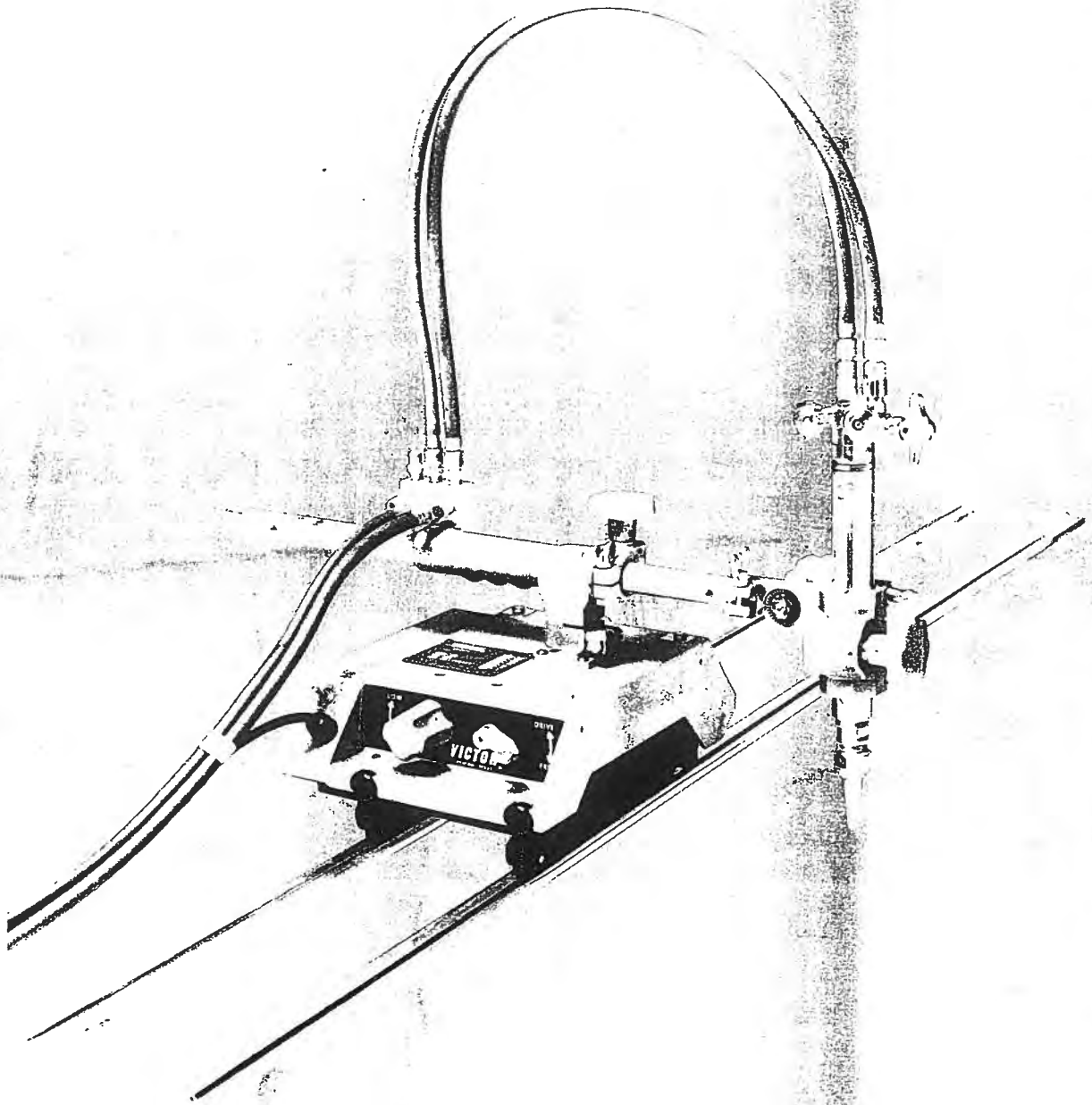


**VICTOR®**

WELDING & CUTTING  
APPARATUS

**MODEL VCM-100 PORTABLE  
FLAME CUTTING MACHINE**  
OPERATING & INSTRUCTION MANUAL/PARTS LIST



The all new VCM-100 Portable Flame Cutting Machine has 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 new cone-disk drive has an automatic wear adjusting mechanism that prolongs the life of the drive. Design simplicity makes the VCM-100 extremely easy to service. Downtime and repair costs are reduced to a minimum.

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# INTRODUCTION

All Victor VCM-100 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 any additional information is required, contact your Authorized Victor Distributor.

**Section 1, General Information**, gives descriptive information on the VCM-100. 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-100 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 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-100.

**Section 3, Machine Maintenance**, details inspections to be performed, troubleshooting and corrective maintenance procedures, and a description of the machine components. The exploded views of the VCM-100 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-100 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:

### NOTE

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.

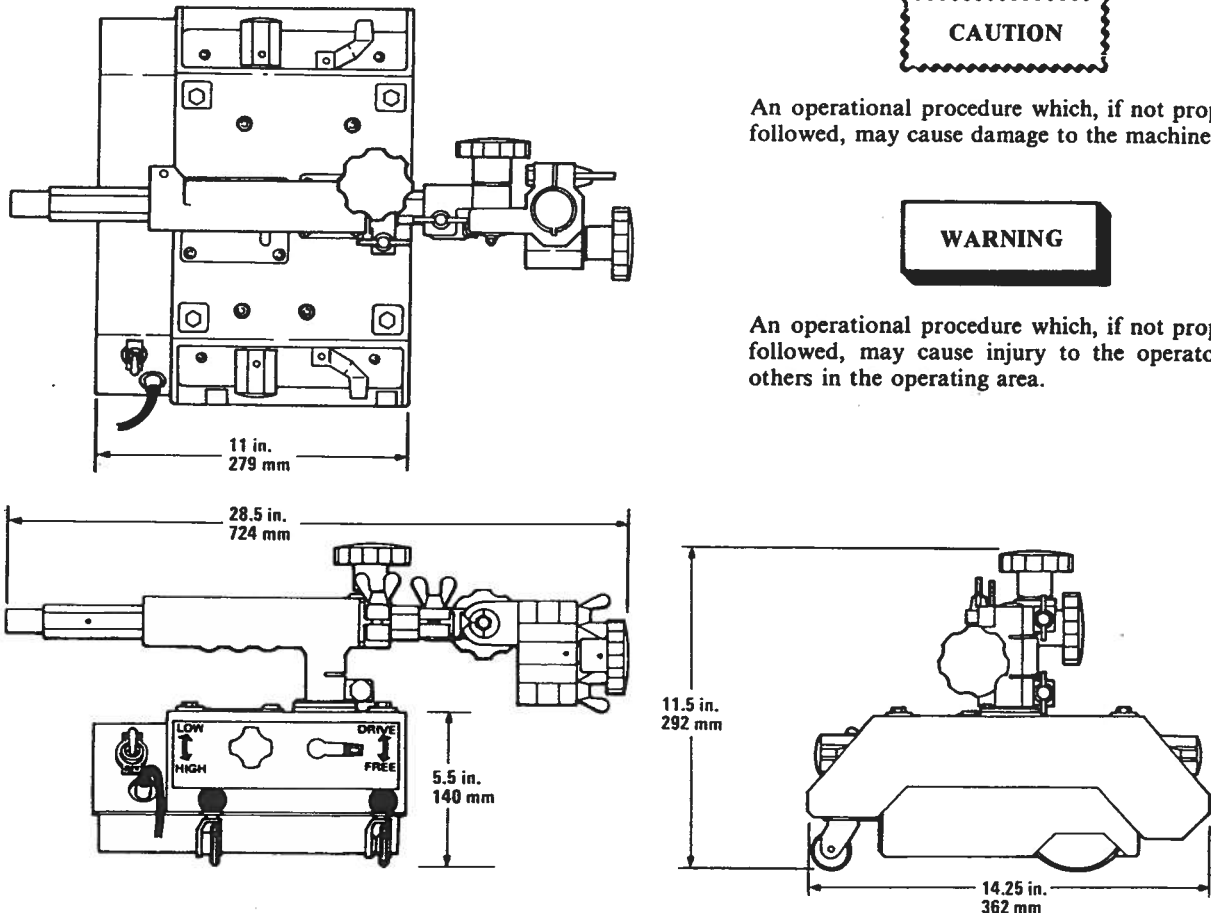


Figure 1-1. VCM-100 Outline Dimensions

## SECTION 1

### GENERAL INFORMATION

#### 1-1. MACHINE DESCRIPTION.

The VCM-100 is a tough, ruggedly constructed cutting machine, yet compact and light enough that it may be taken to the work, 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-100 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-100 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-100 operating track to any length desired.

#### 1-2. MACHINE FEATURES.

The VCM-100 cutting machine offers the following operating, 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.
- 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.

##### 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, like 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 counterweight 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.

##### CAPACITIES:

Cutting Length ..... Increments of 72" (1829 mm)  
Circle Diameter ..... 4" to 96" (102 to 2438 mm)  
Speed Range ..... 1 to 60 ipm (25 to 1524 mmpm)

**POWER REQUIREMENTS:** 115 VAC, 60 Hz, single phase  
E Models; 220 VAC, 50/60 Hz, single phase

##### WEIGHTS:

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

## 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.

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

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

Set-up of the VCM-100 with standard torch mount and manifold block is shown in Figure 2-1. The single torch mount post (1) is secured to the outer case mounting surface with four allen-head cap screws. The rack handle assembly (2) is slipped over the torch mount post and secured with its set-screw.

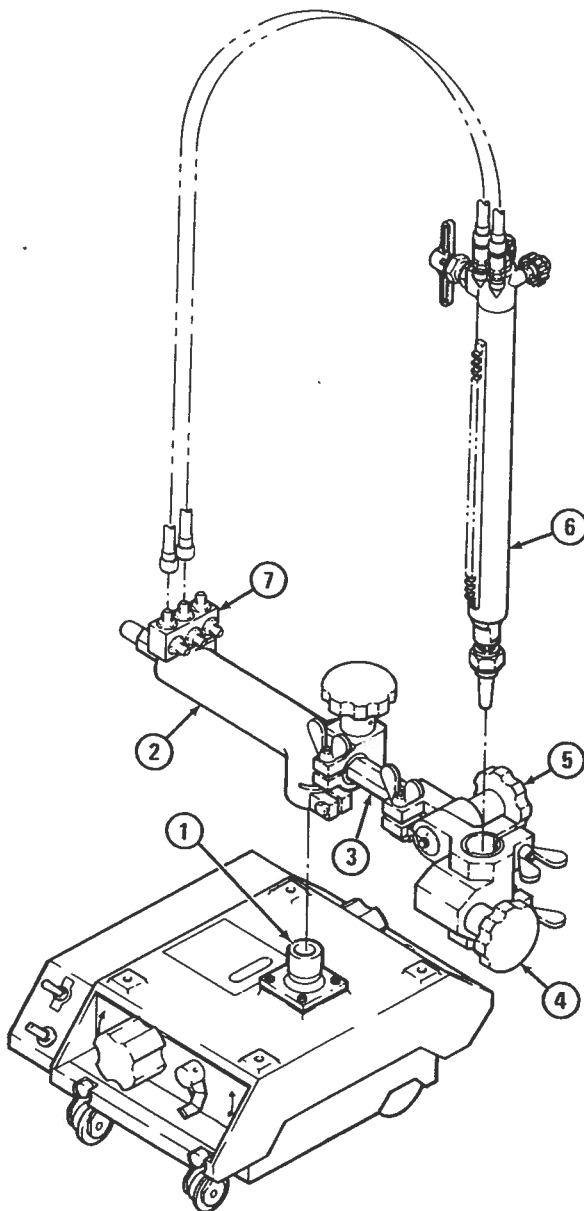


Figure 2-1. Pre-Operation Set-Up  
with Standard Torch Mount

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.

The torch holder assembly (4) is connected to the torch pivot knuckle (5) which, in turn, fits over the round end of the racking bar assembly. Clamping screws provided at each of these points may be left slightly loose for adjustment, then tightened securely after positioning adjustments have been 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. Either two-hose or three-hose torches may be used.

The manifold block (7) is inserted in the end of the rack handle assembly. See that the proper hose adapters are screwed into both the inlets and outlets of the manifold block. Fuel gas hose adapters are used 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 a two-hose cutting torch is used, omit the right hand hose.

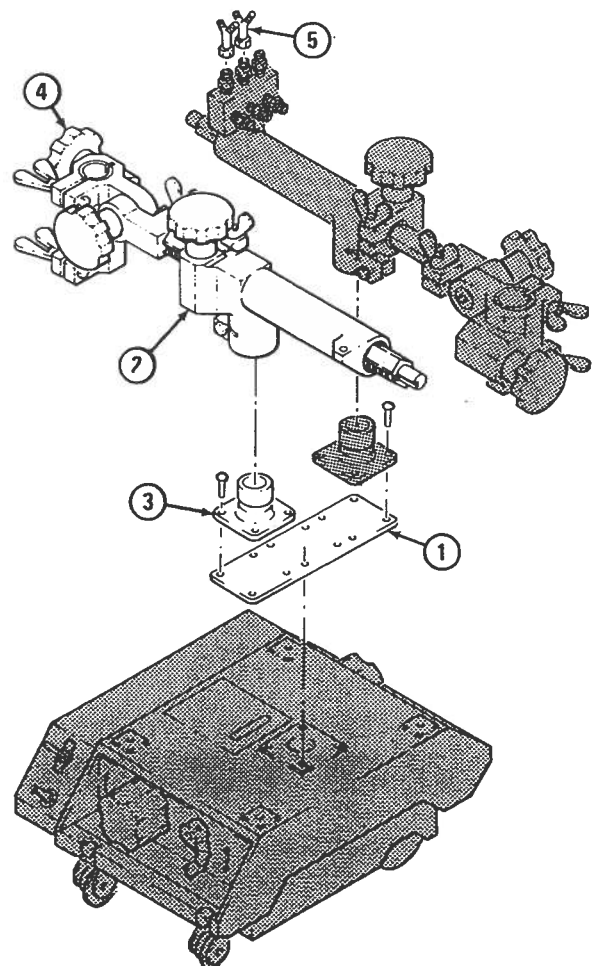


Figure 2-2. Pre-Operation Set-Up  
with Dual Torch Mount

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

The optional dual torch mount assembly is set up 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. The removed single torch mount post should be attached, along with the second one supplied with the dual torch mount assembly, at the ends of the dual torch mount plate.

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

### 2-2-3. Optional Sliding Torch Mount.

If two torches are to be mounted on a single rack, a sliding torch mount can be used to mount a second torch holder assembly on the rack.

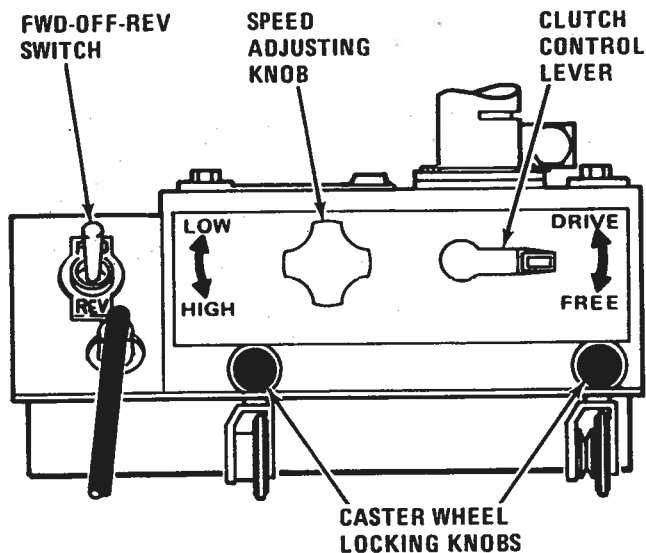


Figure 2-3. VCM-100 Operating Controls

## 2-3. CUTTING OPERATIONS.

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

Operating procedures will vary widely for the many different types of jobs on which the VCM-100 will be used. For this reason, no typical operating procedures can be given, but the following general suggestions may be helpful.

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

A unique feature of the VCM-100 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.

Cutting speeds for straight line cuts may be set directly on the speed indicator located on top of the VCM-100. The speed range is infinitely variable from 1 ipm (inch per minute) to 60 ipm. Turn the large knob on either end of the machine to position the speed indicator to the desired cutting speed. Speed settings for circle cuts must be determined with the formula given in paragraph 2-3-7.

### NOTE

The export (E) model of the VCM-100 may be used with either 50 Hz or 60 Hz, 220 VAC power. When used with 50 Hz power the actual speed will be approximately 12% less than the indicated speed.

### 2-3-4. Clutch Operation

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

The clutch lever is placed 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-100 racking assembly provides full adjustment for the torch. The rack handle assembly permits the torch holder assembly to be moved toward or away from the tractor unit. The torch holder allows the torch to be positioned vertically. The torch pivot knuckle allows the torch to be positioned at any angle from +90° to -90° in a plane perpendicular to the track. After adjusting the torch to the desired position, be sure that all clamping screws are tightened to prevent the torch from making any unexpected movements.

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

Straight lines may be cut 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. Use care in connecting track sections. 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 and 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 VAC, 60 Hz power outlet.

#### NOTE

The export (E) model of the VCM-100 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-100 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 assembly on the cutting machine, reinsert the bolts, and tighten securely. Adjust the radius rod assembly to the desired length.

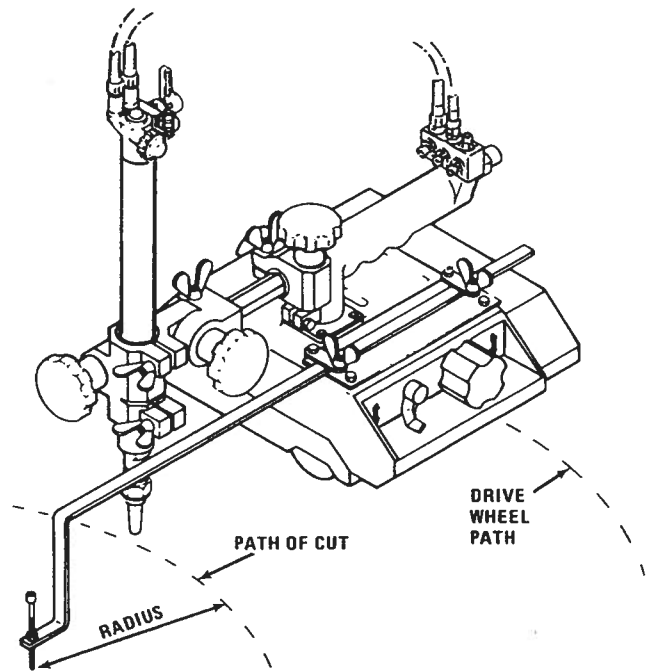


Figure 2-4. Circle Cutting Set-Up

Drill a small pilot hole or centerpunch 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. The torch is positioned between the machine and the center point for small diameter circles. The machine is positioned between the torch and the center point for large diameter circles. The center point should be adjusted so as to lift the inside driving wheel 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

Be sure to readjust the cutting torch to its proper cutting position after the adjustment to lift the inside driving wheel has been made.

Cutting speeds for circle cuts may not be set directly on the VCM-100 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.

To calculate the VCM-100 speed setting for any radius or cutting speed use the following formula:

$$\text{Speed} = \text{CS} \left( \frac{A}{B} \right)$$

where:

Speed = speed indicated on the VCM-100

CS = desired cutting speed

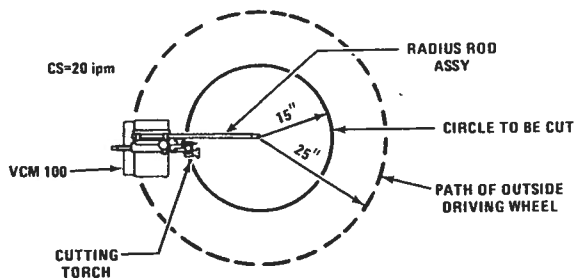
A = distance from the outside driving wheel to the center of the circle

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

**Example 1.** Cutting torch positioned inside the track of the cutting machine.

IF:

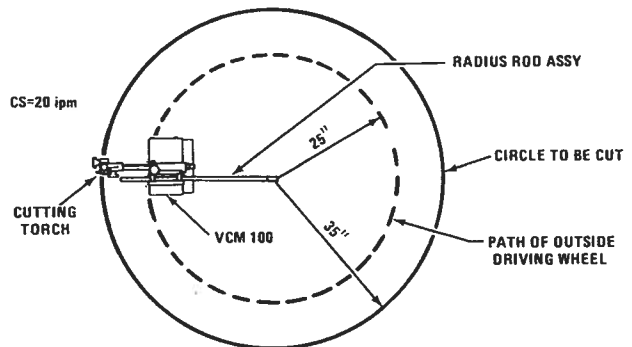
$$\begin{aligned} A &= 25 \text{ inches} & \text{Speed} &= 20 \text{ ipm} \left( \frac{25}{15} \right) \\ B &= 15 \text{ inches} \\ \text{CS} &= 20 \text{ ipm} & \text{Speed} &= 33.3 \text{ ipm} \end{aligned}$$



**Example 2.** Cutting torch positioned outside the track of the cutting machine.

IF:

$$\begin{aligned} A &= 25 \text{ inches} & \text{Speed} &= 20 \text{ ipm} \left( \frac{25}{35} \right) \\ B &= 35 \text{ inches} \\ \text{CS} &= 20 \text{ ipm} & \text{Speed} &= 14.3 \text{ ipm} \end{aligned}$$





## SECTION 3

### MACHINE MAINTENANCE

#### 3-1. GENERAL.

The Victor VCM-100 cutting machine has been 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 inspection and cleaning procedures, as outlined in this section. With proper care, problems can usually be detected and corrected before they 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 paragraphs 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 in performing these procedures, refer to the Troubleshooting Chart, paragraph 3-4, and the following maintenance procedures for the components involved.

1. Wipe off all parts of the machine, the rack, the 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 tracks.
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 115V, 60 Hz power outlet.

#### NOTE

The export (E) model of the VCM-100 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. 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 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 carefully for signs of deterioration or damage. See that all hose connections to the manifold block and the torch (or torches) are secure.

#### 3-3. ROUTINE LUBRICATION.

The only periodic inspection or maintenance required for the VCM-100, other than the inspection and maintenance covered in the daily procedures, is the following periodic lubrication procedure.

1. Every 100 hours the gear train and the groove in the clutch dog should have the grease re-distributed. It is not necessary to add grease. The outer case cover and the inner case cover must be removed for access to the gear train. (Refer to paragraph 3-6-1.) Re-distributing the grease is easily accomplished using the blade of a small screwdriver or similar object.

#### WARNING

Unplug power cord before performing any maintenance on the machine. Whenever the bottom cover of the machine is removed, the capacitor should be shorted out. Capacitors hold an electrical charge even after the power has been disconnected. Touch an insulated screwdriver (plastic or rubber handle) across the capacitor terminals. Make sure not to touch the metal blade of the screwdriver with your fingers.

2. The drive disks and cone must be kept free of grease. They can be cleaned 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. Be sure to read the manufacturer's warning label for 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
<b>A. Motor will not run.</b>	1. No power to machine.	*Check power source and cord; replace if required.
	2. Wire connector is loose.	*Check all wire connectors.
	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>B. Motor runs, but wheels do not turn.</b>	1. Disk drive slipping because output disk shaft is not sliding freely in worm shaft.	Remove output disk assembly. Clean and regrease 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.
<b>C. Motor runs, but will not reverse.</b>	1. Faulty capacitor.	*Replace capacitor.
<b>D. Clutch does not disengage.</b>	1. Clutch out of adjustment.	Adjust clutch. See paragraph 3-5
	2. Throw-out assembly broken.	Replace part.
	3. Set screws loose in clutch yoke.	Retighten screws. Make sure screws are seated in detents on shaft.
	4. Roll pins in 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.
<b>E. Clutch does not engage.</b>	1. Broken clutch spring.	Replace spring.
	2. Worn clutch gears.	Replace gears.
<b>F. Machine travel speed not constant.</b>	1. Disks slipping.	Clean disks.
	2. End play of speed knobs too loose.	Loosen set screws securing speed knobs. Then snup-up knobs against spring washer and retighten set screws.

\* See Wiring Diagrams, Figure 3-3 and Figure 3-4.

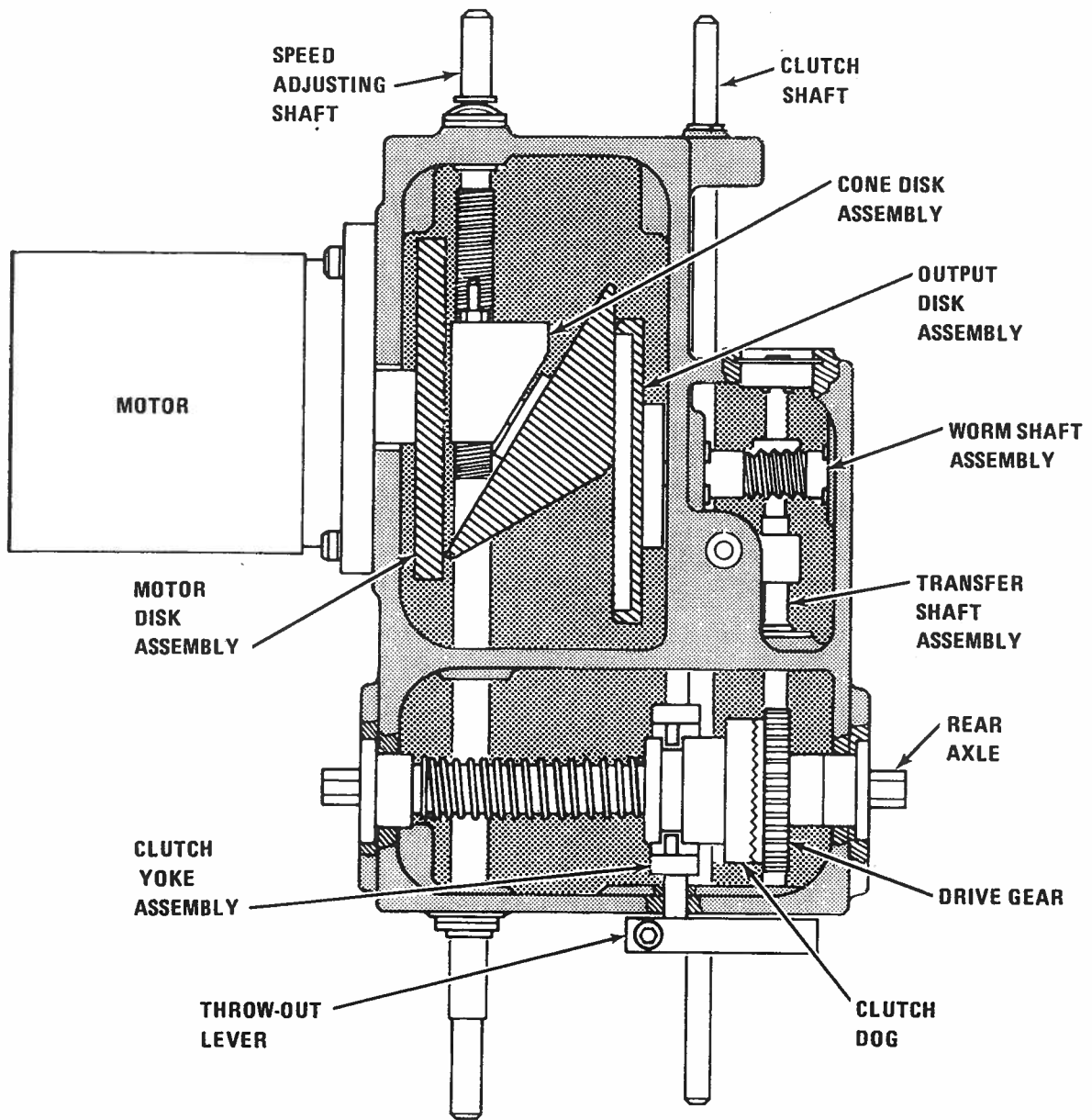


Figure 3-1. VCM-100 Internal Assemblies

### 3-5. DRIVE CLUTCH ADJUSTMENT.

To gain access to the clutch, turn the machine upside down and remove the two casters and the bottom cover. 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 also have enough travel for disengagement.

Clutch free-play can be adjusted by the following steps:

1. Place clutch in DRIVE position.
2. Try to rotate drive wheels by hand. This assures 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 roller on the clutch shaft.
4. Re-tighten the screw.
5. Free-play will automatically be obtained; this will allow approximately 1/4-inch movement at the extreme end of the throw-out lever.

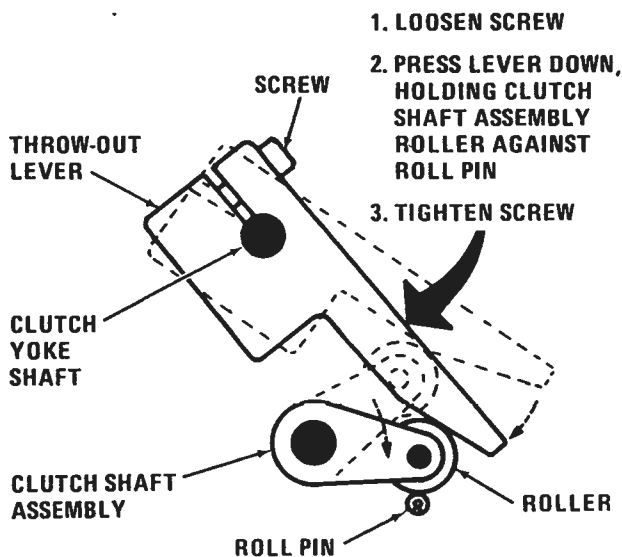


Figure 3-2. Drive Clutch Adjustment

### 3-6. CUTTING MACHINE REPAIR.

When making major repairs to the cutting machine, the inner case should be removed from the outer case. This is not necessary for minor work such as lubrication or clutch adjustment.

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

To remove inner case from outer case, perform the following steps:

1. Unplug power cord.
2. Remove rack handle assembly.

3. Remove clutch control levers from each end of machine.
4. Remove the SPEED knobs from each end of machine. A teflon washer and a spring washer 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 caster locking knobs a few turns to clear groove in caster, then remove casters.
8. Remove bottom cover, which is held by six slotted head screws.

### WARNING

Unplug power cord before performing any maintenance. Whenever the bottom cover of the machine is removed, the capacitor should be shorted out. Capacitors hold an electrical charge even after the power cord has been disconnected. Touch an insulated screw driver (plastic or rubber handle) across the capacitor terminals under the rubber boot, making sure to hold the screwdriver by the insulated handle.

9. The inner case assembly can now be lifted from the outer case and placed 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 SPEED knobs, apply enough pressure to SPEED knob to flatten spring washer and hold while tightening set screws.

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

1. To remove rear axle, first remove the inner case from the outer case. (Refer to paragraph 3-6-1.)
2. Remove drive wheel and key from each end of axle.
3. Remove retaining ring at end of spring. The ring can be removed by inserting a screw driver under the ring and then twisting the screw driver to pry the ring off the axle.
4. Remove bushing on end of axle toward the motor.
5. Slide axle and spring part way through the bushing hole and then remove the spring.
6. Axle and gears can now be lifted out of inner case.
7. When replacing axle, watch for the following:
  - a. Axle must be properly oriented.
  - b. Clutch must be engaged in the groove in the clutch dog.
  - c. Make sure wheels are positioned correctly.

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

1. To remove the transfer shaft first remove the inner case from the outer case. (Refer to paragraph 3-6-1.)
2. Remove capacitor (held by two screws and a clamp).
3. Remove retaining ring.
4. Transfer shaft can then be removed 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. To remove the cone disk and output disk, first remove the inner case from the outer case. (Refer to paragraph 3-6-1.)
2. Remove retaining rings and washers from both ends of speed adjusting shaft.
3. 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.
4. Cone and cone block can then be lifted from the inner case.
5. Output disk assembly can now be pulled from the worm shaft. A woodruff key is used to key disk assembly to the worm shaft.
6. 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.
7. Before reassembly, do the following:
  - a. Clean drive disks.
  - b. Wipe a very thin coating of a moly grease on the shaft and key of the output disk assembly.
8. The last step in reassembly is to install washers and retaining rings on the speed adjusting shaft. To aid in ease of assembly, the end of the shaft that requires the spring washer should be assembled first. This will allow compression of the spring washer and ease assembly of larger retaining ring.

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

1. Unplug the power cord.
2. Remove the bottom cover from the machine.
3. Make sure the capacitor has been shorted out 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 3-3.)

5. Remove the power cord by loosening the power cord holder.
6. We recommend that the replacement cord be Victor Part No. 0252-0058. This is a cord and holder which includes wire connectors.
7. Reconnect the power cord wires as disconnected in Step 4.

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

1. Unplug the power cord.
2. Remove the bottom cover from the machine.
3. Make sure the capacitor has been shorted out 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 to be disconnected is the black line from the power cord. (See Figure 3-3.)
5. Remove the switch by taking off the jam nut on the threaded portion of the switch protruding outside of the case. The switch can now be pulled back inside the case and removed.
6. We recommend that the replacement switch be Victor Part No. 0252-0057. 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 wires as disconnected in Step 4.

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

Victor recommends that the motor be replaced as an entire assembly, which includes the motor, mounting plate, spacer sleeve, and drive disk. Purchasing the assembly directly from Victor will eliminate "down-time" and will also assure that the drive disk "runs true".

1. To replace the motor assembly, first remove the inner case from the outer case. (Refer to paragraph 3-6-1.)
2. Ensure that the capacitor has been shorted out by touching an insulated screw driver to the capacitor terminals.
3. Remove rubber boot from the capacitor and disconnect the two red leads.
4. Disconnect 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 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. The motor and drive disk assembly can now be removed from the inner case.
7. Reverse procedure for reassembly.

# 110 VAC WIRING DIAGRAMS

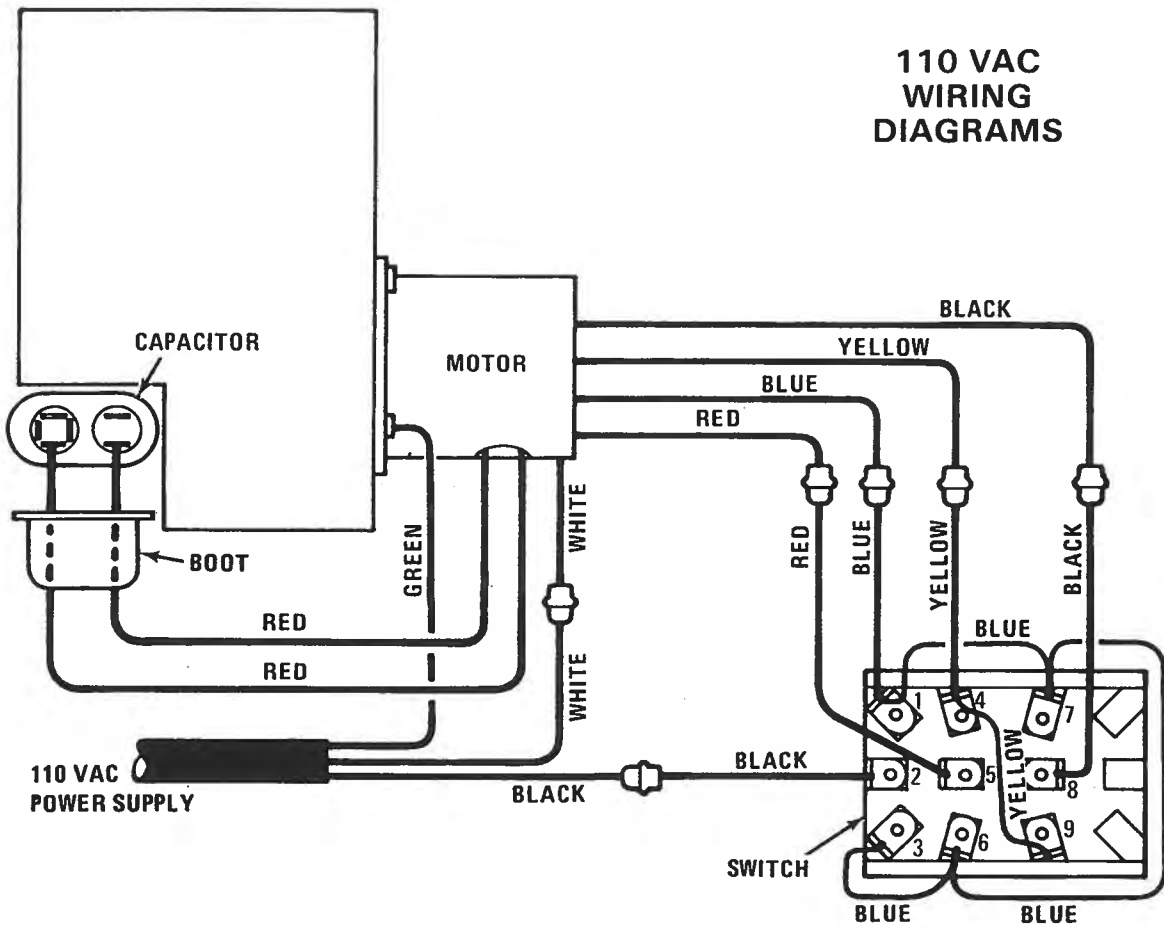


Figure 3-3. Pictorial Wiring Diagram, VCM-100

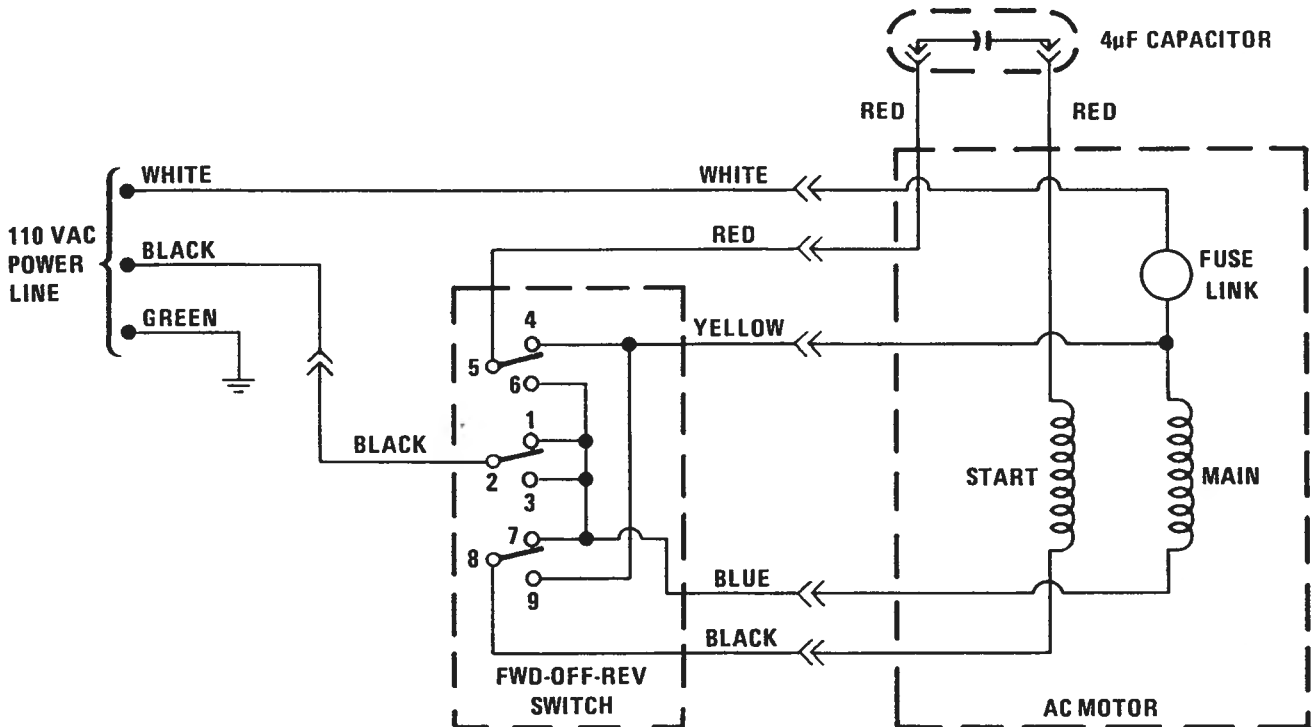


Figure 3-4. Schematic Wiring Diagram, VCM-100

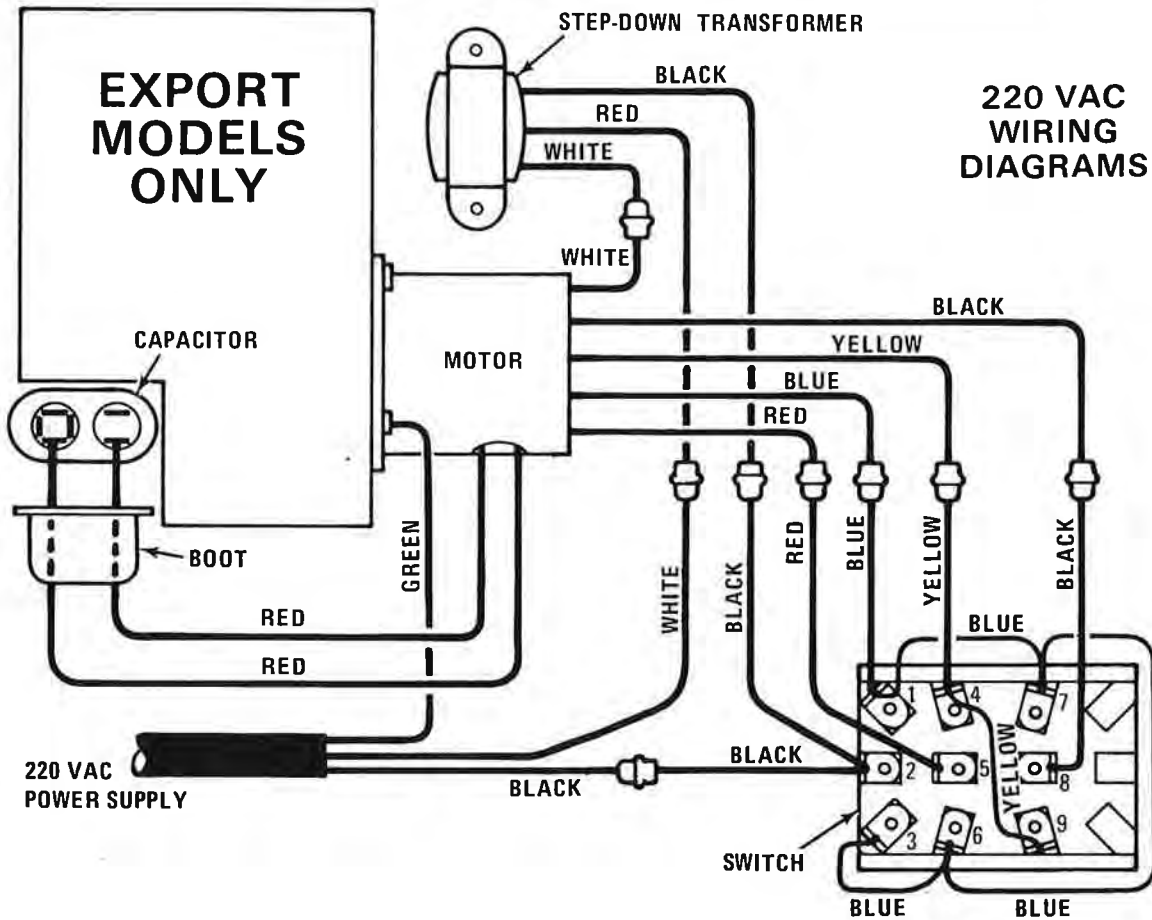


Figure 3-5. Pictorial Wiring Diagram, VCM-100 E

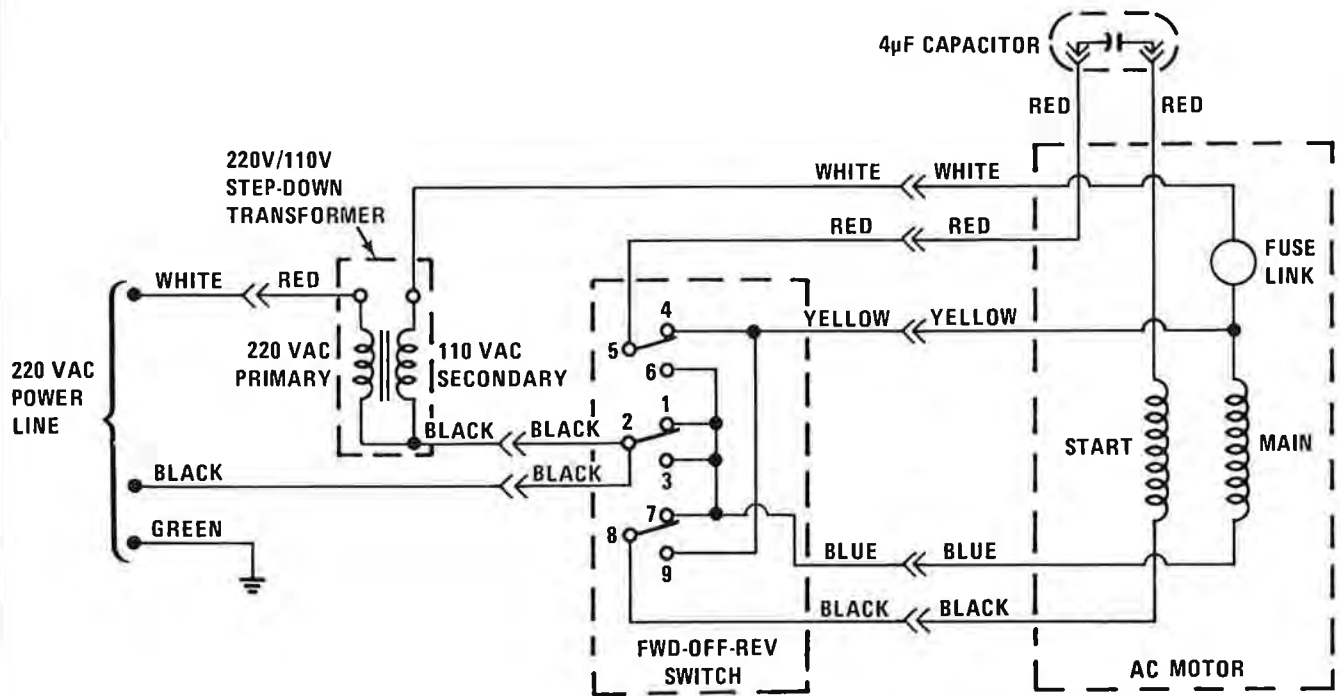
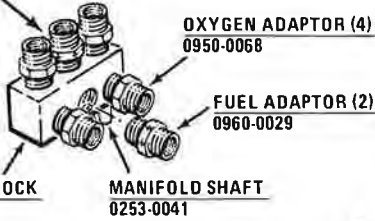


Figure 3-6. Schematic Wiring Diagram, VCM-100 E

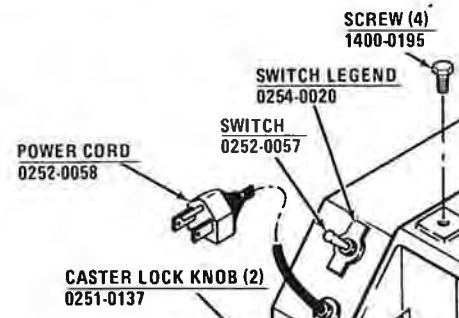
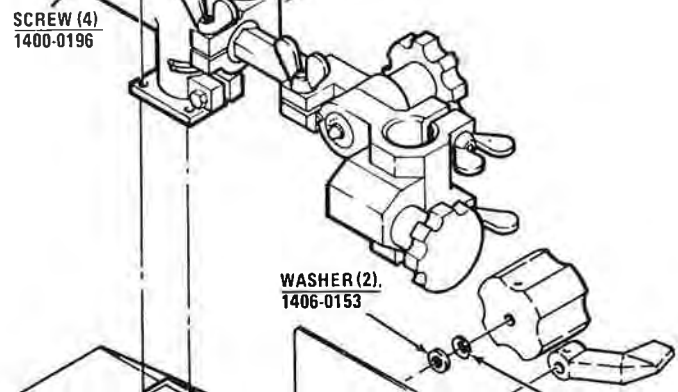
# SECTION 4

## REPLACEMENT PARTS

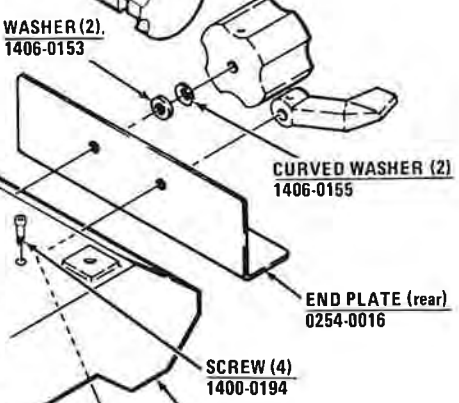
### MANIFOLD ASSEMBLY 0252-0081



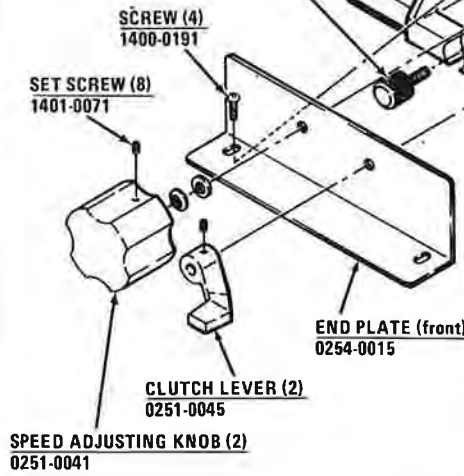
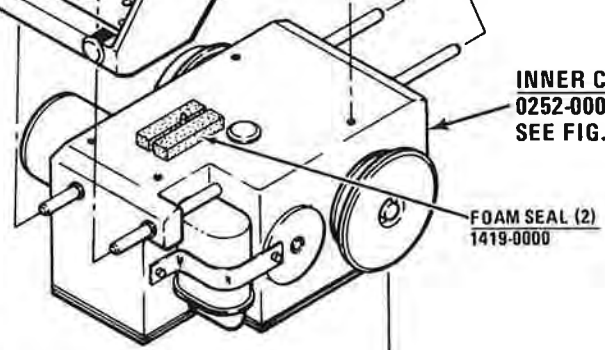
### RIGGING ASSEMBLY 0252-0101 SEE FIG. 4-2 for breakdown



### END PLATE (rear) 0254-0016



### INNER CASE ASSEMBLY 0252-0002 SEE FIG. 4-3 for breakdown



### CASTER BUSHING (2) 0251-0138

### OUTER CASE COVER 0250-0067

### SCREW (6) 1400-0190

### LH CASTER 0252-0016

### RH CASTER 0252-0015

### 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 4-1. VCM-100 Main Assembly.



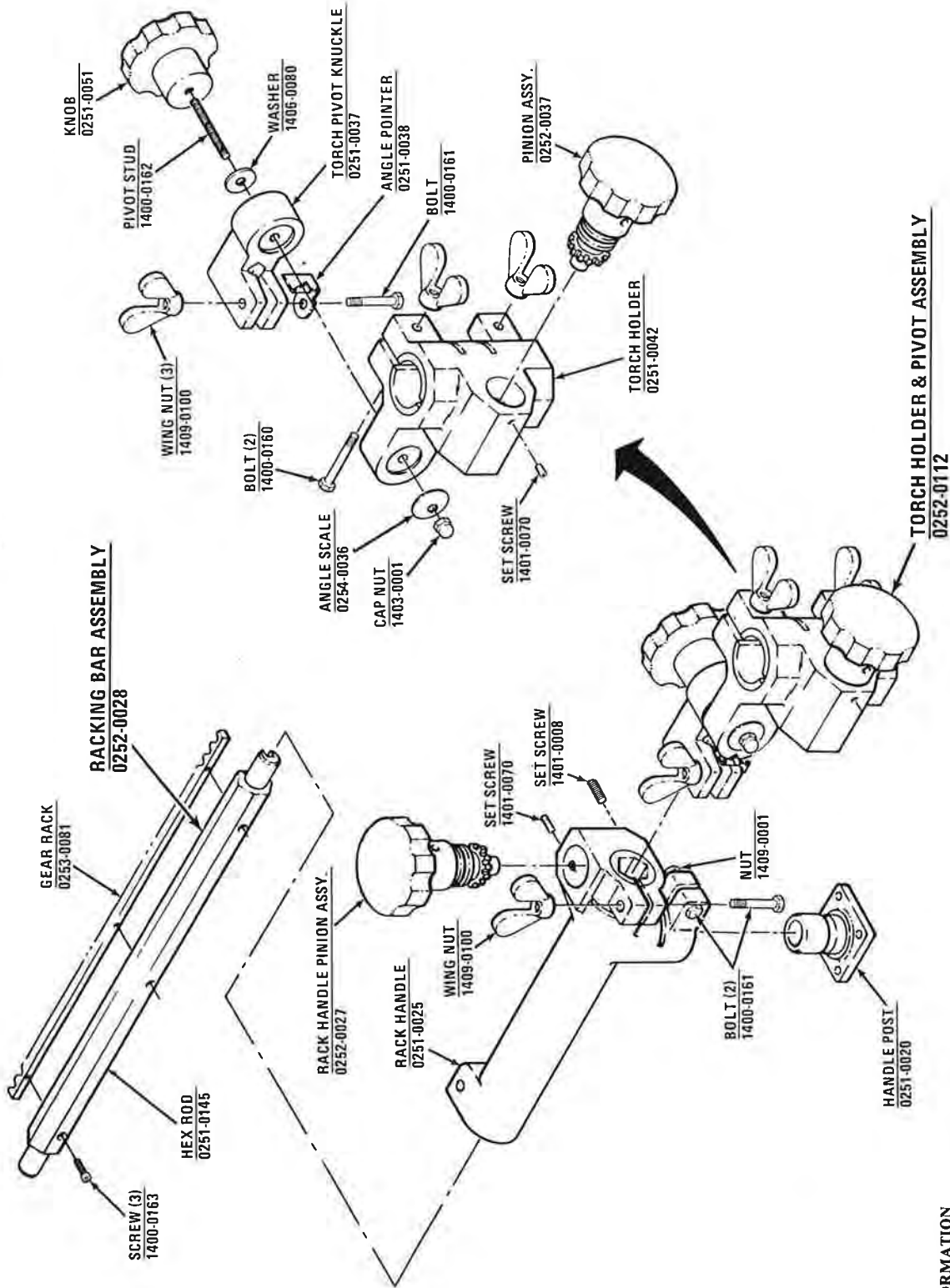


Figure 4-2. VCM-100 Rigging Assembly 0252-0101

**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.

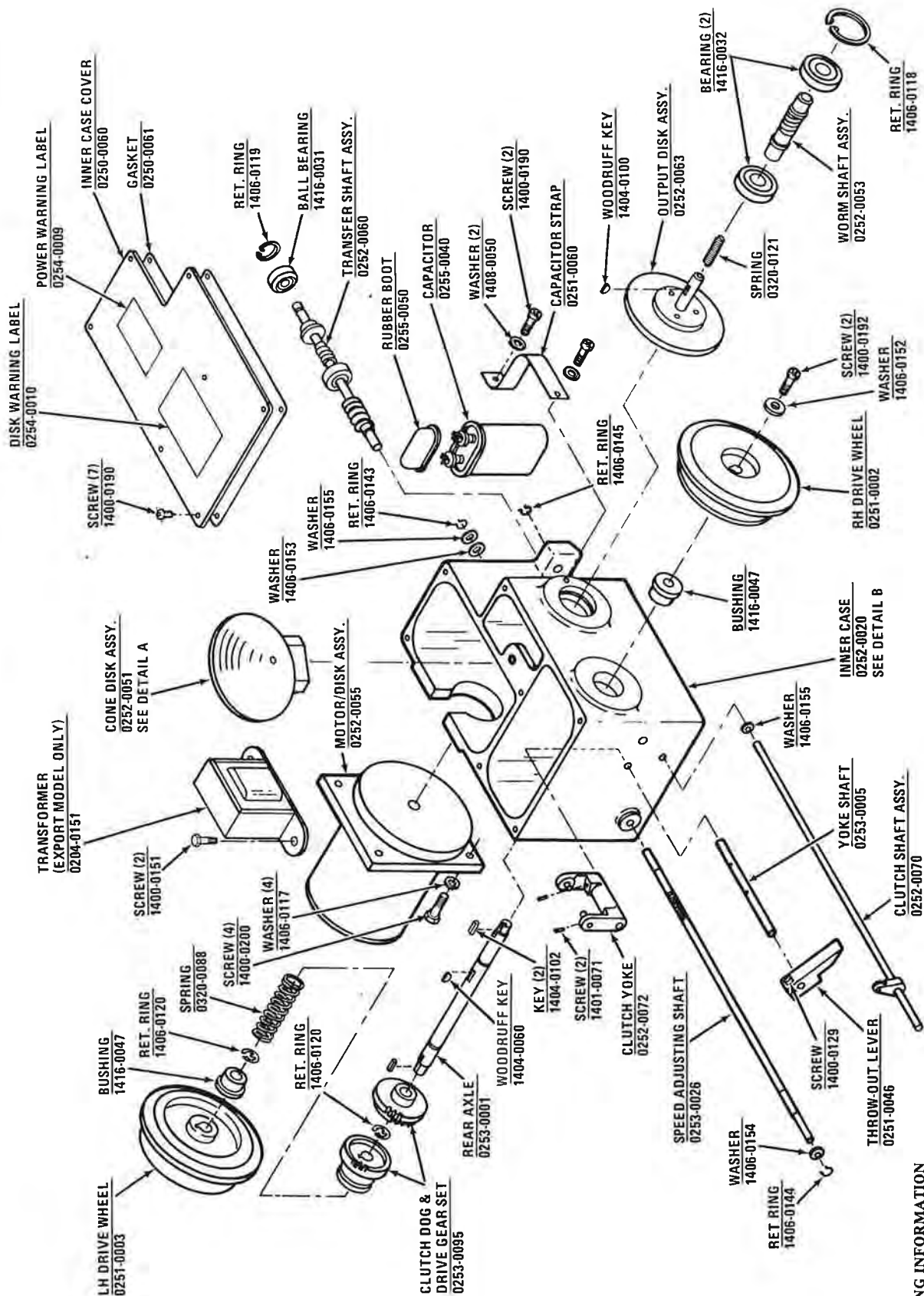
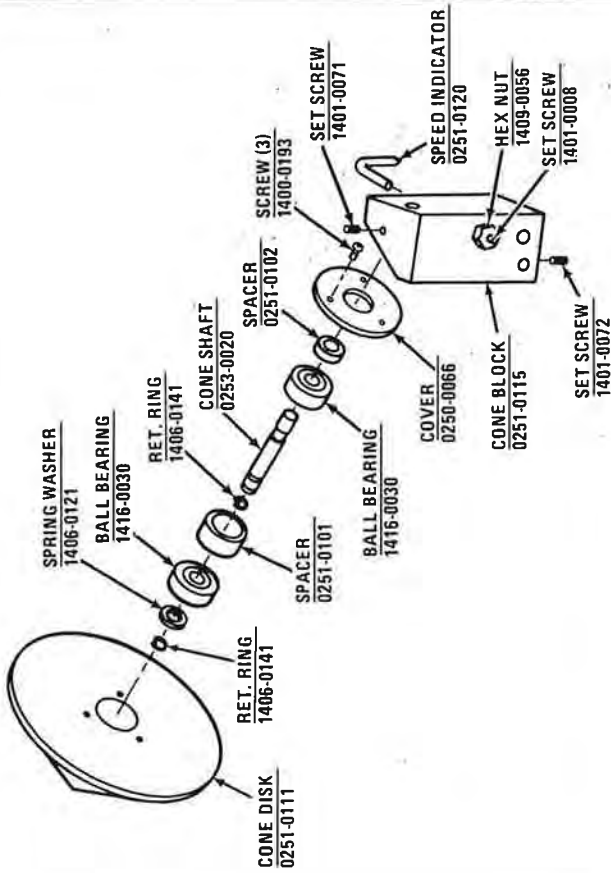


Figure 4-3. VCM-100 Inner Case Assembly 0252-0002

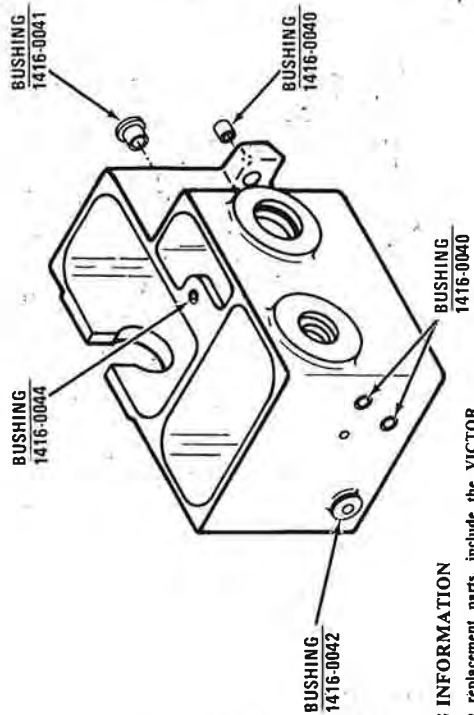
**ORDERING INFORMATION**

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 0252-0051**



**DETAIL B INNER CASE 0252-0020**

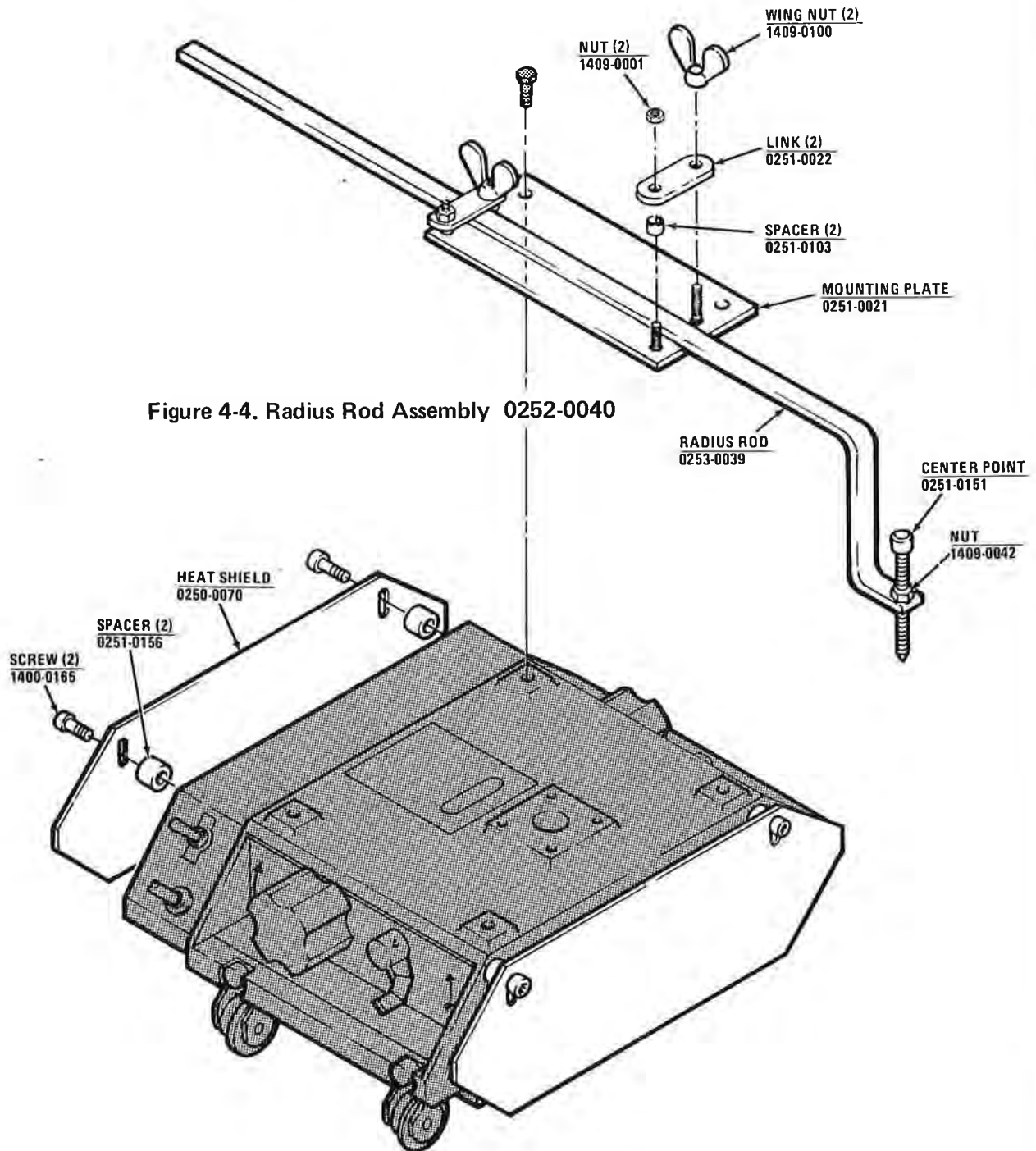


**ORDERING INFORMATION**

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
1400-0129	Screw, Hex Socket Flat Head Cap 1/4-20 UNC-2A x 3/4 Long
1400-0151	Screw, Slotted Head, #8-32 UNC-2A x 5/16 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
1400-0162	Pivot Stud, 3/8-16 UNC-2A x 2-9/16 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
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 1/4-20 UNC-2A x 1/4 Long
1401-0072	Set Screw, Hex Socket Cup Point 1/4-20 UNC-2A x 3/4 Long
1403-0001	Cap Nut, 3/8-16 UNC-2B
1406-0080	Washer, Bevel, .38 I.D., .75 O.D., .056 Thick
1406-0117	Lockwasher, #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
1406-0155	Washer, Curved, .327 I.D., 612 O.D., .013 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



**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 4-5. Heat Shield 0252-0103

**NOTES**

**NOTES**

**VICTOR**

## COMMERCIAL WARRANTY

**From VICTOR EQUIPMENT COMPANY to You, the Original Purchaser for Resale —**

*This warranty is extended by VICTOR solely to the original purchaser who buys from VICTOR for resale.*

**What We Will Do —**

*If a VICTOR product fails because of a defect in material or workmanship under normal use and maintenance within one year from date of shipment by us, we will, at our option and after inspection, repair or replace the defective product or repay the full purchase price you paid us.*

**What You Must Do —**

*In order for this warranty to apply, you must return the defective product to us within one year from the date we shipped it to you. Please be sure to properly identify the complaint regarding the returned product.*

**What Is Not Covered —**

*This warranty shall not apply and VICTOR shall have no liability with respect to any product which has been altered, damaged, misused, improperly repaired, or repaired with parts not manufactured by VICTOR. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES (EXCEPT OF TITLE), EXPRESS, IMPLIED, OR STATUTORY, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE REMEDY DESCRIBED ABOVE IS THE SOLE AND EXCLUSIVE REMEDY, AND OUR SOLE OBLIGATION, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING OUT OF THE MANUFACTURE, SALE OR USE OF OUR PRODUCTS. WE WILL IN NO EVENT BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE.*

**Modification Of These Provisions —**

*These provisions can be modified only by a written instrument which clearly specifies the modification and is signed by one of our Executive Officers.*

Return The Defective Product To: **VICTOR Equipment Company**  
P. O. Drawer 1007, Airport Road  
Denton, Texas 76201  
**Attn: Warranty Repair**



**VICTOR**<sup>®</sup>

**WELDING & CUTTING  
APPARATUS**

**VICTOR EQUIPMENT COMPANY**

HEADQUARTERS  
AIRPORT ROAD  
DENTON, TX 76201  
817-387-5544

PITTSBURGH REGIONAL  
DISTRIBUTION CENTER  
127 COMMONWEALTH DR  
WARRENDALE, PA 15086  
412-776-4163

VICTOR EQUIPMENT CO  
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2200 SPEERS ROAD  
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L6L 2X8 416-827-111

PALCO INTERNATIONAL CO.  
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SUITE 275  
SAN BRUNO, CA 94066  
415-872-1400



***VICTOR***<sup>®</sup>

**Important  
Safety  
And Operating  
Instructions  
For**

**REGULATOR/FLOWMETER,  
REGULATOR/FLOWGUAGE  
COMBINATIONS  
AND FLOWMETERS**

**For Your  
Safety..  
PLEASE READ  
CAREFULLY!**

## INTRODUCTION

This booklet contains information to ensure apparatus is used safely and efficiently. Detailed safety and operating instructions are in ANSI Standard Z49.1, "Safety in Welding and Cutting," and other publications from ANSI, OSHA, AWS and NFPA. Contact your Victor distributor for further information. For optimum safety and performance always use genuine Victor equipment and accessories.

### WARNING

**DO NOT** attempt to use this apparatus unless you are trained in its proper use or are under competent supervision. For your safety, practice the safety and operating procedures described in this booklet every time you use the apparatus. Deviating from these procedures may result in fire, explosion, property damage and/or operator injury. All operations must conform to the applicable Federal, State, County or City regulations for installation, operation, ventilation, fire prevention and protection of personnel. If at any time the apparatus you are using does not perform in its usual manner, or you have any difficulty in the use of the apparatus, you should stop using it immediately. Do not use the apparatus until the problem has been corrected.

## GENERAL SAFETY INFORMATION

Read and understand all safety and operating instructions provided with other types of VICTOR gas apparatus. A good source of safety information is the VICTOR "Welding, Cutting and Heating Guide" form no. 56-003, available from your Victor Distributor.

## Setting Up The Regulator/Flowmeter and Regulator/Flowgauge

1. Place the cylinder where it is to be used and secure it to a cart, wall, work bench post etc.

### WARNING

Cylinders are highly pressurized and must always be handled with care. Never allow cylinder to be dropped, knocked over, or subjected to excessive heat. When moving cylinders always be sure that the valve protection cap is in place. Place the valve protection cap where it can be easily found and replace when the cylinder is empty.

2. Inspect the cylinder valve for oil, grease and damaged parts.

### WARNING

**DO NOT** use the cylinder if oil, grease or damaged parts are detected. Inform your gas supplier of this condition immediately.

3. Inspect the regulator for oil, grease, damaged parts and inlet filter.  
**DO NOT** use the regulator if oil, grease or damaged parts are detected or if the inlet filter is missing or dirty. If oil, grease is detected on the regulator have your qualified repair station clean the regulator.

4. Momentarily open and close (called "cracking") the cylinder valve to dislodge any contaminant that may be present.

### CAUTION

Open the cylinder valve slightly. If the valve is opened too much the cylinder could tip over. When cracking the cylinder valve do not stand directly in front of the cylinder valve. Cracking should always be performed in a well ventilated area.

5. Make sure that the regulator has the correct pressure rating for the cylinder to be used. Attach the apparatus to the cylinder valve and tighten securely.

### WARNING

Never attach a flowmeter directly to a cylinder or high pressure source. Victor flowmeters are calibrated and must be attached to a regulator or pipeline with the specified calibration pressure for proper performance. When using a flowmeter or regulator/flowmeter combination, the flowmeter must be in a vertical position to operate properly.

6. a. **REGULATOR/FLOWGAUGE**  
Before opening the cylinder valve

- release the tension on the regulator adjusting screw by turning it counterclockwise until all spring pressure is released.

### b. REGULATOR/FLOWMETER COMBINATIONS

Since the regulator is a preset type no adjustments need to be made to the regulator, but before opening the cylinder valve, make sure the flow adjusting valve is in a finger tight off position.

### Turning On The Cylinder Valve

1. Stand so that the cylinder valve is between you and the regulator.

### WARNING

Never stand directly in front of or behind a regulator when opening the cylinder valve. Always stand so that the cylinder valve is between you and the regulator.

2. Slowly and carefully open the cylinder valve until the maximum pressure is registered on the high pressure gauge. Now open the valve completely to seal the valve packing.
3. With the flow adjusting knob in the closed position, or the regulator adjusting screw turned counterclockwise until there is no pressure on the adjusting screw, attach the desired down stream equipment to the regulator or flowmeter.

4. Open the flow adjusting knob, or adjusting screw, to attain the desired flow rate.

## Leak Testing The System

Victor strongly recommends leak testing the system before putting it into operation.

1. Be sure that there is a valve on the outlet of the flowmeter or regulator/flowmeter to shut off the gas flow.
2. Regulator/Flowgauge
  - a. Adjust the regulator to deliver the desired flow as indicated on the flowgauge.
  - b. Close the cylinder valve.
  - c. Turn the adjusting screw counterclockwise one turn. If the high pressure gauge reading drops, there is a leak in the cylinder valve, inlet fitting or high pressure gauge. If the flowgauge reading drops, there is a leak in the downstream equipment outlet fitting or low pressure gauge. Check for leaks using an approved leak detector solution. If the high pressure gauge drops, and at the same time the flowgauge reading increases, there is a leak in the regulator seat. If the regulator requires service or repair it must be taken to a qualified repair station.
3. Regulator/Flowmeter
  - a. Close the cylinder valve.
  - b. If the high pressure gauge reading drops, there is a leak in the system. Check for leaks using an approved leak detection solution. If the regulator requires service or repair, it must be taken to a qualified repair station.
4. Once leak testing has been performed, open the cylinder valve and proceed.

## When You Finish Using The Regulator

When you finish using the apparatus, close the cylinder valve, then open the valve on the downstream equipment to allow all pressure to drain from the system. Close the valve on the downstream equipment. On an adjustable type regulator/flowmeter combination release the tension on the adjusting spring by turning the adjusting screw counterclockwise. Check the gauges after a few minutes to be sure the cylinder valve is closed completely.

# VICTOR®

## •• 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.

**THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF**

**QUALITY, WHETHER EXPRESSED OR IMPLIED, EXCEPT OF TITLE AND AGAINST PATENT INFRINGEMENT.** Correction of non-conformities, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of Victor to the Purchaser with respect to, or arising out of a Victor product, whether based on contract, negligence, strict tort or otherwise.

**LIMITATION OF LIABILITY:** Victor shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of other property or equipment, loss of profits or revenue, cost of capital, cost of purchased or replacement goods, or claims of customers of Purchaser for service interruption. Any property damage or personal injury resulting from a Victor product, which contains replacement parts or accessories that affect the safety or performance of such product, shall be the responsibility of the purchaser and the supplier of such replacement parts or accessories and not the responsibility of Victor Equipment Company. The remedies of the Purchaser set forth herein are exclusive, and liability of Victor 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 Victor 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."

**VICTOR Equipment Company**

P.O. Drawer 1007  
Denton, Texas 76202-1007

Airport Road  
Denton, Texas 76205

**NOTE:** Product data, materials, specifications and availability subject to change without notice.

**Attn:** Warranty Repair

