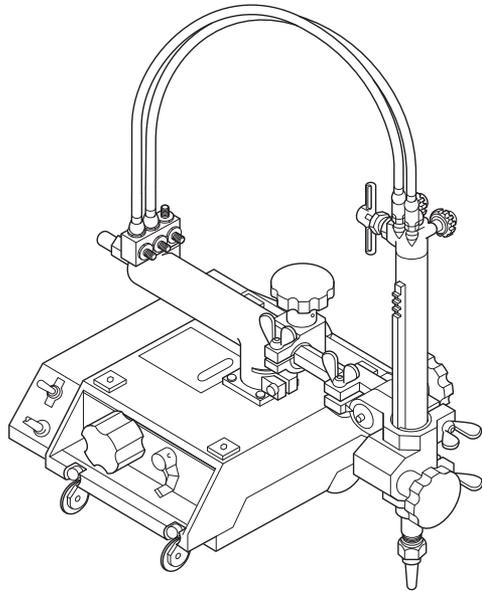


VCM-200 SERIES

VICTOR[®]

PORTABLE FLAME CUTTING MACHINE



SAFETY AND OPERATING INSTRUCTIONS



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 **WARNINGS**

Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment. While the information contained in this Manual represents the Manufacturer's judgment, the Manufacturer assumes no liability for its use.

VCM-200 Series Portable Flame Cutting Machine
Safety and Operating Instructions
Instruction Guide Number: 0056-1351

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Publication Date: September 17, 2008
Record the following information for Warranty purposes:

Where Purchased: _____

Purchase Date: _____

Equipment Serial #: _____

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SECTION 1: INTRODUCTION

1.01 HOW TO USE THIS MANUAL

To ensure safe operation, read the entire manual, including the chapters on safety instructions and warnings.

Throughout this manual, the words WARNING, CAUTION, and NOTE may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

NOTE

NOTE conveys installation, operation, or maintenance information which is important but not hazard-related.



CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in injury.



WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

1.02 RECEIPT OF EQUIPMENT

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to the location in your area, listed on the back cover of this manual. Include a full description of the parts in error.

If you want additional or replacement copies of this manual, please contact Thermadyne at (800) 426-1888. Include the Manual number (Page i).

1.03 DESCRIPTION

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.

SAFETY AND OPERATING INSTRUCTIONS

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.

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 setups. It is suitable for field jobs and repair work, plus 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.

The VCM-200 cutting machine accessories 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 (UL).

SECTION 2: SAFETY PRECAUTIONS

Read and understand these operating instructions before attempting to operate or service this equipment.

The information contained in this document is subject to change without notice.



WARNING

*This product contains chemicals, including lead, or otherwise produces chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. **Wash hands after handling.** (California Health & Safety Code § 25249.5 et seq.)*



WARNING

Personal injury or property damage can occur if you fail to follow the instructions in this manual.



WARNING

*Working with high-pressure gas can be hazardous. Open all valves **SLOWLY**. Very high temperatures and pressures, with possible damage to the equipment, will result if valves are not opened slowly.*



WARNING

***DO NOT** use a flame or “sniff” test for leaks.*



WARNING

Never permit oil, grease, or other combustible materials to come in contact with cylinders, manifold, and connections. Oil and grease may react with explosive force while in contact with some gases, particularly oxygen and nitrous oxide.



WARNING

***ALWAYS** open cylinder, header, and manifold valves very slowly. When valves are opened rapidly, sudden pressurization will cause heat of recompression to occur. These temperatures and pressures can damage the manifold system and may cause injury to operator. **ALWAYS** open valves slowly.*



WARNING

DO NOT kink, twist, or bend pigtails into a radius smaller than 5 inches. If you do this, the pigtail might burst.



WARNING

ALWAYS secure cylinders with racks, straps, or chains. Unrestrained cylinders may fall over and damage or break off the cylinder valve.



WARNING

Electrically ground oxygen and fuel gas manifolds and cylinders. Static discharges and lightning may ignite materials in an oxygen atmosphere, creating fire or explosions.



WARNING

DO NOT apply heat to any part of the manifold system.



WARNING

DO NOT weld near piping. Excessive heat may cause certain gases to dissociate, creating explosive force.

SECTION 3: FEATURES AND SPECIFICATIONS

3.01 MACHINE FEATURES

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

1. Operating Features

- Makes straight-line cuts of any length.
- Makes circle cuts up to 96" 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" per minute (VCM-200/VCM-200HT) or 5" to 120" 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 workpiece. Be sure an unattended machine does not fall from an elevated work piece.

2. Performance Features

- Constant speed AC induction motor located on the side opposite the cutting torch runs cooler, so the drive speed is not adversely affected by temperature, as are electronically-controlled motors.
- Speed regulation operates well at low and 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.

3. Design Features

- Integral carrying handle, lightweight 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 counterweight is required.

SAFETY AND OPERATING INSTRUCTIONS

- 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.

3.02 MACHINE SPECIFICATIONS

Outline Dimensions	Outline dimensions are shown in Figure 1, below.
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)

NOTE

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

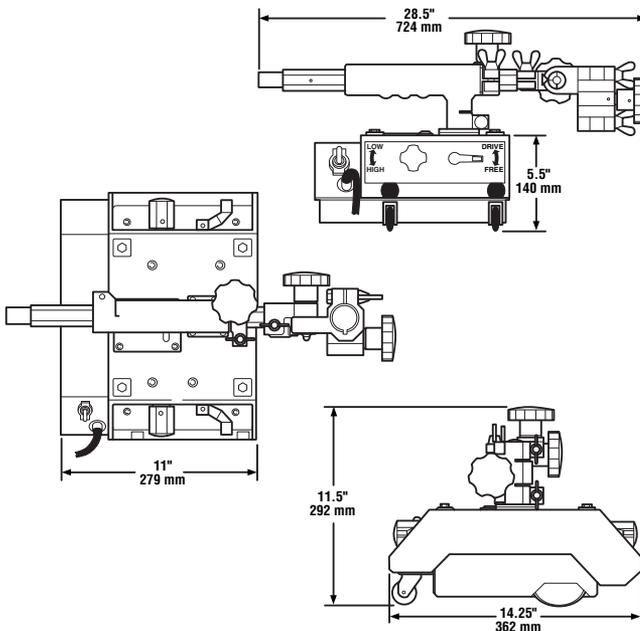


Figure 1: VCM-200/VCM-200HT/VCM-200HS Outline Dimensions

SECTION 4: MACHINE OPERATION

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

NOTE

*Other recommended operating instructions available at your distributor are:
0056-1625 - Safety & Operating Instructions for Compressed Gas Regulators;
0056-0136 - Safety & Operating Instructions for Cutting Torches.*

4.01 TORCH SETUP

A. Standard Single Torch Setup

Setup of the VCM-200 with standard torch mount and manifold block is shown in Figure 2.

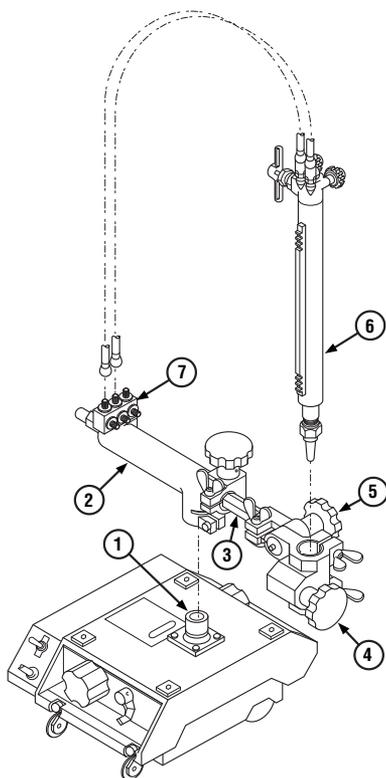


Figure 2:
Setup with Standard Torch Mount

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 the set screw. The rack handle assembly is free to rotate until the clamping bolt is tightened. Insert racking bar assembly (3) so that the rack properly engages the pinion gear in the rack handle assembly.

Connect the torch holder assembly (4) to the torch pivot knuckle (5) which fits over the round end of the racking bar assembly. Leave clamping screws, provided at each of these points, slightly loose for adjustment. Then, 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.

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.

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.

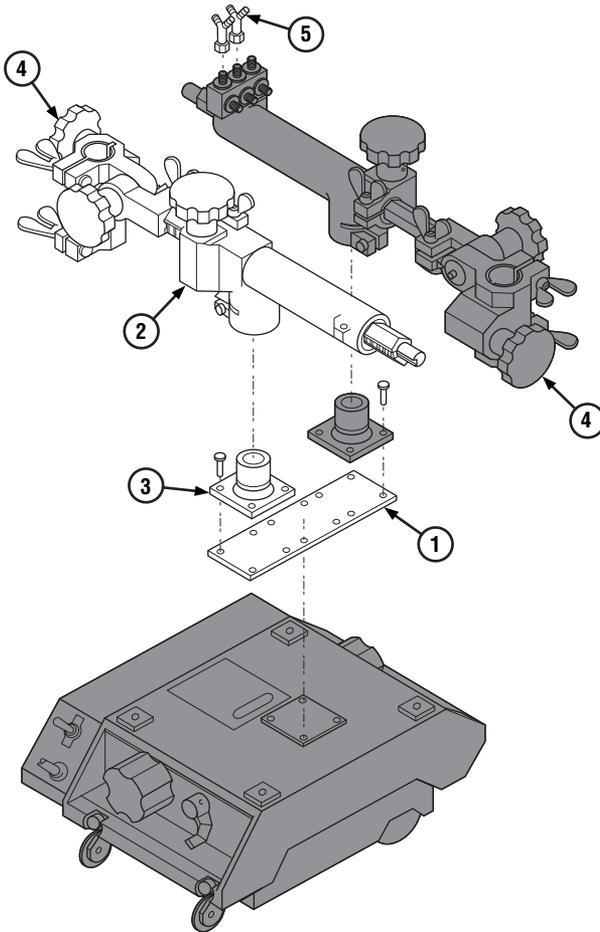


Figure 3: Setup with Dual Torch Mount

B. Optional Dual Torch Setup

Set up the optional dual torch mount assembly, Part No. 0252-0136, as shown in Figure 3. 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 4.01. 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.

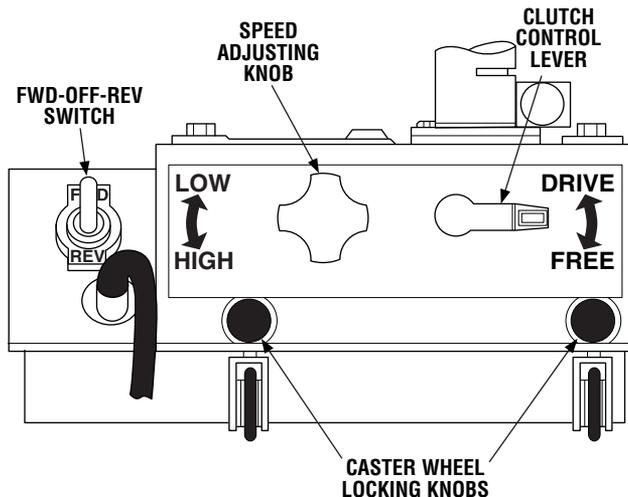


Figure 4: VCM-200/VCM-200HT/VCM-200HS Operating Controls

4.02 CUTTING OPERATIONS

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.

A. Directional Control

A unique feature of the VCM-200 is the 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.

B. 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 on Page 12.

NOTE

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.

C. Clutch Operation

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

SAFETY AND OPERATING INSTRUCTIONS

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

D. 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 $\pm 90^\circ$ 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.

E. Straight Line Cutting



WARNING

The VCM-200 is not designed to detect the end of its track or workpiece. Be sure an unattended machine does not fall from an elevated workpiece.

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.

Track Accessory Information

Part No.	Description
0212-0018	12-foot track section for line cutting
0212-0019	9-foot track section for line cutting
0212-0005	6-foot track section for line cutting

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.

NOTE

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.

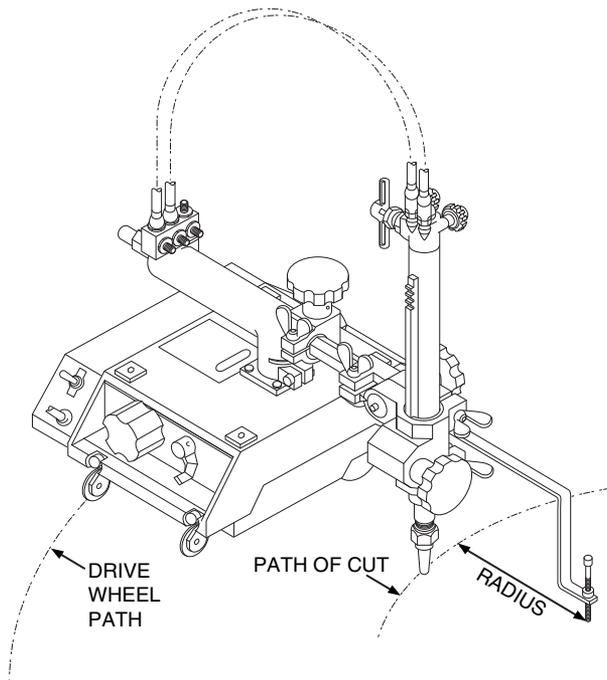


Figure 5: Circle Cutting Setup

F. Circle Cutting

The radius rod and center point make it possible for the VCM-200/VCM-200HS to cut circles from 4" to 96" in diameter. Remove the two bolts located over the drive wheels in the outer case. Position the radius rod assembly on the cutting machine, re-insert 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.

NOTE

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 drive 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

SAFETY AND OPERATING INSTRUCTIONS

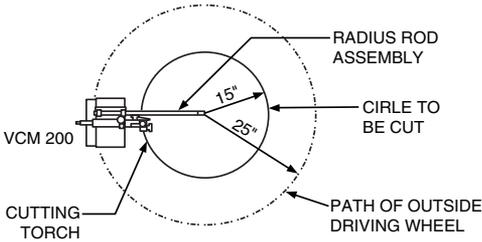
simple method of determining the proper speed setting for circle cuts, regardless of whether the torch is positioned inside or outside the tractor path.

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

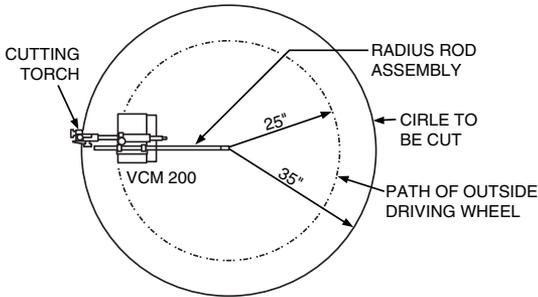
$$\text{Speed} = \text{CS} (A/B)$$

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.



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

SECTION 5: MACHINE MAINTENANCE

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.

5.01 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 on Page 15. 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.

NOTE

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

SAFETY AND OPERATING INSTRUCTIONS

selected torch position. Also, check the torch pivot knuckle to see that it's 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.

5.02 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 (See Page 17, "Inner Case Removal"). 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 cloth 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.

5.03 TROUBLESHOOTING

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

Problem	Possible Cause	Corrective Action
Motor will not run	<ol style="list-style-type: none"> 1. No power to machine. 2. Wire connection is loose. 3. Motor thermal protector is burned out. 4. Switch is bad. 5. Motor has open winding. 6. Faulty capacitor. 	<ol style="list-style-type: none"> 1. Check power source and cord; replace cord if required. 2. Check all wire connections. 3. Replace motor. 4. Replace switch. 5. Replace motor. 6. Replace capacitor.
Motor runs, but wheels do not turn	<ol style="list-style-type: none"> 1. Disk Drive slipping because output disk shaft is not sliding freely in worm shaft. 2. Gears worn. 	<ol style="list-style-type: none"> 1. 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. Check gear train and replace worn parts.
Motor runs, but will not reverse	<ol style="list-style-type: none"> 1. Faulty capacitor. 	<ol style="list-style-type: none"> 1. Replace capacitor.
Clutch does not disengage	<ol style="list-style-type: none"> 1. Clutch out of adjustment. 2. Throw-out assembly broken. 3. Grooved pin in clutch yoke broken or missing. 4. Tabs on yoke not positioned in groove on clutch dog. 5. Control knobs not in proper position on shaft. 	<ol style="list-style-type: none"> 1. Adjust Clutch. See Page 16 2. Replace part. 3. Replace pin. 4. Reassemble properly. 5. Readjust after checking all of the above.
Clutch does not engage	<ol style="list-style-type: none"> 1. Broken clutch spring. 2. Worn clutch gears. 	<ol style="list-style-type: none"> 1. Replace spring. 2. Replace gears.
Machine travel speed not constant	<ol style="list-style-type: none"> 1. Disks Slipping. 2. End play of speed knobs too loose. 	<ol style="list-style-type: none"> 1. Clean Disks. 2. Loosen set screws securing speed knobs. Then snub-up knobs against spring washer and retighten set screws.

*See Wiring Diagrams, Figure 8, Figure 11, and Figure 19.

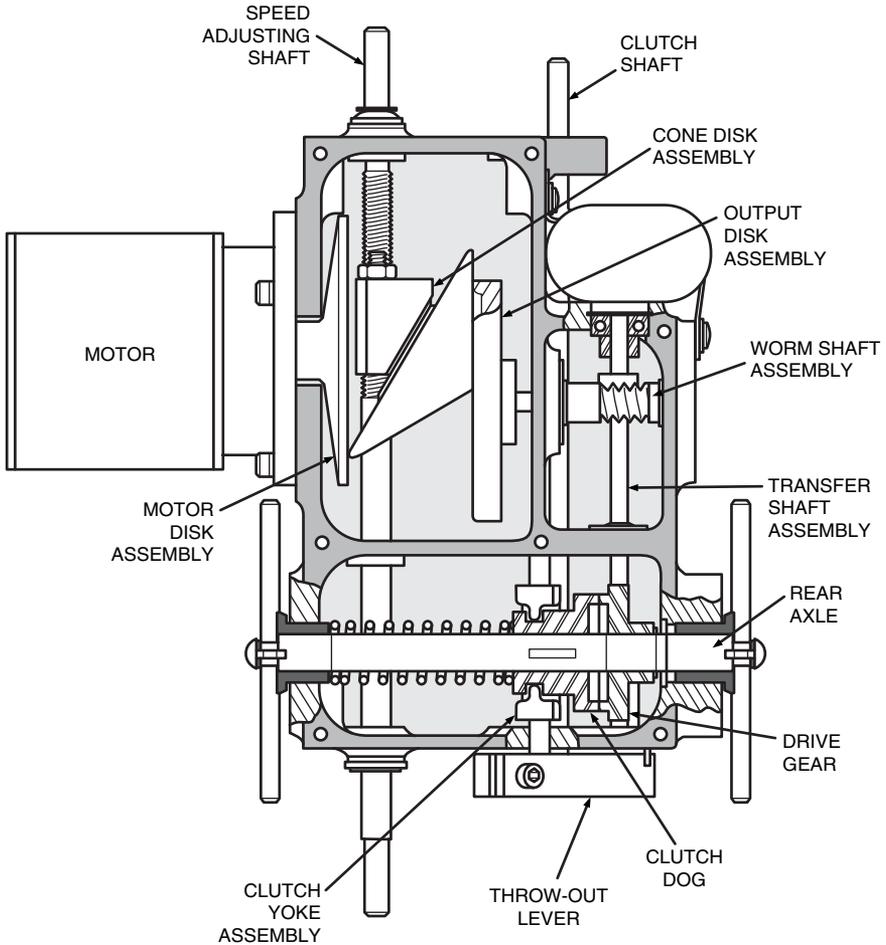


Figure 6: VCM-200/VCM-200HT/VCM-200HS Internal Assemblies

5.04 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 ¼-inch movement for ideal freeplay. This is necessary to assure that the clutch will fully engage and have enough travel for disengagement.

Adjust the clutch freeplay 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. Freeplay will automatically be obtained; this allows approximately ¼-inch movement at the extreme end of the throw-out lever.

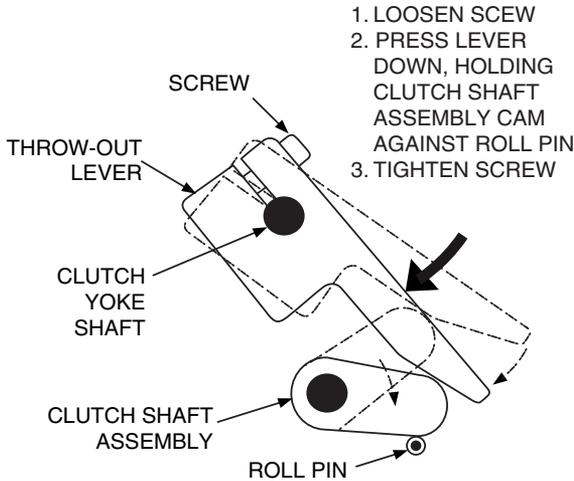


Figure 7: Drive Clutch Adjustment

5.05 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.

A. 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.

B. Rear Axle Removal

1. Remove the inner case from the outer case. (See Page 17)
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.

C. Transfer Shaft Removal

1. Remove the inner case from the outer case. (See Page 17)
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.

NOTE

The center bearing is captured on the transfer shaft and is not available separately.

D. Cone Disk, Output Disk and Worm Shaft Removal

1. Remove the inner case from the outer case. (See Page 17)
2. Remove the retaining rings and washers from both ends of the speed adjusting shaft.

SAFETY AND OPERATING INSTRUCTIONS

3. Loosen the cone block backlash adjusting cap screw using a 7/64" 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 aids 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:
 - 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 allows 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).

E. 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 ground wire (See Figure 8 or 9 for VCM-200) (see Figure 10 or 11 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 (12in-lb).

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F. 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 8)
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.

G. 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 downtime and assures that the drive disk runs accurately.

1. Remove the inner case from the outer case. (See Page 17)
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.

NOTE

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.

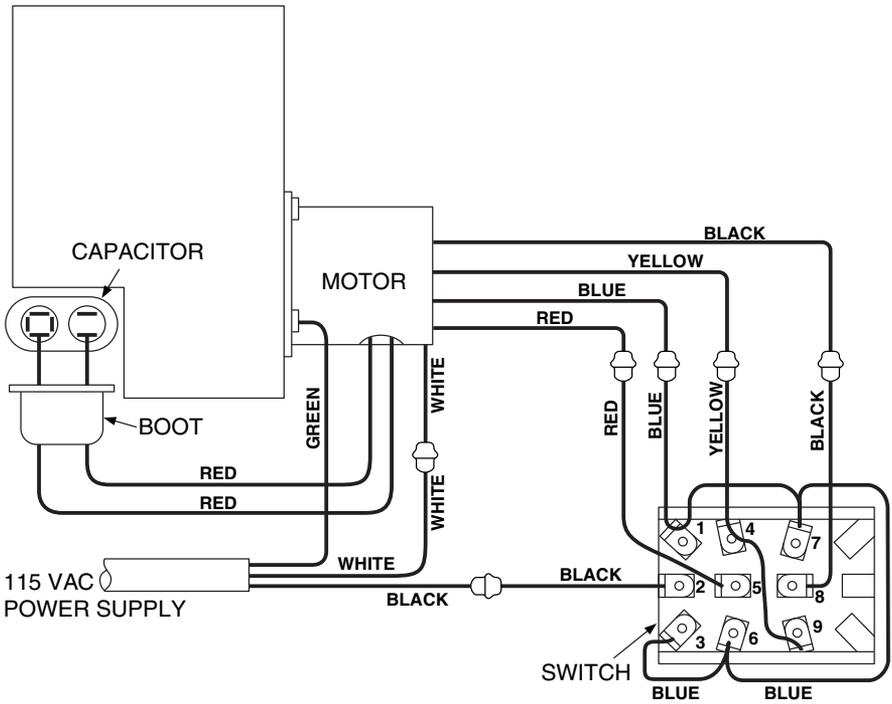


Figure 8: Pictorial Wiring Diagram, VCM-200

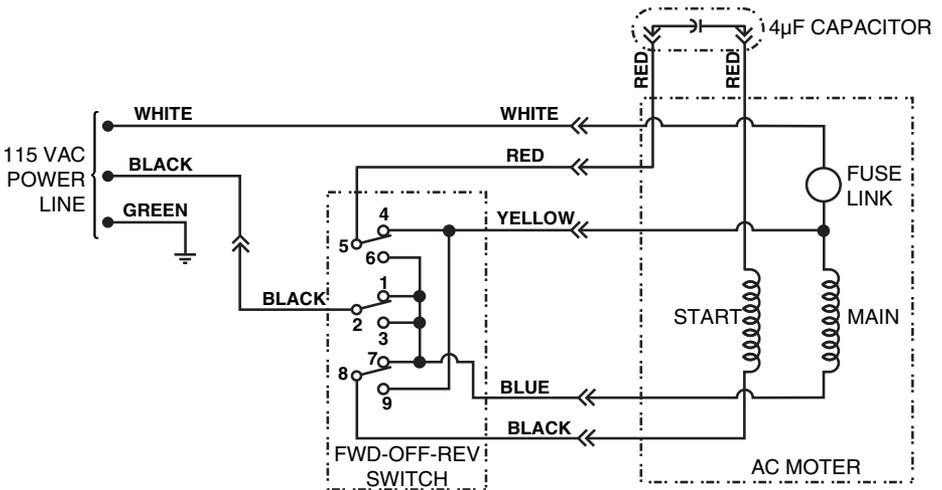


Figure 9: Schematic Wiring Diagram, VCM-200

SAFETY AND OPERATING INSTRUCTIONS

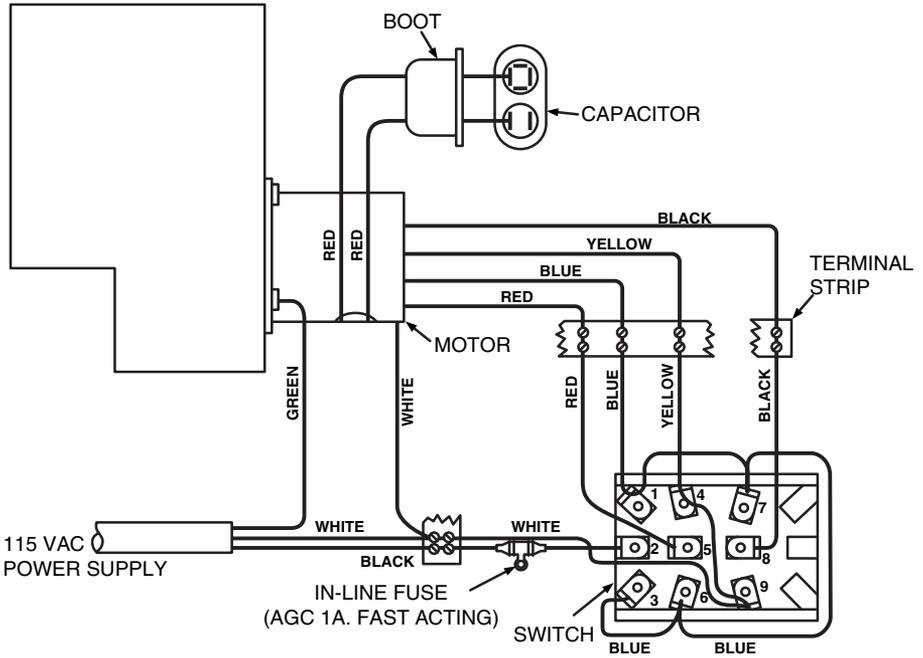


Figure 10: Pictorial Wiring Diagram, VCM-200HT (Hi-Temp)

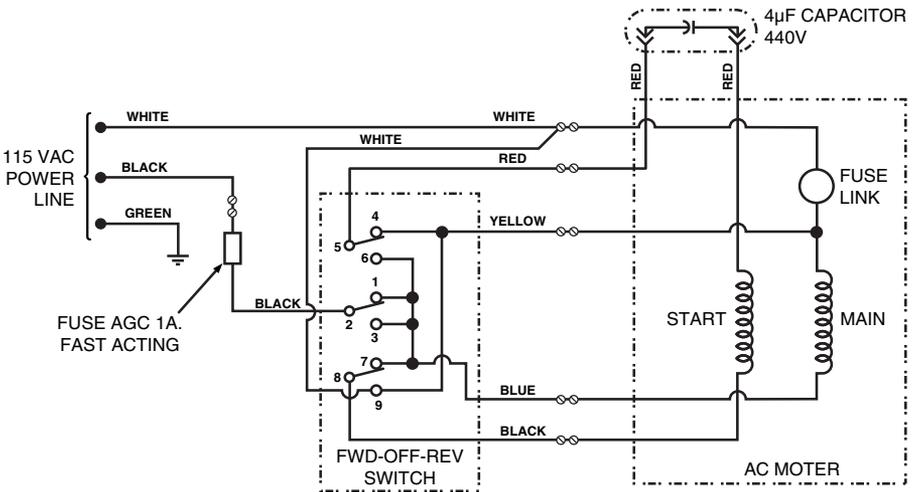


Figure 11: Schematic Wiring Diagram, VCM-200HT (Hi-Temp)

SECTION 6: REPLACEMENT PARTS

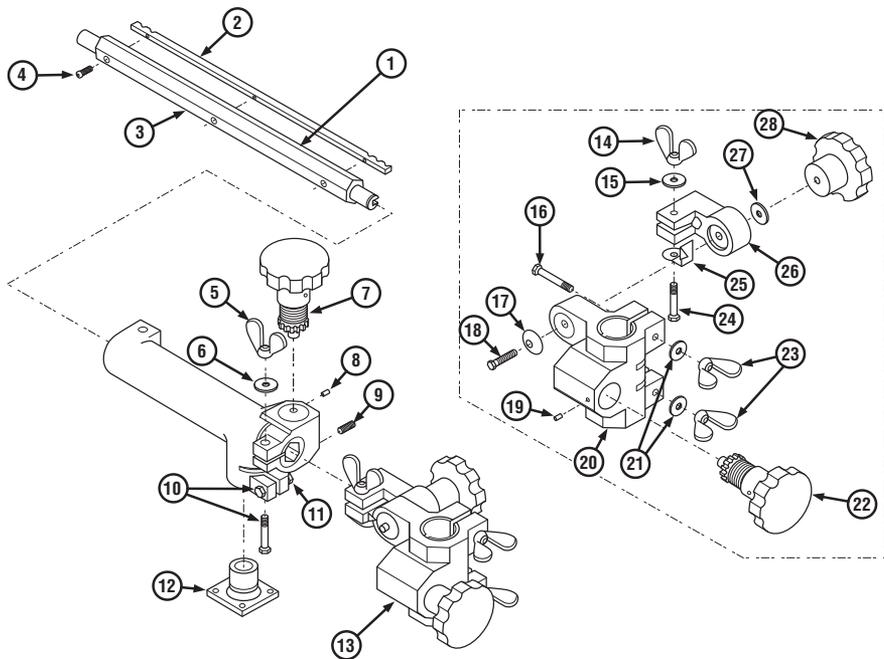


Figure 12: VCM-200 Series Rigging Assembly. Part No. 0252-0134

Item No.	Part No.	Description
1	0252-0028	Racking Bar Assembly
2	0253-0081	Gear Rack
3	0251-0145	Hex Rod
4	1400-0163	Screw (3)
5	1409-0103	Wing Nut
6	1406-0171	Washer
7	0252-0027	Rack Handle Pinion Assembly
8	1401-0070	Set Screw
9	1401-0008	Set Screw
10	1400-0161	Bolt (2)
11	1409-0001	Nut
12	0251-0020	Handle Post
13	0252-0135	Torch Holder and Pivot Assembly
14	1409-0100	Wing Nut

Item No.	Part No.	Description
15	1406-0171	Washer
16	1400-0160	Bolt (2)
17	0254-0036	Angle Scale
18	1400-0166	Hex Head Bolt
19	1401-0070	Set Screw
20	0251-0042	Torch Holder
21	1406-0171	Washer (2)
22	0252-0037	Pinion Assembly
23	1409-0103	Wing Nut
24	1400-0161	Bolt
25	0251-0038	Angle Pointer
26	0251-0037	Torch Pivot Knuckle
27	1406-0080	Washer
28	0251-0051	Knob

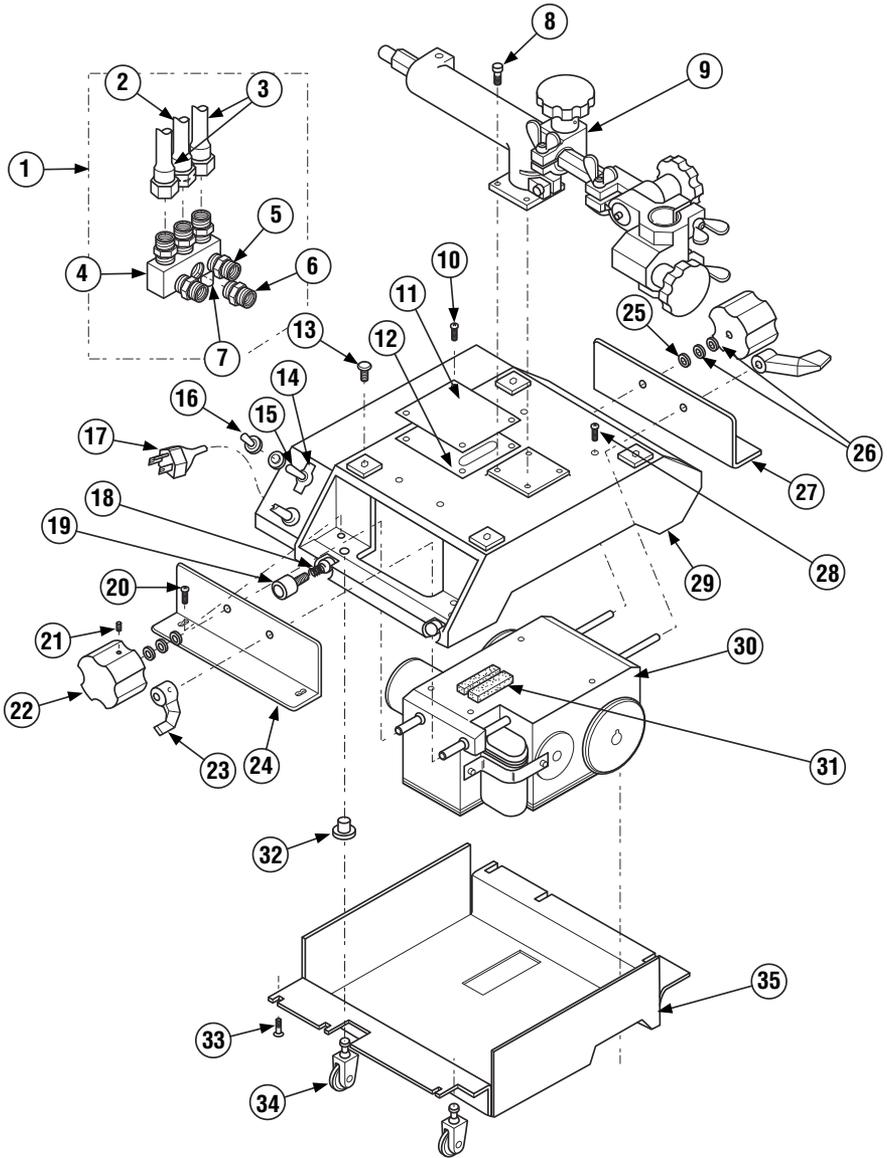


Figure 13: VCM-200 / VCM-200HT* Series Main Assembly
(*For continuous use at up to 300°F)

SAFETY AND OPERATING INSTRUCTIONS

Item No.	Part No.	Description
1	0252-0081	Manifold Assembly
2	1412-0107	Hose-Fuel
3	1412-0106	Hose-Oxy (2)
4	0251-0091	Manifold Block
5	0950-0068	Oxygen Adapter (4)
6	0960-0029	Fuel Adapter (2)
7	0253-0041	Manifold Shaft
8	1400-0196	Screw (4)
9	0252-0134	Rigging Assembly
10	1400-0191	Screw (4)
11	0250-0086	Label Cover (only on VCM-200HT)
12	0254-0041	Label VCM-200
	0251-0042	Label VCM-200HS
	0254-0045	Label VCM-200HT
13	1400-0195	Screw (4)
14	0254-0020	Switch Legend
15	0252-0057	Switch VCM-200
	0252-0140	Switch VCM-200HT
16	1417-0051	Dust Protection Assembly
17	0252-0058	Power Cord VCM-200
	0252-0068	Power Cord VCM-200HT
18	0761-0132	Spring
19	0251-0167	Caster Locking Knob
20	1400-0191	Screw (4)
21	1401-0071	Set Screw (8)
22	0251-0041	Speed Adjusting Knob (2)
23	0251-0045	Clutch Lever (2)
24	0254-0015	End Plate (front)
25	1406-0153	Washer (2)
26	1406-0172	Curved Washer (4)
27	0254-0016	End Plate (rear)
28	1400-0194	Screw (4)
29	0251-0170	Outer Case VCM-200
	0251-0174	Outer Case VCM-200HT
30	0252-0130	Inner Case Assembly (VCM-200)
	0252-0131	Inner Case Assembly (VCM-200HS)
	0252-0141	Inner Case Assembly (VCM-200HT)
31	1419-0000	Foam Seal (2) VCM-200
	1419-0001	Foam Seal (2) VCM-200HT
32	0251-0138	Caster Bushing (2)
33	1400-0190	Screw (6)
34	0252-0124	Caster (2)
35	0250-0067	Outer Case Cover

NOTE

Item Numbers 29, 17, 15, 14 and 32 can be purchased as the Outer Case Assembly, Part No. 0252-0116.

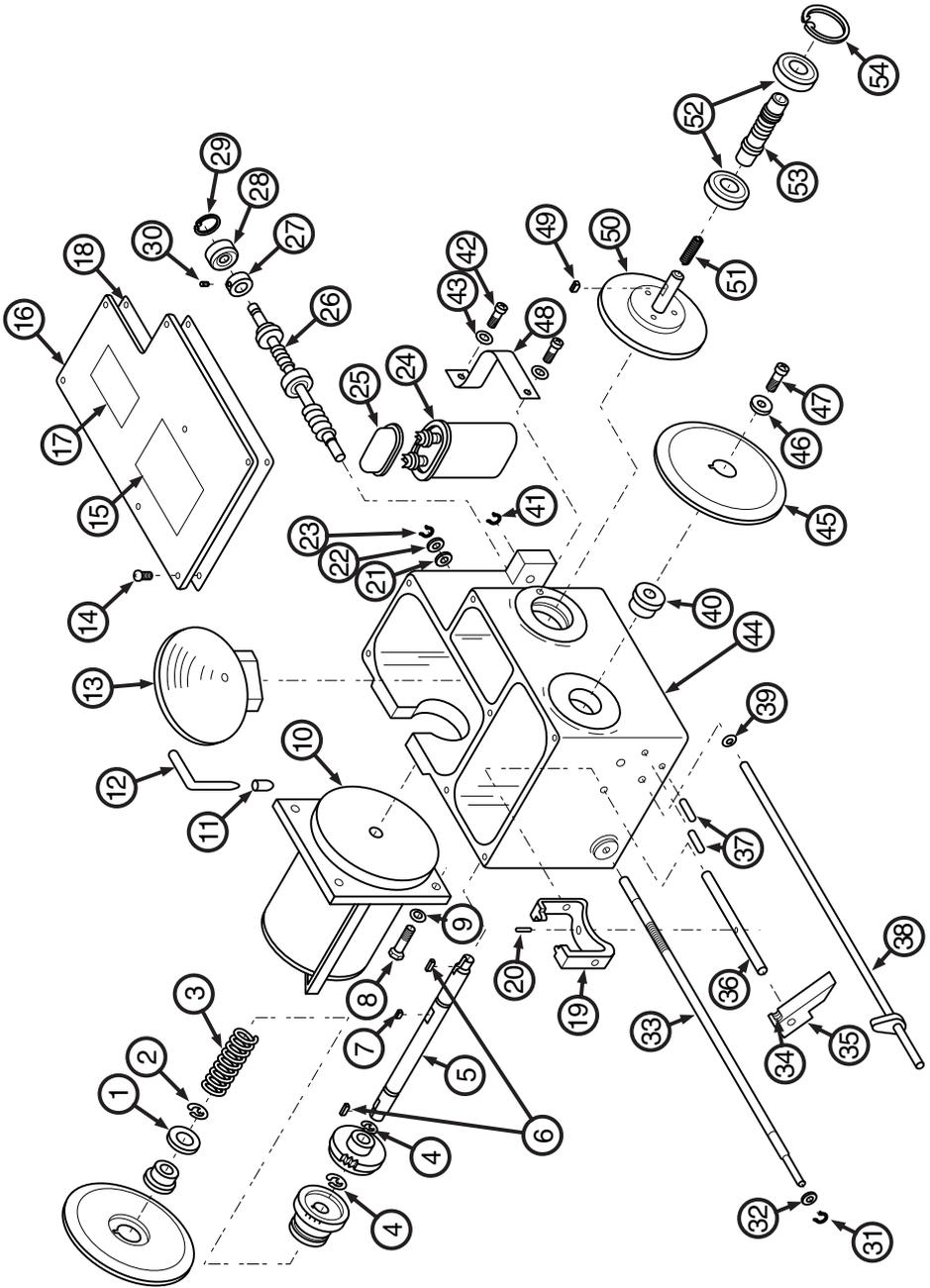
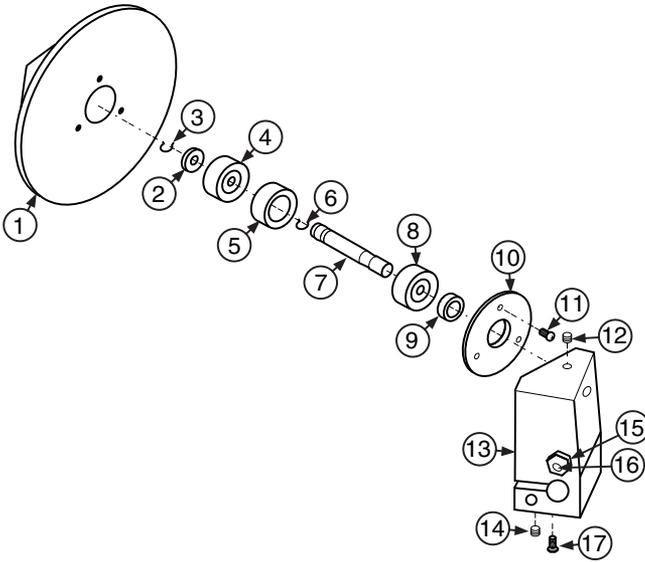


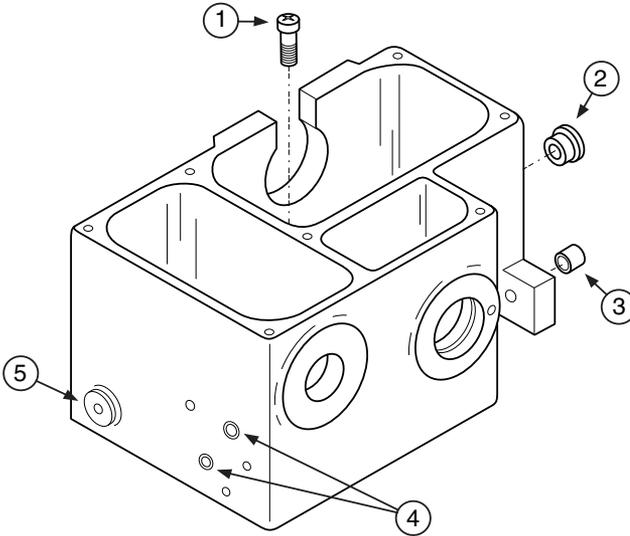
Figure 14: Inner Case Assembly
 VCM-200, Part No. 0252-0130
 VCM-200HS, Part No. 0252-0131
 VCM-200HT, Part No. 0252-0141

SAFETY AND OPERATING INSTRUCTIONS

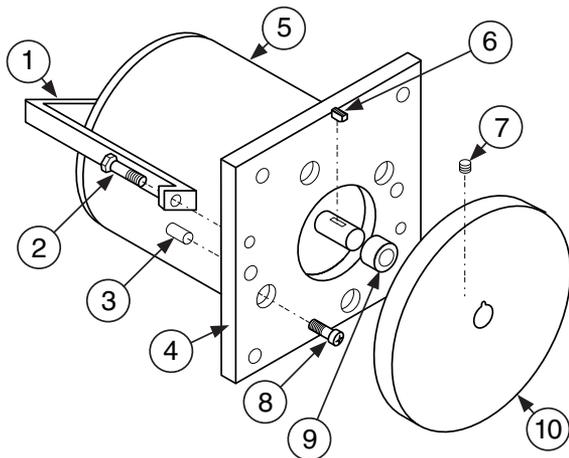
Item No.	Part No.	Description
1	1406-0156	Spring Washer
2	1406-0170	Retaining Ring
3	0320-0148	Spring
4	1406-0170	Retaining Ring
5	0253-0101	Rear Axle
6	1404-0103	Key (2)
7	1404-0060	Woodruff Key
8	1400-0200	Screw (4)
9	1406-0117	Washer (4)
10	0252-0132	Motor/Disk Assembly VCM-200 / VCM-200HS - SEE DETAIL C
	0252-0142	Motor/Disk Assembly VCM-200HT - SEE DETAIL C
11	1417-0040	Cap Pointer
12	0251-0120	Speed Indicator
13	0252-0129	Cone Disk Assembly
14	1400-0190	Screw (7)
15	0254-0010	Disk Warning Label
16	0250-0060	Inner Case Cover
17	0254-0009	Power Warning Label
18	0250-0061	Gasket
19	0252-0073	Clutch Yoke
20	1404-0105	Pin
21	1406-0153	Washer
22	1406-0172	
23	1406-0143	Retaining Ring
24	0255-0040	Capacitor (VCM-200 / VCM-200HS Only)
25	0255-0050	Rubber Boot (VCM-200 / VCM-200HS Only)
26	0252-0060	Transfer Shaft Assembly VCM-200 / VCM-200HT
	0252-0065	Transfer Shaft Assembly VCM-200HS
27	0251-0159	Shaft Collar
28	1416-0031	Ball Bearing
29	1406-0119	Retaining Ring
30	1401-0069	Set Screw (2)
31	1406-0144	Retaining Ring
32	1406-0154	Washer
33	0253-0026	Speed Adjusting Shaft
34	1400-0194	Screw
35	0251-0046	Throw-Out Lever
36	0253-0006	Yoke Shaft
37	1404-0096	Pin (2)
38	0252-0133	Clutch Shaft Assembly
39	1406-0172	Washer
40	1416-0053	Bushing (2)
41	1406-0145	Retaining Ring
42	1400-0190	Screw (2) (VCM-200 / VCM-200HS Only)
43	1408-0050	Washer (2) (VCM-200 / VCM-200HS Only)
44	0252-0122	Inner Case - SEE DETAIL B
45	0251-0160	Drive Wheel (2)
46	1406-0152	Washer (2)
47	1400-0207	Screw (2)
48	0251-0060	Capacitor Strap (VCM-200 / VCM-200HS Only)
49	1404-0100	Woodruff Key
50	0251-0168	Output Disk Assembly
51	0320-0121	Spring
52	1416-0032	Bearing (2)
53	0252-0053	Worm Shaft Assembly
54	1406-0118	Retaining Ring



Detail A: Cone Disk Assembly, Part No. 0252-0129



Detail B: Inner Case, Part No. 0252-0122



Detail C: Motor Disk Assembly, Part No. 0252-0132 / 0252-0142 VCM-200HT

DETAIL A

Item No.	Part No.	Description
1	0251-0162	Cone Disk
2	1406-0121	Spring Washer
3	1406-0141	Retaining Ring
4	1416-0031	Ball Bearing
5	0251-0163	Spacer
6	1406-0141	Retaining Ring
7	0253-0102	Cone Shaft
8	1416-0031	Ball Bearing
9	0251-0102	Spacer

Item No.	Part No.	Description
10	0250-0066	Cover
11	1400-0193	Screw (3)
12	1401-0071	Set Screw
13	0251-0169	Cone Block
14	1401-0072	Set Screw
15	1409-0056	Hex Nut
16	1401-0008	Set Screw
17	1400-0206	Cap Screw

DETAIL B

Item No.	Part No.	Description
1	1400-0192	Screw
2	1416-0041	Bushing
3	1416-0040	Bushing
4		
5	1416-0042	Bushing

DETAIL C

Item No.	Part No.	Description
1	0250-0085	Motor Strap
2	1400-0192	Screw (2)
3	1404-0104	Dowel Pin (2)
4	0251-0172	Flange
5	0252-0054	Motor
	0252-0064	Motor VCM-200HT

Item No.	Part No.	Description
6	1404-0100	Woodruff Key
7	1401-0018	Set Screw (Optional)
8	1400-0192	Screw (4)
9	0251-0158	Sleeve
10	0251-0112	Motor Disk

SAFETY AND OPERATING INSTRUCTIONS

COMMON HARDWARE SPECIFICATIONS

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-2Ax 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., 1/16Thick
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, STO 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

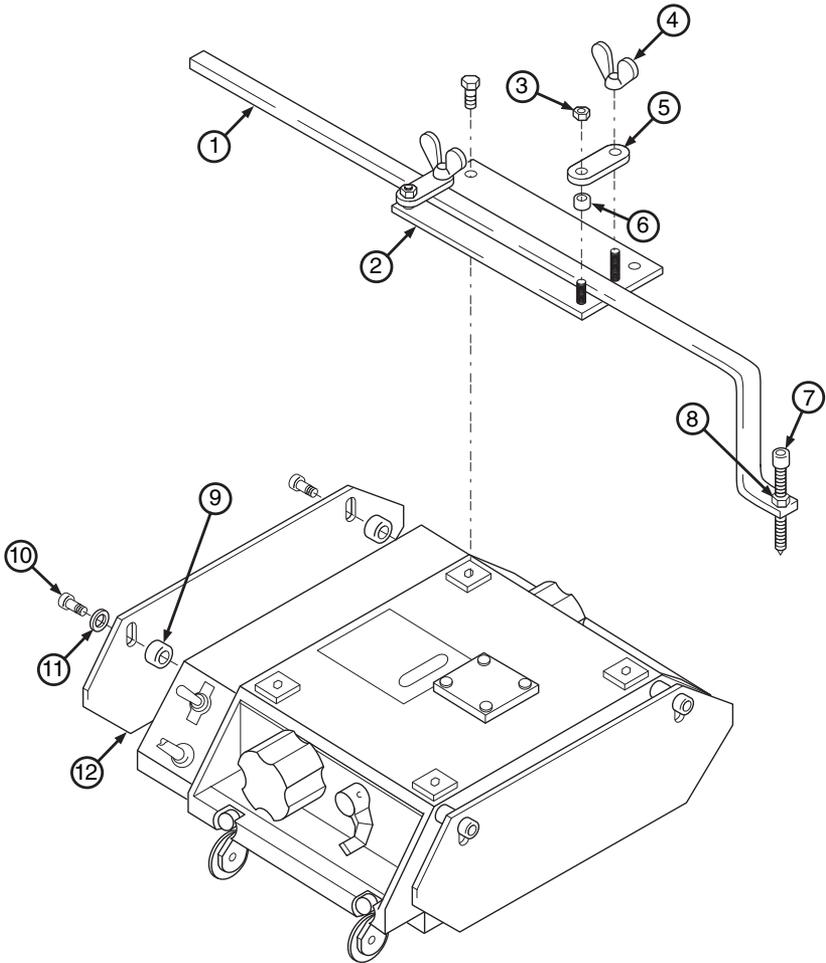


Figure 15:
 Radius Rod Assembly (top), Part No. 0252-0040
 Heat Shield (bottom), Part No. 0252-0103

Item No.	Part No.	Description
1	0253-0039	Radius Rod
2	0251-0021	Mounting Plate
3	1409-0001	Nut (2)
4	1409-0100	Wing Nut (2)
5	0251-0022	Link (2)
6	0251-0103	Spacer (2)

Item No.	Part No.	Description
7	0251-0151	Center Point
8	1409-0042	Nut
9	0251-0103	Spacer
10	1400-0165	Screw (2)
11	1406-0005	Washer (2)
12	0250-0070	Heat Shield

SAFETY AND OPERATING INSTRUCTIONS

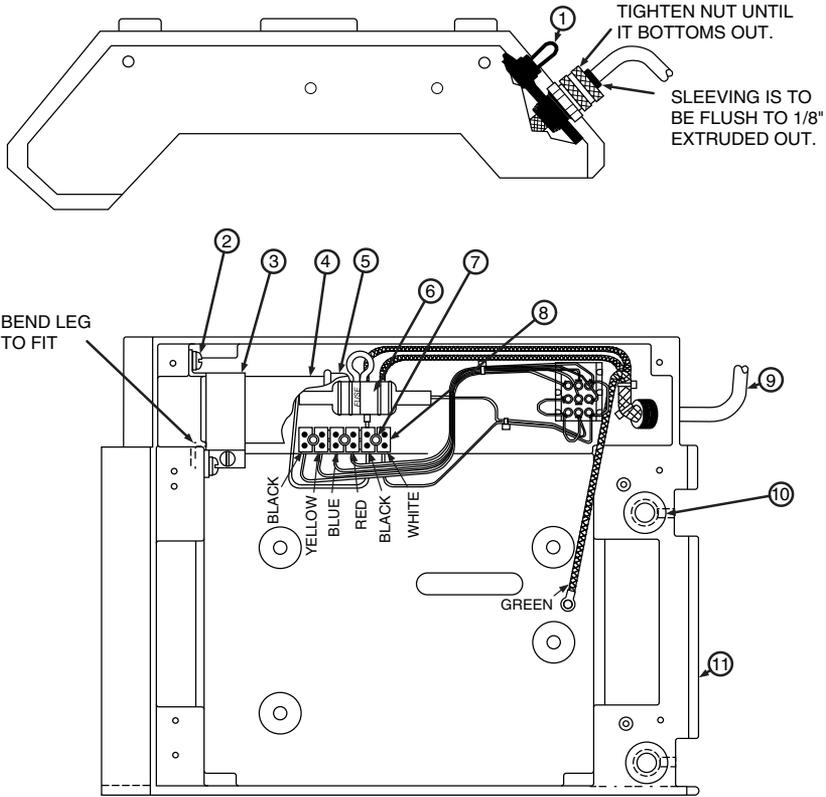


Figure 16: VCM-200HT Outer Case Assembly, Part No. 0252-0116

Item No.	Part No.	Description
1	1417-0051	Dust Boot
	0254-0020	Switch Legend
	0252-0140	Switch Assembly*
2	1400-0190	Screw (2)
	1408-0050	Washer (2)
3	0255-0055	Bracket
4	0255-0041	Capacitor, Extra Heavy Duty 440V, requires horizontal mount (as shown)
	0255-0040	Capacitor, Original 370V, vertical mount
5	0255-0050	Boot
6	0255-0044	Fuse (AGC 1A Fast Acting)
7	1400-0211	Screw
8	0255-0042	Terminal Strip
9	0252-0068	Cord Assembly
10	0251-0138	Bushing (2)
11	0251-0174	Outer Case

* Switch Assembly 0252-0140 includes wiring harness, fuse holder and fuse.

NOTE

To prevent a short circuit, make sure that all wire strands are inserted and tightly clamped in the terminal strip.

SECTION 7: EXPORT MODEL INFORMATION

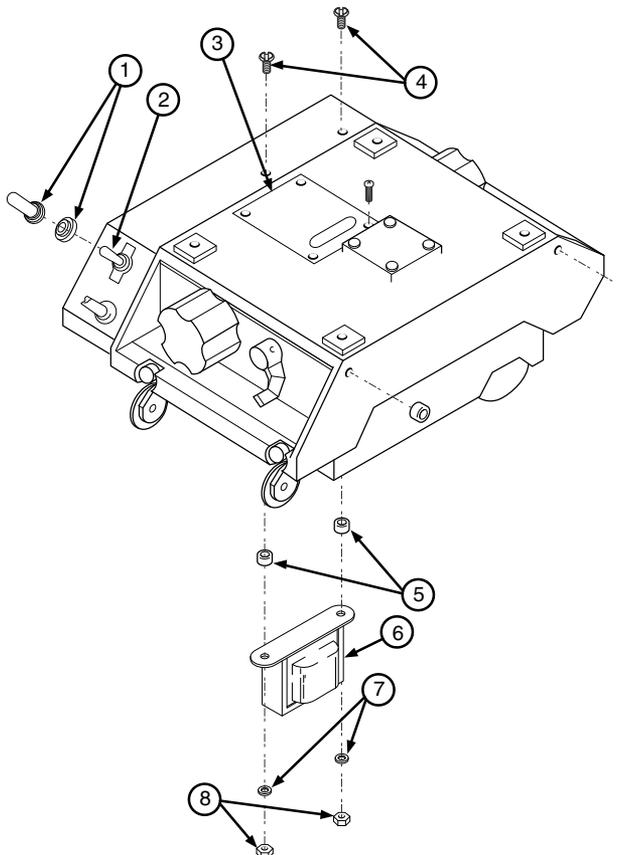


Figure 17: VCM-200E / VCM-200HSE Assembly (Export Only)

Item No.	Part No.	Description
1	1417-0051	Dust Boot and Nut
2	0252-0066	Switch
3	0254-0043	Speed Label, VCM-200E
	0254-0044	Speed Label, VCM-200HSE
4	1400-0151	Screw

Item No.	Part No.	Description
5	0208-0254	Spacer
6	0204-0156	Transformer
7	1406-0088	Lockwasher
8	1409-0072	Nut

NOTE

VCM-200 and VCM-200E Conversion Kit, Part No. 0252-0139 includes all parts listed above, except Item No. 2. Also includes instructions, transformer mounting hole location template and wiring diagram (switch and transformer complete with wiring connections).

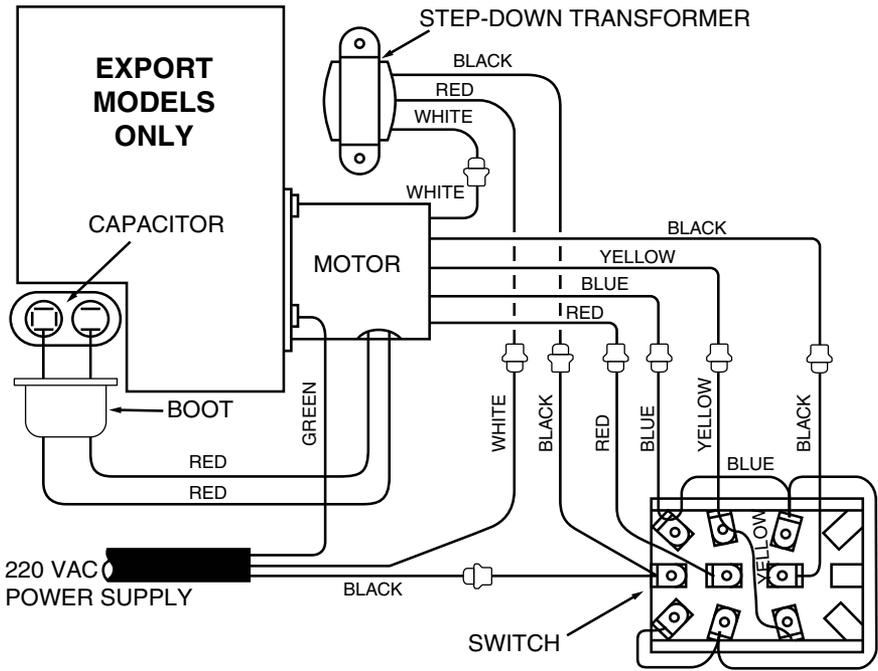


Figure 18: Pictorial Wiring Diagram, VCM-200E

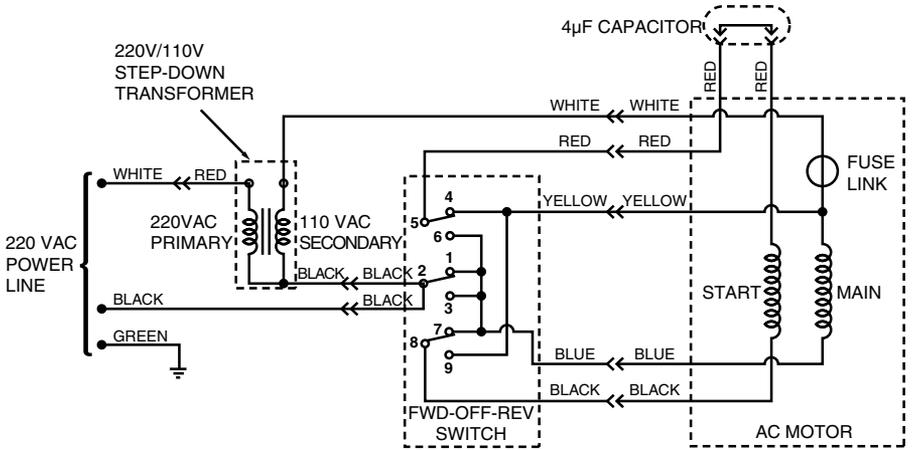


Figure 19: Schematic Wiring Diagram, VCM-200E / VCM-200HSE

SECTION 8: STATEMENT OF WARRANTY

LIMITED WARRANTY: THERMADYNE® warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the THERMADYNE products as stated below, THERMADYNE shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with THERMADYNE's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at THERMADYNE's sole option, of any components or parts of the product determined by THERMADYNE to be defective.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: THERMADYNE shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchased or replacement goods, or claims of customers of distributor (hereinafter the "Purchaser") for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of THERMADYNE with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by THERMADYNE whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based.

THIS WARRANTY BECOMES INVALID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY THERMADYNE PRODUCT.

THIS WARRANTY IS INVALID IF THE PRODUCT IS SOLD BY NON-AUTHORIZED PERSONS.

This warranty is effective for the time stated in the Warranty Schedule beginning on the date that the authorized distributor delivers the products to the Purchaser.

Warranty repairs or replacement claims under this limited warranty must be submitted by an authorized THERMADYNE repair facility within thirty (30) days of the repair. No transportation costs of any kind will be paid under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the Purchaser. All returned goods shall be at the Purchaser's risk and expense. This warranty supersedes all previous THERMADYNE warranties.

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Oakville, Ontario, Canada
 Canada Customer Care
 Pte: (1) 905-827-4515
 Fax: (1) 800-588-1714

International Customer Care
 Pte: (1) 905-827-9777
 Fax: (1) 905-827-9797

EUROPE

Chorley, United Kingdom
 Customer Care
 Pte: (44) 1527-291755
 Fax: (44) 1527-224800

Milan, Italy
 International Customer Care
 Pte: (39) 0236546801
 Fax: (39) 0236546840

ASIA/PACIFIC

Cikarang, Indonesia
 Customer Care
 Pte: 62 21+ 8983-0011 / 0012
 Fax: 62 21+ 893-6067

Osaka, Japan
 Sales Office
 Pte: 816-4809-8411
 Fax: 816-4809-8412

Melbourne, Australia
 Australia Customer Care
 Pte: 1300-654-674
 Fax: 62 613+ 9474-7391

International
 Pte: 613+ 9474-7508
 Fax: 613+ 9474-7488

Rawang, Malaysia
 Customer Care
 Pte: 603+ 6092-2988
 Fax: 603+ 6092-1085

Shanghai, China
 Sales Office
 Pte: 86-21-64072626
 Fax: 86-21-64483032

Singapore
 Sales Office
 Pte: 65+ 6532-8066
 Fax: 65+ 6763-5812