ROTTLER

VR9 VALVE REFACER WITH LINEAR SLIDWAYS

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

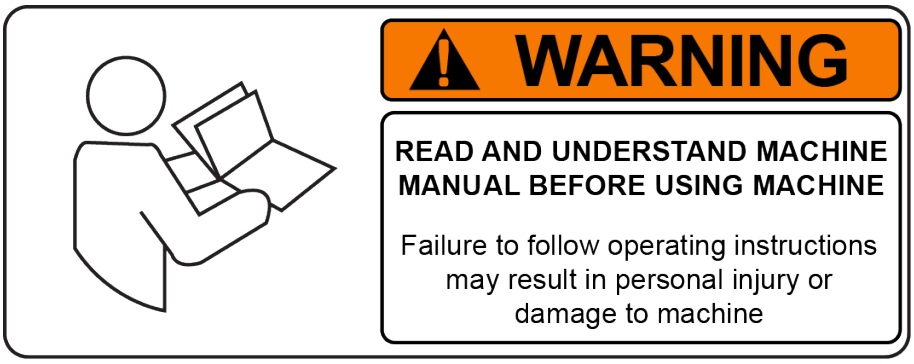
In some cases you may be requested to send a photo of the part you are ordering if it is a replacement part, or doesn't appear in the database.

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

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 VR9 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 VR9 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

The VR9 machine is designed for resurfacing by grinding wheel of engine valves.

Rottler VR9 valve grinding machine can grind valves from 15 to 60 degree. Variable valve rotation speed allow the operator to control surface speed for different diameter valves. Solid cast-iron construction dampens harmonic vibration to eliminate chatter. Valves are held by a precision chuck system with pneumatic operated quick action. A large capacity cooling removable tank holds 5 gallons / 20 liter of grinding fluid.

Each Rottler Chuck offers a dual system of three hardened steel balls - one towards the front of the Chuck and another system in the back of the Chuck holding the valve in the portion of that will be running in the Guide to the valve stem.

This automatically aligns the stem of valve, allowing that the face of the valve to be concentric to the valve, stem depending on the conditions of the stem.

The Rottler linear Centered system ensures accurate in relation to the stem, alignment based on account that we are working with a valve in which the stem is between the tolerances for wear, so we could ensure that the valve seat this concentric ground.

Disclaimer

The VR9 Manual (henceforth to be referred to as the “Manual”) is proprietary to Rottler Manufacturing LLC. (“Rottler Manufacturing”) and no ownership rights are hereby transferred. No part of the Manual shall be used, reproduced, translated, converted, adapted, stored in a retrieval system, communicated or transmitted by any means, for any commercial purpose, including without limitation, sale, resale, license, rental or lease, without the prior express written consent of Rottler Manufacturing.

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Limited Warranty

Rottler Manufacturing Company Model VR9 parts and equipment is warranted as to materials and workmanship. This limited warranty remains in effect for one year from the date of delivery, provided the machine is owned and operated by the original purchaser and is operated and maintained as per the instructions in the manual.

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

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 Order Department or representative 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 Order 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 written approval from Rottler Corporation Management and/ or Shipping Department.

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.

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INSTALLATION

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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

Route to: Service Mgr → Andy → Machine Packet File
VR9 Installation Report Rev 08202015

ROTTLER VR9 INSTALLATION REPORT

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

Customer:_____ Address:_____

City:_____ State:_____ Zip:_____ Phone:_____

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.
_____This machine requires 208 to 240V AC 1-phase, 50/60HZ, isolated power supply (measured between L1 and L2). Current requirement is 15 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.
_____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 VR9 should have a fully isolated power supply to prevent damage and uncontrolled movement of the machine. If the VR9 is on the same power lines that are running to other electrical equipment (grinders, welders, and other AC motors) electrical noise can be inducted into the VR9 electrical system. Electrical noise can cause the controller to see false signals to move.

⚠ 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 a 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 operation.

INSTRUCTING THE OPERATOR

_____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.

General remarks on machine performance, adjustments as received and any further organization or parts required to complete the set up:

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_____

Instructions given to: _____

Sales/Service Engineer: _____Date_____

Shop Foreman/Superintendent or Owner: _____Date_____

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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.

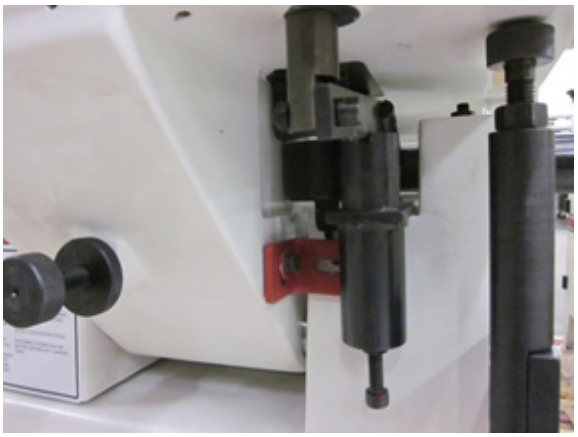
⚠ CAUTION **THIS MACHINE IS TOP-HEAVY**. Use care when lifting and moving Machine

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.



Power Supply

General Warnings

The electrical connection to the power source has to be done by electricians only. Verify if the feed line is in accordance with the norms in force. In the negative, keep the due remedy. Make sure the wiring connection to the power source has been correctly done and not hinder the normal operation and maintenance of the machine.

The sections of the feeding cable, as well as the protective covering have to be calculated accordingly with the fed power. Check the source voltage be as indicated in the machine data plate. Also check the cables are well insulated and the machine connected to the earth. On the feeding line there must be a cut-off circuit breaker.

Plug the machine to the power source paying attention to the data reported on the plate fitted to the machine. Make sure the feeding cable be in accordance with the safety rules.

⚠ CAUTION Once connected the machine, pay attention its sense of rotation be correct. In the negative, invert one phase. Follow the marks and the cable color to identify the phases.

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

This machine has the following power requirements:

208 to 240 VAC it should not exceed 240 Volts
Single Phase
50 or 60 Hertz
10 amps

Air Supply

It is very important the air source for the VR9 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 100 lbs. air source to machine and set regulator to 60 PSI.

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 death or 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 VR9 should have a ***fully isolated power supply*** to prevent damage and uncontrolled movement of the machine.

If the VR9 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 VR9 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 theVR9 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 VR9 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 VR9 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 DEFINITIONS 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
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.

Wheel Rotation Switch
Turns wheel on and off

Coolant Switch
Turns coolant pump on and off

Wheel Rotation Speed
Adjusts wheel speed 0 –2300 RPM

Valve Rotation Speed
Adjusts valve rotation speed 0 – 225 RPM

Valve Face Angle LED
Tells you what angle you are grinding valve at.

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OPERATING INSTRUCTIONS

Contents

Operating Instructions

The ROTTLER VR9 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 VR9 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

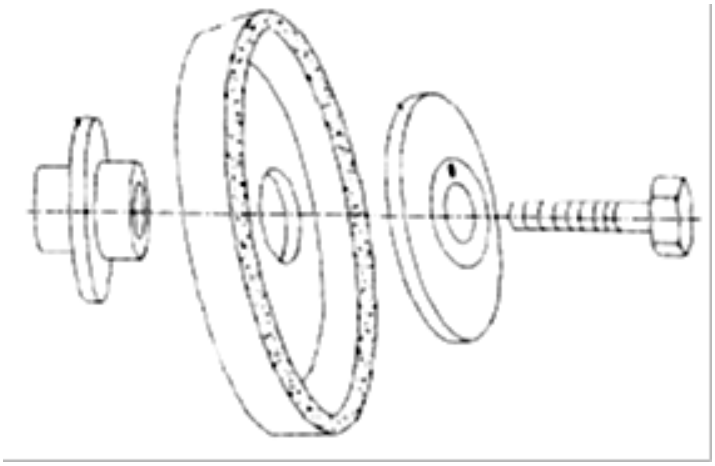
PRESS THE EMERGENCY STOP BUTTON (on the front control panel) **IMMEDIATELY!**

Grinding Wheel

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.

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



1. Be sure that the machine is not powered.
2. Remove the protecting cover of the wheel.
3. Push the spindle locking pin located on the back of the spindle housing.
4. Torque the wheel to 100 in. lbs. and release the spindle looking pin.
5. Reassemble the protecting cover of the wheel

⚠ WARNING

NEVER MAKE THE WHEEL ROTATE WITHOUT ITS PROTECTING COVER.

Rottler VR9 & VR8 Valve Refacers – Over Tightening of Bolt

This Instruction Bulletin serves to notify all Rottler VR9 and VR8 model owners that over-tightening the MAIN grinding wheel attachment nut on the VR9 and VR8 model machines has potential to cause noise, irregular vibrations and damage to bearings.

To prevent possible damage and inconvenience, torque this nut to a maximum of 100in/lbs or 11.3Nm. Do not torque the MAIN grinding wheel attachment nut any further than 100in/lbs or 11.3Nm.

Please post this bulletin on or near your machine so that all operators are aware of and may prevent any possible harm or inconvenience.

See photos below for reference. If you have any questions, please call the factory at +1 (253) 872-7050.

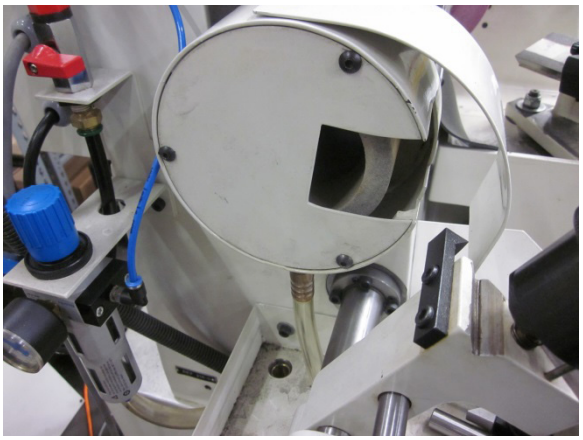
Main Valve Grinding Wheel Removal

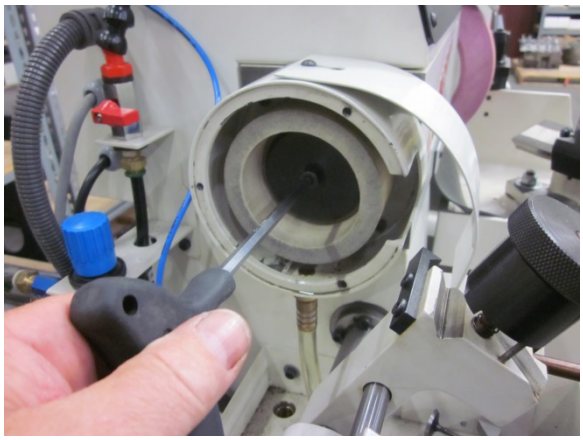
1. Remove the three mounting screws holding the wheel guard in place.
2. Push the locking pin in to lock the spindle from turning and remove the wheel retaining bolt

3. Remove old wheel and reinstall new wheel with Arrow, up mark to the top.
4. Torque retaining bolt to 100 IN. LBS.
5. Re-install wheel guard.

Valve Stem Grinding Wheel Removal

1. Remove wheel cover plate.
2. Push the locking pin in to lock the spindle from turning and remove the wheel retaining bolt
3. Remove old wheel and install new one.
4. Tighten retaining allen bolt and reinstall cover.





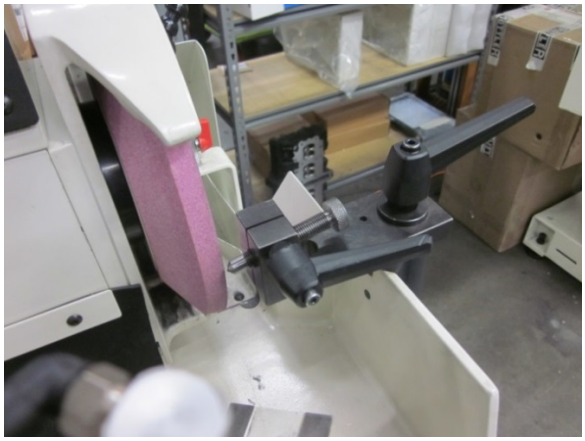
Dressing the Main Grinding Wheel

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: 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.



1. Move the valve carrier to the park position or the lower position.
2. Loosen the locking handle and swing the diamond dresser into dressing position, (make sure the diamond is not going to make contact with the grinding wheel) and lock.
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. Feed the diamond until it start making Contact to the wheel
5. Set the proper speed for dressing (Truing)
6. Firmly grasp the main handle and sweep the dresser across the wheel slowly while slightly pushing in towards the wheel. Adjust diamond slightly in and continue to sweep the wheel until completely dressed or until the face on the grinding wheel is complete clean.
7. Loosen lock handle and swing diamond dresser back out of the way and lock handle.

Dressing the Butt Wheel

The Valve stem grinding wheel needs to be dressed periodically, to keep a sharp cutting edge and a clean face.

Note: NEVER MAKE THE WHEEL ROTATE WITHOUT ITS PROTECTING COVER

Install dressing diamond in place as shown below. Adjust until tip just comes in contact with wheel, swing dresser across wheel slowly until wheel is dressed, cleaned.

Operating Guide

The ROTTLER VR9 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.

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

Stop the machine before making adjustments or removing chips 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.

Calibrating the Digital Angle Display

1. Set the rocker arm so that the scale is at zero by losing the swing angle position block and then clamped. Referred to (Fig. 1)
2. Fit the calibrating device (Fig. 2) into the chuck the same as if a valve is to be ground.
3. Set up a magnetic dial gage and magnetized on the grinding wheel cover and the dial on the center left of the machining face of the calibrating device (Fig. 3) and set the dial gage on Zero.
4. Stroke the rocker arm back and forward the machining face of the calibrating device and adjust the angle until both sides of the calibrating device read zero on the dial gage.
5. Press the Reset button (RST) so that the display shows 0.0
6. Remove the calibrating device, The Digital Angle Display has been calibrated to the perfect zero setting.

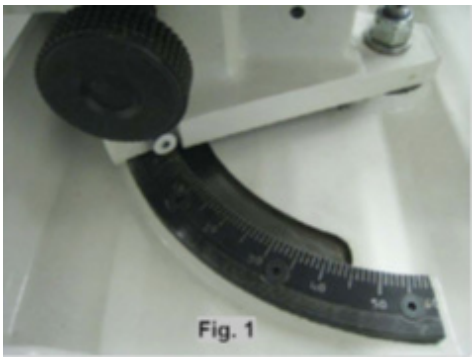


Fig. 1

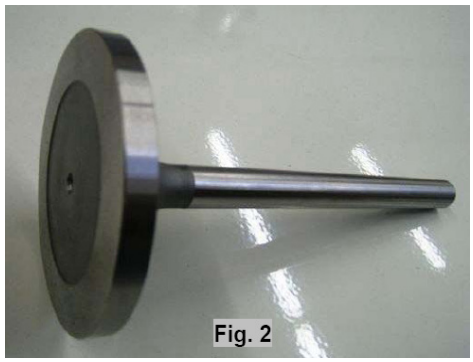


Fig. 2

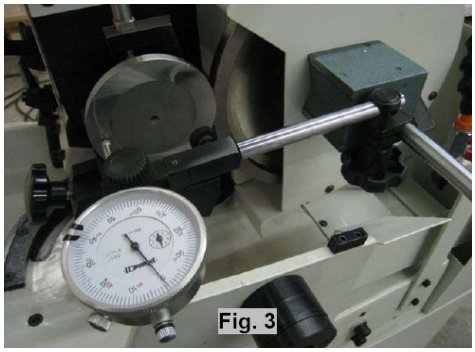


Fig. 3

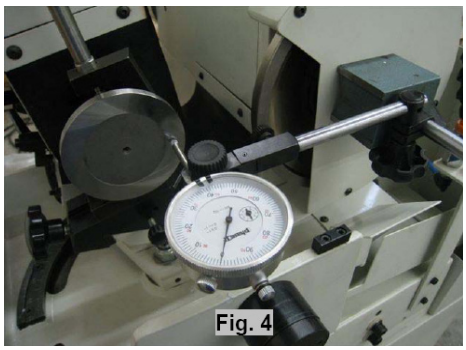
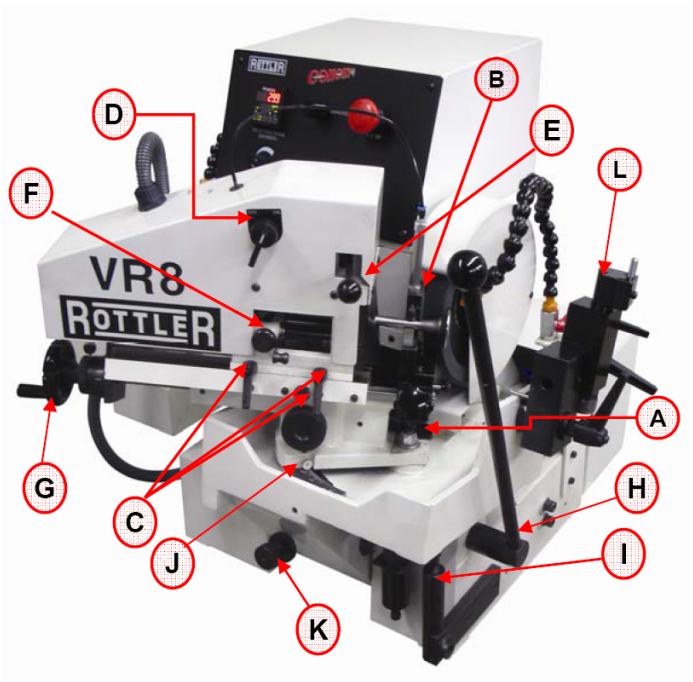


Fig. 4

Fig. 5

Resurfacing Procedure



A - Swing angle support handle

B - Valve stem steady rest

C - Slide support looking handles (2 sliding bases)

D - Pneumatic Steady Rest release Switch.

E - Valve Stem drive out Handle.

F - Valve Stem Stop

G - Valve grinding Feed Knob

H - Stroking Lever Handle

I - Grinding stopper adjusting nut

J - Angle pointer

K - Grinding wheel carrier stroking stop

L – Grinding wheel dresser

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

Grinding of Valve

1. Grinding angle setting
2. Check the valve seat angle that you will be grinding.
    a. Loosen the handle or locking nut A and rotate the slide support valve holding group look at the angle pointer J and set it to the angle from the valve. Verify the angle on the Digital display unit and set it to the proper angle.
    b. Lock the handle A

3. Valve positioning
    a. Shift the valve rest B on the slide, in order the supporting of the valve stem is done at its end as much as possible.
    b. By means of the hand wheel G shift the valve driving unit in a convenient position.
    c. By means of the lever H, pull the machine arm to the operator to release the upper valve driving roller.
    d. Rise up the valve pressing finger F located on the rest.
    e. Insert the valve into its lodgment up to touch the swinging stop device F. Eventually adjust the stop device in length C.
    f. Lower the stem pressing finger of the rest.
    g. Approach the valve using the stroking lever handle H to the grinding wheel

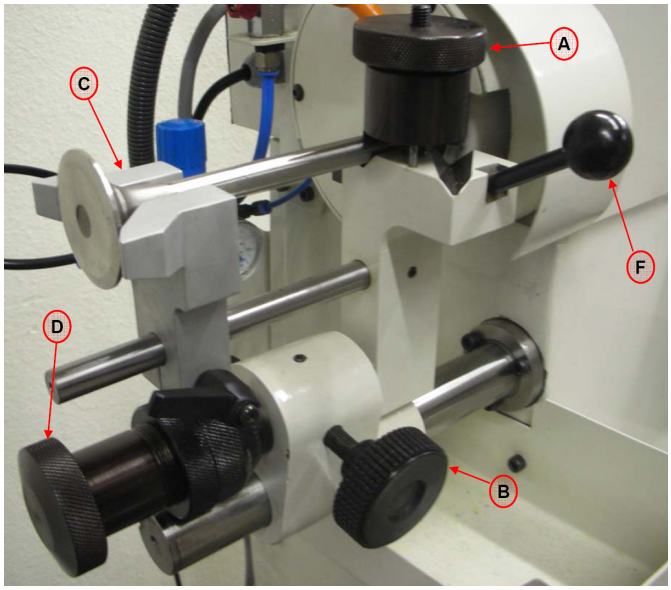
4. Adjusting
    a. Switch on the grinding wheel motor as that one of the valve driving and of the coolant pump.
    b. If necessary adjust position of the valve by shifting the driving unit. Once reached the right position, block the slide by screwing the knob K; This adjustment limits the Grinding wheel carrier stroke in sweeping so that the wheel would not damage the valve stem.
    c.
5. By the lever, approach the valve to the grinding wheel within touching it. Rise up the swinging stop F. The valve automatically moves to left thus starting its grinding against the wheel.
6. Swing the machine stroking lever handle H in order to grind the valve on all the profile of the grinding wheel.
7. For any further pass turn the hand wheel of the valve driving unit.
8. Once performed the grinding operation, push to left E the upper roller lever. The valve is automatically pushed to right, for away from the grinding wheel.

9. Valve grinding by sequence
    a. Pull the machine stocking lever handle H towards the operator to rise the upper roller thus releasing the valve.
    b. Rise up the rest pressing finger
    c. Take out the ground valve.
    d. Insert the second valve up to touch the swinging stop device F.
    e. Let the rest finger go down.
    f. Push the machine stocking lever handle H to approach the valve to the grinding wheel. Rise the swinging stop device in F to let the valve go towards the grinding wheel.
    g. Once performed the grinding operation, push to the left, the upper roller lever to release the valve to right. Pull the arm towards the operator.

⚠ CAUTION Never rotate the machine stroking lever handle H when the grinding wheel is in contact with the valve, move the stroking lever slowly into the grinding wheel to avoid hard contact with the grinding wheel.

This handling would possible destroy the grinding wheel and after the surface finish of the valve head.

Stem Ends



1- 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 **B**, and rotate the clamping block by using the lever handle **F**.

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

3- Lock the valve in this position **A**.

4- Unlock the graduate ring of the micrometer screw, and put it to zero **D**.

5- Use the clamping block rotation to avoid a contact between the valve and the wheel (unlock the V stopper **C** to do that).

6- Adjust the micrometer screw with your grinding value. Be careful, you shouldn't grind more than .0005".

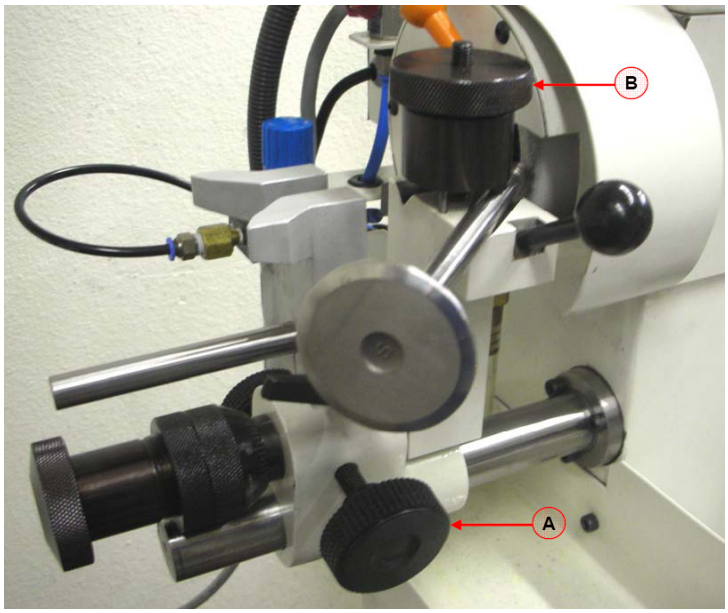
7- Start the wheel and the coolant system.

8- Use the clamping block **F** rotation to grind the valve stem end (backward and forward movement).

9- At the end of the machining, don't forget to stop the wheel and the coolant system.

10- Wait the end of the grinding wheel rotating to remove the valve from the clamping block.

Valve Stem Chamfering



1. Put the end stop knob **A** on the valve and block it in position (not too tight).
2. Use the "V" 45° to the wheel to clamp the valve onto the clamping block. Use the top knob **B** (to rotate the clamping block) to put in contact the valve stem chamfering and the grinding wheel.
3. Block the valve in this position on the clamping system. Don't tight too much; you should be able to turn the valve around his own axis.
4. Start the wheel and the coolant system.
5. Use the clamping block rotation to grind the valve stem chamfering (turn the valve around his own axis).
6. At the end of the machining, don’t forget to stop the wheel and the coolant system.

Wait the end of the grinding wheel rotating to remove the valve from the clamping block.

MAINTENANCE

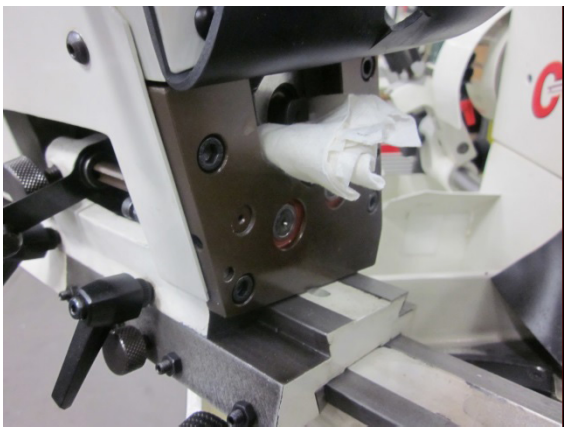
Contents

Maintenance

The Rottler VR9 has been designed to be a low maintenance machine. However, some basic maintenance will ensure long life and accurate results.

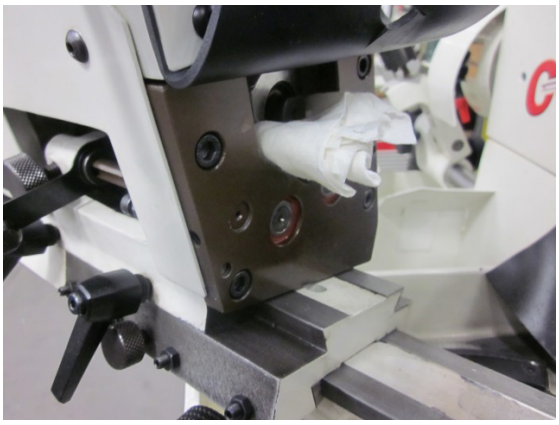
Lubricating the Chuck Slideways

Lubrication –The slideways must be lubricated with ***ISO VG 68 Way Oil*** before starting a new machine and weekly during use of the machine.



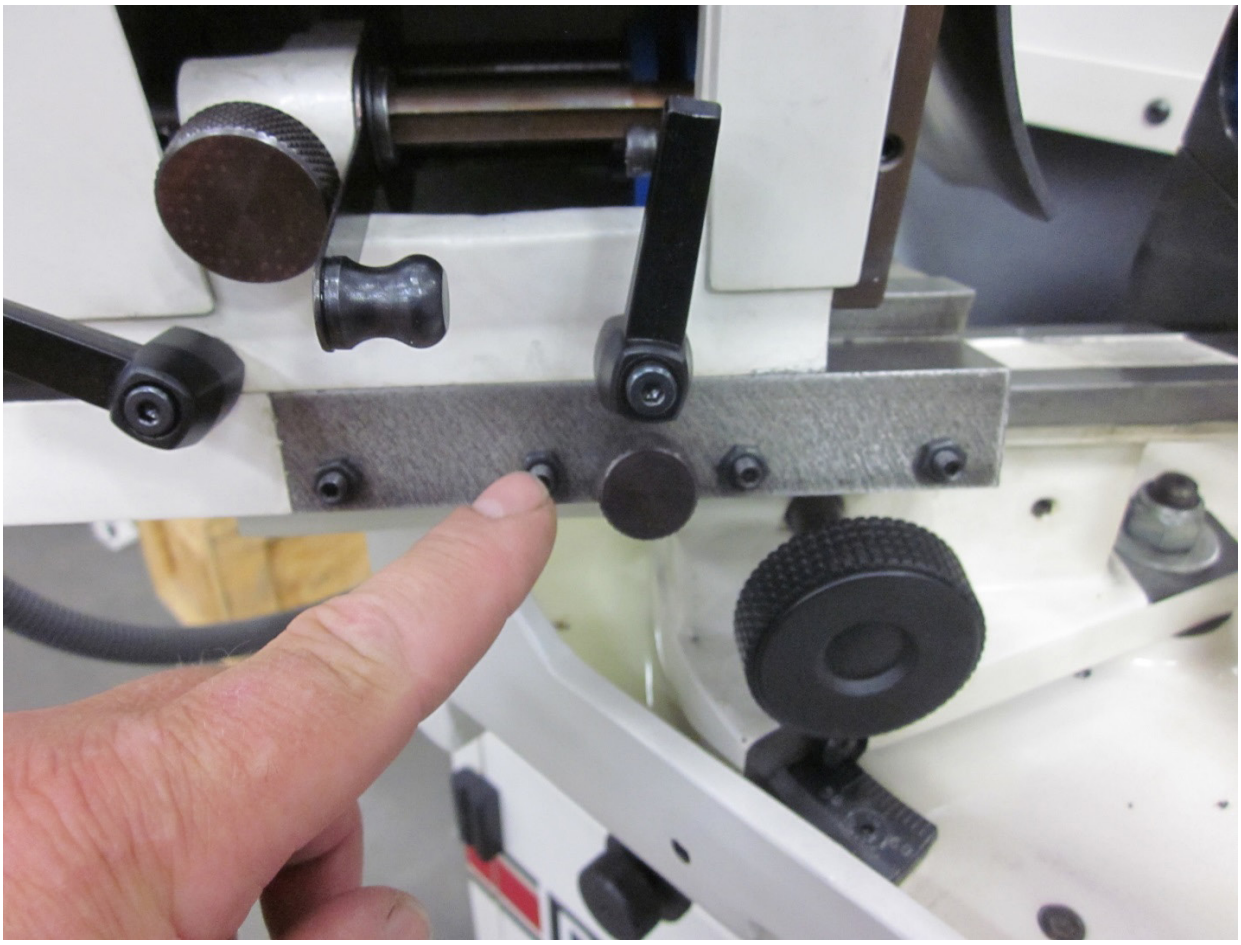
Cleaning Drive Rollers

These should be cleaned weekly – roll up a clean shop towel spray brake clean or similar cleaning solution on towel and clamp into rollers and turn on chuck. You may have to do this a couple times until towel is clean. Cleaning these will make the valve auto feed and spring release handle work much better.



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. 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 screws. Located in front of chuck assembly at the bottom.



BALL CHUCK

Maintenance Procedure for VR Ball Chucks

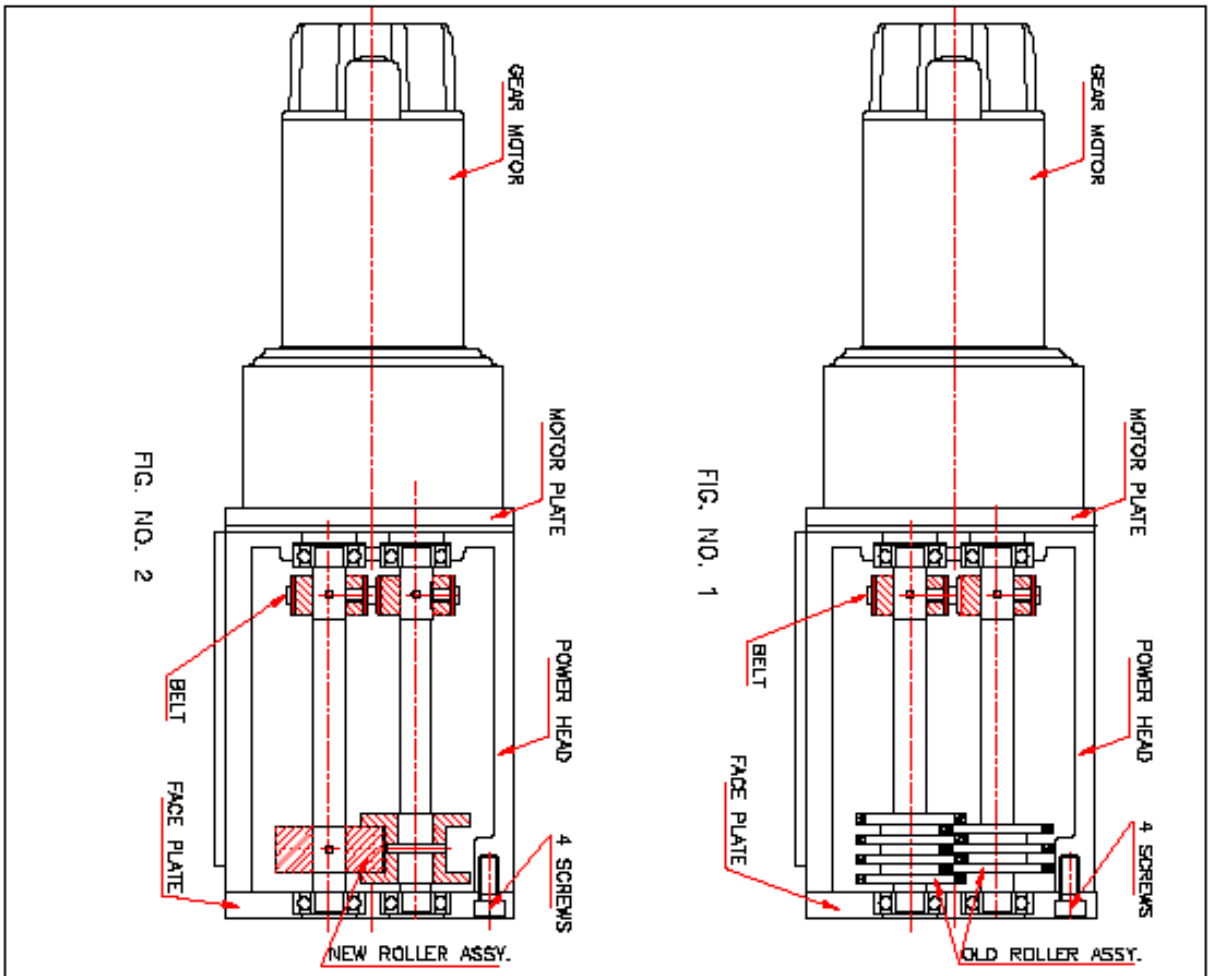
The following procedure should be performed on a weekly a basis:

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



CHANGE DRIVE ROLLERS

TO REPLACE DRIVE ROLLERS IN POWER HEAD PROCEED AS FOLLOWS SEE FIG. NO. 1 & FIG. NO. 2

1. TURN OFF POWER
2. DISCONNECT AIR PIPE FROM STEADY REST & SLIDE REST OFF DRIVE BASE
3. REMOVE POWER HEAD COVER & AIR PIPE FROM POWER HEAD.
4. LOOSE BELT BY LOOSEN SCREWS IN GEAR MOTOR PLATE.
5. REMOVE STEM SHAFT, STOPPER ASSY. & FACE PLATE FROM POWER HEAD BY REMOVING 4 SCREWS.
6. SLIDE DRIVE ROLLER ASSEMBLIES OUT OF POWER HEAD
7. SLIDE NEW DRIVE ROLLER ASSEMBLIES (THRU. DRIVE BELT) IN TO HOLES IN POWER HEAD
8. RE INSTALL FACE PLATE, STEM SHAFT & STOPPER ASSY. & TIGHTEN 4 SCREWS.
9. RE INSTALL STEADY REST & CONNECT AIR PIPES.
10. TIGHT DRIVE BELT & GEAR MOTOR PLATE. DO NOT OVER TIGHTEN BELT.
11. TIGHT POWER HEAD COVER.

DATE: 30-01-09
DRAWING NO: 005-VR9-401

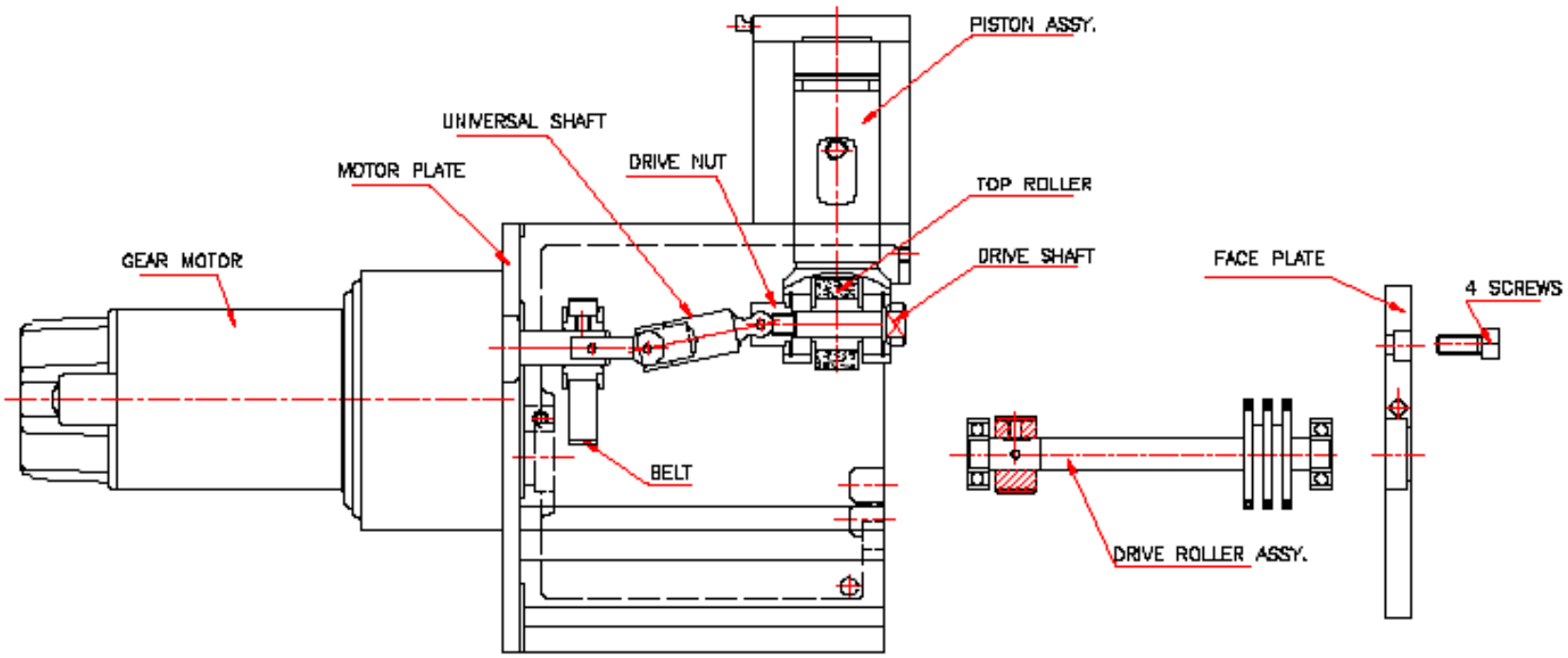


FIG. NO. 3

CHANGE TOP ROLLERS

TO REPLACE TOP ROLLERS IN POWER HEAD PROCEED AS FOLLOWS
SEE FIG. NO. 3

1. TURN OFF POWER
2. DISCONNECT AIR PIPE FROM STEADY REST & SLIDE REST OFF DRIVE BASE.
3. REMOVE POWER HEAD COVER & AIR PIPE FROM POWER HEAD.
4. LOOSE BELT BY LOOSEN SCREWS IN GEAR MOTOR PLATE.
5. REMOVE STEM SHAFT, STOPPER ASSY. & FACE PLATE FROM POWER HEAD BY REMOVING 4 SCREWS.
6. SLIDE DRIVE ROLLER ASSEMBLIES OUT OF POWER HEAD
7. REMOVE UNIVERSAL SHAFT & UNSCREW DRIVE NUT FROM DRIVE SHAFT.
8. REMOVE DRIVE SHAFT & TOP ROLLER FROM PISTON ASSY.
9. CHECK DRIVE BELT & REPLACE AS REQUIRED.
10. REPLACE NEW TOP ROLLER, SLIDE DRIVE SHAFT IN TO PISTON ASSY.
11. SCREW DRIVE NUT IN TO DRIVE SHAFT & REINSTALL UNIVERSAL SHAFT.
12. SLIDE DRIVE ROLLER ASSEMBLIES (THRU. DRIVE BELT) IN TO HOLES IN POWER HEAD.
13. REINSTALL FACE PLATE, STEM SHAFT & STOPPER ASSY. & TIGHTEN 4 SCREWS.
14. TIGHT DRIVE BELT & GEAR MOTOR PLATE DO NOT OVER TIGHTEN BELT.
15. REINSTALL STEADY REST & CONNECT AIR PIPES. ER TIGHTEN BELT.
16. TIGHT POWER HEAD COVER.

DATE: 30-01-09
DRAWING NO: 555-VR6-902

Rottler VR9 & VR8 Valve Refacers – Over Tightening of Bolt

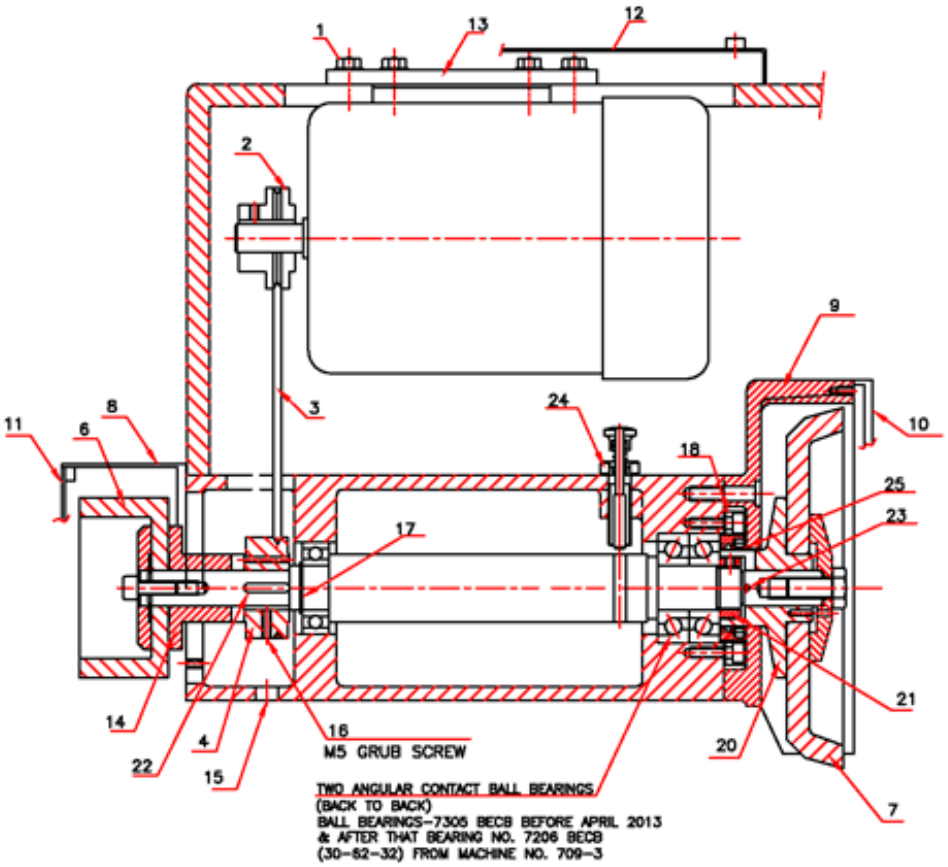
This Instruction Bulletin serves to notify all Rottler VR9 and VR8 model owners that over-tightening the MAIN grinding wheel attachment nut on the VR9 and VR8 model machines has potential to cause noise, irregular vibrations and damage to bearings.

To prevent possible damage and inconvenience, torque this nut to a maximum of 100in/lbs or 11.3Nm. Do not torque the MAIN grinding wheel attachment nut any further than 100in/lbs or 11.3Nm.

Please post this bulletin on or near your machine so that all operators are aware of and may prevent any possible harm or inconvenience.

See photos below for reference. If you have any questions, please call the factory at +1 (253) 872-7050.

Replacing Spindle Bearings



PROCEDURE FOR CHANGE SPINDLE BEARINGS VR9

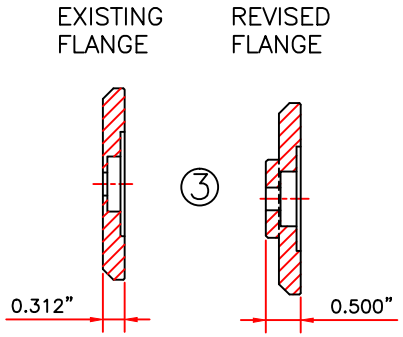
TO REPLACE SPINDLE BEARINGS AND NEW BEARING CLAMP RING IN VR-9 PROCEED AS FOLLOWS

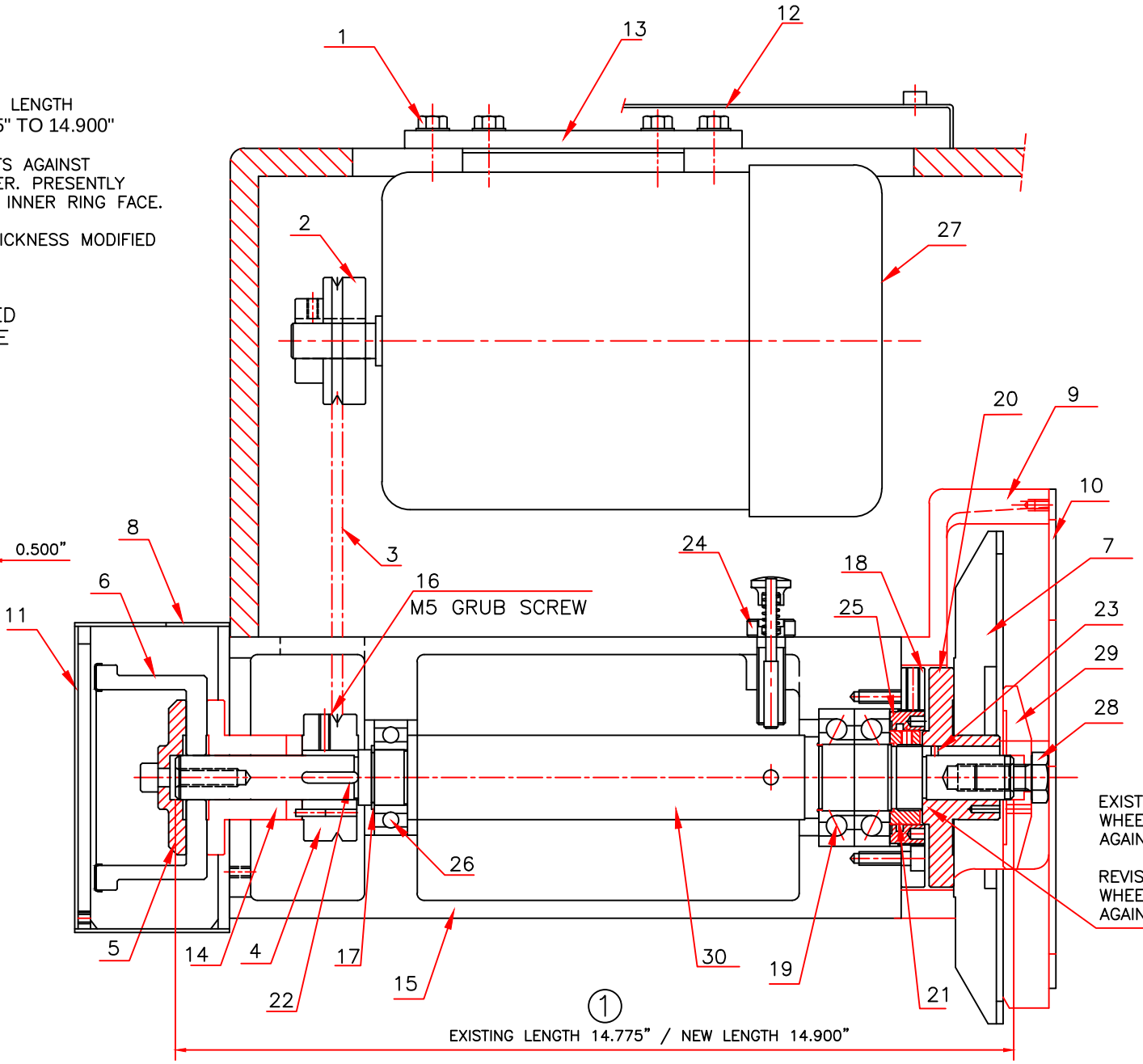
1. TURN 'OFF' POWER.
2. REMOVE WHEEL GUARD COVERS NO.(10) & (11).
3. REMOVE WHEEL NO. (6) & (7), AND FLANGE (14) & (20).
4. UNSCREW STOPPER ASSEMBLY (24).
5. REMOVE MOTOR COVER(12) & LOOSE BELT(3) BY LOOSEN SCREW(1). IN MOTOR PLATE(13).
6. REMOVE PULLEY (4) BY LOOSE SCREW (16) THROUGH HOLE (15).
7. REMOVE WHEEL GUARDS (8) & (9) AND CLAMP RING (18).
8. SLIDE SPINDLE ASSEMBLY OUT OF SPINDLE HOUSING & REMOVE KEY (22) & PIN (23).
9. REMOVE CIRCLIP (17) & UNSCREW LOCK NUT (21). REMOVE OLD BEARINGS & REPLACE NEW BEARINGS FILLED WITH GREASE (AS SHOWN IN FIG. NO. '5'), AFTER MATCHING BEARING INNER RACE MARKED '0' AND BEARING O.D ARROW MARK.
10. SCREW LOCK NUT (21) (USE TORQUE RANCH, TORQUE VALUE 2 Kgm) & REINSTALL CIRCLIP (17) AND KEY (22) & PIN (23).
11. CLEAN BEARING HOUSING BORE (USE EMERY PAPER 220) AND SLIDE SPINDLE ASSEMBLY IN SPINDLE HOUSING.
12. REINSTALL PULLEY (4), NEW CLAMP RING (18) AND LOCK BEARINGS BY LOCK NUT (25) (USE TORQUE RANCH, TORQUE VALUE 5 Kgm)
13. REINSTALL STOPPER ASSEMBLY (24).
14. TIGHT BELT (3) & MOTOR PLATE & COVER (DO NOT OVER TIGHTEN BELT).
15. REINSTALL WHEEL GUARDS (8) & (9) AND FLANGES (14) & (20).
16. REINSTALL WHEELS.
17. TIGHT GUARD COVERS.

REVISED SPINDLE ASSEMBLY LAYOUT : VR9 (NEW EXISTING VERSION)

CHANGES MADE
EFF. MARCH 01,2013

1. SPINDLE SHAFT OVARALL LENGTH INCREASED FROM 14.775" TO 14.900"
2. WHEEL BACK FACE RESTS AGAINST SPINDLE SHAFT SHOULDER. PRESENTLY RESTS AGAINST BEARING INNER RING FACE.
3. BUTT WHEEL FLANGE THICKNESS MODIFIED AS FOLLOWS





②
EXISTING:
WHEEL FLANGE BACK FACE BUTTS AGAINST BEARING FACE

REVISED:
WHEEL FLANGE FACE BUTTS AGAINST SPINDLE SHAFT SHOULDER

DATE: MARCH 01,2013
DRAWING NO: VR9–900B
SHEET 1 OF 1

SUGGESTED TIPS

Familiarize yourself with your Rottler VR9 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.

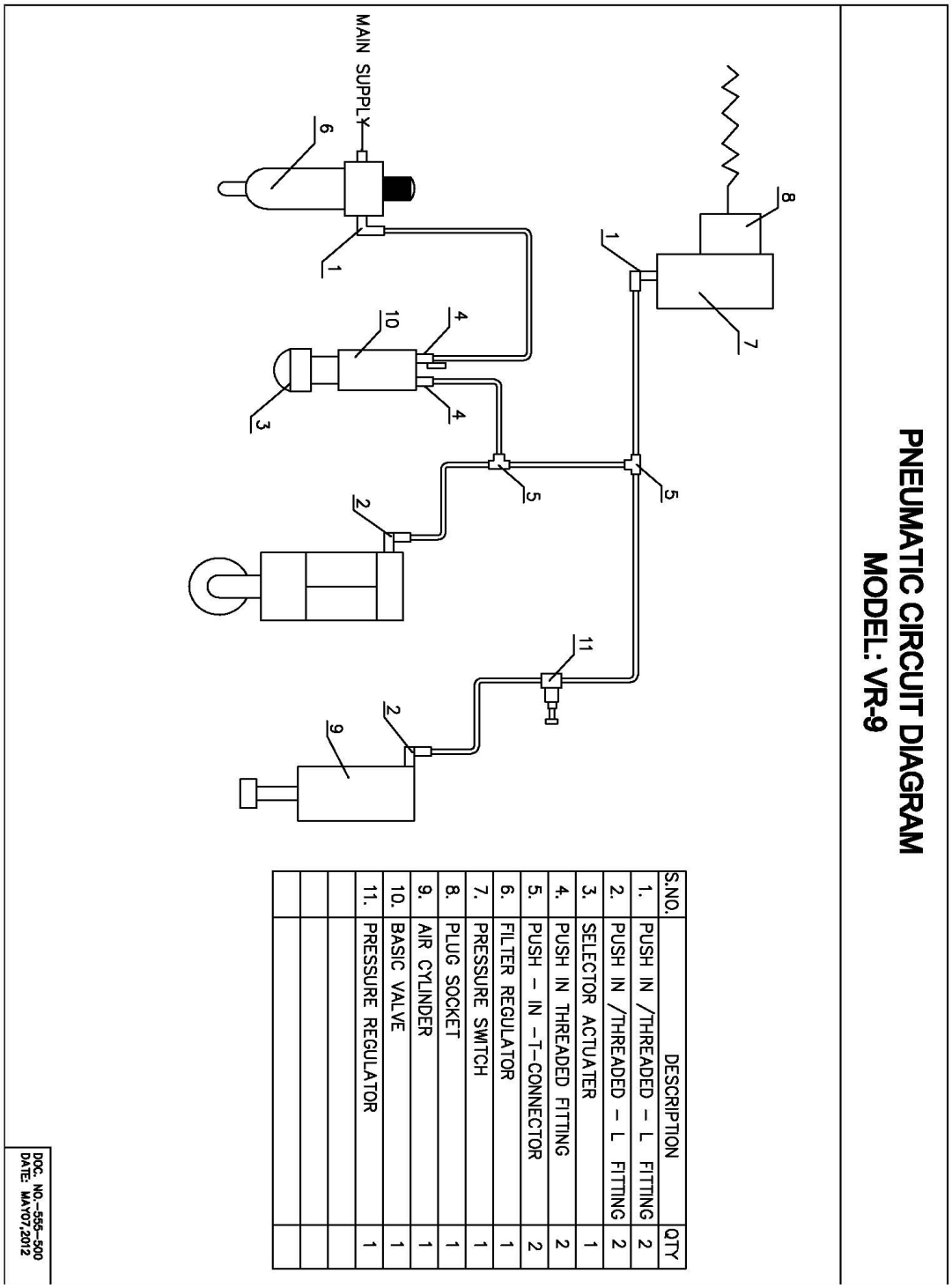
TROUBLESHOOTING

Contents

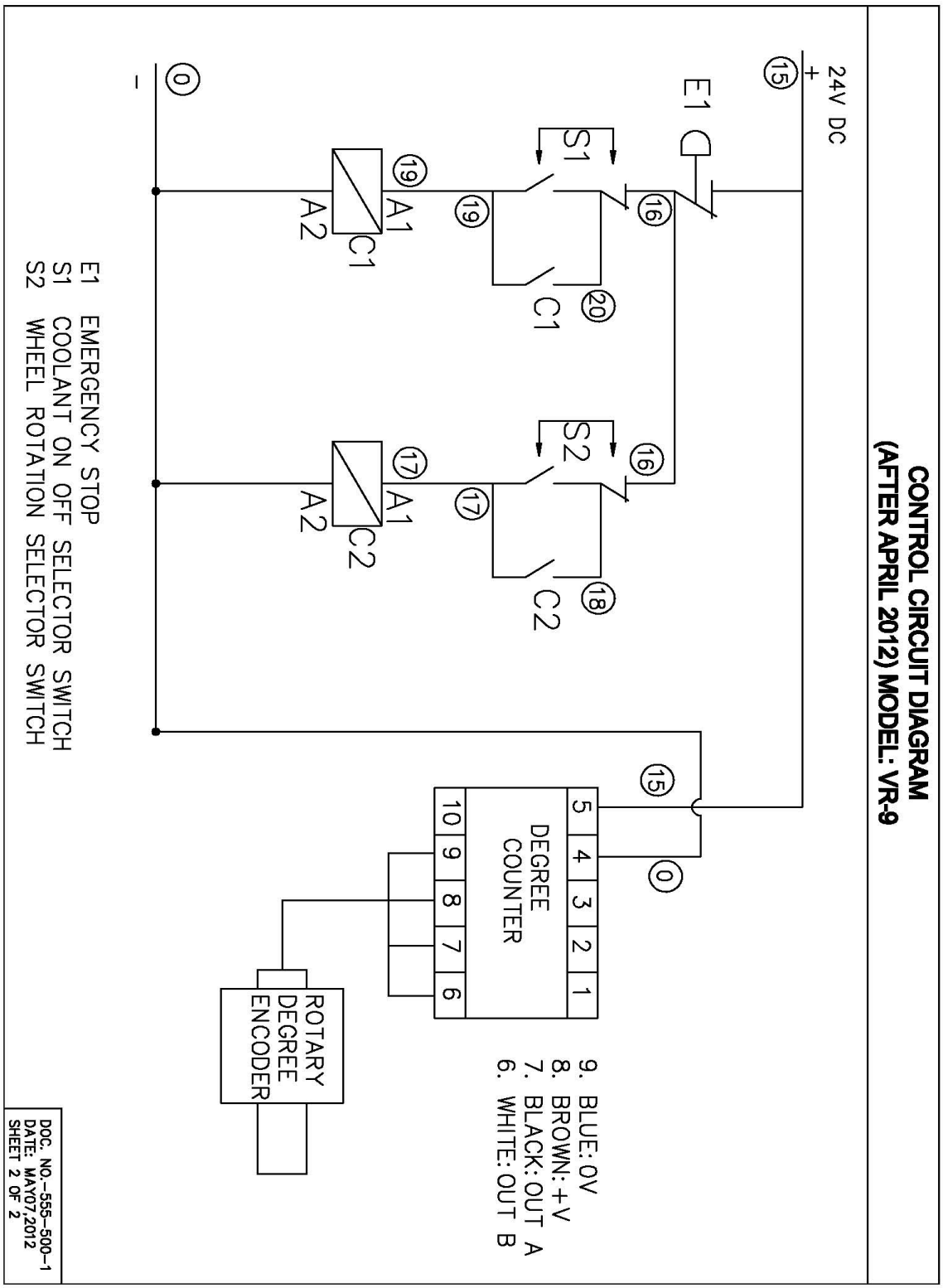
Troubleshooting

Valve will not auto feed or release properly	Oil on drive rollers	Clean drive rollers, see instructions in Maintenance section

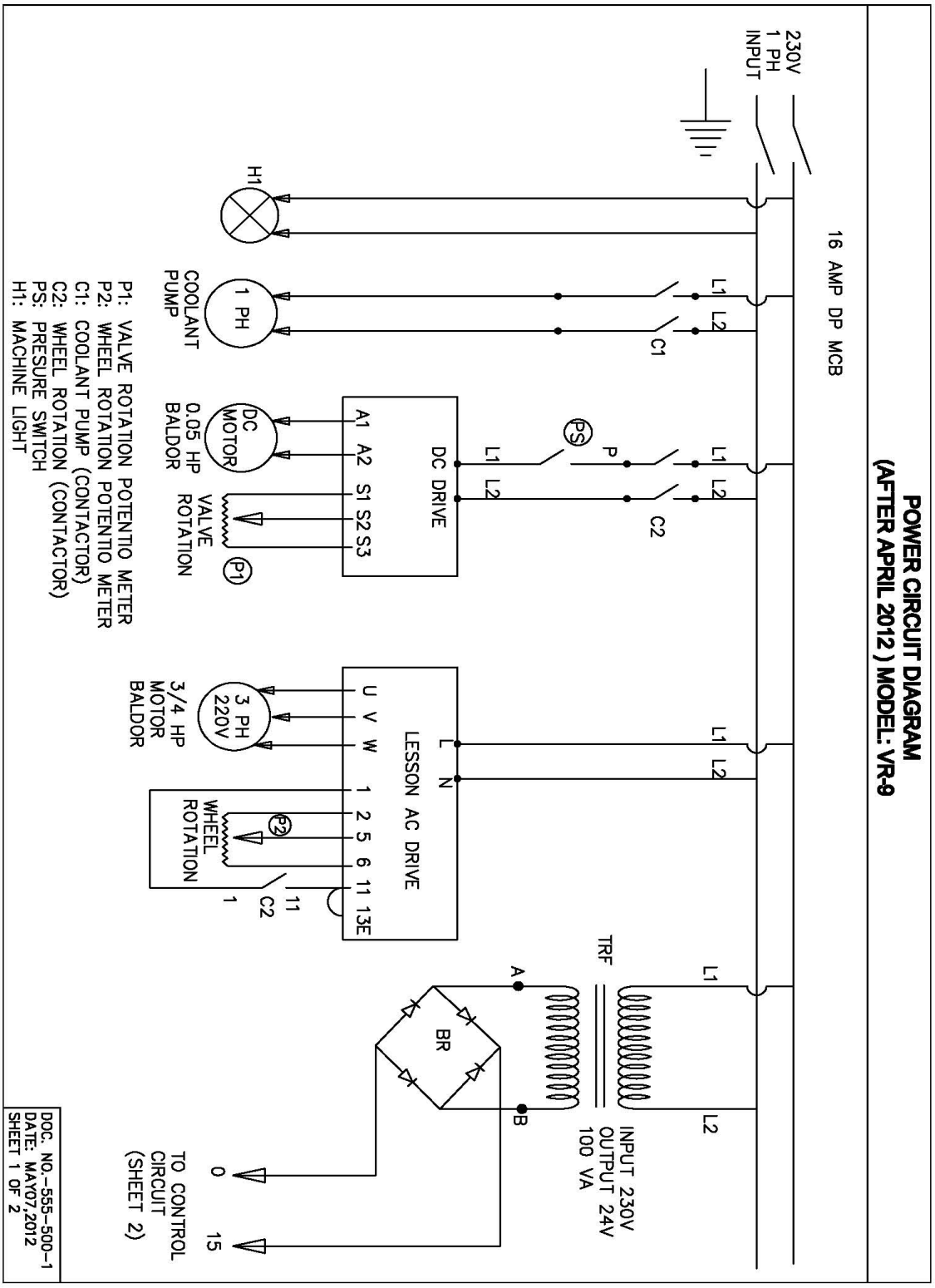
Pneumatic Circuit Diagram



Control Circuit Diagram



Power Circuit Diagram



MACHINE PARTS

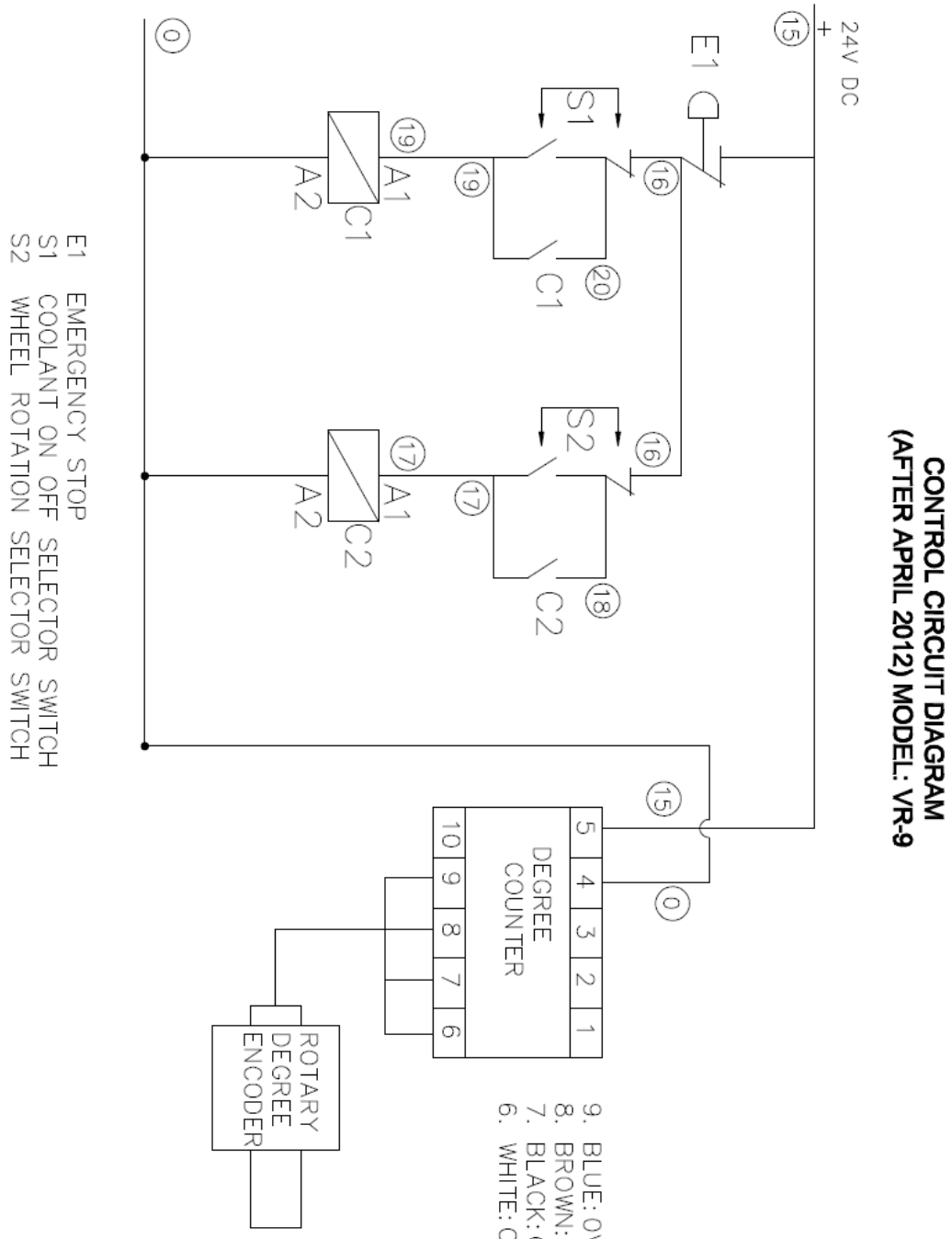
Contents

Consumable Parts for VR9

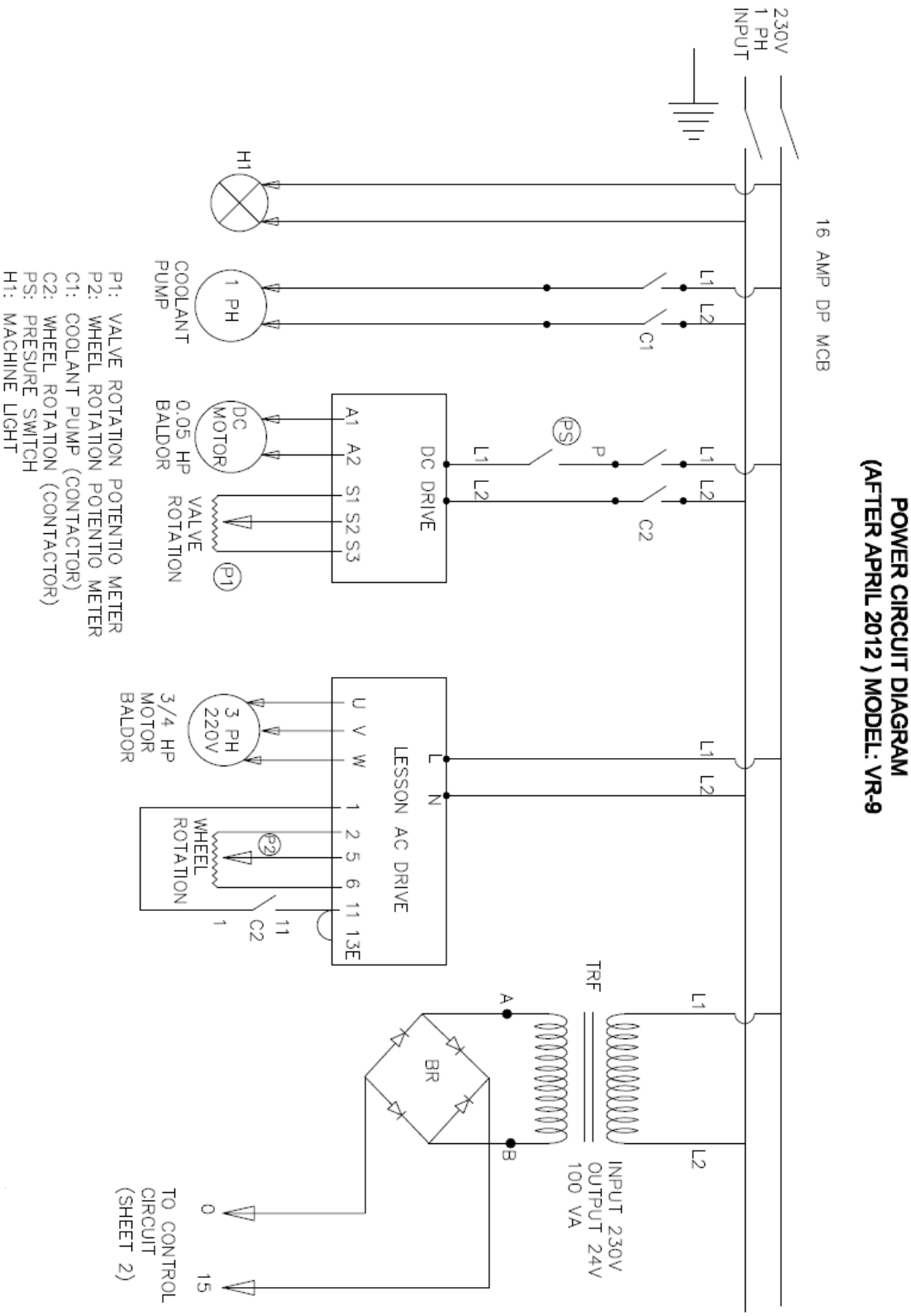
Part Number	Description
VTRW-10	Main Grinding Wheel 9.0" (200mm) Diameter General Purpose
VTRW-11	Main Grinding Wheel 9.0" (200mm) Diameter Special Applications, Titanium
VTRW-12	Main Grinding Wheel 9.0" (200mm) Diameter Special Applications, Stellite
VTRW-3	Butt Grinding Wheel, General Purpose
7609C	Grinding Oil-5 gal.
514-7-66F	Filter Paper (12 ½ x 6 ½) min. order 10ea
VTRW-4	Single Point Wheel Dressing Diamond-main wheel
VTRW-5	Single Point Wheel Dressing Diamond-butt wheel

Machine Parts

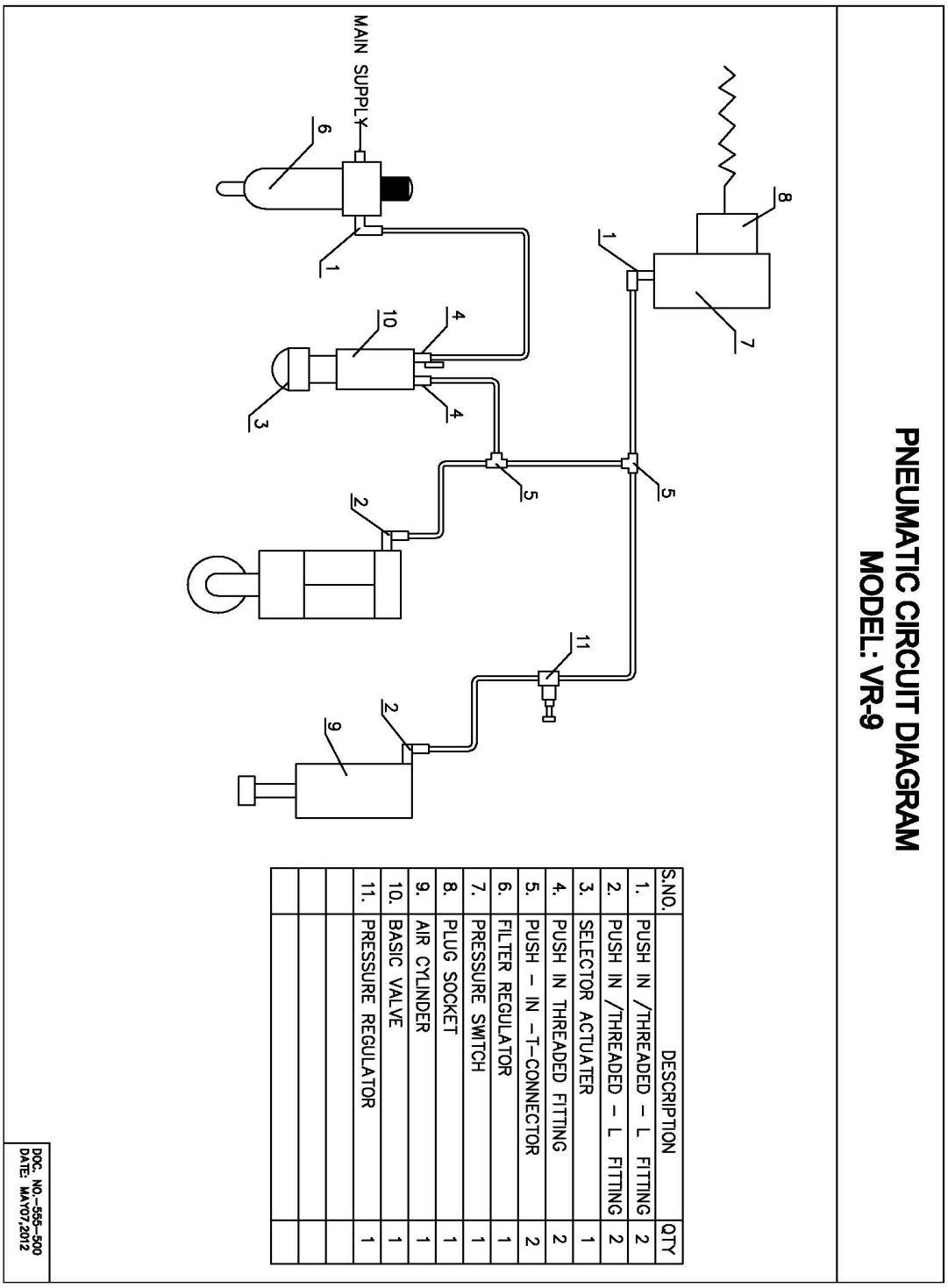
Control Circuit Diagram



Power Circuit Diagram

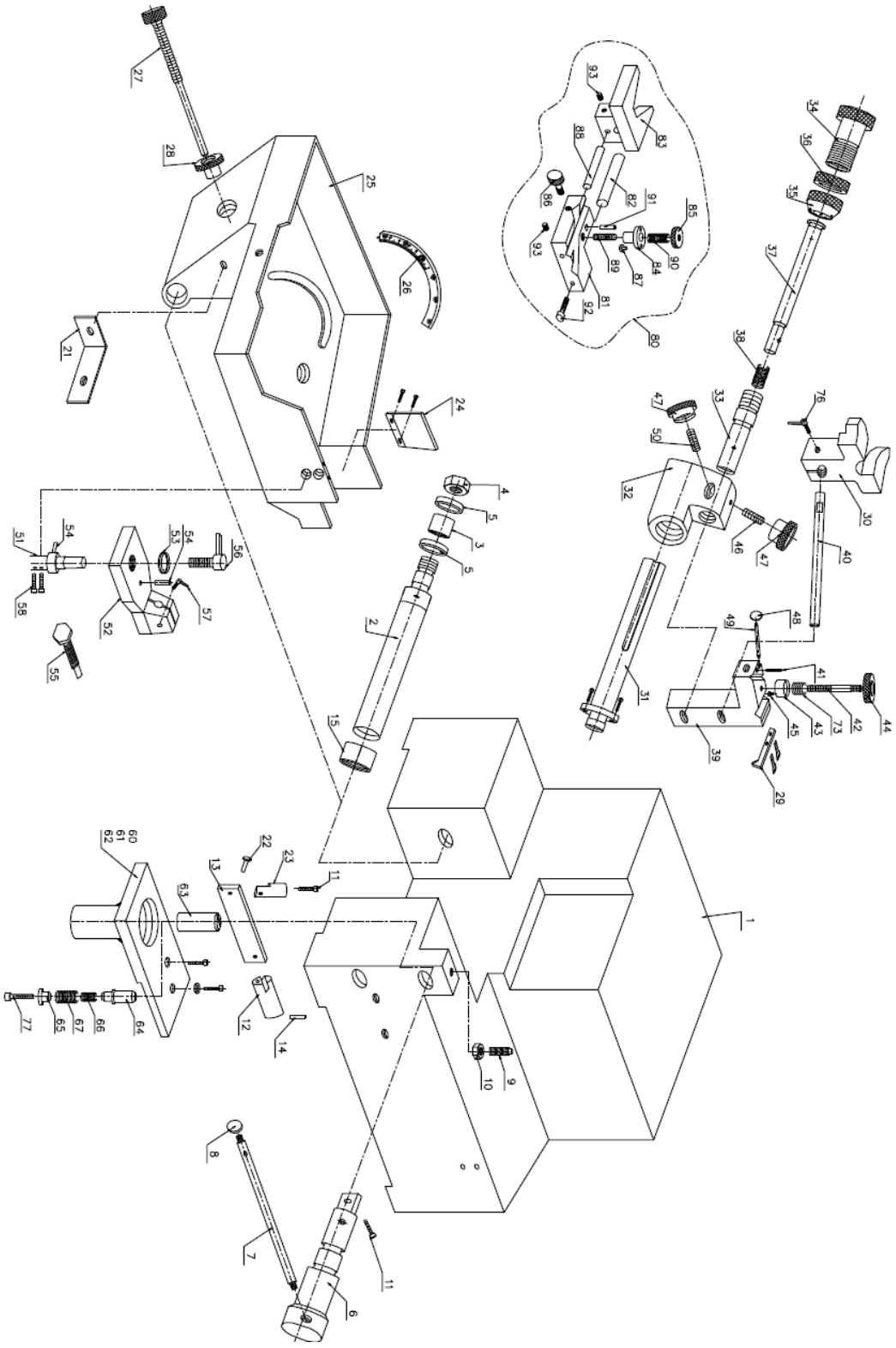


Pneumatic Circuit Diagram



Machine Parts

Base Assembly

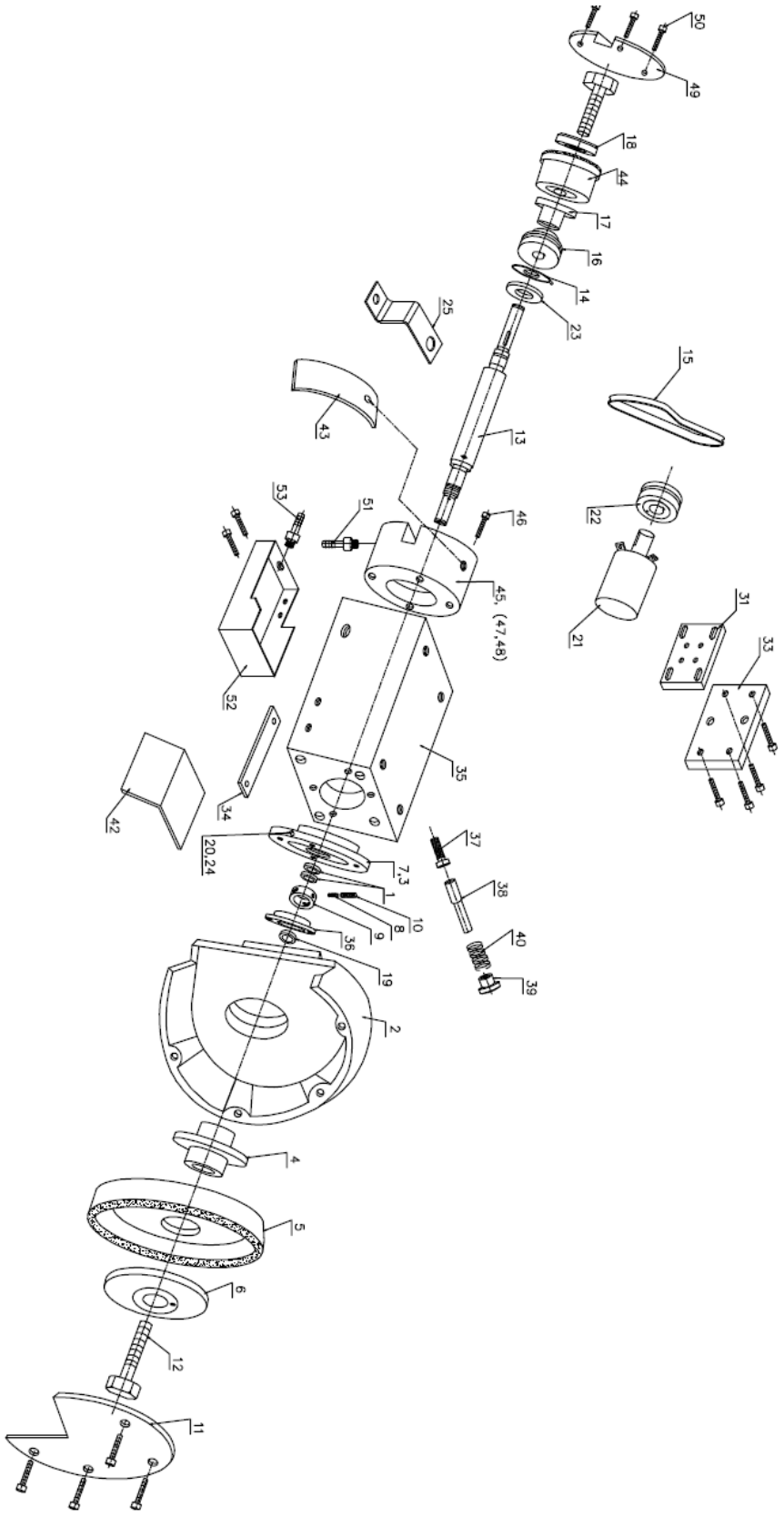


Base Assembly Parts List

S. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	555-101	BASE	1	
2	555-102	PIVOT PIN	1	
3	555-103	LINER	1	
4	404	NUT	1	777
5		THRUST BEARING (25x42x4)	2	
6	555-106	SWING PIN	1	
7	555-107	HAND LEVER	1	
8		BALL KNOB	1	DIN 319-KU-35 M10-C
9	555-109	DOG POINT SCREW	1	
10		NUT (M8)	1	
11		ALLEN HEAD SCREW (M6x30)	2	
12	555-112	HINGE PIN	1	
13	555-113	SWING ARM	1	
14	555-114	PIVOT PIN (1/4"x3/5" SS)	1	
15	555-115	BUSH	1	
16	-----	----	--	
17	-----	----	--	
18	-----	----	--	
19	-----	----	--	
20	-----	----	--	
21	555-121	ROCKER CLAMP	1	
22	555-114 A	PIVOT PIN	1	
23	555-112 A	HINGE PIN(II)	1	
24	555-124	COOLANT GUARD FIXTURE	1	
25	555-125	ROCKER	1	
26	555-126	CLAMP RING	1	
27	555-127	STOP BOLT	1	
28	555-128	STOP KNOB	1	
29	555-129	STOPPER PLATE	1	
30	555-130	V-NEST STOP	1	
31	555-131	SUPPORT ROD	1	
32	555-132	SUPPORT BLOCK	1	
33	555-133	GUIDE BUSH	1	
34	555-134	FEED KNOB	1	
35	555-135	SETTING WHEEL	1	
36	555-136	LOCK NUT	1	
37	555-137	PIVOT PIN	1	
38	555-138	SPRING	1	
39	555-139	SWING ARM	1	
40	555-140	SUPPORT ROD	1	
41	555-141	PIN	1	
42	555-142	STUD	1	
43	555-143	CLAMP RING	1	
44	555-144	KNOB	1	
45	555-145	CLAMP PAD	1	
46	555-146	SCREW SPACIAL	1	
47	555-147	KNOB (DIAMOND)	2	MBT 50B-M10
48	VGS-522	KNOB (1/4" x 1" O.D.)	1	
49	NC-39	LEVER	1	S&G
50	555-150	SCREW ASSY.	1	
51	555-151A	SUPPORT PIN	1	
52	555-152A	SWING BLOCK	1	
53	555-153	WASHER	1	
54	555-154	PIN	2	

S. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
55	555-155	DIAMOND DRESSING TOOL	1	
56	555-156	HAND LEVER (42121)	1	MR-80A-M10
57		HAND LEVER (41526)	1	MR-63P-M8x32
58		ALLEN HEAD SCREW (M8x30)	2	
59	-----	----	--	
60	555-160	BRACKET WELDED		
61	555-161	BRACKET	1	
62	555-162	HOLDER	1	
63	555-163	CYLINDER	1	
64	555-164	PIN LARGE	1	
65	555-165	PIN SMALL	1	
66	555-166	SPRING	1	
67	555-167	SPRING	1	
68	-----	----	--	
69	-----	----	--	
70	-----	----	--	
71	-----	----	--	
72	-----	----	--	
73	555-173	SPRING	1	
74	-----	----	--	
75	-----	----	--	
76	-	HAND LEVER (41335)	1	MR-40P-M6x30
77	-	ALLEN HEAD SCREW (M8x35)	1	
78	-----	----	--	
79	-----	----	--	
80	BUTT GRINDING FIXTURE(MINI)			
81	**VR-9-181**	V-BLOCK	1	
82	**VR-9-182**	LOCATING ROD	1	
83	**VR-9-183**	V-NEST STOP	1	
84	**VR-9-184**	CLAMP RING	1	
85	**VR-9-185**	KNOB	1	
86	**VR-9-186**	SETTING KNOB	1	
87	**VR-9-187**	PAD	1	
88	**VR-9-188**	SETTING ROD	1	
89	**555-189**	GRUB SCREW (M5x35)	1	
90	555-240	SPRING	1	
91	-	ROLL PIN (1/8"x3/4")	1	
92	-	AL.HD. SCREW (M6x20)	1	
93	-	GRUB SCREW (M5x6)	2	

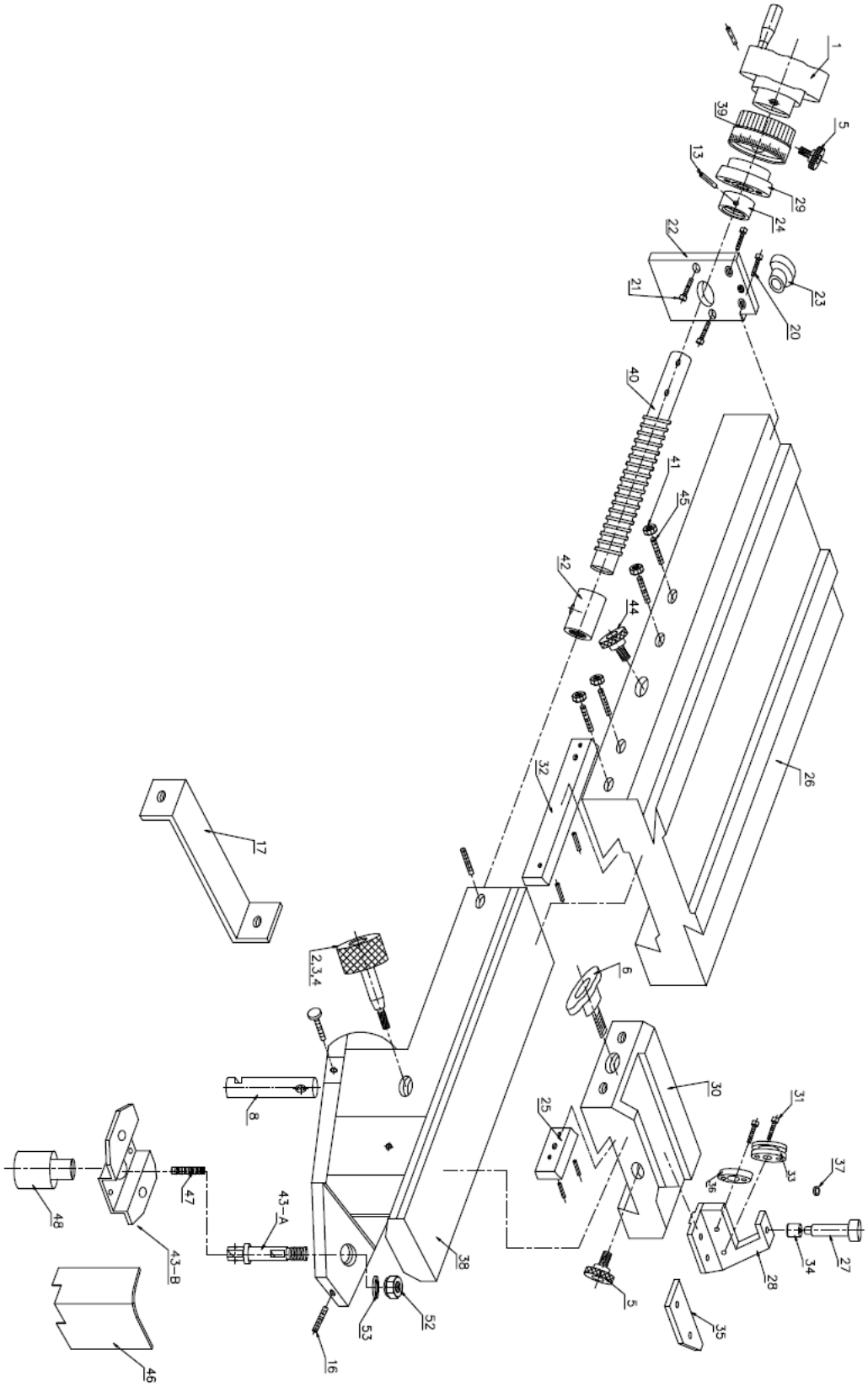
Grinding Wheel Assembly



Grinding Wheel Assembly Parts List

S. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	-----	ANGULAR CONTACT BEARING (7305)	2	(25x62x34)
2	**VR-9-202**	WHEEL GUARD	1	
3	**VR-9-203**	**LOCK NUT**		
4	**VR-9-204**	BEARING FLANGE	1	
5	555-205	GRINDING WHEEL(8")	1	
5A	**VR-9-205**	GRINDING WHEEL(9")	1	NOT SHOWN
5B	**VR-9-205-A**	SPACER (FOR 8" WHEEL)	1	NOT SHOWN
6	555-206	FLANGE	1	
7	**VR-9-207**	CLAMPING RING	1	
8	555-12-41	NYLON PLUG	3	Ø0.150"X0.050"
9	555-12-42	NUT	1	
10	555-210	GRUB SCREW M5X5	3	FLAT POINT 0.0150"LONG
11	**VR-9-211**	COVER	1	
12	555-212	HEX BOLT (M12x1" LONG)	1	
13	555-12-43	SPINDLE SHAFT	1	
14		EXTERNAL CIRCLIP (25mm)	1	
15		POLY RIB BELT (5M 710)	1	
16	555-216	**MOTOR PULLEY**	1	
17	555-217	FLANGE INNER	1	
18	555-218	FLANGE OUTER	1	
19	**VR-9-219**	**O-RING**	**1**	**42x3x48**
20	**VR-9-220**	**PLUG**	**1**	**DIA.0.170"x0.200"**
21		MOTOR (M 3111)	1	¾ HP , 3HP
22	555-222	**SPINDLE PULLEY**	1	
23	-----	BALL BEARING (62052 RSI)	1	25X52X15
24	**VR-9-224**	**GRUB SCREW (M6x8)**	**1**	
25	**555-213-C**	**CLAMP FOR SPINDLE SHAFT**	**1**	
26	-----	----	--	
27	-----	----	--	
28	-----	----	--	
29	-----	----	--	
30	-----	----	--	
31	555-231	MOTOR MTG. PLATE	1	
32	-----	----	--	
33	555-233	MOTOR COVER	1	
34	555-235-S	CLAMP STRIP	1	
35	**VR-9-235**	SPINDLE HOUSING	1	
36	555-236	RETAINER RING	1	
37	555-237	STOP BOLT	1	
38	555-238	STOP PIN	1	
39	555-239	PUSH BUTTON	1	
40	555-240	SPRING	1	
41	-----	----	--	
42	555-242	COOLANT GUARD	1	
43	555-243	COOLANT COVER	1	
44	555-244	GRINDING WHEEL (SMALL)	1	
45	555-245	COOLANT BOX WELDED	1	
46		ALLEN HEAD SCREW (M5x16)	4	
47	555-247	COOLANT HOUSING PLATE	1	
48	555-248	COVER RING	1	
49	555-249	COVER	1	
50		SLOTTED CAP SCREW (M5x8)	3	
51	555-251	NIPPLE	1	
52	555-252	COOLANT TANK	1	
53	555-253	NIPPLE	1	

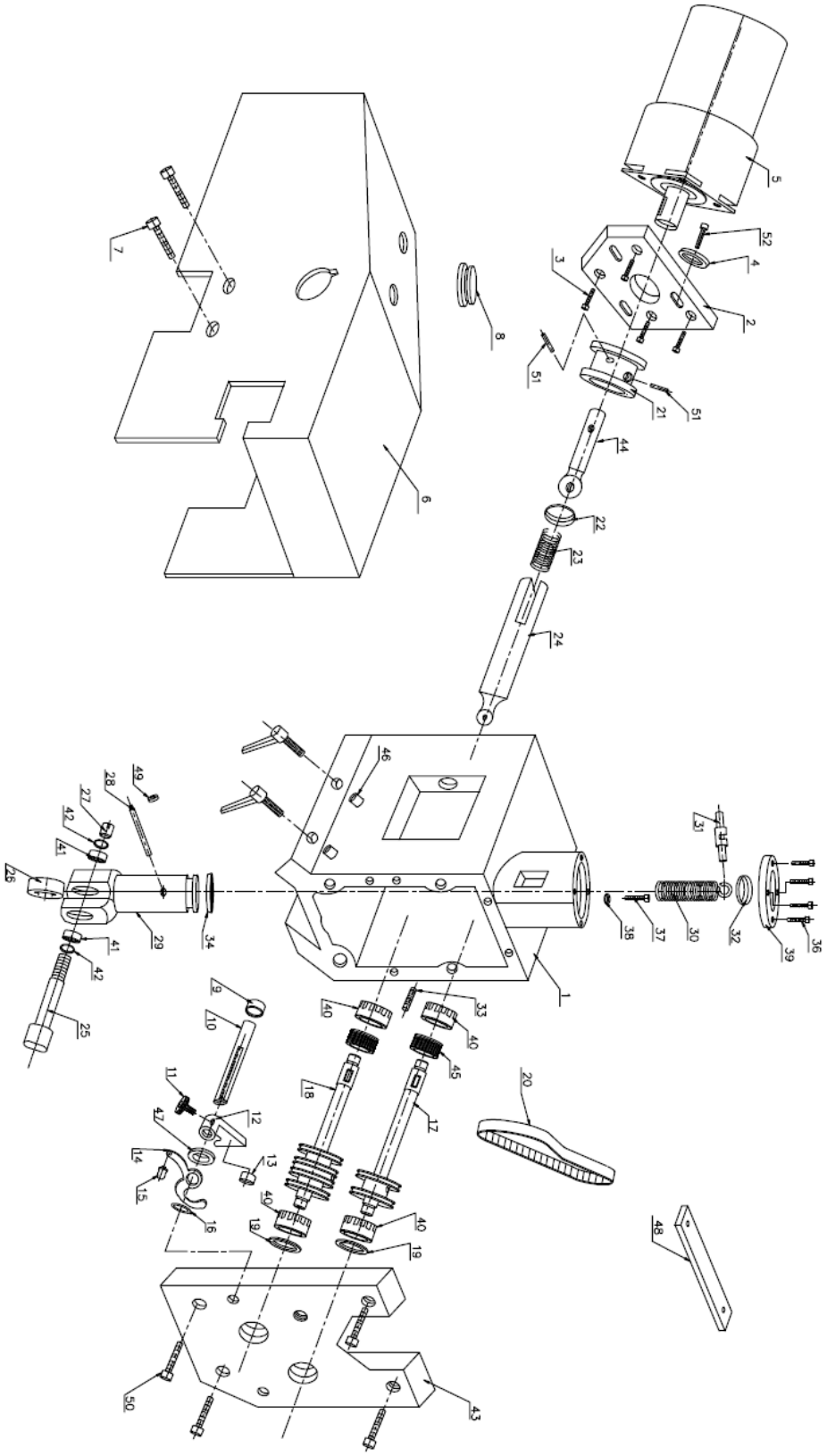
Slide Support Assembly



Slide Support Assembly Parts List

S. NO.	PART NO.	DESCRIPTION	TY	REMARKS
1	555-301	HAND WHEEL		VL 140/80+1
2	555-302	CLAMP KNOB ASSY.	1	
3	555-302-1	KNOB (DIAMOND)	1	MBT 50B-M10
4	555-302-2	CLAMP ROD	1	
5	555-303	SETTING KNOB FLAT POINT	2	B193/15 P-M5x16
6	555-304	KNOB (STEADY)	1	VH 153/44 PM8x30
7	-----	----	--	
8	555-306	CLAMP ROD	1	
9	-----	----	--	
10	-----	----	--	
11	-----	----	--	
12	-----	----	--	
13		ROLL PIN (1/8"x3/4")	1	
14	-----	----	--	
15	-----	----	--	
16		GRUB SCREW (M5x16)	1	
17	555-317	DOVETAIL CLAMP	1	
18	-----	----	--	
18A	-----	----	--	
19	-----	----	--	
20		ALLEN HEAD SCERW (M6x12)	2	
21		ALLEN HEAD SCREW (M6x16)	2	
22	**VR-9-322**	SUPPORT PLATE	1	
23	**VR-9-322-A**	STOPPER	1	
24	555-324	BEARING	1	
25	555-325	GIBB (STEADY)	1	
26	555-326	SLIDE	1	
27	555-327	AIR CYLINDER SMC	1	
28	**VR-9-328**	SUPPORT PLATE (STEADY REST)	1	
29	555-329	BEARING HOUSING	1	
30	**555-330-A**	BASE (STEADY)	1	
31		ALLEN HEAD SCREW (M6x12)	2	
32	555-332	GIBB	1	
33	**VR-9-333-3**	ROLLER (STEADY REST)	1	
34	555-334	PAD	1	
35	555-328-A1	SPACING PLATE	1	
36	**VR-9-333-4**	ROLLER (STEADY REST)	1	
37	**555-327-1**	**SPACER**	**1**	
38	555-338	DOVE TAIL SLIDE	1	
39	555-339	FEED KNOBE	1	
40	555-340	LEAD SCREW	1	
41		NUT (M5)	4	
42	555-342	NUT	1	
43-A	555-343 A	PIVOT PIN	1	
43-B	555-343 B	SUPPORT BRACKET	1	
44	555-344	SLIDE LOCKING KNOB	1	
45		GRUB SCREW (M5x35)	4	
46	555-346	GUARD	1	
47	555-347	COUPLING	1	
48	555-348	ENCODER	1	
49	-----	----	--	
50	-----	----	--	
51	-----	----	--	
52		NYLOCK NUT (M12	1	
53		PLAIN WASHER(Ø12mm)	1	

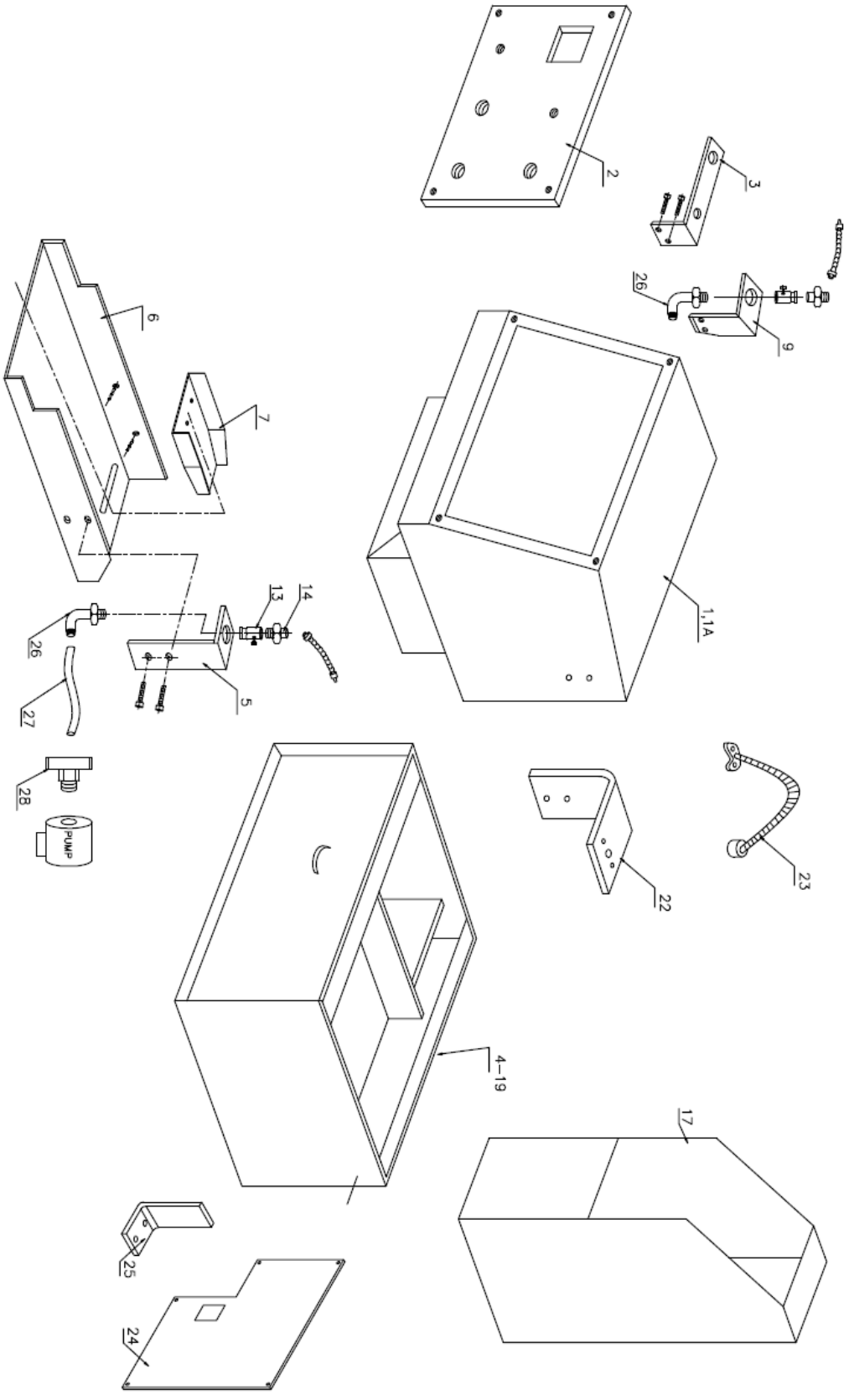
Power Head Assembly



Power Head Assembly Parts List

S. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	555-401	POWER HEAD	1	
2	**VR-9-402**	MOTOR PLATE	1	
3		ALLEN HEAD SCREW (10/32"x5/8")	4	
4		PLAIN WASHER (Ø5mm)	3	
5	555-405	MOTOR (DC) 1/17 HP		
6	555-406	MOTOR COVER	1	
7		BUTTON HEAD SCREW (M5x12)	4	
8	555-408	PLUG	1	
9	555-409	SPACER	1	
10	555-410	STEM SHAFT	1	
11	555-411	THUMB SCREW	1	
12	555-412	STEM STOP	1	
13	555-413	CARBIDE PAD (Ø 0.629"x0.130")	1	
14	555-414	FLIPPER	1	
15	555-415	KNOB	1	
16	555-416	EXT.CIRCLIP (5/8")	1	
17	555-417	ROLLER SHAFT ASSY.(REAR)	1	
18	555-418	ROLLER SHAFT ASSY. (FRONT)	1	
19		DISC WASHER (26mm O.D)	2	
20		BELT XL - 80	1	
21	**VR-9-421**	MOTOR PULLEY	1	
22	555-422	PAD	1	
23		SPRING	1	
24	**VR-9-424**	DRIVE SHAFT	1	
25	**VR-9-425**	TOP ROLLER SHAFT	1	
26	**VR-9-426**	TOP ROLLER	1	
27	555-427	DRIVE NUT	1	
28	555-428	PISTON HANDLE	1	
29	**VR-9-429**	PISTON	1	
30	555-430	SPRING	1	
31	555-431	TENSION SPRING PIN	1	
32		O-RING 3/32 X 1-1/2 X 1-11/16	1	
33	555-433	PIN	2	
34	555-434	U-CUP SEAL	1	
35	-----	----	--	
36		ALLEN HEAD SCREW (M5x6)	4	
37		ALLEN HEAD SCREW (1/4"x3/4")	1	
38		SPRING WASHER (1/4")	1	
39	555-439	CYLINDER CAP	1	
40	555-440	BEARING (10x26x8)	4	
41	555-441	BALL BEARING (9/32"x3/8"x7/8")	2	
42	555-442	INTERNAL CIRCLIP (7/8")	2	
43	555-443	FACE PLATE	1	
44	555-444	DRIVE ADAPTOR	1	
45	**VR-9-445**	DRIVEN PULLEY	2	
46	555-446	PLUG	2	
47	555-447	SPACER	1	
48	555-401-S	CLAMP STRIP	1	
49	VGS-522	KNOB (1/4"x1" O.D.)	1	
50		ALLEN HEAD SCREW (M6x12)	4	
51	**555-451**	PIN (1/8"x0.610")	2	
52		ALLEN HEAD SCREW (M5x16)	3	

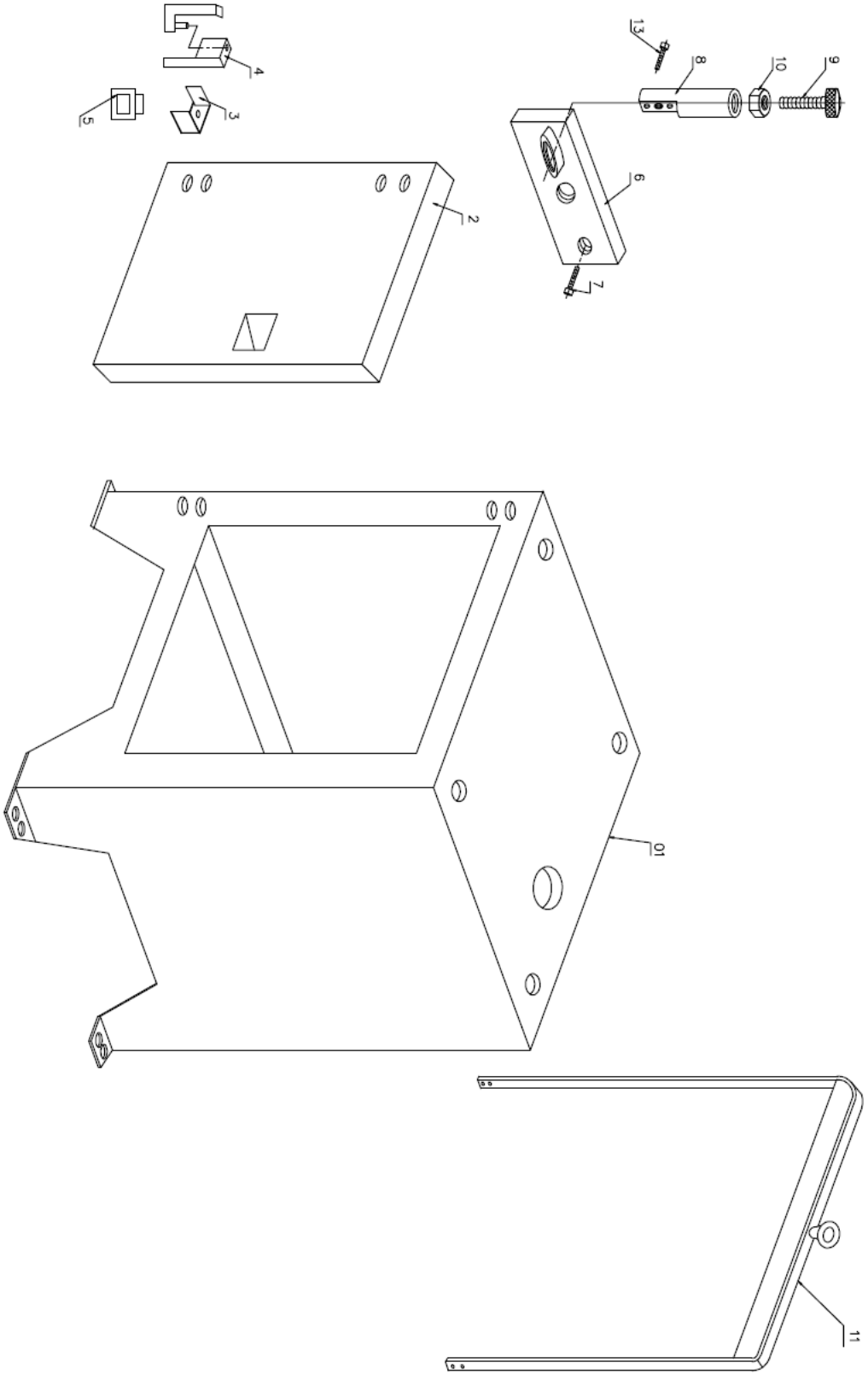
Control Panel Assembly



Control Panel Assembly Parts List

S. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	555-501	PANEL BOX	1	
1A	555-501-1	BACK PLATE (NOT SHOWN)	1	
2	555-502	PANEL PLATE	1	
3	555-503	FILTER MOUNTING BRACKET	1	
4	555-504	COOLANT TANK	1	
5	555-505	COOLANT BRACKET	1	
6	555-506	FLOW CHANNEL	1	4-1/2x4-5/16x1-1/2XG16
7	555-507	CHANNEL	1	
8	-----	----	--	
9	555-509	BRACKET	1	
10	555-510	PNEUMATIC CIRCUIT DIAGRAM	1	
11	-----	----	--	
12	-----	----	--	
13		CHECK VALVE	2	
14		NOZZLE	2	
15	555-515-I	POWER CIRCUIT DIAGRAM		
16	555-515-II	CONTROL CIRCUIT DIAGRAM		
17	555-517	COOLANT HOPPER	1	
18	-----	----	--	
19	555-519	COOLANT GRATE	1	NOT SHOWN
20	-----	----	--	
21	-----	----	--	
22	555-522	LIGHT MTG. BKT.	1	
23	555-523	LIGHT ASSY.	1	
24	555-524	PANEL COVER	1	
25	555-525	BRACKET	1	
26		**ELBOW 3/8x12MM**	**2**	
27		**PIPE**	**2**	
28		**T-CONNECTOR 3/8-12**	**1**	

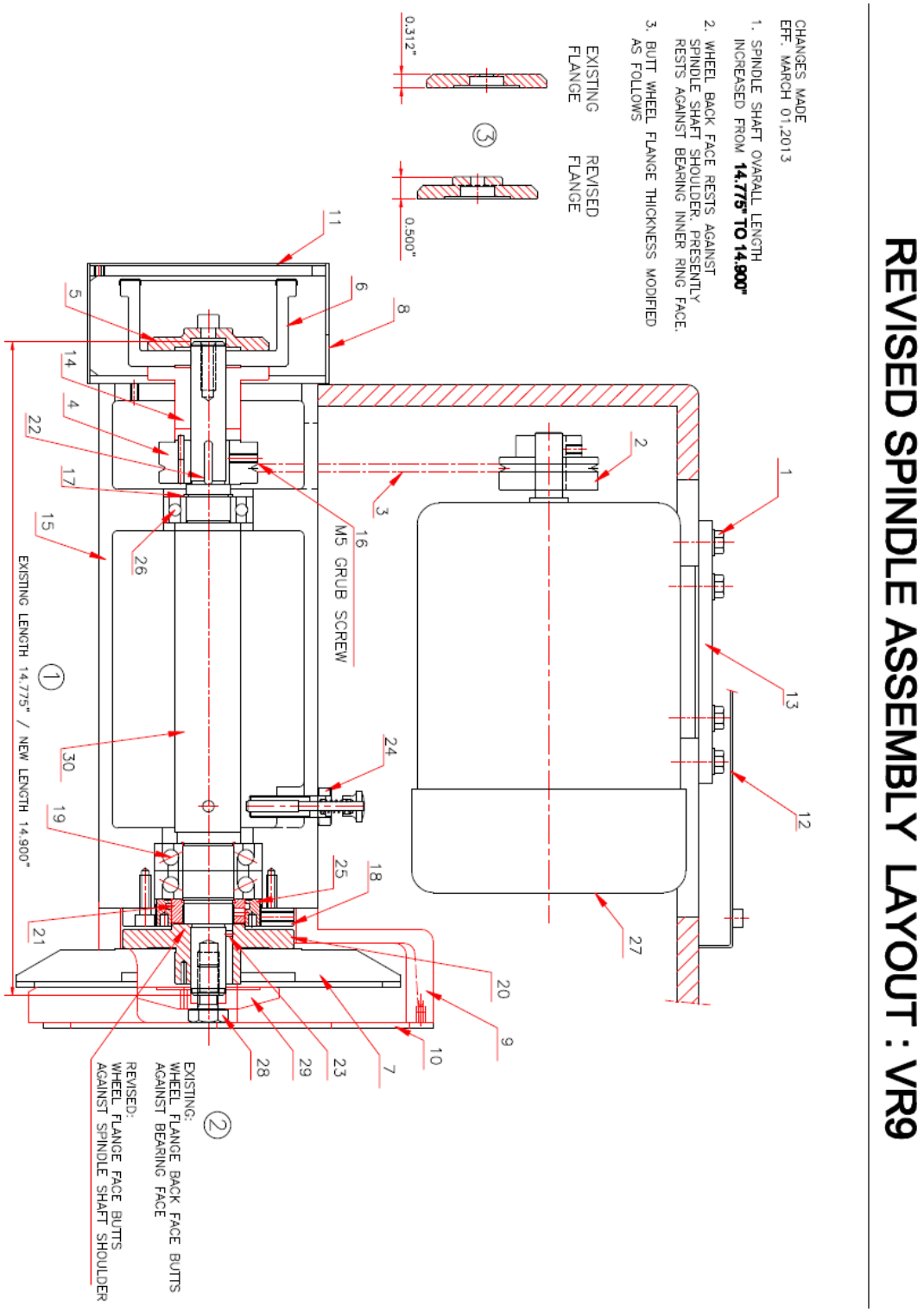
Rocker Feed Assembly



Rocker Feed Assembly Parts List

S. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	555-620	STAND ASSEMBLY	1	
2	555-631	DOOR	1	
3	555-632	CLAMP	1	
4	555-634	HINGE	2	
5	555-635	LOCK	1	
6	555-613	SUPPORT BRACKET	1	
7		AL-HEAD SCREW (M8x20)	2	
8	555-628	STROKE SETTING KNOB	1	
9	555-629	BOLT	1	
10	555-630	NUT (M12)	1	
11	555-618	LIFTING FIXTURE	1	
12	555-619	ANGLE SETTING STD.	1	NOT SHOWN
13		ALLEN HEAD SCREW (M6x20)	2	

Spindle Assy Parts



Spindle Assy Parts List

LIST OF SPINDLE ASSEMBLY PARTS
MODEL : VR-9

S. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1.		HEX. HEAD SCREW	4	
2.	555-216	MOTOR PULLEY	1	
3.		BELT (POLYRIB) 5M710	1	
4.	555-222	SPINDLE PULLEY	1	
5.	555-218	FLANGE (OUTER)	1	
6.	555-244	WHEEL SMALL	1	BUTT WHEEL
7.	VR-9-205	GRINDING WHEEL 9"	1	
8.	555-245	COOLANT BOX WELDED	1	
9.	VR-9-202	WHEEL GUARD	1	
10.	VR-9-211	COVER	1	
11.	555-249	COVER	1	
12.	555-233	MOTOR COVER	1	
13.	555-231	MOTOR PLATE	1	
14.	555-217	FLANGE (INNER)	1	
15.	VR-9-235	SPINDLE HOUSING	1	
16.		GRUB SCREW	1	M5
17.		CIRCLIP	1	25MM EXTERNAL
18.	VR-9-207	CLAMPING RING	1	
19.		ANGULAR CONTACT BALL BEARING	1	RHP-7206 CTRDULP3
20.	VR-9-204	FLANGE	1	
21.	555-209A	NUT	1	
22.		KEY	1	
23.		PIN	1	
24.		STOPPER ASSY.	1	
25.	VR-9-203	LOCK NUT	1	
26.		BALL BEARING	1	6205-2RS1
27.		MOTOR (M-3111)	1	3/4HP-3Ph
28.	555-212	HEX. BOLT	1	M12x1PITCH
29.	555-206	FLANGE	1	
30.	VR-9-213	SPINDLE SHAFT	1	

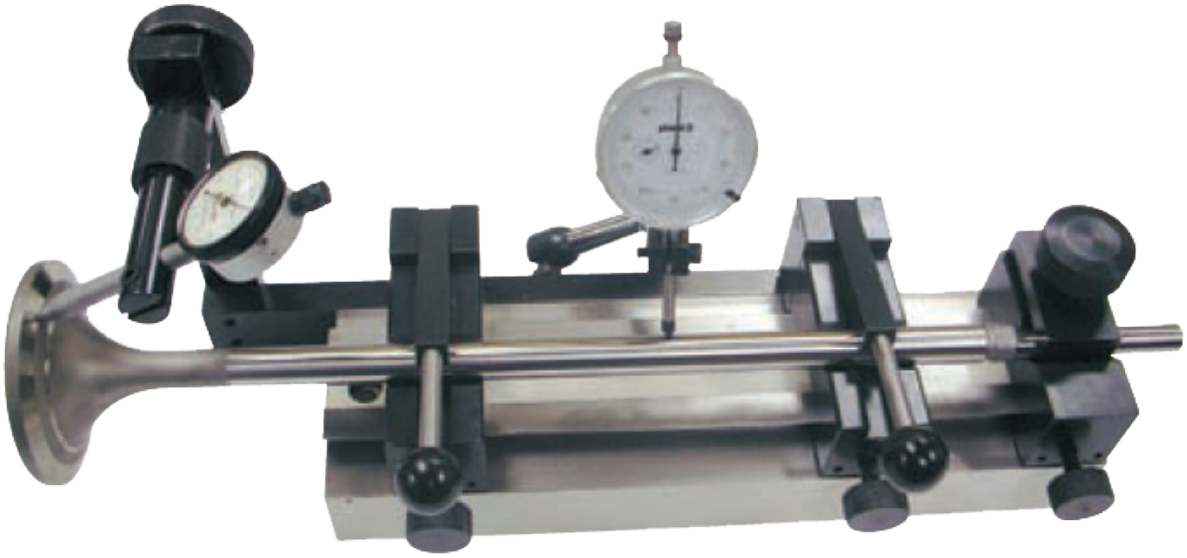
OPTIONS

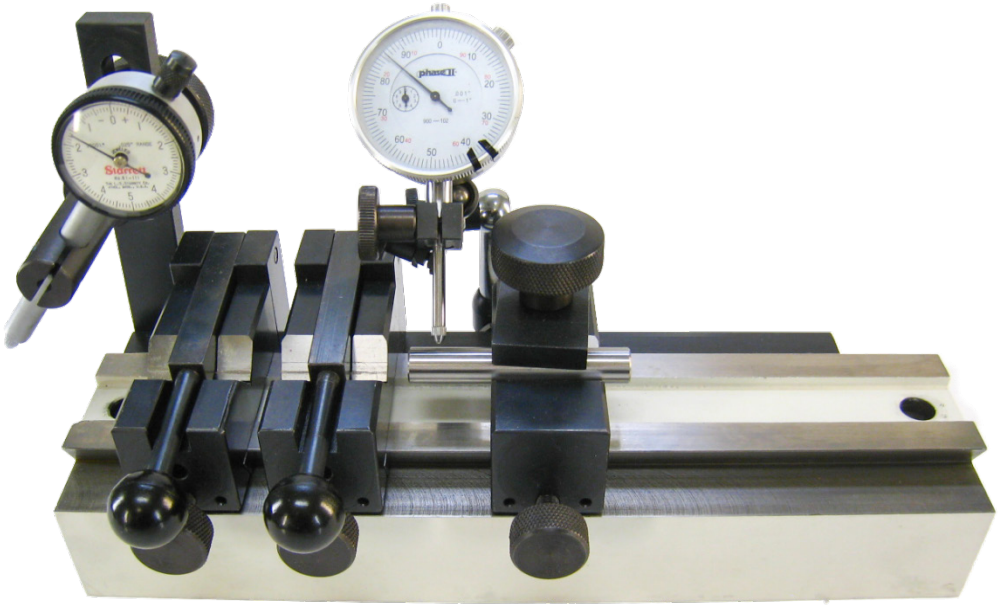
Contents

Valve Measuring Equipment

VALVE-CHECK

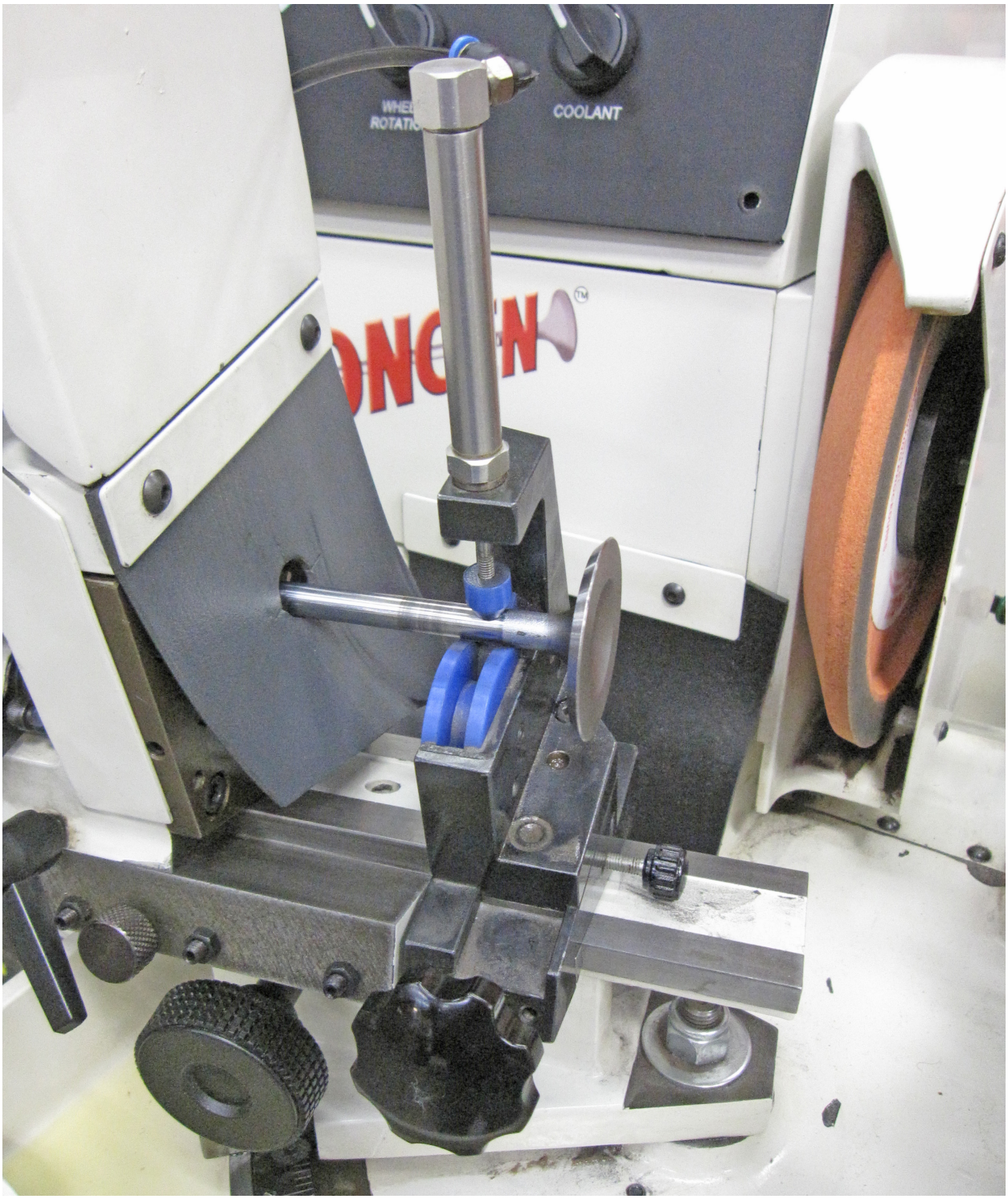
Valve Stem Runout Fixture Assembly measures Valve Seat and Valve Stem Runout with two separate dial gages, specify Inch .0001” or Metric .002mm





STEADY-REST VR9

Steady rest for grinding titanium valves



Grinding Wheels and Diamond Dressers

Vitrified Grinding Wheels, require Grinding Oil 7609B

VTRW-11 Main Grinding Wheel Special Applications, Titanium

9.0” (230mm) Diameter (Green)

VTRW-12 Main Grinding Wheel Special Applications, Hard Valves

9.0” (228.6mm) Diameter (Pink)

VTRW-10 Main Grinding Wheel General Purpose

9.0” (230mm) Diameter

VTRW-3 Butt Grinding Wheel

General Purpose

Parts and Supplies

7609C Grinding Oil 5 Gallon (20 Liters)

Water Soluble for CBN wheels - Mix 2%, 3% coolant with 97% to 98% water (1 Liter)

514-7-66F Filter Paper

Minimum order of (10) sheets, pricing per sheet

514-4-71D Coolant Refractor

(for measuring coolant/water ratio)

VR9-TOPROLL Top Roller for VR9

VR9-ROLLER Complete roller set for VR9

(includes top roller and bottom drive rollers, shafts, bearings and gears)

MSDS

The Material Data Safety 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 Material Data Safety Sheets of substances and materials used by Rottler Manufacturing during manufacturing, testing, and shipping is located on the Manual CD shipped with the machine. Material Data Safety 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.

Manufacturer Castrol Industrial North America, Inc.
150 W. Warrenville Road
Naperville, IL 60563

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

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	85-90

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

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 excessive heat.

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 **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) At least one component is not listed.

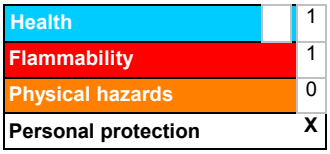
Korea inventory (KECI) All components are listed or exempted.

Philippines inventory (PICCS) All components are listed or exempted.

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

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

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

Section 16. Other information

History

Date of issue/Date of revision	08/11/2014.
Date of previous issue	No previous validation.
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.

Indicates information that has changed from previously issued version.

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