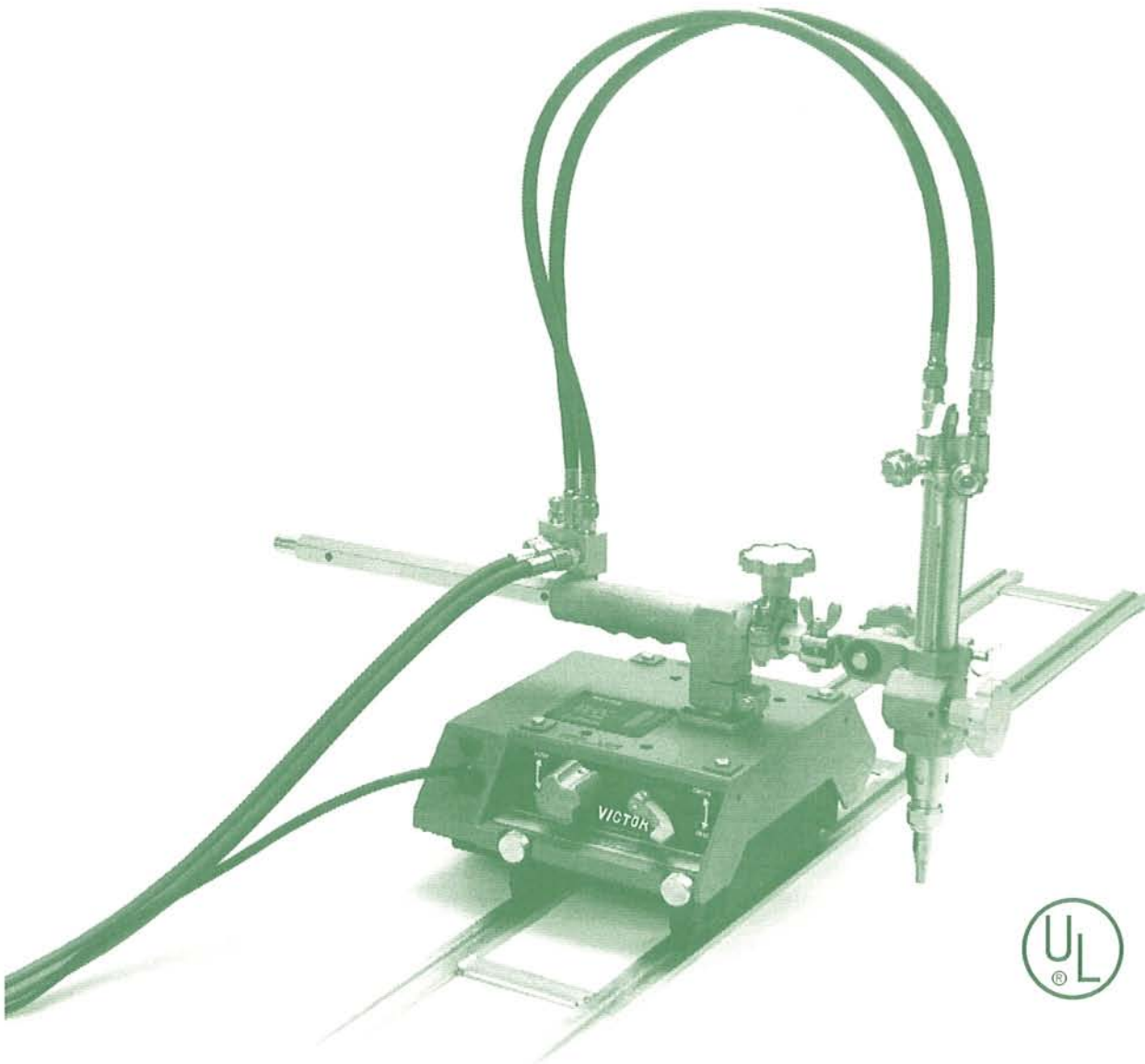


**VICTOR®**WELDING & CUTTING  
APPARATUS**MODEL VCM-200 SERIES PORTABLE  
FLAME CUTTING MACHINE**

OPERATING &amp; INSTRUCTION MANUAL/PARTS LIST



The VCM-200, VCM-200HT (Hi-Temp.) and VCM-200HS (High Speed) Portable Flame Cutting Machines have many outstanding design and construction features to give dependable, trouble-free operation. A constant speed AC induction motor is located on the side opposite the cutting torch for cooler operation. The cone disk drive has an automatic wear adjusting mechanism that prolongs the life of the disk drive. Design simplicity makes the VCM-200 extremely easy to service. Downtime and repair costs are reduced to a minimum.

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## INTRODUCTION

All Victor VCM-200 Series portable cutting machines are carefully assembled and thoroughly tested at the factory before shipment. The machine is designed to provide dependable, trouble-free service with minimum maintenance. This manual contains information needed to operate and maintain the machine properly. If additional information is required, contact your Authorized Victor Distributor.

**Section 1, General Information**, gives descriptive information on the VCM-200 Series. This information will help the operator to become more familiar with the machine and its capabilities. Installation instructions are not included in this manual since the VCM-200 is a portable cutting machine and not usually used in a fixed location.

**Section 2, Machine Operation**, provides information on setting up the machine and making the necessary electrical and gas connections. It also contains operating instructions, including information such as the identification of all operating controls and an explanation of their functions, operational checks to be performed, and cautions to be observed. It is assumed that the operator is thoroughly familiar with cutting practices and procedures; however, a set of Victor tip charts is included with the machine. Use of these charts will allow even inexperienced operators to make successful cuts with the VCM-200.

**Section 3, Machine Maintenance**, details inspection to be performed, troubleshooting and corrective maintenance procedures, and a description of the machine components. The exploded views of the VCM-200 shown in Section 4, Replacement Parts, may be used for reference in maintenance procedures, as well as, parts identification.

**Section 4, Replacement Parts**, illustrates all parts of the VCM-200 Series cutting machine for easy identification.

In presenting the information contained in this manual, a system of notes is used to call particular attention to specific information. The method used to identify these notes, and the purpose for each type of note is as follows:

### NOTICE

An operational procedure, or background information, which aids the operator in efficient use of the machine, the serviceman in performing maintenance, or information that requires additional emphasis.

### CAUTION

An operational procedure which, if not properly followed, may cause damage to the machine.

### WARNING

An operational procedure which, if not properly followed, may cause injury to the operator or others in the operating area.

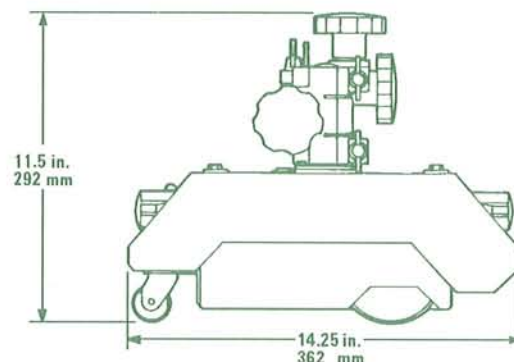
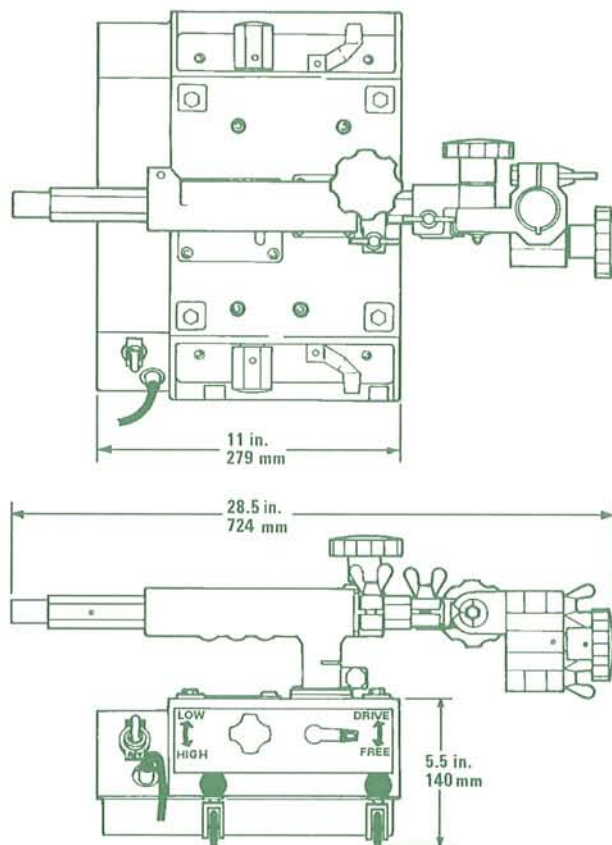


Figure 1-1.  
VCM-200, VCM-200HT and VCM-200HS Outline Dimensions



## SECTION 1

### GENERAL INFORMATION

#### 1-1. MACHINE DESCRIPTION.

The VCM-200 is a tough, ruggedly constructed cutting machine, yet compact and light enough that it may be taken to the work site, wherever it may be. It is a versatile, economic, basic guidance system that can be used for oxy-fuel flame cutting, flame treating or hardening, MIG and TIG welding, high-speed plasma arc cutting, or movement of special equipment set-ups. It is suitable for field jobs and repair work, as well as, straight line and circle cutting operations required in metal fabrication.

The complete VCM-200 cutting machine consists of a heavy duty tractor unit fitted with an adjustable torch mount and a three-hose gas manifold block. The torch holder has a 32-pitch pinion to accommodate a variety of cutting torches available for use with the machine. Large knobs are provided for easy torch position adjustments on both the cross rack holder and the cutting torch holder.

Accessories available for the VCM-200 cutting machine include a six-foot track section for straight line cutting, a radius rod assembly for circle cutting operations, a dual torch mount assembly, a torch holder slide assembly and a heat shield. The dual torch mount assembly provides an adjustable mount for up to four cutting torches. The torch holder slide assembly is used to install additional torches on the cross racks of either standard or dual torch mounts. Additional six-foot track sections are available for extending the VCM-200 operating track to any length desired. The VCM-200 is listed with Underwriters Laboratories, Inc.

#### 1-2. MACHINE FEATURES.

The VCM-200 Series cutting machine offers the following operation, performance and design features:

##### Operating Features:

- Makes straight-line cuts of any length.
- Makes circle cuts up to 96 inches in diameter.
- Makes bevel or chamfer cuts - has calibrated scale for easy torch angle selection.
- Makes X, Y, V or K cuts with multiple torches for plate edge operation.
- Cuts strips, with two or more torches, in a single pass.
- Infinitely variable cutting speeds from 1 to 60 inches per minute (VCM-200 and VCM-200HT) or 5 to 120 inches per minute (VCM-200HS).
- Speed indicator is calibrated at the factory to indicate speed over the entire speed range.
- Dual speed and clutch controls make the machine easy to operate from either end.
- Routine maintenance is quickly and easily accomplished.

**⚠ WARNING** The VCM-200 is not designed to detect the end of its track or work piece. Take care that an unattended machine does not fall from an elevated work piece.

##### Performance Features:

- Constant speed AC induction motor located on the side opposite the cutting torch runs cooler; therefore, the drive speed is not adversely affected by temperature, as are electronically controlled motors.
- Speed regulation is as good at low speeds as it is at high speeds due to the cone disk variable speed drive and the AC induction motor.
- Flat top mounting surface has standard bolt pattern to accommodate MIG, TIG, plasma or other welding or cutting equipment.
- Location of the special rotating manifold ensures easy cutting in either direction and aids in machine balance and stabilization.

##### Design Features:

- Integral carrying handle, light weight and balanced design allow the machine to be carried with one hand.
- A balanced design makes the machine stable when cutting, allowing a racking distance of up to 18" from the machine with a standard torch, and no counter weight is required.
- Cone disk drive has an automatic wear adjusting mechanism which prolongs the life of the drive.
- Knobs and levers are recessed for added protection.
- Ball bearings or special bushings are used at all critical locations.
- All rotating shafts run on permanently lubricated bearings.

#### 1-3. MACHINE SPECIFICATIONS.

##### OUTLINE DIMENSIONS:

Outline dimensions are shown in Figure 1-1, page 1

##### CAPACITIES:

Cutting Length.....Increments of 72" (1829 mm)  
Circle Diameter .....4" to 96" (102 to 2438 mm)

##### Speed Range:

VCM-200 and VCM-200HT

.....1 to 60 ipm (25 to 1524 mmpm)

VCM-200HS

.....5 to 120 ipm (127 to 3048 mmpm)

##### POWER REQUIREMENTS:

115 V .42 A 60 Hz, single phase  
E Models; 220 V .23A 50 Hz/.21A 60 Hz, single phase

##### WEIGHTS:

Tractor Unit alone .....30.5 lbs (13.8 Kg)  
Tractor Unit with rigging .....37.5 lbs (17.0 Kg)

**NOTICE** The VCM-200HT is modified to withstand 300°F continuous operating temperatures such as found in mill and foundry applications.



## SECTION 2

### MACHINE OPERATION

#### 2-1. GENERAL.

The information in this section is provided to familiarize the operator or serviceman with operating controls and procedures.

##### NOTICE

Other recommended operating instructions available at your distributor are:  
0056-0135 - Safety & Operating Instructions for Compressed Gas Regulators;  
0056-0136 - Safety & Operating Instructions for Cutting Torches.

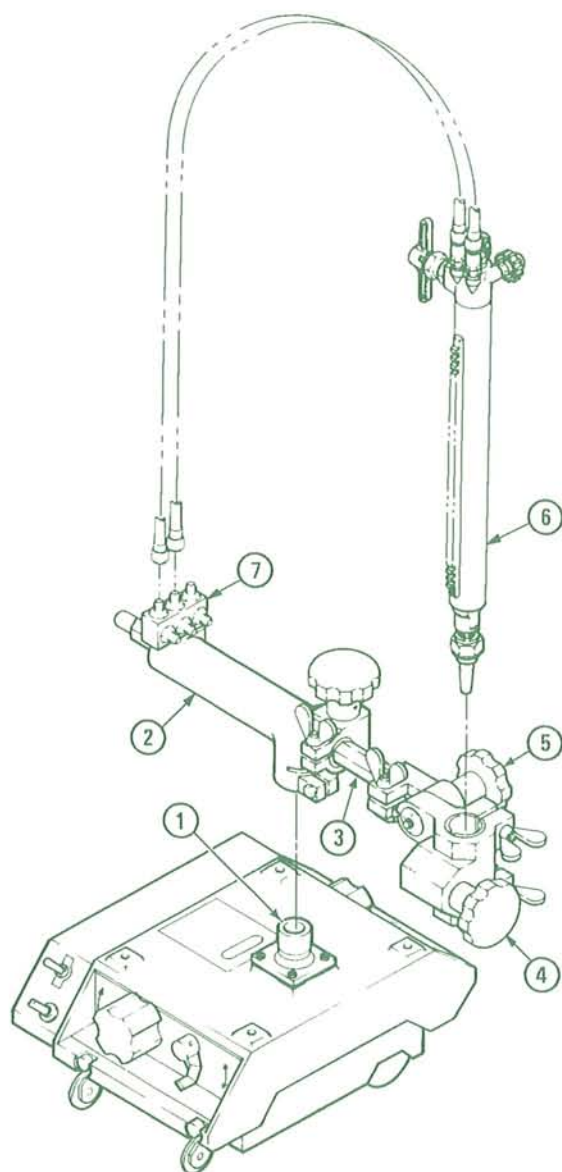


Figure 2-1.  
Pre-Operation Set-Up with Standard Torch Mount

#### 2-2. PRE-OPERATION SET-UP.

##### 2-2-1. Standard Single Torch Set-Up.

Set-up of the VCM-200 with standard torch mount and manifold block is shown in Figure 2-1. Secure the single torch mount post (1) the outer case mounting surface with four allen-head cap screws. Slip the rack handle assembly (2) over the torch mount post and secure it with its set-screw. The rack handle assembly is free to rotate until the clamping bolt is tightened. Insert racking bar assembly (3) so that its rack properly engages the pinion gear in the rack handle assembly.

Connect the torch holder assembly (4) to the torch pivot knuckle (5) which, in turn, fits over the round end of the racking bar assembly. Leave clamping screws provided at each of these points slightly loose for adjustment. Tighten securely after positioning adjustments are made.

Insert the cutting torch (6) into the torch holder so that the torch rack properly engages the adjusting gear of the torch holder. Tighten the torch holder wing nuts enough to hold the torch securely, yet permit vertical adjustment of the torch in the torch holder with the adjusting knob. Use either two-hose or three-hose torches.

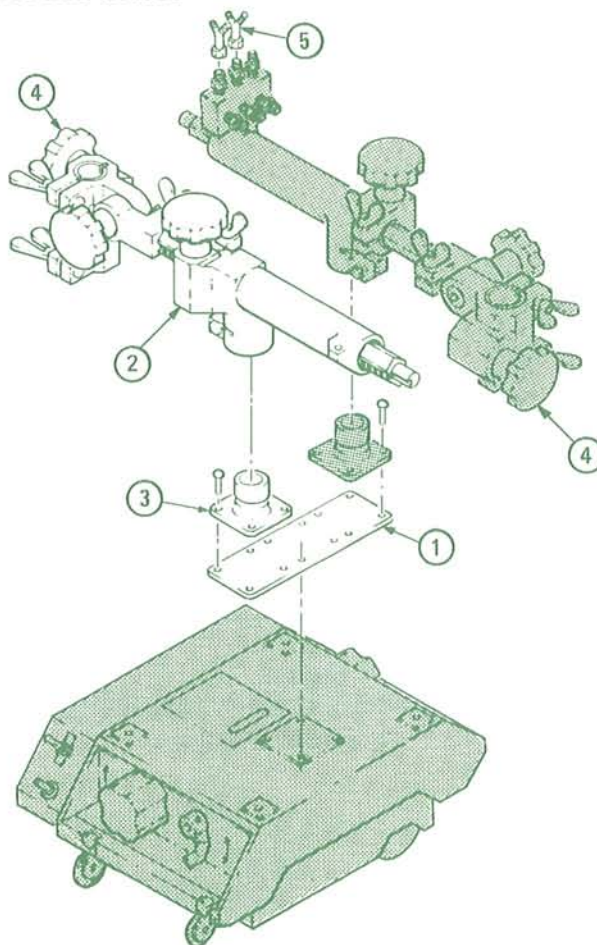


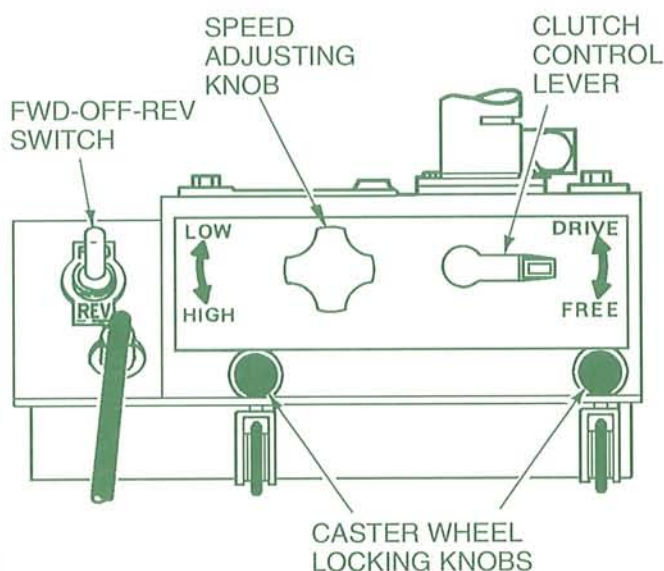
Figure 2-2.  
Pre-Operation Set-Up with Dual Torch Mount

Insert the manifold block (7) in the end of the rack handle assembly. Screw the proper hose adapters into the inlets and outlets of the manifold block. Use fuel gas hose adapters in the center pair of holes and oxygen hose adapters in the outer two pairs of holes. Connect the required hoses from the manifold block to the cutting torch. If using a two-hose cutting torch, omit the right-hand hose.

### 2-2-2. Optional Dual-Torch Set-Up.

Set up the optional dual torch mount assembly as shown in Figure 2-2. Install the dual torch mount plate (1) on the machine housing in place of the single torch mount post supplied with the standard machine package. Attach the removed single torch mount post, along with the second one supplied with the dual torch mount assembly, at the ends of the dual torch mount plate.

Install the rack handle assembly (2) supplied with the dual torch mount assembly on one of the torch mount posts, and install the rack handle assembly from the single torch mount assembly on the other torch mount post (3). Then install the two torch holders (4) on their respective racking bar assemblies and torches as explained in Section 2-2-1. Use the Y-fittings (5) furnished with the dual torch mount assembly to make the necessary dual connections at the gas manifold accommodate the additional cutting torch.



**Figure 2-3.**  
**VCM-200/VCM-200HT/VCM-200HS**  
**Operating Controls**

## 2-3. CUTTING OPERATIONS.

### 2-3-1. General Information.

Operating procedures vary widely for the many different types of jobs on which the VCM-200 is used. For this reason, no typical operating procedure is given, but the following general suggestions may be helpful.

### 2-3-2. Directional Control.

A unique feature of the VCM-200 is its ease of operation in either direction, forward or reverse. Dual speed adjustment and clutch engagement controls are conveniently located on each end of the machine. Machine direction is set by the FWD-OFF-REV toggle switch located next to the power cord.

### 2-3-3. Speed Control.

Set cutting speeds for straight line cuts directly on the speed indicator located on top of the VCM-200 and the VCM-200HS. The speed range is infinitely variable from 1 ipm (inch per minute) to 60 ipm (VCM-200/VCM-200HT) or 5 ipm to 120 ipm (VCM-200HS). Turn the large knob on either end of the machine to position the speed indicator to the desired cutting speed. Determine the speed settings for circle cuts with the formula given in Section 2-3-7.

#### NOTICE

Use the export (E) models of the VCM-200 Series with either 50 Hz or 60 Hz, 220 VAC power. When used with 50 Hz power, the actual speed is approximately 12% less than the indicated speed.

### 2-3-4. Clutch Operation

Engage the clutch by rotating one of the two clutch levers, located on either end of the machine, to the DRIVE position.

Place the clutch lever in the FREE position to permit easy manual positioning of the machine prior to or after the actual cutting operation.

### 2-3-5. Torch Adjustment.

The VCM-200 racking assembly provides full adjustment for the torch. The rack handle assembly permits the torch holder assembly movement toward or away from the tractor unit. The torch holder allows the torch vertical positioning. The torch pivot knuckle allows the torch positioning at any angle from +90° to -90° in a plane perpendicular to the track. If additional torch clearance is needed, rotate the torch holder assembly 180° for an additional clearance of 2 inches. After adjusting the torch to the desired position, tighten all clamping screws to prevent the torch from making any unexpected movements.



### 2-3-6. Straight Line Cutting.

**⚠ WARNING** The VCM-200 is not designed to detect the end of its track or work piece. Take care that an unattended machine does not fall from an elevated work piece.

Cut straight lines using the following procedure:

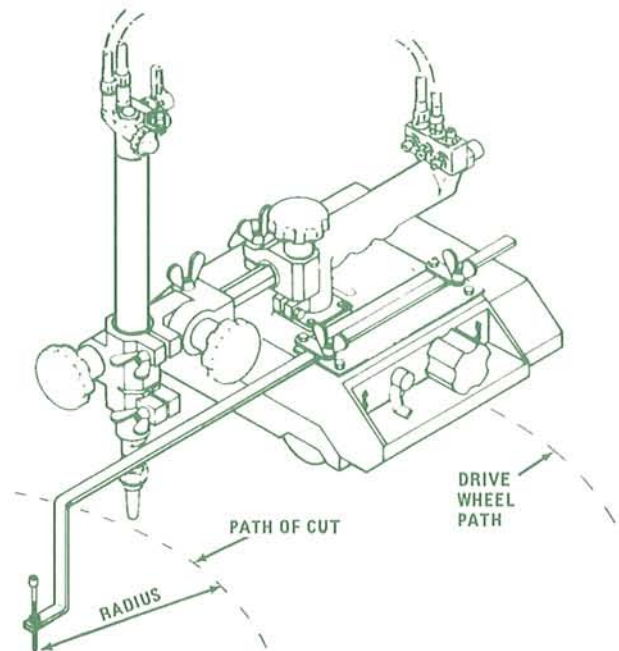
1. Place the machine track on the work and line it up before placing the machine on the track.
2. Be sure the track is long enough for the cut to be made. If not, install additional track. Connect track sections carefully. When properly connected, the machine should travel smoothly from one track section to the next.
3. Place the machine on the track. Place the clutch lever to the FREE position. Be sure that the gas hoses and the power line are long enough and free to move with the machine so that it can complete the cut properly.
4. Move the machine to the approximate point where the cut will start. Set the drive speed control to the desired cutting speed. Set the FWD-OFF-REV switch to the OFF position. Plug the power cord into a 115 AC, 60 Hz power outlet.

**NOTICE** The export (E) model of the VCM-200 Series is equipped with a step-down transformer which permits operation with 220 VAC, 50 Hz (or 60 Hz) power.

5. Ensure that all clamping screws are properly tightened. Light and properly adjust the torch. Set the FWD-OFF-REV switch to the desired direction of travel. Set the clutch lever to the DRIVE position.
6. When the cut is completed, stop the machine and shut off the torch.

### 2-3-7. Circle Cutting.

The radius rod and center point make it possible for the VCM-200/VCM-200HS to cut circles from 4 inches to 96 inches in diameter. Remove the two bolts located over the drive wheels in the outer case. Position the radius rod assem-



**Figure 2-4.**  
**Circle Cutting Set-Up**

bly on the cutting machine, reinsert the bolts and tighten securely. Adjust the radius rod assembly to the desired length.

Drill a small pilot hole or punch the center of the circle to be cut. Place the point of the center point in the center of the circle and adjust the radius rod so that the cutting torch can be properly positioned. Position the torch between the machine and the center point for small diameter circles. Position the machine between the torch and the center point for large diameter circles. Adjust the center point so that the inside driving wheel lifts slightly off the work. Loosen the caster wheel lock knobs so that the caster wheels pivot freely. The machine is now free to follow the desired radius.

**NOTICE** Readjust the cutting torch to its proper cutting position after making the adjustment to lift the inside driving wheel.

Cutting speeds for circle cuts are not set directly on the VCM-200 speed indicator. The indicator shows the speed of the drive wheel. The driving wheel moves along the circumference of a larger or smaller circle than the one being cut by the cutting torch. The following formula provides a simple method of determining the proper speed setting for circle cuts, regardless of whether the torch is positioned inside or outside the tractor path.

Calculate the VCM-200 speed setting for any radius or cutting speed using the following formula:

$$\text{Speed} = \text{CS} (A/B)$$

where:

Speed = speed indicated on the VCM-200

CS = desired cutting speed

A = distance from the outside driving wheel to the center of the circle

B = distance from the cutting torch to the center of the circle

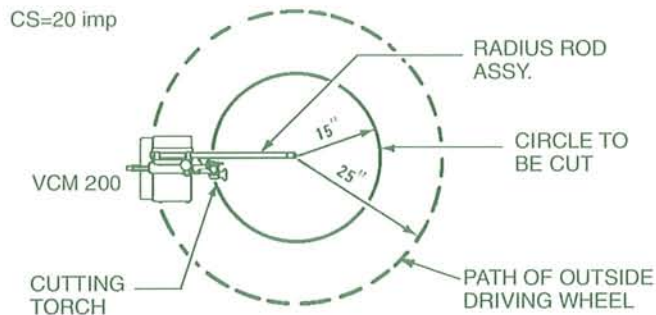
**Example 1.** The cutting torch positioned inside the path of the cutting machine

IF:

A = 25 inches      Speed = 20 ipm (25/15)

B = 15 inches

CS = 20 ipm      Speed = 33.3 ipm



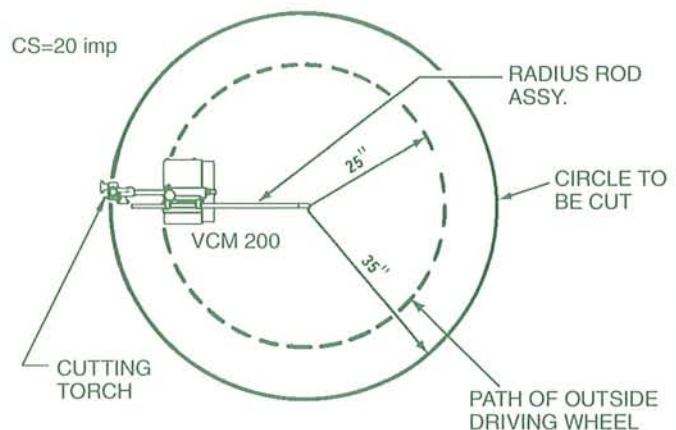
**Example 2.** The cutting torch position outside the path of the cutting machine.

IF:

A = 25 inches      Speed = 20 ipm (25/35)

B = 35 inches

CS = 20 ipm      Speed = 14.3 ipm





## SECTION 3

### MACHINE MAINTENANCE

#### 3-1. GENERAL.

The Victor VCM-200, VCM-200HT and VCM-200HS cutting machines are designed to operate over extended periods with minimum maintenance. However, continued satisfactory operation of the machine depends upon the careful performance of a few simple periodic inspections and the cleaning procedures outlined in this section. With proper care, problems can usually be detected and corrected before the result in loss of machine operating time. Troubleshooting procedures are included to help diagnose and correct problems as they occur and before serious trouble occurs.

Following the inspection and troubleshooting procedures are the maintenance procedures necessary for maintaining the machine. These sections are designed to provide an understanding of the components involved and to supply additional maintenance information which cannot be noted in detail in the Troubleshooting Chart.

#### 3-2. ROUTINE INSPECTION.

Inspect the machine carefully each day before placing it in operation. Visually inspect the machine and perform the following steps, which include operating checks of all machine components. If faults or malfunctions are noted while performing these procedures, refer to the Troubleshooting Chart, Section 3-4, and the following maintenance procedures for the components involved.

1. Wipe off all parts of the machine, rack, torch and all track surfaces.
2. Turn the clutch control lever to the FREE position. Check to see that the machine can be easily pushed along the track.
3. Set the FWD-OFF-REV toggle switch to the OFF position. Turn the SPEED knob to 1 ipm. Plug the power cord into a 115 V, 60 Hz power outlet.

**NOTICE** The export (E) model of the VCM-200 Series is equipped with a step-down transformer which permits operation with 220 VAC, 50 Hz (or 60 Hz) power.

4. Set the FWD-OFF-REV toggle switch to the FWD position. With the clutch lever still in the FREE position, slowly advance the SPEED knob to 60 ipm (VCM-200) or 120 ipm (VCM-200HS). The sound level should increase as the knob is advanced. Return the FWD-OFF-REV toggle switch to the OFF position.
5. Set the clutch lever to the DRIVE position and set the FWD-OFF-REV switch to FWD. If the clutch engaging mechanism is properly adjusted, the machine should move along the track at the selected speed. Move the FWD-OFF-REV toggle switch to the REV position and verify that the machine reverses direction.

6. Check to see that the torch (or torches) can be moved up and down with the adjusting knob(s) and that the torch holder clamping screws are tight enough to maintain the selected torch position. Also, check the torch pivot knuckle to see that its clamping screw is properly adjusted. Adjust tension of clamping screws, if required.
7. Check for free movement of the racking assembly in the rack handle by rotating the rack adjustment knob.
8. Inspect all hoses and the power cord carefully for signs of deterioration or damage. See that all hose connections to the manifold block and the torch (or torches) are secure.
9. Inspect power cord for frayed insulation or signs of damage.
10. Inspect all gas connections for leaks.

#### 3-3. ROUTINE LUBRICATION.

The only periodic inspection or maintenance required for the VCM-200, other than the inspection and maintenance covered in the daily procedures, is the following periodic lubrication procedure.

1. Redistribute the grease on the gear train and the groove in the clutch dog every 100 hours. It is not necessary to add grease. Remove the outer case cover and the inner case cover to gain access to the gear train (Refer to Section 3-6-1). Use the blade of a small screwdriver or similar object to redistribute the grease.

**⚠ WARNING** Unplug the power cord before performing any maintenance on the machine. Whenever the bottom cover of the machine is removed, short out the capacitor. Capacitors hold an electrical charge even after the power has been disconnected. Touch an insulated screwdriver (plastic or rubber handle) across the capacitor terminals. DO NOT touch the metal blade of the screwdriver with your fingers.

2. Keep the drive disks and cone free of grease. Clean them by wiping with a rag dampened with a solvent that does not leave a residue. Alcohol is not an effective cleaner.

**⚠ WARNING** Use solvents only in well ventilated areas. Avoid contact with skin or prolonged exposure to fumes. Read and follow the manufacturer's warning label for the solvent used.

3. Ball bearings or special bushings are used at all critical locations and require no greasing.

### 3-4. TROUBLESHOOTING.

The Troubleshooting Chart serves as an aid in locating possible troubles that may occur in operating the machine.

#### TROUBLESHOOTING CHART

TROUBLE	POSSIBLE CAUSE	REMEDY
A. Motor will not run.	1. No power to machine.	* Check power source and cord; replace cord if required.
	2. Wire connection is loose.	* Check all wire connections.
	3. Motor thermal protector is burned out.	* Replace motor.
	4. Switch is bad.	* Replace switch.
	5. Motor has open winding.	* Replace motor.
	6. Faulty capacitor.	* Replace capacitor.
B. Motor runs, but wheels do not turn.	1. Disk Drive slipping because output disk shaft is not sliding freely in worm shaft.	Remove output disk assembly. Clean and re-grease the shaft with a grease containing molybdenum disulfide, such as EM Lubricants ME-62 or equivalent.
	2. Gears worn.	Check gear train and replace worn parts.
C. Motor runs, but will not reverse.	1. Faulty capacitor.	* Replace capacitor.
D. Clutch does not disengage.	1. Clutch out of adjustment.	Adjust Clutch. See Section 3-5
	2. Throw-out assembly broken.	Replace part.
	3. Grooved pin in clutch yoke broken or missing.	Replace pin.
	4. Tabs on yoke not positioned in groove on clutch dog.	Reassemble properly.
	5. Control knobs not in proper position on shaft.	Readjust after checking all of the above.
E. Clutch does not engage.	1. Broken clutch spring.	Replace spring.
	2. Worn clutch gears.	Replace gears.
F. Machine travel speed not constant.	1. Disks Slipping.	Clean Disks.
	2. End play of speed knobs too loose.	Loosen set screws securing speed knobs. Then snub-up knobs against spring washer and retighten set screws.

\*See Wiring Diagrams, Figure 3-3, Figure 3-6, and Figure 5-3.



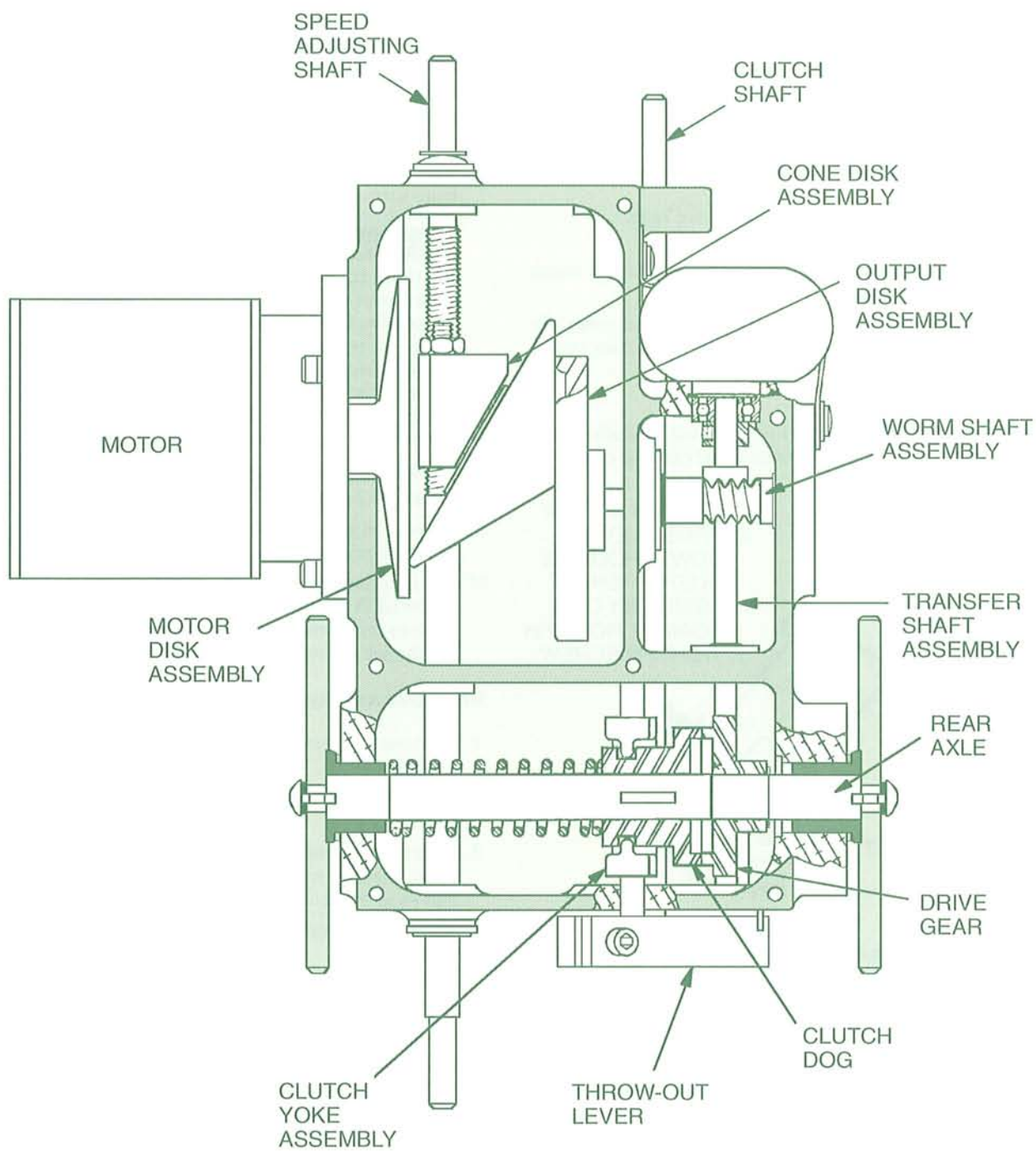


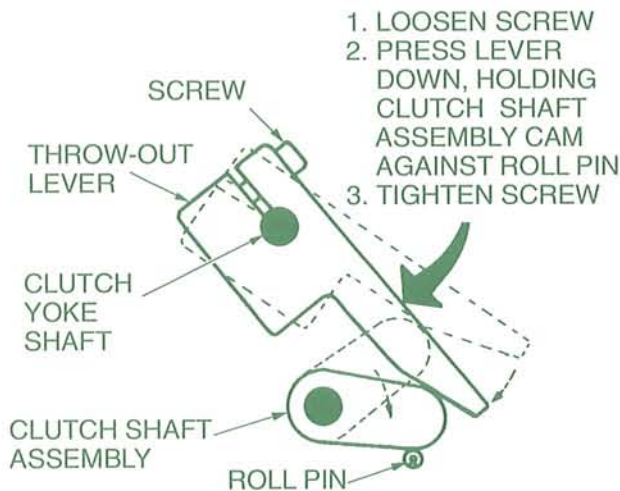
Figure 3-1.  
VCM-200, VCM-200HT and VCM-200HS Internal Assemblies

### 3-5. DRIVE CLUTCH ADJUSTMENT.

Turn the machine upside down; remove the two casters and the bottom cover to access the clutch. Operate the clutch a few times by moving the clutch lever from FREE to DRIVE and observe how the "over-center" action disengages the clutch. With the clutch lever in the DRIVE position, the end of the lever should have about 1/4-inch movement for ideal free-play. This is necessary to assure that the clutch will fully engage and have enough travel for disengagement.

Adjust the clutch free-play by the following steps:

1. Place the clutch in DRIVE position.
2. Rotate the drive wheels by hand to assure that the clutch teeth are fully engaged.
3. Loosen the screw in the throw-out lever and rotate the throw-out lever until it presses against the cam on the clutch shaft.
4. Re-tighten the screw.
5. Free-play will automatically be obtained; this allows approximately 1/4-inch movement at the extreme end of the throw-out lever.



**Figure 3-2.**  
**Drive Clutch Adjustment**

### 3-6. CUTTING MACHINE REPAIR.

Remove the inner case from the outer case when making major repairs to the cutting machine. This is not necessary for minor work such as lubrication or clutch adjustment.

#### 3-6-1. Inner Case Removal.

Perform the following steps:

1. Unplug the power cord.
2. Remove the rack handle assembly.
3. Remove the clutch control levers from each end of the machine.
4. Remove the SPEED knobs from each end of the machine. A flat washer and two (2) spring washers are provided under each SPEED knob.

5. Remove one end plate, which is held by two button head socket screws.
6. Remove the four socket head cap screws that have their heads counter bored into the top of the outer case. These screws secure the inner case.
7. Turn the machine upside down. Loosen the caster locking knobs a few turns to clear groove in caster, then remove casters.
8. Remove the bottom cover, which is held by six slotted head screws.

**WARNING** Unplug the power cord before performing any maintenance. Whenever the bottom cover of the machine is removed, short out the capacitor. Capacitors hold an electrical charge even after the power cord has been disconnected. Touch an insulated screwdriver (plastic or rubber handle) across the capacitor terminals under the rubber boot. Hold the screwdriver by the insulated handle.

9. Lift the inner case assembly from the outer case. Place it beside the outer case with the wires still connected.
10. Remove inner case cover and gasket which are secured by seven slotted head screws.
11. Reverse procedures for reassembly. When reassembling the SPEED knobs, apply enough pressure to the SPEED knob to flatten the spring washers and hold while tightening the set screws.

#### 3-6-2. Rear Axle Removal.

1. Remove the inner case from the outer case (Refer to Section 3-6-1.).
2. Remove the drive wheel and the key from each end of the axle.
3. Remove the retaining ring at the end of the spring. Remove the ring by inserting a screwdriver under the ring and twist the screwdriver to pry the ring off the axle.
4. Remove the bushing on the end of the axle toward the motor.
5. Slide the axle and spring partway through the bushing hole. Remove the spring and the two (2) remaining retaining rings.
6. Slide the axle through the bushing hole and out of the clutch dog and drive gear.
7. Reverse this procedure for reassembly.

#### 3-6-3. Transfer Shaft Removal.

1. Remove the inner case from the outer case (Refer to Section 3-6-1.).
2. Remove the capacitor which is held by two screws and a clamp.
3. Remove the retaining ring.



4. Remove the transfer shaft by sliding the entire assembly out of the inner case through the bearing mounting hole.
5. Note that the center bearing is captured on the transfer shaft and is not available separately.

### 3-6-4. Cone Disk, Output Disk and Worm Shaft Removal.

1. Remove the inner case from the outer case. (Refer to Section 3-6-1.)
2. Remove the retaining rings and washers from both ends of the speed adjusting shaft.
3. Loosen the cone block backlash adjusting cap screw using a 7/64 inch hex key. Gain access to the cap screw through the inner case speed indicator slot.
4. Temporarily, reinstall a SPEED knob on the speed adjusting shaft end that is farthest from the drive cone. This will aid in turning the shaft to free both the shaft and the cone block assembly.
5. Lift the cone and cone block from the inner case.
6. Pull the output disk assembly from the worm shaft. Key the disk assembly to the worm shaft with a woodruff key.
7. If required, remove worm shaft retaining ring, then remove the worm shaft and outer bearing as one piece. A small spring is located inside the worm shaft. This spring provides automatic pressure adjustment for the entire disk drive.
8. Before reassembly, do the following:
  - a. Clean the drive disks.
  - b. Wipe a very thin coating of a moly grease on the shaft and key of the output disk assembly.
9. Install the washers and retaining rings on the speed adjusting shaft. Assemble the end of the shaft that requires the spring washer first. This will allow compression of the spring washer and ease the assembly of the larger retaining ring.
10. Tighten the cone block backlash adjusting cap screw until play between the cone block and speed adjusting shaft is minimized. Loosen cap screw slightly if speed knob requires excessive turning force or cone block rotates with adjusting shaft.
11. Tighten all knob set screws securely (15 in-lb).

### 3-6-5. Power Cord Replacement.

1. Unplug the power cord.
2. Remove the bottom cover from the machine.
3. Short out the capacitor by touching an insulated screwdriver to the capacitor terminals.
4. Disconnect the black and white power line leads and the green groundwire (See Figure 3-3 or 3-4 for VCM-200) (see Figure 3-5 or 3-6 for VCM-200HT).
5. Remove the power cord by loosening the power cord holder. We recommend that the replacement cord be Victor Part No. 0252-0058 (Use Hi-Temp cord assembly 0252-0068 for VCM-200HT). This is a cord and holder which includes the wire connectors.
6. Reconnect the power cord wires as disconnected in Step 4.

7. Tighten the strain relief bushing securely (12 in-lb).

### 3-6-6. Switch Replacement.

1. Unplug the power cord.
2. Remove the bottom cover from the machine.
3. Short out the capacitor by touching an insulated screwdriver to the capacitor terminals.
4. Disconnect the five switch leads. Four of these are the red, blue, yellow and black motor leads. The fifth switch lead is the black line from the power cord (See Figure 3-3).
5. Remove the jam nut on the threaded portion of the switch protruding outside of the case. Pull the switch inside the case and remove.
6. We recommend that the replacement switch be Victor Part No. 0252-0057 (Use Hi-Temp switch assembly 0252-0140 for VCM-200HT). This is a pre-wired switch and includes the wire connectors.
7. Install the new switch by reversing the procedure in Step 5.
8. Reconnect the switch as disconnected in Step 4.

### 3-6-7. Motor Replacement.

Victor recommends that the motor be replaced as an entire assembly. It includes the motor, mounting plate, spacer sleeve and drive disk. Purchase the assembly directly from Victor. This eliminates "down-time" and assures that the drive disk "runs true".

1. Remove the inner case from the outer case (Refer to Section 3-6-1).
2. Short out the capacitor by touching an insulated screwdriver to the capacitor terminals.
3. Remove the rubber boot from the capacitor and disconnect the two red leads.
4. Disconnect the red, blue, black, yellow and white motor wires leading to the switch. Note that red is connected to red, blue is connected to blue, etc.
5. Remove the four socket head cap screws that mount the motor plate to the inner case. Note that the green ground wire from the power cord is secured to the case by one of the four screws.
6. Loosen the motor disk set screw, if so equipped (optional on keyed motors). Slide the disk away from the motor to allow motor plate dowels to clear the inner case.

#### NOTICE

If the motor disk is to be re-used, **DO NOT** pry on back side of the disk. Remove a tight disk by bending a pry bar to reach behind the disk boss.

7. Remove the motor and drive disk assembly from the inner case.
8. Reverse this procedure for reassembly.

115 VAC  
WIRING  
DIAGRAM

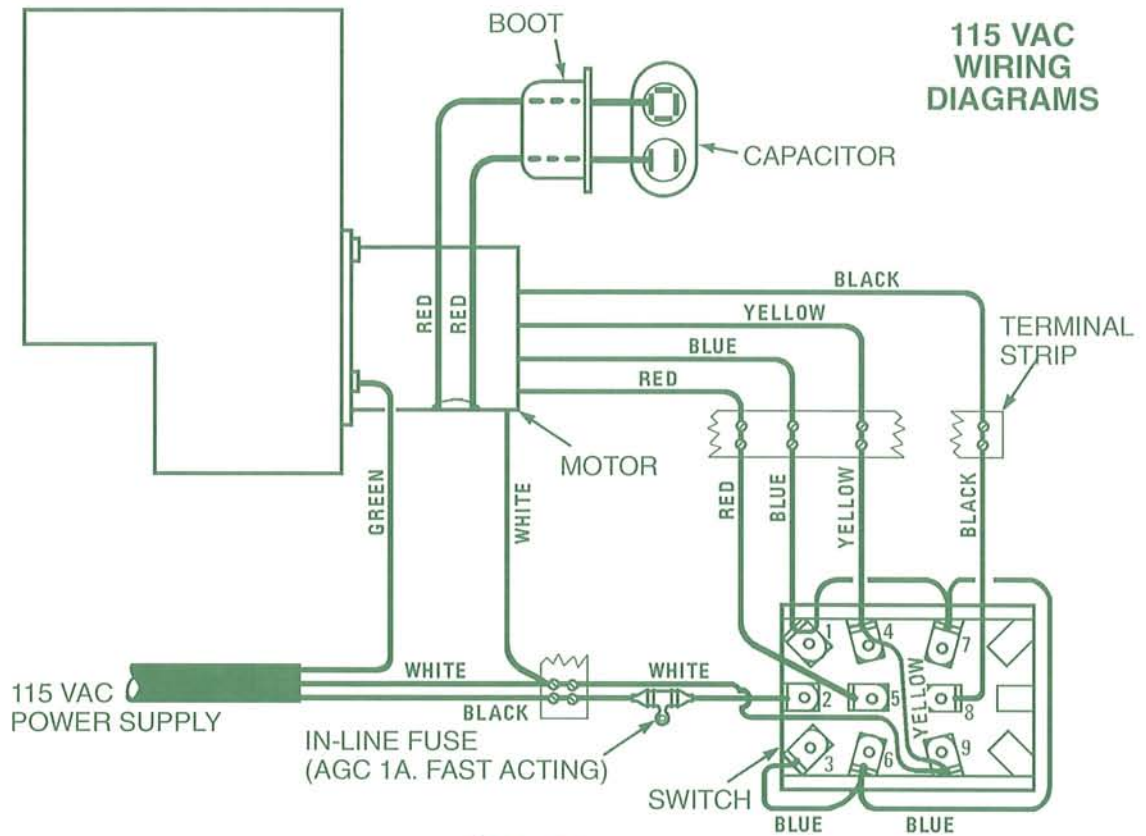
The diagram shows a 115 VAC power supply connected to a motor and a switch. The power supply has two output terminals, one labeled 'CAPACITOR' and the other 'BOOT'. The motor has three output wires: 'GREEN', 'WHITE', and 'BLACK'. The switch has nine terminals, numbered 1 through 9. The wiring is as follows: the 'CAPACITOR' terminal is connected to the 'GREEN' wire of the motor; the 'BOOT' terminal is connected to the 'WHITE' wire of the motor; the 'BLACK' wire of the motor is connected to terminal 1 of the switch; the 'GREEN' wire of the motor is connected to terminal 2 of the switch; the 'WHITE' wire of the motor is connected to terminal 3 of the switch; the 'BLACK' wire of the motor is connected to terminal 4 of the switch; the 'GREEN' wire of the motor is connected to terminal 5 of the switch; the 'WHITE' wire of the motor is connected to terminal 6 of the switch; the 'BLACK' wire of the motor is connected to terminal 7 of the switch; the 'GREEN' wire of the motor is connected to terminal 8 of the switch; and the 'WHITE' wire of the motor is connected to terminal 9 of the switch. The switch is labeled 'SWITCH'.

The diagram illustrates the electrical connections for a 1/2 HP 230VAC 3-phase motor. A 115 VAC power line (White, Black, Green) is connected to a 3-speed switch (FWD-OFF-REV). The switch has terminals 1 through 9. The motor's internal wiring includes a 4μF capacitor, a fuse link, and two windings labeled START and MAIN. The motor is connected to a 230VAC 3-phase power source (Red, Yellow, Blue). The wiring is as follows:

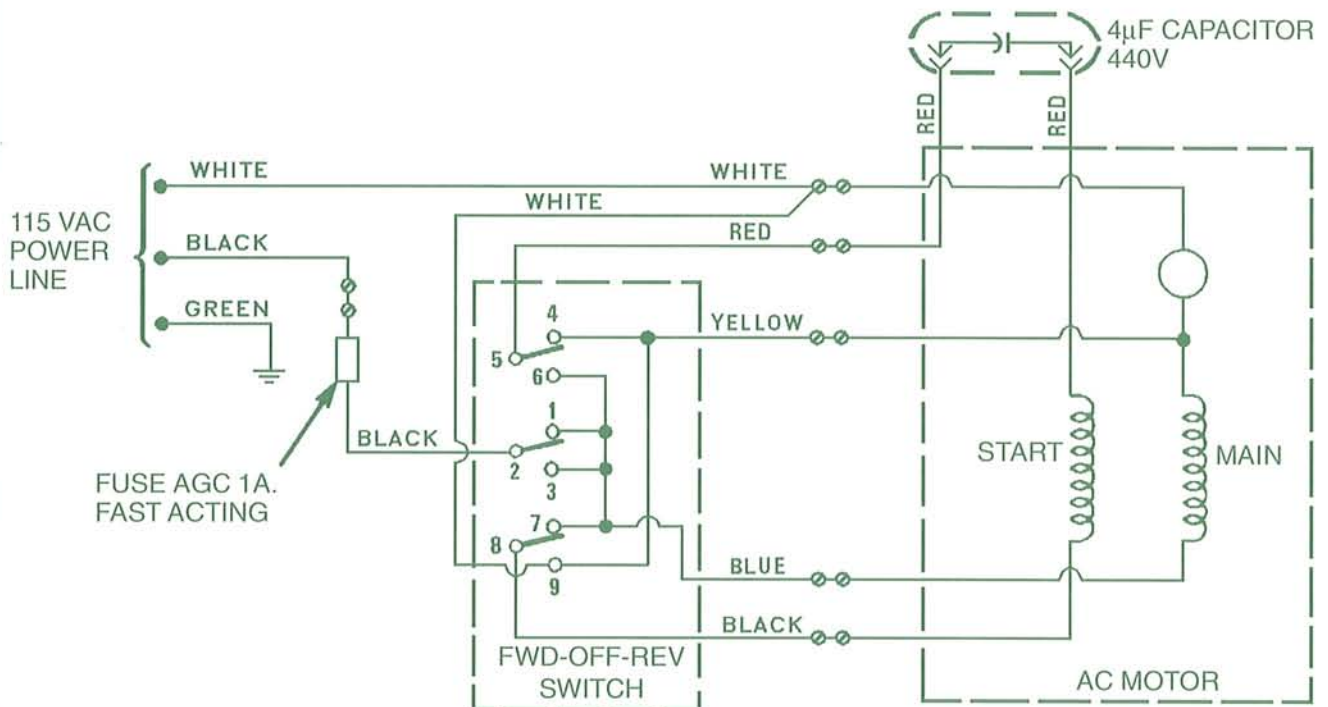
- 115 VAC Power Line:**
  - White:** Connected to the top terminal of the 4μF capacitor.
  - Black:** Connected to the bottom terminal of the 4μF capacitor.
  - Green:** Connected to ground.
- 3-Speed Switch (FWD-OFF-REV):**
  - Terminal 1:** Connected to the top terminal of the 4μF capacitor.
  - Terminal 2:** Connected to the bottom terminal of the 4μF capacitor.
  - Terminal 3:** Connected to the top terminal of the 4μF capacitor.
  - Terminal 4:** Connected to the bottom terminal of the 4μF capacitor.
  - Terminal 5:** Connected to the top terminal of the 4μF capacitor.
  - Terminal 6:** Connected to the bottom terminal of the 4μF capacitor.
  - Terminal 7:** Connected to the top terminal of the 4μF capacitor.
  - Terminal 8:** Connected to the bottom terminal of the 4μF capacitor.
  - Terminal 9:** Connected to the top terminal of the 4μF capacitor.
- Motor Windings:**
  - START Winding:** Connected to the top terminal of the 4μF capacitor.
  - MAIN Winding:** Connected to the bottom terminal of the 4μF capacitor.
- 230VAC 3-Phase Power Source:**
  - Red:** Connected to the top terminal of the 4μF capacitor.
  - Yellow:** Connected to the bottom terminal of the 4μF capacitor.
  - Blue:** Connected to the top terminal of the 4μF capacitor.
  - Black:** Connected to the bottom terminal of the 4μF capacitor.

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**Figure 3-5.**  
Pictorial Wiring Diagram, VCM-200HT (Hi-Temp)



**Figure 3-6.**  
Schematic Wiring Diagram, VCM-200HT (Hi-Temp)

## SECTION 4

### REPLACEMENT PARTS

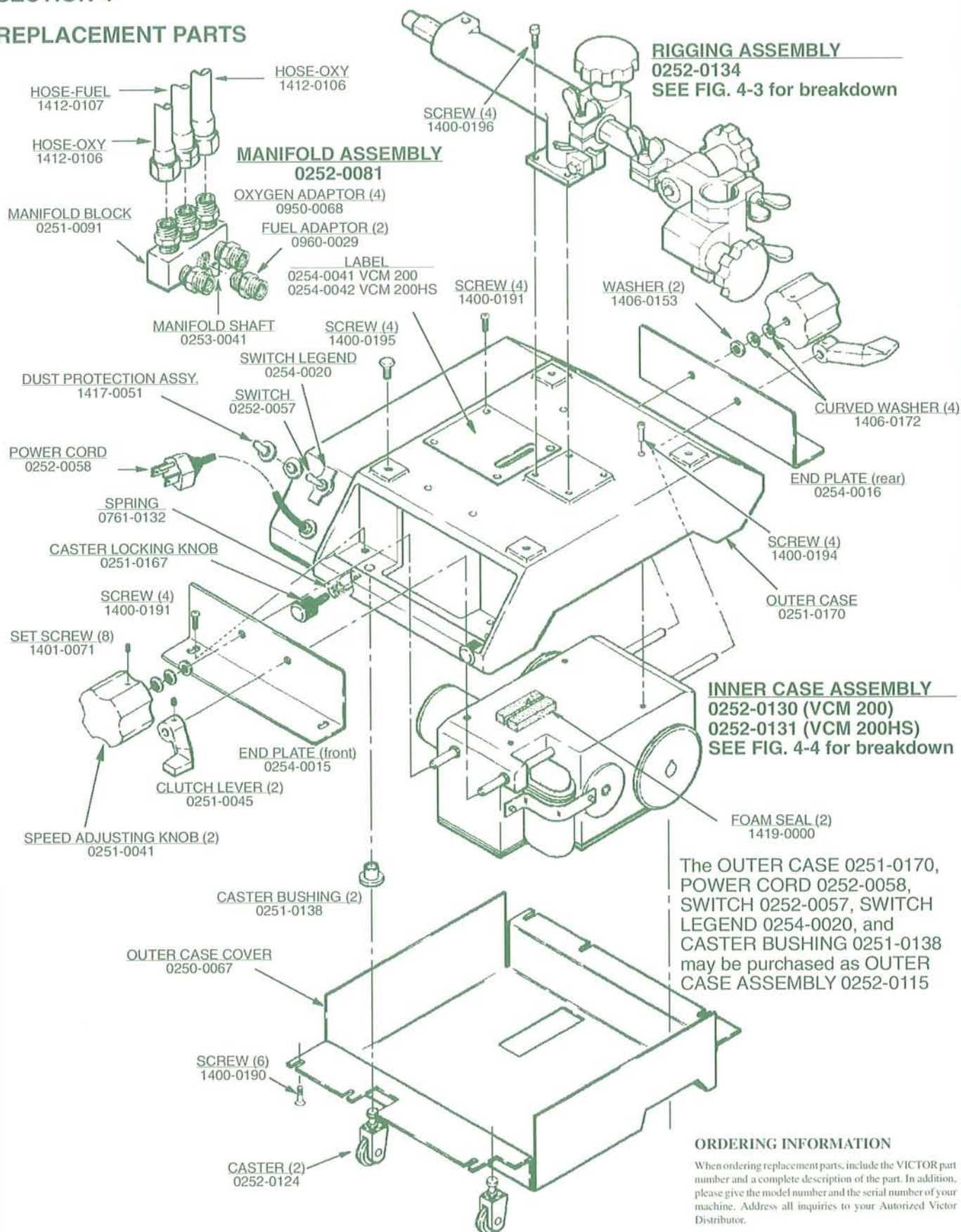
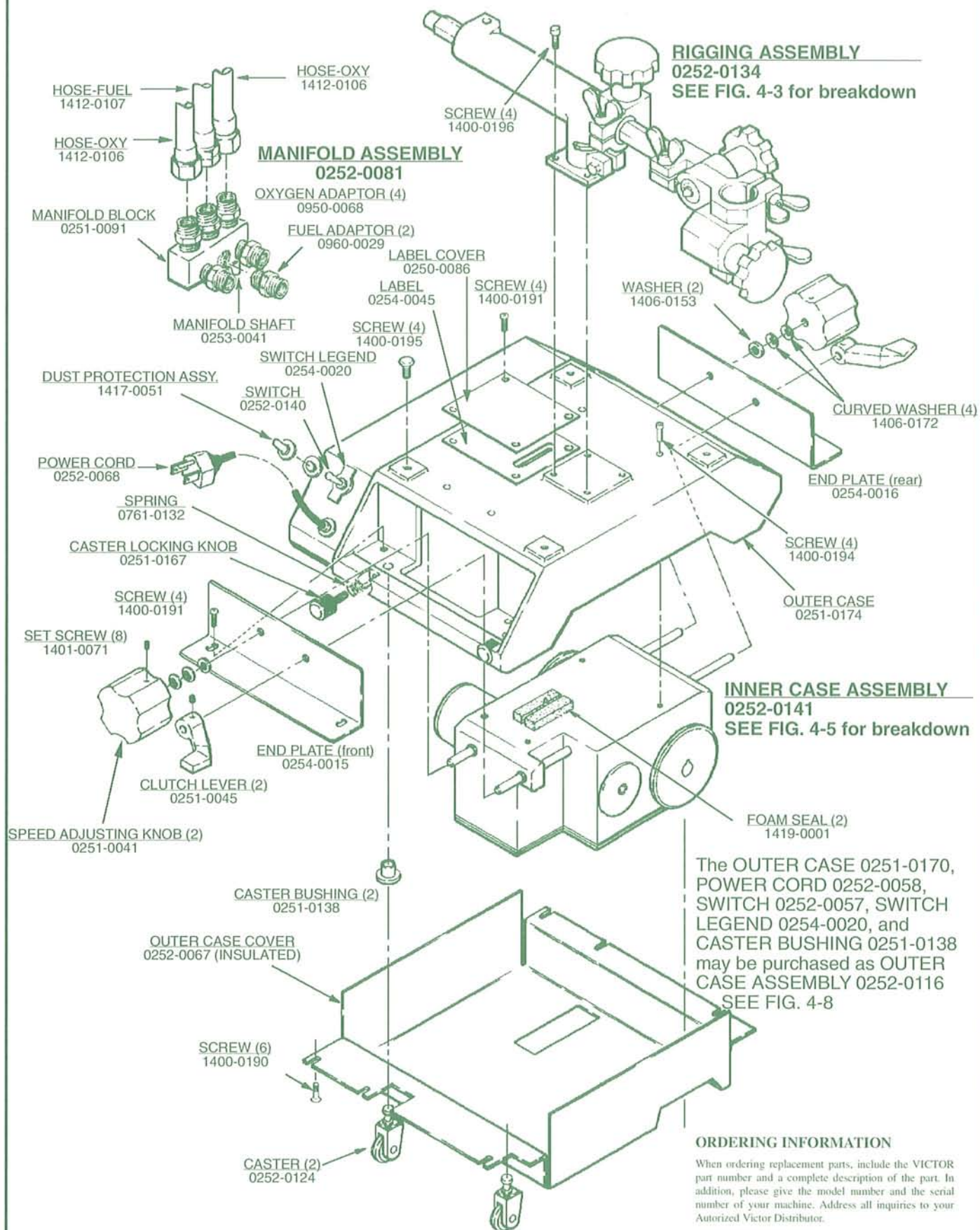


Figure 4-1.  
VCM-200 Series Main Assembly.





**Figure 4-2.**  
**VCM-200HT Series Main Assembly.**  
**(For continuous use at up to 300°F).**

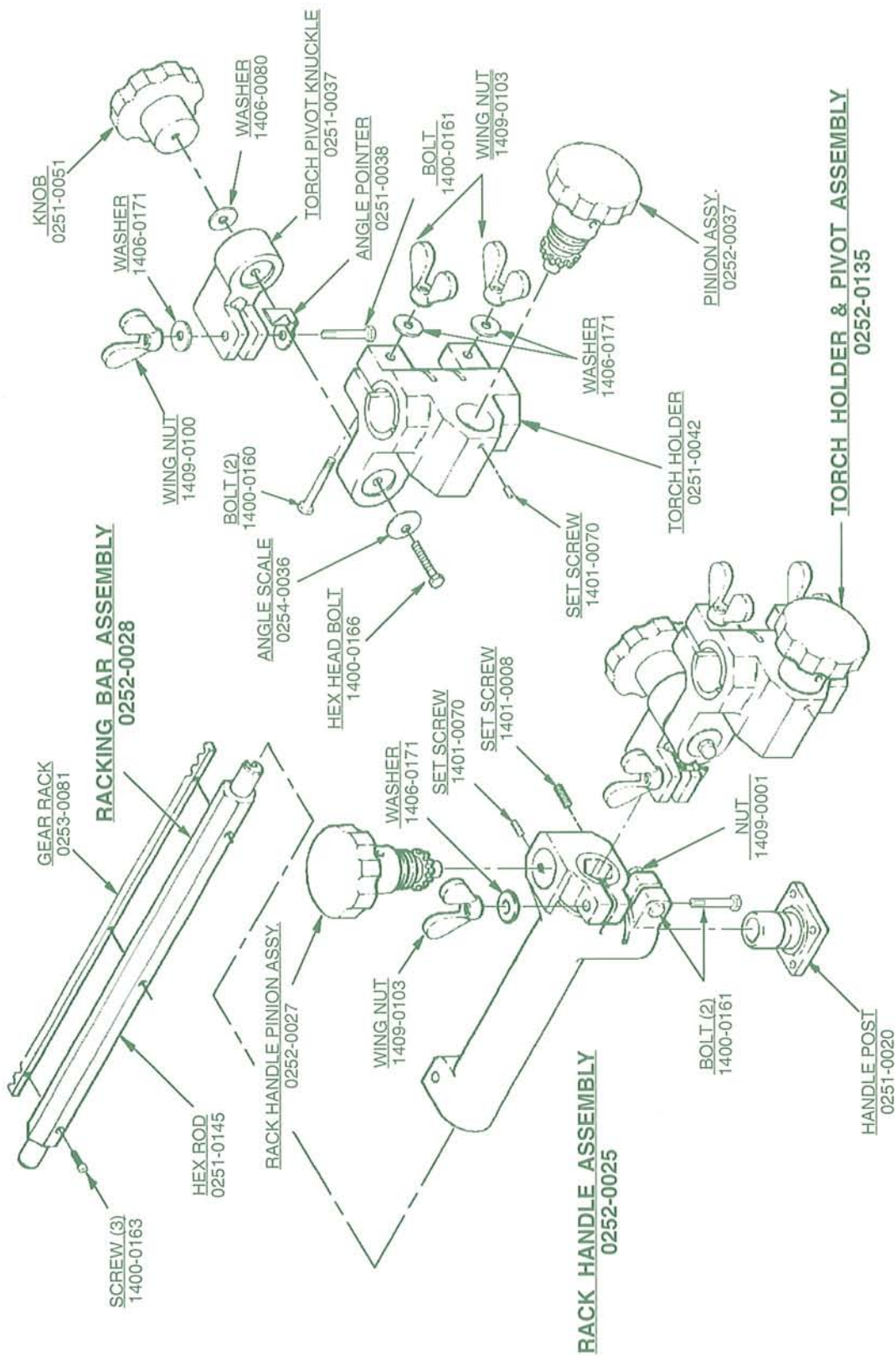
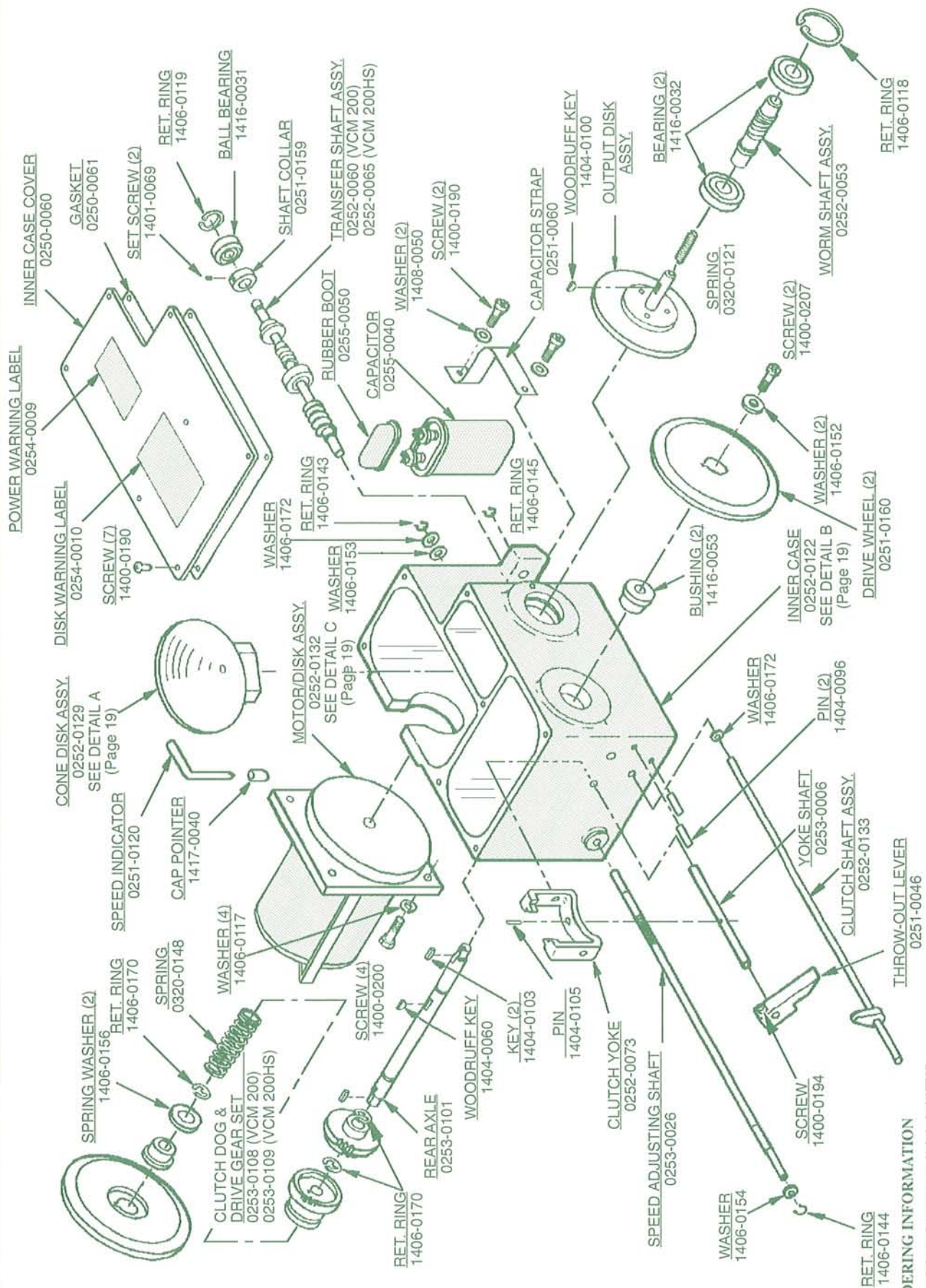


Figure 4-3.  
VCM-200 Series Rigging Assembly 0252-0134

#### ORDERING INFORMATION

When ordering replacement parts, include the VICTOR part number and a complete description of the part. In addition, please give the model number and the serial number of your machine. Address all inquiries to your Authorized Victor Distributor.





**Figure 4-4.**  
**VCM-200 Inner Case Assembly 0252-0130/VCM-200HS Inner Case Assembly 0252-0131**

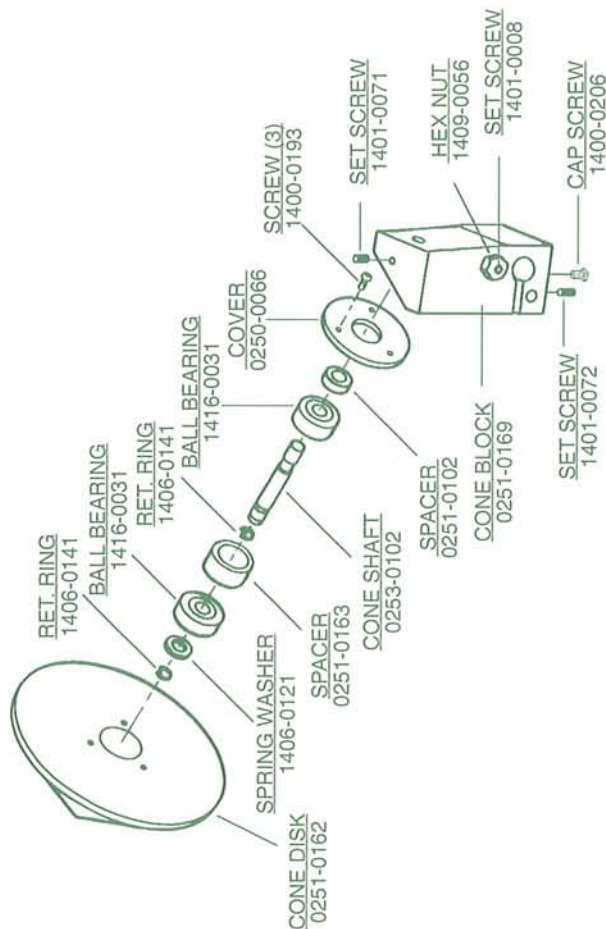
#### ORDERING INFORMATION

When ordering replacement parts, include the VICTOR part number and a complete description of the part. In addition, please give the model number and the serial number of your machine. Address all inquiries to your Authorized Victor Distributor.

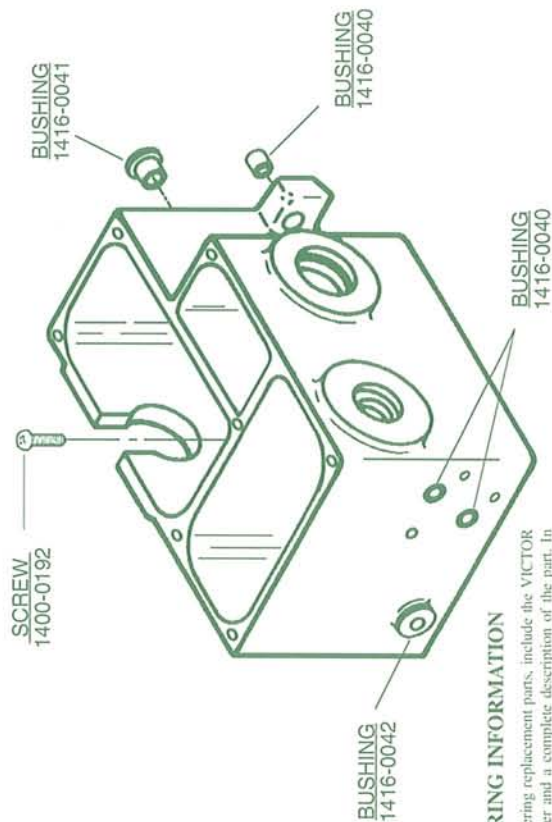




DETAIL A CONE DISK ASSEMBLY 0252-0129



DETAIL B INNER CASE 0252-0122



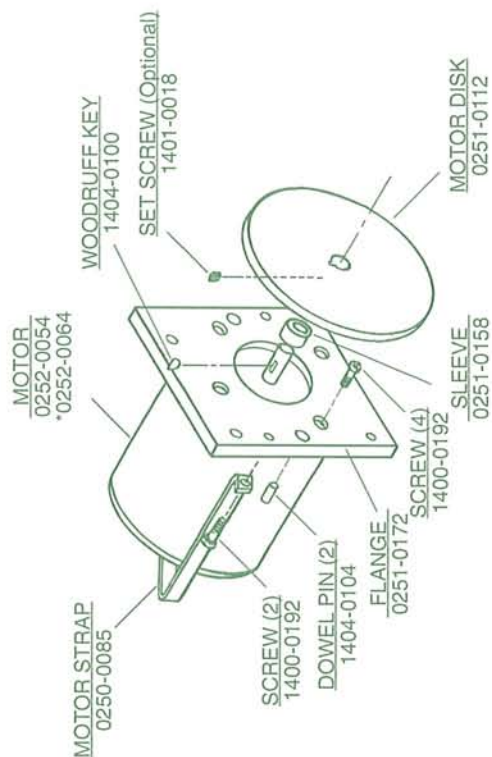
**ORDERING INFORMATION**

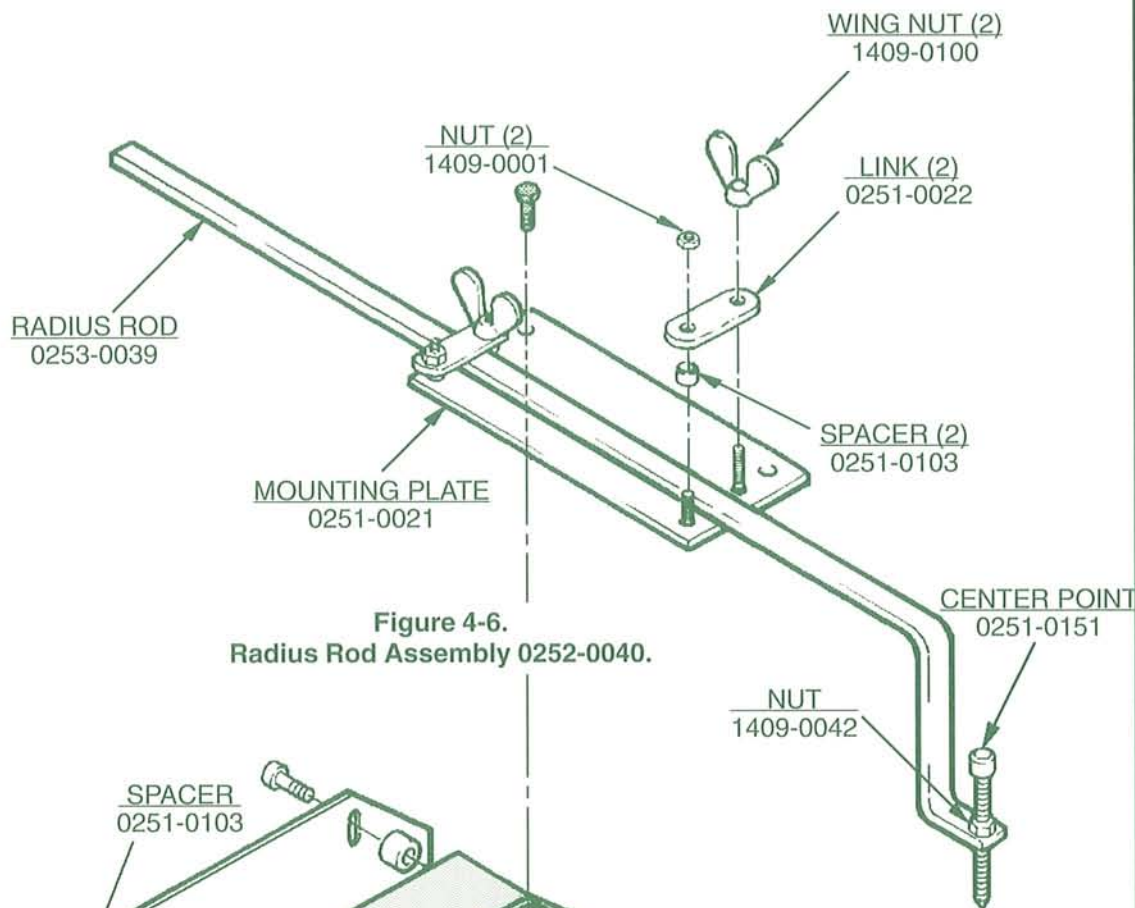
When ordering replacement parts, include the VICTOR part number and a complete description of the part. In addition, please give the model number and the serial number of your machine. Address all inquiries to your Authorized Victor Distributor.

**COMMON HARDWARE SPECIFICATIONS**

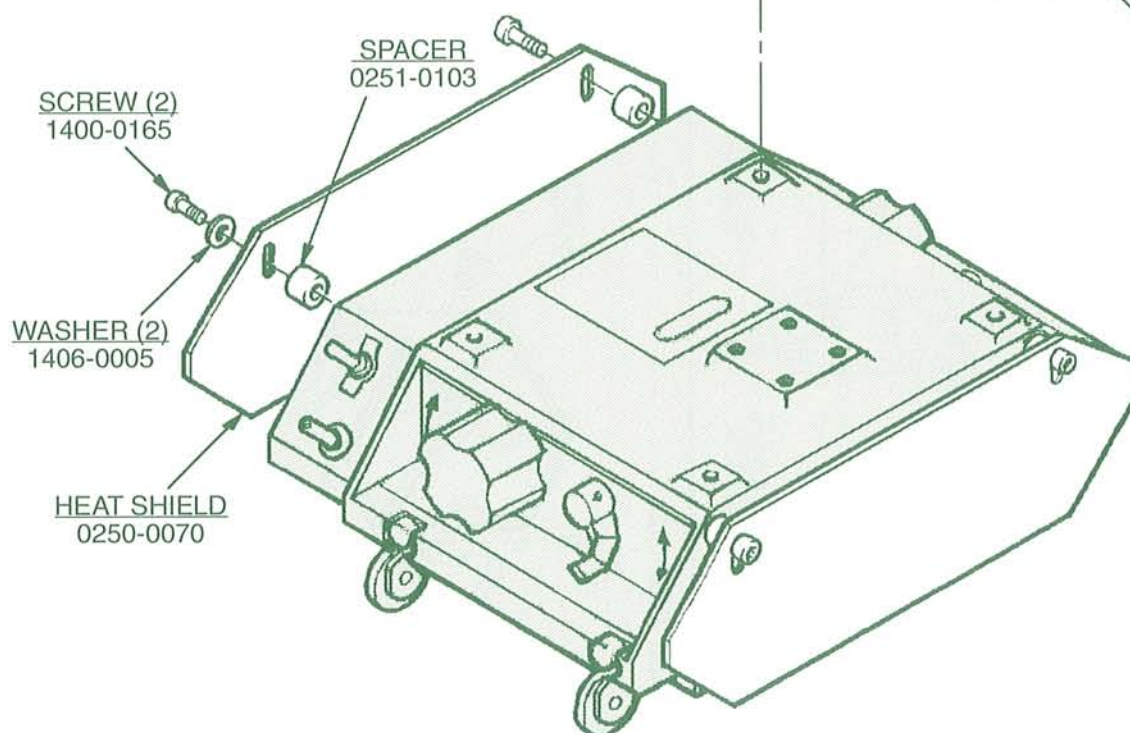
VICTOR PART NO.	DESCRIPTION
1400-0151	Screw, Slotted Head, #8-32 UNC-2A x 6/16 Long
1400-0160	Bolt, Hex Head Tap, 5/16-18 UNC-2A x 2.0 Long
1400-0161	Bolt, Hex Head Tap, 5/16-18 UNC-2A x 1-1/2 Long
1400-0163	Screw, Hex Socket Flat Head Cap, #8-32 UNC-2A x 1/2 Long
1400-0165	Screw, Hex Head Cap, 1/4-20 UNC-2A x 1.0 Long
1400-0190	Screw, Slotted Head, #8-32 UNC-2A x 5/16 Long
1400-0191	Screw, Hex Socket Button Head Cap, #8-32 UNC-2A x 1/4 Long
1400-0192	Screw, Hex Socket Flat Head Cap, #10-24 UNC-2A x 3/8 Long
1400-0193	Screw, Hex Socket Flat Head Cap, #4-40 UNC-2A x 1/4 Long
1400-0194	Screw, Hex Socket Flat Head Cap, 1/4-20 UNC-2A x 7/8 Long
1400-0195	Screw, Hex Head Cap, 1/4-20 UNC-2A x 1/2 Long
1400-0196	Screw, Hex Socket Button Head Cap, 1/4-20 UNC-2A x 5/8 Long
1400-0206	Screw, Hex Head Cap, Self Locking, #8-32 UNC-2A x 1/2 Long
1401-0008	Set Screw, Hex Socket Oval Point, 1/4-20 UNC-2A x 3/4 Long
1401-0070	Set Screw, Hex Socket Cup Point, #10-24 UNC-2A x 3/8 Long
1401-0071	Set Screw, Hex Socket Cup Point, #8-32 UNC-2A x 1/4 Long
1401-0072	Set Screw, Hex Socket Cup Point, 1/4-20 UNC-2A x 3/4 Long
1406-0080	Washer, Bevel, .38 I.D., .75 O.D., .056 Thick
1406-0117	Lock Washer, #10 Split
1406-0152	Washer, SAE Flat, 7/32 I.D., 1/2 O.D., 3/64 Thick
1406-0153	Washer, SAE Flat, 11/32 I.D., 11/16 O.D., 1/16 Thick
1406-0154	Washer, SAE Flat, 13/32 I.D., 13/16 O.D., 1/16 Thick
1408-0050	Washer, SAE Flat, #8
1409-0001	Nut, STD Hex 5/16-18 UNC-2B x 1/2 Wide
1409-0042	Nut, Hex Jam, 3/8-16 UNC-2B x 9/16 Wide
1409-0056	Nut, Hex, 1/4-20 UNC-2B
1409-0100	Nut, Wing 5/16-18 UNC-2B

DETAIL C MOTOR DISK ASSEMBLY 0252-0132/\*VCM 200HT 0252-0142





**Figure 4-6.**  
Radius Rod Assembly 0252-0040.



**Figure 4-7.**  
Heat Shield 0252-0103.

#### ORDERING INFORMATION

When ordering replacement parts, include the VICTOR part number and a complete description of the part. In addition, please give the model number and the serial number of your machine. Address all inquiries to your Authorized Victor Distributor.



**NOTICE**

TO PREVENT A SHORT CIRCUIT, MAKE SURE THAT ALL WIRE STRANDS ARE INSERTED AND TIGHTLY CLAMPED IN THE TERMINAL STRIP.

\*SWITCH ASS'Y 0252-0140 INCLUDES WIRING HARNESS, FUSE HOLDER AND FUSE.

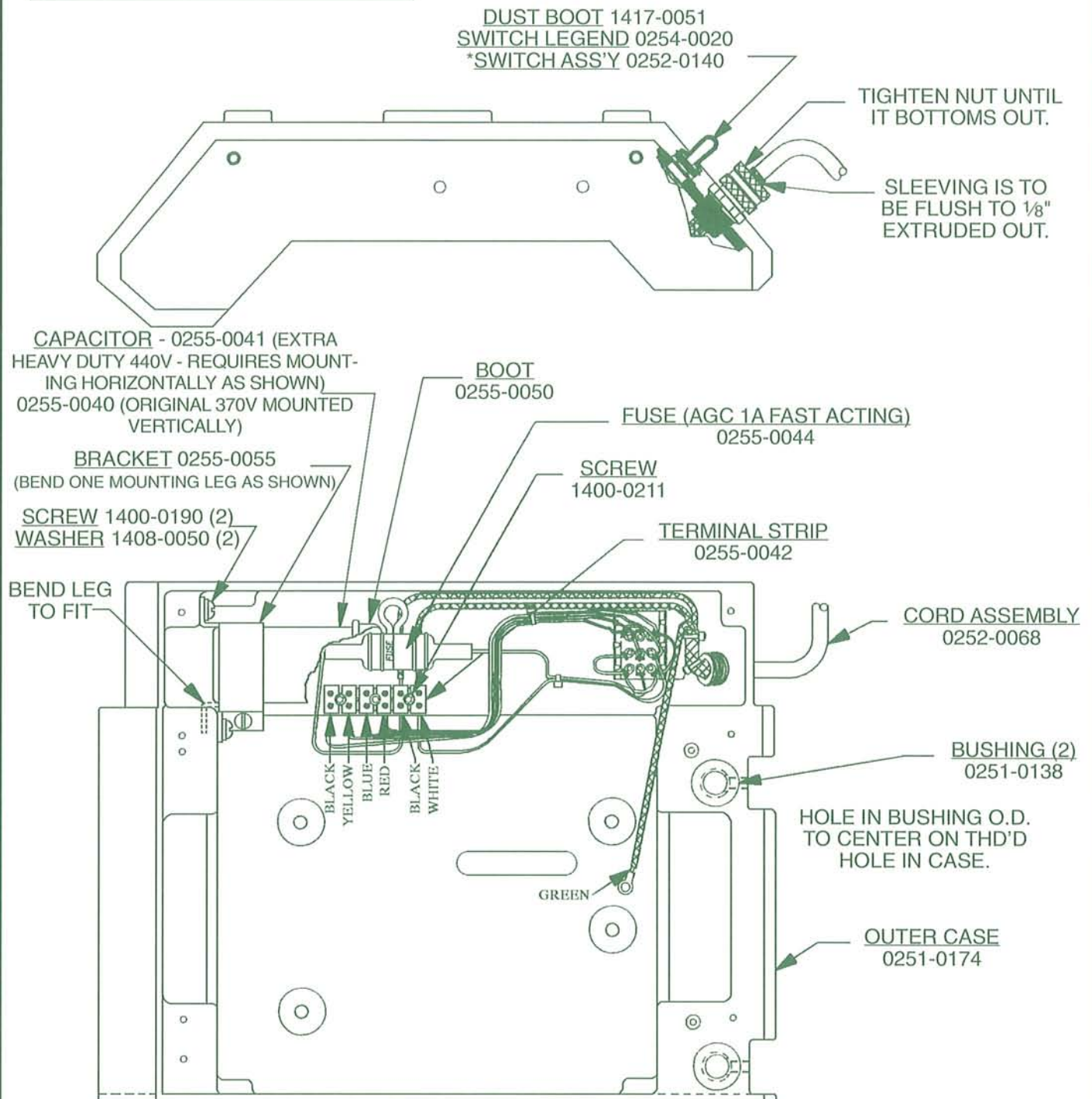


Figure 4-8.  
 VCM-200HT Outer Case Assembly 0252-0116.

## SECTION 5

### EXPORT MODEL INFORMATION

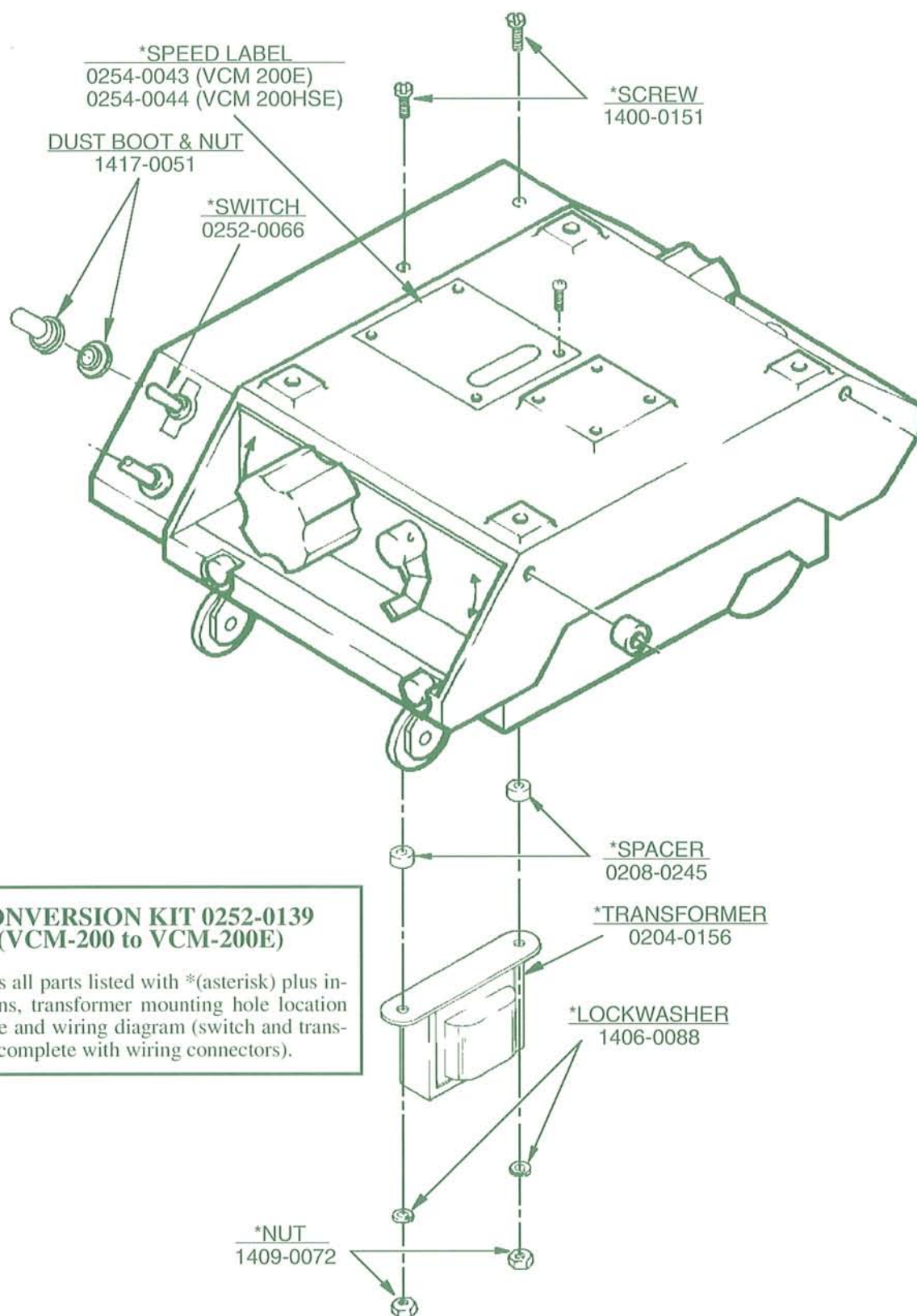


Figure 5-1.  
VCM-200E/VCM-200HSE Assembly (Export Only).



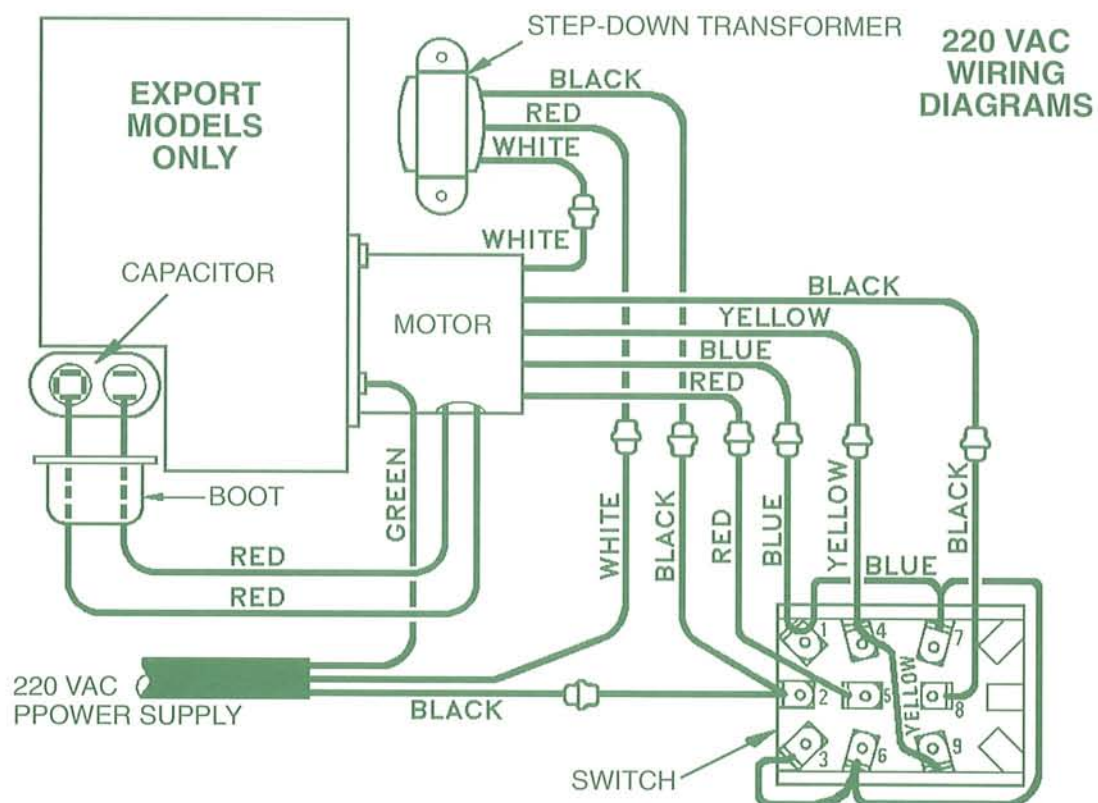


Figure 5-2.  
Pictorial Wiring Diagram, VCM-200E.

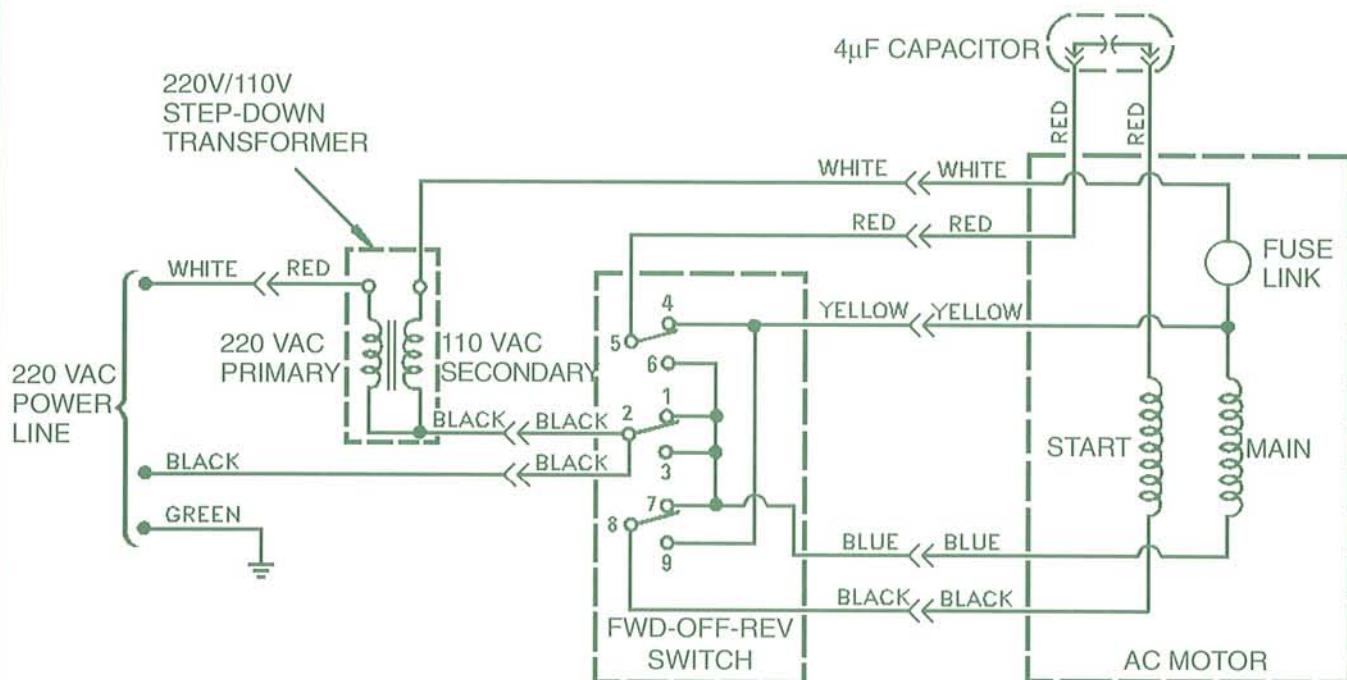


Figure 5-3.  
Schematic Wiring Diagram, VCM-200E/VCM-200HSE.

## NOTES



## NOTES

## VICTOR WARRANTY

"LIMITED WARRANTY: Victor warrants that its products will be free of defects in workmanship or material. The use with any Victor product of replacement parts or accessories, which are not manufactured or distributed by Victor and which may affect product safety or performance, shall render this warranty and all other warranties, whether express or implied, null and void. Should any failure to conform to this warranty appear within two years after the initial delivery, Victor shall, upon notification thereof and substantiation that the product has been stored, maintained and operated in accordance with Victor's recommendations and standard industry practice, correct such defects by suitable repair or replacement at its own expense.

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