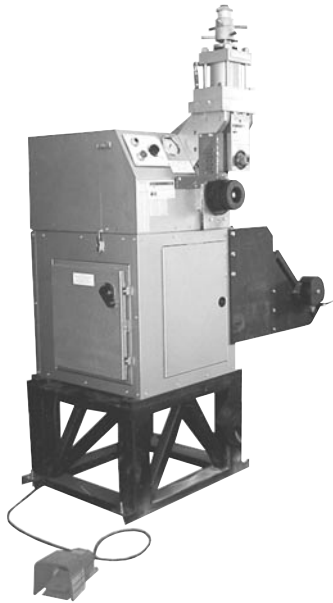


# ***Operating and Maintenance Instructions Manual***

**VE436**

Pipe Roll Grooving Tool



## **WARNING**



- Failure to follow instructions and warnings may result in serious personal injury, property damage or improper installation.
- Before installing, operating, or servicing this tool, read and understand the instructions in this manual and all warning labels on the tool.
- If you need additional copies of the manual or have any questions about the safe operation of this tool, contact Victaulic Europe, Prijkkelstraat 36, Nazareth, Belgium, phone: +32-9-381 15 00, or your Victaulic Sales Office.



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## **READ THIS FIRST - HAZARD IDENTIFICATION**

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Definitions for identifying the various hazard levels shown on warning labels or to indicate proper safety procedures in this Manual are provided below.

When you see these safety messages, be alert to the possibility of personal injury or property damage and carefully read and fully understand the instructions that follow.

### **DANGER**

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

### **WARNING**

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

### **CAUTION**

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

### **NOTICE**

The use of the word "NOTICE" signifies special instructions which are important but not related to hazards.

## **OPERATOR SAFETY INSTRUCTIONS**

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This tool is designed only for roll grooving pipe. To accomplish this function requires some dexterity and mechanical skills, as well as sound safety habits. Although this tool is manufactured for safe dependable operation, it is impossible to anticipate those combinations of circumstances which could result in an accident. The following instructions are recommended for safe operation of the tool. The operator is cautioned to always practice "Safety First" during each phase of use, including setup and maintenance of this unit. **It is the responsibility of the owner, lessee or user of this tool to ensure that all operators receive, read and understand this manual and are fully trained to operate this tool.**

### **General**

- **Read and understand this Manual before operating or performing maintenance on this tool.** Become familiar with the tool's operations, applications and limitations. Be particularly aware of its specific hazards. Store this manual in a clean area and always at a readily available location. Additional copies at no charge are available upon request by writing or phoning Victaulic Europe.
- **Use only recommended accessories.** Use of improper accessories may be hazardous. See "Accessories".
- **This tool is designed ONLY for roll grooving of pipe sizes, materials and wall thicknesses outlined under "Tool Rating and Roll Selection".**

### **Tool Setup**

- **Ground the drive motor.** Be sure the drive motor is connected to an internally grounded electrical system.

- **Avoid dangerous environments.** Don't use the machine in damp or wet locations. Don't use the tool on sloped or uneven ground or floor. Keep work area well illuminated. Allow sufficient space to operate tool and accessories properly and for others to pass safely.
- **Prevent back injury.** During tool setup, it is recommended to use a lift to move and position the tool, as it cannot be safely handled by one person.

## Operating Tool

- **Inspect the equipment.** Prior to starting the tool, check the movable parts for any obstructions. Be sure that guards and tool parts are properly installed and adjusted.
- **Prevent accidental startings.** Place power switch in the "OFF" position prior to connecting electrical power.
- **Operate tool from control station side only.** The tool must be operated with the safety foot switch control located for easy operator access. Never reach across moving parts or material being worked on. Foot switch should always be accessible to operator.
- **Keep hands away from grooving rolls and stabilizer wheel during grooving operation.** Grooving rolls can crush or cut fingers and hands.
- **Never reach inside pipe end or across the tool or pipe during operation.**
- **Do not over-reach.** Keep your proper footing and balance at all times. Be sure you can reach foot switch safely at all times. Do not reach across tool or pipe. Keep hands and loose tools away from moving parts.
- **Always wear safety glasses and foot protection.**
- **Keep work area clean.** Cluttered areas, benches and slippery floors invite accidents.
- **Wear ear protection if exposed to long periods of very noisy operations.**
- **Keep visitors away.** All visitors should be kept a safe distance from the work area.

- **Keep alert.** Do not operate tool if ill or drowsy from medication or fatigue. Avoid horseplay around tool and keep bystanders a safe distance from tool and pipe being grooved.
- **Wear proper apparel.** Never wear loose clothing (unbuttoned jackets or loose sleeve cuffs) loose gloves or jewelry that can get caught in moving parts.
- **Do not force tool.** It will do the job better and safer at the rate for which it was designed.
- **Secure work, machine and accessories.** Make sure machine is stable. See "Tool Setup" for securing machine to floor or platform.
- **Support work.** Support long pipe with a pipe stand secured to the floor or ground.
- **Do not misuse tool.** Perform only the functions for which the tool is designed. Do not overload the tool.
- **Do not remove any labels from tool.** Replace any damaged or worn labels.

## Tool Maintenance

- **Disconnect electrical power prior to servicing.** Repair should be attempted only by authorized personnel. Always disconnect power before servicing or making any tool adjustments unless instructed otherwise.
- **Maintain tool in top condition.** Keep tool clean for best and safest performance. Follow lubricating instructions.
- **Use only genuine Victaulic replacement parts to ensure proper and safe function of the tool.**

### NOTICE

Drawings and/or pictures in this manual may be exaggerated for clarity.

# VE436

## INTRODUCTION

---

The Victaulic® Vic-Easy® Series VE436 is a fully motorized, semi-automatic hydraulic feed tool for roll grooving pipe to prepare it to receive Victaulic grooved pipe couplings. The VE436 is designed to roll groove pipe of various materials and wall thicknesses (see "Tool Rating and Roll Selection" charts).

Both this tool and the manual contain trademarks, copyrights and/or patented features which are the exclusive property of Victaulic Company of America.

### CAUTION

- **This tool should only be used for roll grooving pipe designated in the "Tool Rating and Roll Selection" charts.**
- **Use of the tool for other purposes or exceeding the pipe thickness maximums will overload the tool, shorten tool life and may cause tool damage.**

## Power Requirements

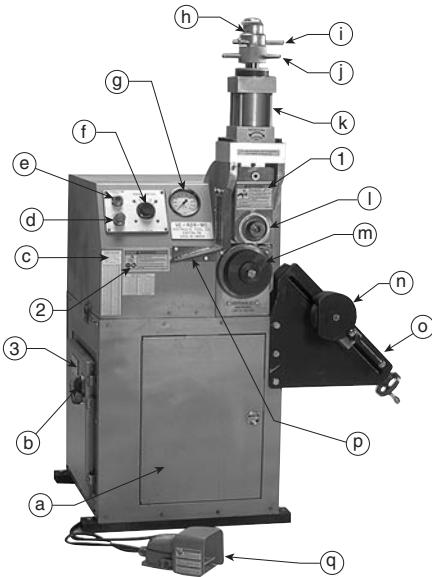
VE436 is designed to operate on 230/400 Volt, 3 phase, 50 Hertz power supply. The tool is shipped with wiring set for 400 Volt operation unless otherwise specified on the order. To re-wire for 230 Volt service refer to "Electrical Schematic" and the name plate data on the drive motor name plate. The 230 Volt service requires a minimum of 20 amp circuit protection. VE436 components are all grounded to the tool frame. Be certain frame is properly grounded. For other voltages and frequencies, contact Victaulic Europe.

### DANGER



- **To reduce the risk of electric shock, check the electrical source for proper grounding.**
- **Always disconnect power before servicing or making any tool adjustments unless instructed otherwise.**
- **Failure to do so may result in serious personal injury.**

**TOOL NOMENCLATURE**



Item	Description
a	storage compartment
b	main power switch
c	groove diameter chart
d	stop button
e	pump start/jog button
f	dwell control
g	ram pressure gauge
h	pipe size indicator
i	depth adjuster
j	depth adjuster lock
k	hydraulic cylinder
l	upper shaft and roll
m	lower roll
n	stabilizer wheel and guard
o	stabilizer assembly
p	roll guard
q	foot switch

The numbers in the illustration indicate the location of the following warning labels:

- Label 1

**⚠ WARNING**

**Grooving rolls can crush or cut fingers and hands.**

- Keep hands away from grooving rolls and stabilizer wheel.
- Never reach inside pipe end or across the tool or pipe during operation.

- Never manually groove pipe shorter than what is recommended.
- Never wear loose clothing, loose gloves, or jewelry while operating tool.

0305.2

- Label 2

**⚠ WARNING**

**Failure to follow instructions and warnings can result in serious injury, property damage, or faulty installation.**

- Before installing, operating, or servicing this tool, read and understand the Operating Instructions and all warning labels on this tool.
- Always wear safety glasses and foot protection.

If you have any questions about the safe operation of this tool, contact Victaulic Tool Company, P.O. Box 31, Easton, PA 18044-0031, 610-559-3300.

0567 Rev. A

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- Label 3

**⚠ DANGER**

**Only Qualified Persons should open this door.**

**Hazardous voltage inside will cause serious injury or death.**

**ALWAYS disconnect power before servicing.**

0305.1

## VE436

### RECEIVING TOOL

---

Victaulic® VE436 tools are packed individually in sturdy containers, designed for use in reshipping the tool.

The stabilizer assembly and additional roll sets are shipped in a separate container.

**NOTE:** Be sure to save original shipping materials for return shipment of rental tools.

Upon receipt of tool, make sure all necessary parts are included. If any parts are missing, notify your Victaulic distributor or Victaulic representative.

### Container Contents



- Tool assembly
- Rolls for 114,3 - 168,3 mm, 219,1 - 323,9 mm, 355,6 - 406,4 mm, 457,0 - 508,0 mm, 559,0 - 610,0 mm and 660,0 - 914,0 mm steel pipe. The 219,1 - 323,9 mm rolls are mounted on the head assembly
- Stabilizer assembly and mounting hardware
- Two (2) tool operating manuals
- Pi-tape
- Hydraulic system bleeder hose
- Stabilizer extensions and tool support, used for grooving 660,0 - 914,0 mm pipe.

The standard series VE436 tools are supplied with grooving rolls for 114,3 - 914,0 mm carbon steel pipe. Rolls are marked with the size and part number and color coded for pipe material, for your convenience.

For grooving to other specifications and other materials, see "Tool Rating and Roll Selection" charts. Grooving rolls for other specifications and other materials must be purchased separately.



## TOOL SETUP

### WARNING

- Do not connect power until instructed otherwise.
- Accidental start up of tool may result in serious personal injury.

### WARNING

- During tool setup, one person cannot safely handle the tool because it is too heavy. A fork truck or hoist is required to safely lift the tool into position.
- One person cannot safely handle the stabilizer assembly, as it weighs 34 kg. Two people are needed to safely handle the assembly. If a hoist is available, use it to lift the stabilizer into position.
- Failure to do so may result in serious personal injury.

**1** Remove all components from the containers and check to be certain all necessary items are included. See "Receiving Tool."

**2** Locate the tool on a level concrete floor or base. The VE436 is designed to be used in a permanent location.

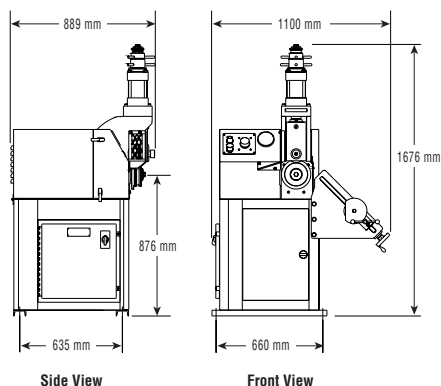
The choice of tool location and position should take into account the following factors:

- Pipe handling and support requirements
- Power supply requirements
- Ambient temperature requirements: -7°C to 40°C
- Clearance requirements around pipe stabilizer for easy adjustment

**3** When the tool is in position, carefully level it. Check tool levelness by placing level directly on tool frame as shown.



**4** Securely anchor the tool (see Figure 1) in a level position. A non-level tool can severely affect proper grooving operation.



**Figure 1** - Mounting hole locations (four 14 mm diameter through holes)

**5** Remove the six (6) stabilizer bolts and lock-washers from the front and right side of tool. Mount pipe stabilizer on tool. Position stabilizer on right front corner of tool so that the mounting holes in the stabilizer line up with the mounting holes on the tool. With the six (6) 1/2" bolts and lockwashers just removed, fasten the stabilizer to the tool. (Note: The tool frame has provisions to directly accept the bolts. No nuts are necessary.) Securely tighten all six (6) bolts as shown.

## VE436



### Power Hook-up

#### DANGER



- ONLY QUALIFIED ELECTRICIANS SHOULD CONNECT OR DISCONNECT INCOMING POWER TO TOOL.
- Failure to follow instructions and warnings may result in serious personal injury, property damage or improper installation.

The tool is supplied with a  $\frac{3}{4}$ " nominal conduit opening for wiring in power. It is located at the rear of the tool near the main electrical enclosure. Incoming electrical connections must be made inside the main electrical enclosure. The incoming three-phase power must be connected to the top side of the main breaker at the upper right within the enclosure.

The tool is supplied set up for 400 Volt, 3 phase, 50 Hz power unless specified otherwise. If 230 Volt is to be used, be sure proper conversions are made.

Conversions include:

- motor connections
- fuse changes
- thermal overload unit changes
- transformer connections

See "Electrical Schematic" for information.

- 1 Make ground connection inside main electrical enclosure.
- 2 Make three phase electrical connections to tool circuit breaker.

#### DANGER



- TOOL MUST BE PROPERLY GROUNDED.
- Failure to follow instructions and warnings may result in serious personal injury, property damage or improper installation.

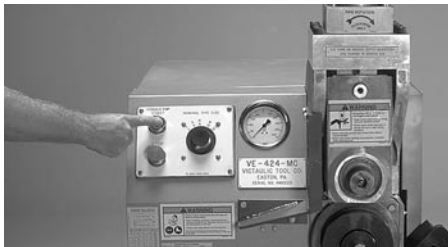
### Checking Roll Rotation

Once power is properly connected, the tool must be checked for proper rotational direction. Proceed as follows:

- 1 Set the main power switch to "ON". It is located on the main enclosure door.



- 2 Press pump button and hold for 1 to 2 seconds. Do not hold button any longer as damage to pump may result. Observe the tool's lower roll rotation direction and then release pump start button and push the stop button.



Proper roll rotation is clockwise. If clockwise, power hook-up is complete; proceed to "Pipe Preparation".

### Changing Roll Rotation

If roll rotation is counterclockwise, turn main power switch off and proceed as follows:

- 1** Disconnect line feeding tool at source and lock in the "OFF" position.
- 2** Open main enclosure and reverse any two incoming lines at the top side of the main breaker.
- 3** Close main enclosure and connect incoming power at source.
- 4** Set the main power switch to "ON" and check rotational direction again. It should now be clockwise. If not, consult Victaulic Europe.

## PRE-OPERATION ADJUSTMENTS

Every Victaulic® tool is checked, adjusted and tested at the factory prior to shipment. Before grooving, however, the following adjustments must be made in sequence to make sure of proper tool operation.

### WARNING

- Always disconnect power before servicing or making any tool adjustments unless instructed otherwise.
- Accidental start up of tool may result in serious personal injury.

### Grooving Rolls

Make sure the proper roll set is on the tool for the pipe size and material to be grooved. Rolls are marked with the pipe size, part number and color coded for the pipe material to be grooved. See "Tool Rating and Roll Selection" charts. If proper rolls are not on tool, refer to "Roll Changing".

### CAUTION

- Make sure roll retaining bolts and set screws are tight.
- Loose retaining bolts or set screws could seriously damage both the tool and rolls.

### Pipe Preparation

For proper tool operation, and production of proper pipe grooves, carefully observe the following pipe preparation tips.

- Pipe ends should be cut squarely in accordance with Column 1 note in the appropriate chart under "Roll Groove Specifications".
- Internal or external weld bead or seams must be ground flush with the pipe surface extending 51 mm back from the pipe end.
- The end of the pipe, both inside and out, must be cleaned of loose rust, coarse scale, dirt and other foreign material.

# VE436

## CAUTION

- For maximum grooving roll life, remove foreign material and loose rust.
- Foreign material such as coarse scale or dirt might interfere with or damage the grooving rolls or distort the groove. Rust is an abrasive material and will tend to wear out the surface of the grooving rolls.

Victaulic recommends that pipe shall be square ended. When using beveled pipe, standard wall or less, the bevel should not exceed 37,5°. Square ended pipe must be used with FlushSeal® and EndSeal® gaskets. For heavier pipe walls, square ended pipe is also required.

## Groovable Pipe Lengths

The VE436 is capable of grooving short pipe lengths without the use of a pipe stand (see Table 1), or long pipe lengths up to double randoms (approximately 12,2 m.) with the use of appropriate pipe stands.

### Short Pipe Lengths

Table 1 shows minimum and maximum pipe lengths that can be grooved without the need for a pipe stand. Refer to "Grooving Operation" for instructions on how to groove short pipe lengths. For pipe longer than shown in Table 1, refer to "Long Pipe Lengths".

## WARNING



- Grooving rolls can crush or cut fingers and hands.
- Loading and unloading pipe will place your hands close to the rollers.
- Never groove pipe shorter than what is recommended (See "Groovable Pipe Lengths").

**Table 1** - Pipe lengths groovable without a pipe stand

O.D. [mm]	Length – [mm]	
	Min.	Max.
60,3	203	914
73,0	203	914
88,9	203	914
101,6	203	914
114,3	203	914
127,0	203	813
141,3	203	813
152,4	254	762
168,3	254	711
203,2	254	610
219,1	254	610
273,0	254	508/381 *
323,9	305	457/356 †
355,6	305	406/330 §
406,4	305	406 ^

\* 508 mm long for aluminum, PVC and lightwall steel and stainless steel. 381 mm long for Sched. 30 and standard wall steel and stainless steel.

† 457 mm long for aluminum, PVC and lightwall steel and stainless steel. 356 mm long for Sched. 30 and standard wall steel and stainless steel.

§ 406 mm long for aluminum, PVC and lightwall steel and stainless steel. 330 mm long for Sched. 30 and standard wall steel and stainless steel.

^ 406 mm long for aluminum, PVC and lightwall steel and stainless steel. Always use a pipe stand for Sched. 30 and standard wall steel and stainless steel.

## NOTICE

**Always use a pipe stand when roll grooving pipe of size 660,0 mm and above. Never groove pipe shorter than 660 mm in these sizes.**

If a pipe shorter than the minimum shown in Table 1 is needed, if possible, shorten the next to last piece of pipe enough so that the last piece of pipe is as long or longer than the minimum length specified in Table 1. See example below.

**NOTICE**

Pipe nipples shorter than those shown in the table above are available from Victaulic.

**Example:** A 6.198 mm length of 273,0 mm diameter pipe is needed to finish a section and you only have 6.000 mm lengths available. Instead of roll grooving a 6.000 mm piece of pipe and a 198 mm piece of pipe, follow these steps:

- 1 Refer to Table 1 and note that for 273,0 mm diameter pipe, the minimum length that should be grooved is 508 mm
- 2 Roll groove a 5.690 mm piece of pipe and a 508 mm piece of pipe. Refer to "Long Pipe Lengths" below.

**Long Pipe Lengths**

With pipe in excess of the maximum length shown in Table 1, a roller type pipe stand must be used.

**NOTICE**

The figures below show the Victaulic adjustable pipe stand (VAPS 224). VAPS 224 is suitable for 60,3 - 610,0 mm pipe. Also available is Victaulic model VAPS 112 suitable for sizes 26,9 - 323,9 mm. See "Accessories".

- 1 Position pipe and pipe stand in accordance with the figures below.

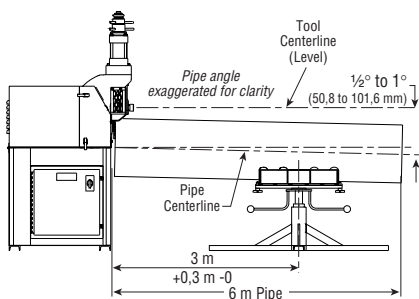


Figure 2 - Support of pipe

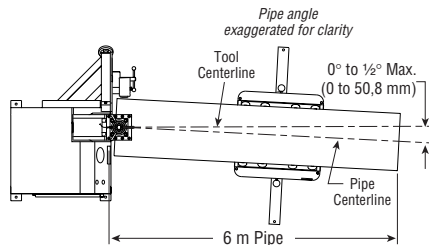


Figure 3 - Tracking angle

**WARNING**

- Pipe stand location will affect pipe tracking.
- Incorrect pipe stand position may cause the pipe to be pushed out of rolls and fall.
- Failure to position pipe and pipe stand in accordance with the figures shown may result in serious personal injury or property damage.

**CAUTION**

- Pipe position will affect pipe flare.
- When pipe end flare is excessive, right-to-left tracking must be kept to a minimum. It may be necessary to use less than 0,5°.
- Make sure tool is level (see "Tool Setup").
- If pipe is grooved with back end of pipe (end of pipe which is not in tool) higher than the end being grooved, pipe may not track and excessive pipe end flare may result.
  - Assembly of couplings on pipe exceeding Maximum Allowable Flare (see "Roll Groove Specifications" charts) may prevent closure of couplings pad-to-pad, allowing possible pipe separation, and result in property damage.
  - Also, joint leakage may result due to excessive gasket distortion/damage.

**NOTICE**

For additional information about pipe stands, refer to the Operating Instructions included with your pipe stand.

## VE436

### Pipe Stabilizer Adjustment

The Series VE436 pipe stabilizer is designed to prevent sway of 139,7 - 610,0 mm pipe. This applies to short as well as long pipes. Once the stabilizer is adjusted for a selected pipe size and wall thickness, it does not require further adjustment on that size and thickness. Pipe of the same size and thickness may be moved in and out of the tool without retracting the stabilizer.

#### WARNING

- Do not connect power until instructed otherwise.
- Accidental start up of tool may result in serious personal injury.

**1** Make sure the proper roll set is on the tool for the pipe size and material to be grooved. Rolls are marked with the pipe size, part number and color coded for the pipe material to be grooved. See "Tool Rating and Roll Selection" charts. If proper rolls are not on tool, refer to "Roll Changing".

**2** Loosen locking handle. With the hand wheel, retract the stabilizer roller to clear pipe when inserted onto lower roll.



**3** Insert a piece of pipe of the correct size and schedule/thickness to be grooved over the lower roll with the pipe end against the lower roll backstop flange.



**4** Advance stabilizer roller inward with the handwheel until the roller lightly contacts the pipe, then tighten locking handle.

#### CAUTION

**Do not adjust stabilizers to push pipe to the left and off center from the rolls. Doing so will cause increased pipe end flare and shorten roller life.**

- Assembly of couplings on pipe exceeding Maximum Allowable Flare (see "Roll Groove Specifications" charts) may prevent closure of couplings pad-to-pad, allowing possible pipe separation, and result in property damage.
- Also, joint leakage may result due to excessive gasket distortion/damage.

**5** Complete the "Pre-Operation Adjustments" and groove the pipe (see "Grooving Operation".) Observe the stabilizer roller while grooving. It should remain in contact with the pipe most of the time and the pipe should rotate smoothly without swaying from side to side. If not, advance stabilizer roller further inward. Re-test and make further adjustments as necessary. Remember, do not adjust stabilizer too far inward as it will skew the pipe to the left and possibly result in excessive pipe end flaring.

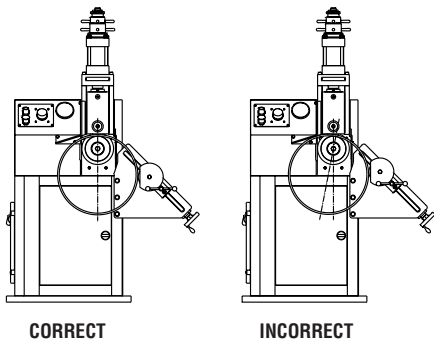


Figure 4 - Positioning the stabilizer.

## Groove Diameter Stop Adjustment

The groove diameter stop must be adjusted for each pipe size or change in wall thickness. Groove diameter, identified as the "C" dimension for each pipe size, is listed under "Standard Roll Groove Specifications".

### NOTICE

To perform the following adjustments, use several short scrap sections of pipe (but not shorter than what is recommended in the "Groovable Pipe Lengths" table) of the proper material, diameter and thickness to be grooved.

To achieve proper diameter:

- 1 Determine the size and thickness of pipe to be grooved. See "Pipe Dimensions" to determine proper schedule.
- 2 Locate the proper size and schedule on the pipe size indicator. It is rotatable for easy viewing.



- 3 Back off the depth adjuster lock. Align the depth adjuster with the proper size and schedule as shown. Lock the depth adjuster in position with the depth adjuster lock.



### NOTICE

The markings provide an approximate groove diameter adjustment and are not "exact" groove diameter settings. Variations in actual pipe O.D.'s and wall thicknesses make it impossible to calibrate the diameter stop exactly.

- 4 Using a piece of scrap pipe or short piece of pipe (refer to the "Groovable Pipe Lengths" table) of the diameter and wall thickness to be grooved, place the pipe over the lower roll with the pipe end against the lower roll backstop flange.



**WARNING**



- Grooving rolls can crush or cut fingers and hands.
- Always disconnect power before servicing or making any tool adjustments unless instructed otherwise.
- Keep hands away from grooving rolls and stabilizer wheel.
- Never reach inside pipe end or across the tool or pipe during operation.
- Never groove pipe shorter than what is recommended (See "Groovable Pipe Lengths").
- Never wear loose clothing, loose gloves, or jewelry while operating tool.

**5** Prepare a trial groove. To do so, follow the "Grooving Operation" procedures.

**6** After a trial groove is prepared and pipe removed from the tool, carefully check the groove diameter ("C" dimension), as charted under "Roll Groove Specifications". The "C" dimension is best checked with a pipe tape. It also may be checked with a vernier caliper or narrow-land micrometer at two locations, 90° apart, around the groove. Average reading must equal the required groove diameter specification.

**CAUTION**

- The "C" dimension (groove diameter) must always conform to specifications under "Roll Groove Specifications" to ensure proper joint performance.
- Failure to follow instructions and warnings may result in serious personal injury, property damage or improper installation.

**7** If groove diameter ("C" dimension) is not within tolerance, the diameter stop must be adjusted to obtain the proper dimension. To adjust for a **smaller groove diameter**, turn the depth adjuster **counterclockwise**. To adjust for a **bigger groove diameter**, turn adjuster **clockwise**. A quarter turn either way will change the groove diameter adjustment by 1,07 mm (4,24 mm per full turn).

**8** Prepare another trial groove and check the groove diameter again. Repeat the two previous steps until the groove diameter is within specification. If excessive pipe flaring or stalling of the drive motor occurs, even when roll grooving with the reduced ram pressure ("black" selector valve setting), adjustment of the Ram Speed Control Valve is required.

**Adjusting the Ram Speed Control Valve**

The Ram Speed Adjustment is Factory Set for Roll Grooving Steel. If the pipe to be grooved is



another material, the Ram Speed must be readjusted.

- 1 Open the top enclosure. Locate the key, stored in a magnetic key box, which fits the hydraulic speed control valve.



- 2 Insert key into ram speed control valve as shown and turn to unlock.



- 3 With key inserted in valve, rotate knob until knob "locks in". Adjust valve to proper setting as indicated in the table below.



Pipe Material	Valve Setting
Steel	2.5
Steel, Extra Strong	5.0
Stainless Steel Types 304 & 316	1.5
Aluminum 6061-T4, 6063-T4	3.0
PVC	10.0

- 4 Remove key from valve and return to its stored location.

### **NOTICE**

- The ram speed control only affects the rate at which the upper roll forms the groove. It does not affect the rate at which the upper roll advances to contact the pipe nor does it affect the rate at which the roll retracts from the pipe at the completion of the groove.
- Ram speed during the formation of the groove can have a significant effect on pipe end flaring. The above recommended settings will produce excellent grooves in most situations. However, should excessive flaring result at these settings, reducing the settings will usually correct the condition. For example, adjust to a setting of 1.5 or 2.0 on steel when flaring is excessive at the 2.5 setting.

### **Adjusting the Dwell Control**

The Dwell Control Adjustment controls the length of time the tool continues to rotate the pipe once the groove diameter stop contacts the top of the hydraulic cylinder. When adjusted to the proper pipe size, the pipe will rotate a minimum of one revolution after the groove diameter stop contacts the hydraulic cylinder. This assures that the groove in the pipe will be of uniform depth around entire pipe circumference.

- 1 Adjust the dial marked "Nominal Pipe Size" to the pipe size requiring grooving.



**NOTICE**

During grooving the groove diameter stop may occasionally ride up and down making contact and then breaking contact with the hydraulic cylinder. This is normal for pipe that has a pronounced weld seam or hard spot.

**GROOVING OPERATION**

**CAUTION**

- Victaulic® Series VE436 tools are designed **ONLY** for roll grooving pipe of the sizes, materials and wall thicknesses outlined under "Tool Rating and Roll Selection".
- Grooving pipe other than that recommended will result in improper pipe end configuration or improper groove dimensions for applying Victaulic products.

Before grooving, make sure you have followed all instructions in:

- "Tool Setup"
- "Grooving Rolls"
- "Pipe Preparation"
- "Groovable Pipe Lengths"
- "Pipe Stabilizer Adjustment"
- "Groove Diameter Stop Adjustment"
- "Adjusting the Ram Speed Control Valve"
- "Adjusting the Dwell Control"

**WARNING**



- Before operating tool, review precautions under "Operator Safety Instructions".
- Failure to follow instructions and warnings may result in serious personal injury, property damage or improper installation.

**DANGER**

- To reduce the risk of electric shock, check the electrical source for proper grounding.
- Always disconnect power before servicing or making any tool adjustments unless instructed otherwise.
- Failure to do so may result in serious personal injury.

## Grooving with Pipe in Roller-Type Pipe Support

**1** Set the main power switch to "ON" and push pump start button.

**WARNING**

- Grooving rolls can crush or cut fingers and hands.
- Keep hands away from grooving rolls and stabilizer wheel.
- Never reach inside pipe end or across the tool or pipe during operation.
- Always groove pipe in a clockwise direction only.
- Never groove pipe shorter than what is recommended (See "Groovable Pipe Lengths").
- Never wear loose clothing, loose gloves, or jewelry while operating tool.

**2** Insert pipe onto lower roll up against lower roll backstop flange as shown.



**3** Operator should be positioned as shown.

## VE436



**4** To initiate grooving, depress and hold down the safety foot switch to start tool. The upper roll will move down to contact the pipe, starting the pipe rotation and grooving process.

**5** As grooving continues, the groove diameter stop will move down and contact the hydraulic cylinder. The tool will automatically release the pipe a few seconds later. Release foot switch and withdraw foot from switch.

**6** After tool releases pipe and rolls have stopped rotating, push stop button and remove pipe from tool.



### WARNING



- Grooving rolls can crush or cut fingers and hands.
- Do not place hand(s) inside end of pipe to pull pipe out of tool or place hand(s) in area of grooving rolls or stabilizer roller.

### NOTICE

If pipe remains lodged in lower roll, momentarily depressing the pump start button will "jog" the lower roll, freeing the pipe. Do not attempt to pull the pipe out of the rolls while "jogging" the lower roll. Push stop button.

### NOTICE

Groove diameter should be correct for the diameter and wall thickness of pipe for which it was set under "Groove Diameter Stop Adjustment". Groove diameter should be checked and adjusted as necessary to ensure grooves are within specification.

## Grooving Short Pipe Lengths

### WARNING



- Grooving rolls can crush or cut fingers and hands.
- Loading and unloading pipe will place your hands close to the rollers.
- Never groove pipe shorter than what is recommended (See "Groovable Pipe Lengths").

**1** Set the main power switch to "ON" and push pump start button.



**2** Insert pipe onto lower roll up against lower roll backstop flange as shown.



**3** To initiate grooving, depress and hold down the safety foot switch to start tool. The upper roll will move down to contact the pipe, starting the pipe rotation and grooving process.

**4** As grooving continues, the groove diameter stop will move down and contact the hydraulic cylinder. The tool will automatically release the pipe a few seconds later. Release foot switch and withdraw foot from switch.

**5** After tool releases pipe and rolls have stopped rotating, push stop button and remove pipe from tool.



## WARNING



- Grooving rolls can crush or cut fingers and hands.
- Do not place hand(s) inside end of pipe to pull pipe out of tool or place hand(s) in area of grooving rolls or stabilizer roller.

## NOTICE

Groove diameter should be correct for the diameter and wall thickness of pipe for which it was set under "Groove Diameter Stop Adjustment". Groove diameter should be checked and adjusted as necessary to ensure grooves are within specification.

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## ROLL CHANGING

### WARNING

- Always disconnect power before servicing or making any tool adjustments unless instructed otherwise.
- Accidental start up of tool may result in serious personal injury.

### NOTICE

Victaulic® Series VE436 roll grooving tools are designed for fast, easy grooving. Rolls accommodate several pipe sizes (refer to "Tool Rating and Roll Selection") eliminating the need for frequent roll changes. When a different size range is encountered or special grooving styles are required, the grooving rolls must be changed and Pre-Operation Adjustments performed again. Also, different pipe materials may require that the rolls be changed. Refer to "Tool Rating and Roll Selection" for proper roll selection.

### Slide Spacer Removal

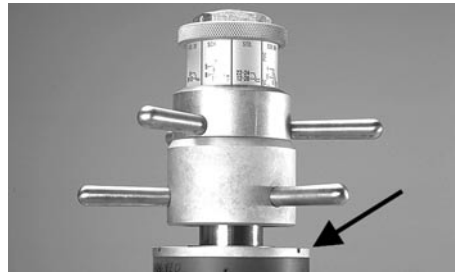
### NOTICE

Slide/Upper Roll must return to its maximum upper position prior to changing rolls. The Slide Spacer will limit the travel of the Slide.

- 1 Set the main power switch to "ON" and push pump start button.



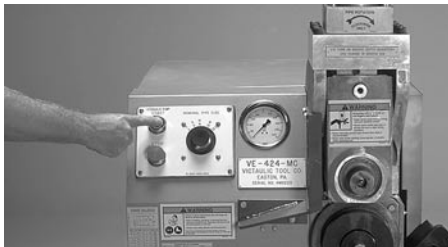
- 2 Depress foot switch and as soon as the groove diameter stop contacts the hydraulic cylinder, press the red stop button. Release foot switch and withdraw foot from switch.



- 3 Remove the slide spacer by snapping it out as shown.



- 4 Push the pump start button to retract (raise) the slide. Once slide is fully retracted, push the stop button and turn main tool power "OFF".



## Roll Removal

### WARNING

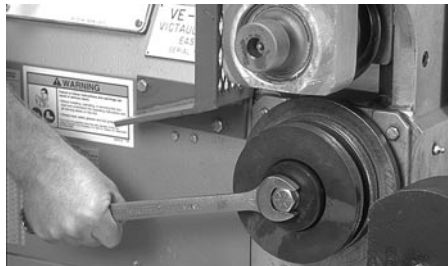
- Always disconnect power before servicing or making any tool adjustments unless instructed otherwise.
- Accidental start up of tool may result in serious personal injury.

#### Lower Roll (all sizes)

- 1 Set the main power switch to "OFF".



- 2 Loosen and remove the bolt and retaining plate as shown. Place on a clean surface.



- 3 Slide lower roll off the main shaft as shown and store in a clean place.



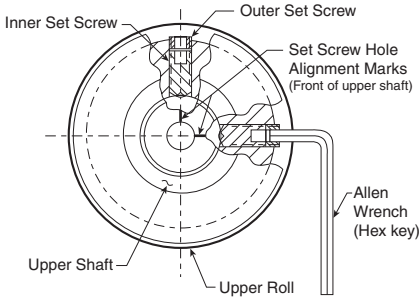
### NOTICE

Be careful not to lose the Woodruff keys. They should remain in the lower shaft. Inspect the Woodruff keys and replace if damaged. Spare Woodruff keys are supplied with instruction manual.

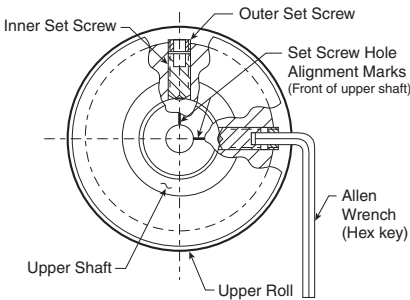
#### Upper Roll (all sizes)

- 1 With the  $\frac{3}{16}$ " Allen wrench, loosen the outer set screw about one half turn as shown.

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**2** Fully insert Allen Wrench through outer set screw and into inner set screw as shown and loosen 2 turns.



**3** Repeat Steps 1 and 2 on remaining set screws 90° from those loosened.

**4** With one hand, support the upper roll from the bottom; with the other hand, withdraw the upper shaft as shown. When the upper shaft is withdrawn, the upper roll will drop into your hand.



**5** Store roll in a clean place.

## Roll Installation

### Upper Roll (all sizes)

**1** Inspect the upper shaft bearings. Replace if damaged or worn.

**2** Clean all shaft surfaces and roll bores of any dirt and/or scale before installation.



**3** Insert the desired upper roll into the slide with markings facing forward. Fully insert the shaft into the slide and through the upper roll and slide bearings as shown.





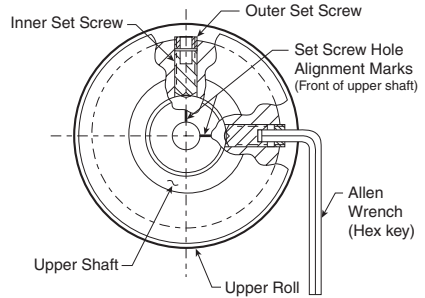
**NOTICE**

**Do not force shaft. Shaft should fit freely through upper roll and bearings.**

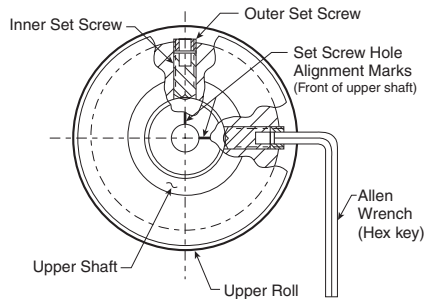
- 4** Align the upper roll set screws with the radial lines on front of the upper shaft as shown.



- 5** Hold the upper roll against the front shoulder of the upper shaft. With the  $\frac{3}{16}$ " Allen Wrench supplied, "feel" the inner set screw into the set screw hole on upper shaft as you tighten. Allen Wrench must be in the position shown to tighten inner set screw.



- 6** Withdraw Allen Wrench to position shown and securely tighten the outer set screw.



- 7** Repeat the two previous steps for remaining set screws 90° from those tightened. Make sure these set screws are aligned with a radial line on the front of the upper shaft.

**Lower Roll (all sizes)**

**NOTICE**

**Clean main shaft and lower roll bore of any dirt and/or scale before installation. Make repairs as necessary.**

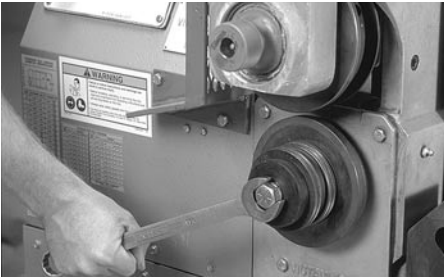
- 1** Slide desired size lower roll fully onto main shaft with the marked side facing forward as shown. Properly align roll with the Woodruff key on main shaft.

# VE436

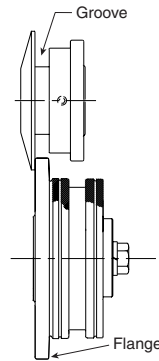


**NOTE:** To aid in removing roll at a later time, you may apply a thin film of oil or grease (anti-seize lubricant) to the main shaft before installing the lower roll.

**2** Install lower roll retaining plate and bolt as shown. Securely tighten bolt with a wrench.



**2** Depress foot switch and align upper roll "groove" with lower roll pipe stop flange as slide advances. Align upper roll by using the knob on the front of the upper shaft.



**3** Once the slide has advanced about 25 mm and the rolls are aligned and engaged, press the red stop button.

**NOTICE**  
Slide spacer must be installed before grooving.

## Slide Spacer Installation

**1** Set the main power switch to "ON" and push pump start button.



**4** Snap in the slide spacer as shown.



**5** Push the pump start button to retract (raise) the slide. Once slide is fully retracted, push the stop button.

**6** Grease upper shaft bearings as shown by applying grease through lubrication fitting on the front of the upper shaft (See "Recommended Lubricants").



Roll installation is complete.

Before grooving, make sure all "Pre-Operation Adjustments" are reviewed and followed.

## CONVERSION FOR GROOVING OF 660,0 - 914,0 MM PIPE

### Adjusting for Clearance of 660,0 - 914,0 mm Pipe

- 1** Remove the bolts that secure the tool to the floor.
- 2** If tool is connected to power supply by means of rigid conduit, provisions must be made at this time to disconnect and revise conduit. Disconnect power at source and lock out.
- 3** Move the machine out of the way to make room for new tool supports.
- 4** Secure the tool supports (supplied) to the floor, front to back, using the original anchor bolts.
- 5** Place the tool on top of the tool supports and secure with the four (4)  $\frac{1}{2}$  - 13" x 3" Lg. bolts, nuts and washers provided.

### WARNING

- One person cannot safely handle the stabilizer assembly, as it weighs 34 kg. Two people are needed to safely handle the assembly. If a hoist is available, use it to lift the stabilizer into position.
- Failure to do so may result in serious personal injury.

- 6** Remove the stabilizer assembly from side of machine.

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- 7** Attach the front stabilizer extension to front of machine using existing hardware.



- 8** Attach rear stabilizer extension to side of machine, as shown, with the two (2)  $\frac{1}{2}$  - 13" x 4" Lg. bolts, and washers provided.



### WARNING

- One person cannot safely handle the stabilizer assembly, as it weighs 34 kg. Two people are needed to safely handle the assembly. If a hoist is available, use it to lift the stabilizer into position.
- Failure to do so may result in serious personal injury.

- 9** Reattach the stabilizer. Place it behind the front extension and on top of rear extension. Install and tighten the three (3)  $\frac{1}{2}$  - 13" x 1  $\frac{1}{4}$ " bolts and lockwashers from the rear, as shown. Use existing bolts and lockwashers to attach stabilizer to the rear extension.



- 10** If tool was disconnected from incoming power, reconnect power. Refer to "Power Hook-Up".
- 11** Perform the "Air Bleeding" procedure.
- 12** Install the rolls (see "Roll Changing") and adjust the stabilizer (see "Pipe Stabilizer Adjustment").

Tool conversion for 660,0 - 914,0 mm pipe is now complete. Refer to "Grooving Operation".

### NOTICE

- For initial groove depth setting, set depth adjuster to 24" and rotate depth adjuster one full turn counter-clockwise.
- For dwell control adjustment, set pointer to approximately the 3 o'clock position, about 18 mm past the 24" marking.

## MAINTENANCE

### General

This manual provides information to permit the operator of Victaulic® roll grooving tools to keep his equipment in top operating condition and to guide him in making repairs when it becomes necessary.

Replacement parts, applicable only to these tools, should be ordered from Victaulic to ensure proper operation of the tool. All parts are supplied ex Nazareth, Belgium – unless otherwise stated – at the price in effect at the time of ordering.

### NOTICE

Remember that preventative maintenance during operation will pay for itself in repair and operating savings.

### DANGER

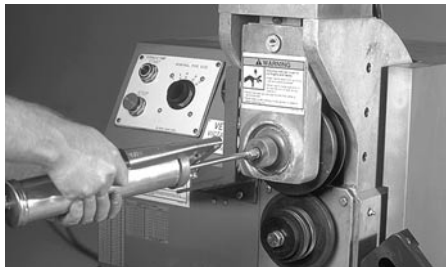


- Always disconnect power before servicing or making any tool adjustments unless instructed otherwise.
- Failure to do so may result in serious personal injury.

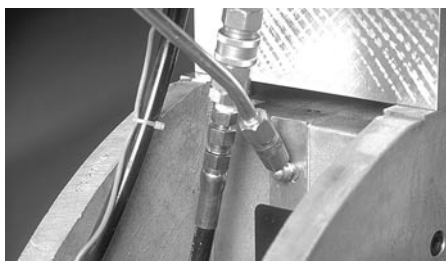
### Lubrication

After every eight hours of operation lubricate the tool. Always lubricate upper roll bearings when rolls are changed.

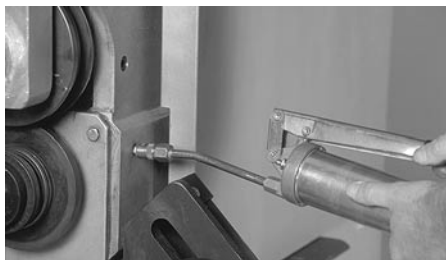
**1** Grease upper shaft bearings as shown every time roll changes are made or once every eight hours of operation, whichever comes first. Refer to recommended lubricants chart at the end of this manual for proper grease. A grease fitting is provided on the front of the upper shaft.



**2** Grease the slide gibs. The slide gib grease fitting is on the back side of the slide accessible with the tool hood open.

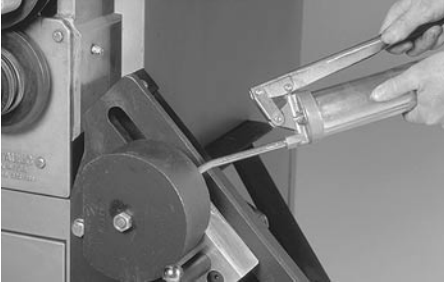


**3** Grease the main shaft bearings as shown, using the fitting located on the side of the tool.



**4** Grease the stabilizer wheel.

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### Hydraulic Systems

Check the hydraulic oil level at least every 50 hours of operation, preferably before start up. The oil level should be no lower than 25 mm from the top of the tank. Fill with recommended hydraulic oil (refer to "Recommended Lubricants") to no higher than 19 mm from the top of the tank. The 19 mm clearance is needed for the expansion of the hydraulic fluid when higher temperatures are reached.



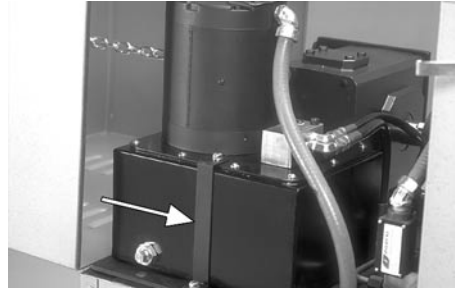
### NOTICE

Be sure to use a recommended hydraulic oil.

### Replacing Hydraulic Oil and Filter

Change the hydraulic oil and filter once a year or every 2000 hours of operation, whichever comes first.

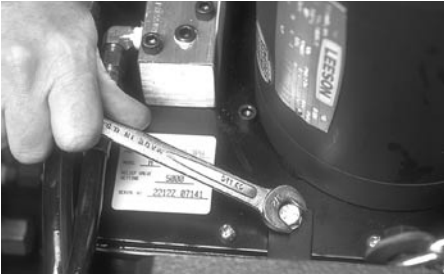
- 1 Raise tool hood.
- 2 Locate the two brackets which hold the oil reservoir to the frame.



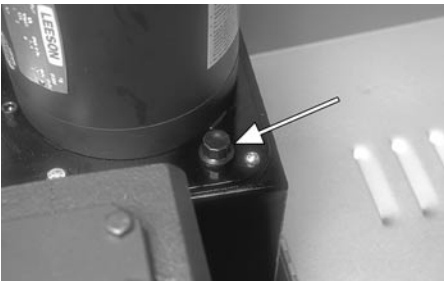
- 3 Loosen the screws on the bracket nearest the drain plug. Remove the bracket and set it aside.



- 4 On the other bracket, loosen and remove the screw on the top of the reservoir. There is no need to loosen the screw which holds the bracket to the frame.



**5** Remove the fill/vent plug from the top of the reservoir.



**6** Slide the reservoir partially over the side of the tool. Do not disconnect any electrical or hydraulic lines.



**7** Position a container large enough to hold 7,57 l of oil underneath the drain plug.



**8** Remove the drain plug and drain the oil.



**9** Replace the drain plug. Slide reservoir back into position and reattach the brackets.

**10** Place a tray under the oil filter and remove the filter.

# VE436



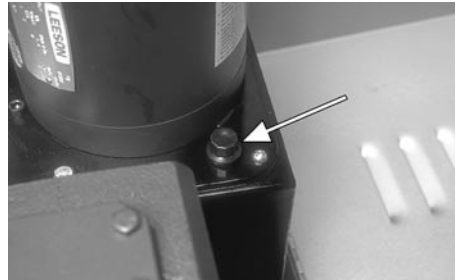
**11** Lubricate new filter gasket with new hydraulic oil. Install new filter hand tight.



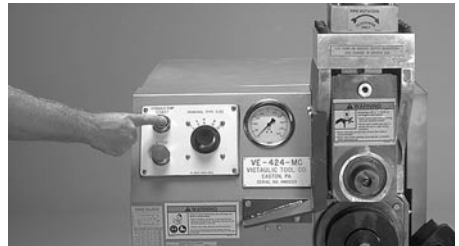
**12** Fill the tank with new hydraulic oil to 19 - 25 mm from top of tank. See the "Recommended Lubricants".



**13** Install the fill/vent plug.

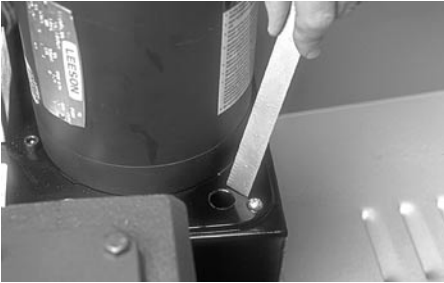


**14** Set the main power switch to "ON" and push pump start button.



**15** Check hydraulic oil level and add oil as necessary.

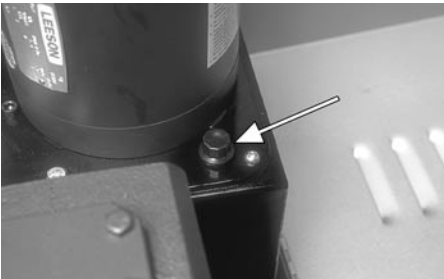




**16** Push stop button and proceed with the "Air Bleeding" procedure.

**Air Bleeding**

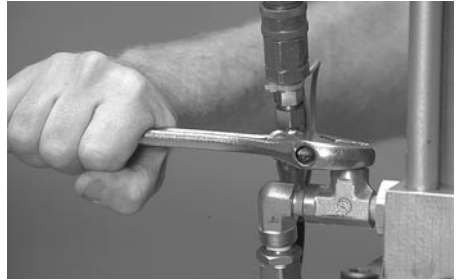
**1** Remove fill/vent plug from hydraulic tank.



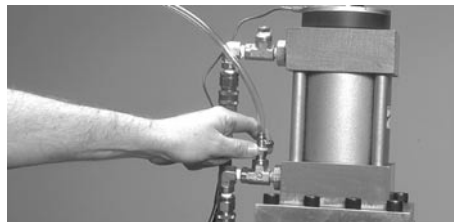
**2** Bring hydraulic oil up to specification (19 - 25 mm from top of tank). Refer to "Recommended Lubricants" for proper hydraulic oil.



**3** Remove plug from the tee at the bottom hydraulic cylinder port.



**4** Install a bleeder tube into tee, as shown. Insert other end of tube into fill/vent hole in hydraulic tank.



**5** Start pump motor. Hydraulic oil will start flowing from the tee through the bleeder tube into the tank.



**6** Depress foot switch and hold for 5 seconds, then release for 5 seconds. Repeat until no air bubbles can be seen in the clear vinyl tube, then push the stop button.

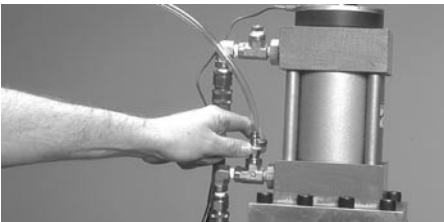
**7** Remove bleeder tube and install plug into tee.



**NOTICE**

- Be careful not to let air back into tee when installing plug.
- To prevent oil from flowing out of tee while removing bleeder tube and installing plug, block the groove diameter stop from moving down by inserting a piece of wood between groove diameter stop and top of hydraulic cylinder.

**8** Repeat Steps 4 through 7 for bleeding from the tee at the top hydraulic cylinder port. The image shows the bleeder tube installation.



**NOTICE**

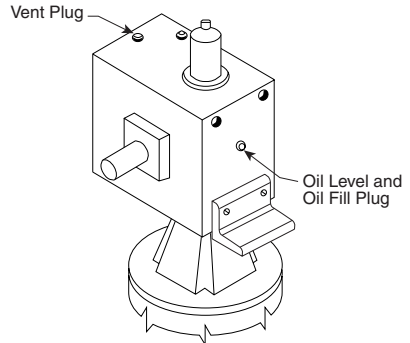
To prevent air from entering tee while the bleeder tube is being removed and the plug installed, hold the 4-way valve in the "shifted" position by pressing in on the rubber boot on the end of the valve. Keep depressed until plug is installed and tightened.

**9** Bring hydraulic oil up to specification (19 - 25 mm from top of tank).



**Gear Reducer Oil Level Check**

**1** Remove oil level plug from gear reducer (see Figure 6). Oil level should be even with bottom of hole.



**Figure 5** - Oil/fill level plug of gear reducer

**2** To add oil, remove oil fill/level plug from side of gear reducer and fill to proper level (see Figure).

**3** Install plug(s).

**Recommended Lubricants**

**Bearing and Slide Grease**

General Purpose E.P. Lithium Base Grease.

**PARTS ORDERING INFORMATION**

<b>Manufacturer</b>	<b>Product</b>
Amoco Oil	Amolith Grease #2EP
Arco Petroleum Prod. Co.	Litholine HEP 2
Ashland Oil, Inc./Valvoline Oil Co.	Multi-Lube Lith. EP Grease
Exxon Co., USA	Lidok EP 2
Gulf Oil Corp.	Gulfocrown Grease EP#2
Kendall Refining Co.	L-426
Lubriplate	No. 630-2
Mobil Oil Corp.	Mobilux EP2
Pennzoil Prod. Co.	Pennlith EP 712 Lube
Shell Oil Co.	Alvania EP2
Sun Refining	Sun Prestige 742 EP
Texaco Inc.	Multifak EP2

**Gear Oil**

See tag on Gear Reducer.

**Hydraulic Oil**

High Pressure Anti-Wear Hydraulic Oil ISO Grade 32.

<b>Manufacturer</b>	<b>Product</b>
Amoco Oil	Rykon Oil #32
Arco Petroleum Prod. Co.	Duro AW 32
Ashland Oil, Inc./Valvoline Oil Co.	AW Oil #15
Exxon Co., USA	Nuto H 32
Gulf Oil Corp.	Harmony 32 AW
Kendall Refining Co.	Kenoil R&O AW-32
Lubriplate	HO-O
Mobil Oil Corp.	Mobil DTE 24
Pennzoil Prod. Co.	AW 32 Hyd. Oil/Penreco Oil 32
Shell Oil Co.	Tellus 32
Sun Refining	Survis 706, 816 WR
Texaco Inc.	Rando Oil HD 32

When ordering parts, the following information is necessary for Victaulic Europe to process the order promptly and send the correct part(s):

- Tool Model Number: VE436
- Tool Serial Number. The serial number can be found on the side of the tool name plate.
- (Quantity), Item Number, Part Number and Description. Example: (1) #R-105-424-VEO, Upper Shaft.
- Where to send the part(s): company name, address
- To whose attention to send the part(s): person's name
- Purchase Order Number
- Billing Address

You can order parts directly from Victaulic Europe.

## VE436

### ACCESSORIES

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#### Pipe Stands

##### **Victaulic Adjustable Pipe Stand VAPS224**



Victaulic Model VAPS 224 (art. code: R000224PS0), a portable, adjustable, roller type, pipe stand for use with Victaulic roll grooving tools, is available from Victaulic Europe. Ball transfer rollers, adjustable for pipe from 60,3 - 610,0 mm, will accommodate linear and rotational movement. Turnstile design permits easy swivel for grooving both pipe ends. Contact Victaulic for details.

##### **Victaulic Adjustable Pipe Stand VAPS3036**



Victaulic Model VAPS3036 is also available from Victaulic Europe. It has features similar to the VAPS224 and is suitable for pipe sizes from 660,0 - 914,0 mm. Consult Victaulic Europe for details.

##### **Victaulic Adjustable Pipe Stand 236PS**

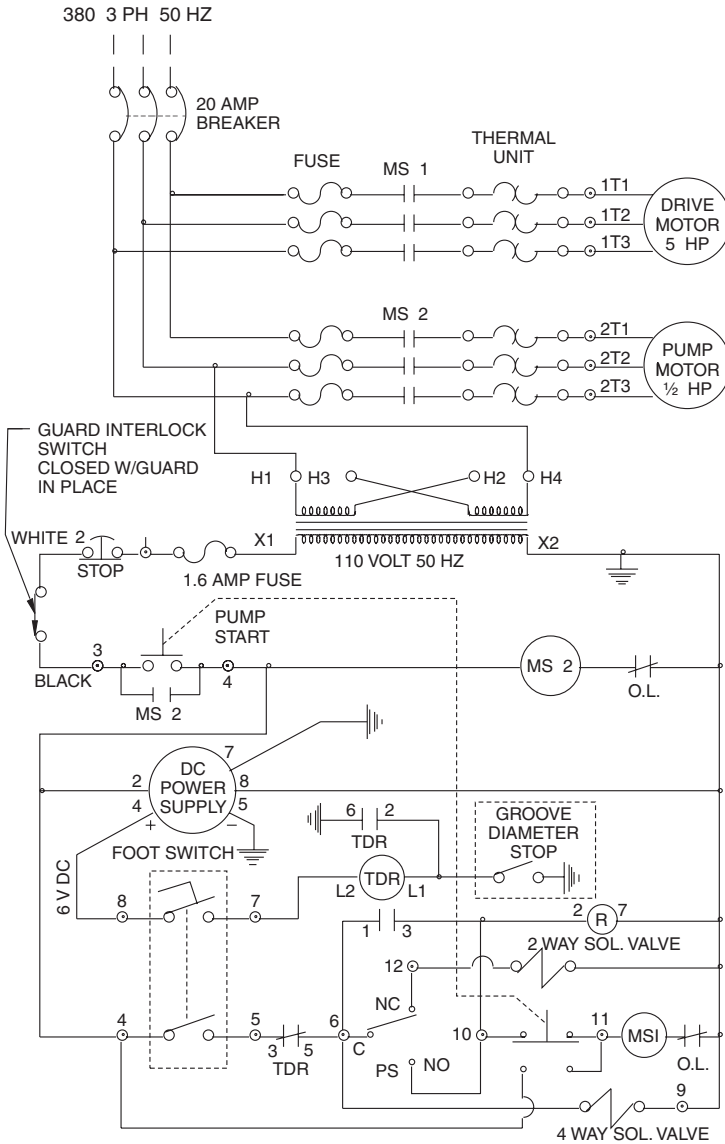


Victaulic Model 236PS is also available from Victaulic Europe. It is designed especially for Extra Strong pipe sizes 660,0 - 914,0 mm.

## TROUBLESHOOTING

Problem	Possible Cause	Solution
Pipe will not stay in grooving rolls.	Incorrect pipe positioning.	See Pipe Support section.
	Improper manual grooving technique.	See "Grooving Operation" - Grooving Short Pipe Lengths section.
Pipe stops rotating during grooving.	Rust or dirt has built up on lower roll.	Remove accumulation from lower roll with stiff wire brush.
	Rust or dirt is excessively heavy inside the pipe end.	Remove heavy rust and dirt from inside pipe end. See "Pipe Preparation".
	Worn grooving rolls.	Inspect lower roll for worn knurls, replace if worn.
	Ram Speed Control Valve requires adjustment.	Set the valve to the value corresponding to the pipe to be grooved. See table under "Adjusting the Ram Speed Control Valve".
	Woodruff keys under lower roll are damaged or missing.	Remove lower roll, replace key and reinstall lower roll. See "Roll Changing".
	Circuit breaker has tripped or fuse has blown on electrical circuit supplying motor.	Reset breaker or replace fuse.
Pipe flare is excessive.	Pipe support adjusted too high.	Check pipe levelness. See Pipe Support section.
	Ram Speed Control Valve requires adjustment.	Set the valve to the value corresponding to the pipe to be grooved. See table under "Adjusting the Ram Speed Control Valve".
	Tool is tilted forward.	Check tool levelness. See Tool Setup section.
	Incorrect pipe support positioning, pipe is "overtracking".	Move pipe support to the right. See Pipe Support section.
	Stabilizer(s) is pushing pipe to the left and off center from the rolls.	Back off stabilizer(s) to the furthest point where it still stabilizes pipe effectively. See Stabilizer Adjustment section.
Pipe vibrates or sways from side to side.	Incorrect stabilizer adjustment.	Move stabilizer in or out until pipe rotates smoothly. See Stabilizer Adjustment section.
While grooving, loud squeaks echo through the pipe.	Pipe not square cut.	Cut pipe end squarely.
	Incorrect pipe support positioning, pipe is "overtracking".	Move pipe support to the right. See Pipe Support section.
	Pipe is rubbing excessively hard on lower roll flange.	Remove pipe from tool and apply a film of grease to the face of the lower roll flange as needed.
During grooving, loud thumps or bangs occur about once every revolution of the pipe.	Pipe has a pronounced weld seam.	Grind welds flush with pipe surface inside and out 51 mm back from pipe end.
Pump won't start or lower roll won't rotate.	Main power is off.	Turn on main power.
	Thermal units tripped.	Reset thermal units.
	Fuses blown.	Check fuses and replace as necessary.
Tool comes up to operating pressure excessively slow.	Air in hydraulic system.	Bleed air from hydraulic system.
Upper roll won't rotate	Dirt trapped between roll and slide or retaining plate.	Remove upper roll and clean off dirt. Reinstall upper roll.

**ELECTRICAL SCHEMATIC**



## TOOL RATING AND ROLL SELECTION

### Standard Rolls

O.D. [mm]	1		2		3		4		Standard Roll Nos.
	Nominal Wall Thickness Dimensions - [mm]								
	Steel Pipe		Stainless Steel Pipe		Aluminum Pipe		PVC Plastic Pipe		
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
114,3	2,11	9,53	6,02	6,02	2,11	6,02	6,02	8,55	Lower Roll R904436L06
141,3	2,77	9,53	6,55	6,55	2,77	6,55	6,55	9,53	
168,3	2,77	9,53	7,11	7,11	2,77	7,11	7,11	10,97	Upper Roll R904436U06
219,1	2,77	9,53	6,35	8,22	2,77	8,22	8,22	12,70	Lower Roll R908436L12
273,0	3,40	9,53	6,35	9,27	3,40	6,35	9,27	15,06	
323,9	4,00	9,53	6,35	9,53	3,96	6,35	10,30	17,45	Upper Roll R908436U16
355,6	3,96	9,53	7,92	9,53	-	-	11,13	11,13	Lower Roll R914436L16
406,4	4,19	9,53	7,92	9,53	-	-	12,70	12,70	Upper Roll R914436U16
457,2	4,19	9,53	9,53	9,53	-	-	-	-	Lower Roll R918436L20
508,0	4,65	9,53	9,53	9,53	-	-	-	-	Upper Roll R918436U20
559,0	4,78	9,53	9,53	9,53	-	-	-	-	Lower Roll R922436L24
610,0	5,54	9,53	9,53	9,53	-	-	-	-	Upper Roll R922436U24
711,0	6,35	9,53	9,53	9,53	-	-	-	-	Lower Roll R930436L36
762,0	6,35	9,53	9,53	9,53	-	-	-	-	
813,0	6,35	9,53	9,53	9,53	-	-	-	-	
914,0	6,35	9,53	9,53	9,53	-	-	-	-	Upper Roll R930436U36

Notes for Standard Rolls:

COLUMN 1: **Steel Pipe** – Maximum ratings on steel are limited to pipe of 180 BHN (Brinell Hardness Number) and less.

COLUMN 2: **Stainless Steel Pipe** – Types 304/304L and 316/316L

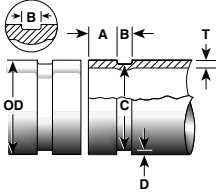
COLUMN 3: **Aluminum Pipe** – Alloys 6061-T4 and 6063-T4

COLUMN 4: **PVC Plastic Pipe** – PVC Type I Grade I - PVC1120; PVC Type I Grade II - PVC1220; PVC Type II Grade I - PVC2116

The following pipe sizes may also be grooved: 76,1 mm., 108,0 mm., 133,0 mm., 139,7 mm., 159,0 mm., 165,1 mm., 254,0 mm and 304,8 mm. Contact Victaulic Europe for details.

**ROLL GROOVE SPECIFICATIONS**

**Steel Pipe and All Materials Grooved with Standard Rolls**



1			2	3	4		5	6	7
O.D. - [mm]			Dimensions - [mm]						
Basic	Tolerance		Gasket Seat A ±0,76	Groove Width B ±0,76	Groove Dia. C		Grv. Depth D (ref.)	Min. Wall Thk. T	Max. Flare Dia.
	+	-			Basic	Tolerance			
108,0	1,04	0,79	15,88	8,74	103,73	-0,51	2,11	2,11	110,5
114,3	1,14	0,79	15,88	8,74	110,08	-0,51	2,11	2,11	116,8
127,0	1,27	0,79	15,88	8,74	122,78	-0,51	2,11	2,41	129,5
133,0	1,34	0,79	15,88	8,74	129,13	-0,51	2,11	2,77	135,9
139,7	1,42	0,79	15,88	8,74	135,48	-0,51	2,11	2,77	142,2
141,3	1,42	0,79	15,88	8,74	137,03	-0,56	2,13	2,77	143,8
152,4	1,42	0,79	15,88	8,74	148,06	-0,56	2,16	2,77	154,9
159,0	1,60	0,79	15,88	8,74	153,21	-0,56	2,16	2,77	161,3
165,1	1,60	0,79	15,88	8,74	160,78	-0,56	2,16	2,77	167,6
168,3	1,60	0,79	15,88	8,74	163,96	-0,56	2,16	2,77	170,9
203,2	1,60	0,79	19,05	11,91	198,53	-0,64	2,34	2,77	207,5
219,1	1,60	0,79	19,05	11,91	214,40	-0,64	2,34	2,77	223,5
254,0	1,60	0,79	19,05	11,91	249,23	-0,69	2,39	3,40	258,3
273,0	1,60	0,79	19,05	11,91	268,28	-0,69	2,39	3,40	277,4
304,8	1,60	0,79	19,05	11,91	299,24	-0,76	2,77	3,96	309,1
323,9	1,60	0,79	19,05	11,91	318,29	-0,76	2,77	3,96	328,2
355,6	1,60	0,79	23,83	11,91	350,04	-0,76	2,77	3,96	359,7
381,0	1,60	0,79	23,83	11,91	375,44	-0,76	2,77	4,19	383,5
406,4	1,60	0,79	23,83	11,91	400,84	-0,76	2,77	4,19	410,5
457,2	1,60	0,79	25,40	11,91	451,64	-0,76	2,77	4,19	461,3
508,0	1,60	0,79	25,40	11,91	502,44	-0,76	2,77	4,78	512,1
559,0	1,60	0,79	25,40	12,70	550,06	-0,76	4,34	4,78	563,9
610,0	1,60	0,79	25,40	12,70	600,86	-0,76	4,34	5,54	614,7



1			2	3	4		5	6	7
O.D. - [mm]			Dimensions - [mm]						
Basic	Tolerance		Gasket Seat A $\pm 0,76$	Groove Width B $\pm 0,76$	Groove Dia. C		Grv. Depth D (ref.)	Min. Wall Thk. T	Max. Flare Dia.
	+	-			Basic	Tolerance			
711,0	2,36	0,79	44,45†	15,88	698,50	-0,76	6,35	6,35	716,3
762,0	2,36	0,79	44,45†	15,88	749,30	-0,76	6,35	6,35	767,1
813,0	2,36	0,79	44,45†	15,88	800,10	-0,76	6,35	6,35	817,9
914,0	2,36	0,79	44,45†	15,88	901,70	-0,76	6,35	6,35	919,5

† Gasket seat tolerance is +0,80/-1,50.

Standard roll groove specifications notes:

**COLUMN 1: Outside diameter** – The outside diameter of roll grooved pipe shall not vary more than the tolerance listed. For IPS pipe the maximum allowable tolerance from square cut ends is 0,762 mm for 26,9 - 101,6 mm; 1,143 mm for 114,3 - 168,3 mm; and 1,524 mm for sizes 203,2 mm and above measured from true square line.

**COLUMN 2: Gasket seat** – The pipe surface shall be free from indentations, roll marks, and projections from the end of the pipe to the groove, to provide a leak-tight seal for the gasket. All loose paint, scale, dirt, chips, grease and rust must be removed. It continues to be Victaulic's first recommendation that pipe be square cut. When using beveled pipe contact Victaulic for details. Square cut pipe must be used with FlushSeal® and EndSeal® gaskets. Gasket seat "A" is measured from the end of the pipe.

**IMPORTANT:** Roll grooving of beveled end pipe may result in unacceptable pipe end flare. See column 7.

**COLUMN 3: Groove width** – Bottom of groove to be free of loose dirt, chips, rust and scale that may interfere with proper coupling assembly. Corners at bottom of groove must have a radius of the following dimensions. For IPS steel pipe, 0,06R on 26,9 - 48,3 mm, 0,08R on 60,3 - 168,3 mm, 0,05R on 219,1 mm and up.

**COLUMN 4: Groove outside diameter** – The groove must be of uniform depth for the entire pipe circumference. Groove must be maintained within the "C" diameter tolerance listed.

**COLUMN 5: Groove depth** – For reference only. Groove must conform to the groove diameter "C" listed.

**COLUMN 6: Minimum allowable wall thickness** – This is the minimum wall thickness which may be roll grooved – except PVC.

**COLUMN 7: Maximum allowable pipe end flare diameter** – Measured at the most extreme pipe end diameter square cut or beveled.

**PIPE DIMENSIONS**

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**Seamless and Welded Steel Pipe†**

O.D. [mm]	Nominal Wall Thickness - [mm]							
	Sched. 5S	Sched. 10S	Sched. 10	Sched. 20	Sched. 30	Sched. 40	Sched. STD	Sched. 80
114,3	2,1	3,0	-	-	-	6,0	6,0	8,6
141,3	2,8	3,4	-	-	-	6,6	6,6	9,5
168,3	2,8	3,4	-	-	-	7,1	7,1	11,0
219,1	2,8	3,8	-	6,4	7,0	8,2	8,2	12,7
273,0	3,4	4,2	-	6,4	7,8	9,3	9,3	15,1
323,9	4,0	4,6	-	6,4	8,4	10,3	9,5	17,4
355,6	4,0	4,8	6,4	7,9	9,5	11,1	9,5	19,0
406,4	4,2	4,8	6,4	7,9	9,5	12,7	9,5	21,4
457,2	4,2	4,8	6,4	7,9	11,1	14,3	9,5	23,8
508,0	4,7	5,5	6,4	9,5	12,7	15,0	9,5	26,2
559,0	4,8	5,5	6,4	9,5	12,7	-	9,5	28,6
610,0	5,5	6,4	6,4	9,5	14,3	17,5	9,5	30,9
660,0	-	-	7,9	12,7	-	-	9,5	-
711,0	-	-	7,9	12,7	15,9	-	9,5	-
762,0	6,4	7,9	7,9	12,7	15,9	-	9,5	-
813,0	-	-	7,9	12,7	15,9	17,5	9,5	-
863,6	-	-	7,9	12,7	15,9	17,5	9,5	-
914,0	-	-	7,9	12,7	15,9	19,1	9,5	-





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