ROTTLER

VR10 VALVE REFACER

OPERATION AND MAINTENANCE MANUAL

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ORDERING PROCEDURE

Contact your regional Rottler sales rep for assistance in ordering optional equipment, replacement parts, or tooling.

If you are unable to contact your regional Rottler sales rep, call the factory at 253-872-7050 and ask to speak to the parts sales specialist.

Have the following information handy to expedite the ordering process:

1. Your name, business name, and contact number
2. Customer number
3. If you don't have a customer number, your billing address
4. Shipping address if different from billing address
5. Machine model and serial number
6. Part number and description of what you want to order
7. Preferred method of shipment
8. You may also contact us via e-mail with the above information. Send e-mail requests to: parts@rottlermfg.com or intlparts@rottlermfg.com

In some cases you may be requested to send a photo of the part you are ordering if it is a replacement part, or doesn't appear in the database.

If you are unsure which part you need to order, contact our service department and ask to speak to one of our service consultants. They will assist you in determining which part you require.

THERE IS A MINIMUM ORDER OF $25.00

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Introduction

READ THE SAFETY CHAPTER BEFORE INSTALLING MACHINE. THOROUGHLY UNDERSTAND ALL SAFETY ISSUES BEFORE OPERATING MACHINE.

ATTENTION OWNER/BUSINESS MANAGER

To validate the warranty on your new Rottler machine, please be sure to sign and complete the "Installation Report" located in the Installation Chapter of this manual.

We suggest that the new user of the VR10 read the CONTROL DEFINITIONS to get an idea how the machine operates.

The Operating Instructions chapter should be read in order to familiarize the user with the actual button pushing sequences required to carry out a job. These chapters in the manual should be considered an introduction. As the operators of the VR10 series machines gain experience with using the different functions of the machine, complicated setups and programs will make more sense.

The rest of the manual contains information and part number reference on fixtures, cutting tools, and machine maintenance. The operator should read and become familiar with these areas as well.

Description

Precision Hardened Tool Steel Chuck System -Pneumatic Operated Quick Action 2 X 3 Ball Precision Chuck driven by large, heavy duty variable speed gear motor. The 2 X 3 ball chuck allows a wide range of valve stem diameters to be ground without changing any parts - no collets or wrenches! The 2 X 3 ball chuck gives extremely accurate run-out for improved sealing, better heat transfer and reduces mechanical stresses on valves.

3 Phase Grinding Wheel Motor - Single Phase power supply is converted to 3 phase to give smooth grinding without any vibrations.

Turcite Coated Slideways - Low Friction for smooth stroking of Grinding Wheel over Valve.

Disclaimer

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Rottler Manufacturing and its employees or representatives are not responsible for any information regarding final specifications of any workpiece that is created as a final product when using Rottler equipment. It is the responsibility of the end user of Rottler equipment to determine the final dimensions and finishes of the workpiece that they are working on. Any information regarding final dimensions and finishes that appears in any Rottler literature or that is expressed by anyone representing Rottler is to be regarded as general information to help with the demonstration of or for operator training of Rottler equipment.

Limited Warranty

Rottler Manufacturing Company Model VR10 parts and equipment is warranted as to materials and workmanship. This limited warranty remains in effect for one year from the date of installation or two years from the date of the original shipment from Rottler or whichever date occurs first. This only applies is the machine is owned and operated by the original purchaser and is operated and maintained as per the instructions in the manual. A machine is warranted only if the Installation Report has been properly executed by a certified installation person and received by Rottler at the time of actual installation.

The products are warranted upon delivery to conform to their published specifications and to be free from defects in material and workmanship under normal use for a period of one year from shipment. Should a product not be as warranted, Rottler sole obligation shall be, at its option, to repair, correct or replace the product or to refund the amounts paid for the Product upon its return to a location designated by Rottler. No warranty shall extend to rapid wear Products (including tooling) or to Products which have been subject to misuse (including any use contrary to Rottler instructions), neglect, accident (including during shipment), improper handling or installation, or subject to any modification, repair or service not certified by Rottler. Rottler shall not be liable for any consequential, direct or indirect damages or for any other injury or loss. Buyer waives any right, beyond the foregoing warranty, to make a claim against Rottler. No warranty is provided for any Products not paid in full.

Merchandise cannot be returned to Rottler without prior approval. Customer must contact the Parts Department to get approval and to be issued a Return Goods Authorization number **(RGR#).** Merchandise authorized for return must be returned prepaid. If merchandise is returned with shipping charges collect, the actual amount of these charges may be deducted from any credit which may be due the customer. The **RGR #** assigned by the Parts Department should be written on the shipping label and must appear on a copy of the invoice(s) covering the original shipment. This invoice copy must be included in the box with the parts. Shipment must contain ONLY those items on the **RGR** as approved for return. Merchandise must be received within 10 days of the date of **RGR** or the **RGR** will be canceled. All returned merchandise may be subject to a 20% restocking fee on under $1,000.00 amount or 10% on any items over $1,000.00. Parts or tooling over 30 days old are considered as customer property and can only be returned with prior approval from Rottler Corporation Management.

The issuance of a **RGR DOES NOT** guarantee credit - it is only authorization for the return of the goods. Credit for return merchandise is at the sole discretion of Rottler. Credit will be issued only after inspection of returned goods.

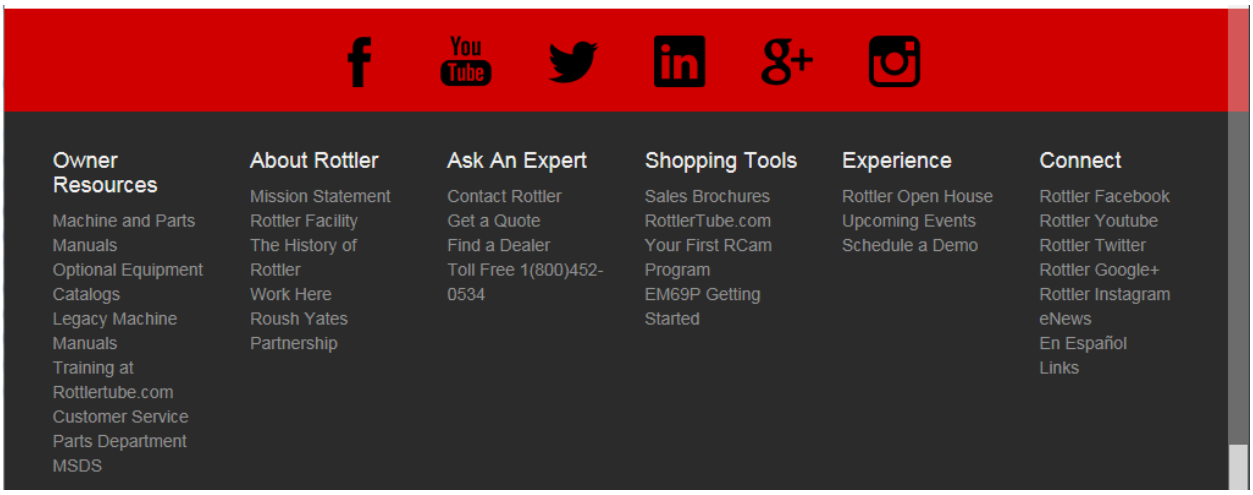
Tools proven to be defective within the warranty period will be repaired or replaced at the factory's option.

We accept no responsibility for defects caused by external damage, wear, abuse, or misuse, nor do we accept any obligation to provide compensation for direct or indirect costs in connection with cases covered by the warranty.

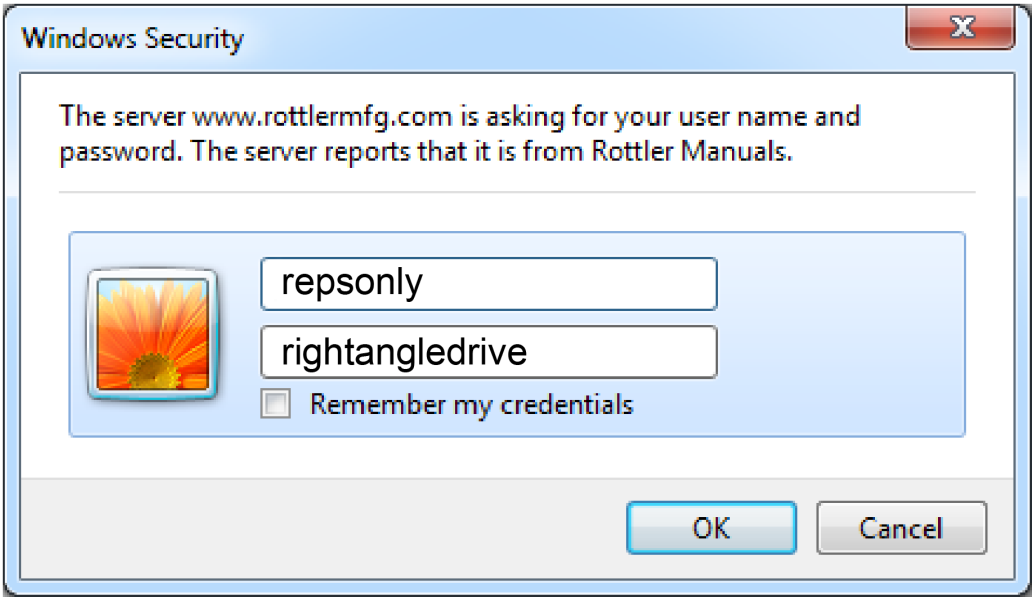
Online Documentation Access

Online documentation for machines and optional equipment can be accessed at the Rottler website. To access documentation open your browser and navigate to https://www.rottlermfg.com.

Scroll to the bottom of the page and under the Owner Resources title click the type of documentation you want to access.



If a log in window pops up asking for user name and password fill in the blanks as shown.



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ATTENTION OWNER/BUSINESS MANAGER

To validate the warranty on your new Rottler machine, please be sure to sign the installation report after the installation technician has installed the machine and verified the machine is operating correctly and given the operators operation and maintenance training.

Thank you for your cooperation and the opportunity to be of service to you.

ROTTLER MANUFACTURING

INSTALLATION REPORT
VR10
REV 110619

OFFICE USE ONLY

Route to: Parts _____ Service Mgr _____ Assembly Mgr _____ Parts _____ Andy _____ Parts _____

Warranty Exp Date _____

ROTTLER MANUFACTURING MUST HAVE THIS REPORT RETURNED TO PROPERLY QUALIFY WARRANTY ON EQUIPMENT

Customer:_____ Address:_____
City:_____ State:_____ Zip:_____ Phone:_____
Country:_____
Machine Model:_____ Serial Number:_____ Representative:_____

MACHINE INSTALLATION: Electrical information MUST be complete to validate this report.

Customer is responsible for providing electricity to machine in a manner that meets the local electrical code requirements.

_____Check machine with precision level and for equal support on feet.
_____For 110V machines plug power cord supplied with machine into suitable 110V AC 20A outlet.
_____For 220V version this machine requires 208 to 240V AC 1-phase, 50/60HZ power supply (measured between L1 and L2). Current requirement is 10 amps. When using two legs of a three-phase supply, the voltage from each leg to ground must be between 100-120V AC. Measure the voltages of the power supply twice during installation
(1) _____VAC (2) _____VAC.
_____For 220V version measure each leg of the incoming supply to ground. When using a one leg and neutral of a 380 VAC three phase supply L1 should measure 240 VAC and Neutral should measure almost 0 VAC.
L1 to ground _____VAC L2 to ground _____VAC.

Make sure all electrical equipment has the proper overload protection. The VR10 should have a stable power supply to prevent damage and uncontrolled movement of the machine.

⚠ CAUTION Neutral and machine ground are not the same thing. You should measure an open circuit between Neutral and ground.

⚠ CAUTION **IF VOLTAGE IS OUTSIDE THE CORRECT RANGE AT ANY TIME THE MACHINE WILL NOT OPERATE PROPERLY AND MAY BE DAMAGED.**

_____**BEFORE** turning power on to the machine. Check all wires for security by using the correct screw driver and turning CW until movement stops. Stranded wire can “spread” slightly from vibration during transport.
_____Air of the proper pressure and capacity connected to the machine below 70 to 90 PSI Air supply must be free from oil and water. Oil or water will damage electrical and air components. Air pressure should never drop below 70 PSI at any time. Failure to provide adequate air supply may cause improper clamping.

_____Remove back cover from the Control Panel and recheck/Inspect all wire connections with a screwdriver for security, Stranded wire used in these machines can spread and loosen a connection when shipping.
_____Remove the shipping bolts and brackets.
_____Clean any rust inhibitor from the machine surfaces.
_____Confirm that coolant pump is wired and plumbed. See Installation section of manual for detailed instructions if needed.
_____Have the operator read through the operation manual before training begins. This will help him be familiar with the button pushing sequences. Have the operator read through the manual again after training and some of the sequences will make more sense.

MACHINE START-UP

⚠ CAUTION When starting the machine for the first time, it may move out of control. Make sure all hands are clear of machine parts. Be ready to press the Emergency Stop button if needed.

_____Turn main power on from the main incoming breaker box.

MACHINE MOVEMENTS

_____Before mounting the grinding wheel, be sure that the machine is not powered and the emergency stop is pushed in.
_____Always check that it is not damaged does not show any shock or damage mark.
_____Start the spindle and verify grinding wheel operation.

INSTRUCTING THE OPERATOR

Note: Rotter employees and representatives per company policy are not permitted to provide end user of Rottler equipment with any OEM specifications for the workpiece that is created by end user using Rottler equipment.

_____Using the operating manual as a guide explain the function of all buttons.
_____Cycle all machine movements and supervise the handling of same by operator.
_____Fully explain the operation of the machine on seat angle face and stem ends.
_____Point out safety features to customer and operator. Do not push any buttons without thinking of safety first.
_____Check cooling pump and cooling tank for proper operation.
_____Explain the importance of using only Rottler grinding oil. ***Use of non approved grinding oil will void the warranty.***
_____The following is a checklist to go through every time the machine is started to begin machining a seat. Work piece secure Grinding wheel RPM set Valve Rotation RPM set
_____Proceed to have operator to machine a valve under you control.
_____Parts ordering, refer the to the operating manual for part numbers and description.
_____Review Emergency stop procedure and with operator per operating manual.
_____Explain the importance of ball chuck maintenance per instructions in manual.

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Note: Rotter employees and representatives per company policy are not permitted to provide end user of Rottler equipment with any OEM specifications for the workpiece that is created by end user using Rottler equipment.

General remarks on machine performance, adjustments as received and any further organization or parts required to complete the installation.

_____

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Instructions given to:_____

Sales/Service Engineer: _____ Date_____

Shop Foreman/Superintendent or Owner: _____ Date_____

Once completed send this form to:
Rottler Manufacturing
attn: Parts Department
8029 S 200 St
Kent, WA 98032 USA

Alternately you may send this form via fax or e-mail:
fax: [+1] 253-395-0230
e-mail: parts@rottlermfg.com

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Installation Procedure

Unpacking and Lifting

Use care when removing the crate materials from the machine. Be careful not to use force on any part of the machine.

Remove the shipping screws (4) from the skid; the shipping brackets will be painted red and lifting bracket on yellow for easy identification. These screws are located at the four bottom corners of the Main Base.

The machine can be lifted by ropes once duly secured by.

⚠ CAUTION **THIS MACHINE IS TOP-HEAVY**. Use care when lifting and moving Machine

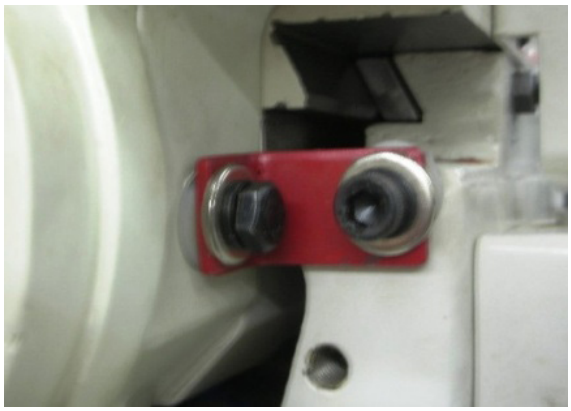
Location

For a suitable working level, suggest to rise the machine up to some 650 mm.

Avoid an excessive smoothness of the floor to prevent any sliding of the operator.

1. Place the machine in its pre-determined location and carefully remove crating.
2. Remove all the shipping brackets painted red, clean the rust preventative with a clean cloth, and approved solvent.

3. Remove the shipping bracket from the swivel plate (located on the front of the chuck swivel plate clamp on the front of the machine).



If you are putting the machine on the bench, make sure to remove the drain tube and install the black 1.00” drain plug located on the back of the machine; be sure the coolant pump is free of all packing. (Packing material will clog the coolant system)

Machine Bolting

Put it on a bench and duly bolt the machine to it through the holes located on the lower part of the machine base. Bolt the bench to the floor if decided by using some studs drowned into the concrete by means of a spirit level; check in both ways the planarity of the machine.

Power Supply

This machine has the following power requirements:

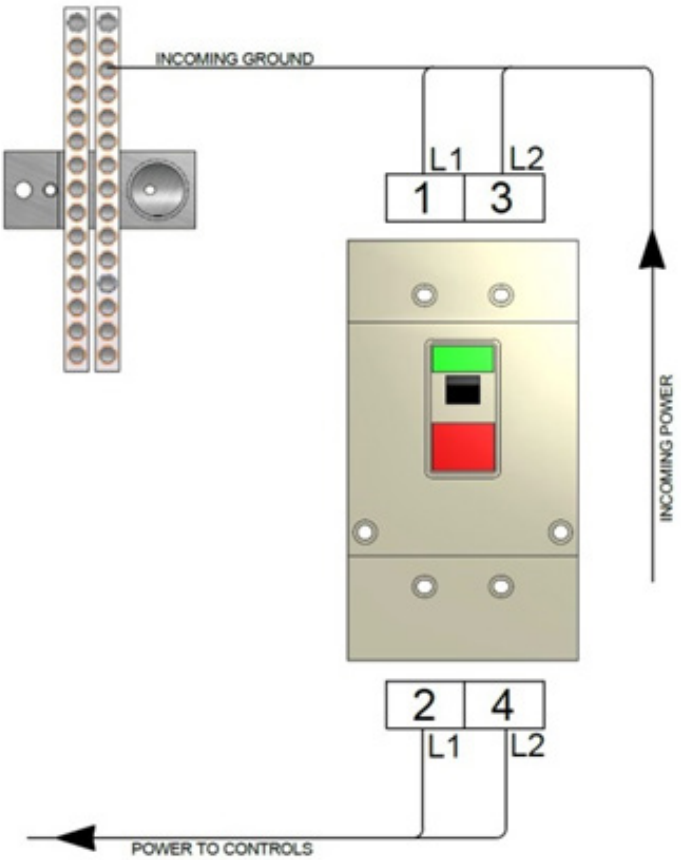
- 110 to 120 or 208 to 240 VAC
- Single Phase Power
- 50 or 60 Hz
- 20 Amps for 115 VAC or 140 Amps for 220 VAC

See illustration below for correct connection of incoming power. Measured power at the machine's main breaker must be within the required range listed above. If incoming power is not within range, a transformer must be used. Failure to do so will cause the machine to function abnormally and cause permanent damage to the electronic control system.

Some electrical services contain a "Hot Leg, High Leg, or Wild Leg", where single phase is derived from a three phase connection and one leg measures 208VAC to Ground instead of 120VAC. It is not permitted to use the "Hot Leg" for providing power to this machine. Voltage measured between the phases must be between 208VAC and 240VAC, while each phase to ground must be ~120VAC.

IMPORTANT ***Electrically connect in accordance with national and local electrical codes.***

⚠ CAUTION ***Do not attempt to connect more 240VAC to this machine.***
Do not attempt to connect to Three Phase Power.



Grounding

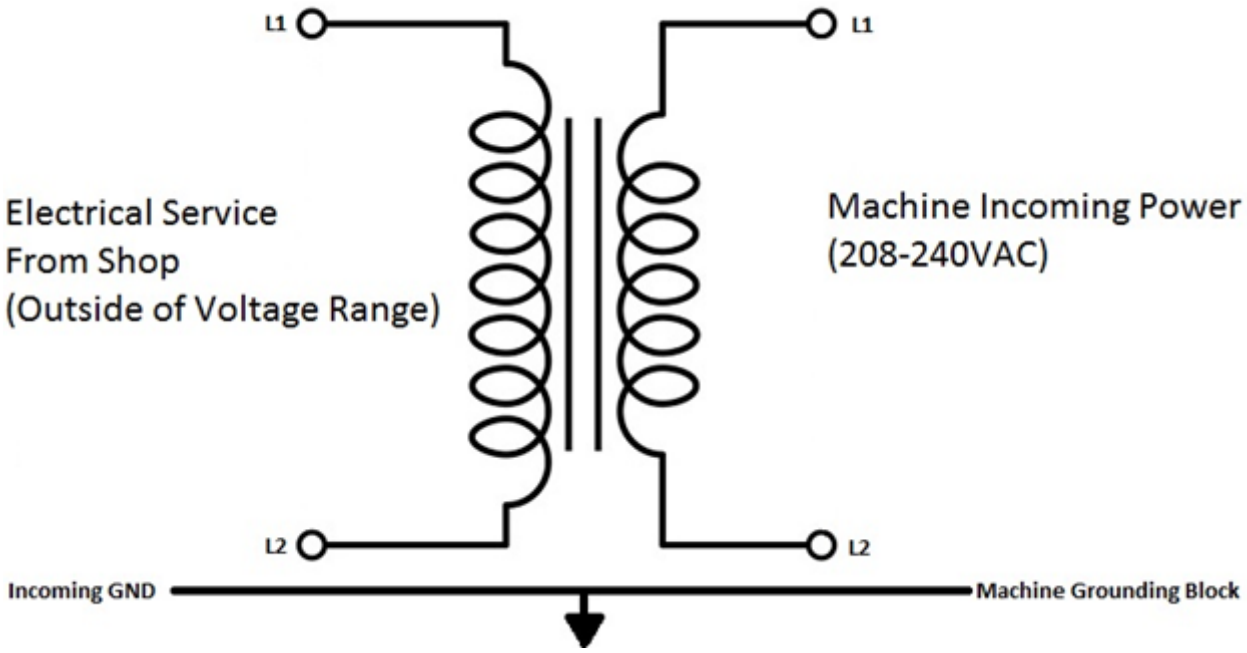
The machine requires a good earth ground. The grounding conductor from the incoming power source must be connected to the grounding block located inside of the electrical cabinet. A ground rod installed in addition to the electrical service grounding conductor is permitted, but must be connected directly to the grounding block inside of the electrical cabinet. Connecting the ground rod to the machine base is not permitted. Consult a Licensed Electrician in your area to assess the installation, and install the appropriate ground rod if necessary. Failure to do so may lead to an installation that is unsafe and does not meet national and local electric codes.

Transformer Connections

This machine has the following minimum transformer size requirement:

- 10 kVA

If a transformer is necessary for machine installation, please refer to the diagram below for connection information. Transformers must be sized to meet the minimum power requirements listed above. Consult a Licensed Electrician in your area for transformer selection and installation.



Air Supply

It is very important the air source for the VR10 machine be moisture free.

Water and oil in the line will result in early cylinder and valve failure. The factory recommends installing a water trap at the machine.

Attach a 100 PSI air source to the intake located on the left side of the machine as you are standing in the operators position. Adjust pressure regulator so that air pressure going to the machine is between 70 and 90 PSI. (4.8 – 6.25 bar)

Adding Grinding Oil

Add grinding oil that was shipped with the machine by pouring oil into drainage area.

SAFETY

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Safety Information

For Your Own Safety Read This Instruction Manual Before Operating This Machine.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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

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

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Safety Instructions for Machine Use

WARNING **This machine is capable of causing severe bodily injury**

ONLY A QUALIFIED, EXPERIENCED OPERATOR SHOULD OPERATE THIS MACHINE. NEVER ALLOW UNSUPERVISED OR UNTRAINED PERSONNEL TO OPERATE THE MACHINE. Make sure any instructions you give in regards to machine operation are approved, correct, safe, and clearly understood. Untrained personal present a hazard to themselves and the machine. Improper operation will void the warranty.

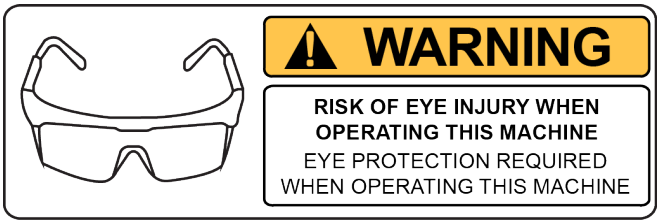
KEEP GUARDS IN PLACE and in proper working order. If equipped with doors, they must be in the closed position when the machine is in operation.

KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.

KEEP CHILDREN AND VISITORS AWAY. All children and visitors should be kept a safe distance from work area.

WEAR THE PROPER APPAREL. DO NOT wear loose clothing, gloves, rings, bracelets, or other jewelry which may get caught in moving parts. Non-Slip foot wear is recommended. Wear protective hair covering to contain long hair.

ALWAYS USE SAFETY GLASSES. Also use face or dust mask if cutting operation is dusty. Everyday eye glasses only have impact resistant lenses, they are NOT safety glasses.



DO NOT OVER-REACH. Keep proper footing and balance at all times.

USE THE RECOMMENDED ACCESSORIES. Consult the manual for recommended accessories. The use of improper accessories may cause risk of injury.

CHECK DAMAGED PARTS. Before further use of the machine, a guard or other part that is damaged should be checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, breakage of parts, mounting, and other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.

NEVER OPERATE A MACHINE WHEN TIRED, OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL. Full mental alertness is required at all times when running a machine.

IF AT ANY TIME YOU ARE EXPERIENCING DIFFICULTIES performing the intended operation, stop using the machine! Then contact our service department or ask a qualified expert how the operation should be performed.

DO NOT MODIFY OR ALTER THIS EQUIPMENT in any way. If modifications are deemed necessary, all such requests must be approved and/or handled by Rottler Manufacturing. Unauthorized modifications could cause injury and/or damage to machine and will void the warranty.

SAFETY DECALS SHOULD NEVER BE REMOVED. They are there to convey important safety information and warn of potential hazards.

ALL LOCAL SAFETY CODES AND REGULATIONS should be followed when installing this machine.

ONLY QUALIFIED PERSONAL should perform service on the electrical and control systems.

ALWAYS USE THE GUARDS. Eye protection must be worn at all times by the operator and all other personnel in the area of the machine.

⚠ CAUTION No list of safety guidelines can be complete. Every piece of shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to follow guidelines could result in serious personal injury, damage to equipment or poor work results.

Electrical Power

Make sure all electrical equipment has the proper overload protection. The VR10 should have a ***fully isolated power supply*** to prevent damage and uncontrolled movement of the machine.

If the VR10 is on the same power lines that are running to other electrical equipment (grinders, welders, and other AC motors) electrical noise can be induced into the VR10 electrical system.

Electrical noise can cause the controller to see false signals to move. Not supplying a fully isolated supply to the machine may void factory warranty.

Make sure all electrical equipment has the proper electrical overload protection.

⚠ WARNING Electrocution or a fire can result if the machine is not grounded correctly. Make sure the ground is connected in accordance with this manual. DO NOT operate the machine if it is not grounded. In the event of an electrical short, grounding reduces the risk of electric shock by providing a path of least resistance to disperse electric current.

⚠ DANGER All electrical power should be removed from the machine before opening the rear electrical enclosure. It is recommended that the machine have a electrical LOCK-OUT device installed.

⚠ CAUTION When you doing any operation on the cylinder head; the machine is capable of throwing metal chips. Eye protection must be worn at all times by the operator and all other personnel in the area of the machine.

⚠ WARNING The operator and nearby personnel should be familiar with the location and operation of the Emergency Stop Button.

Machine Operator

The operator of theVR10 should be a skilled machinist craftsman who is well versed in the caution, care, and knowledge required to safely operate metal cutting tools.

If the operator is not a skilled machinist he/she must pay strict attention to the Operating Instructions outlined in this manual, and get instruction from a qualified machinist in both production and operation of this machine.

The VR10 machines have the following areas of exposed moving parts that you must train yourself to respect and stay away from when they are in motion:

⚠ WARNING Cutting Tool Area – Any operation involving hands in the tool holder, such as inspection or alignment of the tool holder or tools, changing tool holder or insert holders, tool insertion, and removal, tool holder changes, and size checking etc. requires the machine to be in neutral or on the off position.

⚠ CAUTION Machining – Eye protection must be worn during all operations of the machine. Hands must be kept completely away from the cutter head.

⚠ CAUTION Work Loading and Unloading – Carefully develop handling methods of loading and unloading work pieces so that no injury can result if hoist equipment or lift connection should fail. Periodically check lift components for damage that may cause failure of Cylinder head Handler Assembly.

⚠ CAUTION Machine Maintenance – Any machine adjustment, maintenance or parts replacement absolutely requires a complete power disconnection from the machine, this is an absolute rule.

Emergency Procedure

Assuming one of the following has occurred: tool bit set completely off size, work piece or spindle base not clamped, spindle is not properly centered, and these mistakes will become obvious the minute the cut starts

PRESS THE EMERGENCY STOP BUTTON (on the front control panel) **IMMEDIATELY!**

Find out what the problem is; return the spindle to its up position without causing more damage. To restart the machine, turn the Emergency Stop Button CW until the button pops out. Make sure the button has been depress for at least 1 1/2 minutes or the drive will not have time to reset and they will not function.

Be alert to quickly stop the machine in the event of a serious disruption of the boring process either at the top or bottom of the bores.

“REMEMBER” metal cutting tools have the speed and torque to severely injure any part of the human body exposed to them.

When Using the VR10 Machine

- ***Never*** use wheels, which that have been dropped or damaged
- ***Never*** use excessive pressure when installing a new wheel between the wheel and hubs. Tighten nut only enough to hold wheel firmly.
- ***Don't*** overload Precaution the wheel when grinding.
- ***Don't*** use the machine for any purpose than grinding Valves, Valve Stem or Rocker Arms.
- ***Don't*** modify the safety guards provided with the machine.
- ***Always*** use Safety Glasses when operating the machine.

CONTROL DEFINITION AND SWITCHES

Before attempting to operate this machine, first familiarize yourself with all controls and switches and the functions of each component of the machine.

Stop Switch (1)

By pressing, the Stop Switch will turn any function off the machine and for emergency purpose.

It needs to be rotating clockwise to be reset.

Main Switch (2)

This switch has three positions. In the left position, both the spindle, coolant and the chuck motor are on. With the switch in the right position, only the spindle motor will run and the cooling (for dressing the grinding wheels). When centered, all three functions will be turn off, chuck, cooling and spindle motors are off.

Chuck Speed Controllers (3)

The Rottler VR10 valve refacer is equipped with a variable speed chuck motor, which allows you to alter the rotational speed based on the valve head diameter (See chart on chuck cover).

Spindle Slide Switch

This machine is equipped with an automatic switch, which shuts off the spindle motor, chuck motor and the coolant pump when the traverse handle is in the far right position.

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Operating Instructions

The ROTTLER VR10 MODEL is a machine fitted with high speed rotating grinding wheels, it is therefore very important to apply the following safety instructions.

Do not use the machine without all the guards on.

Grounding procedure: the machine comes with a three-wire conductor. The green / yellow wire must be connected to the ground in the plug and receptacle. A qualified electrician is required for this procedure.

Personal protection: prior to operating the machine, Remove loose clothes and. Safety shoes must be worn. Do not wear gloves.

Eye protection: wear safety glasses, goggles, or a facial shield.

Stop the machine before making adjustments or removing debris from the working area.

The part to be machined must be strongly clamped before beginning machining.

The power must always be **OFF** if the operator is not present.

Machine Operator

The operator of the VR10 should be a skilled machinist craftsman who is well versed in the caution, care, and knowledge required to safely operate metal cutting tools.

Clean the machine carefully, removing the protective grease spread on unpainted parts.

Lubricate the points as indicated.

Before the delivery the machine has been duly tested therefore it is not necessary any particular setting up when using it.

Anyway, since damage might occur during the transport, it is advisable to verify its status before putting into operation.

Work Area

Keep the floor around the machine clean and free of tools, tooling, stock scrap and other foreign material and oil, grease or coolant to minimize the danger of tripping or slipping. Rottler recommends the use of anti-skid floor strips on the floor area where the operator normally stands and that each machine's work area be marked off. Make certain the work area is well lighted and ventilated. Provide for adequate workspace around the machine.

Overreach

Maintain a balanced stance and keep your body under control at all times.

Hand Safety

NEVER wear gloves while operating this machine.

Machine Capacity

Do not attempt to use the machine beyond its stated capacity or operations. This type use will reduce the productive life of the machine and could cause the breakage of parts, which could result in personal injury.

Avoid Accidental Starting

Make certain the main switch is in the OFF position before connecting power to the machine.

Careless Acts

Give the work you are doing your undivided attention. Looking around, carrying on a conversation and horseplay are careless acts that can result in serious injury.

Job Completion

If the operation is complete, the machine should be emptied and the work area cleaned.

Replacement Parts

Use only Rottler replacement parts and accessories; otherwise, warranty will be null and void.

Misuse

Do not use the machine for other than its intended use. If used for other purposes, Rottler Manufacturing disclaims any real or implied warranty and holds itself harmless for any injury or loss that may result from such use.

Emergency Procedure

Assuming one of the following has occurred: Work piece or spindle base not clamped, depth of cut not set correctly, these mistakes will become obvious the minute the cut starts

PRESS THE EMERGENCY STOP BUTTON (on the front control panel) **IMMEDIATELY!**

Grinding Wheel Replacement

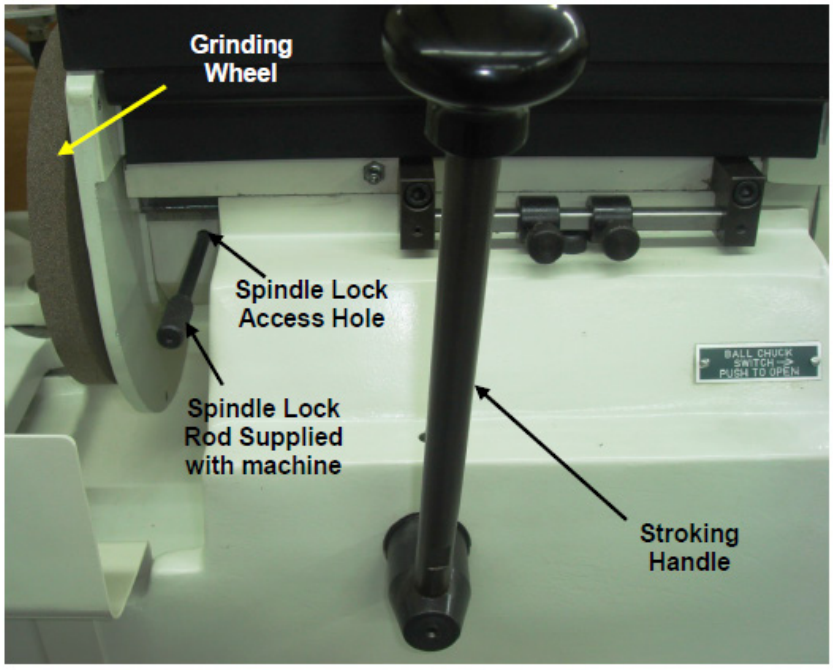
Use ONLY ROTTLER grinding wheels when replacing a grinding wheel. Use the reference numbers listed in the consumable section of this manual. Those grinding wheels are checked for balance before shipment.

Attention! The use of original parts is required.

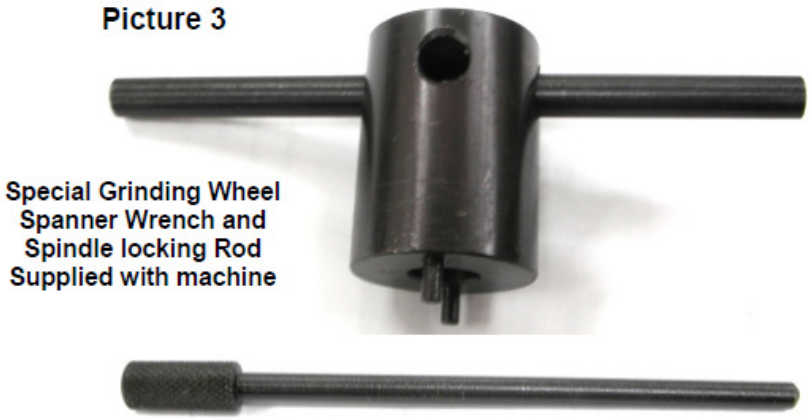
Grinding Wheel Replacement Instructions

WARNING ***Always disconnect the machine from the power source before attempting to change wheels***

The valve and stem grinding wheels are attached with special spanner nuts and a special wrench for its removal is included with the accessories.

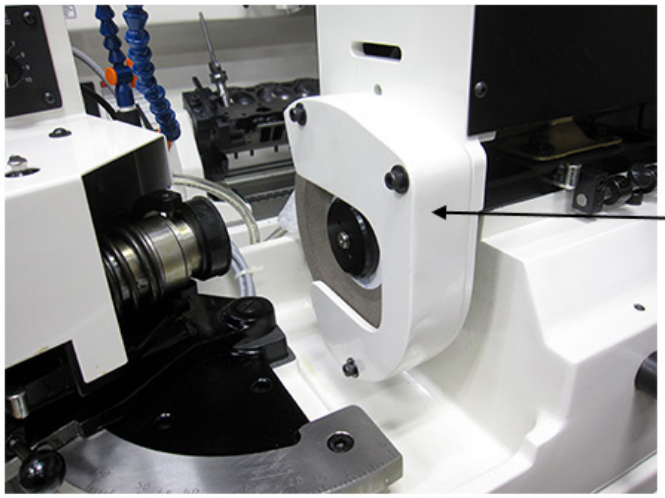


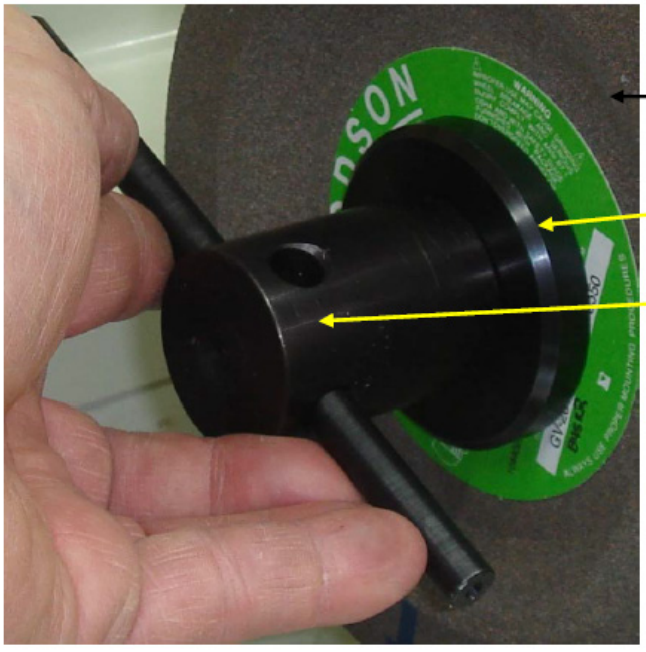
Picture 3



Main Valve Grinding Wheel Replacement

1. Remove the three mounting screws holding the wheel guard in place.
2. Insert the 3/16” diameter valve stop rod provided. (This will keep the spindle from turning while removing the grinding wheel nut.)
3. With the special grinding wheel nut wrench, remove the grinding wheel nut and then the grinding wheel.
4. Make certain the grinding wheel bushing is tight.
5. Install the new grinding wheel and grinding wheel nut, and then tighten.
6. Remove special pin and re-install wheel guard.
7. Start the grinding wheel and check for any vibration. If there is any vibration, remove the cover and make a reference mark on wheels label. Loosen the retaining bolt and rotate the wheel clockwise 30º. Retorque the mounting bolt and again check for vibration. Repeat if needed until the vibration is gone. If vibration can not be eliminated, contact the Rotter service department for further assistance.





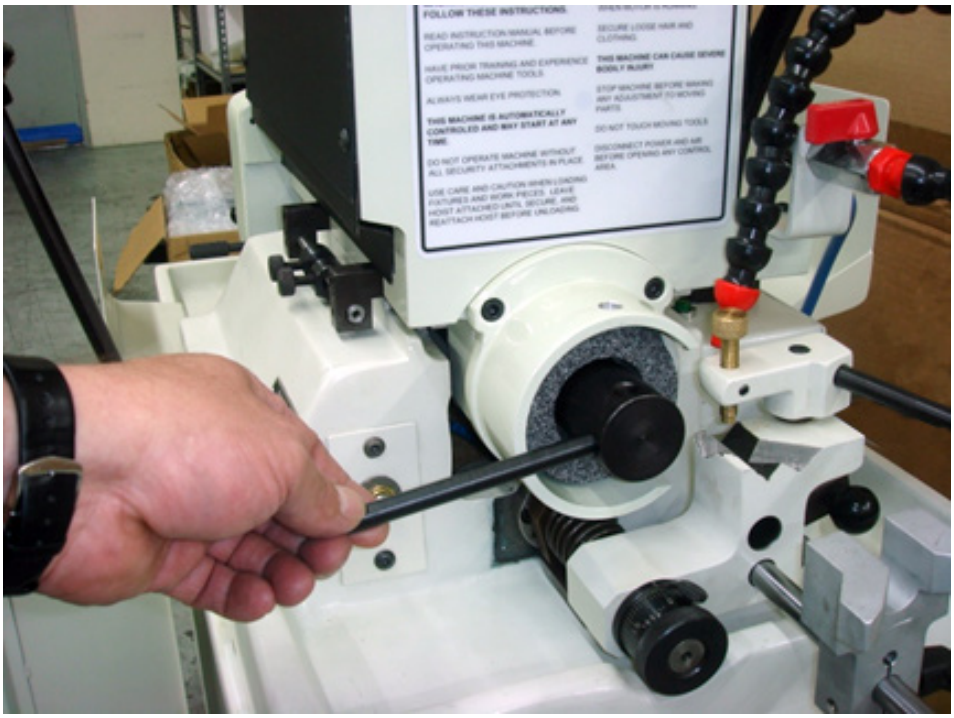
Valve Stem Grinding Wheel Removal

NOTE: It is not necessary to remove the wheel guard to remove this wheel!

Insert the 3/16” diameter spindle lock pin provided. (This will keep the spindle from turning)

With the special wrench, remove the butt wheel nut and then the butt grinding wheel.

NOTE: Butt wheel nut has left hand threads. Install the new grinding wheel and butt wheel nut, and tighten. Remove special pin.

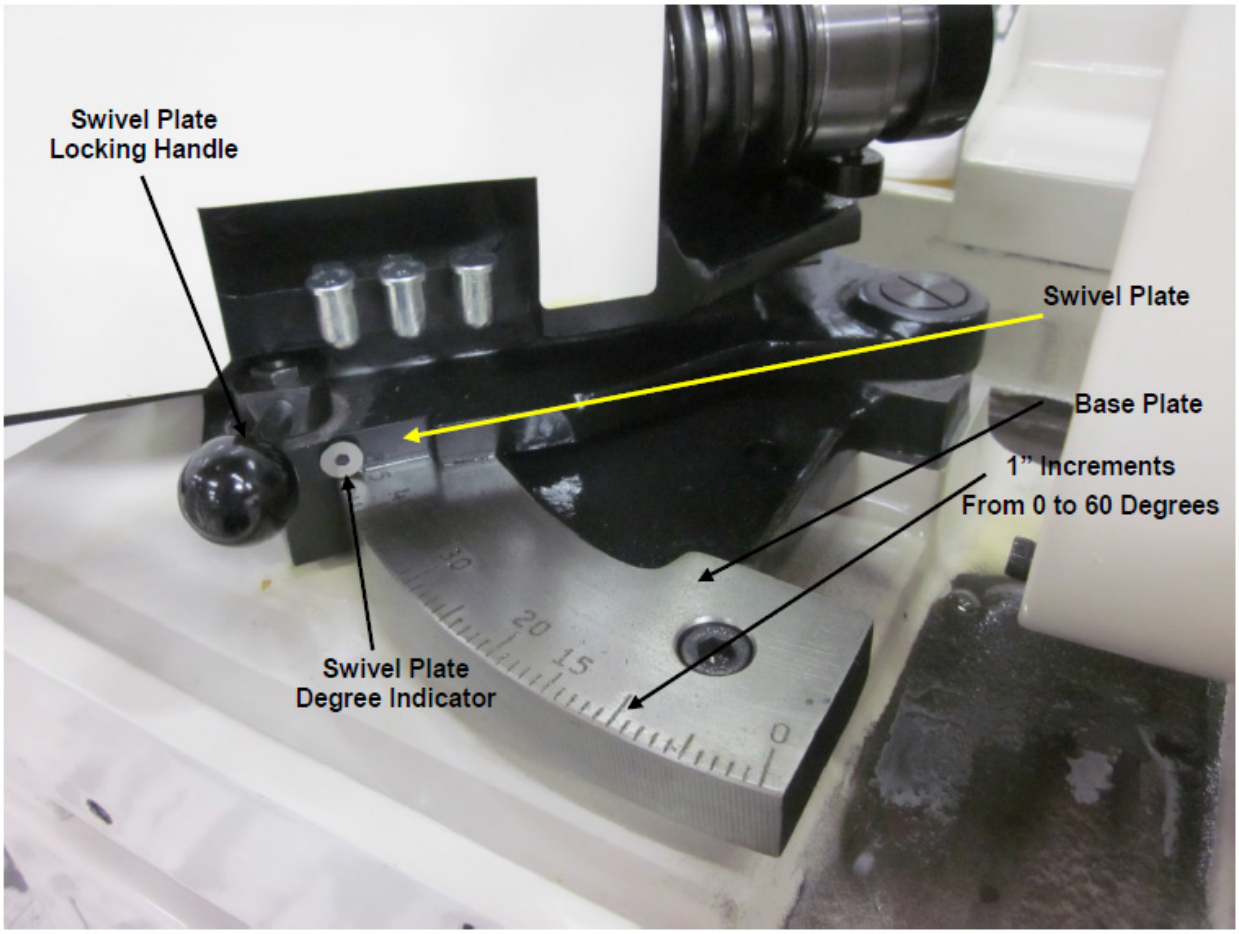


SETTING THE SWIVEL PLATE ANGLE

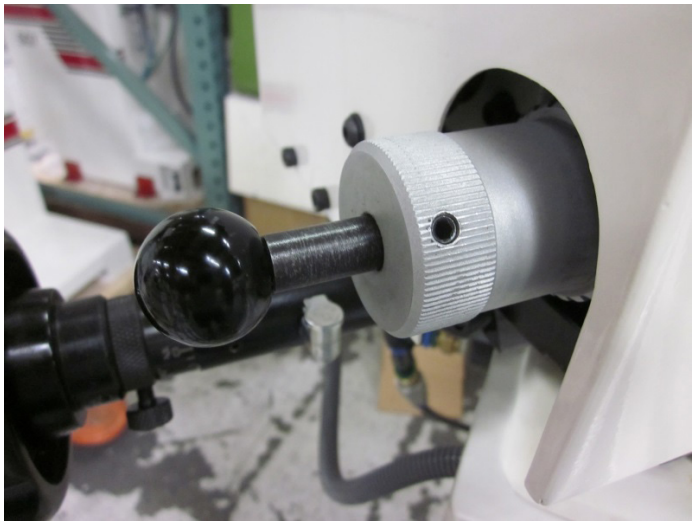
The swivel plate is marked in 1° increments from 0° to 60°. Actual setting for 0° - 60° are indicated with these numbers.

To set the angle

1. Loosen the lock handle (see picture below) and set the edge of the swivel plate to the desired angle.
2. Tighten the lock handle (clockwise)



SETTING THE CHUCK VALVE STOP



The valve stop is a device designed to locate all like valves at a given relative distance from the end of the chuck. (See picture above)

To set the valve stop:

1. Install a valve in the chuck at the desired depth and allow the chuck to close.
2. Using the 3/16” diameter valve stop rod provided, push the valve stop in until it is seated against the valve stem end and then tighter the 3mm allen set screw.

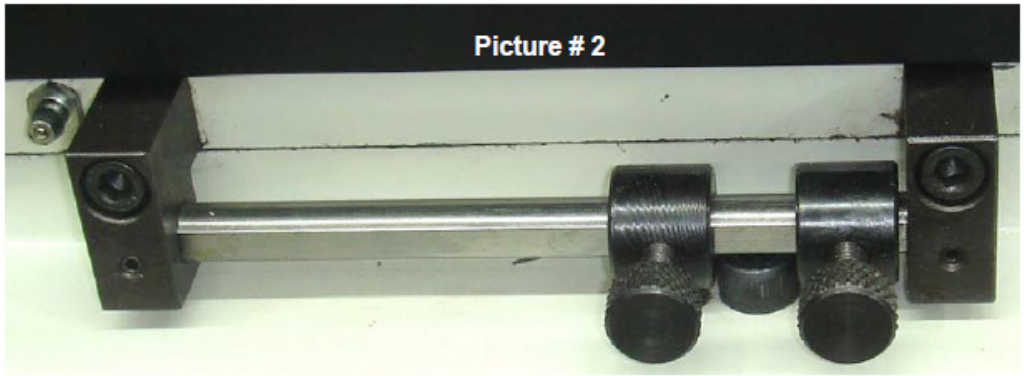
NOTE: Be sure subsequent valves are pushed in far enough to contact the stop.

SETTING SPINDLE SLIDE STOPS

This machine is equipped with adjustable stops to limit the travel of the grinding wheel spindle slide.

This stop, when set, prevents the wheel from striking the chuck or the valve stem.

1. With the valve installed in the chuck, all motors off and the thumbscrews loose, advance the traverse handle to the left.
2. Feed valve up to valve wheel.
3. Be sure the grinding wheel does not strike either the chuck or the valve stem.
4. Slide the right hand adjustable stop up against the fixed stop and tighten locking knob.
5. (See picture #2)



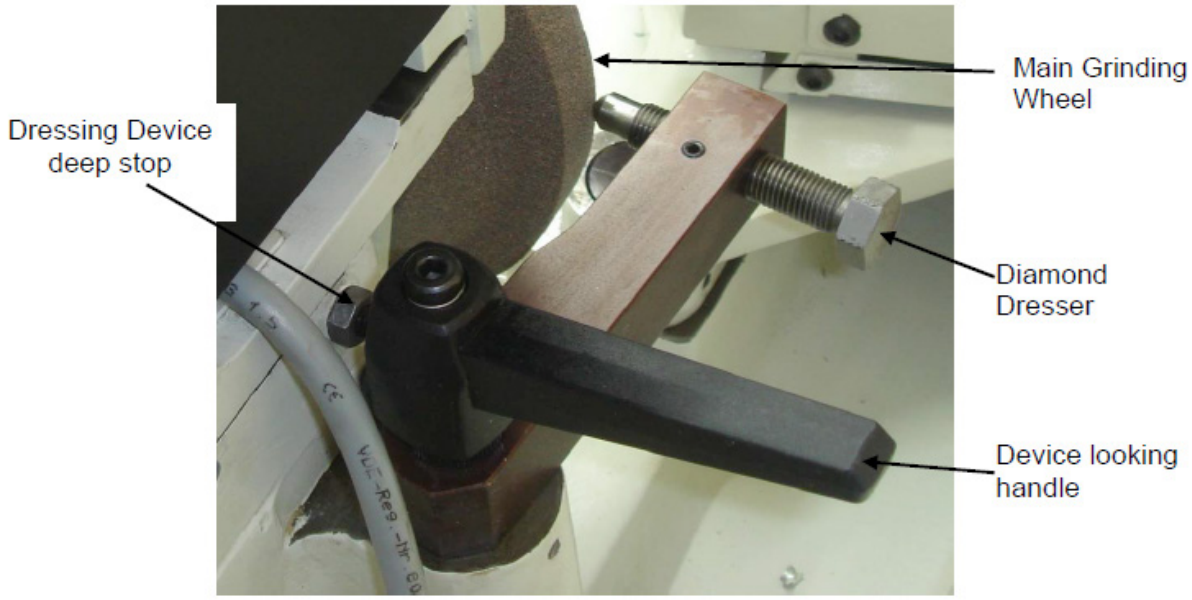
Dressing the Main Grinding Wheel

Use ***ONLY*** the ROTTLER grinding wheels using the reference numbers listed on consumable section of this manual. Those grinding wheels are already balanced before delivery.

Attention! The use of original parts is required.

As the wheel is used, particles break away from the face and the wheel needs to be dressed. The process of dressing the grinding wheel returns it to a smooth condition for the best possible finish on the valve face.

NOTE: Before mounting a wheel, always check that it is not damaged or does not show any shock or damage mark.



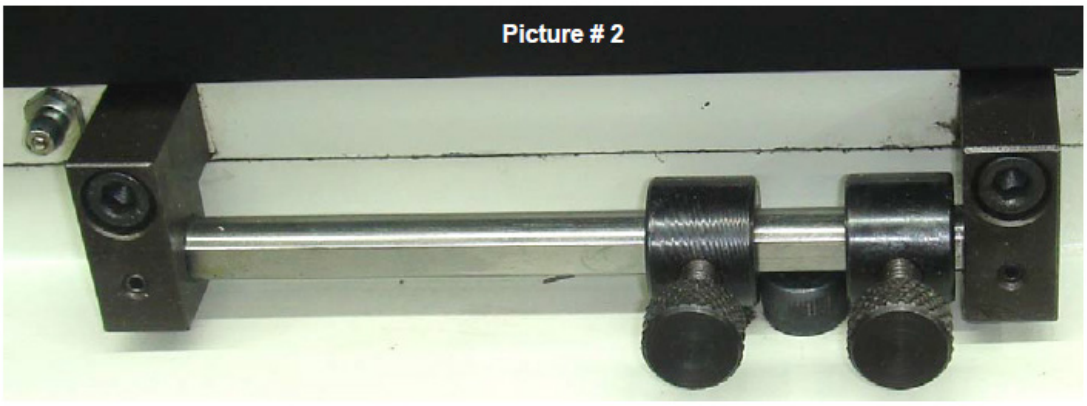
Note: NEVER MAKE THE WHEEL ROTATE WITHOUT ITS PROTECTING COVER

1. Turn the main switch to the OFF (center) position.
2. Loose the lock arm, swing the diamond dresser device toward the wheel and feed the diamond until it start making Contact to the wheel and dresser and feed the diamond point turns the scaled knob.
3. Start the coolant pump by turning the switch button to the on position. (cooling must be on after the wheel is rotating to avoid unbalancing the wheel)
4. Using the traverse handle, locate the grinding wheel so that the diamond point just contacts the center of the face and lock device in place.
5. Depress the right side of the main switch turning on the spindle and coolant pump.
6. Cycle the traverse handle with a slow and continuous motion several times, from one end to the other so that the grinding wheel is completely dressed or until the face on the grinding wheel is complete clean.
7. Place the diamond feed lever to the back on park position and lock the handle.

NOTE: Coolant nozzles must always be directly onto the diamond when dressing the wheels; make sure the wheel turning before turning on the coolant pump to avoid unbalancing the grinding wheel.

Valve Stem Wheel Dressing

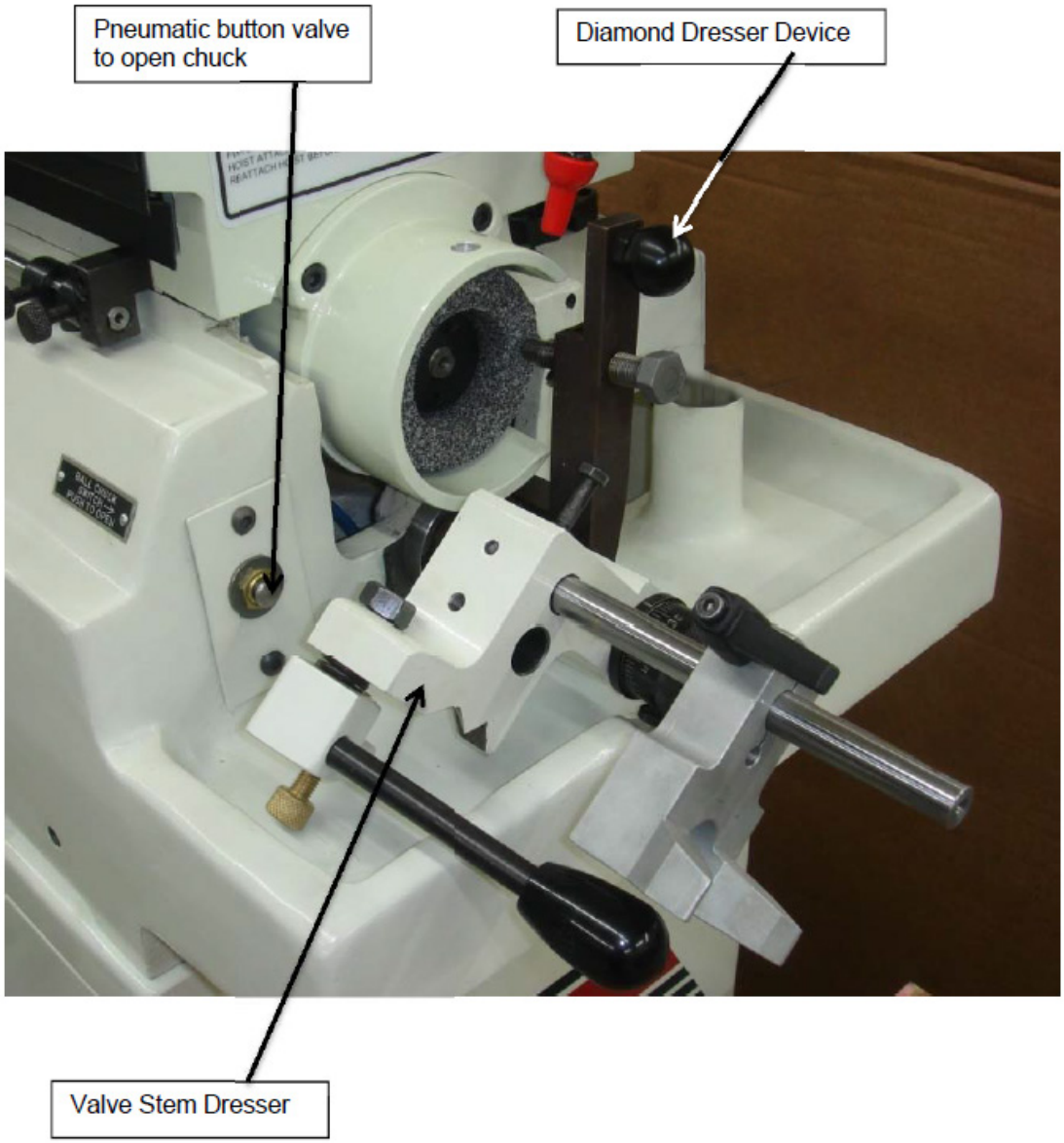
1. The Valve stem grinding wheel needs to be dressed periodically, to keep a sharp cutting edge and a clean face.
2. Press the right side of the main switch (spindle) and move the cross on the handle to the left until the motor starts.
3. Leave the transverse handle on left position after the motor starts, and shut down the motor (move the switch to the center position “OFF”)
4. Loosen the spindle-sliding stop, move it adjusted stop against the fixed stop and re-tighten the knob. (see picture #2 below)



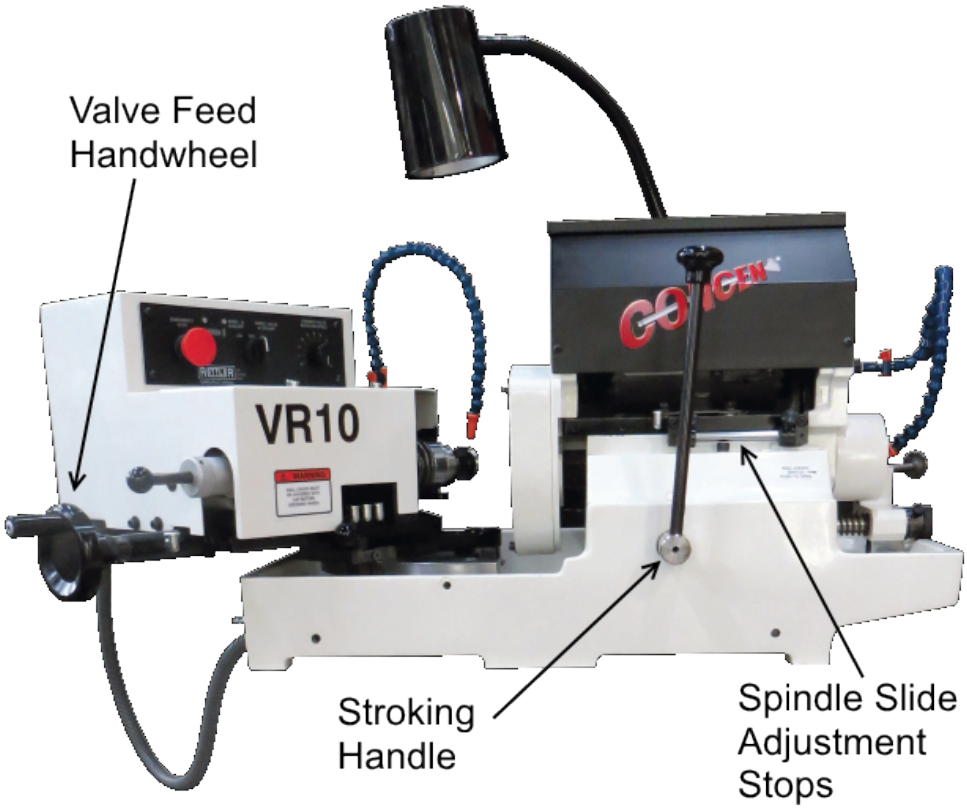
5. Rotate the valve stem dresser device forward out of the way. Next rotate the valve dresser into position in front of wheel. (Make sure diamond dresser will not be hitting the wheel at the time of moving the diamond across the wheel).
6. Using the diamond now move the point in until it just touches the valve stem wheel.
7. Move the diamond clear of the wheel and turn the main switch to the spindle “ON” position.

NOTE: Coolant must always be directed onto the diamond when dressing.

7. Sweep the diamond across the face of the wheel feeding in .003 to .005 until the face has been totally clean up. (see picture below).

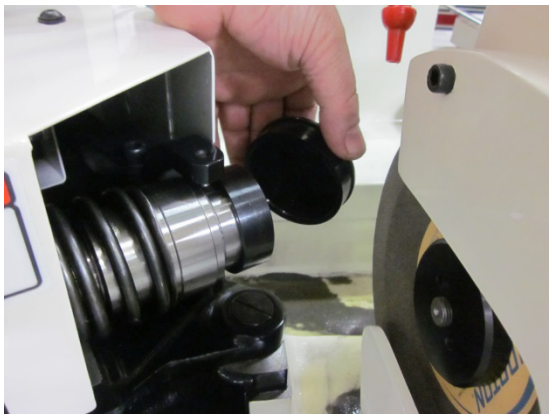


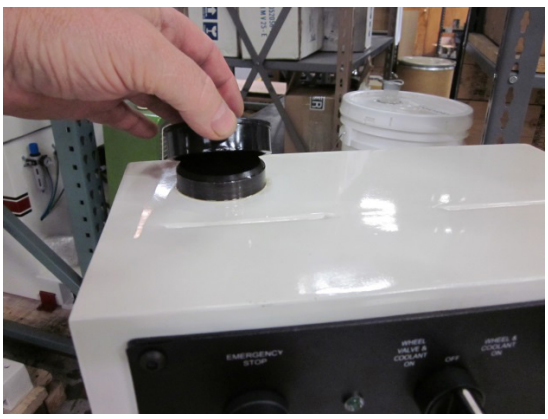
Resurfacing Procedure



Note: To achieve a good run out on the valve head it is imported to keep valve stem clean and the butt must be resurface.

1. Loosen the swivel plate lock and set the proper angle for the valve seat face.
2. Remove the chuck dust cover. This must be installed when dressing the wheel to keep dust out and causing chuck to stick. Place dust cover on holder on top of chuck housing.





With the stroking handle in the extreme right hand position, install the valve in the Chuck by pressing the pneumatic valve button located on the right side of the machine. (See picture below)

Switch on the grinding wheel motor at the control panel by position the Spindle switch to the Left (Wheel Valve and Coolant On)

3. Move the traverse handle slowly to the left until the motors and coolant pump come on.
4. If necessary, adjust position of the valve by rotating the valve feed hand wheel. Once it reached the right position adjustment limits the Grinding wheel carrier stroke in sweeping so that the wheel would not damage the valve stem and then lock the stop knobs

NOTE: Adjust the coolant flow onto the face of the valve. Never allow the coolant to be directly onto the chuck. Suspended grit in the coolant will cause damage to the chuck balls and collars.

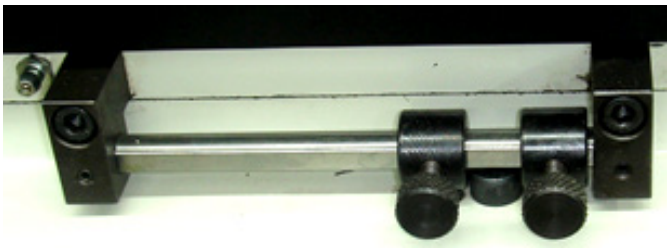
5. Bring the valve face into contact with the grinding wheel by SLOWLY turning the feed hand wheel clockwise while at the same time slowly stroke the wheel back and forth.

NOTE: Adjust the coolant flow

6. Stop feeding the hand wheel in and pass the wheel across the face 3 or 4 times. (This will put on the finish grind). Allow the valve to spark out before proceeding
7. Slowly back off the feed by turning the feed handle counter-clockwise moving the valve away from the grinding wheel and park the spindle to the left until motors and cooling goes to a comply stop.
8. Wait for the grinding wheel for a complete stop, press the chuck release valve on the right side and remove the finished valve.

⚠ CAUTION ***NEVER*** attempt to release or remove the valve from the chuck while either motor is still running.

Grinding of Valve Stem Ends



1. With the spindle motor always to the right and on the switch on the ON position, move the stroking handle away from the switch (the main wheel should not be running at this time), then move the stroking handle to the left until spindle motor starts running.

2. Loosen the spindle-sliding stop, adjust stopper against the fixed stop and re-tighten locking knobs. (see picture above)

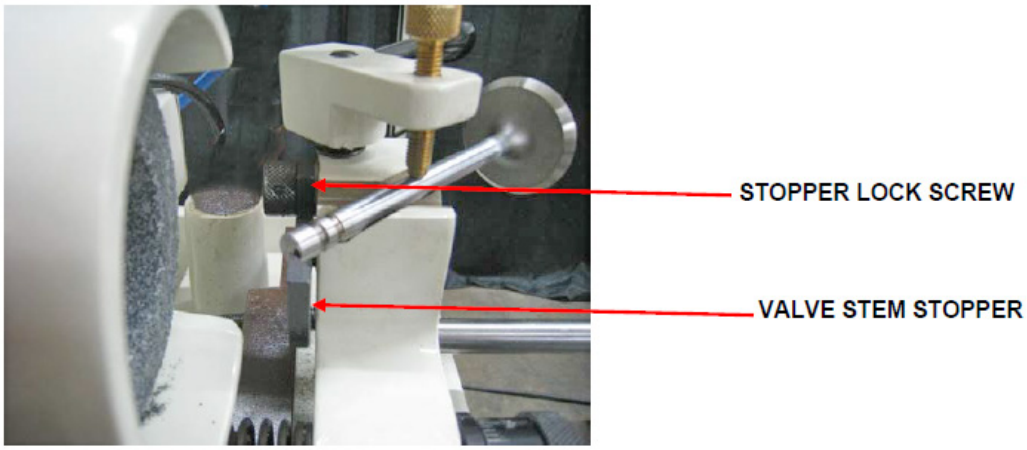
3. Install the valve stem on the clamping block axis, on the right side of the machine, with the straight "V" near the wheel. To do that, you have to lock the index in position , and rotate the clamping block by using the lever handle

4. Use the "V" perpendicular to the wheel to clamp the valve on the clamping block. Use the rear feed screw (to rotate the clamping block) to put in contact the valve stem end and the grinding wheel

5. Lock the valve in this position with the brass screw

6. Start the wheel and the coolant system and take a light cut across the tip of the valve stem.
7. Adjust the micrometer screw with your grinding value. Be careful, you should not grind more than .0005” – (.013mm)
8. Using the valve clamping devise handle, swing the devise to grind the valve stem end (backward and forward movement).
9. Once you done grinding don’t forget to stop the wheel and the coolant system.

Valve Stem Chamfering



1. Place the stem end dressing device in the front position as shown in the photo.
2. Release the valve stem stopper device, rotate to the stop and tighten the lock screw.
3. Place the valve stem in the 45 degree V with the stem end against the stopper and lightly clamp with brass screw so that the valve can be rotated by hand.
4. Block the valve in this position on the clamping system. Do not tight too much; you should be able to turn the valve around his own axis.
5. Start the grinding wheel and coolant and slowly feed the stem end device with the screw until the stem touches the grinding wheel. Now rotate the valve while pushing towards the stopper and grind a chamfer on the end of the stem.
6. Use the clamping block rotation to grind the valve stem chamfering (turn the valve around his own axis).
7. Rotate the feed screw of the stem device to move the valve away from the grinding wheel.
8. Switch off the grinding wheel and wait till the wheel stops rotating until the valve is removed from the device.

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MAINTENANCE

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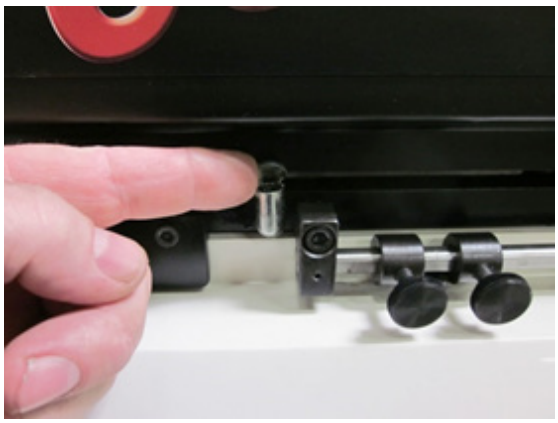
Maintenance

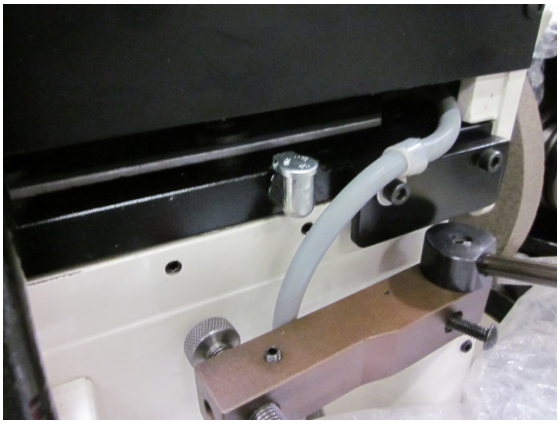
The Rottler VR10 has been designed to be a low maintenance machine. However, some basic maintenance will ensure long life and accurate results.

Lubrication – the VR10 is supplied with 8 oiler cups and a container of slideway oil. The slideways must be lubricated before starting a new machine and regularly during use of the machine.

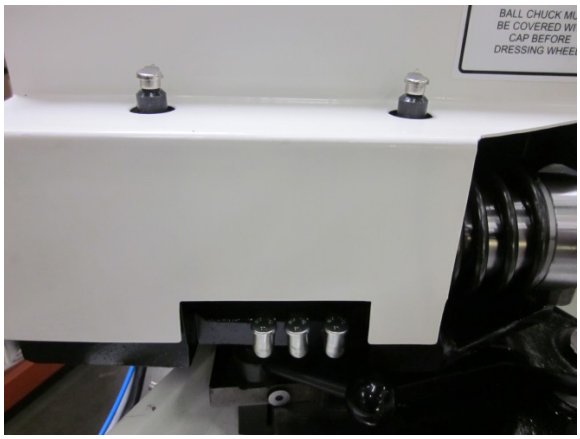
Lubricating the Chuck Slideways

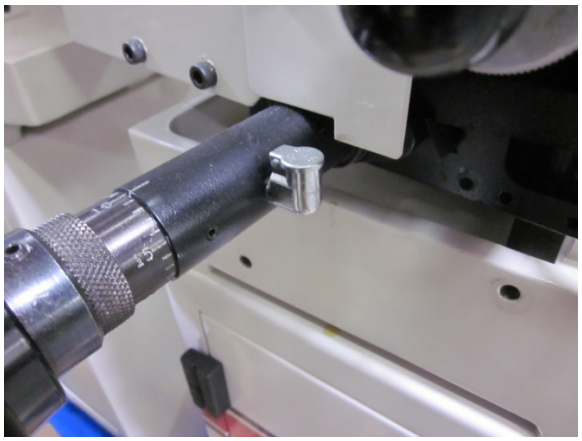
The oilers on front and rear of the slide ways should be oiled weekly with ***ISO VG 68 Way Oil.***





The chuck shaft slide ways are equipped with 3 lubricator cups. (Lower portion of left photo.) The upper 2 oilers are for the chuck housing, these also should be oiled weekly



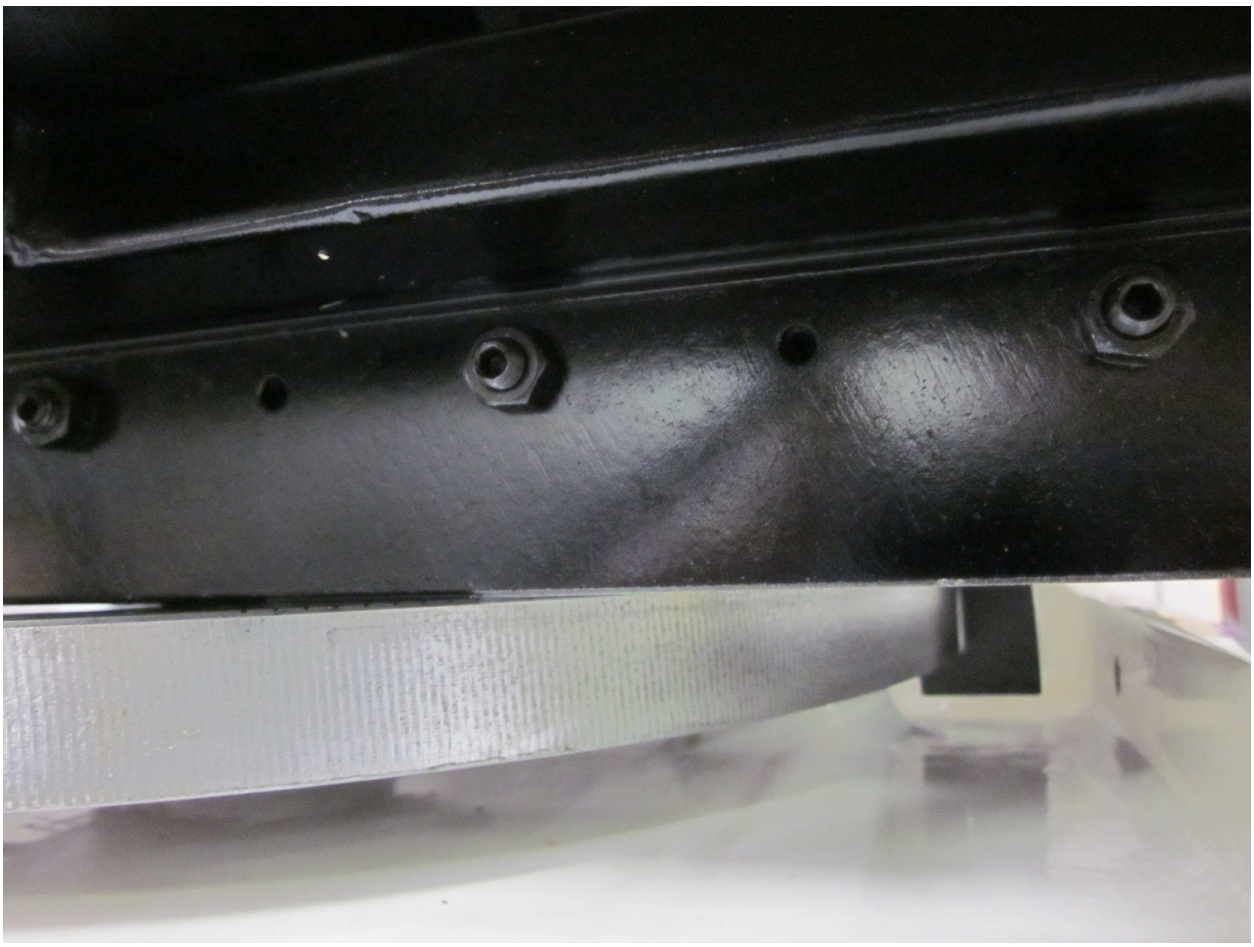


The last oiler is in the feed handle and should be oiled weekly. (Above right)

Adjusting Gibs of Chuck Slideway

After transport and use, the gibs of the chuck slideways may become lose and require some adjusting. Be sure that the gibs are well oiled as described in lubrication chapter before attempting to tighten the gibs. It is best to tighten the gib set screws without loosening the locknuts. Using a 3mm allen key, gently tighten the set screws.

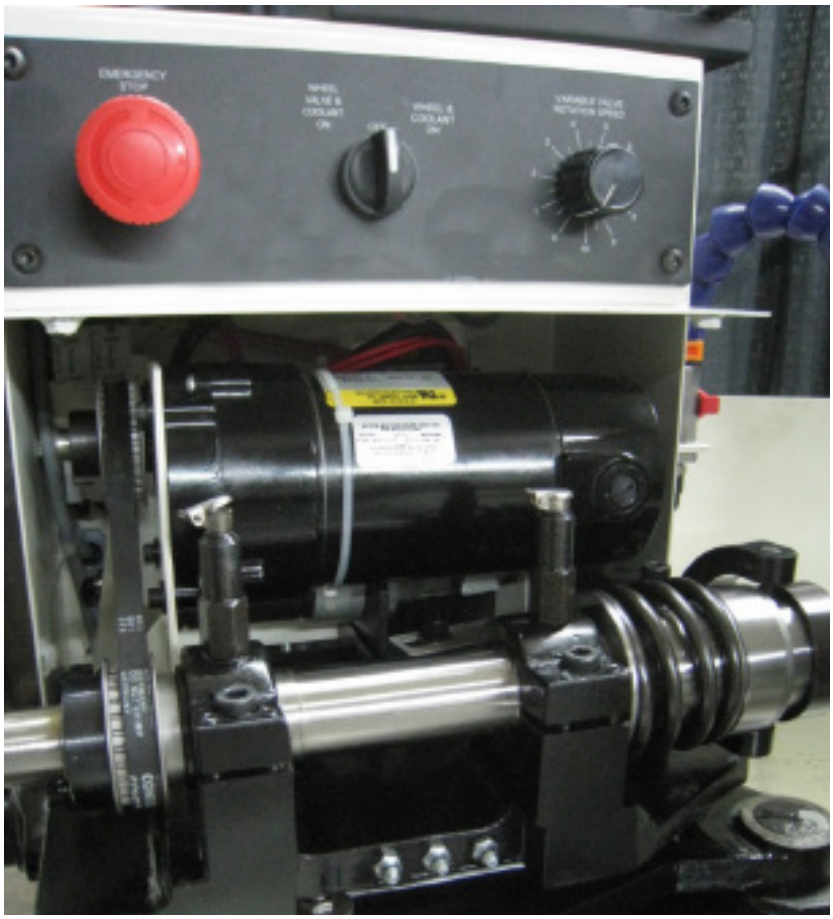
Chuck Slideway Gib – while slowly turning the feed handwheel, gently tighten the outside setscrews until some resistance is felt to the handwheel. Once outside set screws are adjusted, then use same procedure to tighten center set screw. Located in rear of chuck assembly at the bottom.



Adjusting The Chuck Assemble Belt

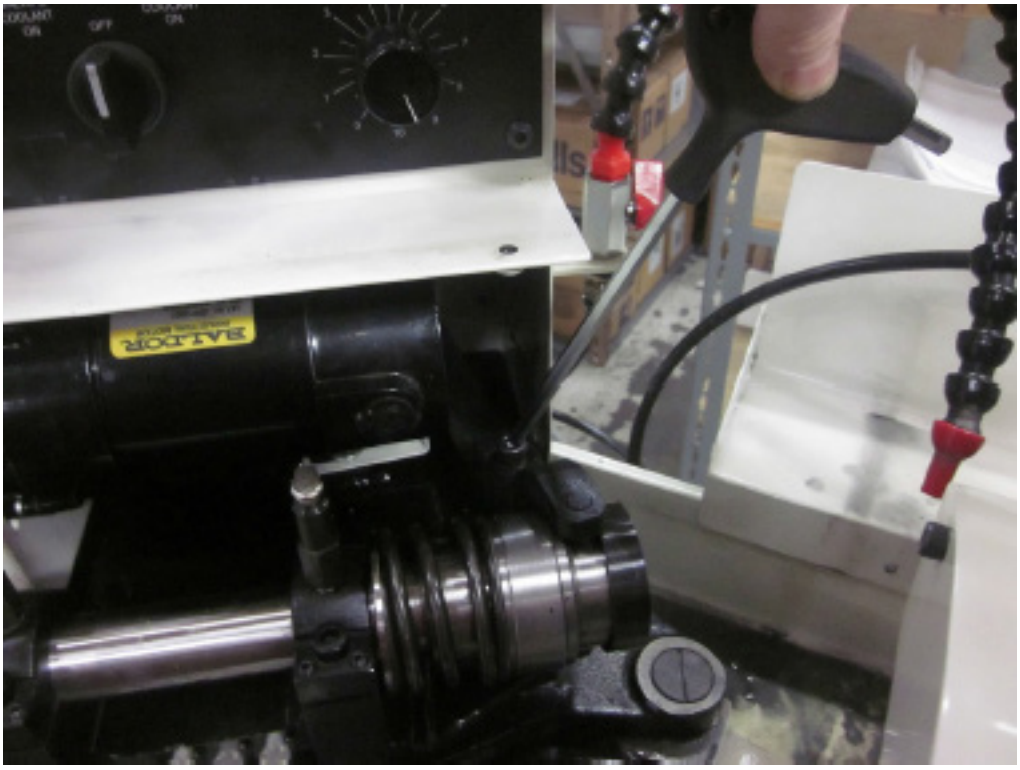
1. The correct adjustment of the chuck drive belt will ensure long life and smooth operation.
2. It is not necessary to give excessive tension to the belt, tooth belt requires less tension then conventional belt.
3. The chuck drive motor mounting bolts are used to adjust the tension.
4. If the belt runs sideways, it indicates that the axis of the motor is not parallel to the chuck shaft.
5. Loosen the motor mounting bolts and adjust the tension and re-tighten the bolts.
6. Repeat #5 above until the tension is correct and the belt runs straight.

Replacing Chuck Assembly

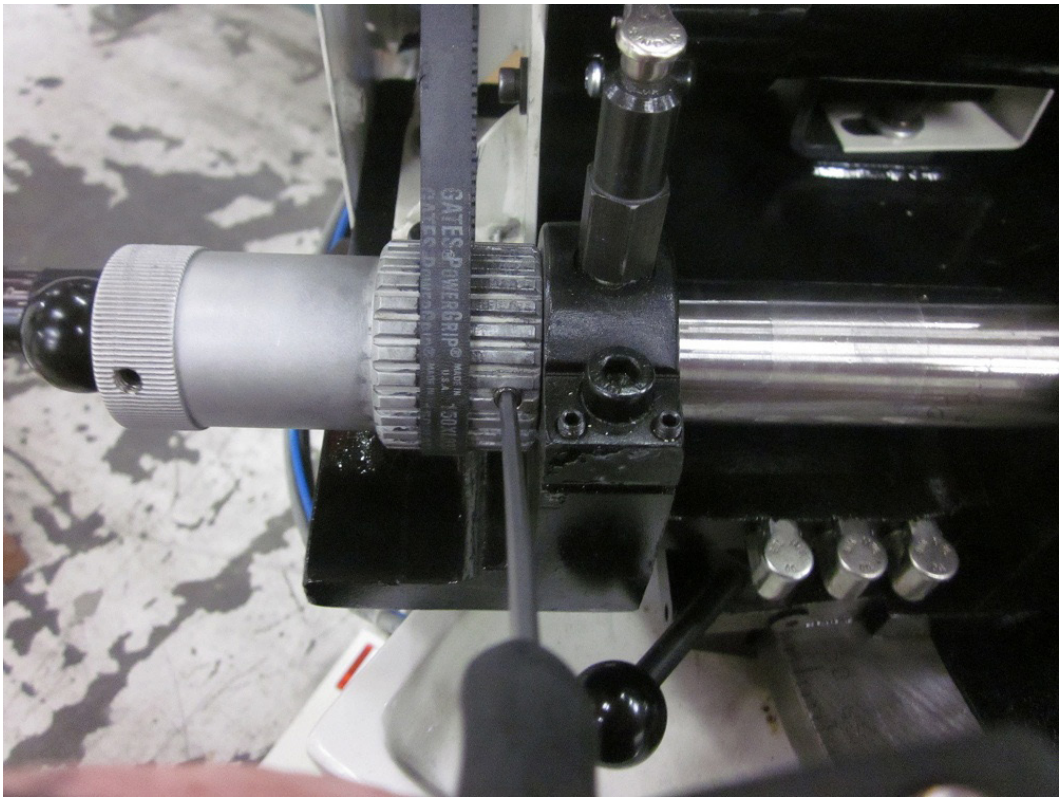


First remove cover

Then remove bolt holding actuating arm

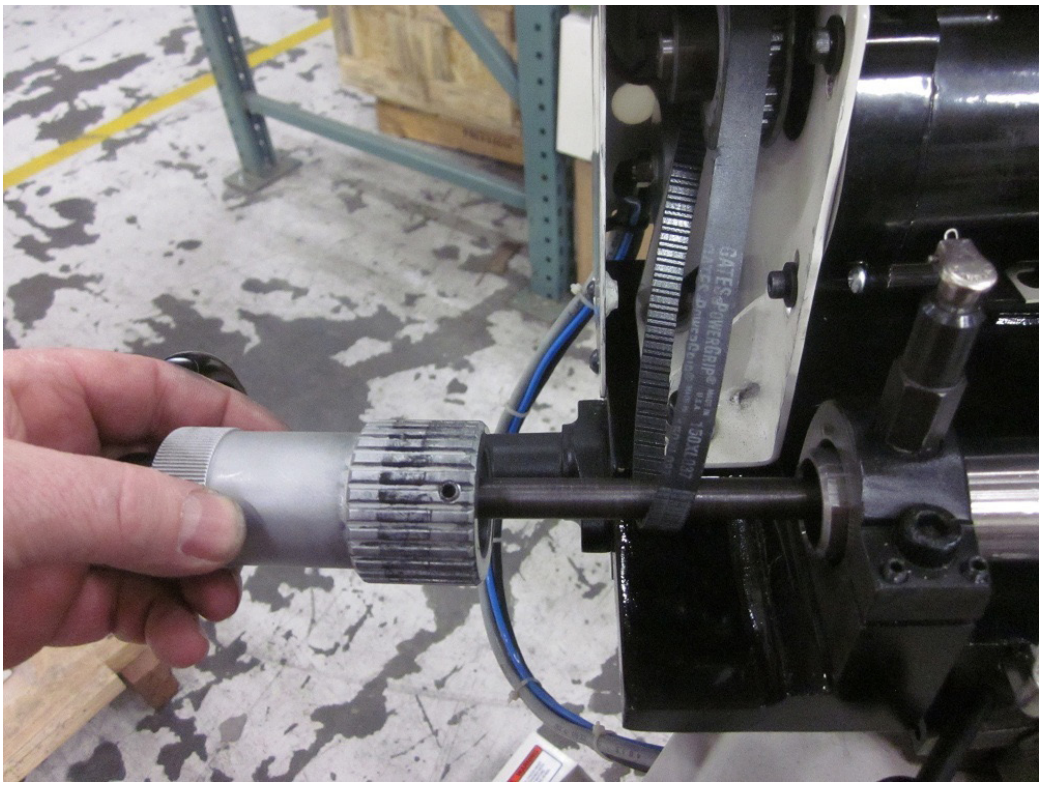


Then loosen set screw holding aluminum drive hub/thrust hub



Next loosen motor

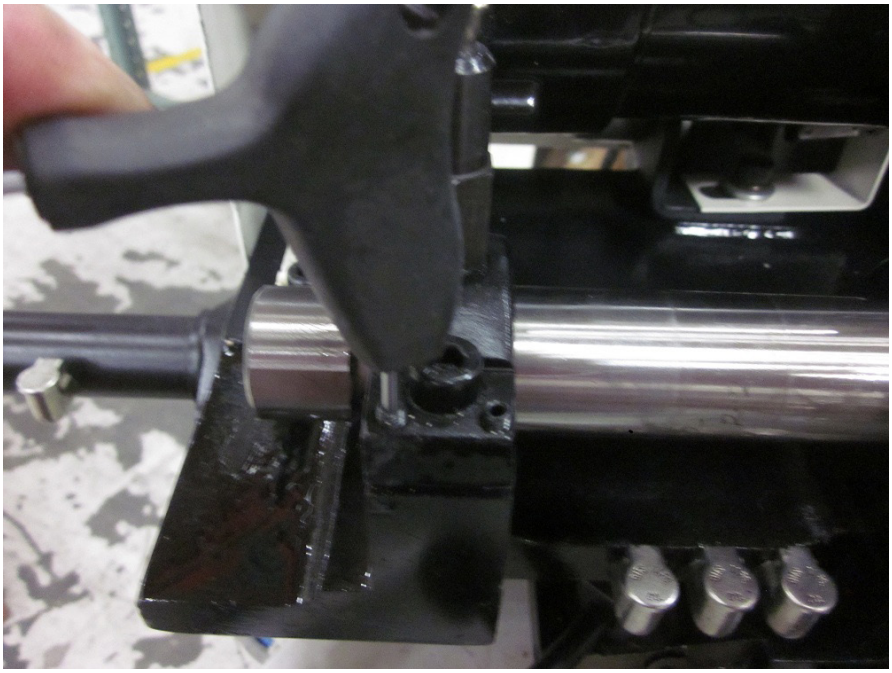
Then remove drive hub/stop shaft assembly.



Next remove chuck buy slipping out of housing.

Install in reverse order.
After new chuck is slid into place the housing clamps must be adjusted.
Loosen all adjusting bolts. Tighten 1 large allen until slight drag is felt on the chuck when rotating

Then tighten small allen screws until chuck rotates freely



Continue to other adjuster and repeat. Do this 2-3 times.

Next install aluminum drive hub assembly. Adjust thrust buy pushing towards housing while pushing chuck back, and tighten set screw. Make sure the chuck turns freely and there is no thrust movement in and out.

Assemble remaining parts in reverse order of disassembly

BALL CHUCK

Maintenance Procedure for VR Ball Chucks

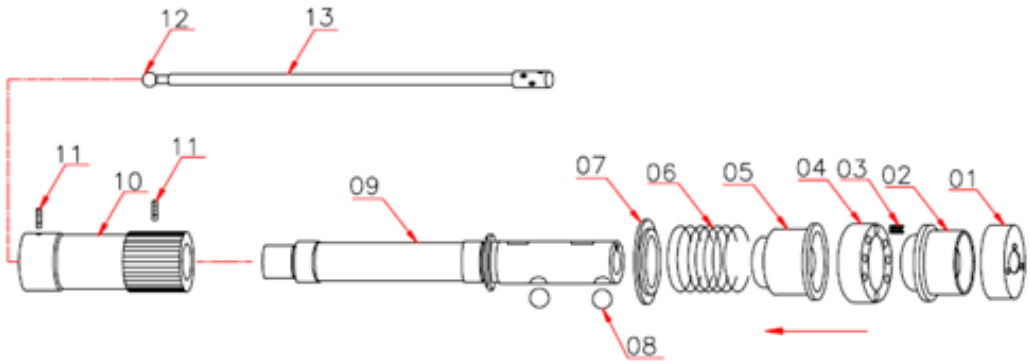
The following procedure should be performed on a weekly a basis:

Use Dexron Automatic Transmission Fluid to perform following service.

1. Press the air button to release and open the ball chuck balls.

2. Squirt ATF fluid into the inside of the ball chuck. Be certain to squirt on each of the 6 balls to flush out any debris and ensure proper lubrication.

Contact the Service Department using the service form on the Rottler web site if further assistance is required

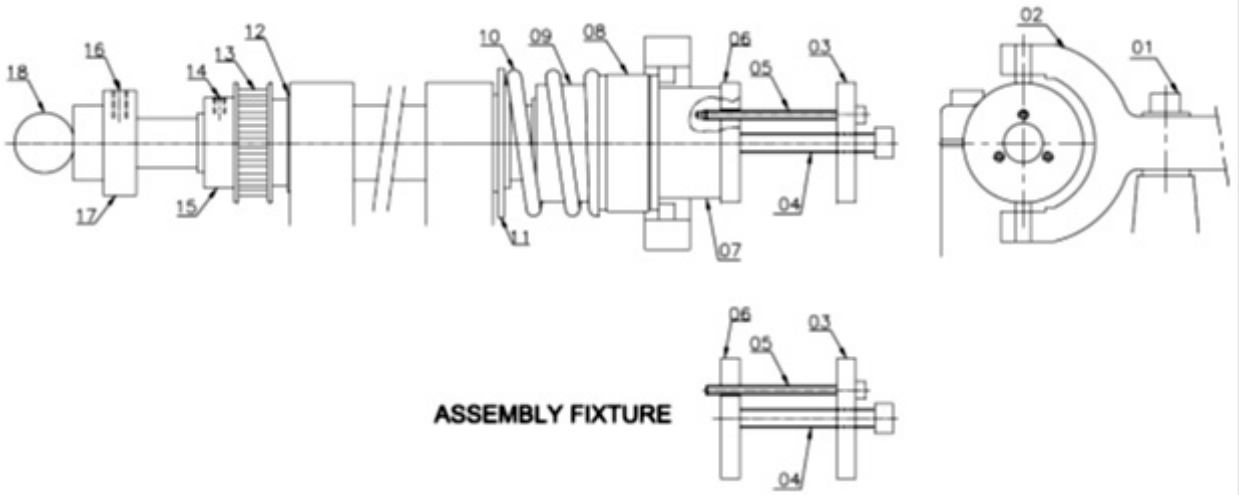


REF. NO.	PART NO.	DESCRIPTION	QTY.
01	VR7-128	FRONT COVER	01
02	VR7-122	FRONT CHUCK HOUSING	01
03	VR7-126	COMPRESION SPRING	08
04	VR7-123	SPRING HOUSING	01
05	VR7-121	REAR CHUCK HOUSING	01
06	VR7-125	COMPRESION SPRING	01
07	VR7-124	SPACER	01
08		BALLS	06
09	VR7-158	CHUCK SHAFT WITH 2 KEYWAYS	01
10	VR7-159	CLUTCH SHAFT PULLEY	01
11		GRUB SCREW M6x8	02
12		BALL KNOB	01
13	VR7-129	VALVE STOPPER	01

CHUCK DISASSEMBLY AND CLEANING

1. REMOVE CHUCK BODY MOTOR COVER BY REMOVING ALL THE ALLEN HEAD SCREWS.
2. WITH THE CHUCK ON THE MACHINE, REMOVE FRONT CAP FROM THE CHUCK.
3. MOUNT ASSY. FIXTURE AS SHOWN. BE SURE THAT 3 NOS. ALLEN HEAD SCREW (05) ARE ENGAGED ATLEAST 1/4" IN TO THE CLUTCH SHAFT TAP HOLES.
4. TURN IN ALLEN HEAD CAP SCREW (04) AGAINST ASSY. FIXTURE PLATE (06) UNTIL THE SLIDING BUSHES ARE PUSHED BACK TO CLEAR PINS FITTED ON YOKE (02).
5. REMOVE CHUCK YOKE PIVOT SCREW (01) AND YOKE (02) AWAY FROM THE CHUCK.
6. UNSCREW ALLEN HEAD SCREW (04) UNTILL THE SLIDING BUSHES COME FORWARD, RELEASING ALL SPRING PRESSURE.
7. REMOVE THE ASSY. FIXTURE FROM THE CHUCK.
8. REMOVE SLIDING BUSHES (06 & 09),6 BALLS, SPRING RETAINER (08), COMPRESSION SPRING (10) & SPACER (11) AS SHOWN IN FIG.
9. THOROUGHLY CLEAN ALL THE PARTS IN THE SOLVENT INCLUDING BALL HOLES IN CHUCK SHAFT.
10. LUBRICATE CHUCK SHAFT, SLIDING BUSHES, BALLS & OTHER PARTS WITH LIGHT LUBRICATING OIL.

CHUCK ASSEMBLY



ASSEMBLY FIXTURE

1. ASSEMBLE BACK SPACER (11), COMPRESION SPRING (10), BALLS, REAR SLIDING BUSH (09), SPRING RETAINER (08) WITH COMPRESION SPRINGS & FRONT SLIDING BUSH (06). ENSURE THAT KEYWAYS OF SLIDING BUSHES ARE POSITIONED CORRECTLY.
2. MOUNT BACK ASSY. FIXTURE ON CHUCK SHAFT.
3. COMPRESS SLIDING BUSHES TOWARDS BACK BY TURNING ALLEN HEAD SCREW (04). INCASE SLIDING BUSHES BIND, CHECK FOR PROPER ALIGNMENT OF SHAFT KEYS WITH KEYWAYS.
4. REPLACE THE YOKE (02) & YOKE PIVOT SCREW (01) AS BEFORE.
5. REMOVE ASSY. FIXTURE & REPLACE END CAP ON THE CHUCK SHAFT.

REMOVAL OF BALL CHUCK ASSEMBLY FROM THE MACHINE

IN CASE IT IS NECESSARY TO REMOVE THE COMPLETE CHUCK ASSY. FOR REPLACEMENT, PROCEED AS FOLLOWS.

1. REMOVE THE CHUCK BODY COVER.
2. REMOVE CHUCK YOKE PIVOT SCREW (01). DISCONNECT RETURN SPRING & MOVE CHUCK YOKE (02) OUT OF THE WAY.
3. LOOSEN FOUR ALLEN HEAD CAP SCREWS MOUNTING MOTOR TO THE MOTOR BRACKET TO RELIEVE BELT TENSION.
4. REMOVE KNURLED BUSH (17) ALONG WITH VALVE STOPER (18) BY LOOSENING GRUB SCREW (16).
5. REMOVE COLLAR (15) ALONG WITH PULLEY (13) & SPACER (12) BY LOOSENING GRUB SCREW (14).
6. THE CLUTCH SHAFT ASSY. CAN NOW BE TAKEN OUT FROM FRONT SIDE BY ADJUSTING SLIGHTLY ALLEN HEAD CAP SCREWS MOUNTED ON CHUCK SHAFT BODY BEARINGS.

INSTALLATION OF THE BALL CHUCK ASSEMBLY

1. REVERSE STEPS 1 TO 6 AS MENTIONED ABOVE.
2. MAKE CERTAIN THAT THE CHUCK SHAFT IS BACK SNUG FIT AGAINST THE SOLID BEARINGS. READJUST ALLEN HEAD CAP SCREWS ON CHUCK SHAFT BODY BEARING FOR SMOOTH ROTATION OF CHUCK SHAFT.
3. WHEN INSTALLING THE PULLEY, SPACER & COLLAR, ENSURE IT IS DRAWN UP SNUG YET THE CHUCK SHAFT CAN TURN FREELY. THEN TIGHTEN THE GRUB SCREW IN THE COLLAR.

Guide Adjustment, Disassembly, and Assembly

Instructions for above procedure are not currently available.

For further assistance:

Please visit the service tab of our web page at Send a Service Request www.rottlermfg.com or contact the Rottler Factory Service at service@rottlermfg.com for assistance and your service request.

You may also call Rottler at 1-800-452-0534 or 1-253-872-7050

Please ensure you have the Machine Model and Serial Number available when contacting Rottler for Service

SUGGESTED TIPS

Familiarize yourself with your Rottler VR10 valve grinding machine.

We recommend that before you start grinding on customer valves, use waste valves to practices. This will prevent any undue pressure or errors while learning on a customer valves.

ALWAYS cover the chuck before dressing the grinding wheel.

ALWAYS dress the grinding wheel after installation or whether new or reinstalling a grinding wheel

If the grinding wheel becomes impregnated with, grease or lubricating, oil, remove the wheel from the spindle and soak in solvent overnight, reinstall and turn the motor on. This will throw out the oil by centrifugal force.

ALWAYS use coolant when dressing or grinding.

To achieve a good result on the finish and the run out on the seat of the valve, take very light cuts, slowly pass, and cycle the wheel back and forth across the valve face many times.

ALWAYS clean and degrease valves before grinding to prevent the grinding wheel from loading up.

TROUBLESHOOTING

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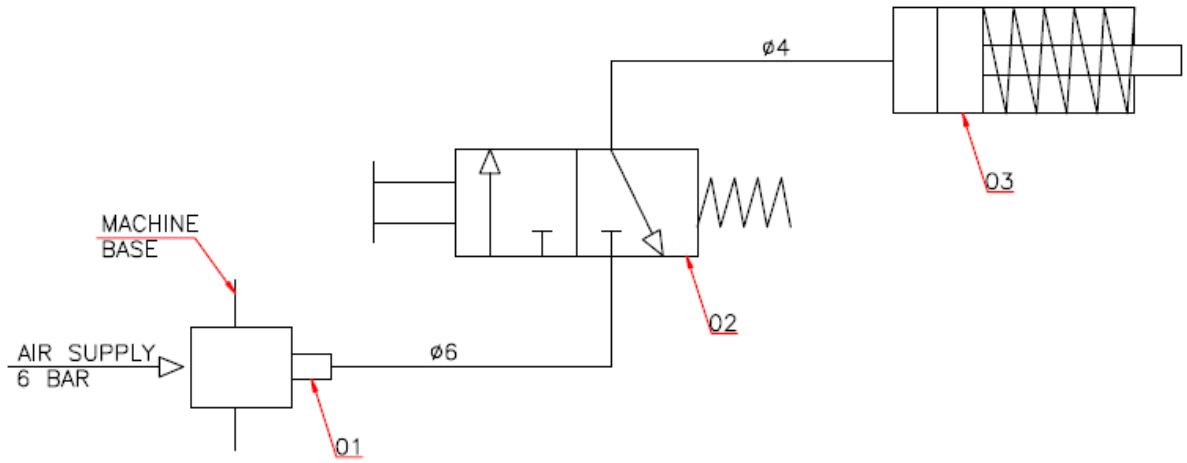
Troubleshooting

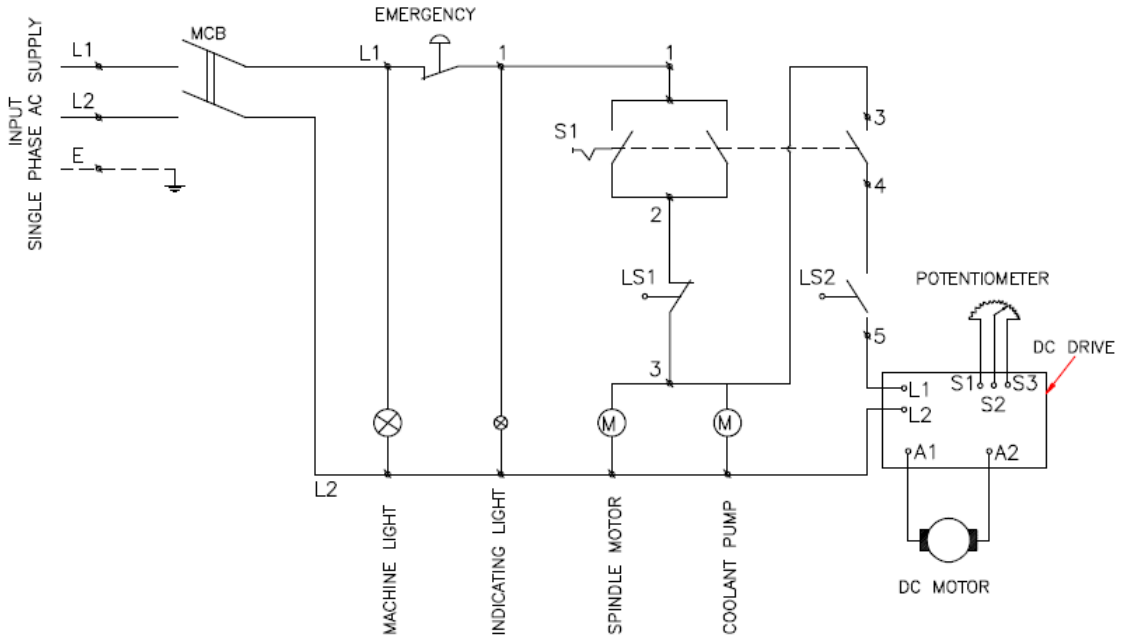
Valve chuck sticky and or concentricity problems	Grit in Ball chuck	Disassemble clean and polish. See instructions in Maintenance section
Slideway rough	Lack of oil or grit on slideways	Oil slideway and or disassemble and clean. See maintenance section for instructions

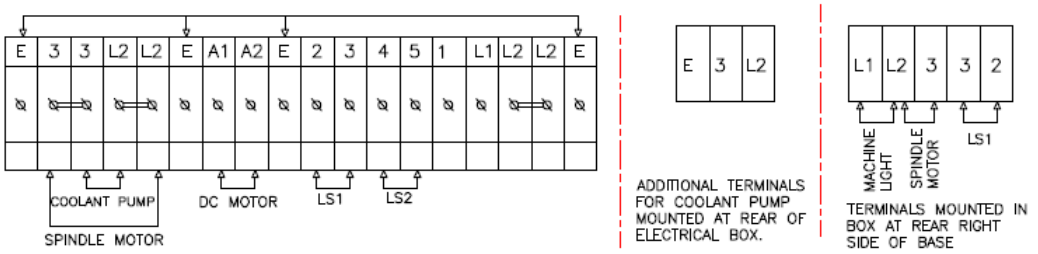
PNEUMATIC DIAGRAM & PARTS LIST



REF. NO.	DESCRIPTION	QTY.	REMARKS
01	STRAIGHT CONNECTOR 1/8 BSP–6	01	
02	PUSH BUTTON VALVE	01	
	ELBOW CONNECTOR M5–6	01	
	ELBOW CONNECTOR M5–4	01	
03	PNEUMATIC CYLINDER	01	
	ELBOW CONNECTOR 1/4 BSP–4	01	

ELECTRICAL WIRING DIAGRAM





TERMINAL MOUNTED ON ELECTRICAL PANNEL

PART NO.	DESCRIPTION
S1	THREE POSITION SLECTOR SWITCH
LS1, LS2	LIMIT SWITCH
MAX. AMPS AT 115V, 60HZ : 8.5 MAX. AMPS AT 230V, 60HZ : 5.0	

MACHINE CAN BE CONNECTED TO INPUT SUPPLY OF 115V OR 230V, 60HZ.

FOLLOW INSTRUCTIONS GIVEN BELOW FOR CONNECTING TO DIFFERENT INPUT VOLTAGE SUPPLY.

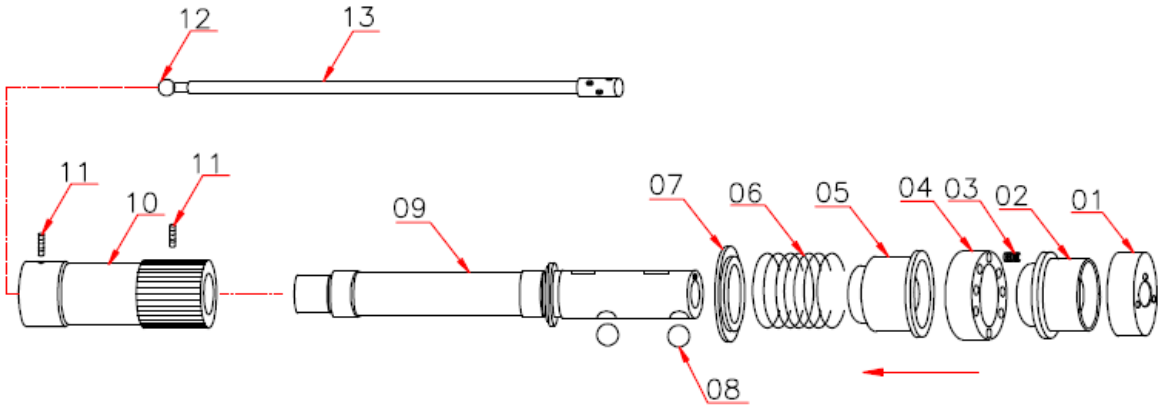
1.) CONNECT SPINDLE MOTOR FOR THE REQUIRED VOLTAGE AS PER INSTRUCTION PLATE FITTED ON THE MOTOR.

2.) SET SWITCHES "SW501" & "SW502", MOUNTED ON DC DRIVE, TO THE REQUIRED VOLTAGE.

3A.) FOR 115V INPUT SUPPLY
SET ADJUSTABLE TRIMPOT "MAX SPD", MOUNTED ON DC DRIVE, AT THE MAX. VALUE.

3B.) FOR 230V INPUT SUPPLY
ADJUST TRIPMPOT "MAX SPD" SO AS TO GET SLIGHTLY LESS THAN 180V DC AT OUTPUT TERMINALS "A1" & "A2" MOUNTED ON DC DRIVE OR AT TERMINALS "A1" & "A2" MOUNTED ON ELECTRICAL PANNEL.

BALL CHUCK ASSEMBLY & PARTS LIST



REF. NO.	PART NO.	DESCRIPTION	QTY.
01	VR7-128	FRONT COVER	01
02	VR7-122	FRONT CHUCK HOUSING	01
03	VR7-126	COMPRESION SPRING	08
04	VR7-123	SPRING HOUSING	01
05	VR7-121	REAR CHUCK HOUSING	01
06	VR7-125	COMPRESION SPRING	01
07	VR7-124	SPACER	01
08		BALLS	06
09	VR7-158	CHUCK SHAFT WITH 2 KEYWAYS	01
10	VR7-159	CLUTCH SHAFT PULLEY	01
11		GRUB SCREW M6x8	02
12		BALL KNOB	01
13	VR7-129	VALVE STOPPER	01

MACHINE PARTS

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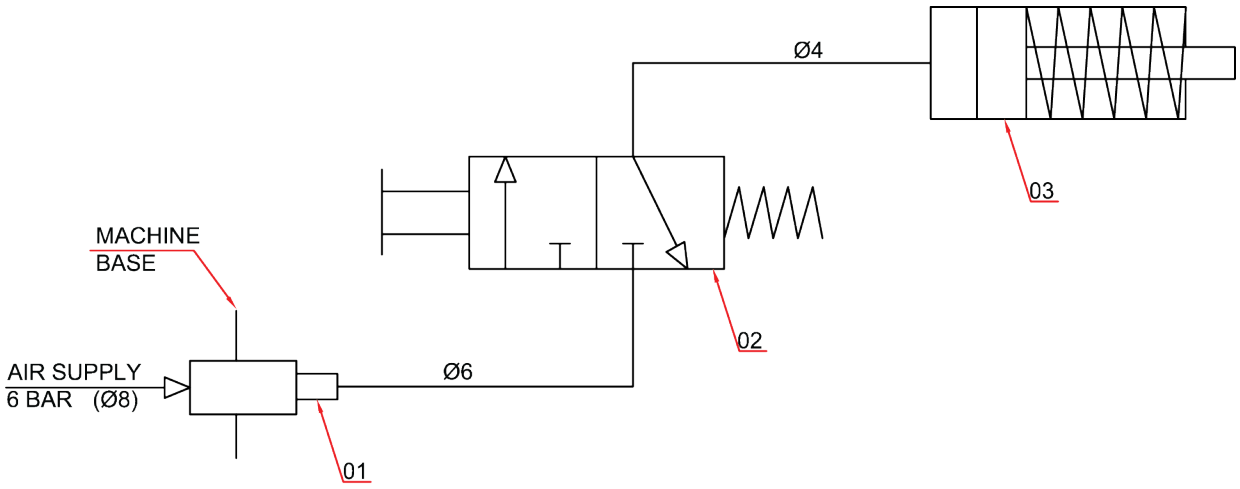
BALL CHUCK ASSEMBLY & PARTS LIST 8-13

Machine Parts

Consumable Parts For VR10

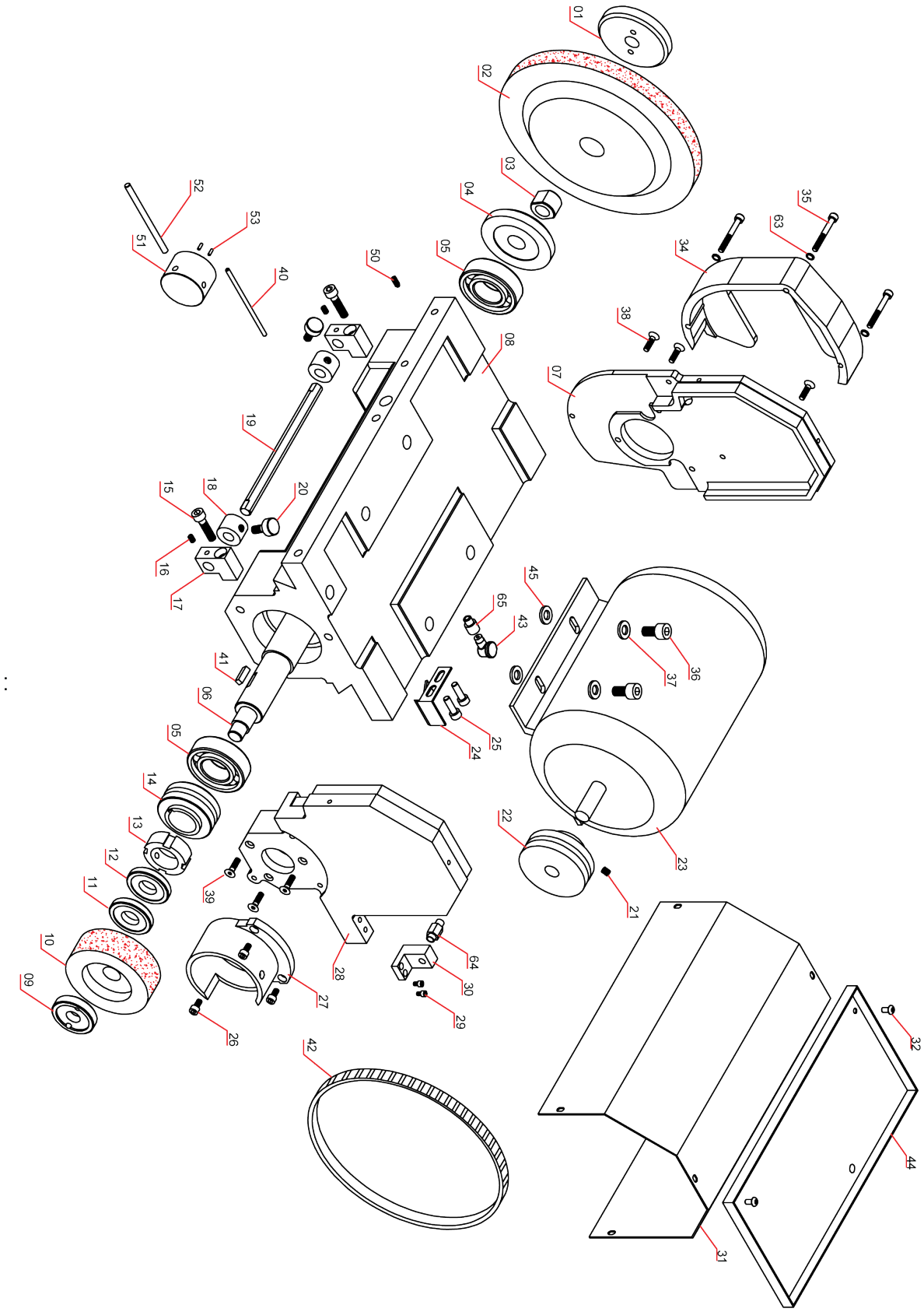
Part Number	Description
VR7-CAB	Base Storage Cabinet including removable coolant tank and paper filter system, capacity 5 gals 20 liters - order grinding oil separately.
VTRW-7	Main Grinding Wheel 7.0" (180mm) Diameter Special Applications, Titanium
VTRW-8	Main Grinding Wheel 7.0" (180mm) Diameter General Purpose
VTRW-13	Main Grinding Wheel 7.0” (180mm) Diameter Fine, Stellite
VTRW-9	Butt Grinding Wheel, General Purpose
7609C	Grinding Oil 5 gal container
VTRW-4	Wheel Dressing Diamond
514-7-66E	Filter Paper – minimum order of 12 ea.

PNEUMATIC DIAGRAM & PARTS LIST



REF. NO.	DESCRIPTION	QTY.	REMARKS
01	STRAIGHT CONNECTOR 1/8 BSP-6	01	
02	PUSH BUTTON VALVE	01	
	ELBOW CONNECTOR M5-6	01	
	ELBOW CONNECTOR M5-4	01	
03	PNEUMATIC CYLINDER	01	ESNU-50-30-P-MA (SINGLE ACTING)
	ELBOW CONNECTOR 1/4 BSP-4	01	

GRINDING WHEEL ASSEMBLY



GRINDING WHEEL ASSEMBLY PARTS LIST

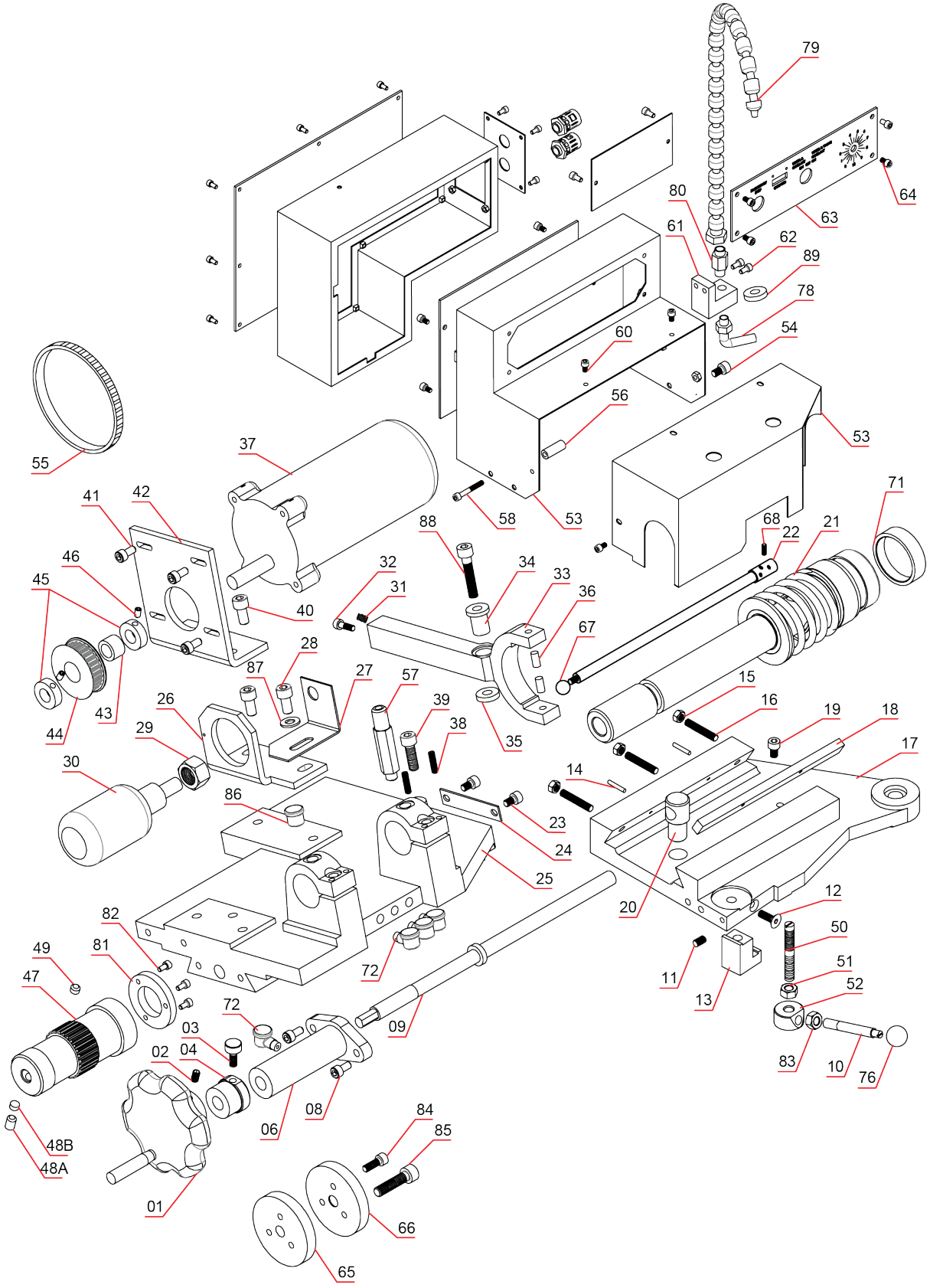
GRINDING WHEEL ASSEMBLY – PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	QTY.	REMARKS
01	VR7-016	WHEEL NUT	1	
02	VR7-036	VALVE GRINDING WHEEL	1	
03	VR7-017	RING NUT	1	
04	VR7-015	WHEEL FLANGE	1	
05		BALL BRG. 6205-2RS (25X52X15)	2	
06	VR7-018	GRINDING SPINDLE	1	
07	VR7-06	FRONT COVER	1	
08	VR7-04	SPINDLE SLIDE	1	
09	VR7-010	BUTT WHEEL NUT	1	
10	VR7-037	BUTT GRINDING WHEEL	1	
11	VR7-105	SPACER	1	
12	VR7-011	BUTT WHEEL FLANGE	1	
13	VR7-012	RING NUT	1	
14	VR7-435	SPINDLE PULLEY	1	
15		ALLEN CAP SCREW M6x25	2	
16		ALLEN GRUB SCREW M4x6	2	
17	VR7-050	STOPPER ROD SUPPORT	2	
18	VR7-051	STOPPER	2	
19	VR7-049	STOPPER ROD	1	
20		SOCKET HEAD CAP SCREW M6x15 WITH SHEAR LOCK KNOB DIA. 3/4”	2	
21		ALLEN GRUB SCREW M5x6	1	
22	VR7-434	MOTOR PULLEY	1	
23	555-10-52	WHEEL MOTOR	1	
24	VR7-109	STOP DOG	1	
25		ALLEN BUTTON HEAD SCREW M5X10	2	
26		ALLEN CAP SCREW M6x12	3	
27	VR7-08	BUTT WHEEL COVER	1	
28	VR7-07	REAR COVER	1	
29		ALLEN BUTTON HEAD SCREW M6X10	2	
30	VR7-294	COOLANT BRACKET	1	
31	VR7-091	MOTOR COVER	1	
32		BUTTON HEAD SCREW M5x10	6	
33				
34	VR7-09	WHEEL COVER	1	
35		ALLEN CAP SCREW M6x50	3	
36		**HEX. BOLT M8x20**	**4**	
37	VR7-097	WASHER	4	
38		ALLEN CSK SCREW M6x20	3	
39		ALLEN CSK SCREW M6x20	3	
40.	VR7-137	SPINDLE STOPPER	1	
41.		PARALLEL KEY 3/16”x3/16”x5/8”	1	
42.		POLY FLEX BELT 5M425	1	
43.		ELBOW OILER	2	
44.	VR7-195	SPINDLE TRAY	1	
45.	VR7-192	WASHER	4	
46.				
47.				

GRINDING WHEEL ASSEMBLY– PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	QTY.	REMARKS
48.				
49				
50.		SPRING BALL PLUNGER (GN 615-M8-K)	1	ELESA
51.	VR7-104	WHEEL SPANNER	1	
52.	VR7-132	SPANNER ROD	1	
53.		CYL. PIN. DIA. 4X12MM	2	
54.				
55.				
56.				
57.				
58.				
59.				
60.				
61.				
62.				
63.		MACHINE WASHER M6	3	
64.	VR7-295	PIPE NIPPLE	1	
65.	VR7-441	NIPPLE EXTENSION	1	

BASE & BUTT GRIND ASSEMBLY

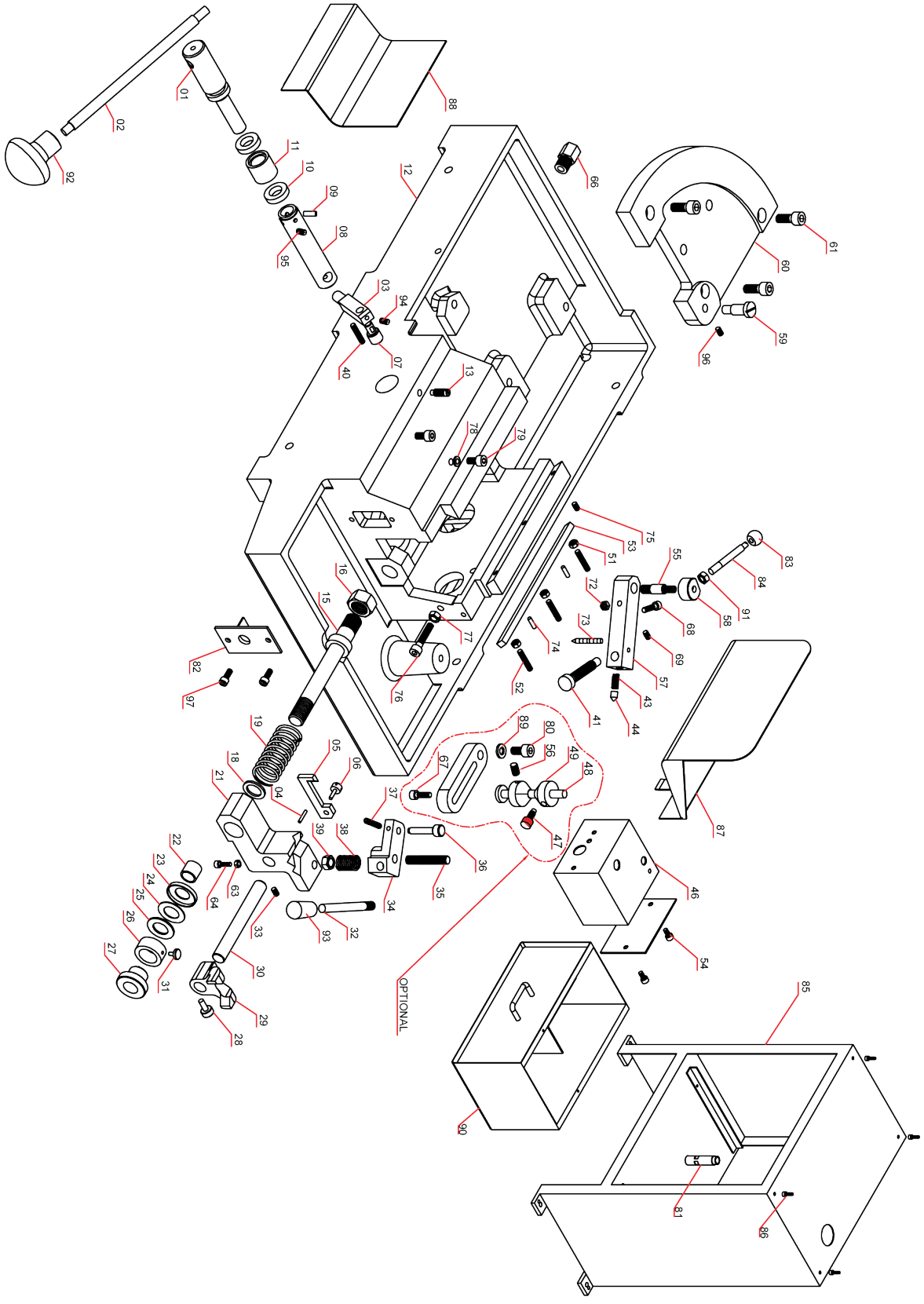


BASE & BUTT GRIND ASSEMBLY PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	QTY.	REMARKS
01	VR7-045	HAND WHEEL	1	
02		ALLEN GRUB SCREW M6x10	1	
03		THUMB SCREW M6x16	3	
04	VR7-044	FEED DIAL	1	
05	-------			
06	VR7-043	FEED SCREW BRACKET	1	
07	--------			
08		ALLEN CAP SCREW M6x20	2	
09	VR7-041	FEED SCREW	1	
10	VR7-190	LEVER	1	
11		ALLEN GRUB SCREW M4X10 WITH NYLON PLUG	1	
12		ALLEN CSK HEAD SCREW M6x15	1	
13	VR7-052	CLAMPING BLOCK	1	
14		SPRING DOWEL DIA 1/8” X 3/4”	2	
15		HEX NUT M6	3	
16	VR7-119	ALLEN GRUB SCREW	3	
17	VR7-02	SWIVEL SLIDE	1	
18	VR7-048	PARALLEL GIB	1	
19		ALLEN HEAD CAP SCREW M6x10	1	
20	VR7-042	FEED NUT	1	
21		CLUTCH SHAFT ASSEMBLY	1	REF. PLATE 3A
22	**VR7-129**	**VALVE STOPPER**	**1**	
23		ALLEN BUTTON HEAD SCREW M6X10	2	
24	VR7-103	STOPPER PLATE	1	
25	VR7-01	TOP SLIDE	1	
26	VR7-271-W	CYLINDER BRACKET	1	
27	VR7-094	LIMIT SWITCH CLAMP	1	
28		ALLEN HEAD CAP SCREW M8x20	2	
29		HEX NUT M16	1	
30		PNEUMATIC CYL. ESNU-50-30-P-MA	1	FESTO
31	VR7-054	TENSION SPRING	1	
32		ALLEN HEAD CAP SCREW M5x16	1	
33	VR7-127	CLAMPING LEVER	1	
34	VR7-040	PIVOT BUSH	1	
35	VR7-047	SPACER	1	
36		HARD CYL. PIN DIA 1/4”x1/2”	2	
37	650-7-6C	GEAR MOTOR	1	
38		ALLEN GRUB SCREW M5X20	4	
39		ALLEN HEAD CAP SCREW M8x25	2	
40.		ALLEN CAP HEAD SCREW M8x15	3	
41.		ALLEN CAP HEAD SCREW 10-32 X 1/2”	4	
42.	VR7-270-W	GEAR MOTOR BRACKET	1	
43.		CLUTCH BEARING	1	
44.	VR7-169	MOTOR PULLEY	1	
45.	VR7-179	COLLAR	2	
46.		ALLEN GRUB SCREW M5x6	2	
47.	VR7-269	CHUCK SHAFT PULLEY	1	
48A.		AL. GR. SCR. M6x12	1	

REF. NO.	PART NO.	DESCRIPTION	QTY.	REMARKS
48B.		BRASS PLUG	1	
49.		ALLEN GRUB SCREW M6x6	1	
50.	VR7-189	STUD	1	
51.	VR7-191	LOCK NUT	1	
52.	VR7-188	CLAMP NUT	1	
53.	VR7-268-W	CHUCK SLIDE COVER	1	
54.		ALLEN BUTTON HEAD SCREW M6x10	4	
55.		TIMING BELT (130XL 037)	1	
56.	VR7-313	SPACER	2	
57.	VR7-141	OILER	2	
58.		ALLEN HEAD SCREW M6x45	2	
59.	-------			
60.		ALLEN BUTTON HEAD SCREW M6x10	4	
61.	VR7-294	COOLANT BRACKET	1	
62.		ALLEN HEAD CAP SCREW M6X12	4	
63.	VR7-081-01	NAME PLATE	1	
64.		ALLEN BUTTON HEAD SCREW M6x10	4	
65.	VR7-130	ASSY. FIX	1	
66.	VR7-131	ASSY. FIX	1	
67.		**KNOB M6**	**1**	
68.		**BALL PLUNGER M4**	**4**	
69.	------			
70.	------			
71.	VR7-133	DRESSING CAP	1	
72.		ELBOW OILER	4	
73.	-------			
74.	-------			
75.	-------			
76.		BALL KNOBE	1	
77.		ALLEN HEAD CAP SCREW M8X60	1	
78.		ELBOW 1/4x12MM	2	
79.		FLEXIBLE COOLANT PIPE	2	
80.	VR7-295	PIPE NIPPLE	2	
81.	VR7-279	PULLEY SPACER	1	
82.		ALLEN HEAD SCREW M4x8	3	
83.	VR7-296	HEX. NUT	1	
84.		ALLEN HEAD CAP SCREW M4x50	3	
85.		ALLEN HEAD CAP SCREW M8x80	1	
86.		STRAIGHT OILER	2	
87.		WASHER M8	1	
88.		ALLEN CAP SCREW M8x40	1	
89.		FIBER SPACER	1	

VALVE CLUTCH ASSEMBLY



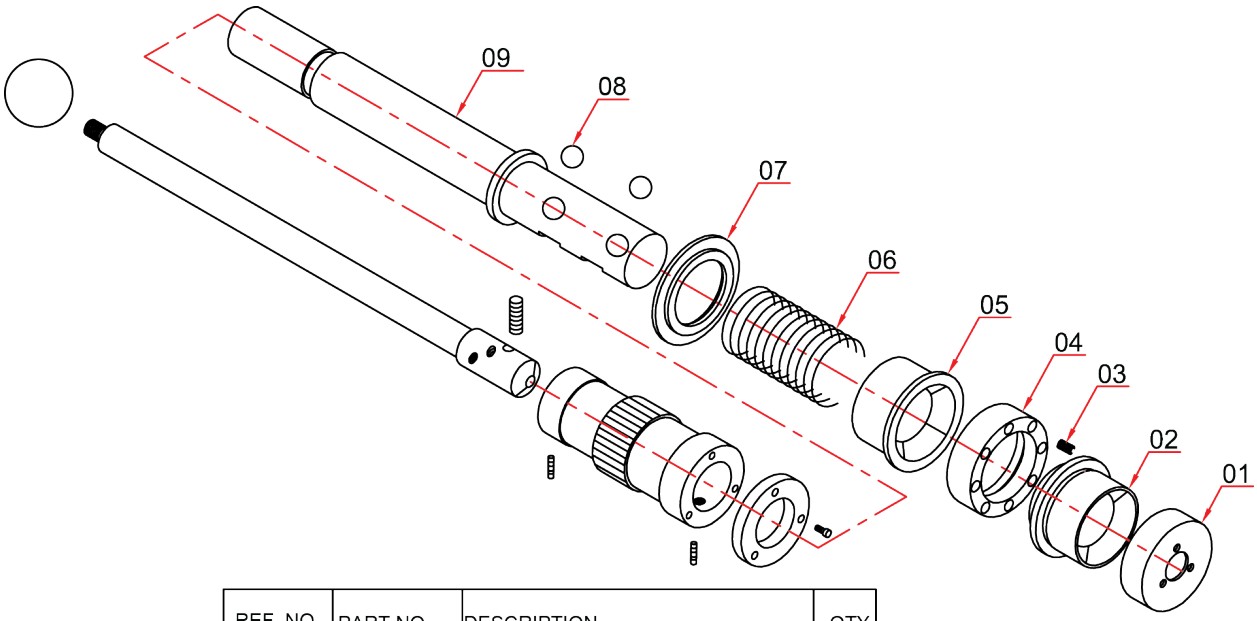
VALVE CLUTCH ASSEMBLY PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	QTY.	REMARKS
01	VR7-424	ROCKER SHAFT	1	
02	VR7-429	ROCKING LEVER	1	
03	VR7-427	ROCKER LEVER	1	
04		SPRING DOWEL 1/8”x1/2”	1	
05	VR7-187	STOPPER PLATE	1	
06	VR7-186	KNOB	1	
07	VR7-428	ROCKER PIN	1	
08	VR7-425	ROCKER HUB	1	
09		CYLINDRICAL PIN DIA. 5x22mm	1	
10		BALL BRG. 6903-2RS (17x30x7)	2	
11	VR7-426	BEARING SPACER	1	
12	VR7-05	MACHINE BASE	1	
13	VR7-315	ALLEN GRUB SCREW	1	
14				
15	VR7-317	V-BLOCK PIVOT SHAFT	1	
16		HEX. NUT M20	1	
17	-------			
18	VR7-077	SPACER	1	
19	VR7-196	COMP. SPRING	1	
20	--------			
21	VR7-197	V-BLOCK	1	
22	VR7-075	BUSH	1	
23	VR7-076	BEARING HOUSING	1	
24		NEEDLE THRUST CAGE 20x35x2	1	
25		THRUST WASHER 20x35x1	2	
26	VR7-068	DIAL	1	
27	VR7-067	FEED KNOB	1	
28	VR7-113	THUMB SCREW	1	
29	VR7-074	V-SUPPORT	1	
30	VR7-066	SUPPORT ROD	1	
31	VR7-069	THUMB SCRW	1	
32	VR7-073	LEVER	1	
33		ALLEN GRUB SCREW M6x10	1	
34	VR7-071	CLAMP LEVER	1	
35		FULL THREADED STUD M10x60	1	
36	VR7-072	THUMB SCREW	1	
37		AL. GRUB SCR. M5x8 WITH NYLON PLUG	1	
38	VR7-065	COMPRESSION SPRING	1	
39		HEX NUT M10	1	
40.		ALLEN GRUB SCREW M6x10	2	
41.		DIAMOND DRESSER (G17)	1	
42.	-------			
43.	VR7-107	COMP. SPRING	**1**	
44.	VR7-108	SPRING PAD	**1**	
45.	-------			
46.	VR7-106	SWITCH BOX WITH COVER	1	
47.	VR7-114	THUMB SCREW	1	

REF. NO.	PART NO.	DESCRIPTION	QTY.	REMARKS
48.	VR7-112	GUIDE PIN	2	
49.	VR7-111	CONE	2	
50.	VR7-110	CLAMP	1	
51.		HEX. NUT M6	3	
52.	VR7-440	ALLEN GRUB SCREW M6x32	3	
53.	VR7-023	PARALLEL GIB	1	
54.		ALLEN HEAD CAP SCREW M5x10	2	
55.	VR7-201	DRESSER PIVOT	1	
56.		GRUB SCREW M8x10	1	
57.	VR7-061	DRESSER HOLDER	1	
58.	VR7-202	CLAMPING COLLAR	1	
59.	VR7-418	PIVOT SCREW	1	
60.	VR7-03	BOTTOM PLATE	1	
61.		ALLEN CAP SCREW M10x25	3	
62.		CYL. PIN DIA. 0.125”X1.187” LONG	1	
63.		HEX NUT M6	1	
64.		HEX HEAD SCREW M6x30	1	
65.	-------			
66.	VR7-116	STRAIGHT NIPPLE	1	
67.		ALLEN HEAD CAP SCREW M8X15	1	
68.		ALLEN BUTTON HEAD SCREW M6x25	1	
69.		ALLEN GRUB SCREW M5X10 WITH NYLON PLUG	1	
70.	-------			
71.	-------			
72.		HEX NUT M6	1	
73.		DIAMOND DRESSER (G1L)	1	
74.		SPRING DOWEL 1/8”x3/4”	2	
75.		ALLEN GRUB SCREW M4x10	1	
76.		ALLEN CAP SCREW M8x40	1	
77.		HEX NUT M8	1	
78.		WASHER M8	1	
79.		ALLEN HEAD CAP SCREW M8X15	1	
80.		ALLEN HEAD CAP SCREW M8x25	1	
81.	VR7-93	COOLANT PIPE	1	
82.	VR7-090	BRACKET	1	FOR FESTO
83.		BALL KNOB	1	
84.	VR7-190	LEVER	1	
85.	VR7-095-W	MACHINE STAND	1	FAB.
86.		ALLEN HEAD CAP SCREW M8X25	4	
87.	VR7-098	REAR SPLASH COVER	1	FAB.
88.	VR7-099	FRONT SPLASH COVER	1	FAB.
89.		WASHER M8	1	
90.	VR7-96-W	COOLANT TANK	1	FAB.
91.	VR7-296	HEX. NUT	1	
92.		KNOB P.131/45-M10 (46501)	1	
93.		KNOB 1.662/40-M10 (121001)	1	

REF. NO.	PART NO.	DESCRIPTION	QTY.	REMARKS
94		ALLEN CAP SCREW M5x8	1	
95		ALLEN CAP SCREW M6x6	1	
96		AL. GRUB SCR. M5x10 WITH NYLON PLUG	1	
94		BUTTON HEAD SCREW M6x12	2	

BALL CHUCK ASSEMBLY & PARTS LIST



REF. NO.	PART NO.	DESCRIPTION	QTY.
01	VR7-128	FRONT COVER	01
02	VR7-122	FRONT CHUCK HOUSING	01
03	VR7-126	COMPRESION SPRING	08
04	VR7-123	SPRING HOUSING	01
05	VR7-121	REAR CHUCK HOUSING	01
06	VR7-125	COMPRESION SPRING	01
07	VR7-124	SPACER	01
08		BALLS	06
09	VR7-158	CHUCK SHAFT	01

ONLY FOR REFERENCE

THE BALL CHUCK ASSEMBLY TO BE ORDERED ONLY AS ASSEMBLED UNIT

OPTIONS

Contents

Optional Cabinet....9-1

CAB-VR10.... 9-1

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514-7-66E Filter Paper....9-6

Optional Cabinet

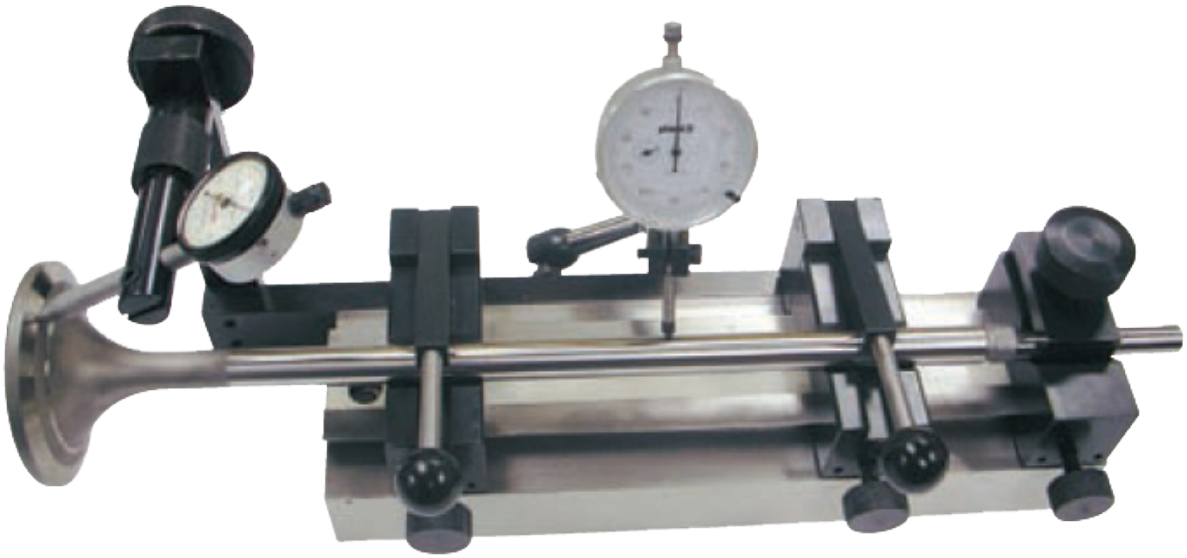
CAB-VR10

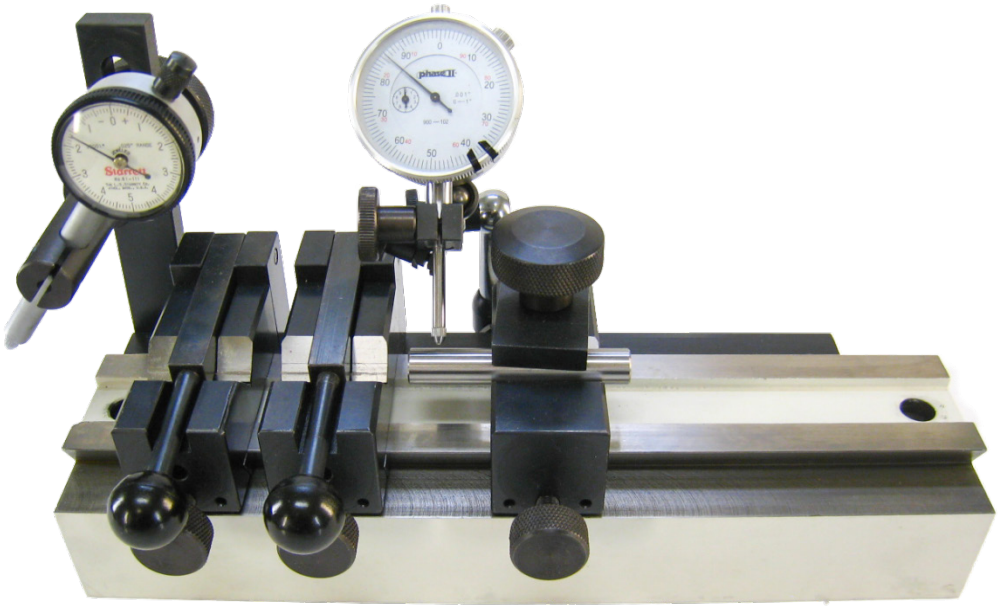
Base Storage Cabinet including removable coolant tank and paper filter system, capacity (5) gallons (20 liters) - order grinding oil 7609C separately

Valve Measuring Equipment

VALVE-CHECK

Valve Stem Runout Fixture Assembly measures Valve Seat and Valve Stem Runout with two separate dial gages, specify Inch .0001” or Metric .002mm





Grinding Wheels and Diamond Dressers

VTRW-7 Main Grinding Wheel

7.0” (180mm) Diameter Special Applications, Titanium

VTRW-8 Main Grinding Wheel

7.0” (180mm) Diameter General Purpose

VTRW-9 Butt Grinding Wheel

General Purpose

VTRW-13 Main Grinding Wheel

7.0” (180mm)Diameter(White) Fine Finishing/Stellite

VTRW-4 Dressing Diamond

For Main and Butt Grinding Wheel

Rocker Arm Grinding Device

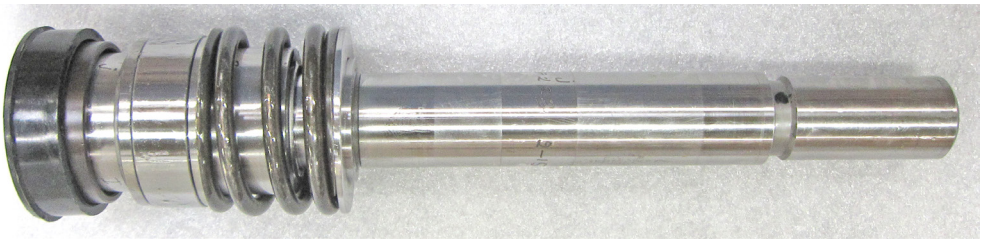
555-10-48 Rocker Arm Grinding Device for Shaft Type Rocker Arms

Optional Chucks

Valve Stem Diameter Range from .138 - .815” (3.5 - 20.7mm)
See VR7 Specification chart for valve seat angles, valve head diameters and valve stem length capacities for different design valves.
Note: New VR7 machine may be ordered with small or large chuck. Machine price change will be difference of standard and small or large chuck.

VR7CHUCK-STD – Standard Chuck

Standard 2 X 3 Ball Chuck - Valve Stem Diameter range .157 - .551” (4 - 14mm)



VR7CHUCK-SML – Small Chuck

Small 2 X 3 Ball Chuck - Valve Stem Diameter Range .138 - .2795” (3.5 - 7.1mm)

VR7CHUCK-LRG – Large Chuck

Large 2 X 3 Ball Chuck - Valve Stem Diameter Range .433 - .815” (11 - 20.7mm)

Service Parts and Supplies

7609C Grinding Oil

5 Gallon (20 Liters)

514-7-66E Filter Paper

Minimum order of (10) sheets, pricing per sheet

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SDS

The Safety Data Sheets list shown in this section are the substances and materials that an operator is most likely to come in contact with while using this machine.

Other substances and materials are used in the manufacture, testing, and shipping of this machine. A complete list of the Safety Data Sheets of substances and materials used by Rottler Manufacturing during manufacturing, testing, and shipping is located on the Manual flash drive shipped with the machine. Safety Data Sheets are also located on the company web site: http://www.rottlermfg.com/documentation.php

1) Honilo 710 Grinding Oil

SAFETY DATA SHEET

Section 1. Identification

Product name Honilo 710

SDS # 461349

Historic SDS #: 05267

Code 461349-US03

Relevant identified uses of the substance or mixture and uses advised against

Product use Metalworking fluid - neat.
For specific application advice see appropriate Technical Data Sheet or consult our company representative.

Supplier

Castrol Industrial North America, Inc.
150 W. Warrenville Road
Naperville, IL 60563
Product Information: +1-877-641-1600

BP Lubricants USA Inc.
1500 Valley Road
Wayne, NJ 07470
Telephone: (973) 633-2200

EMERGENCY SPILL INFORMATION: 1 (800) 424-9300 CHEMTREC (USA)

Section 2. Hazards identification

OSHA/HCS status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms

Signal word Danger

Hazard statements May be fatal if swallowed and enters airways.

Precautionary statements

Prevention Not applicable.

Response IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.

Storage Store locked up.

Disposal Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified Defatting to the skin.

Section 3. Composition/information on ingredients

Cooling agents for metal processing - Honing oils

Substance/mixture Mixture

Ingredient name	CAS number	%
Distillates, petroleum, hydrotreated middle	64742-46-7	≥75 - <90
Triazole derivative	Proprietary	≥0.1 - <0.3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.

Skin contact Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

Inhalation If inhaled, remove to fresh air. Get medical attention if symptoms occur.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage. Get medical attention immediately.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

Specific treatments No specific treatment.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media Do not use water jet.

Specific hazards arising from the chemical Swarf fires - Neat metal working oils may fume, thermally decompose or ignite if they come into contact with red hot swarf. To minimise the generation of red hot swarf ensure that a sufficient flow of oil is correctly directed to the cutting edge of the tool to flood it throughout cutting operations. As an additional precaution swarf should be regularly cleared from the immediate area to prevent the risk of fire. In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous combustion products Combustion products may include the following:
carbon dioxide
carbon monoxide

Section 5. Fire-fighting measures

Special protective actions for fire-fighters Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling. Contact emergency personnel.

For emergency responders Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilled product. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures Put on appropriate personal protective equipment (see Section 8). Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Do not swallow. Aspiration hazard if swallowed. Can enter lungs and cause damage. Never siphon by mouth. Concentrations of mist, fumes and vapors in enclosed spaces may result in the formation of explosive atmospheres. Excessive splashing, agitation or heating must be avoided. During metal working, solid particles from workpieces or tools will contaminate the fluid and may cause abrasions of the skin. Where such abrasions result in a penetration of the skin, first aid treatment should be applied as soon as reasonably possible. The presence of certain metals in the workpiece or tool, such as chromium, cobalt and nickel, can contaminate the metalworking fluid, as can bacteria, and as a result may induce allergic and other skin reactions, especially if personal hygiene is inadequate.

Advice on general occupational hygiene Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Distillates, petroleum, hydrotreated middle	**ACGIH (United States).** TWA: 5 mg/m³ 8 hours. Form: Oil mist, mineral **OSHA (United States).** TWA: 5 mg/m³ 8 hours. Form: Oil mist, mineral
Triazole derivative	None.

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.
Appropriate techniques should be used to remove potentially contaminated clothing.
Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety glasses with side shields.

Skin protection

Hand protection

Wear protective gloves if prolonged or repeated contact is likely. Wear chemical resistant gloves. Recommended: Nitrile gloves. The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/ manufacturer and with a full assessment of the working conditions.

Consult your supervisor or Standard Operating Procedure (S.O.P) for special handling instructions.

Section 8. Exposure controls/personal protection

Body protection
Use of protective clothing is good industrial practice.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection
Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Section 9. Physical and chemical properties

Appearance

Physical state Liquid.

Color Light Yellow.

Odor Mild.

Odor threshold Not available.

pH Not available.

Melting point Not available.

Boiling point Not available.

Flash point Open cup: 140°C (284°F) [Cleveland.]

Evaporation rate Not available.

Flammability (solid, gas) Not applicable. Based on - Physical state

Lower and upper explosive (flammable) limits Not available.

Vapor pressure Not available.

Vapor density Not available.

Density <1000 kg/m³ (<1 g/cm³) at 15.6°C

Solubility insoluble in water.

Partition coefficient: n-octanol/water Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Kinematic: 5.2 mm^2/s (5.2 cSt) at 40°C

Section 10. Stability and reactivity

Reactivity
No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

Chemical stability
The product is stable.

Possibility of hazardous reactions
Under normal conditions of storage and use, hazardous reactions will not occur.
Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid
Avoid all possible sources of ignition (spark or flame).

Section 10. Stability and reactivity

Incompatible materials Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Aspiration hazard

Name	Result
Distillates, petroleum, hydrotreated middle	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Eye contact No known significant effects or critical hazards.

Skin contact No known significant effects or critical hazards.

Inhalation Vapor inhalation under ambient conditions is not normally a problem due to low vapor pressure.

Ingestion Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact No specific data.

Skin contact Adverse symptoms may include the following:
irritation
dryness
cracking

Inhalation No specific data.

Ingestion Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects Not available.

Potential delayed effects Not available.

Long term exposure

Potential immediate effects Not available.

Potential delayed effects Not available.

Potential chronic health effects

General No known significant effects or critical hazards.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 11. Toxicological information

Section 12. Ecological information

Toxicity

No testing has been performed by the manufacturer.

Persistence and degradability

Expected to be biodegradable.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC})	Not available.
Mobility	Non-volatile. Liquid. insoluble in water.

Other adverse effects No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

Special precautions for user Not available.

Section 14. Transport information

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

Section 15. Regulatory information

U.S. Federal regulations

United States inventory (TSCA 8b) All components are listed or exempted.

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 311/312

Classification Not applicable.

SARA 313

Form R - Reporting requirements This product does not contain any hazardous ingredients at or above regulated thresholds.

Supplier notification This product does not contain any hazardous ingredients at or above regulated thresholds.

State regulations

Massachusetts None of the components are listed.

New Jersey None of the components are listed.

Pennsylvania None of the components are listed.

California Prop. 65 No products were found.

Other regulations

Australia inventory (AICS) At least one component is not listed.

Canada inventory All components are listed or exempted.

China inventory (IECSC) At least one component is not listed.

Japan inventory (ENCS) Not determined.

Korea inventory (KECI) All components are listed or exempted.

Philippines inventory (PICCS) At least one component is not listed.

Taiwan inventory (CSNN) At least one component is not listed.

REACH Status For the REACH status of this product please consult your company contact, as identified in Section 1.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of issue/Date of revision 02/10/2016.

Date of previous issue 09/18/2015.

Prepared by Product Stewardship

Section 16. Other information

Key to abbreviations

ACGIH = American Conference of Industrial Hygienists
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS Number = Chemical Abstracts Service Registry Number
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OEL = Occupational Exposure Limit
SDS = Safety Data Sheet
STEL = Short term exposure limit
TWA = Time weighted average
UN = United Nations
UN Number = United Nations Number, a four digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.
Varies = may contain one or more of the following 101316-69-2, 101316-70-5, 101316-71-6, 101316-72-7, 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64741-97-5, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-64-9, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1, 74869-22-0, 90669-74-2

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.