102.9
-18.0	-27.8	41.0	5.0	100.0	37.8	159.0	70.6	218.0	103.4
-17.0	-27.2	42.0	5.6	101.0	38.4	160.0	71.2	219.0	104.0
-16.0	-26.7	43.0	6.1	102.0	38.9	161.0	71.7	220.0	104.5
-15.0	-26.1	44.0	6.7	103.0	39.5	162.0	72.3	221.0	105.1
-14.0	-25.6	45.0	7.2	104.0	40.0	163.0	72.8	222.0	105.6
-13.0	-25.0	46.0	7.8	105.0	40.6	164.0	73.4	223.0	106.2
-12.0	-24.5	47.0	8.3	106.0	41.1	165.0	73.9	224.0	106.8
-11.0	-23.9	48.0	8.9	107.0	41.7	166.0	74.5	225.0	107.3
-10.0	-23.4	49.0	9.5	108.0	42.3	167.0	75.1	226.0	107.9
-9.0	-22.8	50.0	10.0	109.0	42.8	168.0	75.6	227.0	108.4
-8.0	-22.2	51.0	10.6	110.0	43.4	169.0	76.2	228.0	109.0
-7.0	-21.8	52.0	11.1	111.0	43.9	170.0	76.7	229.0	109.5
-6.0	-21.1	53.0	11.7	112.0	44.5	171.0	77.3	230.0	110.1
-5.0	-20.6	54.0	12.2	113.0	45.0	172.0	77.8	231.0	110.6
-4.0	-20.0	55.0	12.8	114.0	45.6	173.0	78.4	232.0	111.2
-3.0	-19.5	56.0	13.3	115.0	46.1	174.0	79.0	233.0	111.8
-2.0	-18.9	57.0	13.9	116.0	46.7	175.0	79.5	234.0	112.3
-1.0	-18.3	58.0	14.5	117.0	47.3	176.0	80.1	235.0	112.9
0.0	-17.8	59.0	15.0	118.0	47.8	177.0	80.6	236.0	113.4
1.0	-17.2	60.0	15.6	119.0	48.4	178.0	81.2	237.0	114.0
2.0	-16.7	61.0	16.1	120.0	48.9	179.0	81.7	238.0	114.5
3.0	-16.1	62.0	16.7	121.0	49.5	180.0	82.3	239.0	115.1
4.0	-15.6	63.0	17.2	122.0	50.0	181.0	82.8	240.0	115.6
5.0	-15.0	64.0	17.8	123.0	50.6	182.0	83.4	241.0	116.2
6.0	-14.5	65.0	18.3	124.0	51.2	183.0	84.0	242.0	116.8
7.0	-13.9	66.0	18.9	125.0	51.7	184.0	84.5	243.0	117.3
8.0	-13.3	67.0	19.5	126.0	52.3	185.0	85.1	244.0	117.9
9.0	-12.8	68.0	20.0	127.0	52.8	186.0	85.6	245.0	118.4
10.0	-12.2	69.0	20.6	128.0	53.4	187.0	86.2	246.0	119.0
11.0	-11.7	70.0	21.1	129.0	53.9	188.0	86.7	247.0	119.5
12.0	-11.1	71.0	21.7	130.0	54.5	189.0	87.3	248.0	120.1
13.0	-10.6	72.0	22.2	131.0	55.0	190.0	87.8	249.0	120.7
14.0	-10.0	73.0	22.8	132.0	55.6	191.0	88.4	250.0	121.2
15.0	-9.5	74.0	23.4	133.0	56.2	192.0	89.0		
16.0	-8.9	75.0	23.9	134.0	56.7	193.0	89.5		
17.0	-8.3	76.0	24.5	135.0	57.3	194.0	90.1		
18.0	-7.8	77.0	25.0	136.0	57.8	195.0	90.6		
19.0	-7.2	78.0	25.6	137.0	58.4	196.0	91.2		
20.0	-6.7	79.0	26.1	138.0	58.9	197.0	91.7		
21.0	-6.1	80.0	26.7	139.0	59.5	198.0	92.3		
22.0	-5.6	81.0	27.2	140.0	60.0	199.0	92.9		
23.0	-5.0	82.0	27.8	141.0	60.6	200.0	93.4		
24.0	-4.4	83.0	28.4	142.0	61.2	201.0	94.0		
25.0	-3.9	84.0	28.9	143.0	61.7	202.0	94.5		
26.0	-3.3	85.0	29.5	144.0	62.3	203.0	95.1		
27.0	-2.8	86.0	30.0	145.0	62.8	204.0	95.6		
28.0	-2.2	87.0	30.6	146.0	63.4	205.0	96.2		

Foot Pounds (ft-lb) to Newton Meters (N·M) Conversion Table

1 ft-lb = 1.3355818 N·M (Newton Meter)

ft-lb	N·M	ft-lb	N·M
1	1.35	51	69.16
2	2.71	52	70.51
3	4.07	53	71.87
4	5.42	54	73.22
5	6.78	55	74.58
6	8.14	56	75.94
7	9.49	57	77.29
8	10.85	58	78.65
9	12.20	59	80.00
10	13.56	60	81.36
11	14.92	61	82.72
12	16.27	62	84.07
13	17.63	63	85.43
14	18.98	64	86.78
15	20.34	65	88.14
16	21.70	66	89.50
17	23.05	67	90.85
18	24.41	68	92.21
19	25.76	69	93.56
20	27.12	70	94.92
21	28.48	71	96.28
22	29.83	72	97.63
23	31.19	73	98.99
24	32.54	74	100.34
25	33.90	75	101.70
26	35.26	76	103.06
27	36.61	77	104.41
28	37.97	78	105.77
29	39.32	79	107.12
30	40.68	80	108.48
31	42.04	81	109.84
32	43.39	82	111.19
33	44.75	83	112.55
34	46.10	84	113.90
35	47.46	85	115.26
36	48.82	86	116.62
37	50.17	87	117.97
38	51.53	88	119.33
39	52.88	89	120.68
40	54.24	90	122.04
41	55.60	91	123.40
42	56.95	92	124.75
43	58.31	93	126.11
44	59.66	94	127.46
45	61.02	95	128.82
46	62.38	96	130.18
47	63.73	97	131.53
48	65.09	98	132.89
49	66.44	99	134.24
50	67.80	100	135.60

US Fluid Ounces to Liters Conversion Table

1 Ounce = .02957 Liters

Ounces	Liters	Ounces	Liters
1	0.030	51	1.530
2	0.060	52	1.560
3	0.090	53	1.590
4	0.120	54	1.620
5	0.150	55	1.650
6	0.180	56	1.680
7	0.210	57	1.710
8	0.240	58	1.740
9	0.270	59	1.770
10	0.300	60	1.800
11	0.330	61	1.830
12	0.360	62	1.860
13	0.390	63	1.890
14	0.420	64	1.920
15	0.450	65	1.950
16	0.480	66	1.980
17	0.510	67	2.010
18	0.540	68	2.040
19	0.570	69	2.070
20	0.600	70	2.100
21	0.630	71	2.130
22	0.660	72	2.160
23	0.690	73	2.190
24	0.720	74	2.220
25	0.750	75	2.250
26	0.780	76	2.280
27	0.810	77	2.310
28	0.840	78	2.340
29	0.870	79	2.370
30	0.900	80	2.400
31	0.930	81	2.430
32	0.960	82	2.460
33	0.990	83	2.490
34	1.020	84	2.520
35	1.050	85	2.550
36	1.080	86	2.580
37	1.110	87	2.610
38	1.140	88	2.640
39	1.170	89	2.670
40	1.200	90	2.700
41	1.230	91	2.730
42	1.260	92	2.760
43	1.290	93	2.790
44	1.320	94	2.820
45	1.350	95	2.850
46	1.380	96	2.880
47	1.410	97	2.910
48	1.440	98	2.940
49	1.470	99	2.970
50	1.500	100	3.000

Inches to Millimeters Conversion Table

1 inch = 25.4 mm

in.	mm	in.	mm
0.10	2.54	11.25	285.75
0.15	3.81	11.50	292.10
0.20	5.08	11.75	298.45
0.25	6.35	12.00	304.80
0.30	7.62	12.25	311.15
0.35	8.89	12.50	317.50
0.40	10.16	12.75	323.85
0.45	11.43	13.00	330.20
0.50	12.70	13.25	336.55
0.55	13.97	13.50	342.90
0.60	15.24	13.75	349.25
0.65	16.51	14.00	355.60
0.70	17.78	14.25	361.95
0.75	19.05	14.50	368.30
0.80	20.32	14.75	374.65
0.85	21.59	15.00	381.00
0.90	22.86	15.25	387.35
0.95	24.13	15.50	393.70
1.00	25.40	15.75	400.05
1.25	31.75	16.00	406.40
1.50	38.10	16.25	412.75
1.75	44.45	16.50	419.10
2.00	50.80	16.75	425.45
2.25	57.15	17.00	431.80
2.50	63.50	17.25	438.15
2.75	69.85	17.50	444.50
3.00	76.20	17.75	450.85
3.25	82.55	18.00	457.20
3.50	88.90	18.25	463.55
3.75	95.25	18.50	469.90
4.00	101.60	18.75	476.25
4.25	107.95	19.00	482.60
4.50	114.30	19.25	488.95
4.75	120.65	19.50	495.30
5.00	127.00	19.75	501.65
5.25	133.35	20.00	508.00
5.50	139.70	20.25	514.35
5.75	146.05	20.50	520.70
6.00	152.40	20.75	527.05
6.25	158.75	21.00	533.40
6.50	165.10	21.25	539.75
6.75	171.45		
7.00	177.80		
7.25	184.15		
7.50	190.50		
7.75	196.85		
8.00	203.20		
8.25	209.55		
8.50	215.90		
8.75	222.25		
9.00	228.60		
9.25	234.95		
9.50	241.30		
9.75	247.65		
10.00	254.00		
10.25	260.35		
10.50	266.70		
10.75	273.05		
11.00	279.40		

Inches to Centimeters Conversion Table

1 inch = 2.54 cm

in.	cm	in.	cm	in.	cm
0.25	0.635	54.00	137.160	113.00	287.020
0.50	1.270	55.00	139.700	114.00	289.560
0.75	1.905	56.00	142.240	115.00	292.100
1.00	2.540	57.00	144.780	116.00	294.640
1.25	3.175	58.00	147.320	117.00	297.180
1.50	3.810	59.00	149.860	118.00	299.720
1.75	4.445	60.00	152.400	119.00	302.260
2.00	5.080	61.00	154.940	120.00	304.800
3.00	7.620	62.00	157.480	121.00	307.340
4.00	10.160	63.00	160.020	122.00	309.880
5.00	12.700	64.00	162.560	123.00	312.420
6.00	15.240	65.00	165.100	124.00	314.960
7.00	17.780	66.00	167.640	125.00	317.500
8.00	20.320	67.00	170.180	126.00	320.040
9.00	22.860	68.00	172.720	127.00	322.580
10.00	25.400	69.00	175.260	128.00	325.120
11.00	27.940	70.00	177.800	129.00	327.660
12.00	30.480	71.00	180.340	130.00	330.200
13.00	33.020	72.00	182.880	131.00	332.740
14.00	35.560	73.00	185.420	132.00	335.280
15.00	38.100	74.00	187.960	133.00	337.820
16.00	40.640	75.00	190.500	134.00	340.360
17.00	43.180	76.00	193.040	135.00	342.900
18.00	45.720	77.00	195.580	136.00	345.440
19.00	48.260	78.00	198.120	137.00	347.980
20.00	50.800	79.00	200.660	138.00	350.520
21.00	53.340	80.00	203.200	139.00	353.060
22.00	55.880	81.00	205.740	140.00	355.600
23.00	58.420	82.00	208.280	141.00	358.140
24.00	60.960	83.00	210.820	142.00	360.680
25.00	63.500	84.00	213.360	143.00	363.220
26.00	66.040	85.00	215.900	144.00	365.760
27.00	68.580	86.00	218.440	145.00	368.300
28.00	71.120	87.00	220.980	146.00	370.840
29.00	73.660	88.00	223.520	147.00	373.380
30.00	76.200	89.00	226.060	148.00	375.920
31.00	78.740	90.00	228.600	149.00	378.460
32.00	81.280	91.00	231.140	150.00	381.000
33.00	83.820	92.00	233.680	151.00	383.540
34.00	86.360	93.00	236.220	152.00	386.080
35.00	88.900	94.00	238.760	153.00	388.620
36.00	91.440	95.00	241.300	154.00	391.160
37.00	93.980	96.00	243.840	155.00	393.700
38.00	96.520	97.00	246.380	156.00	396.240
39.00	99.060	98.00	248.920	157.00	398.780
40.00	101.600	99.00	251.460	158.00	401.320
41.00	104.140	100.00	254.000	159.00	403.860
42.00	106.680	101.00	256.540	160.00	406.400
43.00	109.220	102.00	259.080	161.00	408.940
44.00	111.760	103.00	261.620	162.00	411.480
45.00	114.300	104.00	264.160	163.00	414.020
46.00	116.840	105.00	266.700	164.00	416.560
47.00	119.380	106.00	269.240	165.00	419.100
48.00	121.920	107.00	271.780	166.00	421.640
49.00	124.460	108.00	274.320	167.00	424.180
50.00	127.000	109.00	276.860	168.00	426.720
51.00	129.540	110.00	279.400	169.00	429.260
52.00	132.080	111.00	281.940	170.00	431.800
53.00	134.620	112.00	284.480	171.00	434.340

Gallons to Liters Conversion Table

1 Gallon = 3.785 Liters

Gallons	Liters	Gallons	Liters
1	3.785	420	1589.700
2	7.570	430	1627.550
3	11.355	440	1665.400
4	15.140	450	1703.250
5	18.925	460	1741.100
6	22.710	470	1778.950
7	26.495	480	1816.800
8	30.280	490	1854.650
9	34.065	500	1892.500
10	37.850	510	1930.350
20	75.700	520	1968.200
30	113.550	530	2006.050
40	151.400	540	2043.900
50	189.250	550	2081.750
60	227.100	560	2119.600
70	264.950	570	2157.450
80	302.800	580	2195.300
90	340.650	590	2233.150
100	378.500	600	2271.000
110	416.350	610	2308.850
120	454.200	620	2346.700
130	492.050	630	2384.550
140	529.900	640	2422.400
150	567.750	650	2460.250
160	605.600	660	2498.100
170	643.450	670	2535.950
180	681.300	680	2573.800
190	719.150	690	2611.650
200	757.000	700	2649.500
210	794.850	710	2687.350
220	832.700	720	2725.200
230	870.550	730	2763.050
240	908.400	740	2800.900
250	946.250	750	2838.750
260	984.100	760	2876.600
270	1021.950	770	2914.450
280	1059.800	780	2952.300
290	1097.650	790	2990.150
300	1135.500	800	3028.000
310	1173.350	810	3065.850
320	1211.200	820	3103.700
330	1249.050	830	3141.550
340	1286.900	840	3179.400
350	1324.750	850	3217.250
360	1362.600	860	3255.100
370	1400.450	870	3292.950
380	1438.300	880	3330.800
390	1476.150	890	3368.650
400	1514.000	900	3406.500
410	1551.850		

Quarts to Liters Conversion Table

1 Quart = .946 Liters

Quarts	Liters	Quarts	Liters
1	0.946	51	48.246
2	1.892	52	49.192
3	2.838	53	50.138
4	3.784	54	51.084
5	4.730	55	52.030
6	5.676	56	52.976
7	6.622	57	53.922
8	7.568	58	54.868
9	8.514	59	55.814
10	9.460	60	56.760
11	10.406	61	57.706
12	11.352	62	58.652
13	12.298	63	59.598
14	13.244	64	60.544
15	14.190	65	61.490
16	15.136	66	62.436
17	16.082	67	63.382
18	17.028	68	64.328
19	17.974	69	65.274
20	18.920	70	66.220
21	19.866	71	67.166
22	20.812	72	68.112
23	21.758	73	69.058
24	22.704	74	70.004
25	23.650	75	70.950
26	24.596	76	71.896
27	25.542	77	72.842
28	26.488	78	73.788
29	27.434	79	74.734
30	28.380	80	75.680
31	29.326	81	76.626
32	30.272	82	77.572
33	31.218	83	78.518
34	32.164	84	79.464
35	33.110	85	80.410
36	34.056	86	81.356
37	35.002	87	82.302
38	35.948	88	83.248
39	36.894	89	84.194
40	37.840	90	85.140
41	38.786	91	86.086
42	39.732	92	87.032
43	40.678	93	87.978
44	41.624	94	88.924
45	42.570	95	89.870
46	43.516	96	90.816
47	44.462	97	91.762
48	45.408	98	92.708
49	46.354	99	93.654
50	47.300	100	94.600

Pounds per Square Inch Gauge(PSIG) to Bar Conversion Table

1 PSIG = 0.069 Bar

PSIG	Bar	PSIG	Bar	PSIG	Bar	PSIG	Bar	PSIG	Bar
1	0.069	58	4.002	115	7.935	172	11.868	228	15.732
2	0.138	59	4.071	116	8.004	173	11.937	229	15.801
3	0.207	60	4.140	117	8.073	174	12.006	230	15.870
4	0.276	61	4.209	118	8.142	175	12.075	231	15.939
5	0.345	62	4.278	119	8.211	176	12.144	232	16.008
6	0.414	63	4.347	120	8.280	177	12.213	233	16.077
7	0.483	64	4.416	121	8.349	178	12.282	234	16.146
8	0.552	65	4.485	122	8.418	179	12.351	235	16.215
9	0.621	66	4.554	123	8.487	180	12.420	236	16.284
10	0.690	67	4.623	124	8.556	181	12.489	237	16.353
11	0.759	68	4.692	125	8.625	182	12.558	238	16.422
12	0.828	69	4.761	126	8.694	183	12.627	239	16.491
13	0.897	70	4.830	127	8.763	184	12.696	240	16.560
14	0.966	71	4.899	128	8.832	185	12.765	241	16.629
15	1.035	72	4.968	129	8.901	186	12.834	242	16.698
16	1.104	73	5.037	130	8.970	187	12.903	243	16.767
17	1.173	74	5.106	131	9.039	188	12.972	244	16.836
18	1.242	75	5.175	132	9.108	189	13.041	245	16.905
19	1.311	76	5.244	133	9.177	190	13.110	246	16.974
20	1.380	77	5.313	134	9.246	191	13.179	247	17.043
21	1.449	78	5.382	135	9.315	192	13.248	248	17.112
22	1.518	79	5.451	136	9.384	193	13.317	249	17.181
23	1.587	80	5.520	137	9.453	194	13.386	250	17.250
24	1.656	81	5.589	138	9.522	195	13.455	251	17.319
25	1.725	82	5.658	139	9.591	196	13.524	252	17.388
26	1.794	83	5.727	140	9.660	197	13.594	253	17.457
27	1.863	84	5.796	141	9.729	198	13.662	254	17.526
28	1.932	85	5.865	142	9.798	199	13.731	255	17.595
29	2.001	86	5.934	143	9.867	200	13.800	256	17.664
30	2.070	87	6.003	144	9.936	201	13.869	257	17.733
31	2.139	88	6.072	145	10.005	202	13.938	258	17.802
32	2.208	89	6.141	146	10.074	203	14.007	259	17.871
33	2.277	90	6.210	147	10.143	204	14.076	260	17.940
34	2.346	91	6.279	148	10.212	205	14.145	261	18.009
35	2.415	92	6.348	149	10.281	206	14.214	262	18.078
36	2.484	93	6.417	150	10.350	207	14.283	263	18.147
37	2.553	94	6.486	151	10.419	208	14.352	264	18.216
38	2.622	95	6.555	152	10.488	209	14.421	265	18.285
39	2.691	96	6.624	153	10.557	210	14.490	266	18.354
40	2.760	97	6.693	154	10.626	211	14.559	267	18.423
41	2.829	98	6.762	155	10.695	212	14.628	268	18.492
42	2.898	99	6.831	156	10.764	213	14.697	269	18.561
43	2.967	100	6.900	157	10.833	214	14.766	270	18.630
44	3.036	101	6.969	158	10.902	215	14.835	271	18.699
45	3.105	102	7.038	159	10.971	216	14.904	272	18.768
46	3.174	103	7.107	160	11.040	217	14.973	273	18.837
47	3.243	104	7.176	161	11.109	218	15.042	274	18.906
48	3.312	105	7.245	162	11.178	219	15.111	275	18.975
49	3.381	106	7.314	163	11.247	220	15.180	276	19.044
50	3.450	107	7.383	164	11.316	221	15.249	277	19.113
51	3.519	108	7.452	165	11.385	222	15.318	278	19.182
52	3.588	109	7.521	166	11.454	223	15.387	279	19.251
53	3.657	110	7.590	167	11.523	224	15.456	280	19.320
54	3.726	111	7.659	168	11.592	225	15.525	281	19.389
55	3.795	112	7.728	169	11.661	226	15.594	282	19.458
56	3.864	113	7.797	170	11.730	227	15.663	283	19.527
57	3.933	114	7.866	171	11.799	228	15.732	284	19.596

Wire Size Conversion Table

Wire Gauge	Diameter of Wire in Inches	Diameter of Wire in mm	Resistance at 77 F (Ohms per 1000 ft.)
0000	.4600	11.684	000.0500
000	.4097	10.404	000.0630
00	.3648	9.266	000.0795
0	.3248	8.250	000.1002
1	.2893	7.349	000.1264
2	.2576	6.543	000.1593
3	.2294	5.827	000.2009
4	.2043	5.190	000.2533
6	.1620	4.115	000.4028
8	.1284	3.262	000.6405
10	.1018	2.586	001.0180
12	.0808	2.053	001.6190
14	.0640	1.626	002.5750
16	.0508	1.291	004.0940
18	.0403	1.024	006.5100
20	.0319	0.811	010.3500
22	.0254	0.646	016.4600
24	.0201	0.511	026.1700
26	.0159	0.404	041.6200
28	.0126	0.320	066.1700
30	.0100	0.254	105.2000
32	.0080	0.204	167.3000
34	.0063	0.160	266.0000
36	.0050	0.127	423.0000
38	.0040	0.102	672.6000
40	.0031	0.079	1069.0000
42	.0025	0.064	1701.0000
44	.0020	0.051	2703.0000
46	.0016	0.041	4299.0000
48	.0012	0.031	6836.0000
50	.0010	0.026	10870.0000

Feet to Meters Conversion Table

1 Foot = 0.3048 Meter

Feet	Meters
1	0.3048
2	0.6096
3	0.9144
4	1.2190
5	1.5240
6	1.8288
7	2.1336
8	2.4384
9	2.7432
10	3.0480
11	3.3528
12	3.6576
13	3.9624
14	4.2672
15	4.5720
16	4.8768
17	5.1816
18	5.4864
19	5.7912
20	6.0960
21	6.4008
22	6.7056
23	7.0104
24	7.3152
25	7.6200
100	30.4800
1000	304.8000
2000	609.6000

When Specific Gravity is 1		When Specific Gravity is other than 1		Viscosity Conversion Table									
Read Directly Across		Find CKS, Then Multiply CKS x SG = CPS	Find Stokes, Then Multiply Stoke x SG = Poise										
CPS	Poise	CKS	Stoke	Saybolt Universal (SSU)	Seconds Engler	Degrees Engler	Dupont Parlin #7	Dupont Parlin #10	Dupont Parlin #15	Dupont Parlin #20	Krebs Units	Mac-Michael	Pratt & Lambert F
1	.01	1	.01	31	54	1.0	20		4.2				
2	.02	2	.02	34	57	1.1	23		4.3				
4	.04	4	.04	38	61	1.3	24		4.4				
7	.07	7	.07	47	75	1.6	26		4.6				
10	.10	10	.10	60	94	1.9	28	11	4.7				
15	.15	15	.15	80	125	2.5	30	12	4.9				
20	.20	20	.20	100	170	3.0	32	13	5.0			125	
25	.24	25	.24	130	190	4.1	37	14	5.1			139	
30	.30	30	.30	160	210	4.9	43	15	5.4			151	
40	.40	40	.40	210	300	6.0	50	16	5.7			177	
50	.50	50	.50	260	350	7.5	57	17	6.0		30	201	
60	.60	60	.60	320	450	9.1	63	18	6.3	3.1	33	230	
70	.70	70	.70	370	525	10.5	68	20	6.8	3.2	35	260	
80	.80	80	.80	430	600	12.4	73	22	7.5	3.3	37	290	7.3
90	.90	90	.90	480	875	14.0	78	23	7.7	3.4	38	315	7.8
100	1.0	100	1.0	530	750	15.3	81	25	8.0	3.5	40	335	8.3
120	1.2	120	1.2	580	900	16.1	90	30	8.3	3.6	43	380	8.9
140	1.4	140	1.4	690	1050	20.0	106	32	8.9	3.9	46	415	9.8
160	1.6	160	1.6	790	1200	23.0	120	37	9.7	4.1	48	465	10.8
180	1.8	180	1.8	900	1350	26.3	135	41	10.7	4.3	50	520	11.9
200	2.0	200	2.0	1000	1500	29.2	149	43	11.5	4.5	52	570	12.5
220	2.2	220	2.2	1100	1650	32.2		45	12.2	4.8	54	610	13.0
240	2.4	240	2.4	1200	1800	35.0		49	13.0	5.0	56	660	14.2
260	2.6	260	2.6	1280	1950	37.7		53	13.7	5.3	58	700	15.1
280	2.8	280	2.8	1380	2100	40.5		58	14.4	5.6	59	750	15.6
300	3.0	300	3.0	1475	2250	43.0		64	15.0	5.9	60	800	16.7
320	3.2	320	3.2	1530	2400	44.7		66	15.5	6.1		825	17.3
340	3.4	340	3.4	1630	2550	47.5		70	16.4	6.4		875	18.5
360	3.6	360	3.6	1730	2700	50.3		74	17.3	6.7	62	925	19.6
380	3.8	380	3.8	1850	2850	54.0		79	18.2	7.0		980	21.0
400	4.0	400	4.0	1950	3000	57.0		84	19.1	7.3	64	1035	22.1
420	4.2	420	4.2	2050	3150	59.9		88	20.0	7.6		1070	23.2
440	4.4	440	4.4	2160	3300	63.6		93	21.0	8.0		1125	24.4
460	4.6	460	4.6	2270	3450	67.0		100	22.0	8.5	65	1180	26.7
480	4.8	480	4.8	2380	3600	69.5		104	23.0	8.9	67	1240	27.0
500	5.0	500	5.0	2480	3750	73.1		107	23.9	9.2	68	1290	28.1
550	5.5	550	5.5	2660	4125	78.0		115	26.3	9.7	69	1385	30.1
600	6.0	600	6.0	2900	4500	85.0		126	28.5	10.6	71	1510	32.8
700	7.0	700	7.0	3380	5250	95.0		145	31.9	12.1	74	1760	38.2
800	8.0	800	8.0	3880	6000	110		168	36.4	13.9	77	2020	44.4
900	9.0	900	9.0	4300	8750	125		185	40.0	15.5	81	2240	48.6
1000	10.0	1000	10.0	4600	7500	135		198	43.0	16.8	85	2395	52.0

When Specific Gravity is 1		When Specific Gravity is other than 1		Viscosity Conversion Table (Continued)									
Read Directly Across		Find CKS, Then Multiply CKS x SG = CPS	Find Stokes, Then Multiply Stoke x SG = Poise										
CPS	Poise	CKS	Stoke	Saybolt Universal (SSU)	Seconds Engler	Decrees Engler	Dupont Parlin #7	Dupont Parlin #10	Dupont Parlin #15	Dupont Parlin #20	Krebs Units	Mac-Michael	Pratt & Lambert F
1100	11	1100	11	5200	8250	151		224	48.0	18.7	88	2710	58.1
1200	12	1200	12	5620	9000	164		242	53.2	20.2	92	2930	63.6
1300	13	1300	13	6100	9750	177		262	58.0	22.0	95	3180	69.0
1400	14	1400	14	6480	10350	188		280	61.6	23.2	96	3370	73.4
1500	15	1500	15	7000	11100	203		300	69.0	25.0	98	3650	79.3
1600	16	1600	16	7500	11850	217		322	72.0	26.7	100	3900	85.0
1700	17	1700	17	8000	12600	233		344	76.0	28.5	101	4180	90.5
1800	18	1800	18	8500	13300	248		366	81.0	30.0		4420	96.2
1900	19	1900	19	9000	13900	263		387	86.0	31.8		4830	102.0
2000	20	2000	20	9400	14600	275		405	90.0	33.0	103	4900	106.2
2100	21	2100	21	9850	15300	287		433	94.5	34.7		5120	111.3
2200	22	2200	22	10,300	16100	300		453	99.0	36.0		5360	116.6
2300	23	2300	23	10,750	16800	314		473	105.7	38.0	105	5600	124
2400	24	2400	24	11,200	17500	325		493	110.3	39.5	109	5840	127
2500	25	2500	25	11,600	18250	339		510	114	40.8	114	6040	131
3000	30	3000	30	14,500	21800	425		638	142	51.0	121	7550	165
3500	35	3500	35	16,500	25200	485		725	164	57.0	129	8600	187
4000	40	4000	40	18,500	28800	540		814	186	64.5	133	9640	210
4500	45	4500	45	21,000	32400	615		924	214	73.5	136	10920	238
5000	50	5000	50	23,500	36000	690			239	82.0		12220	267
5500	55	5500	55	26,000	39600	765			265	90.6		13510	295
6000	60	6000	60	28,000	43100	820			285	97.5		14570	318
6500	65	6500	65	30,000	46000	885			306	104		15610	340
7000	70	7000	70	32,500	49600	960			331	113		16900	369
7500	75	7500	75	35,000	53200	1035			356	122		18200	397
8000	80	8000	80	37,000	56800	1095			377	129		19250	420
8500	85	8500	85	39,500	60300	1175			402	138		20600	449
9000	90	9000	90	41,080	63900	1220			417	143		21350	465
9500	95	9500	95	43,000	67400	1280			433	150		22400	488
10,000	100	10,000	100	46,500		1385			464	162		24200	527
15,000	150	15,000	150	69,400	106000					242			
20,000	200	20,000	200	92,500	140000					322			
30,000	300	30,000	300	138,500	210000					483			
40,000	400	40,000	400	185,000	276000					645			
50,000	500	50,000	500	231,000	345000					805			
60,000	600	60,000	600	277,500	414000					957			
70,000	700	70,000	700	323,500	484000					1127			
80,000	800	80,000	800	370,000	550000					1290			
90,000	900	90,000	900	415,500	620000					1445			
100,000	1000	100,000	1100	462,000	689000					1810			
125,000	1250	125,000	1250	578,000	850000					2010			
150,000	1500	150,000	1500	694,000						2420			
175,000	1750	175,000	1750	810,000						2820			
200,000	2000	200,000	2000	925,000						3220			

C.I.P. MTG INSTR MODEL 308

NO. 11XP 383937

MAT. Noted

FIN. #4 Pol.

ASSEMBLY 11BP 383936

SCALE Half

REQ. 1

OWN BY TOB

CHECKED

DATE 6-10-82

THIS PRINT IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON THE EXPRESS CON-
DITION THAT IT WILL NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL
TO OUR INTERESTS. —

APV Crepaco Inc

UNLESS OTHERWISE SPECIFIED

SURFACE ROUGHNESS $\sqrt{\text{ }}$ NOT TO EXCEED
— ON MACHINE FINISHED SURFACES

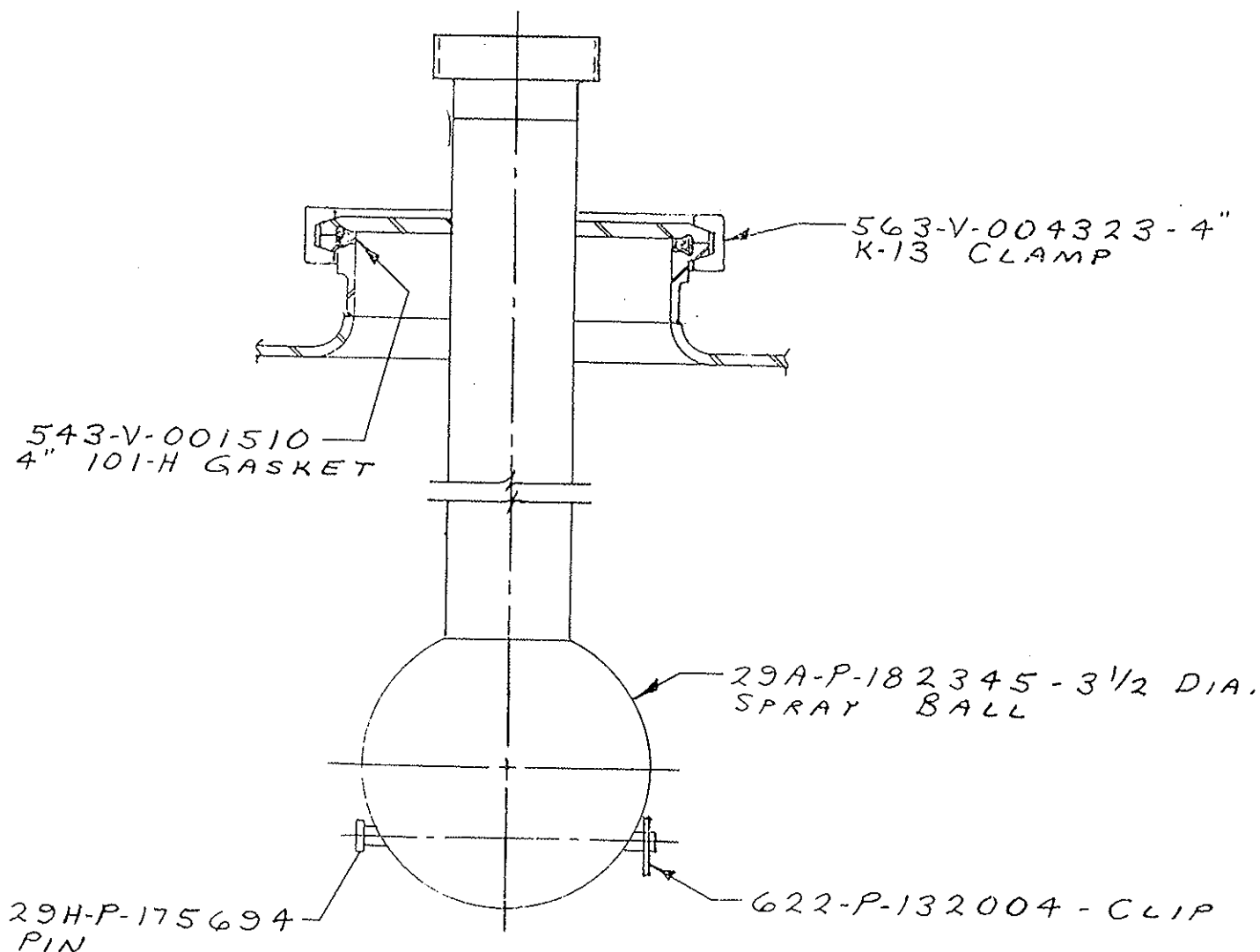
ALL DIMENSIONS IN INCHES

MACHINED FILLETS .005 TO .015 R

BURR SHARP EDGES .005 TO .015.

TOLERANCE ON ANGLES $\pm 1/2^\circ$

TOLERANCES FOR MACHINING: —

DEC. DIM'S $\pm .005$ FRACT. DIM'S $\pm 1/64$ REAMED HOLES $\pm .0005$ 

RECOMMENDED SPARE PARTS

DATE: May 2, 1997

CUSTOMER: Olmarc Packaging

ATTENTION/P.O. Helmut Judt

MODEL: 200 Gallon Liquiverter

SERIAL NUMBER: K-2090

GENERAL ASSEMBLIES: 11BP488799

APV REFERENCE ORDER NO. F208880000

The following is a list of recommended spare parts for the above product. Quantity is per unit. List price is US Dollars, valid for 30 days.

<i>Qty</i>	<i>Part Number</i>	<i>Description</i>	<i>List Price</i>
1	622P132004	CIP Clip	
1	543V001510	4" 101 H Gasket	
1	11HP383507	Manway Gasket (24")	
1	11HP411496	Seal Retainer	
1	11HP415235	Seal Spring	
1	546P464445	Dynamic Seal Ring	
2	543SI31408	"O" Ring	
1	543SK51331	"O" Ring	
1	546P464444	Static Seal Ring	
1	10HP248552	Hood	
1	11HP479081	Spacer	
1	543SI31313	O-Ring	

Installation Maintenance Lubrication

INSTALLATION

Careful adherence to the following installation suggestions will help you get maximum service and life from your reducer.

Fill the reducer to the proper level with the recommended lubricant (See the lubrication information section on this page for specific recommendations.)

ALIGNMENT - When installing reducers, care should be taken to align input and output shafts vertically and horizontally with connecting shafts. A flat and even mounting surface will help prevent uneven base hole bolt pressures. Flexible couplings will help compensate for minor variations in shaft alignment.

When mounting a sprocket, gear, or sheave etc. on a reducer shaft, mount the working face as close to the reducer housing as possible. The gear or sprocket hub should be nearer the end of the shaft. Be careful not to damage the reducer oil seal when mounting the sprocket, gear, or sheave.

Installing in this manner reduces the load on the shaft and increases bearing life.

To reduce unnecessary load and obtain maximum reducer and component life, driving and driven sprockets or sheaves should be properly aligned with their mates and all shafts parallel. Gears should be mounted on shafts at the proper center to center distance.

MAINTENANCE

No routine maintenance other than that recommended in the lubrication section is required of reducers. Occasionally oil seals will need replacing and the new seal should be protected from being cut by sharp edges or scratches on the shaft by wrapping the shaft with shim stock or heavy paper during seal installation.

CAUTION: UNITS ARE SHIPPED DRY AND MUST BE FILLED WITH AN AGMA APPROVED LUBRICANT BEFORE OPERATION.

STORAGE

Units are intended to be used within 30 days after receipt and presumed to be stored indoors in a heated building. If storing under adverse conditions or for longer periods of time, special precautions may be necessary.

- 1 Store in a sheltered area away from chemical vapors or steam.
- 2 Cover.
- 3 Do not store in sunlight or near high heat.
- 4 Spray oil on exposed shafts & seals. Clean oil off before installation.
- 5 If units are assembled and filled with oil, rotate output shaft 360 degrees every 3-4 weeks by turning the input shaft.

LUBRICATION

Your reducer will last longer if the following lubrication schedule and suggestions are followed.

Use a lubricant to meet AGMA 5 requirements for gear drives. Use the lubricant with your reducer or any lubricant conforming to the specifications in the AGMA chart below.

Fill your reducer to the proper level by removing the air vent pipe plug and pouring lube in the top pipe plug hole until it reaches the center of the sight-glass recommended by your lubricant supplier to meet AGMA 5 requirements. Stop pouring and replace the top pipe plug and the vent plug.

After the initial 250 hours of operation, drain the reducer and fill with fresh lubricant. Always drain while the reducer is still warm.

Drain and refill with fresh lubricant every 2500 hours or six months; whichever comes first. More frequent changes are suggested if the lubricant becomes dirty or contaminated due to environment.

Synthetic lubricants can, in some cases, last longer than Petroleum based lubricants and require less frequent changes. Check with your synthetic lubricant supplier for recommendations.

RECOMMENDED LUBRICANTS

Type of Lubricant	Ambient Temperature Range (degrees F)	Kin Viscosity (cSt) at 40 degrees C (mm ² /s)	Viscosity SUS 100 degrees F	AGMA Lubricant No.	ISO Grade
Oil (Helical & Bevel Gears)	15 to 125	198 to 242	900 to 1100	5EP	220EP
	-10 to +75	90 to 165	465 to 765	3-4EP	100-150EP
	Below 10	15 to 680	135 to 165		
Oil-Synthetic	-40 to 175			5EP	220EP



PEOPLE WHO GET THINGS MOVING

GearTechnic Corporation
2792 South Syene Road
Madison, Wisconsin 53711
Telephone (608) 273-4644
TeleFax (608) 273-4654

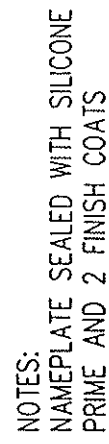


PEOPLE WHO GET THINGS MOVING

GearTechnic Corporation
3232 Kingsley Way
Madison, WI 53713-4628
Telephone (608) 273-4644
TeleFax (608) 273-4654

PARTS LIST CAPV18800

ITEM	PART#	DESCRIPTION	QTY
800	CAPV18000	housing	1
801	CAPV18020	output flange	1
802	CAPV18030	input cylinder	1
820	CAPV18200	hollow shaft	1
821	CAPV18210	input shaft	1
830	CAPV18300	input pinion bore 1-3/16"	1
840	CAPV18400	output gear 1-11/16"	1
860	C60720810	bearing	2
861	C60220710	bearing	1
862	C60620710	bearing	1
870	B70400802	seal double lip	2
871	B70350722	seal double lip	1
8900	B90111025	bolt hex head	4
8901	C90111040	bolt hex head plated	4
8910	B91010800	drain plug	2
8911	B91030401	vent plug	1
8912	B91020800	sight glass	1
8913	B91080408	elbow 1/4" npt male	1
8914	B91080409	elbow 1/4" npt male	1
8920	B92000205	key rectangular 1s gear	2
8921	B92000512	key square hs shaft	1
8930	B93110800	shim din 988	2
8931	B93130800	shim din 988	2
8932	B93110720	shim din 988	2
8933	B93130720	shim din 988	2
8940	B94000003	name plate	1
8950	C95110350	snap ring	1
8951	C95100800	snap ring	1
8952	B951007200	snap ring	1
8953	B95011030	snap ring	1
8960	B96101810	lock washer din 127b-zy plated	8
	DATE10/30/96		



NOMINAL DIMENSIONS TO DRAINAGE	
1" TO 3/4"	2.0mm
3/4" TO 3/8"	2.0mm
3/8" TO 1/4"	2.0mm
1/4" TO 1/8"	2.0mm
1/8" TO 1/16"	2.0mm
1/16" TO 1/32"	2.0mm
1/32" TO 1/64"	2.0mm

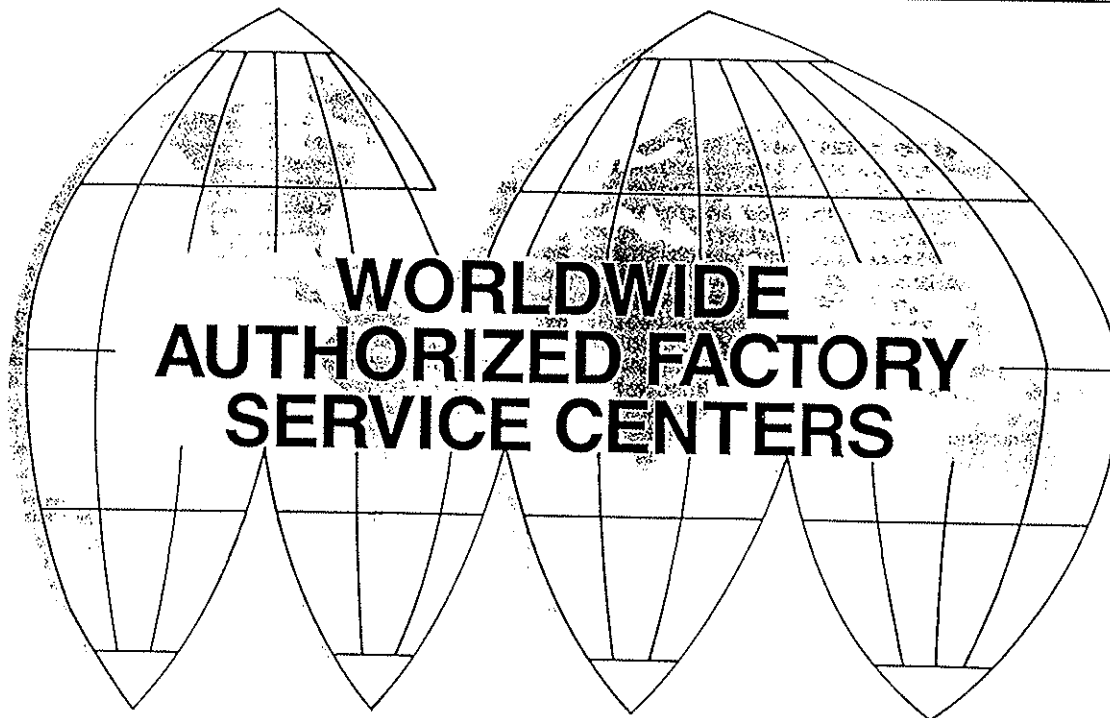
ALL SURFACE FINISHES ARE IN MICRO-INCHES RMS



SERVICE CENTERS

DEPENDABLE
ENERGY SAVING
POWER FOR INDUSTRY

Bulletin 1053
Effective: 7/94
Supersedes: 7/93



LEESON Electric Corporation offers Factory Authorized Service at any of the US and Canadian service centers listed in this bulletin. These centers have complete repair facilities and are capable of doing any necessary service work required on LEESON motors. We have also listed overseas service centers, which we are affiliated with through the Electrical Apparatus Service Association (EASA).

REPAIR SERVICE: (Warranty and Non-Warranty) To obtain prompt service from any of the US or Canadian service centers listed within this bulletin, the defective motor should be carefully packed and shipped prepaid to the nearest authorized service center. It is important that all information be received by the service center before repair work can be started. To minimize delay, this information should be sent right along with the motor.

1. A description of the application or product in which the motor is being used.
2. The problem with the motor.
3. The original date the motor was put into service and the date of failure.
4. If, for some reason, the nameplate has been removed, include complete nameplate data if it is available.

REPLACEMENT PARTS: ALL US and Canadian service centers listed in this bulletin are authorized by LEESON Electric to sell genuine LEESON replacement parts. These parts can be ordered from any US or Canadian service center or direct from our factory in Grafton, Wisconsin. When ordering parts, it is important that complete nameplate data be given from the motor and a description of the part required. To continue to receive uninterrupted service from your LEESON motor, it is important that only genuine LEESON replacement parts be utilized in repair. This will assure you of the same high standards and quality that the motor had when it originally left our factory.

STATEMENT OF WARRANTY

LEESON Electric Corporation guarantees all motors manufactured or sold by it to be free from defects in workmanship and materials when operated under normal conditions and in accordance with nameplate characteristic limits. There is no warranty on motors which have been modified, adjusted, neglected, abused, or improperly operated or maintained. This warranty shall be in effect for a period of twelve months from date of installation, but shall in no event be in effect for more than twenty-four months from date of manufacture. THIS WARRANTY SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LEESON Electric Corporation will repair or replace, at its option, any motor which has been found to be defective and is within the warranty period, provided that the motor is shipped, with previous factory authorization, freight prepaid, to LEESON's plant in Grafton, Wisconsin, USA or to LEESON's nearest authorized service station. All return shipments are made FOB LEESON's factory or service station. LEESON is not responsible for removal, installation, or any other incidental expenses incurred in shipping the motor to or from LEESON.

LEESON Electric Corporation's liability under this warranty shall be solely limited to repair or replacement of the motor within the warranty period, and LEESON shall not be liable, under any circumstances, for consequential or incidental damages, including, but not limited to, personal injury or labor costs.

Under no circumstances will LEESON Electric Corporation be responsible for any expense in connection with any repairs made by anyone other than the factory or an authorized service station, unless such repairs have been specifically authorized in writing.



Member

UNITED STATES

ALABAMA

Albertville 35950	Albertville Electric Motor Service	6621 U. S. Hwy. 431 (205) 878-0491
Athens 35611	Star Electric Motor	515 North Marion (205) 232-1141
Birmingham 35233	B & D Electric Motor Company	2320 Fourth Ave South (205) 251-6241
Birmingham 35233	Brannon Electric Motor Company	3022 6th Ave South (205) 322-0495
Birmingham 35233	Electro Motive	3021 4th Ave South (205) 252-2644
Cullman 35055	The Electric Motor Co.	1416 Sportsman Lake Rd (205) 734-9490
Cullman 35055	Johnson Electric Motor Co.	413 2nd Ave SE (205) 739-1180
Decatur 35601	Fortney Electric Company, Inc.	1530 Church (205) 837-5471
Doona 35060	Jay Electric	600 6th Ave. (205) 791-1360
Dothan 36303	Alabama Electric	1512 Headland Rd. (205) 792-5164
Dothan 36303	Dothan Electric	2711 Westgate Pkwy (205) 793-3433
Dothan 36301	Robbins Electric Motor Service	1305 S Oates St (205) 792-5332
Enterprise 36330	Southern Electric	322 Bollweaver Circle (205) 347-1364
Florence 35630	Fortney Electric Company, Inc.	4300 Helton Dr (205) 764-1142
Fort Payne 35967	Fi Payne Electric Motor Service	1205 Chitwood Ave (205) 845-5843
Gadsden 35901	Bowden Electric Company, Inc.	1193 Tuscaloosa Ave (205) 547-7272
Huntsville 35805	KBB Electric Motor Sales & Svc.	2104 Triana Blvd. SW (205) 534-0884
Irondale 35210	American Electric Motors	2012 First Ave North (205) 956-9053
Jackson 36545	Jay Electric	634 Clotinger (205) 246-9061
Leeds 35094	Alabama Electric	1010 Railroad Ave. (205) 699-7101
Mobile 36607	Allen Southern Electric	2877 Mill St (205) 478-9577
Mobile 36606	▼ Hancock Electric Motor Service	1912 Duval St (205) 471-4354
Mobile 366911595	Homer Electric Motor Co., Inc.	P. O. Box 91595 (205) 344-8496
Mobile 36607	McLeod's Electric	2832 Old Shell Rd (205) 479-2469
Montevallo 35115	Montevallo Elec. & Mach., Inc.	3820 Hwy 25 (205) 665-1291
Montgomery 36104	Ed's Electric Motor Service	513 North Hull St (205) 262-5271
Montgomery 36104	M & M Electric Motor Service, Inc.	674 S McDonough St (205) 264-8485
Montgomery 36104	Mid State Electric Motor Service, Inc.	1514 S Decatur St (205) 262-2941
Montgomery 36197	▼ Jay Electric	421 Randolph St (205) 263-0277
Muscle Shoals 35661	B & E Electric Motor Service	102 Broadway (205) 386-7252
Talladega 35160	Talladega Electrical Service & Supply	302 E Coosa St (205) 362-3190
Tuscaloosa 35401	Freeman's Electric Co.	1616 25th Ave (205) 759-4241
Tuscaloosa 35401	Jay Electric	1515 7th Ave. (205) 349-3170

ALASKA

Anchorage 99503	Hayden Electric Motors, Inc.	4109 Seward Hwy (907) 561-1073
Dardanelle 72834	Dardanelle Electric Motors	111 S Front St (907) 229-4313
Fairbanks 99701	Electrical Apparatus Repair	3307 B International Way (907) 452-4363
Juneau 99801	AC/DC Electric	10006 Crazy Horse Dr (907) 789-3504
Juneau 99802	Parsons Electric	PO Box 1604 (907) 586-3055
Kenai 99611	Industrial Elec Mtr Svc	Kenai Spur Hwy P.O. Box 3588 (907) 283-5400

ARIZONA

Bisbee 85603	Copper City Electric, Inc.	219 Douglas St (602) 432-2061
Casa Grande 85222	Casa Grande Electric Motors	807 E Main St (602) 421-0222
Flagstaff 86001	Northern Arizona Elec Motor	1802 W Kristy La, Suite 900 (602) 779-2339
Glendale 85301	Hayden Electric	5124 North 51st Ave (602) 934-0565
Phoenix 85009	Allstate Electric Motor Company	2538 W McDowell Rd (602) 233-0500
Phoenix 85006	Phoenix Electric	1736 McDowell Rd (602) 258-4407
Tucson 85712	HEMCO	3938 E Pina (602) 881-1108
Tucson 85705	Industrial Motor and Control Company	2025 W Highway Dr (602) 887-4816
Tucson 85714	Industrial Power and Equipment	4200 East Tennessee (602) 750-0001

ARKANSAS

Conway 72023	Nolans Motor Service	42 Dendron St (501) 329-6127
El Dorado 71730	Herring Electric Motors	304 Grady Ball Rd (501) 862-3928
Forest City 72335	Bob's Electric	1526 W Broadway (501) 633-6141
Fort Smith 72902	Electric Motor Center	1231 South 11th (501) 785-2536
Fort Smith 72903	Evans Electric Motor Centers, Inc.	4300 Planters Rd (501) 648-1500
Jacksonville 72076	Midstate Electric Inc.	138 Industrial Drive (501) 985-1583
Little Rock 72209	Cleveland Electric	3405 W 65th St (501) 565-7561
Little Rock 72202	Electric Motor Service	1701 E 15th St (501) 372-4019
Pine Bluff 71603	T & N Electric Company	2002 Blake St (501) 534-8161
Rogers 72756	▼ Evans Electric	2001 N 12th St (501) 336-0721
Rogers 72756	Sallee Electric	1020 N Second St, Hwy 62 N (501) 636-1261
Russellville 72801	Electric Motor Center	907 E 29th St (501) 968-2532
Springdale 72764	West Ark Electric Company	705 N Old Missouri Rd (501) 751-7051
Springdale 72764	Electric Motor Center	804 N Jefferson St (501) 756-8040

CALIFORNIA

Alhambra 91803	Electric Motors Sales & Service	1101 S Meridian (818) 282-7601
Apple Valley 92307	Standard Electric Works	22000 Hwy 18 (619) 247-8909
Bakersfield 93305	Electric Motor Works, Inc.	803 Inyo St (805) 327-4271
Bakersfield 93380	Quality Electric	PO Box 81085 (805) 324-2781
Baldwin Park 91706	Power Electric	1477 Virginia Ave. (818) 337-1011
Beaumont 90706	Beaumont Electric	10030 E Artesia Place (310) 866-7518
Beaumont 90706	Zamboni Industrial Electric	9054 E Artesia Blvd (213) 634-3500
Bishop 93514	Rowe's Electric	156 E Pine St (619) 872-1770
Canoga Park 91303	All Safe Electric Company	7057 Canoga Ave (818) 340-0974
Corona 91719	Corona Electric	1865 Sampson Ave. (909) 735-0483
Carson 90810	Shunt Electric	21016 S Alameda St (310) 830-2599
Chico 95928	Ted's Electric	1377 E 9th St (916) 345-3600
Chula Vista 92011	H & A Electric Motors	180 Mace St Suite A-13 (619) 420-9456
Culver City 90230	Dick's Electric Motor Inc.	4521 Inglewood Boulevard (805) 922-8326
Durango 81301	Puckett Electric	73 Jameson Lane (303) 247-5195
Escondido 92029	Sloan Electric	1480 Simpson Way (619) 745-5276
Fortuna 95540	Electric Motor Works	580 Fortuna Blvd (707) 725-4346
Fresno 93721	Arrow Electric Motor Service	645 Broadway (209) 266-0104
Fresno 93709	▼ Electric Motor Shop	253 Fulton (209) 233-1153
Garden Grove 92643	RPM Electric Motors	11352 Westminster (714) 638-4174
Gardena 90248	Dynamic Electric	140 E. Alondra Blvd (310) 323-7310
Gardena 90249	South Bay Electric	1924 West Rose Crans (310) 327-1768
Glendale 91202	Alpine Electric	6056 San Fernando Rd (818) 247-9193
Gonzales 93926	Valley Electric Motor Service, Inc.	30925 S Alta (408) 675-3770
Hanford 93230	Hanford Electric Motor Shop	108 W 6th St (209) 582-6653
Hayward 94541	Electric Motor & Control	570 C Street (510) 881-4413
Hemet 92343	Swains Electric Motor Service	400 E Devonshire St (714) 929-3411
Hollywood 90046	Arbuckle Electric	7548 Santa Monica Blvd (213) 876-7100
Huntington Prk 90255	Superior Electric	2553 E 53rd (312) 583-1040
Indio 92201	Desert Motor Rewind	84-191 Indio Blvd (619) 342-9699
Long Beach 90012	Ando Electric	1999 W Anaheim St (310) 437-0445
Long Beach 90807	▼ Delta Motor Company	2492 Brayton Ave (310) 424-2824
Los Angeles 90058	Al Johnson Electric Motors	5015 Pacific Blvd (213) 583-9943
Los Angeles 90003	Standard Electric Service	6829 Avalon Blvd (213) 753-1593
Los Angeles 90006	AAA Electric Motor Sales and Service	1346 Vanice Blvd (213) 749-2367
Merced 95340	Dom's Electric Motor Shop	551 S Hwy 99 (209) 384-1950
Modesto 95351	Herold & Mielenz	903 Kansas Ave, St "O" (209) 525-9040
Modesto 95351	Stanislaus Electric Motor Works	504 River Road (209) 523-8269
Montebello 90640	Advance Electric Motor Service	1915 W Whittier Blvd (714) 721-6468
Napa 94559	Wayne Electric Co.	1518 Yajome St (707) 255-4758
Oakland 94608	▼ California Electric Company	3015 Adeline St (510) 655-1038
Oakland 94606	East Bay Electric Motors	1240 E 12th St (510) 261-2222
Oakland 94606	United Electric Motor Co.	1225 10th Ave (510) 834-9126
Oxnard 93030	Electric Motor Service	200 East Fifth St (805) 483-4233
Palm Springs 92262	Electric Motor	303 Radio Rd (619) 325-9446
Petaluma 94952	Electrical Equipment Company, Inc.	300 East D Street (707) 762-2883
Pico Rivera 90660	All Application Electric	3639 San Gabriel River Pk (619) 692-0361
Pomona 91767	GP Electric	1020 Price St (909) 865-2291
Pomona 91766	M-D Electric	220 E Monterey Ave (909) 629-8661
Red Bluff 96080	Red Bluff Industrial Electric	455 Monroe (510) 527-5104
Redding 96003	Nor-Cal Rewinding Inc.	4773 Mountain Lakes Blvd (916) 241-7145
Richmond 94801	Dahl-Beck Electric	2775 Goodrick Ave (510) 237-2325
Riverside 92509	Electric Motor Industries	4075 Riverview Dr (909) 684-2639
Rosemead 91770	Quality Electric Motor Svc	2755 Willard Ave (818) 572-4016
Sacramento 95823	Herold & Mielenz, Inc.	3531 51st Ave (916) 422-7493
San Bernardino 92410	CJM Electric	1356 W Rialto Ave (909) 889-2576
San Diego 92110	Al's Electric Motor Repair	980 Buenos, Suite A2 (619) 276-5170
San Diego 92110	Bay City Electric Works	3375 Hancock St (619) 298-6193
San Diego 92113	Chick's Electric Motor Service	3592 Main Street (619) 232-2162
San Diego 92113	Sloan Electric	2905 Commercial St (619) 239-5174
San Fernando 91340	H C Stroud Electric Motor Service	1811 First Street (213) 361-5213
San Francisco 94103	▼ Buzzell Electric Works	130 8th St (510) 431-5526
San Gabriel 91776	San Gabriel Electric	1817 S San Gabriel Blvd (213) 283-1078
San Jose 95112	Nelson Industrial Electric	75 Phelan Ave 3 (408) 292-2213
San Leandro 94577	Sylek/Benkiser Inc.	527 Whitney St (510) 638-8262
San Luis Obispo 93400	Electric Rewind, Inc.	823 A Villa Esteban St (805) 541-2856
Santa Ana 92707	A & W Electric Motors, Inc.	2337 S Broadway (714) 540-3060
Santa Ana 92703	Santa Ana Electric Motors	2225 West Second St, PO Box 3217 (714) 543-9401
Santa Barbara 93103	Cravotto Electric	520 E Haley (805) 965-0514
Santa Cruz 95060	John's Electric Motor Service	457 May Ave (408) 426-2900
Santa Fe Springs 90670	E & L Electric	9632 Santa Fe Springs Rd (310) 903-9272
Santa Maria 93454	Lahr Electric Motors Inc.	119 W Mill Street (805) 937-2830
Santa Maria 93454	Perry's Electric Motors & Controls	414 S Western Ave (805) 925-8761
Saugus 91350	Foothill Electric	25852 Springbrook Ave (805) 254-8400
So Gate 90280	E & L Electric	9710 Atlantic Ave (213) 569-8111

Stockton 95205 Stanley Electric Motor Co., Inc 1520 East Moner Ave. (209) 464-7321
 Torrance 90501 Igor Electric 1450 West 228th St, Unit 26 (213) 530-1860
 Tulare 93274 Alexanders Electric 996 North "J" St (209) 686-4532
 Tulare 93274 Tumupseed Electric Service 1580 South "K" St (209) 686-1541
 Turlock 95380 Turlock Electric Motor Service 1072 S First Street (209) 634-5864
 Vallejo 94590 Vallejo Electric Motor Shop, Inc 925 Maine Street (707) 642-4315
 Van Nuys 91406 Bail/Clark Electric Motor 7902 Woodley Ave (818) 781-1069
 Van Nuys 91406 Horizon Pump & Repair 16874 Slagg (818) 781-6880
 Ventura 93001 Oilfield Electric Company 1801 N Ventura Ave (805) 648-3131
 Visalia 93277 D & D Electric Motor Co 717 South Bridge (209) 734-2887
 Wasco 93280 Mid-Valley Electric, Inc 221 F Street (805) 758-5666
 Westlake Village 91362 Conejo Electric Motor & Pool 31200 La Baya Dr 305 (805) 495-0556
 Woodland 95695 Industrial Motor Electric Co 50 Harter Ave, PO Box 521 (916) 662-6774
 Yuba City 95991 Kinney Electric & Power Trans 720 Bridge St (916) 673-3450

COLORADO

Boulder 80301 Boulder Electric Motor Co 3867 Walnut St (303) 443-1331
 Colorado Springs 80909 Colorado Electric Motor Repair, Inc 316 Juanita St (719) 473-7744
 Colorado Springs 80903 Electric Motor Company 222 E Moreno (719) 473-1487
 Craig 81625 Electric Motor and Machine 120 W 16th St (303) 824-7023
 Denver 80216 Denver Electric Motor Sales & Service 1300 E 58th Ave (303) 292-9133
 Denver 80216 Industrial Motors & Mach 3610 Brighton Blvd (303) 296-1960
 Denver 80204 Wazee Electric Co 2020 W Barbary (303) 623-8658
 Durango 81301 Puckett Electric 73 Jameson Drive (303) 247-5195
 Ft. Collins 80524 Larimer Electric Motor Co 1808 E Lincoln Ave (303) 484-8411
 Ft. Morgan 80701 M & S Electric Motor Repair, Inc 17192 2nd St (303) 867-3322
 Greeley 80631 Greeley Electric Service, Inc 2509 1/2 8th Ave (303) 352-1961
 Julesburg 80737 Ingram Electric Motor Repair 116 Walnut St (303) 474-3633
 Longmont 80501 A A A Electric Company, Inc 24 S Main (303) 776-6031
 Monte Vista 81144 Monte Electric 1325 N Hwy 285 (719) 852-2832
 Pueblo 81003 IPS/Johnson Electric Company 324 S Union Ave (719) 543-1746
 Sterling 80751 McMurrin Electric 222 South 10th Ave (303) 522-2696

CONNECTICUT

Ansonia 06401 B & J Electric Motor Repair 30 Maple Street (203) 734-1695
 Bloomfield 06002 Leppert/Nutmeg Corporation 113 W Dudleytown Rd (203) 243-1737
 Danbury 06810 Industrial Electric Motors 50 Shelter Rock Road (203) 743-9611
 East Hartford 06108 Rite-Way Electric Motors, Inc 94 Charles Street (203) 528-8890
 Hartford 06114 Reliable Electric 285 Murphy Rd (203) 522-4761
 Newington 06111 Gullmartin Electric Motor 108 Liberty St (203) 667-8024
 Norwalk 06850 Norwalk Electric 41 Commerce St (203) 853-7235
 Norwich 06360 Piela Electric Inc Halls Mills Road (203) 889-8476
 South Norwalk 06854 Phillips Electric 123 Water St (203) 866-9863
 Southington 06489 Eddy Electric Motor Company 115 Water St (203) 621-7335
 Stamford 06902 Palmers Electric Motors, Inc 44 Garden St (203) 348-7378
 Stratford 06497 Electric Enterprise 1410 Stratford Ave (203) 378-7311
 Stratford 06497 Electric Motor Maintenance 81 Mead St (203) 375-4416
 Wallingford 06492 Magna-Wind 130 S Turnpike Rd (203) 265-2304

DELAWARE

Cheswold 19936 Roy's Electric Service State Route 42, Main St (302) 674-3199
 Dover 19901 Square One Electric Service Company Rd 7, Box 102-AB (302) 678-0400
 Wilmington 19804 McHugh Electric Company Old Dupont Rd & B&O RR (302) 955-2271

FLORIDA

Atlantic Beach 32233 Atlas Electric Motors 1651 May Post Rd (904) 241-4506
 Belle Glade 33430 Belle Glade Electric 900 NW 13th St (407) 996-6739
 Crystal Lake 32629 Holton Electric Motor 7800 E Gulf to Lake Hwy (904) 795-4838
 Daytona Beach 32014 Electric Motor Service 537 N Beach St (904) 255-6722
 Deland 32724 Stewart's Electric Motor Works 1776 Langley Ave (407) 278-3976
 Delray Beach 33444 Delray Electric Motors & Pumps 11 NE Second Ave (407) 278-3976
 Fort Lauderdale 33334 Peninsular Armature Works 3056 NE 12th Terrace (305) 563-5627
 Fort Myers 33912 Metro Electric Works 12581 Metro Parkway (813) 768-2700
 Fort Myers 33905 East Side Electric Motors 13438 Palm Beach Blvd (813) 694-3333
 Fort Pierce 33482 Indian River Armature, Inc 3800 Olando Ave (407) 464-0455
 Fort Walton Beach 32547 Electric Motor Repair 1128 Hospital Rd (904) 862-0433
 Gainesville 32602 Electric Motor Repair Company 2816 NW 6th St (904) 382-8318
 Harbour Heights 33950 Harbour Heights Electric Motors 3014 Sunny Brook Rd (813) 629-0240
 Hialeah 33013 Condo Electric Service 3615 East 10th Court (305) 691-5400
 Hialeah 33010 A.C. Industrial Service 268 W. 23rd Street (305) 887-5541

Jacksonville 32205 Fuller Electric Motor Service, Inc 6566 Commonwealth Ave (904) 781-4944
 Key Largo 33037 Jimmy's Electric Motor US Hwy 1 Mile Mark 100.1, Box 691 (305) 451-2919
 Largo 33541 Coastal Service & Supply 1625 Starkey Rd (813) 536-5078
 Marathon 33050 AC/DC Electric Motor 1411 Overseas Hwy (305) 743-7890
 Medley 33166 Southern Electric Motor Inc 8148 NW 74th Ave Bay 8 (305) 887-3411
 Miami 33168 Biscayne Electric Motor & Pump 830 NW 144th St (305) 881-8171
 Miami 33176 DeRuiter Electric 14261 South Dixie Hwy (305) 235-5000
 Mulberry 33860 Cox Electric P.O. Box 318 (813) 425-3046
 Naples 33942 Electric Motors, Inc 3455 Westview Dr (813) 643-3030
 North Miami 33161 JC Electric Motor Repairs, Inc 13015 NE 14th Ave (305) 491-0832
 Ocala 32670 Greens Electric Motors & Supply 2265 N Magnolia Ave (904) 622-7531
 Ocala 32678 Link's Electric Motor Service, Inc PO Box 4967 (904) 629-2478
 Ocala 32670 Marion Electric Motors 216 N.E. 14th St (904) 732-6605
 Orlando 32806 Central Florida Pump & Motor Svc 315 W Grant St Unit N (407) 649-9908
 Orlando 32805 Electric Motor Repair Corporation 15 S Paramore Ave (407) 425-0577
 Orlando 32804 Electrical Motor Services 4108 N Orange Blossom Trail (407) 295-7304
 Orlando 32824 Stewart's Electric Motor 9269 Palm Ave (407) 859-1837
 Pensacola 32596 Gulf Coast Electric Motor Service 124 N. DeVilliers Street (904) 433-5134
 Pensacola 32505 L.C. Electric Motor Service 117 Industrial Blvd (904) 476-7655
 St Petersburg 33709 Gulf Electric Motor Service 5582 66th St North (813) 548-0094
 St Augustine 32084 St Augustine Electric Motor 14 Center St (904) 829-8211
 Tampa 33619 EME Engineering Ltd 5128 36th Ave (813) 247-3478
 Tampa 33605 Gulf Electric Motors 2718 N 40th St (813) 626-1401
 Tarpon Springs 33589 Electric Motor & Pump Rebuilders 801 U.S. 19 North (813) 938-4069
 Tavares 32778 Tavares Electric Motor Old US 441, Tamsett Bldg, Box 685 (904) 343-5595
 Titusville 32780 Control Electric Company, Inc 1525 White Dr (407) 267-3853
 Venice 34292 Venice Pumps & Motors 306 Warfield Avenue South (813) 484-2587
 Vero Beach 32960 Jacobs Electric Motor Repair 1120 Old Dixie Hwy (407) 567-7181
 W Palm Beach 33407 Electric Motors of Palm Beach 801 27th St (407) 833-0859
 W Palm Beach 33405 Electric Motors of Palm Beach 729 Belevedere Rd (407) 832-0233
 Winter Haven 33881 McNabb's Electric Motor Serv 3104 Havendale Blvd (813) 967-0381

GEORGIA

Albany 31706 Deese Electric 1203 Cordale Rd (912) 439-2333
 Albany 31706 Smith-Gray 2204 Newton Rd (912) 435-1376
 Albany 31701 SOWEGA Electric Motor Repair 614 Roosevelt Ave (912) 432-2721
 Alpharetta 30201 North Atlanta Elec Motor Sales 49458 Hwy 9 (404) 740-1982
 Atlanta 30307 AAA Electric Motor Service 741 Edgewood Ave NE (404) 525-1319
 Atlanta 30318 Bearden-Thompson Electric 1085 Bank Head Ave NW (404) 876-6721
 Atlanta 30336 Cleveland Electric Company 3795 Wendell Drive SW (404) 696-4550
 Atlanta 30310 Cole Electric 1669 Westview Dr SW (404) 752-7885
 Atlanta 30312 McCullough Electric Motor Serv 521 Edgewood Avenue SE (404) 688-5251
 Augusta 30901 Electrical Equipment Company 1441 Green St (404) 722-6685
 Bainbridge 31717 Flint River Electric Co., Inc 210 Newton Rd, PO Box 493 (912) 246-0867
 Baxley 31513 L H Bass & Sons 503 S Main St (912) 367-2136
 Blairsville 30512 Jack's Electric Hwy 76 E (404) 745-6133
 Bogart 30622 Athens Industrial Electric PO Box 326 Hwy 78 West (404) 225-2206
 Brunswick 31520 Southern Tri-State Electric, Inc 1900 Second St (912) 264-9379
 Calhoun 30701 Industrial Winding Service 402 Dothacoga St, PO Box 2048 (404) 625-0070
 Carrollton 30117 Johnson Electric Motor Shop 213 Avenue C (404) 834-7722
 Cartersville 30120 Cartersville Electric Company 6 West Ave (404) 382-4550
 Columbus 31904 P & M Electric Company 2717 Second Ave (404) 324-2000
 Columbus 31901 Smith-Gray Electric Company 1508 Cussela Rd (404) 322-2569
 Dalton 30720 Whitfield Electric Motor Sales & Service 926 E. Morris St. (404) 226-6943
 Douglas 31533 Vincent Electric Company PO Box 632, Bowens Mill Rd (912) 384-7819
 Dublin 31021 Bridges Electric Motor Svc 1809 Jarondon Dr (912) 272-5732
 Elberton 30635 Elberton Industrial Electric 602 College Ave (404) 283-7704
 Elberton 30635 M & S Electric 149 North Oliver (706) 283-2892
 Gainesville 30130 Gainesville Industrial Electric 1039 Old Athens Hwy (404) 532-4411
 Gainesville 30501 James Electric 1218 Industrial Boulevard (404) 534-9515
 Hazlehurst 31539 Courson Electric Motor Works 510 S Williams St (912) 375-4671
 Hephzibah 30815 Salter Electric Co 1712 Brown Rd (404) 592-2685
 Hull 30646 Electric Motors Company Box 162A, Rt 2, Hwy 29 North (404) 549-6556
 Jessup 31545 Georgia Electrical & Mechanical 810 E Pine St (912) 427-7265
 Macon 31210 Spires Electric Company, Inc 4022 I-475 Industrial Blvd (912) 474-9545
 Macon 31213 Wilson Electric Company, Inc 557 Pine St (912) 746-5654
 Moultrie 31768 Moultrie Electric Motor Service Rt 8, Box 284 (912) 985-4727
 Norcross 30071 R. F. Wolters Co 4585 Barkley Lake Rd (404) 449-5855
 Rome 30161 Rome Electric 36 West Side Industrial Blvd (404) 232-4483
 Savannah 31402 Commercial Electric Company 2217 West Bay St (912) 232-7151
 La Fayette 30728 Pruitt's Electric Motor, Inc PO Box 414 Hwy 27 (404) 638-3909
 Statesboro 30458 Statesboro Electric Motor 16 Williams Rd (912) 764-4268
 Thomasville 31792 Smith Electric Motor, Inc 336 Campbell St (912) 228-0670
 Tifton 31794 Tifton Electric Motor Shop 1710 Tucker Rd (912) 386-2929

Waycross 31502 L H Bass & Sons 717 Garlington Ave (912) 285-2469
 Wilkwood 30757 Chattanooga Industrial Motors Hwy 11, PO Box 264 (404) 657-7926
 Winston 30187 Jay Electric 7940 Highway 78 (404) 942-2584

HAWAII

Hilo 96720 Electric Motor Service 494 Kalanikoa St (808) 961-6767
 Honolulu 96817 Kenneths Motor Rewinding 1428 Liliha St (808) 538-3515
 Honolulu 96819 Machine Tools Hawaii Inc. 845 Mapunapuna St (808) 833-2777

IDAHO

American Falls 83211 Electric Motor Rewinding, Inc 130 Harrison (208) 226-2226
 Boise 83704 L & K Electric 3041 Chinden Blvd (208) 342-6381
 Boise 83702 Missman Electric Company 2422 West Main St (208) 344-6539
 Idaho Falls 83401 Electric Motor Service 527 South Utah (208) 522-5246
 Idaho Falls 83403 Rossiter Electric 1501 South Capital Ave (208) 529-3665
 Meridian 83642 Associated Coil 720 W Franklin Blvd (208) 888-6922
 Nampa 83651 Hopper Electric Service 912 2nd St South (208) 466-2611
 Pocatello 83201 Dyke's Pole Line Electric 3028 Pole Line Rd (208) 237-4300
 Rupert 83350 Electric Motor Rewind PO Box 609, Hwy 24 (208) 436-4658
 Troy 83871 Strom Electric Company 405 S Main Street (208) 835-2331
 Twin Falls 83301 Hodder Electric Motor Repair 468 Addison Ave (208) 733-1699
 Twin Falls 83301 Waite Electric 255 Second Ave (208) 733-1901

ILLINOIS

Addison 60101 United Electric Motor Inc 1244 Capital Dr (708) 628-1796
 Alsip 60658 Dreisilker Electric Motors 12005 S Cicero Ave (708) 388-1160
 Bensenville 60106 Motor Control Systems 630 Thorndale (708) 766-5544
 Berwyn 60402 Richard's Electric Co 2715 S Ridgeland Ave (708) 788-5250
 Bradley 60915 Arthur Motor Works, Inc 359 S Kinzie Ave (815) 933-6683
 Campaign 61820 Floyd Electric Motor Service 133 W Kenyon Rd (217) 352-0571
 Chicago 60636 All Electric Motor Repair & Service 6726 S Ashland Ave (312) 925-2404
 Chicago 60609 Bemer Electric 1624 W 35th St (312) 247-5190
 Chicago 60613 B & P Electric 4014 North Western (312) 539-4343
 Chicago 60639 City Suburban Electric Motors, Inc 2740 N Pulaski Rd (312) 278-3322
 Chicago 60618 Complete Electric Motor Repair 4322 N Lincoln Ave (312) 463-2644
 Chicago 60622 Dreisilker Electric Motors 1015 W Grand Ave (312) 421-5880
 Chicago 60641 Electric Motor Corporation 3865 N Milwaukee Ave (312) 725-1050
 Chicago 60608 Excel Electric Service Company 2415 W 19th St (312) 421-7220
 Chicago 60618 G-N Electric Company, Inc 3823 N Kedzie Ave (312) 583-3307
 Chicago 60612 Robert Stage Electric 515 S Western Ave (312) 243-9704
 Chicago Heights 60411 H-J Service Company 1245 Halstead (708) 756-2123
 Chicago Ridge 60415 Best Way Electric, Inc 10321 S Oxford (708) 424-0028
 Cintralia 62801 Klein Armature Works, Inc PO Box 426 (618) 532-1951
 Danville 61832 Bodine Electric 19 Withner Ave Box 701 (217) 443-0022
 Danville 61832 Midwest Electric Motors 601 E Fairchild (217) 446-3647
 Danville 61832 Park Electric Motors Service, Inc 406 W Fairchild St (217) 442-1977
 Danville 61832 The Modern Machine Shop 123 N Hazel St (217) 446-0742
 Decatur 62525 Bodine Electric 1845 N 22nd St (217) 423-2593
 East St Louis 62201 Bradford Electric Company 925 Missouri Ave (618) 874-1015
 East St Louis 62202 Illinois Electric Works, Inc 1300 Missouri Ave (618) 274-6900
 Effingham 62401 Probst Refrigeration & Elec Motor Repair 410 W Fayette (217) 342-6441
 Elgin 60120 Elgin Electric 884 Grace St (708) 695-2433
 Elk Grove Village 60007 Dreisilker Electric Motors 139 Crossen Ave (708) 228-0830
 Elk Grove Village 60007 United Electric 1545 Jarvis (708) 806-0011
 Elmhurst 60126 Triple R Service 633 S Rt 83 (708) 833-4545
 Fairfield 62837 Parent Electric RR5 Box 478 (618) 842-2921
 Forest Park 60130 Sievert Electrical Service & Sales 1230 S Hannah St (708) 771-1600
 Franklin Park 60131 Rainbow Electric 2910 Birch St (708) 455-4605
 Freeport 61032 Koyne Electric 417 South Locust (815) 233-0611
 Galesburg 61401 Midland Electric Motor Works 932 Monmouth Blvd (309) 342-4125
 Glen Ellyn 60137 Dreisilker Electric Motors 352 Roosevelt Rd (708) 469-7510
 Grays Lake 60030 Krug Northwest Electric Motors 123 Hawley St (708) 223-2410
 Hamilton 62341 Snyder Electric Hwy 96 South (217) 847-3555
 Jacksonville 62650 G & H Electric Motors 314 W Walnut St (217) 245-8249
 Kankakee 60901 Woody's Electrical Motor Service 431 S Washington Ave (815) 932-6363
 Lansing 60438 Trigon Electric Motor Repair 18419 Wentworth Ave (708) 895-3326
 LaSalle 61301 Inman Electric Civic Industrial Park (815) 223-2288
 Lombard 60148 Master Motor Rebuilders 820 N Ridge Ave Unit G (708) 629-9575
 Mattoon 61938 Campbell Wade 3301 Marshall (217) 234-2221
 McHenry 60050 McHenry Electric 4012 W Main St (815) 385-5530
 Morton Grove 60053 Dreisilker Electric Motors 6012 Dempster St (708) 966-3010

Morton Grove 60053 Trans-Tek 6298 W Oakton (708) 470-8631
 Peoria 61603 Dreisilker Electric Motors 1407 NE Adams St (309) 672-1825
 Peoria 61602 Foremost Electric & Transmission 918 SW Adams St (309) 676-1371
 Peoria 61607 Melton Electric 5807 S Washington (309) 697-1422
 Quincy 62301 Richards Electric Motor Co 426 State St (217) 222-7154
 Rockford 61109 Rockford Armature 4923 Colt Rd (815) 874-8811
 Rock Falls 61071 Hill's Electric Motor Service 305 First Ave (815) 625-0305
 Rock Island 61201 Rock Island Electric Motor Repair, Inc 211 31st Ave (309) 788-9517
 Rockford 61108 Imperial Motor & Armature Company 2027 23rd Ave (815) 398-2313
 Rockford 61101 Rockford Power Machinery Division 2401 11th St (815) 962-8841
 St Charles 60174 Joliet Equipment Corporation 3N359 12th St (708) 584-9051
 Skokie 60076 Shiffmann Electrotec 8208 McCormick Blvd (708) 675-0607
 Springfield 62703 Modern Electric Motor Co 1112 E Edwards St (217) 522-2362
 Stone Park 60165 Fred Arms Electric Motor Repair 1538 W Mannheim (708) 343-6262
 Vandalia 62471 Vandalia Electric Motor Service Route 185 West (618) 283-0068
 Worth 60482 Accurate Electric Motor 6955 W 11th St (708) 448-2792

INDIANA

Anderson 46015 Kirby Risk Service Center 544 Broadway (317) 643-3384
 Bloomington 47401 Owens Electric Company 116 S Madison Ave (812) 336-4351
 Booneville 47601 Mohler Arm & Electric, Inc 2355 Eby Rd (812) 897-2900
 Columbus 47201 Columbus Industrial Electric 1625 Indianapolis Blvd (812) 372-8414
 Crown Point 46307 Ploog Engineering Company 814 North Indiana Ave (219) 663-2854
 Elkhart 46514 Shaum Electric Company, Inc 1125 North Nappanee St (219) 264-4189
 Evansville 47711 Flanders Electric Motor Service 8101 Baumgard Rd (812) 867-7421
 Evansville 47713 Swanson-Nunn Electric Co .. PO Box 508, 400 SE 8th St (812) 464-3732
 Farmersburg 47850 H & W Electric Motor Service RR2, PO Box 47A (812) 696-2601
 Ft Wayne 46802 D & J Electric Inc 1940 S Harrison St (219) 456-3925
 Ft Wayne 46803 E.P.S. Enterprises Inc 5423 US Hwy 30 E (219) 493-4913
 Ft Wayne 46805 Wagner Electric 3610 North Clinton St (219) 484-5532
 Goshen 46526 C & L Electric Motor Repair, Inc 1405 Chicago Ave (219) 533-2643
 Hammond 46327 Mills Electric Company, Inc 4828 Calumet Ave (219) 931-3114
 Indianapolis 46202 Frakes Electric Company, Inc 1345 West 16th St (317) 638-1594
 Indianapolis 46201 Homer Electric 1521 East Washington (317) 639-4261
 Indianapolis 46202 McBroom Electric Co Inc 800 West 16th St (317) 926-3451
 Indianapolis 46225 Scherer Electric 940 Southwest St (317) 635-3466
 Indianapolis 46203 Teepe Electric 1629 Harlan St (317) 784-6538
 Kendallville 46755 Kendallville Electric Motor Service 620 Krueger St (219) 347-0564
 Lafayette 47903 Kirby Risk Service Center PO Box 5089 (317) 423-4205
 Laporte 46350 S & W Electric Company 106 Washington St (219) 362-4581
 Upland 46787 Ketcham's Electric Motor Repair 402 Lincolnway West (219) 894-7247
 Madison 47250 North Madison Electric 2520 Lanier Dr (812) 273-6118
 Michigan City 46360 Harrison Electric, Inc 201 East Harrison (219) 879-0444
 Monroe 46772 Parish Electric Rt 1, 273 North Van Buren St (219) 692-6416
 Muncie 47307 Motor Craft 1219 South Walnut (317) 282-4272
 North Vernon 47265 Hoosier Industrial Electric 308 Hoosier St, PO Box 656 (812) 346-2232
 North Vernon 47265 North Vernon Electrical, Inc Box 449, Rt 1 Hwy 50 E (812) 346-3436
 Plymouth 46583 Absolute Electric Co Inc 10476 Muckshaw Rd (219) 936-8017
 Portage 46368 F & L Electric Motor Service, Inc 2221 Crisman Rd (219) 763-2181
 Princeton 47670 Princeton Electric Motors, Inc 314 North Main (812) 385-2561
 Reynolds 47980 Gary's Electric Motor Sales & Serv RR1 Box B US 24 E (219) 984-5000
 Richmond 47374 Remsco, Inc 1541 South 9th St (317) 962-0816
 Rochester 46975 Holloway Electric 426 Main St (219) 223-6825
 Seymour 47274 Micro Mill Electric 1733 Firestone Ave (812) 522-8811
 South Bend 46617 Northern Electric Company, Inc 116 North Hill St (219) 289-7791
 Vincennes 47591 Vincennes Electric Motor Service, Inc 604 South 3rd (812) 882-8818
 Wabash 4699 Story's Electric Motor Repair 44 Walnut St (219) 563-4763
 Warsaw 46580 Kester's Electric Motors Serv PO Box 515, Boggs Ind Park (219) 269-2889
 West Lafayette 47906 Best Electric 6422 State Road 26W (317) 583-2408

IOWA

Alden 50006 Zoske Electric Motor Repair Box 326 (515) 859-7360
 Ames 50010 Rease Electric Motor Company 202 East Ave (515) 232-5081
 Burlington 52610 Industrial Electric Motor Co 1511 Mount Pleasant St (319) 752-4917
 Cedar Falls 50613 Cedar Falls Electric 1405 Center St (319) 277-6116
 Cedar Falls 50613 Modern Electric Motors 2419 Main St (319) 277-6178
 Cedar Rapids 52404 Hupp Electric Motors, Inc 275 33rd Ave SW (319) 366-0761
 Cedar Rapids 52402 Janda Electric Motor Service 1716 Blairs Ferry Rd NE (319) 393-1230
 Cedar Rapids 52402 Torrance Electric 700 16th St. NW (319) 365-4662
 Clear Lake 50428 Knorr Electric 310 South 20th St (515) 357-3614
 Creston 50801 Central Plains Electric Motor Service Rt 4, Hwy 34 (515) 782-5310

Davenport 52808	Industrial Engineering Equipment Co ..	1958 West River Dr (319) 323-9721
Des Moines 50313	A & B Electric Motor Service	1727 Hull Ave (515) 265-8552
Des Moines 50309	Electric Motors Corporation	509 S.E. 6th Street (512) 243-3824
Des Moines 50309	Electric Pump & Tool Service, Inc	1520 Walnut (515) 288-0245
Des Moines 50317	Electrical Engineering & Equipment Co ..	1808 Delaware Ave (515) 266-8890
Dubuque 52001	Dubuque Electric Motor Serv	1160 East 12th St (319) 583-2442
Garnier 50438	C & L Electric	260 N State St (515) 923-2974
Guttenberg 52052	Rodenberg Electric	702 South Bluff St (319) 252-1167
Iowa City 52240	Electric Motors of Iowa City	1518 Highway I West (319) 354-4040
Iowa Falls 50126	Cam Spray, Div of Campbell Supply	Box 726 (515) 648-5011
Kesley 50649	Kesley Electric Motor Service	309 Keith Street, PO Box 28 (319) 347-2462
Maquoketa 52060	Maquoketa Electric Motors	705 E Platt St (319) 652-3364
Marshalltown 50158	Egleston Electric Company	1208 East Main St (515) 752-4678
Mason City 50401	Peterson Electric Motor Service	207 6th St SW (515) 424-2055
Mt Pleasant 52641	Ors Electric Service	901 Broadway (319) 385-2485
New Albin 52160	Vonderohr Electric	RR 1 (319) 544-4984
New Hampton 50679	Mohawk Electric Co	104 South Linn (515) 394-3081
Ottumwa 52501	Hallyer Electric Motor Service	402 South Iowa Ave (515) 684-7769
Pella 50219	Griffers Electric	210 SE 14th (515) 628-3816
Rock Valley 51247	P & M Electric Motor Service	RR2 Box 301-C (712) 476-2305
Sac City 50583	Town & Country Service	1704 W Main St (712) 662-7040
Sanborn 51248	Hary's Electric, Inc	122 Main Street (712) 729-3821
Sheldon 51201	Wolbrink Electric	1311 2nd Ave (712) 324-3435
Sioux City 51101	Mid City Electric Motor Tools	507 Iowa (712) 255-1836
Sioux City 51101	Thorp Electric Ltd	1024 Fifth St (712) 258-5515
Spencer 51301	Pixler Electric	2601 Highway Blvd (712) 262-1550
Tipton 52772	Tipton Electric Motors	107 W Second Street (319) 886-3131
Waukon 52172	Lydon Electric	802 W Main St (319) 568-3504
Wayland 52654	Graber Electric	408 S Pearl St (319) 256-5700
Webster City 50595	Phelps Electric Motor Service	805 West Ave (515) 832-2746

KANSAS

Chanute 66720	Markham Electric Motor Service	113 W 2nd St (316) 431-6711
Chanute 66720	A-1 Electric Motor Services	313 E Main St (316) 431-0290
Chanute 66720	Zimmerman Electric	PO Box 533 (316) 431-2260
Clay Center 67432	Griggs Electric Company	611 Bridge (913) 632-2823
Coffeyville 67337	Moon Hill Electric Service Co	1514 Spruce (316) 251-4420
Coffeyville 67337	OK Electric	10 E North St (316) 251-2270
Dodge City 67801	Dalton Brothers Inc	1110 S 14th St (316) 227-2793
El Dorado 67042	Long's Electric Motor Service	2345 W Central (316) 321-5350
Emporia 66801	Emporia Electric, Inc	PO Box 824, 312 Commercial (316) 342-2965
Garden City 67846	Mid-West Electric	1620 Buffalo Jones Ave (316) 275-6306
Garden City 67846	Naab Electric	West Highway 50 (316) 276-8101
Garnett 66032	Ken's Electric Company	138 East 6th St (913) 448-6685
Great Bend 67530	Johnson Electric, Inc	2212 10th St (316) 792-3597
Hiawatha 66434	Electric Motor Service	824 Oregon (913) 742-2211
Hutchinson 67501	Central Electric Motor Repair	125 West Avenue F (316) 663-9114
Kansas City 66103	▼...Kornfeld-Thorp Electric	100 Graystone Ave (913) 321-7070
Lawrence 66044	Patchen Electric	602 E 9th St (913) 843-4522
Liberal 67901	Electric Motor Service	334 S Virginia, Box 1123 (316) 624-1132
McPherson 67460	Gibson Electric Motor Service	525 North Baer (316) 241-3551
Parsons 67357	Ervin Auto & Electric Service	2121 Main St (316) 421-3140
Pittsburg 66762	Atkinson Industries	1801 E 27th Terrace (316) 231-6900
Salina 67401	Central Kansas Electric	PO Box 1027, 912 W North St (913) 825-9521
Seneca, 66538	Holthaus Electric Motor Service	Route 3 (913) 336-3109
Topeka 66604	F & F Electric Motor Repair	4004 West 21st (913) 272-9504
Topeka 66606	Topeka Electric Motor Repair	605 Lane (913) 233-4750
Wichita 67211	B & B Electric Motor Company	332 Lulu (316) 267-1238
Wichita 67214	McDowell-Hogue Electric, Inc	915 E Murdoch (316) 263-7519
Wichita 67213	Richmond Electric Company	911 Maple (316) 264-2344

KENTUCKY

Bardstown 40004	Boone Electric Motor Service, Inc	1808 Boston Rd (502) 348-5145
Corbin 40701	Poynter Brothers Electric Co	304 Lynn Ave (606) 528-5995
Covington 41011	A-1 Electric Motor Service	662 Pike St (606) 291-1351
Danville 40422	Industrial Electric Motors	US 150 Bypass East (606) 238-7984
Henderson 42420	Electric Motors, Inc	2204 Hwy 41 N (502) 826-4867
Hopkinsville 42240	Hopkinsville Electric Motor Service	704 W 15th (502) 886-7585
Lebanon 40033	Lebanon Power & Apparatus Company	451 E Main (502) 692-6091
Lexington 40505	City Electric Motor Company	631 Kennedy Road (606) 254-5581
Lexington 40508	Kentucky Service Company	822 South Mill St (606) 254-6310
Louisville 40211	Clark Electric Sales & Service Co	2500 W Broadway (502) 778-1676

Louisville 40203	Ignition Service & Supply	307 E Breckinridge St (502) 584-3184
Louisville 40222	Quality Electric Motor Service, Inc	8020 Vincrest Ave (502) 426-3396
Louisville 40213	Ruf Supply Company, K-C Division	1419 Salinda Ave (502) 451-1220
Maysville 41056	Maysville Electric Motors	1710 Forest Ave (606) 564-9551
Maysville 41056	Sunier Machine Shop	1308 Forest Ave (606) 564-5017
Middlesboro 40965	Kentucky Armature & Motor Works	209 Winchester (606) 248-2930
Owensboro 42301	Owensboro Armature Works, Inc	609 E 14th St (502) 683-9855
Paducah 42003	Quality Electric Service, Inc	532 Milliken Road (502) 442-4151
Paducah 42002	Warden Electric Co	604 North 7th St (502) 443-4622
Seabree 42455	Ashby Electric Co Inc	149 E Madison St (502) 835-2922
Somerset 42502	Standard Armature & Electric Co	South Hwy 27 (606) 679-1181

LOUISIANA

Alexandria 71301	Electric Motor Service	Box 1461, 1123 Washington St (318) 442-5644
Baton Rouge 70814	James Electric	10471 Mammoth Dr (504) 926-0746
Baton Rouge 70815	Red Stick Armature Works	9444 S Choctaw (504) 927-5331
Crowley 70526	A J Toups Jr & Son	316 W Elm (318) 785-0471
Hammond 70401	Standard Electric Motor Service, Inc	410 N Cherry (504) 542-0282
Harvey 70058	West Side Electric Service	412 Peters Rd (504) 366-5364
Lake Charles 70601	J & J Armature Works	1612 First St (318) 439-8849
Laplace 70068	Complete Electric Motor Co	2720 W 5th St (504) 652-1772
Lawtell 70550	Thibodeaux Electric	Box 109, Hwy 190W (318) 543-2362
New Iberia 70562	Teche Armature Works	PO Box 9712 (318) 364-7418
New Orleans 70112	G & M Electric Company, Inc	417 N Claiborne Ave (504) 586-8100
Shreveport 71103	United Electric	1125 Joseph St (318) 424-3448
West Monroe 71291	Quachita Electric Service	212 Haynes (318) 323-2525

MAINE

Augusta 04330	Poulin's Electric	RFD #1 Church Hill Rd, Box 1175 (207) 626-1689
Bangor 04401	John's Electric Motor	499 Hammond St (207) 947-7771
Oxford 04270	Curtis Electric	Box 81, High St (207) 539-2589
Portland 04103	The Motor Works	1129 Forrest Ave. (207) 878-2275
Presque Isle 04769	Goan's	17 Parsons St (207) 762-8191
Westbrook 04092	Stultz Electric Motor Systems	PO Box 270, 25 Bridge St (207) 854-2501

MARYLAND

Baltimore 21218	The Electric Motor Repair Company	700 East 25th St (301) 467-8080
Baltimore 21202	Industrial Electric Company, Inc	707 S Central Ave (301) 327-1150
Baltimore 21224	Kaufman Electric Company	Boston St & Highland Ave (301) 276-4000
Baltimore 21230	Power House, Inc	2682 W Patapsco Ave (304) 525-1111
Bladensburg 20710	Energy Ltd - Al Gleeson Elec Co	4717 Upshur St (301) 699-1144
Cumberland 21502	Queen City Electric	219 S Walnut Pl (301) 777-1133
Delmar 19940	Peninsula Electric	Rt 13A Old Delmar Rd (301) 896-9186
Fredrick 21701	Roberts Electric Motors	5833-B Urbane Pike (301) 663-5757
Hagerstown 21740	Hagerstown Equipment	Maryland Ave & Memorial Blvd (301) 733-7600
Hagerstown 21740	M/L Electric Company	90 West Lee St (301) 739-8285
Hyattsville 20782	Beaver's Electric Motor Service	2426 Chillum Rd (301) 864-4658
Linthicum Hts 21090	Fiddes Electric, Inc	821L Oregon Rd (301) 636-5996
Salisbury 21801	Delmarva Electric Motors & Machine	111 E Gordy Rd (301) 749-1377

MASSACHUSETTS

Agawam 01001	Anchor Electric Company, Inc	66 Ramah Circle (413) 786-6788
Attleboro 02723	Holander Electric, Inc	PO Box 126 (508) 226-1060
Dorchester 02125	Dorchester Electric Motor Co	1224 Dorchester Ave (617) 265-5828
Fall River 02724	Broadway Electric	65 Middle St (508) 673-3339
Gardner 01440	Morsa Electric Motor Co	380 E Broadway (508) 632-3733
Greenfield 01301	Applied Dynamics	33 Butter Nut St (413) 774-7268
Holyoke 01041	McKenny Electrical Co	Rt 5, Mt Tom, PO Box 670 (413) 536-5551
Lynn 01902	E.R. Sullivan Co	21 Fayette St (617) 592-8124
Medford 02155	Empire Electrical Company	54 Mystic Ave (508) 395-5000
New Bedford 02740	Delta Electric Motor	PO Box D-619 (508) 997-0582
Quincy 02169	Hancock Electric	231 Willard St (617) 472-5789
Reading 02150	First Electric Motor Service	192 New Boston St (617) 937-0226
Westport 02790	Ralco Electric/Industrial	101 State Rd (508) 679-3366
Whitman 02382	Blanchard Electric, Inc	21 Vernon St (508) 447-5122
Worcester 01604	George W Ruby Electric Co	77 E Worcester St (508) 799-6165
Wrentham 02093	▼...Lynch Electric Motor Co	Eagle Lane, Route 140 (508) 384-2590

MICHIGAN

Bay City 48706 Bay United Motors, Inc 4353 E Wilder Rd (517) 684-3972
 Benton Harbor 49022 Industrial Electric Company 401 Klock Ave (616) 925-3244
 Cadillac 49601 A & K Electric 1463 Filmore (616) 775-4311
 Comstock Park 49321 Lakeland Electrical Motor Service 3790 Millcreek NE (616) 784-1212
 Decatur 49045 Decatur Electric Motor Service 82237 M-51 Hwy (616) 423-4051
 Dearborn Hts 48125 Great Lakes Service & Sales, Inc 18710 Van Born (313) 565-1870
 Dearborn Hts 48125 Taylor Electric Motor Service, Inc 4015 S Beech Daly (313) 565-0510
 Detroit 48227 Ajer Electric Motor Service 14811 Plymouth Rd (313) 272-0144
 Dexter 48130 Turner Electric, Inc 1022 Baker Rd (313) 426-5657
 East Jordan 49727 Graham Motor & Generator Rt 3 PO Box 205 (616) 536-2700
 Fernsburg 49409 Wyfie Electric Motor Service Co 121 Camen Dr (616) 846-6131
 Flint 48418 Dudley Electric Works, Inc 1826 S Dort Hwy (313) 239-8646
 Flint 48503 Reliance Electric Machine Co, Inc 1527 Industrial Ave (313) 232-3355
 Garden City 48135 Dynamic Power Systems Inc 32606 Industrial Rd (313) 261-9511
 Gaylord 49701 Graham Motor & Generator 975 N Center (517) 732-5055
 Grand Rapids 49503 REMS, Inc 534 Ottawa NW (616) 451-7134
 Grandville 49418 River City Electronics 2980 44th St SW (616) 538-2060
 Hancock 49930 V...Coon Electric, Inc 100 Navy St (906) 482-1730
 Hancock 49930 Gadda's Electric Repair, Inc 715 Pine St (906) 482-5037
 Holland 49424 Holland Electric Motor 11269 E. Lakewood Blvd. (616) 392-1115
 Iron Mountain 49801 Z & R Electric Service, Inc 619 Industrial Park Dr (906) 774-0468
 Kalamazoo 49001 Midwest Electric Motor 2734 Miller Rd (616) 343-7090
 Kalamazoo 49007 V...Rowen & Blair Electric Co, Inc 2513 N Burdick St (616) 381-3050
 Lake Odessa 48849 Kimmel Electric 1972 Eaton Hwy (517) 566-8619
 Lansing 48912 Barker-Fowler Electric Motor Service 500 N Larch St (517) 371-1488
 Ludington 49431 Carrier Electric Motor Repair 5608 W Sixth (616) 845-5097
 Marquette 49855 Superior Electric Co 1740 Presque Isle Ave (906) 226-9051
 Melvindale 48122 Core Electric Company, Inc 25125 Outer Dr (313) 382-7140
 Michigan Center 49254 P & B Motors 300 Napoleon Rd. (517) 764-1001
 Monroe 48161 Monroe Electric 317 Harbor (313) 241-5811
 Mt Pleasant 48858 Stu's Electric Motor 611 W Pickard (517) 773-5575
 Mt Clemens 48045 A & C Electric 41225 Irwin Rd (313) 469-0710
 Muskegon 49441 Jones Electric Company 1965 Sanford St (616) 726-5001
 Niles 49120 Electric Repair Service 1109 McKee St (616) 683-4241
 Petoskey 49770 V...Petoskey Electric Motor Service 3018 US 131 South (616) 347-8777
 Pigeon 48755 Dietzel Electric, Inc 7176 Nitz St (517) 453-2721
 Pontiac 48058 Electric Motor Service 384 N Saginaw St (313) 334-3981
 Riverside 49084 Riverside Electric Service, Inc 3864 Riverside Rd (616) 849-1222
 Romulus 48174 V...Birdar Electric & Machine, Inc 12600 Wayne Rd (313) 941-7400
 Roseville 48066 V...C Electric Motor Service 30121 Groesbeck Hwy (313) 779-4663
 Royal Oak 48067 North End Electric Co. 2000 Bellaire (313) 398-8187
 Saginaw 48602 Ken's General Repair 400 W Remington (517) 753-9031
 Saginaw 48602 Lange & Leaman Electric 300 W Bristol (517) 754-5266
 Traverse City 49684 Davis Electric Inc 1131 Hastings Street (616) 947-9880
 Traverse City 49684 Northwestern Electric Service 1670 Barlow, PO Box 1065 (616) 947-3600
 Troy 48084 Universal Electric Motor Supply 895 Wendlandt (313) 689-1200
 Warren 48089 Koonitz-Wagner 24776 Gibson Dr (313) 755-0440
 Ypsilanti 48197 Rem Corporation 1160 Watson Ave (313) 522-3170

MINNESOTA

Albany 56307 Amps Inc 360 Railroad Ave (612) 845-4690
 Albert Lea 56007 Electric Motor & Bearing Service West 9th Street (507) 377-0032
 Austin 55992 Power Rite Electric 513 E Oakland Ave (507) 437-4311
 Balaton 56115 Christians' Electric Rural Route 2 (507) 734-2951
 Baxer 56401 Austin Electric Motor Repair 600 Inglewood Drive N (218) 829-3371
 Bird Island 55310 Electric Motor Company 451 Highway Ave (612) 365-4800
 Blaine 55434 Electric Motor Specialists, Inc 9100 Davenport Street NE (612) 780-1177
 Blue Earth 56013 Ron's Electric Motor Repair Old Hwy 169 North (507) 526-3060
 Brainerd 56401 Benson Motor Electric 613 Maple St (218) 829-3838
 Clontarf 56226 Kent Electric Motor Repair Box 326 (612) 843-2418
 Crookston 56716 Crookston Welding & Machine Hwy 75 S (218) 281-6911
 Duluth 55806 Mielke Electric Works, Inc 2606 W Michigan St (218) 727-7411
 Fairmont 56031 Pritts Electric 221 N State (507) 238-2061
 Fergus Falls 56537 Knutson Electric 1607 College Way (218) 736-7065
 Grand Rapids 55744 Itasca Electric Motor Service 1520 McKinney Lake Rd (218) 326-5315
 Howard Lake 55349 Wagner Electric 1012 6th St (612) 543-2061
 Lake City 55041 Dan's Lake City Service Co 118 West Center (612) 345-2418
 Lismore 56155 Electric Motor Service Center PO Box 36, 1301 S Main (507) 472-8551
 Little Falls 56345 Opalz Electric Motor 113 1st NW (612) 632-6324
 Luverne 56156 Luverne Electric Motor Repair 404 S Kniss (507) 283-2759
 Mankato 56001 The Motor Shop of Mankato Inc Hwy 22 S (507) 345-4682
 Marshall 56258 Ness Electric Motor Service 212 W College Dr (507) 532-2400
 Minneapolis Aris Industrial Service 1977 W River Rd (612) 529-1533

Minneapolis 55427 V...Boustead Electric & Mfg. 7135 Madison Ave West (612) 544-9131
 Minneapolis 55411 Electric Motor Repair, Inc 2010 N 4th St (612) 588-4693
 Monticello 55362 Olson & Sons Electric, Inc 240 W Oakwood Dr (612) 295-2690
 Morris 56267 Larson Electric Motor Repair 26 Eighth St (612) 589-1334
 New Ulm 56073 Abel Electric Motor Shop 117 North Broadway (507) 354-4419
 Owatonna 55060 Owatonna Motor Repair 1524 S Cedar Box 445 (507) 455-3159
 Parkers Prairie 56361 Fortwengler Electric 121 Otter Avenue South (218) 338-2061
 Paynesville 56362 Electric Motor Center 521 Minnie St (612) 243-3695
 Perham 56573 Gary's Electric 506 W Main (218) 346-4279
 Redwood Falls 56283 Lance's Electric Motor Route #1, Box 154 (507) 342-5585
 St Cloud 56301 Electric Motor Service 2020 Division St (612) 251-8691
 St Cloud 56303 Lewis Motor Repair 1004-23rd Ave N (612) 252-0352
 St Paul 55110 Electrical-Mechanical Services, Inc 998 E Berwood (612) 484-5533
 Wasoca 56093 Jemco 308 15th Ave SE (507) 835-3550
 Willmar 56201 Tri-Mor Electric PO Box 1294, 102 E Benson (612) 235-6343
 Windom 56101 Dynamic Sales Company 955 First Ave (507) 831-1150
 Winona 55987 Lackore Electric Motor Repair 108 W 2nd Street (507) 452-3103

MISSISSIPPI

Brookhaven 39601 Cannon Electric Company 523 Byrd St (601) 833-6666
 Columbus 39702 Electric Motor Sales & Service 232 Alabama St (601) 327-1606
 Forest 39074 Forest Electric Motor Service 1052A W 3rd, Hwy 80 W (601) 469-2071
 Jackson 39202 Flannigan Electric Company, Inc 1820 Southwest St Ext (601) 354-2756
 Jackson 39204 Hatley's Electric Motor Shop 2045 Coussey Dr (601) 922-2746
 Jackson 39209 Natchez Electric & Supply Company 3051 Lunch St (601) 352-5537
 Laurel 39440 Jeffcoat Electric Rt 14 PO Box 920 (601) 425-5116
 Laurel 39440 Williams Electric PO Box 4280, Hwy 84 East (601) 425-3144
 Long Beach 39560 Bay Motor Rewinding 125 N Ocean Wave (601) 883-0666
 McComb 39648 Forrest Electric Motor Service 711 Edgar St (601) 684-4141
 Natchez 39120 Natchez Electric & Suppl Company 190 O'Everaux Dr (601) 442-2711
 Tupelo 38801 Jesco, Inc 637 Carnation St (601) 842-5582
 Waynesboro 39367 Magnolia Electric Motor Works 707 Hough St (601) 735-0659

MISSOURI

Brookfield 64628 Guy's Electric Motor Service 418 E Brooks (816) 258-3426
 Buckner 64016 Electrical Apparatus Specialties, Inc Box 221 302 S Hudson (816) 228-6584
 Cape Girardeau 63701 Kagno Electric Motor Company 2351 Rust Ave (314) 335-2562
 Desloge 63601 Edmonds Electric Motor Sales & Repair 102 North Lincoln (314) 431-3945
 Joplin 64802 Covert Electric Machinery, Inc 1122 E Fourth St (417) 623-4827
 Joplin 64802 Electric Motor & Supply, Inc 2301 W 20th St (417) 623-4544
 Kansas City 64106 Davis Electric 401 Lydia (816) 842-8314
 Kansas City 64108 Dynamic Electric Motor Service 2130 Jefferson (816) 471-4584
 Kansas City 64108 V...Independent Electric Machine 300 Southwest Blvd (816) 471-2610
 Mexico 65265 S & S Electric Motor Service, Inc 1120 Omar (314) 581-7667
 O'Fallon 63366 Cummings Machinery Company 401 East Wabash (314) 272-2702
 Sedalia 65301 Cooper Electric Motors Inc 218 S Kentucky (816) 826-7410
 Sedalia 65301 Sedalia Electric & Machine Shop 321 W Second St (816) 827-5300
 Springfield 65807 Electric Motor Service & Supply Co 445 South Patton (417) 862-7304
 Springfield 65803 Northside Electric Service 401 E Commercial (417) 862-0766
 Springfield 65802 Independent Electric Machinery 1640 E Traffic Way (417) 865-1626
 St Joseph 64501 Four State Ind. Electric 611 Palsee St (816) 232-2404
 St Joseph 64501 St Joseph Electric Motor Service, Inc 507 South 7th St (816) 232-1138
 St Louis 63102 Acme Electric 1520 N Broadway (314) 241-7775
 St Louis 63110 Quality Electric Inc 1211 S. Vandeventer (314) 535-5236
 St Louis 63146 V...State Electric .. PO Box 28589, 1977 Congressional Dr (314) 569-2140
 St Louis 63125 Zeller Electric, Inc 4250 Hoffmeister (314) 638-9641
 Trenton 64683 R & R Electric Motor 3225 Oklahoma Ave (816) 359-3959
 Warrenton 63383 D R Electric Motor Service Route 2, Box 54 (314) 456-3410
 West Plains 65775 West Plains Electric Motor Service .. N Hwy 63, PO Box 824 (417) 256-6749

MONTANA

Black Eagle 59414 Mosch Electric Motors, Inc 2513 17th NE (406) 453-2481
 Butte 59701 H & N Electric 100 N Parkmount (406) 494-7653
 Butte 59701 Montana Electric Motors 300 Holmes Ave (406) 494-1645
 Havre 59501 Trig's Electric Supply Co 255 W First St (406) 265-2272
 Helena 59601 Helena Motor Repair, Inc 1513 National Ave (406) 442-1232
 Kalispell 59901 Diversified Electric Co 67 Eighth Ave WN (406) 257-8090
 Missoula 59801 Electro Service Center 101 Catlin (406) 549-4115

NEBRASKA

Allamore 69301	Nelson Electric Motor Service	817 East 3rd St (308) 762-1148
Atkinson 68713	Ag-Land Electric	PO Box 753, S Highway 11 (402) 925-2913
Beatrice 68310	Genex Corporation	1400 North 7th (402) 228-3363
Columbus 68601	Nebraska Electric Motor Serv...	PO Box 788, 16th Ave & 23rd (402) 564-1416
Columbus 68601	Northwest Electric Motor Service	2070 E 11th Ave (402) 564-9437
Fremont 68025	P & H Electric, Inc	1210 East 17th St (402) 721-7044
Gordon 69343	Lee Electric Motor Service	RR 1, Box 87A, W Hwy 20 (308) 282-2122
Grand Island 68803	Hesselgesser Electric & Motor Repair	3808 Arch Ave (308) 382-8715
Grand Island 68803	Motor Engineering Works	612 S Webb Rd (308) 384-2547
Hastings 68901	Hatten Electric Service, Inc	130 S Hastings Ave (402) 463-4596
Kearney 68847	Northwest Electric Motor	1712 Central Ave (308) 234-3771
Lincoln 68528	Colin Electric Motor Service	520 West O St (402) 476-2121
Lincoln 68502	Fuller Electric	1341 High Street (402) 423-9739
McCook 69001	K-C Motor & Electric	902 East B St (308) 345-1223
N Platte 69101	Knapp Electric Company	1900 E Fourth St (308) 532-4840
Norfolk 68701	Northwest Electric Motor, Inc	609 Omaha Ave (402) 371-3192
O'Neill 68763	Midwest Electric Motor Service	West Highway 20 (402) 336-3660
Ogallala 69153	Quick Electric & Manufacturing	1501 West 4th St (308) 284-2105
Omaha 68127	Armature & Electric Machine	4425 S 87th St (402) 331-0700
Omaha 68106	Midland Electric Motor Repair	4657 Leavenworth St. (402) 551-5454
Omaha 68106	Pokorny Electric Motor Service	1402 South 50th (402) 551-5454
Pierce 68767	B & B Electric Motor Repair	Route 2, Box 36A (402) 329-6368
Scottsbluff 69361	H M Brown Electric Company, Inc	706 S Broadway (308) 635-2622
York 68467	Murphy Electric Service	411 Platte Ave (402) 362-3245
York 68467	Power Service Inc	116 S Lincoln Ave (402) 362-6000

NEVADA

Las Vegas 89101	Carlson Electric Motor Service	709 N Main St (702) 384-8246
Las Vegas 89102	Electric Motor Works	3111 S Valley View #L-102 (702) 871-6708
Las Vegas 89102	P & G Electric	1702 Western No E (702) 383-3036
Las Vegas 89102	Western Electric	2113 Western Ave (702) 384-9949
Sparks 89431	All Star Electric	845 Marietta Way (702) 356-1800

NEW HAMPSHIRE

Berlin 03570	Ray's Electric	PO Box 597, 383 Jericho Rd (603) 752-1370
Brentwood 03833	Raymond Electric Service	247 Rt 125 (603) 642-3208
Keene 03431	Frederick A Farrar, Inc	15 Avon St (603) 352-4316
Laconia 03246	New Hampshire Electric	RFD 2, Rt 107 (603) 524-3729

NEW JERSEY

Bloomfield 17003	Arrow Electric Motor Co	187 Bloomfield Ave. (201) 743-0600
Cinamenson 08077	Greenwood Electric Motor Repair	1301 Union Landing Rd (209) 829-2911
Freehold 07728	Best Electric Motor Co	Rd 5, 22 Weaverville Rd (908) 462-7683
Gibbsboro 08026	Willier Electric Motor Repair Company	1 Linden Ave (609) 627-3535
Kenilworth 07033	George J. Bender, Inc	132 Market St (908) 241-8980
Lakewood 08701	Cleveland Electric Company	1161 River Ave (908) 363-9110
Newark 07105	Reich Electric Motor, Inc	100 Polk St (201) 589-0128
New Brunswick 08901	Bishop Electric Motors Exchange	318 Commercial Ave (201) 249-0665
Paterson 07514	Electrical Equipment & Repair	445 East 16th St (201) 742-8383
Paterson 07503	Reliable Electric, Inc	19-21 California Ave (201) 278-8122
Somerville 08876	New Jersey Electric	84 Somerset St (908) 526-5225
Trenton 08609	Electric Motor Repair Co	809 E State St (609) 392-6149
Union City 07087	Eiffel Electric	PO Box 865 (201) 867-6674
Vineland 08360	D Electric Motor Sales & Service	94 W Sherman Ave (609) 696-5959
Vineland 08360	Phil Desiere Electric Motor Service	1338 Almond Rd (609) 692-8442
West Caldwell 07006	National Electric Coil	7 Fairfield Crescent (201) 575-0760

NEW MEXICO

Albuquerque 87102	Lee's Electric	1310 4th St SW (505) 247-2635
Clovis 88101	Crown Electric Company, Inc	120 Oak St (505) 763-5597
Clovis 88101	M & M Electric	400 Norris (505) 763-3088
Eunice 88231	Gary Electric, Inc	PO Box GE, 700 Main (505) 394-3044
Farmington 87401	Western Tool Crib	2601 E Main St (505) 325-4543
Gallup 87301	Mesa Electric	2400 E Aptec (505) 863-9343
Hobbs 88240	Dixie Electric Motors	1105 W Sanger St (505) 393-2498
Hobbs 88240	Hobbs Auto Tool Co	3403 Industrial Blvd, PO Box 2204 (505) 392-7561
Las Cruces 88005	Turners Electric Motor Service	1301 W Pichacho (505) 526-5721
Portales 88130	Valley Electric Co	PO Box 145, 701 E Second Street (505) 356-8372
Roswell 88201	Savage Bros. Electric	426 E 2nd St (505) 622-3070

NEW YORK

Akron 14001	Bailey Electric	203 Main Rd, Route 5 Penbrooke (716) 542-5902
Albany 12205	Klahr Electric Company, Inc	1846 Central Ave (518) 456-8510
Auburn 13021	Auburn Armature Inc	48 Canoga St (315) 253-9724
Auburn 13021	Central Electric	130 York St (315) 253-2886
Binghamton 13904	Hulbert Electrical, Inc	78 Travis Ave (607) 724-3968
Bohemia 11716	D. P. Electric Motor Service, Inc	493-K Johnson Ave (516) 567-8342
Bronx 10456	Normandy Repairs, Inc	447 East 167 St (212) 665-2550
Brooklyn 11203	Phane Electric Motor Co	1094 Utica Ave (718) 945-9400
Brooklyn 11232	T & C Electric Co	4206 Third Ave (718) 768-9135
Buffalo 14207	EMSCO	80 Skillen (716) 875-9053
Buffalo 14210	S-S Electric Repair Shop, Inc	2470 Seneca St (716) 823-1232
Buffalo 14204	United Electric Motor	106 Michigan Ave (716) 855-1945
Buffalo 14213	Volland Electric Equipment Corp	1511 Niagara St (716) 884-2713
Deer Park 11729	Ben Electric	615 Acom St (516) 586-1168
Dunkirk 14048	Dunkirk Elec Motor Repair	20 W Courtney St (716) 366-4353
Farmingdale 11735	Central Electric Pump	141-C Central Ave (516) 249-8226
Freeport 11520	▼ International Variable Speed Drive	527 Atlantic Ave (516) 623-2300
Glens Falls 12801	RR More Electric	49 Park St (518) 792-5031
Goshen 10924	Empire State Electric Motors	Box 12 C (914) 294-7440
Jamaica 11423	General Electric Specialties	101-04 Jamaica Ave (716) 658-2440
Jamestown 14701	Electric Motor Specialties	70 Metcalf Ave West (716) 487-1458
Jamestown 14701	Westburgh Electric	P. O. Box 1319 (716) 488-1172
Lyndonville 14098	Phil's Electrical Supplies	2589 Sweet Rd (716) 765-9194
Marion 14505	Vanderbrook Electric Motor Repair	4016 N Main St (315) 926-4938
Maspeeth 11378	Babco, Inc	60-10 Maurice Ave (516) 333-8849
Massena 13662	Cushman Corp	Winthrop Rd (315) 769-8639
Middletown 10940	Middletown Electric Motors, Inc	PO Box 862 (914) 343-4171
MI Vernon 10550	Eveready Electric Motor Service	220 W 1st St (914) 664-3005
Munnsville 13409	Fisher's Electric	Route 46 (315) 495-2451
N Tonawanda 14120	Niagara Electric Motors	908 Niagara Falls Blvd (716) 695-2953
Newburgh 12550	F & G Electric Motors	593 Route 9 W (914) 561-1313
New York 10002	Castellano Electric Motors	147 Ridge St (212) 254-7040
Niagara Falls 14304	Barker Electric Motor Service	8635 Parkard Rd (716) 297-8484
Oneonta 13820	Clarkson Electric Motor Service	393 Main St (607) 432-5580
Oneonta 13820	Country Electric Motors	Route 2, Box 412A (607) 278-5465
Patchogue 11772	Patchogue Electric Motors, Inc	71 Sycamore St (516) 475-0117
Peekskill 10566	Peekskill Electric	13 S Broad St (914) 737-4141
Penn Yan 14527	Tomion Electric Motor Service	102 Delano Place (315) 536-2220
Plainville 11803	Wit-Craft Electric Service	333 N Mall (516) 694-8151
Plattsburgh 12901	Caron Electric Motor Co	6 St Johns Street (518) 563-2530
Poughkeepsie 12603	H A Schreck, Inc	32 Van Wagner Rd (914) 454-3560
Rochester 14621	Preferred Electric	42 Fernwood Ave (716) 342-5000
Rochester 14623	T H Green Electric Company, Inc	235 Metro Park (716) 424-3800
Rochester 14607	Vanderlinde Electric	100 Charlotte St (716) 232-1494
Rockville Ctr 11570	Centre Electric Motor Repair	142 S Long Beach Rd (516) 766-0017
Schenectady 12034	Gray Electric	2011 Hamburg St (518) 346-0111
Seneca 14224	Samar Electric	101 South Ave (716) 647-7404
Seneca Falls 13148	Wiltner Electric	3703 Rt 414 (315) 549-7612
Staten Island 10306	John's Electric Repair, Inc	602 Midland Ave (212) 241-3400
S Kortright 13842	Carl's Electric Motor Repair	P.O. Box 19 (607) 538-8478
Smithtown 11787	Smithtown Armature Works	950 W Jericho Turnpike (516) 543-7828
Syracuse 13206	Syracuse Armature Co., Inc	1622 Burnett Ave (315) 476-2576
Syracuse 13206	T.E.A.M. Service	4030 New Court Rd (315) 432-1682
Utica 13501	E DelMonte & Son, Inc	317 Niagara St (315) 793-0283
Vestal 13850	Cascade Electric, Inc	416 Commerce Rd (607) 729-5278
Wantagh 11793	▼ K & G Electric Motor & Pump	2225 Wantagh Ave (516) 221-1171
Weedsport 13166	Weedsport Electric Motors	8983 North Seneca St (315) 834-6181
White Plains 10603	A & C Furia Electric Motors, Inc	75 Lafayette Ave (914) 632-9191
Williamstown 13493	B & T Machine Shop	Rd No 2 Box 61 (315) 599-8816
Woodside 11377	Area Distributors, Inc	61-02 31st Ave (718) 726-9200

NORTH CAROLINA

Ahaskie 27910	Electric Motor Service Company	Highway 13 South (919) 332-4364
Albemarle 28001	Hammond Electric Motor	Rt 3, Box 100 Concord Rd (704) 983-3178
Asheboro 27203	Piedmont Motor & Repair	468 N Fayetteville St (919) 625-5543
Asheville 28801	Hayes & Lunsford Electric Company	226 Hilliard Ave (704) 252-4785
Cary 27511	B & D Electric	417 Raleigh Road (919) 469-1930
Charlotte 28208	Dixie Elec Motor Service	PO Box 66894, 2115 Freedom Dr (704) 332-1116
Charlotte 28208	Jones Electric Repair Co	PO Box 33806, 4251 Golf Acres (704) 399-9734
Concord 28025	Central Rewinding Company, Inc	865 Hwy 29 (704) 786-3131
Durham 27701	Central Electric Motor Company	1309 Angier Ave (919) 688-7563
Durham 27701	Southern Electric Motor Co	602 N Magnun (919) 688-7879
Eden 27288	Oakley Electric Motor Repair	602 Bridge St (919) 623-1717
Eden 27288	Rex Electric Company	625 Irving Ave (919) 627-1282

Fayetteville 28301	Carolina Armature Works	806 Ramsey St (919) 483-2109
Fayetteville 28306	Industrial Electric Supply Company	800 Whitfield St (919) 484-3195
Gastonia 28052	Gaston Electric Company	1204 N Chester (704) 867-7264
Goldsboro 27530	Hill & Ferencz Electric Motor	301 S George St (919) 736-7373
Greensboro 27409	Custom Electric Motor Service	215 Aloe Rd (919) 855-0164
Greensboro 27405	Electric Service Sales	PO Box 21605, 867 Huffman St (919) 275-5321
Henderson 27536	Holland Supply Company	518 W Montgomery (919) 492-7541
Hickory 28601	E M S Electric Motors	PO Box 2609, 1322 9th Ave (704) 322-7212
Hickory 28601	Industrial Rewinding Service, Inc	504 Main Ave SE (704) 324-9932
Laurinburg 28352	Averitt's Electric	PO Box 1793 (919) 276-1294
Lexington 27292	Piedmont Electric Repair Company	915 Talbot Blvd (704) 246-2377
Marshallville 28103	Union Electric	Hwy 74 East (704) 624-2130
Monroe 28110	American Rewinding Inc	819 N Charlotte Ave (704) 289-4177
Monroe 28110	Randall Supply, Inc	2409 Walkup Ave (704) 289-6479
N Wilkesboro 28659	Wilkes Electric Armature	Box 1266, 1518 West "D" St (919) 838-8209
Plumouth 27962	Sikes Electric	Rt 3, Box 139 (919) 793-3103
Raleigh 27603	Electrical Equipment Company	1440 Diggs Dr (919) 828-5411
Ridgeway 27320	Gibson Electric Company	509 W Harrison St (919) 349-6465
Rockingham 28379	Elektron Motor Repair	220 River Rd, PO Box 1027 (919) 997-5062
Rocky Mount 27803	Bowden Electric Co	1681 S Wesleyan Rd (919) 446-4203
Rocky Mount 27803	Industrial Electric Sales	Box 471, Hwy 97 West (919) 442-1101
Salisbury 28144	Lingle Electric Repair Inc	600 N Main St (704) 636-5591
Sanford 27330	Sanford Rewinding Co	223 Jenkins Rd (919) 775-7924
Shelby 28150	Cleveland Electric Motors Inc	2536 W Dixon Blvd (704) 484-0186
Shelby 28150	Electric Motor Service of Shelby	1814 R East Dixon Blvd (704) 482-9979
Tabor City 28463	Apex Motor Company	PO Box 714, 701 By Pass South (919) 653-3061
Tabor City 28463	Hardee Electric	Box 644, North Railroad (919) 653-2555
Waxhaw 28173	A & W Electric Motor Repair	2813 Blythe Rd (704) 392-0633
Wilmington 28401	Hanover Electric Motor Service	602 Wellington Ct (919) 782-3704
Winston-Salem 27101	Snow Electric Company, Inc	428 Brookstown Ave (919) 723-2092
Winston-Salem 27101	Henry's Electric Motor Serv	1406 S Martin Luther King Dr (919) 784-4006

NORTH DAKOTA

Fargo 58107	Bearings & Drives	P.O. Box 708 (701) 293-3737
Fargo 58102	Dean's Electric Motor	720 -1/2 N University (701) 239-4433
Fargo 58102	Electric Motor Repair	102 23rd St N (701) 232-4411
Grafton 58237	Valley Electric Motor	118 E 12th St (701) 352-3676
Grand Forks 58201	▼...Forks Electric Motor & Supply	2304 Mill Rd (701) 746-1361
Jamestown 58401	Weldon Electric Motor	PO Box 1326, 2516 Hwy 281 South (701) 252-4380
Minot 58701	P & C Electric Company	2031 3rd St NW (701) 839-5618
Valley City 58072	Pearson Electric Motor	1260 West Main (701) 845-1542
Williston 58801	Williston Electric Motor, Inc	2644 1st Ave E (701) 572-8828

OHIO

Akron 44707	Akron-Canton Electric	377 W Thomson St (216) 434-7878
Akron 44320	Tyler Electric Motor Repair, Inc	1888 Copley Rd (216) 836-5537
Alliance 44601	Frank's Electric Motor	11424 Beech St NE (216) 821-5457
Archbold 43502	Wyse Electric Motor Repair	State Rt 66 South (419) 445-5921
Ashland 44906	KBZ Electric, Inc	1250 Middle Rowsburg Rd (419) 281-7671
Bedford 44146	▼A's Electric Motor Service	135 Northfield Rd (216) 232-7090
Bellefontaine 43311	Tudor Electric Supply	308-316 W Columbus Ave (513) 592-5856
Bryan 43506	Dooley Electric Motor Svc	609 E Mulberry St (419) 636-2416
Canton 44707	Akron-Canton Electric	618 Tuscarawas St E (216) 452-3593
Canton 44706	Ragon Electric Svc. & Supply Co	1240 Dueber Ave SW (216) 453-8809
Carrollton 44615	Carter Electrical Repair	3448 Lunar Rd NE (216) 627-4061
Chillicothe 45601	Duffy Electric & Machine	15 South Renick Ave (614) 773-2206
Cincinnati 45237	Cincinnati Armature Works, Inc	6516 Wiehe Rd (513) 631-3020
Cincinnati 45214	Frank's Electric Motor Service	2640 Colerain Ave (513) 542-0342
Cincinnati 45212	Matlock Electric	2780 Highland Ave (513) 731-9600
Cincinnati 45202	Sullivan Electric	838 Roedy St (513) 241-5413
Cincinnati 45246	Sylek, Inc	5100 Duff Dr (513) 874-5840
Cleveland 44110	Baumgardner & Sons, Inc	1380 East 170th St (216) 531-2800
Cleveland 44128	▼...E-Z Electric Motor Service	14309 Guinea Ave (216) 662-4791
Cleveland 44119	Electric Motor Repair	17616 South Waterloo (216) 531-5995
Cleveland 44111	Hennings Quality Service, Inc	13921 Trisket (216) 941-9490
Cleveland 44114	United Electric Motor Repair, Inc	2117 Superior Ave (216) 621-4380
Cleveland 44113	Wach's Electric Service Company	2294 Scranton Rd (216) 566-9118
Coshocton 43812	Electric Motor Repair	Rear 322 N 10th St (614) 622-6004
Columbiana 44408	Hoover Electric	44444 Columbiana Waterloo Rd (216) 482-3906
Columbus 43215	American Electric Motor Service Inc	389 N Grant Ave (614) 224-9075
Columbus 43215	Columbus Electric Works Company	777 N Fourth St (614) 294-4651
Columbus 43222	Mid-Ohio Electric Company	1170 McKinley Ave (614) 274-8000
Columbus 43211	Shoemaker Electric	831 Bonham Ave (614) 294-5626

Columbus 43207	Watson Electric	1630 S High St (614) 444-9926
Coshocton 43812	Electric Motor Repair	322 N 10th (Rear) (614) 622-6004
Creston 44217	W.G. Dairy Supply	PO Box 2224 - 12993 Cleveland Rd (216) 435-6522
Dayton 45403	Motorie Electric Company, Inc	334 Linden Ave (513) 253-1141
Dayton 45403	M & R Electric Motor Service, Inc	1516 E 5th St (513) 222-6282
Dayton 45414	Sylek	5131 Webster St (513) 278-7355
Defiance 43512	Industrial Sales & Service	1714 Baltimore Avenue (419) 782-7728
Defiance 43512	MAC Electric	1990 Baltimore Rd (419) 782-0671
Dover 44622	Progress Motor & Control	2129 Progress St (216) 343-1166
Eastlake 44094	A-1 Electric Motor & Transmission Repair	1884 E 337th St (216) 951-1079
Eastlake 44094	O R Machine & Control Corp	1857 E 337th St (216) 953-8084
Elyria 44035	E-M Service, Inc	600 Lowell St (216) 323-3260
Fort Recovery 45846	Don's Electric Motor Repair	206 S Wayne (419) 375-2823
Fort Recovery 45846	Moto Shop	2516 Philothea Rd (419) 678-8595
Garrettsville 44231	Electric Motor Repair	RD 2 (216) 527-2737
Grafton 44044	Fildes Electric Motor Company	1014 Cleveland St (216) 926-2641
Greenwich 44837	Stewart Electric	RD 1, Box 30, State Rt 224 (419) 752-5011
Grove City 43123	Ohio Electric Motor Service Center	2053 Hendrix Dr (614) 875-1913
Groveport 43125	Watson Electric Motor Service	81 Front St (614) 836-9976
Lancaster 43130	American Electric Sales	737 North Slocum St (614) 654-0072
Lima 45801	Lima Armature Works	142 E Pearl St (419) 222-4010
Lima 45802	Mac Electric	1910 Bible Rd (419) 229-0847
Mansfield 44906	KBZ Electric	725 W Longview Ave (419) 526-3800
Marion 43302	Electric Sales & Service Company	236 N Main St (614) 383-6555
Massillon 44646	Kienzle Electric	30 North Avenue NW (216) 832-3861
Mentor 44060	M Q N Electric Motor Service	7455 Tyler Blvd (419) 951-5111
Middletown 45242	Marconi Electric Service, Inc	2504 Alco Ave (513) 422-6388
New Philadelphia 44663	Faton Brothers Electric	235 Ray Ave NE, PO Box 280 (216) 343-8858
N Royalton 44133	Parker Electric	13170 York Rd (216) 582-1600
Orwell 44076	Musgrave Electric Motor Repair	156 E Main St (216) 437-6363
Painesville 44077	Hannon Electric Motors Co	11321 Concord-Hambden Rd (216) 352-7954
Perrysburg 43551	Klemle-Hankins Co	94 "H" St (419) 666-0660
Piqua 45356	Electric Motor Service	8270 North Dixie Dr (513) 773-0426
Sandusky 44870	Sandusky Electric, Inc	1516 Milan Rd (419) 625-4985
Springfield 45503	Mader Electric Motor	315 E Columbia St (513) 325-5576
St Mary 45885	Irish Electric Motor Service, Inc	1600 Celina Rd (419) 394-3284
Tiffin 44883	American Armature Corporation	980 Morgan Ave (419) 448-1926
Tiffin 44883	Hoover Elec Motor Serv	5108 N Township Rd #71 (419) 448-0495
Toledo 43612	Girkins Electric Company	501 Phillips Ave (419) 478-5600
Toledo 43612	Lachmiller Electric Motor Service Co	5122 Lewis Ave (419) 476-2121
Toledo 43610	Rams Div Koontz Wagner	1000 Post St (419) 241-6101
Toledo 43605	River East Electric Motor & Equipment	135 Oak St (419) 693-0387
Toledo 43609	Whitney Electric Corporation	3607 Marine Dr (419) 385-4627
Vermilion 44089	Lorain Armature & Motor Rpr	960 Sunnyside Rd (216) 967-2620
Wadsworth 44281	D & J Electric Motor Repair Company	1734 Wall Rd (216) 336-3474
Warren 44483	Quality Electric Service Co	1431 Buena Vista, NE (216) 372-5132
Warren 44484	Warren Electric Company	177 Niles Cortland Rd NE (216) 856-6735
Washington Ct Hse 43160	▼...Roberts Electric	226 Jonesboro Rd (614) 335-9474
Wooster 44691	Bechtel Refrigeration	6437 Chestnut Rd (216) 264-2889
Wooster 44691	Johnston & Knowlton	5757 Cleveland Rd (216) 345-6504
Wooster 44691	Schavey-Uher Electric, Inc	510 W Henry St (216) 262-0906
Youngstown 44512	▼...Mahoning Valley Elec Serv	PO Box 3343, 4326 Lake Pk Rd (216) 783-0837
Youngstown 44506	The Phoenix Electric Company	1623 Wilson Ave (216) 744-8441

OKLAHOMA

Altus 73521	Kay Electric Company	1101 W Broadway (405) 482-1757
Alva 73717	Mayer Electric Motor Service	1021 9th (405) 327-1399
Barlesville 74003	Wards Elec Motor Service	PO Box 1395, 502 S Comanche (918) 336-3566
Claremore 74018	Phil-Coe Electric	PO Box 1133, 3/4 Mi E on Hwy 20 (918) 341-0137
Duncan 73533	Quality Electric	801 Viola (405) 252-8001
Enid 73701	Enid Electric Motor Service	1406 N 4th St (405) 233-8622
Lawton 73501	Lawton Electric Motor Company	1407 SE First St (405) 353-6361
Mannford 74044	Dennis Electric Motor Service	108 S Steele (918) 865-7318
Muskogee 74401	All State Electric	1730 N 11th (918) 683-6581
Oklahoma City 73106	▼...Allstate Electric Motor & Equipment Co	1839 Linwood Blvd (405) 232-1129
Oklahoma City 73114	Britton Electric	1001 Northwest 80th (405) 842-8357
Oklahoma City 73108	Capitol Electric Motor	2215 Southwest 11th St (405) 235-9638
Oklahoma City 73125	Evans Electric Service Center	1536 S Wistern (405) 631-1344
Sand Springs 74063	Interstate Electric	196 E Morrow (918) 245-4508
Stillwater 74074	Ewing Electric Company	1509 S Perkins Rd (405) 372-2078
Tulsa 74107	Advanced Industrial Devices	4323 S Elwood (918) 445-1254
Tulsa 74107	Evans Electric Service Center	2002 SW Blvd (918) 587-1566
Tulsa 74120	Hammond Electric Company, Inc	1510 E Third St (918) 582-4104
Tulsa 74107	Southwest Electric Company	3744 S Jackson (918) 445-1866

OREGON

Albany 97321	Fishers RPM Electric Motor Service	1400 Timber SE (503) 926-7763
Albany 97321	Schoon's Motors, Inc	P O Box 1043 (503) 926-0054
Bend 97701	Electrical Mechanics	63352 Nels Anderson Rd (503) 382-6830
Bend 97701	Waddell Electric Motors	375 NE Burnside (503) 382-2068
Central Point 97502	Perrine Electric	6067 Crater Lake Hwy (503) 826-5505
Coos Bay 97420	Wright's Electric Motor Repair	1023 South Broadway (503) 269-5343
Corvallis 97333	Rugh Electric	2440 SW 3rd St (503) 753-6812
Eugene 97402	W. Kalen Electric	175 Almaden St (503) 345-1579
Eugene 97402	Wheeler Electric, Inc	820 W 1st (503) 687-2121
Hermiston 97838	Wilde Electric Motor Supply, Inc	Rte 2, Box 2562 (503) 567-7538
Klamath Falls 97601	Winema Electric, Inc	735 Commercial (503) 884-7798
Medford 97501	Cascade Electric Motor Service, Inc	1225 Court St (503) 773-4517
Newport 97365	Northern Electric Motor Service	138 NE 11th St (503) 265-2765
Ontario 97914	Ernie's Electric	435 South Oregon (503) 881-1327
Pendleton 97801	Cole Electric Motor Service	1200 Airport Rd (503) 276-7761
Portland 97209	Central Electric Motors & Service	400 NW 17th (503) 226-2726
Portland 97210	Reed Electric Company	2539 NW Vaughn St (503) 223-8191
Roseburg 97470	HPS Electric Motor Service	3801 NW Stewart Pkwy (503) 673-3162
Salem 97302	Electric Motor & Control Service	1005 12th St SE (503) 363-3919

PENNSYLVANIA

Albrightsville 18210	ACS Air Compressor Co	P. O. Box 205 (717) 722-2745
Allentown 18103	Curio Electric Repair Shop	825 S 5th St (215) 432-9923
Allentown 18105	Crowder Jr Company, Inc	PO Box 659 (215) 791-1551
Altoona 16601	Electric Motor & Supply	PO Box 152 (814) 946-0401
Athens 18810	Horton Electric Motor Serv	108-1/2 Main St (717) 888-2421
Bellwood 16617	Central Blair Electric Company	526 N 4th (814) 742-9021
Berwick 18603	R & R Electric	RD No 3 (717) 752-3823
Bethlehem 18017	Albaroff Electric Motor Repair Shop, Inc	1523 Easton Ave (215) 691-7030
Bradford 18701	Boydair Co	181 Main St (814) 368-7141
Carlisle 17013	Estep Electrical Service Company	501 E. Louthier St (717) 249-2698
Collegeville 19426	Tyson Electric Motors	1075 Collegeville Rd. (215) 489-2448
Erie 16504	Ace Viking Electric Motor Co	703 E. 33rd St (814) 456-3131
Erie 16502	Erie Electric Motor Service	2001 West 20th St (814) 455-6284
Erie 16502	Tri-State Elect Motor & Coil Co	548 Huron St (814) 455-9076
Frackville 17931	Silicon Power Controls	334 N 2nd St (717) 874-0662
Harrisburg 17105	Edwin L Heim Co	1900 Greenwood St (717) 233-8611
Landsdale 19446	Moats & Taylor	213 Broad St (215) 368-1641
Luzerne 18709	Ligus Electric	349 Union St (717) 287-1272
Meadville 16335	Veith Electric	RR8, Box 621 (814) 333-8362
Mifflintown 17844	W M Wagner Sales	R 2, PO Box 63 (717) 966-3125
New Castle 16101	A Servadio Electric Motor Serv	634 E Washington St (412) 658-8041
Norristown 19401	Coleman & Schmidt, Inc	843 Cherry St (610) 275-0796
Philadelphia 19136	Atlantic Electric Motor Co, Inc	7347 State Rd (215) 624-0800
Philadelphia 19125	Electric Rewind Co	2068 East Lehigh Ave. (215) 739-0311
Philadelphia 19134	Penn Electric Motor Company	3080 Emerald St (215) 426-9920
Philadelphia 19106	Rothman Equipment Co	PO Box 40088 144 N 3rd St (215) 627-1962
Philadelphia 19125	R Scheinert & Son, Inc	2211 Trenton Ave (215) 739-3380
Philadelphia 19139	Wagner Electric Service	892-96 N 50th St (215) 477-4900
Pine Grove 17963	Heinbach, Inc	RD No 2 (717) 345-8134
Pittsburgh 15237	Industrial Motor & Pump	3387 Evergreen Rd (412) 369-5060
Pittsburgh 15233	Snyder Electric Co	1500 Chateau St (412) 231-3100
Pittsburgh 15220	United Electric Motors	921 Saw Mill Run Blvd (412) 481-3300
Reading 19607	Ram Motor & Control	PO Box 10 (215) 376-7102
Reading 19605	Reading Electric Motor Services	4029 Pottsville Pike (215) 929-5777
Reading 19605	Standard Electric Service Corp	4420 Pottsville Pike (215) 921-2781
Slatington 18080	Donward's Electric Motor	4711 Main St (215) 767-8148
Slevens 17578	Witmer Motor Service	189 E Church St (215) 445-6371
Tamaqua 18252	Martin's Electrical Service	Road #1, Box 1080 (717) 668-4540
Tunkhannock 18657	Route Six Power Equipment	RR 2, Box 52 (717) 836-5115
Warminster 18974	Kufen Electric Motors, Inc	27 N York Rd (215) 672-5250
Washington 15301	Dynalectric Corporation	195 Museum Rd (412) 225-1507
Washington Boro 17582	Slaymaker Electric Motor Service	146 Penn St (717) 684-5050
W Wyoming 18644	Sklonger Elec Motor Service	481 Shoemaker Ave (717) 693-3330
Williamsport 17701	G I Electric Company, Inc	944 Sheridan St (717) 323-6147
Yeadon 19050	Marc Electric	418 Church Lane (215) 284-1048
York 17403	Industrial Electric Company	116 E Gas Ave (717) 854-1539
York 17402	Motor Technology, Inc	3 Interchange Pl (717) 767-6495

RHODE ISLAND

Pawtucket 02862	Jet Electric Motor	688 School St (401) 725-0426
Providence 02903	Delta Electro Power	303 Eddy St (401) 272-8350
Providence 02903	J & H Electric Company	200 Richmond St (401) 421-7840

SOUTH CAROLINA

Aiken 29801	Rees Electric Co	Park Ave Ext S E (803) 648-0159
Anderson 29621	Darby Electric Company, Inc	402 US 29 N (803) 224-2131
Anderson 29622	Electric Motors & Drives	US Hwy 29 North (803) 224-6623
Anderson 29624	Industrial Motor Service, Inc	3021 Standridge Rd (803) 226-2893
Charleston 29403	Ireland Electric Corporation	2200 Heriot St (803) 723-6449
Charleston 29405	Rewind Specialties, Inc	1906 Meeting St (803) 577-5670
Charleston 29403	Spivy's Electric Service	621 Meeting St (803) 723-5309
W Columbia 29169	Electric Motor & Repair Company, Inc	125 Huckabee Rd (803) 791-9000
Columbia 29203	Mann Electric Repair Company, Inc	3600 Main St (803) 252-7777
Eastley 29640	Mayfield Electric Motor Repair	Route 4 (803) 859-8320
Fountain Inn 29644	Electric Service Company	Route 1, Hwy 14 (803) 862-3998
Greenville 29605	Greenville Industrial Supplies, Inc	100 Dixie Circle (803) 277-9400
Greenville 29602	Southern Electric Service Co	119 N Markley St (803) 233-5341
Greer 29651	Crimson Electric Motor Service	PO Box 403, Lee Joyal Rd (803) 877-3357
Myrtle Beach 29577	Coastal Electric Rewind	718 8th Ave N (803) 448-3586

SOUTH DAKOTA

Aberdeen 57401	Nelson Auto Electric, Inc	110 South 1st St (605) 225-8010
Amour 57313	Armour Electric Motor Repair	610 Main St PO Box 246 (605) 724-2877
Brookings 57006	Wheekons Small Engine & Electric Motor	111 Railroad St (605) 692-6094
Freeman 57029	Stucky's Electric Motor Repair	479 South Main (605) 925-7845
Huron 57350	Freddies Electric Motor Sales & Service	124 Second SE (605) 352-6941
Menno 57045	Kirschenman Electric	RR2, Box 153 (605) 387-5283
Rapid City 57702	Harrington Electric Motors	404 St Onge Street (605) 348-0525
Sioux Falls 57103	Electric Motor Repair & Machine Works	927 East 8th St (605) 336-3020
Watertown 57201	Electric Motor Co	512 10th St SE (605) 886-7893
Watertown 57201	Electric Motors & Moore	P.O. Box 86, W Hwy 212 (605) 882-4028

TENNESSEE

Chattanooga 37408	Chattanooga Armature Works	1209 E 23rd St (615) 267-7665
Chattanooga 37404	Dixie Industrial Service	2108 E Main St (615) 698-8063
Dyersburg 38024	Vaughn Electric	501 East Court (901) 286-0516
Franklin 37064	Cotham Electric Motor Repair	136 Reynolds Dr (615) 791-0987
Gray 37615	Gray's Repair Service	Rt 11, Box 22 (615) 477-4100
Greenville 37743	Quality Electric Motor Serv	Route 14, PO Box 416B (615) 638-5631
Jackson 38301	Townsend Electric Motor Works	111 Gordon St (901) 423-2800
Johnson City 37601	Jones Electrical Co	PO Box 1418, Buffalo & Maple St (615) 926-0188
Kingsport 37660	Kingsport Armature & Electric Co., Inc	323 E. Market St (615) 247-7189
Knoxville 37917	Industrial Service Electric, Inc	611 Depot Ave (615) 523-1217
Knoxville 37917	Southern Armature Works, Inc	1721 Potter St (615) 522-8638
LaVergne 37086	Industrial Maintenance & Engr	1531 JP Hennessy Dr (615) 641-9474
Lawrenceburg 38461	Fortney Electric	1505 Buffalo Rd (615) 762-6516
Marlin 38237	Electrical Services	PO Box 228, 119 Neal St (901) 587-5713
McMinnville 37110	C & W Armature	404 Beersheba St (615) 473-2346
Memphis 38116	Pierce Armature	1930 Lynnbrook (901) 345-6385
Memphis 38126	Southern Electric Company	812 Porter St (901) 774-4651
Morristown 37814	Morristown Electric Motors	3482 New Brights Pike (615) 581-1126
Murfreesboro 37130	Fox Brothers	861 West College St (615) 893-0542
Nashville 37210	Allied Electric Motor Company	924 Third Ave S (615) 259-3892
Nashville 37209	Electric Motor Rewinding	1319 51st Ave N (615) 298-3377
Nashville 37086	Industrial Maint & Elec. Corp	1531 JP Hennessy Dr (615) 641-9474
Nashville 37209	Industrial Services, Inc	1319 51st Ave North (615) 385-2240
Nashville 37208	Power Electric	1227 3rd Ave N (615) 255-0307
Nashville 37203	Tennessee Electric Motor Co	408 6th Ave S (615) 255-7331
Powell 37849	Landon Electric	2612 Clinton Hwy (615) 945-3112
Sparta 38583	Sparta Electric Motor	170 Mayberry St (615) 836-2813
Winchester 37398	Poultry & Electric Motor Sales & Svc	125 N College St (615) 967-7351

TEXAS

Abilene 79601	National Electric & Manufacturing Co	4034 East Hwy 80 (915) 673-7052
Alice 78333	Ball Montez Electric	Hwy 44 West (512) 664-2181
Amarillo 79107	G E Jones Electric Company, Inc	204 North Polk (806) 372-5505
Arlington 76015	Armature Electric	2627 S Cooper St, Ste. B-27 (817) 572-4291
Austin 78752	Bartosh Distributing	706A Brentwood (512) 459-1305
Austin 78722	Hamilton Electric Works	3800 Air Port Blvd (512) 472-2428
Brenham 77833	Brenham Electric Motor Service	800 S Horton St (409) 836-2882
Brownsville 78520	Imperial Electrical Motor Service	905 E Tyler St (512) 546-4523
Bryan 77802	Frank's Electric	2600 Makoney St (409) 822-2024
Cedar Hill 75104	Phase Electric Motor, Inc	659A Grigsby Way (214) 291-9221
Channelview 77530	Dee's Industrial Motor Service	PO Box 960, 1410 North Dr (713) 457-1135
Cleburne 76031	Herman Gatewood Electric	1118 N Main (817) 645-6722
Cleburne 76031	McClanahan Electric	401 Shaw (817) 645-7762
Conroe 77301	Industrial Armature Works, Inc	1009 S First St (409) 756-5445
Corpus Christi 78401	Bradley's Motor & Armature Works	1920 N Port Ave (512) 882-4381
Corpus Christi 78408	C-D Electric Motor Sales & Service	617 High Starr Dr (512) 888-4133
Corpus Christi 78469	Temco, Inc	PO Box 4941, 4570 Baldwin (512) 884-9899
Corsicana 75110	Noblett Electric Motor Service	PO Box 3091 (214) 872-6567
Dallas 75223	Chapman Electric	3131 S Haskell (214) 824-8095
Dallas 75210	Henry's Motor Rewinding Co	3231 Grand Ave (214) 421-9494
Dallas 75220	Shermoo Industries	2815 Congressman Lane (214) 358-4271
Dallas 75226	Southwest Electric Motor Svc	3008 Canton St (214) 742-8211
Dallas 75215	Story Electric Company	2625 S Central Expwy (214) 421-7381
Dallas 75247	T. Gray Electric	3404 Jane Lane (214) 631-1188
El Paso 79902	Cooper Electric Company	1211 Wyoming Ave (915) 542-0544
El Paso 79902	Electric Motor Company	1517 Wyoming Ave (915) 533-5979
El Paso 79915	Musshom Ent. Inc.	7200 Alameda Ave (915) 772-9007
Gainesville 76240	Newman Electric	1610 Independence Ave (817) 668-8381
Garland 75042	Tolbert Electric Motor Company, Inc	3822 Dividend (214) 272-6541
Harlingen 78552	Lewis Electric Motors	3300 Spur 54 (512) 423-4273
Harlingen 78550	Payton Place Electric Motor	1323 W Tyler (512) 425-4091
Hereford 79045	Brandon & Clark Electric Company	515 East First (806) 364-5470
Houston 77262	Glynn Electric Company, Inc	7647 Harrisburg (713) 921-5213
Houston 77016	Hydro-Dyme Electric Company	4301 Laura Koppe Rd (713) 631-0770
Houston 77003	Oliver Armature Works, Inc	612 Live Oak St (713) 222-9272
Houston 77009	Quality Electrical & Electronic	11320 S Post Oak, Suite 204 (713) 426-9040
La Mesa 79331	Automated Controls	NE 14th St Ind Park (806) 872-8341
Longview 75801	Longview Electric Company, Inc	319 E Cotton (214) 758-2776
Lubbock 79404	Brandon & Clark Electric Co, Inc	3623 Avenue H (806) 747-3861
Lubbock 79405	Lubbock Electric Company	1108 34th St (806) 744-2336
Lufkin 75901	Lufkin Electric Co, Inc	1307 Denman (409) 639-2377
Lumberton 77856	International Electric Systems	Hwy 69 North & Walton Rd (409) 755-4953
Maabank 75147	Tri-County Electric Company	Highway 175 West (214) 887-2009
McAllen 78501	McAllen Armature Works, Inc	617 Beaumont (512) 686-9502
Odessa 79760	Roundhouse Electric & Engr	2224 Cities Service Rd (915) 333-3923
Plainview 79072	Plains Electric	610 W 6th (806) 293-1871
San Angelo 76903	J & J Electric Motors	314 N Chadbourne (915) 653-4633
San Antonio 78265	Air Electric Systems	4354 Industrial Center (512) 655-0921
San Antonio 78210	Koopp Electric & Motor Service	402 Vine (512) 534-6031
San Antonio 78207	San Antonio Armature Works, Inc	1015 N Colorado (512) 227-0291
Sherman 75090	Flowers Electric Motor Service	2012 Highway 75 North (214) 893-1831
Stephenville 76401	Marlin Electric	201 East Road (214) 965-4185
Texarkana 75501	Ray's Electric Motor Repair	922 Bowie St (214) 792-7031
Vidor 77662	Electro-Motor, Inc	465 South Main (409) 769-5402
Wichita Falls 76307	Evans Electric	2707 Central Fwy E (817) 723-7466
Wichita Falls 76301	Savage Electric Company	522 Sixth St (817) 322-7859
Wichita Falls 76301	Wichita Falls Armature Shop	Rt 2, 2211 Hwy 79 (817) 767-1583
Yoakum 77995	Delta Armature & Motor Works	406 Forest St (512) 293-2213

UTAH

Logan 84321	Mountain Valley Motor	657 North Main St (801) 753-0916
Ogden 84401	Christensen Electric	7645 Lincoln Ave (801) 394-9615
Ogden 84401	Johnson Electric	2795 Industrial Dr (801) 621-3853
Orangeville 84537	Industrial Electric Motor Service	PO Box 340 (801) 746-2828
Provo 84604	Provo Electric	1700 N State St (801) 373-0270
Salt Lake City 84101	C W Silver Company	550 West Seventh St (801) 321-4700
Salt Lake City 84115	Diamond Electric, Inc	1465 South 300 West (801) 484-4325
Salt Lake City 84115	Nelson Electric Motor Serv	233 W 3620 South (801) 262-9530
Salt Lake City 84115	Schroeder Electric Motor	1773 South 300 West (801) 467-9200
Salt Lake City 84104	Skyline Electric	1000 W 1910 SO (801) 972-3656
Salt Lake City 84115	Stevens Electric	3198 South West Temple (801) 484-1982
W Valley City 84119	Apparatus Sales & Service Co	2575 South 3270 West (801) 972-0423

VERMONT

Bennington 05201	Pioneer Electric Motors Inc	108 Hardwood Hill, Route 7A (802) 442-2003
Burlington 05401	Metevier Electric Motor Service	226 North Avenue (802) 864-4365
White River Junction 05001	T & L Electric, Inc	35 North Main St (802) 295-3114

VIRGINIA

Arlington 22206	Cowherd Electric Motor	3806B, South Four Mile Run Dr (703) 671-3000
Ashland 23005	Industrial Electric Company	305 S Leadbetter Rd (804) 798-9000
Bristol 24203	Electric Motor Repair and Sales Co	One Goodson St (703) 669-9428
Danville 24540	Daniel's Electric Motor Service	3308 N Main St Hwy 29 N (804) 836-7148
Danville 24540	Parrish-Johnson Electric	135 Lansdale St (804) 792-4711
Galax 24333	Felder Electric Motor Repair	104 Poplar Knob Rd (703) 236-7125
Lynchburg 24504	Industrial Electric Corporation	700 Fifth St (804) 845-5923
Manassas 22110	Manassas Electric Motor Co Inc	7519 Centerville Rd (703) 368-2321
Manassas 24115	Bi-State Coil Winding, Inc	PO Box 3983 (703) 956-3106
Newport News 23607	Alco Electric Motor Service, Inc	4806 Commerce Dr (804) 380-1211
Norfolk 23504	Caddell Electric Company	1250 Bolton St (804) 625-4261
Norfolk 23513	Todd Electric Company	2311 Ingleside Rd (804) 855-3111
Petersburg 23803	Superior Electric Motor Repair	42 River St (804) 733-2914
Richmond 23224	Eastern Electric Apparatus Svc Ctr	1001 East 4th St (804) 232-8940
Richmond 23220	Perkins Electric Motor Service	1301-05 W Main St (804) 355-1387
Richmond 23230	Roy's Electric Motor Service	3201 Norfolk St (804) 355-5713
Richmond 23203	Wingfield & Hundley, Inc	2403 E Franklin St (804) 643-5305
Roanoke 24013	Lloyd Electric	605 Third St SE (703) 982-0135
Rocky Mt 24151	Frisbee Electric	422 N. Main Street, Box 883 (703) 483-0361
Salem 24153	Mahoy Electric Service Company	2144 Salem Ind Dr (703) 387-1129
South Boston 24592	Ragans Electric Company, Inc	1204 Seymour Dr (804) 575-7927
Timberville 22853	Price's Electric Motor Repair, Inc	356 Third Ave (703) 896-9451
Winchester 22601	Blue Ridge Electric Service	1604 S Loudoun St (703) 662-8463
Winchester 22601	Winchester Electric Service, Inc	443 Millwood Ave (703) 667-2040

WASHINGTON

Aberdeen 98520	Electrical Apparatus Service Company	621 W State (206) 533-4164
Bellingham 98226	Mac & Mac Electric	1410 Iowa (206) 734-6530
Bremerton 98312	Charleston Electrical Motors, Inc	901 North Wycoll (206) 377-3400
Bremerton 98312	Red's Electric Motors, Inc	2300 6th St (206) 377-3903
Centralia 98531	C & R Electric Motor Service, Inc	820 North Tower (206) 736-2521
Edmonds 98020	F & M Electric Motors	22912A Hwy 99 (206) 776-1002
Everett 98206	Industrial Electric	2701 Hewitt Ave PO Box 1125 (206) 259-3124
Longview 98632	Northwest Motor Service	1341 Industrial Way (206) 425-8700
Moses Lake 98837	Hochstatter Electric	547 Interlake (509) 765-0254
Mount Vernon 98273	Industrial Electric Co Inc	1120 West Division (206) 424-3239
Pasco 99301	Delta Star Electric Motor Service	2424 West Lewis (509) 545-1869
Pasco 99301	H & N Electric, Inc	Big Pasco Ind'l Park, Bldg T121 (509) 547-1691
Port Angeles 98362	Electric Motor Repair	402 South Valley (206) 452-5289
Seattle 98134	Cascade Machine & Electric	4600 E Marginal Way South (206) 762-0500
Seattle 98107	Harris Electric	1510 NW 46th (206) 782-6668
Seattle 98109	Seattle Electric Works	118 5th Ave North (206) 448-4974
Seattle 98109	United Electric Motors, Inc	308 Ninth Ave North (206) 624-0044
Snohomish 98290	Sea Alaska Ind. Electric	415 Maple Ave (206) 568-7624
Spokane 99212	H & N Electric, Inc	East 5511 Broadway (509) 534-6271
Spokane 99202	K & N Electric Motor	E611 Sprague (509) 838-8000
Spokane 99202	Paragon Sales & Service	North 128 Stone (509) 534-4125
Tacoma 98409	Center Electric, Inc	1212 South 30th (206) 383-4416
Walla Walla 99362	Berry Electric Company	301 South 3rd Ave S (509) 529-2812
Walla Walla 99362	Harold Electric Company	811 West Rose (509) 525-5070
Wenatchee 98801	Gray's Electric	1183 S Wenatchee Ave (509) 662-6834
Wenatchee 98801	Industrial Electric	1512 Walla Walla (509) 663-4756

WEST VIRGINIA

Fairmont 26554	Solas Electric Company, Inc	1552 Tulip Lane (304) 363-2058
Charleston 25312	Roberts Electric Motor Serv	3631 7th Ave (304) 744-1525
Glendale 26038	Tri-State Electric	1702 Wheeling Ave. (419) 845-4540
Huntington 25701	Lawler Electric Motor Company	202 Adams Ave (304) 522-8297
Martinsburg 25401	Biedler's Elec Motor Repair	PO Box 1022, Charlestown Rd (304) 263-9995
Sophia 25921	Sophia Electric Company	PO Box 458, Rt 16 (304) 683-4353
Wheeling 26003	Criswell Electric Motor Serv	Rt 2 & N Warwood Dr (304) 232-0184
Wheeling 26003	Warwood Armature Repair	128 North 7th St (304) 277-2550

WISCONSIN

Abbotsford 54405	Helndl Electric	106 Industrial Park Rd (715) 223-3541
Alma Center 54611	A C Electric	219 E Main St (715) 964-2631
Antigo 54409	Bonnetts Electric Motor Service	PO Box 127, 1707 Neva Rd (715) 623-5388
Appleton 54911	Crescent Electric Motor Service, Inc	1727 N Richmond St (414) 733-6136
Beloit 53511	McGilvra Electric	1411 Huebbe Parkway (608) 364-4459
Blair 54616	Stetzer Electric, Inc	PO Box 25, 520 West Broadway St (608) 989-2571
Cedar Grove 53013	Lenz Electric	RFD 1, PO Box 269, 108 South Main St (414) 668-6825
Eau Claire 54707	B & B Inc	1303 Western Ave (715) 832-1676
Elmwood 54740	Schneider Electric Motor	200 N Main St (715) 639-4182
Fond Du Lac 54935	W & W Electric, Inc	215 Morris Ct (414) 235-3880
Fort Atkinson 53538	Lake Geneva Spindustries	633 Hilltop Trail (414) 583-8493
Grantsburg 54850	Krueger Electric Motor Repair	Box 524, Hwy 70 (715) 463-5375
Green Bay 54304	Christianson Electric Company, Inc	1138 State St (414) 435-6924
Hartford 53027	Butzler Electric Company	455 Pine St (414) 673-5000
Janesville 53545	Panels Motors	PO Box 102, 102 Freedom Lane (608) 755-1830
Janesville 53545	Janesville Electric Motor Repair	443 North Parker Dr (608) 754-6434
Jefferson 53549	R C S Electric Motor Center	112 N Main St (414) 674-5301
Kaukauna 54130	Electric Motor Service	PO Box 86, 1150 Prospect Lane (414) 766-0166
La Crosse 54601	Electric Motor Repair & Supply	222 Vine St (608) 784-6330
La Crosse 54603	Advanced Electric Service, Inc	2306 Commerce St (608) 781-2627
Lancaster 53813	Reynolds Electric	625 N Washington (608) 723-7615
Lone Rock 53556	Electric Motors	Route 1 PO Box 394A Hwy 14 (608) 583-2506
Madison 53713	Electric Motors Unlimited	1000 Jonathan Dr (608) 271-2311
Madison 53704	Electric Motor Service, Inc	1901 Wright St (608) 241-8866
Marshfield 54449	▼...Marshfield Electric Motor, Inc	1100 South Central (715) 384-9010
Marshfield 54449	Thomas Electric Service, Inc	1606 North Central Ave (715) 387-1271
Mayville 53050	Schroeder Electric	1106 Breckenridge (414) 387-3940
Modford 54451	Bach Electric, Inc	W5960 Apple Ave (715) 748-5982
Monomorie 54751	Schneider Electric Motor	2405 S Broadway (715) 235-7530
Merrill 54452	D C Motors	2200 Sturtevant St (715) 536-9786
Milwaukee 53207	Badger Electric Motor	5000 South 2nd St (414) 483-8600
Milwaukee 53219	▼...Dietz Electric Company, Inc	4329 W Lincoln Ave (414) 645-3000
Milwaukee 53208	Holt Electric Motor Company	5225 West State St (414) 771-6600
Milwaukee 53216	Quality Electric Service	4170 North 35th St (414) 873-3710
Milwaukee 53207	U.S. Industrial Sales	2156 S 4th St (414) 645-8300
Mineral Point 53565	Knudson Motor Service, Inc	121 Commerce St (608) 987-2965
Monroe 53566	Precision Drive & Control	504 11th St (608) 328-5600
Neenah 54957	Alferi Industrial Sales & Svc, Inc	346 Smith St (414) 722-6483
Neillsville 54456	G C Electric Motor Service	Rt 1 (715) 743-2282
New Berlin 53151	Ese/ Tresler	15755 W Rogers Dr (414) 782-2400
New London 54961	R & L Electric, Inc	Rt 4 (414) 982-5650
New Richmond 54017	Rickard Electric	1159 Johnson Dr (715) 246-2079
Oshkosh 54901	Oshkosh Electric	716 Nebraska St (414) 235-4310
Oshkosh 54901	W & W Electric, Inc	521 West 12th Ave (414) 235-3880
Plainfield 54966	Tri-County Electric Motors, Inc	Rt 1, Box 486 (715) 335-4127
Platteville 53818	A-C Service	150 North Second (608) 348-6487
Plover 54467	Ristey's Electric Motor Serv.	1087 Meehan Dr, Hwy 54 W (715) 344-0010
Plymouth 53073	Hubacok Electric Motor Service	110 Rustic St (414) 892-4055
Poynette 53955	Columbia Electric	Route 1 Hwy 51 (608) 742-5688
Prairie Du Sac 53578	Sauk Prairie Power Equipment	641 Water St (608) 643-3616
Racine 53404	Lakeshore Electric Co	920 Wilson St (414) 634-5889
Racine 53404	Motoronics Electric Motor Service	2200 Northwestern Ave (414) 634-5827
Reedsburg 53959	Glens Motor Repair	2315 E Main (608) 524-3234
Sheboygan 53083	Beaudry Electric	N7317 Hwy 42 (414) 565-3993
Sheboygan 53083	Sheboygan Armature Works, Inc	2727 North 21st St (414) 452-3389
Sparta 54656	Speeds Electric	1126 John St (608) 269-6038
Sturtevant 53177	Electric Motor Service	10200 Durand Ave (414) 886-1875
Superior 54880	TM Electric	1102-1/2 N 3rd (715) 392-4202
Tomah 27536	Hollar Electric Motor Svc	1015 Townline Rd (608) 372-9384
Watertown 53094	Kottwitz Electric Motors, Inc	202 North Water St (414) 261-3233
Waukesha 53188	Electric Motor Repair & Sales, Inc	W239 N438 Pewaukee Rd (414) 549-1120
Waukesha 53186	Rusch Electric Motor Repair Co	330 East North St (414) 547-4037
Waukesha 53186	Warfield Electric Co	2125 S. West Ave (414) 549-6540
Waupun 53963	W W Electric Motors, Inc	Hwy 49 W, West Main St (414) 324-4507
Wausau 54401	Linder Electric	308 Adrian St (715) 842-3725
Wausau 54402	Wausau Electric	P O Box 1284 (715) 842-2260
Wausaukee 54177	County Electric Motor Service	W7895 Cty X (715) 854-2275
Wisconsin Rapids 54494	Staub's Electric Company, Inc	210 First St North (715) 423-1560

WYOMING

Casper 82604	Monney's Electric Svc Co	3289 S Prospector Dr (307) 266-1000
Casper 82604	Intermountain Electric	2101 North 6 Mi Rd, Box 4780 (307) 472-0854
Casper 82601	Statewide Electric Co	PO Box 440 3415 MJB Rd (307) 265-2567
Cody 82414	Opatz Electric Motor Repair	304C Street (307) 587-6961
Riverton 82504	Koon's Electric Motor Repair	North 8th West, Rt 1, Box 54 (307) 856-6962

CANADA

ALBERTA

Calgary T2E6T6	Complete Electric Motor Repair, Ltd	4019 - 23 St. NE (403) 291-9337
Calgary T2E6T3	Electric Motor Service Ltd.	2121 39 Ave NE (403) 250-2695
Calgary T2H 2L2	James Electric Motor Service, Ltd	6115 3rd Street SE (403) 252-5477
Calgary T2C 1P4	Star Electric, Ltd	3504 64th Avenue SE (403) 279-7202
Camrose T4V3V8	C.J. Electric Motor Repair, Ltd	4327 - 41 Street (403) 672-5133
Edmonton T6E 5E9	Alberta Rewind & Pump Service, Ltd	8717 53rd Avenue (403) 468-7175
Edmonton T6E4M9	CN Electric Motor Rewinds, Ltd	6108 Davies Road (403) 469-5045
Edmonton T5H 2X5	Electric Motor Service, Ltd	10589 106th Street (403) 426-6490
Edmonton T6H5E4	Electric Motor Service, Ltd	10333 58th Ave. (403) 496-9300
Edmonton T5K 1K7	Electrical Industries Western, Ltd	11616 - 170 St (403) 452-3674
Edmonton T5B2C9	Ibis Electric Motor Rewind, Ltd	12063-76th St (403) 474-9638
Edmonton T6E1J2	Scona Electric Ltd	9950 - 75th Ave (403) 433-4247
Edmonton T6C4G2	Standard Electric Ltd	4755 Eleniak Rd (403) 465-9817
Edmonton T5H3C6	Superior Pump & Motor Service Ltd	10549 - 100 St (403) 426-6991
Edmonton T5M3W1	Universal Rewind Co	15711 - 116 Ave (403) 451-4781
Fort McMurray T9H2S9	Quality Rewind Inc	305 MacDonald Cr (403) 743-1123
Fort Saskatchewan T8L 3K8	Sturgeon Rewind	No 1-11110-88 Ave (403) 998-2220
Grande Prairie T8V4E3	Bearmar Rewind Ltd	9609 - 109 St (403) 532-0818
Lethbridge T1J 0E3	Hagen Electric Lethbridge, Ltd	1202 2nd Avenue South (403) 328-8826
Lethbridge T1H 5E6	Southern Rewind & Mechanical	3306 9th Avenue North (403) 328-9049
Lloydminster T9V2E3	R.L. Electric Motor Rewinding, Ltd	5107 - 62nd Street (403) 875-6880
Nisku T0C2G0	Neutron Electric Co., Ltd	704 - 19 Avenue (403) 955-7595
Peace River T8S1G8	Noraita Rewind	9719 - 90 Ave (403) 624-4393
Red Deer T4N 4B6	McCauleys Electric	5301 50th Avenue (403) 346-3361
Wainwright T0B 4P0	Wainwright Electric Motor Repair	832 - 2nd Ave (403) 842-4979
Wetaskwin T9A 0P6	Wilson Electric Ltd	4802-49 Ave (403) 352-4215

BRITISH COLUMBIA

Burnaby V5C 5W7	Mercer Electric, Ltd	111-2544 Douglas Road (604) 291-9919
Cranbrook V1L 4K7	Columbia Electric, Ltd	1045 Industrial Road 2 (604) 426-4069
Dawson Creek V1G 1N6	Jacques Electric	1533 97th Avenue (604) 782-7029
Grand Forks V0H1H0	Boundary Electric (1985) Ltd	Box 756 7990 Columbia Dr (604) 442-5581
Kamloops V2C 6G3	Kamloops Electric Motor Sales Ltd	1260 Dalhousie Dr (604) 372-9822
Kamloops V2C 4B6	Thompson Valley Rewind	1647 Valleyview Drive (604) 374-1633
Kelowna V1Y7G7	Kelowna Ind. Rewind	824 Crowley Ave (604) 763-8434
Kelowna V1Y 2K5	Thompson Electric Motor Serv	1090 Richter Street (604) 762-3136
Langley V3A 6K8	Stator Distributors, Ltd	101A-6320-202 St (604) 530-5446
Nanaimo V9R4Y5	Burwood's Electric Motor Svc Ltd	291 Eaton St (604) 753-6544
Penticton V2A 3J8	A C Motor Electric, Ltd	259 Okanagan Avenue East (604) 493-1440
Prince George V2N 1A9	Baler Electric, Ltd	3674 18th Avenue (604) 563-8181
Prince George V2N1B7	West Fraser Electro/Mechanical Ltd	3937-22nd Ave (604) 563-4330
Surrey R2J 2W5	B&B Bearing & Supply, Ltd	No 10 7788-132 St (204) 237-6066
Terrace V8G3P6	West Fraser Electrical Svc	3055 River Dr (604) 635-6108
Vancouver V8A 1M8	Drakes Universal	1007 E Cordova (604) 254-4412
Vancouver V5V 3C8	Regal Controls, Ltd	1156 Kingsway Avenue (604) 879-6357
Vernon V1T 1P5	John M Electric, Ltd	4317 25th Avenue (604) 545-6315
Victoria V9A 2V2	Alliance Power & Equipment, Ltd	859 Viewfield Road (604) 382-3995
Victoria V8T 4K9	John Stefaniac, Ltd	2021 Douglas Road (604) 384-1027
Victoria V8Z1A6	Troy Elec Motor Repairs Sales & Svc	Unit 1-3131 Delta Ave (604) 382-7442
Williams Lake V2G1N9	West Fraser Electro/Mechanical Ltd	675 N Mackenzie Ave (604) 398-5122

MANITOBA

Brandon R7B 0T1	Fort Ignition Ltd	1940 Queens Ave (204) 725-1354
Ile De Chenes R0A0T0	Joleco Enterprises	P. O. Box 181 (204) 878-3168
Neepawa R0J1H0	Neepawa Electric Motors, Ltd	153 Mill St (204) 476-3803
Portage-La-Prairie R1N 0K8	Laramie Enterprises	322 Saskatchewan Ave E (204) 857-3483
Rosenort R0G1W0	C.G. Auto Electric	205 Main St West Box 204 (204) 746-2669
Steinbach R0A2A0	Palmitte Electric Motors	Hwy 12 North Box 3308 (204) 326-9271
The Pas R9A1P8	Electric Motor Rewind Shop	Box 3274 Lot #2 Birchpoint (204) 623-7372
Thompson R8N1N2	KNC Electric, Ltd	Box 428 49 Severn Crescent (204) 778-7333
Winkler R6W4A8	Peter Rampel Electric Ltd	309 Manitoba Rd (204) 325-7220
Winnipeg R3A1H9	Allied Electric Motor & Pump	62 June St (204) 786-1337
Winnipeg R2J 2W5	B & B Dynamo & Armature	572 Mc Tavish St (204) 237-6066
Winnipeg R2W 3A8	E A R Ind Sales & Serv	471 Jarvis Ave (204) 586-1104
Winnipeg R2L 1J5	King's Electric Motor Ltd	633 Tyne Ave (204) 663-5332
Winnipeg R3B1P4	Luke's Machinery Co., Ltd	318 Notre Dame Ave (204) 943-3421

NEW BRUNSWICK

Bathurst E2A 1Y4	Rogers Electric Motor Service	1561 Miramichi Ave (506) 548-8711
Bathurst E2A 1W9	Steve's Electric Motor Service	605 Bridge St (506) 548-4681
Charlo E0B 1M0	Maga Rebuilding	Parc Industriel Restibouche (506) 826-3559
Chatham E1N 3A8	Tri Volt Electric Div	RR 3 (506) 773-9632
Edmundston E3V 3K3	Edmundston Motor Electric Service	6 Rue Lacombe (506) 735-4485
Fredericton E3B 3L4	Electric Motor Service	129 W Morland (506) 458-8770
Grand Falls E3Z 1C7	Fernand Michaud	99 Rue Portage (506) 473-2370
Hartland E0J 1N0	Hartland Armature Works	Industrial Park (506) 375-6797
Moncton E1C 8H7	Electrical & Refrigeration Service	88 Beaverbrook (506) 857-2233
Moncton E1C 8H7	Moncton Electrical Service, Ltd	345 Collishaw (506) 859-7505
St John E2L 4A5	Eastern Distributors	38 Bayside Dr (506) 634-8760
St John E2L 4X4	Universal Sales, Ltd	132 Station St (506) 634-2300

NEWFOUNDLAND

Corner Brook A2H 6E6	Locke's Motor Service	PO Box 506 (709) 634-4870
St Johns A1E 1B6	Electric Mtr & Pump	578 Water St W (709) 739-9626
St. Johns A1E 3Y3	Powerlite Electric	524 Water Street (709) 726-1180
Stephenville A2N 2Z5	Frelco Ltd	836 Harmon Street (709) 643-2369

NORTHWEST TERRITORIES

Yellowknife X1A 2P2	Territorial Rewind Ltd	PO Box 1648 (403) 920-2569
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NOVA SCOTIA

Bridgewater B4V 2W8	L & B Electric, Ltd	North Street, PO Box 140 (902) 543-9966
Dartmouth B3A 1A5	Fader Agencies	83 Shore Rd (902) 466-2333
Halifax B3K 5M5	Nova Scotia Armature Ltd	2453 James Street (902) 429-1590
North Sydney B2A 3S9	Bartlett I.R. & E.M.S.	P. O. Box 1846 (902) 794-2642
Truro B2N 5Z5	Smith Motor & Pump Shop, Ltd	82 Walker Street (902) 893-7291
Windsor B0N 2T0	Anthony's Motor Repair	4 Centennial Dr (902) 798-4003

ONTARIO

Alliston L9R 1W3	Alliston Electric Motors & Pumps	P. O. Box 1126 (705) 435-5061
Aiton L0N 1A0	Saylor Electric, Ltd	Box 39 (519) 941-0025
Barrie L4N 4K5	Walwin Electric	50 Innisfil Street (705) 726-1859
Belleville K8N4L1	Emsco, Ltd	57 Cannifton Road (613) 966-3234
Belleville K8V 4L2	Branch's Electric Motor Service	7 Frankford Crescent (613) 394-4851
Brampton L6T 4M2	Dupont Manufacturing	211 Wilkinson Rd Unit 2 (905) 455-7440
Brantford N3T 2S5	Johnston & Cook Electric, Ltd	104 Marlborough Street (519) 753-0652
Brantford N3S 6B3	Gilbert - McEachern Electric, Ltd	225 Drummond Street (519) 753-0465
Brockville K6V 5V8	Hewitts Brockville	200 Bl Laurier (613) 342-7903
Burlington L7M 1A4	Burlington Electric Motor Service	3141 Mainway No 1&2 (416) 632-4006
Cochrane P0L 1C0	Busy Man General Repairs	RR 2 Lot 9 Con 4 Lamarche TW (705) 272-3828
Concord L4K 1H3	Royal Equipment	163 Bowers Rd Unit 3 (905) 669-4007
Corwall K6J 3V4	Surgeson Electric, Ltd	1730 Pitt Street (613) 933-2355
Delhi N4B 2C9	S & S Equipment Electric	771 James Street (519) 582-3390
Downsview M3J 2S2	L & N Electric Ltd	980 Alness Unit 14 (416) 661-5667
Elora N0B 1S0	Rectify Electric	RR 2, Box 669 (519) 846-0540
Etobicoke M8Z 5G8	Bill's Electric Sales & Svc	829 Kipling Ave (416) 239-2227
Etobicoke M8Z 5A6	Leslie Electric	12 Amold St (416) 259-6385
Elmira N3B2Z2	Rolan Maintenance Service	RR2 Elmira (519) 669-1842
Fordwich N0G 1V0	Wilson Electric (Fordwich), Ltd	P. O. Box 161 (519) 335-3501
Fort Erie L2A 3P5	Marr Electric	50 Klauka St (905) 871-3070
Galt Cambridge N1R 1A2	Shiels Electric, Ltd	6 Munch Avenue (519) 653-1844
Goderich N7A 4H8	Priestap Electric	224 Suncoast Dr E (519) 271-8580
Guelph N1K 1A7	Harlock-Schultz Electric, Ltd	19 Malcolm Rd (519) 824-3680
Guelph N1H 6M6	Schnurr Electric	P. O. Box 935-64 Gordon St (905) 862-1569
Hamilton L8L 3C7	Duke Electric Company, Ltd	986 Barton Street East (905) 547-9171
Hamilton L8L 2A8	Electric Motor Service	192 Cannon Street East (905) 522-2051
Hamilton L8L 7A5	Hamilton Armature Works	220 Gage Ave N (905) 544-9822
Hanover N4N 2V5	Waynes Electric Ltd	626 12th Ave (519) 364-4020
Hawkesbury K6A 1C6	Master Electric	1446 Main St E (613) 632-3491
Kingston K7M 1W6	Boyd Electric	833 Portsmouth (613) 548-4888
Kirkton N0K 1K0	Nasbitt Electric	PO Box 94 (519) 229-8222
Kitchener N2H 5H5	Maico Electric, Ltd	272 Breilhaupt Street (519) 576-2065
Kitchener N2B 2E2	RMW Electric	969 Guelph (519) 744-1821
Kitchener N1R 1A2	Shiels Electric, Ltd	327 Breilhaupt Street (519) 744-1023
Kitchener N2G 4H5	Sutherland Schultz, Ltd	859 Courtland Ave E (519) 743-4123
Leamington N8H 3W1	A C Fox Electric, Ltd	140 Oak Street W (519) 326-4511
Lindsay K9V 1W7	Jordan Electric	4 Durham St E (705) 324-9427
London N5W 4E3	A C Jenkins Electric	289 Ashland Avenue (519) 451-4020

QUEBEC

London NSZ 2B2	Ampro Electric	20 Kitchener Ave Unit 28 (519) 439-9748	Amos J9T 3A2	Clement Bilodeau Inc	4810 Rte. de L'Aéroport (819) 732-3181
London NSV 4L5	TME-Delta	550 Admiral Dr (519) 659-4983	Baio Comeau G4Z 1T7	Atelier Belle-Baie	12 William Dobel (418) 296-4811
Markham L3R 1C6	M S Electric Motor Repair	400 Don Park Road Unit 8 (905) 475-1646	Beaumont G1C 7B1	Les Moteurs PMR du Quebec	520 Ardouin (418) 666-7310
Midland L4R 3T4	Dana Electric Motor Service	206 4th Street (705) 526-7651	Beloeil J3G 1X4	Beloeil Electrique	59 Parreault (514) 467-4857
Milton L9T 5A4	Milton Electric Motors, Ltd	300A Market Dr (905) 798-7969	Boisbriand J7G 2J2	Les Moteurs Electrique RDL	755 Blvd Cure Boivin (514) 433-1813
Mississauga L4T 3Y9	Bestway Elec Motor & Tool Srv 7385	Torbram Rd, Unit 17 (416) 672-2378	Coaticook J1A 2T7	Les Armature Coaticook	146 Gendreau (819) 849-9131
Mississauga L4W 2M6	Magneto Electric	1150 Eslington E (905) 625-9450	Cowansville J2K 3H6	Les Rep de Mtrs de Cowansvil	311 Rue Miner (514) 263-5215
Mississauga L4W 2V6	Nustart Electric Motors	1565 Britannia Rd E Unit 1 (905) 670-2145	Dolbeau G8L 1J1	Robert Conroy Electrique Engr	1849 Walberg (418) 276-6596
Mississauga L4T 3Y3	Speedy Electric Motor Service	7040 Torbram Road (905) 673-3311	Drummondville J2B 6V2	Atelier De Moteurs Croteau Engr	3570 Jean de Brabouin (819) 395-4430
Mississauga L5T 1E8	Waffle's Electric, Ltd	1005 Westport Crescent (416) 564-0828	Farnham J2N 2H4	Meunier Electrique Engr	354 St Vincent (514) 293-4302
North Bay P1B 8G5	Gateway Electric	1570 Hamilt St (705) 476-5814	Granby J2G 5A6	Armature Shefford (1986) Inc	200 Rue Cartier (514) 375-1414
North Bay P1B 8Z4	Industrial Motors (North Bay) Ltd.	128 Booth Rd (705) 495-1633	Granby J2G 8A1	Centre du Moteur Electrique	314 Brignon (514) 378-5654
Oakville L6L 2X4	Greenpark Electric Motor Srv Ltd	1240 Speers Rd, Unit 11 (905) 847-1099	Granby J2G 8C6	Moteurs Elect Gaudreault	1150 St Charles Sud (514) 372-1519
Oakville L6L 2X4	Polyphase Electric Motor Service	275 Speers Road (416) 845-5291	Iberville J2X 4C1	Guy Goyette Pompes & Ref.	2031 Route 133 (514) 347-3268
Oakville L6K 3V1	Oakville Electric Motor Srv 220 Wyecroft	Road, Units 43 & 44 (905) 842-0420	Iberville J2X 3R8	Moteurs Electrique Goyette	575 Rue Riendeau (514) 346-6855
Oakville L6K 3V1	Ontario Electric Motor, Ltd	1498 Wallace Street (416) 827-2384	Joliette J6E 2T7	Rep. Moteurs Sam Inc	730 Richard (514) 759-0652
Orillia L3V 6K2	Orser Electric	301 Forest Avenue (705) 326-6427	Jonquiere G7S 4K6	CBL Contracteur Bouillanne Ltd	2050 Deschênes (418) 548-3134
Oshawa L1H 5R7	Omega Electric Motor Service	899 Nelson St (905) 434-5494	Jonquiere G7S 4K6	Saguenay Moteur Elect	2885 Blvd du Royaume CP 1033 (418) 548-8211
Ottawa K2P 1Y4	CCB Electric Motors	378 Bank St (613) 232-5706	L'Islet G0R 2B0	Gaudreau Equipement Electrique	Route 132 (418) 247-3498
Ottawa K2C 0P8	Emrie's Electric Serv	1732 Woodward Ave (613) 228-9480	Lachine H8S 2V3	Solutions Moteurs Inc	515 4 Iame Ave (514) 634-4451
Ottawa K1S 4N1	Grant Electric, Ltd	401 Preston Street (613) 236-9773	Lafontaine J7Z 1A2	Moteurs Electrique Desjardins	163 Belanger (514) 438-5828
Owen Sound N4K 1L2	Johnson Pumps & Motors Inc	285 - 8th St E (519) 376-3305	Lambton G0M 1H0	Bar-For Electrique	231-2 Ave (418) 486-7533
Parry Sound P2A 3A3	O'Rourke Auto El & Elec Motor	5 Water St (705) 746-5232	Laval H7L 4A1	AET Electro Techniques	1406 Borlier (514) 687-4730
Peterborough K9J 2N3	Larry Electric	164 Sherbrooke Street (705) 434-3167	Lemoyne J4P 3S2	Rep Electrique Inc	1505 St Thomas (514) 662-2100
Pickering L1W 3T1	Lawcon Electric & Machining	1165 Squires Beach Rd (905) 686-4661	Levis G6W 1H3	Larriere Moteurs Elect Inc	4895 Blvd De la Rive Sud (418) 837-7982
Port Hope L1A 3W3	Acme Electric (Port Hope), Ltd	Box 215 - 330 Ward Street (905) 885-2469	Longueuil J4N 1G7	Conception Jph Inc	2566 Chemin du Lac (514) 646-3205
Rexdale M9W 4N5	Bock Electric Motors	50 Brydon Drive (416) 743-6163	Louisville J5V 1E2	Luc Gagnon Electrique Inc	543 St Jacques (819) 228-4423
Richmond Hill L4C 2Y2	C A F Electric Motors	45-47 Industrial Road (905) 889-0197	Magog J1X 4V9	Les Ent. Express Electrique	1890 Bl. Industriel (819) 868-1784
Samia N7T 7L3	TME-Delta	177 Samuel Street (519) 337-5454	Mont St Grégoire J0J 1K0	Mrs. Elect. & Pompes G & T Elect.	444 St Joseph (514) 346-4687
Sault Ste Marie P6A 5N3	Algo Electric	543 Second Line East (705) 949-3151	Mont Joli G5H 2A8	Mrs. Elect. J. E. Poirier (1985)	109 Chemin Price (418) 775-5335
Sault Ste Marie P6A 5K7	Great Northern Motor	1133 Great Northern Rd (705) 759-8316	Mont Laurier J9L 2V5	Moteurs Electrique Enr	642 Rue Alix (418) 232-2760
Scarborough N1L 4C4	Industrial Motor Serv	793 Warden Ave (416) 751-7971	Mont Laurier J9L 3G6	Moteurs Electrique Milaire	261 Blvd Du Ruissseau (819) 623-6300
Scarborough M1S 4J9	ITM	4490 Sheppard Ave E, Unit 13 (416) 321-8214	Montmagny G5V 3L5	Reparations Montmagny	170-4 Rue Parc Industriel (418) 248-2072
Scarborough M1R 3C4	Toronto Electric	72 Crockett Blvd (416) 755-7716	Montreal H1A 3N6	Delstar Electrique Inc	13065 Jean Grou (514) 482-8220
St Catharines L2T 1J7	Kaupp Electric	225 Moritt Street (905) 227-1661	Montreal H2H 2A8	Claude Ralelle Inc	5450 B-Rue Bordeaux (514) 527-1361
Stratford N5A 6W3	Culliton Brothers, Ltd	473 Douro Street (519) 271-1981	Montreal H1X 2Z7	E M S Service De Moteurs Elect	5332-12 Iame Avenue (514) 376-8362
Stratford N5A 1V7	Stratford Electric	24 Corcoran Street (519) 273-3501	Montreal H2H 2L6	Lalonde Electrique	4212 Iberville (514) 524-7507
Sudbury R3A 2T2	Burkes Service	875 Notre Dame Ave (705) 566-1144	Montreal H4N 1M2	Laval Electric Motor Ltd	9390 Charles de Latour (514) 381-3992
Sudbury P3A 5J2	Wilson Electric	Box 2607 - 598 Falconbridge Rd (705) 560-5086	Montreal H2H 2L8	Leduc Electrique	4420 Iberville (514) 524-3721
Thunder Bay P7C 4V9	Mahon's Electric Co Ltd	340 Waterloo St (807) 623-8471	Montreal H1H 2B8	Les Ent Electric L M	3006 St Catherine Est (514) 525-2831
Thunder Bay P7B 2X8	Mersse Motor Electric, Ltd	194 South Court Street (807) 345-2400	Montreal H1H 3A1	Les Mtrs. AC DC	10601 Ave L'Archereque (514) 328-3874
Tillsonburg N4G 2J8	Merv Davis Electric	346 Simcoe St (519) 842-7194	Montreal H3C 1K6	Moteurs ACDC Engr	1240 Notre Dames Ouest (514) 933-1946
Timmins P4N 2T2	Gem Electric Motor Service	151 Wilson Avenue (705) 264-0668	Montreal H4N 1M2	Moteurs Electrique Laval Lie	9390 Charles de Latour (514) 381-3992
Toronto M6B 3P8	Arnold Pump & Elec Motor	2464 Dufferin St (416) 256-9867	Montreal H1W 3S9	Moteurs Orleans Lee	2555 Charlemagne (514) 252-1143
Toronto M4L 1B3	Anronn Electric Motor Repair	136 Sears St (416) 466-5575	Montreal H4P 1X7	Snowdon Electric Motor Repair	5160 Namur (514) 739-3257
Toronto M8Z 5G8	Bill's Electric Sales & Service	829 Kipling Ave (416) 255-2777	Montreal H2G 1X6	Y B Maintenance	2381 des Carrières (514) 272-8275
Toronto M1L 1C1	Carson Electric	3218 Danforth (416) 698-2526	New Richmond G0C 2B0	Mrs. Electriques Charleux Inc	178 Perron O. (418) 392-5444
Toronto M6N 1X8	Cater's Electric Service	55 McCormack Street (416) 766-1166	Quebec G1N 4A7	Electro Mecanik Inc	445 Marconi (418) 683-1724
Toronto M4L 1Y1	Delta Electric Motor Repair	1125 Gerrard St E (416) 463-3032	Quebec G1N 1E8	H Roberge	425 Nolin (418) 687-0550
Toronto M6R 2N4	Drinkwater Electric	457 Roncesvalles (416) 533-8222	Paspébiac G0C 2K0	H R H Electric Engr	Cte Bonaventure (418) 752-3031
Toronto M8A 2Z2	Electric Repair & Machine	35 Chauncey Avenue (416) 236-1861	Plessisville G6L 1Y4	Electromecanique Plessis Ltd	1545 Pinchard (819) 362-3875
Toronto M4E 2V9	Galaxy Electric Motors	1 Musgrave St (416) 691-4315	Portneuf G0A 2Y0	J R Perreault & Fils Lee	340 Rue Lucien Thibodeau (418) 286-6666
Toronto M3J 1Y8	R T A Electric	100 Ste Regis Cres (416) 636-9546	Rawdon J0K 1S0	Les Moteurs Elect Rawdon Engr	3217 9 Avenue (514) 834-3954
Toronto M6M 2P5	Twin Electric	75 Densley Avenue (416) 244-1272	Rimouski G5L 7C9	Dickner Inc	559 Lausanne Street (418) 723-7936
Trenton K8V 4L2	Branch Electric Motor Service	6 Frankford Cr. (613) 394-4851	Riviere Du Loup G5R 2G8	Majella Vaillancourt	82 St Cyrille (418) 862-2503
Vineland L0R 2C0	Gary's Electric Motor Shop	Box 455 - 4033 Victoria Ave (905) 562-7440	Sept-Iles G4R 1L8	Atelier Woods Electrique	361 Noel (418) 962-6131
Walkerton N0G 2V0	Nolan's Electric	RR 3 (519) 881-0798	Shawinigan G9N 6T5	Les Moteurs Electrique PM Engr	1190 Blvd Industriel (819) 536-2609
Waterloo N2V 1B4	Distel Co Ltd	641 Colby Dr (519) 884-9811	Shawinigan G9N 1W4	Moreco Electrique	990 Rue Station (819) 537-7747
Welland L3B 5W6	Burger Electric, Ltd	60 Clark Street (416) 734-6171	Sherbrooke J1H 2R1	Sherelec, Inc	1635 Denault Street (819) 569-6373
Wellandport L0R 2J0	Franks Electric Motor Shop	93 Main St (905) 386-6955	St Agathe J8C 2S4	Les Moteurs Elec Ste Agathe Inc	80 Rue Demontigny (819) 326-5333
Weston M9L 2B2	Alhan Electric	95 Ponn Drive (416) 749-5244	St Alexandre J0J 1S0	Serge Guertin	2674 Chemin Grande Ligne (514) 296-8866
Weston M9L 2W1	Bert Thomas Electric	4801 Steeles Avenue W (416) 746-3200	St Basile de Portneuf G0A 3G0	Electro Plus	475 de L'Eglise (418) 329-2058
Windsor N8X 2Y2	Moncur Electric	333 Eugenie Street (519) 969-9660	St Celestin J0C 1G0	Atelier du Mtrs Elec. St-Celestin	755 Maquis (819) 229-3463
Windsor N9A 6K1	Waffle's Electric, Ltd	400 Erie Street (519) 254-9215	St Claire G0R 2V0	Mrs. Elect. Ste-Claire	110 Bl Bagin (418) 883-2091
Wingham N0G 2W0	Petch Electric	446 Josephine Street (519) 357-1583	St Cuthbert J0K 2C0	Donommee Moteur Electrique	121 Rue Fafard (514) 836-2907
Woodbridge L4L 4C2	Delmar Electric Motor Serv	30 Gauduar Rd Unit 6 (416) 851-8413	St Cuthbert J0K 2C0	Manan Moteurs Electrique	121 Fafard (514) 836-2907
			St Cyrille J0C 1H0	O G Moteurs Electrique	405 St Louis (819) 397-5654
			St Esprit J0K 2L0	Atelier du Moteurs Piche	29 Des Ecoles (514) 839-6450
			St Felix de Valo J0K 2M0	Clinique du Moteur Electriq	45 Laporte (514) 889-4279
			St Georges De Beauce G5Y 7J7	Electro Beauce	2250-90e Rue (418) 228-5505
			St Gorman J0C 1K0	Moteurs de Ferme a Joyal	378 Ri 122 (819) 295-2233
			St Hyacinthe J2S 5X9	Alias Electrique Inc	1390 De la Bruere (514) 774-6396
			St Isidore J0L 2A0	Installations Elect R & F Dubuc	65 Dupuis (514) 454-9993
			St Jacques du Montcalm J0K 2R0	Hydraulique B R	35A Dupuis (514) 839-3322
			St Jean sur Richelieu J3B 4R9	Mrs. Elect. St-Jean Engr	365 B Grand Bernier N (514) 347-3265

PRINCE EDWARD ISLAND

Charlottetown C1A 7L3	Palmer Electric, Ltd	96 Fitzroy (902) 894-8543
Charlottetown C1A 2W2	Andrews Motor Repair	21 Jordan Crescent (902) 892-8703
Summerside C1N 1E3	Paul's Electromechanical	37 Jenkins Avenue (902) 436-5554

St Jerome J7Z 4M5 Albert Bouvrette 708 Blvd Des Laurentides (514) 438-0855
 St Joseph de Sor J3R 1A8 Electromoteurs Richelieu 602 Rue St Pierre (514) 742-0203
 St Laurent H4T 1N8 Laval Electrique (Leu) 550 Montee de Liessa (514) 731-3737
 St Leonard H1P 1Y1 EMS / Seimec 8455 Champs d'Eau (514) 325-0941
 St Marie de Bea G6E 2L5 Les Moteurs Elect De Beauce 1120 Notre Dame Nord (418) 387-2910
 St Michel J0L 2J0 Garage Lamarre 2435 Principale (514) 454-3432
 St Ours J0G 1P0 Jacques Pelletier Electrique 1915 ch. des Patriotes (514) 785-3076
 St Theodore d'Acton J0H 1Z0 Moteurs Electriques Fontaine Inc 1600 Principale (514) 546-7166
 St Therese de Bl J7E 3J7 G Colle Electric Eng 221 Turgeon (514) 435-7293
 St Victoire J0G 1T0 Mrs. Elect. Volta Inc 244 Ch. Ste-Victoire (514) 782-2512
 Sorel J0G 1T0 Moteurs Electriques Volta Inc 244 Chemin Ste-Victoire (514) 782-2512
 Thetford Mines G6G 5T1 Thetford Armature Works 240 Bl Smith N (418) 335-3405
 Trois Rivieres G9A 5L6 M Electrique Ltee 1330 Cartier (819) 374-4687
 Val d'Or J9P 4P6 Moteurs Du Cuivre Inc 990 Rue de l'Echo (819) 825-9231
 Valleyfield J6T 2C9 J H Sauve & Fils 573 Ch. Laroque (514) 373-7622
 Victoriaville G6P 7E6 Baril Electrique Inc 10 Bl Labbe Sud (819) 752-4480
 Victoriaville G6P 1N2 Moteur Elec Victo Inc 49 2 rue Aqueduc (819) 758-4974
 Ville St Laurent H4R 2E9 Cogelec Inc 2483 Rue Guenette (514) 336-1440
 Ville Vanier G1N 1E8 Roberge / Distrielec 425 Nolin (418) 687-0550
 Waterloo J0E 2N0 Jean Electrique Enr 5231 Foster St (514) 539-3355

SASKATCHEWAN

Estevan S4A 2A7 J R Auto Electric Ltd 100 Kensington Ave (306) 634-6825
 Moose Jaw S6H 7K7 Western Electric Motor Serv 240 High St W (306) 692-3200
 North Battleford S9A 2N4 Ray's Electric 11152 - 8th Ave (306) 445-1611
 Regina S4R 2S8 Budget Electric Motor 143 Montreal St N (306) 545-3563
 Regina S4R 2E5 Capital Electric Motor Repair Ltd 1435 Cornwall Street (306) 525-2704
 Regina S4T 0X5 Mr Tool Warehouse 2724 Dewdney Ave (306) 352-2550
 Saskatoon S7K0X1 GMR Electric Motors, Ltd 813 46th St East (306) 931-8456
 Saskatoon S7K 5H1 Klassen Electric Motor Service Ltd 203 G 47th Street E (306) 931-2967
 Swift Current S9H 0Z5 United Motor Electric Ltd 141-8 Ave NW (306) 773-2058
 Tisdale S0E 1T0 Tisdale Motor Rewinding PO Box 2198 Hwy 3 W (306) 873-2881
 Weyburn S4H0X7 Fisk Repair Service 22-4th St (306) 842-2303
 Weyburn S0C 2H0 Redvers Auto Electric 2 Carlton St (306) 452-6465
 Yorkton S3N 3K3 Yorkton Electric Motor 43 Tupper (306) 783-8761

YUKON TERRITORIES

Whitehorse Y1A 2V1 Industrial Electric Services Ltd 178 Industrial Rd (403) 688-2759

AFRICA

KENYA

Nairobi Sira Electric (Kenya) Ltd Lusaka Road, Industrial Area
 Nairobi *Repelectric Keyna Ltd PO Box 60889 02/802579

MALAWI

Lilongwe A & I Electrical PO Box 853

NIGERIA

Lagos Heinrich Friedrich Schroeders WA 23 Abebe Village Road

SOUTH AFRICA

Cleveland 2022 *Marthinussen & Coutts PO Box 40018 616-2320
 Durban Natal R S Trivett & Company (Pty) Ltd PO Box 29026 Maydon Wharf
 Johannesburg 2000 *Bonnycan Electric Co Aerolon Rd, Aerolon PO Box 10983 011/494-3360
 Pretoria 0001 *Volt Ampere Elec & Mech Eng Box 4245, 100 Schoeman St 012/286551
 Springs 1560 *Delba Electrical Company 137 Butler, PO Box 901 001/818-5955
 Transvaal Phalaborwa Armature Winders (Pty) PO Box 449, 34 Potgieter Ave
 Transvaal Rand Armature Winders, (Pty) Ltd PO Box 498, 218 Railway St
 Transvaal Republic Electric (Pty) Ltd PO Box 5052, Boksburg North
 Mahmoud E J.H. Curtis & Sons (Pty) Ltd 67, Mullins

ZAMBIA

Kitwe Stator Electrical Ltd 3626 North End Road

ZIMBABWE RHODESIA

Bulawayo *Bottom Armature Winding (Pvt) Ltd Cowden Road (HIS) PO Box 1235 69717

AUSTRALIA

NEW SOUTH WALES

Alexandria 2015 *S & E Downie 56 O'Riordan St. 02/6692944
 Auburn 2142 *Atom Electrical P/L 11 Skarrat Street 02/6483474
 Belmont 2280 *Hunter Valley Rewinds P/L 26 Bluebell Street, PO Box 378, 049/477244
 Campbelltown 2560 *Microd Electrics P/L 63 Blaxland Rd, 046/267366
 East Maitland 2323 *G & D Donnelly P/L 12 Young Street, 049/338033
 Inverell 2360 *Arlington P/L 67 Oliver Street, PO Box 9 067/223151
 Lismore 2296 *Alan Dorman P/L 144 Fern Street 049/614641
 Leeton 2705 *Rivelectric Services 7 McKay Ave, PO Box 20 069/533541
 Riverwood 2210 *G R Deer P/L 30 Wiggs Road, 02/5344506
 Rydalmere 2116 *I. McLean Electrical Co. P/L 14 Clyde St, PO Box 105, 02/6386333
 Smithfield 2164 *Starway Electric P/L Unit 7 10/16 Sturt St, 02/6323385
 Sydney 2015 *S & E Downie 56 O'Riordan St 02/6692944
 Villawood 2163 *Westinghouse Electric Ltd 49 Miowere Rd, Box 13, 02/7247322
 Waitara 2077 *Butler & Smith P/L 10 James St, 02/4764355
 Warabrook 2304 *Konric P/L 10 Callistemon Close, 049/674433
 West Gosford 2250 *R J Oyston P/L Justine Drive 043/251465

QUEENSLAND

Brendale 4500 *Dickson Dowling & Mills P/L 342 South Pine Road, 07/2053233
 Fortitude Valley 4006 *Watson-Will & Co. P/L PO Box 130 07/2525552
 Morningside 4170 *George Gilbert & Co Cnr. Thynne & Manton Sts, Box 118 07/3996544

SOUTH AUSTRALIA

Adelaide 5000 *Ambler's Electric Motor Service 9, 72-78 Carrington Street 08/2235913

TASMANIA

Burnie 7320 *Alpha Electrics Scarle Street, PO Box 618, 004/351708
 Devonport 7310 *Tasmanian Rewinders & Cable Repairers 144 Don Road 004/249272
 Launceston 7250 *Littles Electrical Service 152-156 George St, PO Box 1604 003/314324

VICTORIA

Cobram 3644 *Giles Electric Motors Lot 1 Colgan St., Box 428 058/722307
 Corio 3214 *Bob White Electric 79 St Georges Road, PO Box 62 052/751017
 Melbourne 3001 *SEC of Vic. Latrobe Valley Elec. Workshop G PO Box 2765Y 051/353722
 Port Melbourne 3207 *Clamp Electrical Services P/L 68 Ingles Street 03/6461925
 Reservoir 3073 *Electric Motor Technicians 9 Brex Court, PO Box 188 03/4608888
 Richmond 3132 *Bayley & Grimster 556 Swan Street 03/4291122
 South Melbourne 3205 *P W Ingmire & Son 54 Clarke Street 03/6996149
 Springvale 3171 *Maddison Electric 1676 Centre Road 03/5467515

NORTHERN TERRITORY

Winnellie 0820 *Darwin Electric Motor Rewinds P/L Lot 2827 RomCt 089/844861

WESTERN AUSTRALIA

Kewdale 6105 *L E Jarvis & Company P/Y 11 Glassford Road 09/4587288
 Osborne Park 6017 *WA Rewind Co Hutton & Collingwood Streets 09/4452422
 South Fremantle 6162 *Read's Electrical Pty Ltd 25 Strang Street, 09/3354019

CENTRAL AND SOUTH AMERICA

ARGENTINA

Buenos Aires 1009 *..Almot SA Carlos Pellegrini 755-5 P 392-6299

COSTA RICA

San Jose Taller Electrico Clinton Pringle Calles (BIS Y 11 Avenida 16)

ECUADOR

Quito *..Retmo Cia Ltd Panamericana Sur KM 13, Guamaní Box 160024 CEO 593-2-629884

GUATEMALA

Zona 1 *..Electrica-Industrial 10a Av 21-61 29121
Zona 12 *..Electroservicio Tapia .. 2a Av 43-79 Monte Maria, PO Box 882-A 502-772355
Zona 13 *..Servicio Electrico Industrial Blvd Liberacion 2-62 720844-721252

HONDURAS

San Pedro Sula *..Ind de Transformaciones Elec SA6 Ave SE 11 Y12 C #108, Box 838 527607

PARAGUAY

Asuncion *..Record Electric SA 1139 Toniente Farina, PO Box 2008

REPUBLIC OF PANAMA

Panama *..Motores Electricos SA Curundu Calle 27 Final PO Box 6-2296 62-1762

VENEZUELA

Ciudad Ojeda *..Rimes Elec Macanica CA Av Intercomunal, Apartado 124, Lagunillas 065/24865
Ciudad Ojeda *..Star Delta Electric SRL Carretera N Parque Ind'l, PO Box 42 065/24170
El Tigre Sertesa Servicios Tecnicos SA Av Principal No 301
Valencia Carabobo *..Electrotecnova Calle 89 Entre Av Uzlar Y Av San Blas 2, Galpon 3 041/63319

EUROPE

BELGIUM

Antwerpen Stefens Electro NV Noorderlaan 107
Antwerpen NV Elamo Noorderlaan 81
Charitrol Mulye Rue De Couillet 104

FRANCE

Repelec 69008 Lyon 40 Rue Seignemartin Lyon
Venissieux 69200 *..Laborde & Kupfer .. Repelec 225, Av de Pressense, BP 7223 78/74 87 54

GREAT BRITAIN

Ashford TN23 1ES *..Electric Motor Services Ltd Chart Road Ind'l Estate 0233/23183
Barnet EN5 5TJ *..D W Rewinds, Ltd North London Works, Hyde Close 01/440-8361
Bedford Re-Nu Electrical Service Murdock Road, Manton Lane Ind
Birmingham B12 8GB *..Deritend Elec'l Svcs Ltd 238 Highgate Road 021/772-4041
Birmingham B12 0JJ *..Dowling & Mills Ltd Camp Hill 021/766-6161
Bootle L20 4RD *..Mannings Marine Ltd 186 Regent Road 051/933 0820
Bradford Magnet Electrical Repairs Ltd Thornbury Works, Leeds Old Rd
Bristol BS11 9HE *..Anstee & Ware Limited Avonmouth Way 820081
Liverpool Rewinds & J Windsor & Sons Ltd 81 Regent Road
Liverpool Massey Coggins Ltd Edgehill Works, Bridge Road
Maidenhead SL6 7DY *..Lewis Electric Group Limited 32 Clivemont Road 0628/770022
Manchester British Electrical Repairs Ltd Emard House, Piccadilly Plaza
New Basford NG7 7HQ *..Electric Rpxs (Notlm) Ltd Elson Street 0602/786638
Northampton NN1 5ED *..W H Shoebridge & Sons, Ltd Victoria Road 0604/38099
Pudsey R F Winder Ltd Belgrave Elect Works, Town St Stan
Sheffield Pennine Elec Rewinding Ltd Buttermere Works, Buttermere Rd
Sheffield S6 3BL *..Rotary Electrical Co, Ltd Gilpin Street 0742/769901-8
Sheffield W E Burnard Ltd Rother Valley Way, Holbrook
Sheffield Bradwell Electrical Company Ltd Volt Works, Princess Street

Stoke On Trent ST4 1QG *..Fletcher Bickerton Ltd Elenora Street 0782/411021 Wembley
Dynamo & Motors Repairs Ltd North End Road
Wolverhampton Dentend Electric Services, Ltd El Works, Upper Villiers St

HOLLAND

Amstelveen Hanco International Rembrandtweg 665, PO Box 137

ITALY

Portofino C R A M E Zona Industriale *

NORTHERN IRELAND

Belfast Hugh J Scott Limited 314 Ravenhill Road

NORWAY

Tonsberg Bestfold Elektro-Diesel A/S Engt 20, PO Box 1285 Trudvang

SCOTLAND

Greenok K B Armature Winders, Ltd 24 Port Glasgow Road

SWITZERLAND

Lucerne CH-6005 *..Volta AG Voltastreet 10 041/442212
Zurich Gebrueder Meier AG Zypressenstr 71, PO Box 230

WEST GERMANY

Berlin 21 *..Menzel Elektromotoren GmbH Neues Ufer 19-25 30/3445051
Hamburg 20 *..Gebr Rademacher 26-28 Charlottenstrasse 040/404646
Hamburg 26 *..Otto Sternberg Suederstrasse 294 21-4049
Heide Motoren-Jacobs Hamburger Str 57, 2240 Heide

MEXICO

CHIHUAHUA

Chihuahua 31110 *..Electrodinamica Industrial SA de CV Gral Rosafio Hernandez 3A14/176868

FEDERAL DISTRICT

Mexico City 06800 *..H Schall SA Manual J Othon 10 905/588-6500
Mexico City Reliance De Mexico, SA Av Ano De Juarez 205
Mexico City 09070 *..Reparaciones Y Servicios SA de CV An Ano de Juarez 205 905/5821484
Mexico City Electro-Talleres Mexico, SA Las Granjas 312-Alzcapotzalco

NUEVO LEON

Monclova Bobinas Electricas Nacionales, SA Apdo Postal 15
Monterrey 64260 *..Bobinas Y Mantenimiento Elec NC Monterrey 6118 ColTopo Chico 83 760707
Monterrey 64000 *..Electrica Industrial Maldonado SA Colegio Civil 842 Nte 757502
Monterrey 64000 *..Electrica Maldonado de Monterrey SA Tapia Ote 702 83 752510
Monterrey Electro Reparaciones, SA Va Escocia 4329 Frac A Lincoln
Monterrey 64570 *..Taller Electrico Alvarez Del Norte Magallanes 310 Ota Co Trevino 757212
Monterrey Taller Electrico Elizondo, SA Martin De Zavala 1110 Nte
Monterrey *..Taller Electrico Gonzalez SA Ave Colon 2648 Ota, PO Box 1636 83 547008
Monterrey 64000 *..Taller Electrico Maldonado, SA Cuauhtemoc 522 Norte 83 750217
Monterrey 64000 *..Taller Electrico Olivo, SA MM Del Llano 922 83 444178
Monterrey Taller Electrico Victoria, SA A Cossio 701 Ota Col Del Nort
Monterrey 64810 *..Transformadores Trase Av J Cantu Leal 1460, Box 4746 Suc J 83 58-6941
San Nicholas de los Garza 66450 *..Selco-Servicios Y Equip 309 Porfirio Diaz Box 183 83 50-1659

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▼ - UL approved for rebuilding electric motors for use in hazardous locations. (Explosion-proof)

MIDDLE EAST

ARABIAN GULF

Bahrain BASREC of Bahrain PO Box 568

INDIA

Bombay 400028 .. *..Alpha Elec & Eng Co...13-15 Navprabhat Chambers Ranade Rd Dadar 4228159
 Bombay 400093.....*..Bharat Heavy Elec's Ltd...Plot D-1, Rd 16, Box 9439, Andheri E 022/6325191
 Bombay 400093 *..Evan's Electric Private Ltd.....3 Mahakali Rd, Midc, Andheri East 6325050
 Bombay J S Prakasa Rao Associates.....IT 64 Shah Ind Estate, Deonar
 Bombay Mahati Electrics.....32-33 Shankersheth Road
 Bombay Manisha Industries.....13, Vaibhav Ind Estate Mahakali Cave R
 Bombay 400088 *..M/S Lenzohm Elec Engr C...Dharamchand Ind Est, Deonar Vlg Marg 5510128
 Bombay 400001 *..Reunion Engineering Company, Pvt/LTD.....Sir PM Road, Fort 2860772
 Nagpur 440028 *..Paramount Conductors Ltd.....32 Midc Ind'l Area 7316
 Thane 400613 *..Kamal Electro-Mech P/L.....W-135, Midc, Belapur Road 592974

ISRAEL

Haifa 31025.....*..Electromechanic MS Ltd 10 Heletz St (Paz Bridge), PO Box 2636 04/644238
 Haifa 31306 *..Metah Ltd 18 Joseph Levi Street, PO Box 3639 722530-1

KUWAIT

Al-Kuwait *..Gulf Electrical Engr SAK 61001 Ahmadi, PO Box 9051 965/3982010
 Shuwaykh 13002 *..Bader Al Mulla & Bros Co....WLOff Canada Dry St, Box 177 Safat 4815077

NEW ZEALAND

NORTH ISLAND

Auckland *..Electropar Ltd 55 MacKelvie St Grey Lynn 09-376-1009
 Auckland *..Ind'l Electric Motors Sales Ltd .. 33 Altham Ave, Morningside 09-849-4641
 Auckland *..JC Electrical Svcs Ltd 20A Fairfax Ave, PO Box 12-091, Penrose 579-6023
 Auckland *..South Auckland Arm Winders Ltd 10 Tironui Rd, Papakura 2989562
 Auckland *..Star Motor Elecs Ltd 170 Railside Ave, PO Box 21179 Henderson 8362225
 Hamilton *..Waikato Rewinds Ltd 17 Brandon Street 071-76138
 Napier *..DRS Electrical Engr Ltd Edmundson Street, Onokawa 070-438-504
 Napier.....*..HB Elec Mtr Rewinders (1986) Ltd .. Austin Street, Onokawa, PO Box 3285070-439284
 New Plymouth *..Moeller & Durrant Ltd...De Havilland Drive, Bellblock, PO Box 638 067-70734
 New Plymouth *..New Plymouth Rewinds Ltd 3 High Street, PO Box 727 82163
 Otahuhu *..South Pacific Rewinders Ltd 36 Huia Rd, PO Box 22347 09-2763833
 Rotorua *..Thermal Rewinds Ltd 62 Pururu Street 478624
 Te Puke, Bay of Plenty *..Electric Motor Rewinds Ltd Palmer Place, PO Box 186 075-737-977
 Wellington *..Electropar Ltd 4/408 Hutt Road 04-693-946
 Whakatane *..BOP Electric Motor Rewinders Ltd...7 McAllister Street, PO Box 513 176-85624
 Whangarei *..Snow Brothers Rewinds Ltd 39 Hannah Street No 4 481922

SOUTH ISLAND

Christchurch *..Asea Brown Boveri SVC 16 Vulcan Pl PO Box 2120 03-3383787
 Christchurch *..Electropar Ltd 1/8 Vulcan Pl Upper Riccarton 03-3385165
 Dunedin *..Electro Mechanical Developments Ltd 8-12 Titan Street 024-773-244
 Invercargill *..Wallace Murray Electrical Ltd 10 Bowmont St PO Box 1737 021-86947
 Nelson *..Motor Rewind Specialists Ltd 82 Vickerman St PO Box 334 88544
 Oamaru *..Transformer Maint Ltd 16 Wear Street PO Box 380 0287-45778
 Timaru *..J.J. Cockcroft Ltd 51 Sophia Street 64-056-44617
 Timaru *..Rewind Services (TU) Ltd 8 Dee St PO Box 755 056-88-264

PACIFIC AND FAR EAST

GUAM

Agana Sussex Electrical Contracting, Inc PO Box 2144
 Tamuning 96911 *..Construction & Power Sources Inc 145 Ypao Road 671/646-1953

PHILIPPINES

Manila Philippine Electric Corp PO Box 45
 Pasay City 1300 *..R F Gilt Pwr & Communications SV 2327 Laveriza St 8316108
 Quezon City *..Newton Engineering Corp KM 14 Quirino Hwy, Novaliches 90-33-91

MALAYSIA

Selangor 46100 Petaling Jaya.....EMM Electric SDN BHD 3A Jalan 225 03-7574288

SINGAPORE

Singapore 0315 East Electric Pte Ltd No 2 Kung Chong Rd 65-473-6555
 Singapore 0512 *..South Island Electrical & Eng.Co .. Blk 14, No 53, Pandan Loop 7794544
 Singapore 2262 *..Westinghouse Ind Svcs Asia P/L 10 Guil Ave 65/8614466
 Singapore 0512 Yong Chen Electrical Engr Blk 15 127 Pandan Loop 779-6133

WEST INDIES

BAHAMAS

Nassau Bonds Electric Motors PO Box SS-5407, Jerome Avenue 809/393-7277

BARBADOS

Bridgetown Emlage Electric Co Ltd Chepstow, River Rd, PO Box 244
 Bridgetown *..TMR Sales & Service Ltd Tudor Street, PO Box 304 809-426-0072
 St Michael Transformer and Motor Repairs Ltd Trevor Black Rock

BERMUDA

Devonshire DV03.....*..Tungate Elec Motor Co Ltd. 78 Happy Valley Rd Box HM392 809/292-4760

DOMINICAN REPUBLIC

Santo Domingo Empresa de Ingeniería, SA Autopista Duarte KM 10 1-2

JAMAICA

Kingston BJ Hanna & Sons 7 Retirement Crescent (809) 926-8886
 Kingston *..RA Silvera, Ltd 186 Orange Street 809-922-1450
 Mandeville Muschamp Electric Co Ltd Tudor Avenue

NETHERLANDS ANTILLES

Willemstad Curacao .. *..Antem N V Emancipatie Boulevard, PO Box 3633 (Z/N) 76500

PUERTO RICO

Arecibo Velazquez Electric Corp Miramar Ave 1001, State Road 2
 Carolina Torres Electric Motors 65th Ave KM 7.4, PO Box 1661
 Carolina 00630 *..Industrial Electric Serv Corp PO Box 3570 809-469-7660
 Dorado 00646 *..WYE Electric Mendez Vigo No 221, PO Box 708 809-796-1009
 Hato Ray 00919 *..Delta Electric Motor Company PO Box 1177 809-755-5757
 Miramar 00940 *..Electrical Reconstruction, Inc PO Box 41264, Santruce 809-724-0041
 Ponce 00731 *..Nieves Electric Service, Inc 12 Comercio Street 809-842-1335
 Santurce 00940 Cortes Industrial P. O. Box 41264 (809) 724-0041
 Toa Baja 00759 *..Continental Elec SvcRd 2 KM 19.9 Int Bo Candelaria, Box 942 809-780-5025
 Trujillo Alto 00919 Delta Electric Motor Corp PO Box 1177, Ramal 809-753-7665

TRINIDAD

Port of Spain *..Ind'l Electrical Motor & Arm Repairs 5A Luckput Street 801/622-8248
 San Fernando *..Rampersad's Electrical Winders Co 4, Moody-Stuart Street

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▼ - UL approved for rebuilding electric motors for use in hazardous locations (Explosion-proof)

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LEESON DISTRICT SALES OFFICES & WAREHOUSES

UNITED STATES

ARKANSAS -
LITTLE ROCK 72118
3706 Harold
501-758-1479
FAX: 501-753-5043

CALIFORNIA -
DOWNEY 90241
11933 Woodruff Ave.
310-803-6330
FAX: 310-803-0617

CALIFORNIA -
SAN LEANDRO 94577
14025 Catalina St.
510-614-1890
FAX: 510-614-1893

COLORADO -
DENVER 80216
4115 Jackson St.
303-333-6050
FAX: 303-333-6118

CONNECTICUT -
MANCHESTER 06040
99 Loomis St.
203-646-9665
FAX: 203-643-2982

FLORIDA -
TAMPA 33605-5940
4739-4 Transport Dr. Bldg. 5
813-248-4749
FAX: 813-247-7630

LEESON ELECTRIC INTERNATIONAL, INC.

CORPORATE OFFICE:
THE NETHERLANDS
AMSTERDAM
De Steiger 89
1351 AH Almere-Haven
(+31) 36. 531. 9295
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AUSTRALIA
ROYAL EXCHANGE SYDNEY
N.S.W. 2000
P.O. Box R1081
(+1) 414. 377. 8810
FAX: (+1) 414. 377. 9025

BELGIUM
GRAFTON, WI 53024 USA
P.O. Box 241
(+1) 414. 377. 8810
FAX: (+1) 414. 377. 9025

**CENTRAL AMERICA
& THE CARIBBEAN**
GRAFTON, WI 53024 USA
P.O. Box 241
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(+1) 414. 377. 8810
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GEORGIA -
MARIETTA 30067
1691 Enterprise Way
404-933-0453
FAX: 404-933-0549

ILLINOIS -
BENSENVILLE 60106
1140 Tower Lane
708-238-0991
FAX: 708-238-0995

INDIANA -
BEECH GROVE 46107-0469
306 East Main St.
317-786-2272
FAX: 317-786-0022

IOWA -
DES MOINES 50316
1710 E. Guthrie Ave. Suite X
515-263-1880
FAX: 515-263-0460

KANSAS -
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