

ROTTLER

F9/10 A OPERATIONS MANUAL



PARTS ORDERING

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1. Your name, business name, and contact number
2. Customer number, or your billing address if you do not have a customer number
3. Shipping address if different from the billing address
4. Machine model and serial number
5. Part number and description of the item(s) to order
6. Preferred method of shipment

For customers outside of the U.S. requiring faster service, contact your local distributor.

In some cases, you may be requested to send a photo of the part you are ordering if it is a replacement part or does not appear in our 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(s) you require.

THERE IS A MINIMUM ORDER OF \$25.00

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CONTROL DEFINITIONS

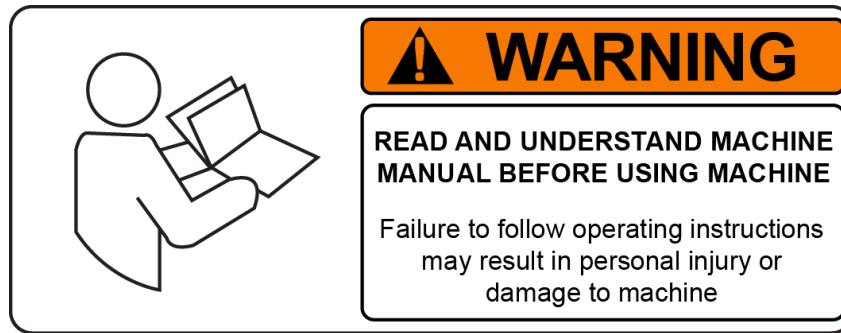
OPERATING INSTRUCTIONS

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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 F9A & F10A read the CONTROL DEFINITIONS to get an idea how the F9A & F10A operates.

The Operating Instructions section should be read in order to familiarize the user with the actual button pushing sequences required to carry out a job. These sections in the manual should be considered an introduction. As the operators of the F9A & F10A series gain experience with using the different functions of the F9A & F10A, complicated setups and programs will make more sense.

The rest of the manual contains information and part number reference on fixtures, cutting tools, and F9A & F10A maintenance. The operator should read and become familiar with these areas as well.

Description

The model F9A & F10A is a precision, single point high-speed boring unit. The F9A & F10A can be equipped with tooling and accessories for re-boring most American passenger car and truck engines, In-lines, as well as 90 and 60 degree V-types.

F9A & F10As can be easily tooled, to a wide range of engines, including European and Asian engines, also, the F9A & F10A can be easily adapted to perform other boring operations.

The F9A & F10A is designed, to maintain alignment of cylinder bores to the pan rails and main bearing bore locations, as was done in the original factory machining. This overcomes the many inaccuracies and out-of-alignment problems associated with clamping portable boring bars to the cylinder head surface of blocks.

Convenient controls, fast block clamping, precise positioning and clamping, means considerable savings in floor to floor time, and operator involvement.

Change over or resetting time required to set up V-type or in-line engines is a minimum, making this F9A & F10A highly suited to the jobber shop where engines cannot be run through in model lots.

Disclaimer

The F9A & F10A 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.

Rottler Manufacturing does not make any representations, warranties or guarantees, express or implied, as to the accuracy or completeness of the Manual. Users must be aware that updates and amendments will be made from time to time to the Manual. It is the user’s responsibility to determine whether there have been any such updates or amendments. Neither Rottler Manufacturing nor any of its directors, officers, employees or agents shall not be liable in any manner whatsoever to any person for any loss, damage, injury, liability, cost or expense of any nature, including without limitation incidental, special, direct or consequential damages arising out of or in connection with the use of the Manual.

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 F9A & F10A 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 if 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.

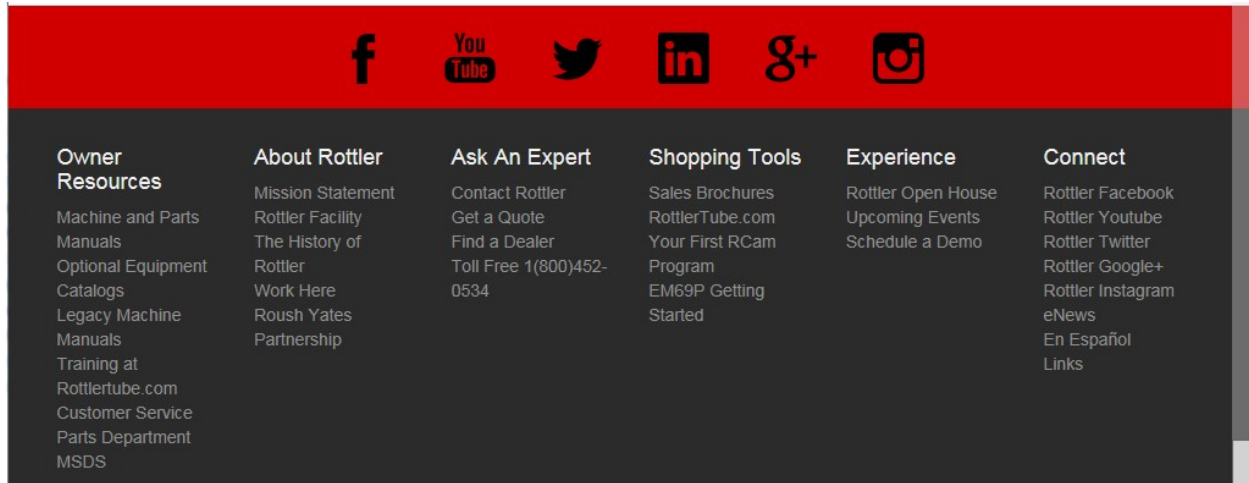
The issuance of a **RGR DOES NOT** guarantee credit - it is only authorization for the return of the goods. Credit for return merchandise is at the sole discretion of Rottler. Credit will be issued only after inspection of returned goods.

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.

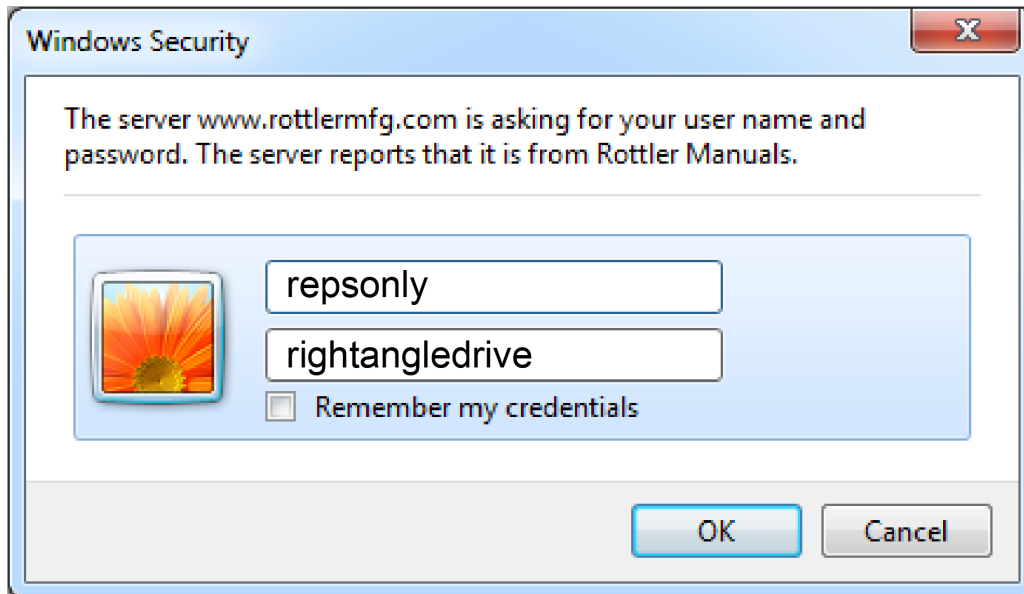
Online Documentation Access

Online documentation for machines and optional equipment, including manuals and catalogs, 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.



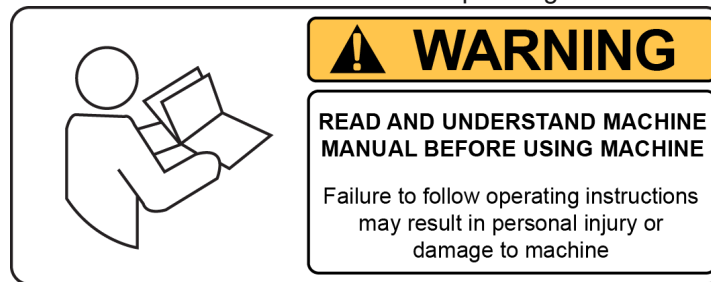
SAFETY

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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



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 personnel 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.

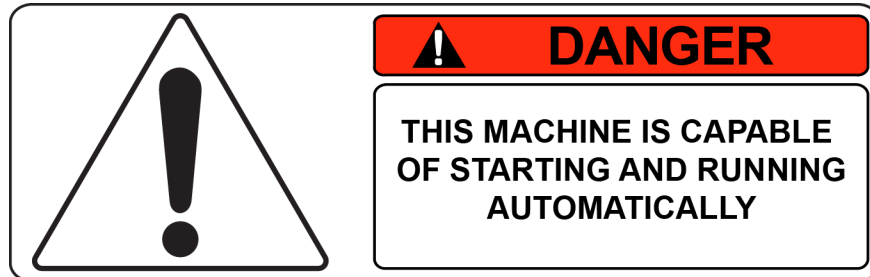
When boring the machine is capable of throwing metal chips over 10- feet from the cutting area. Always use the guards. Eye protection must be worn at all times by the operator and all other personnel in the area of the machine.



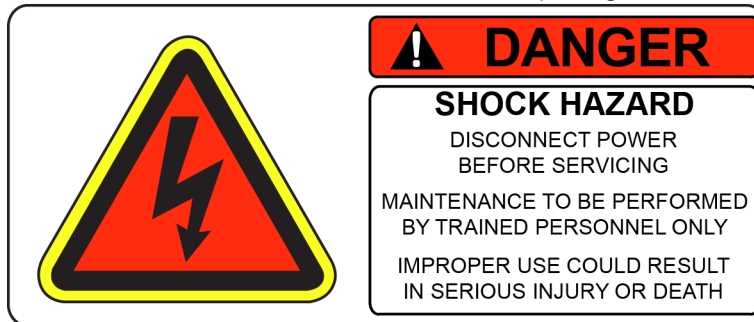
CAUTION No list of safety guidelines can be complete. Every piece of shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to follow guidelines could result in serious personal injury,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

Electrical Power

THIS MACHINE IS AUTOMATICALLY CONTROLLED AND MAY START AT ANYTIME

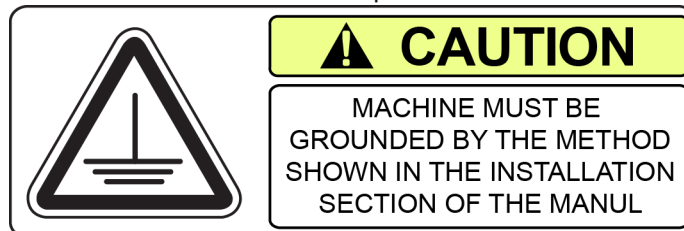


All electrical power should be removed from the machine before opening the rear electrical enclosure.



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.

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.



CAUTION No single list of electrical guidelines can be comprehensive for all shop environments. Operating this machinery may require additional electrical upgrades specific to your shop environment. It is your responsibility to make sure your electrical system comply with all local codes and ordinances.

WARNING This machine operates under computerized control and, like all computerized equipment, is susceptible to extraneous electrical impulses, internally or externally produced. The machine may make moves out of the operator control at any time. The operator should work in and around the machine with caution at all times.

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

Make sure all electrical equipment has the proper overload protection. This machine should have **a fully isolated** power supply to prevent damage and uncontrolled movement of the machine. If this machine 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 this machine's 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. Refer to the Power supply section located in the Installation section for voltage and amperage requirements of this machine.

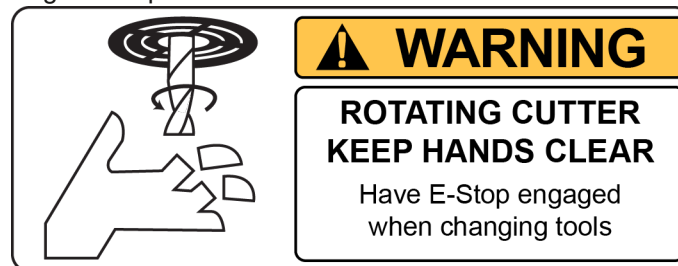
Machine Operator

The operator of this machine 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.

This machine has the following areas of exposed moving parts that you must train yourself to respect and stay away from when they are in motion

Cutting Tool Area – Any operation involving hands in the cutter head area, such as inspection or alignment of the cutter head or tools, changing Centering Fingers, tool insertion, and removal, cutter head changes, and size checking etc. requires the machine to be in Neutral.



Machining – Eye protection must be worn during all operations of the machine. Hands must be kept completely away from the cutter head. All chip guards must be in position during machine operations.



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.

CAUTION **Machine Maintenance** – Any machine adjustment, maintenance or parts replacement absolutely requires a complete power disconnection from the machine.

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 second 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. 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.

Computer and Controller System Safety

The computer and controller are located in the main rear electrical enclosure. This unit is a full computer, running Windows 10 64 Bit operating system. Contact the factory if more information on the computer system is required.

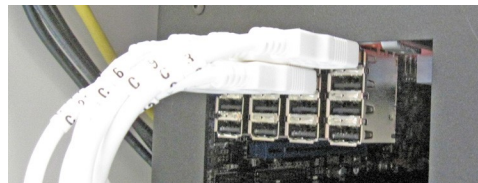
IMPORTANT The computer in this machine has the ability to connect to the Internet via Ethernet or Wireless using a USB wireless (Wi-Fi) adapter. Updating the Rottler software should **ONLY** be done when directed to do so by a Rottler service technician. Updating Rottler Software when not directed by Rottler personnel will result in a non-operational machine.

The machine should be hooked up to the Internet anytime it is on. The software on the machine will automatically connect to our server to send back useful information on machine status.

Any “IT” personnel should **ALWAYS** get approval from Rottler before doing **ANYTHING** on the computer.

DANGER This machine is capable of causing severe injury or death. Doing any of the following without Rottler’s direct consent may cause severe injury or death.

WARNING Do not attempt to install USB devices in the PCI ports. These ports have high voltage and any attempt to connect a USB device in these ports will result in destruction of that device. There is also the possibility of damage to the computer system of the machine.



IMPORTANT Downloading any program or changing any Rottler or Computer settings may cause the machine and/or software to become unstable. DO NOT install ANY screen saver, Anti-Virus, Spyware or any type of Security software on the computer. This could create a hazardous environment for the operator and personnel around the machine. Performing any of the above will also result in the machine warranty being NULL and VOID.

IMPORTANT DO NOT connect any type of external hardware to the computer via USB or any other means. Do not install any type of Device Driver. This could create a hazardous environment for the operator and personnel around the machine. Performing any of the above will also result in the machine warranty being NULL and VOID.

Electrical Safety Features Of Rottler DM Controlled Machines

All Rottler machines that use the DM operational control system are designed to comply with all applicable safety standards. This includes but is not limited to the following systems:
Thermal sensors in all motors and motor controls.

1. Current sensors in all motor control panels.
2. Electrical breakers to prevent voltage surges and spikes from reaching electrical system.
3. Electrical lockout on main electrical enclosure.
4. E-Stop that shuts down all operational systems in an event of an emergency.

All thermal and current limits for motors and motor controls are preset at the factory. In the event that any of those parameters are exceeded during operation of the machine, the machine control system will shut down the machine and a warning of the specific fault will appear on the control screen.

CONTROL DEFINITIONS

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Control Definitions

The purpose of this chapter is to define the function of the buttons throughout the various screens. Certain button functions may not make sense right away in this chapter. As the operator reads through the Operating Instructions chapter of this manual, the function of these buttons will become clear.

NOTE: Not all modes of operation will be discussed in this Chapter. The function of several buttons and actions are the same in many modes. The description of a function or button operation will not be repeated if it exists in another mode. All modes of operation will be discussed in the Operations Section of this manual (Section 5).

Computer and Controller System Safety for DM Controlled Machines:


The computer and controller are located in the main rear electrical enclosure. This unit is a full computer, running Windows 7 64 Bit operating system. Contact the factory if more information on the computer system is required.


IMPORTANT: The computer in this machine has the ability to connect to the World Wide Web via Ethernet or Wireless using a USB wireless (Wi-Fi) adapter. Updating the Rottler software should **ONLY** be done when directed to do so by a Rottler service technician. Updating Rottler Software when not directed by Rottler personnel could result in a non-operational machine.

It is recommended that the machine be hooked up to the Internet anytime it is on. The software on the machine will automatically connect to our server to send back useful information on machine status. It will also record performance parameters that will be used to evaluate any occurrence of a malfunction.

The Auto Update for the Windows Firewall (Security) and Windows Defender (Anti-Virus) is turned on. The computer will automatically download the updates and then install them when the computer is shut down every Friday night.

Any "IT" personnel should **ALWAYS** get approval from Rottler before doing **ANYTHING** on the computer.

 **WARNING** Downloading **ANY** program from the Internet or by other means when not directed by Rottler is prohibited and will result in the machine warranty being NULL and VOID.

 **WARNING** Downloading any program or changing any Rottler or Computer settings may cause the machine and/or software to become unstable. **DO NOT** install **ANY** screen saver, Anti-Virus, Spyware or any type of Security software on the computer. This could create a hazardous environment for the operator and personnel around the machine. Performing any of the above will also result in the machine warranty being NULL and VOID.

COMMON INTERFACE NOTICE

All Rottler machines using Direct Motion technology share a common control interface. This allows for a better environment for programming machine functions across a wide range of different machines. This also allows for easier deployment in shops already using Rottler Direct Motion machines.

Because of the common interface some machines may have buttons and menu tabs that may not be applicable to the machine that is being used. If the buttons or menu tabs are not mentioned in the control definitions section of the manual, they will not be used in machine operation.

Master Power On/Off Switch

This switch is located on the main electrical control enclosure on back of the machine. The switch must be in the off position before opening the rear enclosure door.

When first applying power to the machine the computer will need to boot up. Be patient, it will take several minutes to complete booting. The Rottler program will not automatically start. Double tap the Rottler_WPF icon on the screen to start Rottler.

When turning the main power to the machine off there is a specific procedure to follow so as not to damage the computer. The computer must shut down its internal systems before main power is removed from it.

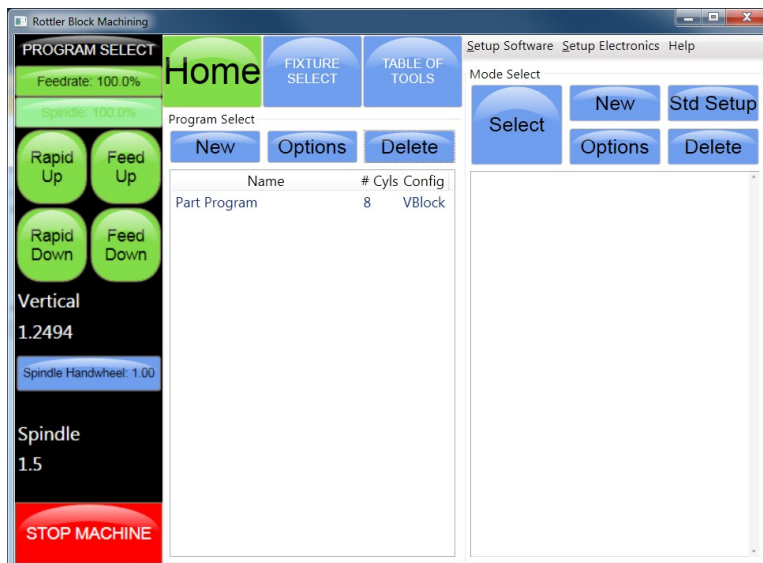
Press the “Start” button in the left-hand side of the Start Bar. This will bring up the “Start Menu”. Press the “Shutdown” line at the bottom of the Start Menu. This will bring up a Pop Up menu, make sure that “shut down computer” is selected and press “OK”.

This will shut down the computer. It is now OK to turn Main Power off to the machine.

Initialization Screen

When the F9A & F10A is powered up the Rottler program will not automatically start. It may take several minutes for the computer to power. Start the Rottler program by double tapping the Rottler_WPF icon on the desktop. Once the program is started, the Rottler Program Select will appear.

NOTE: Do not push any buttons or icons on the screen before the Rottler program starts or an error may be caused on the computer.



General Information

The Rottler software operates on a Block Model format. You select or create the block you are working with. Then select or create an operation to be performed on that block. The following are descriptions of the functions of the different buttons that appear on the display screen after the system has loaded.

Home

Pressing this button will cause the machine to move the spindle and cutterhead to the home position. The machine **MUST** be homed after it is turned on. This is how the machine gets its reference points to operate.

Fixture Select and Table of Tools buttons are not used on this machine. Operating software is shared among many of Rottler's machines and not all features are used on all machines.

Rapid Travel Buttons

Rapid Up will cause the spindle to move up quickly at a fixed rate of speed. The button is a momentary button and contact must be maintained or the travel will stop.

Rapid Down will cause the spindle to move down quickly at a fixed rate of speed. The button is a momentary button and contact must be maintained or the travel will stop.

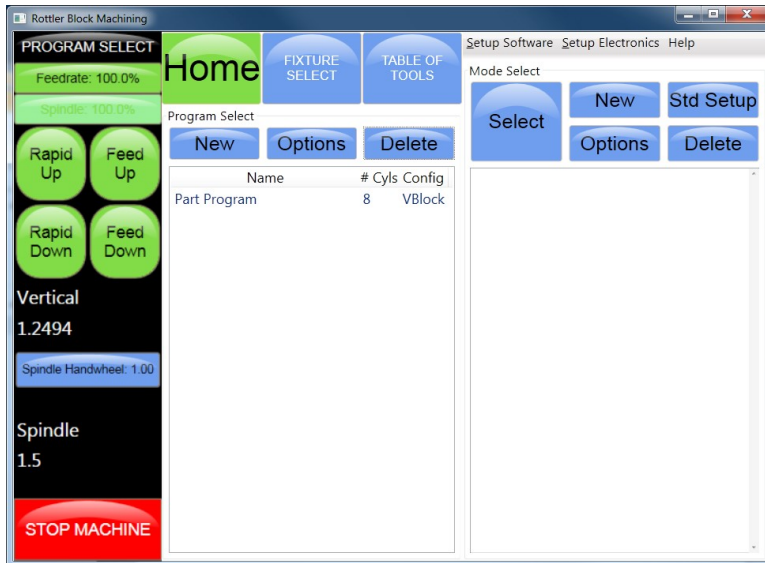
Feed Buttons

Feed Up button moves the spindle up at a fixed feed rate when the spindle is not turned on. If the spindle is rotating, the spindle will move up using the feed rate value set by the operator. This button is a latching button and will remain activated until the end of travel is reached or the operator touches the button a second time.

Feed Down button moves the spindle down at a fixed feed rate when the spindle is not turned on. If the spindle is rotating, the spindle will move down using the feed rate value set by the operator. This button is a latching button and will remain activated until the end of travel is reached or the operator touches the button a second time.

Feedrate and Spindle RPM

Tap on either the Feedrate button or the Spindle button. The button that is tapped will be highlighted. Use the hand wheel to change the feedrate or spindle RPM. It is possible to change the feedrate or spindle RPM while the machine is running in Auto Cycle.



Definitions of Control Buttons

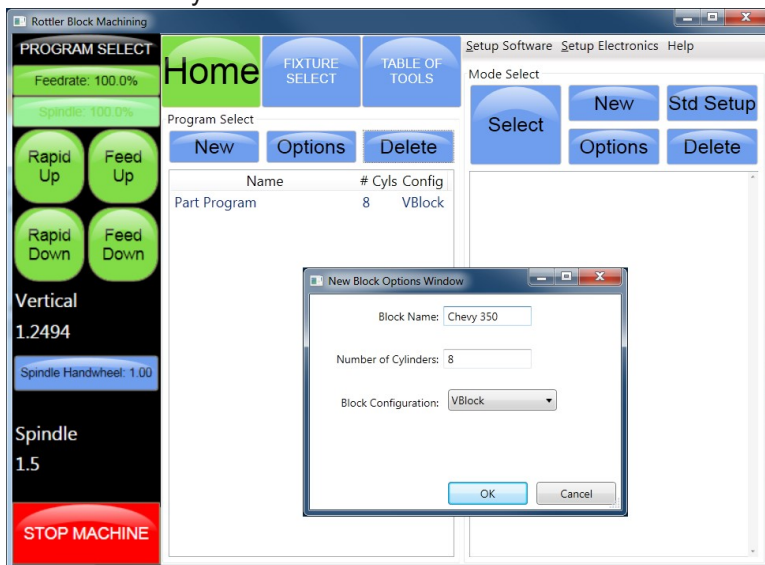
Program Select

This button will bring you back to the home screen.

The Program Select section of the home screen is located above the spindle control buttons. This is where you create programs for boring different type of blocks.

New

Pressing this button will cause a dialog box to appear. Here is where you name and configure the block i.e. number of cylinders and Inline or V Block.



Pressing OK will result in the Block Model being inserted into the left hand side of the screen.



Options

This will bring up the same dialog box as described above if any of the information needs to be changed.

Delete

This will delete whatever block program is selected. A dialog box will appear to ask you if you want that program deleted.

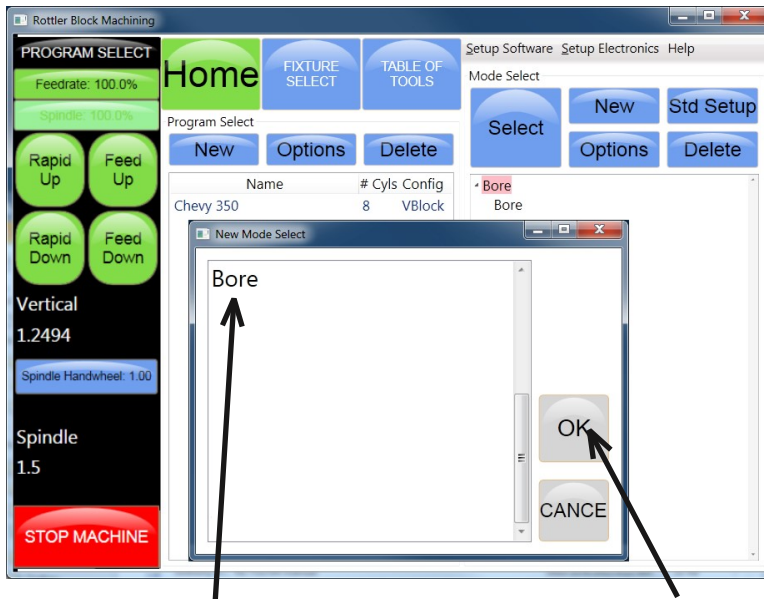
Mode Select

This is the right section of the screen. This is where you create or select operations to be performed on the selected Block. This area will be blank when you first create a block.

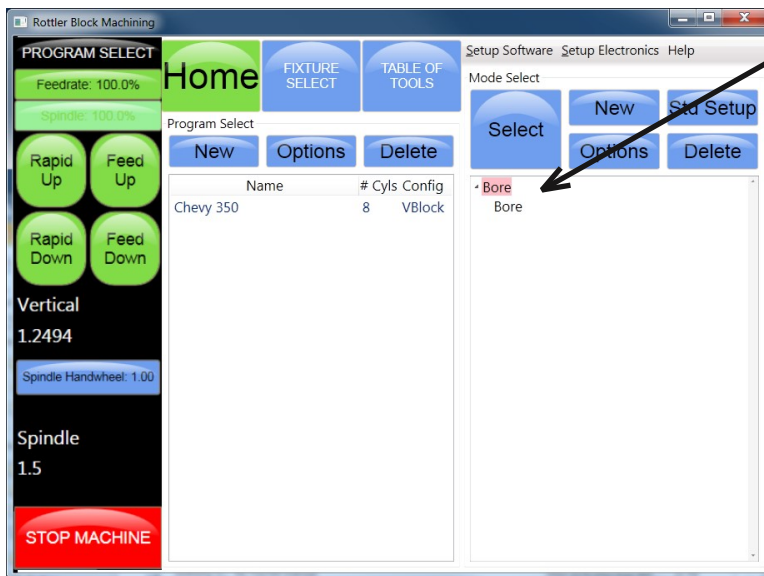
You can create only certain modes you will use on a block or use a standard set up that inserts all modes available. You can also create a new mode and rename if for a specific use.

New

Pressing this button will bring up a dialog box with Rottler standard operations.



Select the operation you want to create and then press OK. This will place a Bore operation under the Cylinder bore mode in the right hand section.



To enter Bore mode highlight it and then press Select. This will take you to the operation screens that will be described later.

Std (Standard) Setup

Pressing this button will insert all the Rottler operations into the right hand section automatically.



Options

This button is not used on this machine.

Delete

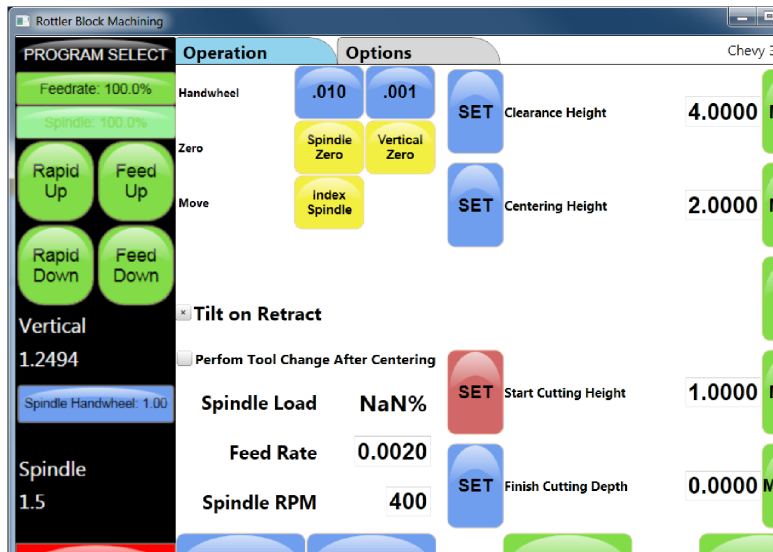
This will delete the selected Mode. It will ask you if you want this mode deleted before deleting it. NOTE: Once the control definition for a particular button has been discussed it will not be repeated in the different modes of operation. Only new buttons or buttons with a different function will be discussed in different modes.

Select

Highlight the Bore function and then touch the Select button.



This will bring up the Operation screen.



Handwheel Buttons

.010 button allows the operator to use the hand wheel to move the spindle up or down at .010" per click in either direction.

.001 button allows the operator to use the hand wheel to move the spindle up or down at .001" per click in either direction.

Pressing any of the spindle control buttons will disengage the handwheel.

Zero Buttons

Spindle Zero button is used to set the tool index position. The operator rotates the tool to the desired index position, always 3 o'clock for normal operation, and press the button to set that position as the tool index point.

Vertical Zero button is used to set the vertical zero position which is used as reference for the vertical stop points in the program.

Index Spindle Button

This button turns the tool to the index position, 3 o'clock for normal operation.

Tilt on Retract

When checked, the tilt function will cause the spindle to tilt as it moves vertically up from the Finish Cutting Depth.

When unchecked, the tilt function will not cause the spindle to tilt as it moves vertically up from the Finish Cutting Depth. This is used when the operator does not want the spindle to move from its position relative to the cylinder.

Blind Hole Program

When checked, the spindle will perform the Centering routine in auto cycle then move up to the Start Cutting Height. At this point the operator will see a prompt to insert the tool holder into the cutter head and press OK to continue operation. This is used in blind hole operations.

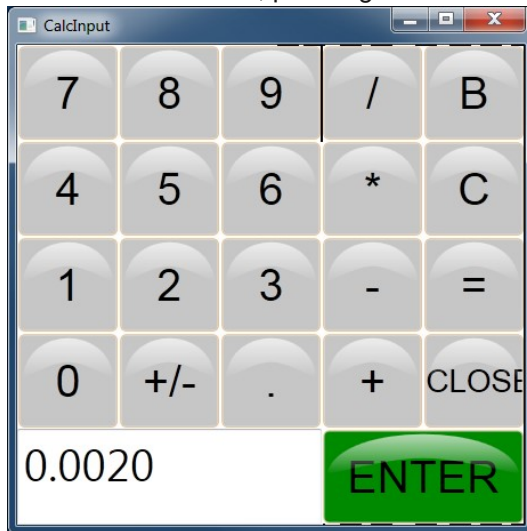
This box is unchecked during all cylinder bore operations except for blind hole cutting.

Spindle Load

Spindle Load indicates percent of motor load during operation.

Feed Rate

Operator clicks the box to the right to enter desired feed rate. Wherever there is number box where a value can be entered, pressing value box will activate a pop up number pad to input values.



Spindle RPM

Operator clicks the box to the right to enter desired spindle RPM.

WORKHEAD FLOAT

This button causes the machine to release the clamps and the spindle base to float. Button turns red when pressed. If the button is pushed again, the button turns blue and spindle base float is turned off. The spindle base is in neutral.

WORKHEAD CLAMP

This button causes the machine to turn off the float function and the spindle base to be clamped. Button turns red when pressed. If button is pushed while red, button turns blue and spindle base clamps release. The spindle base is in neutral.

SET Clearance Height

Pressed once to select the clearance height as the position the spindle will return to at the end of the auto cycle.

Hold the button to select and set the current vertical position as the clearance height value shown in the window to the right.

Clearance Height MOVE

This button is pressed to cause the spindle to move up or down to the indicated position in the window to the left.

SET Centering Height

Pressed once to select the centering height as the position the spindle will return to at the end of the auto cycle.

Hold the button to select and set the current vertical position as the clearance height value shown in the window to the right.

Centering Height MOVE

This button is pressed to cause the spindle to move up or down to the indicated position in the window to the left.

Auto Center

This button is pressed to cause the machine to float the spindle base, extend the centering fingers, clamp the spindle base, and then retract the centering fingers.

SET Start Cutting Height

Pressed once to select the start cutting height as the position the spindle will return to at the end of the auto cycle.

Hold the button to select and set the current vertical position as the start cutting height value shown in the window to the right.

Start Cutting Height MOVE

This button is pressed to cause the spindle to move up or down to the indicated position in the window to the left.

SET Finish Cutting Depth

Press once to select the finish cutting depth as the position the spindle will return to at the end of the auto cycle.

Hold the button to select and set the current vertical position as the finish cutting depth value shown in the window to the right.

Finish Cutting Depth MANUAL

This button is pressed to cause the spindle to start rotating and feed down to the Finish Cutting Depth. The spindle will then stop rotating and feeding, index the tool, tilt and move vertically up to the position preselected by the operator.

START SPINDLE

This button causes the spindle to start rotating at the designated RPM. Pushing the button again will stop the spindle rotation.

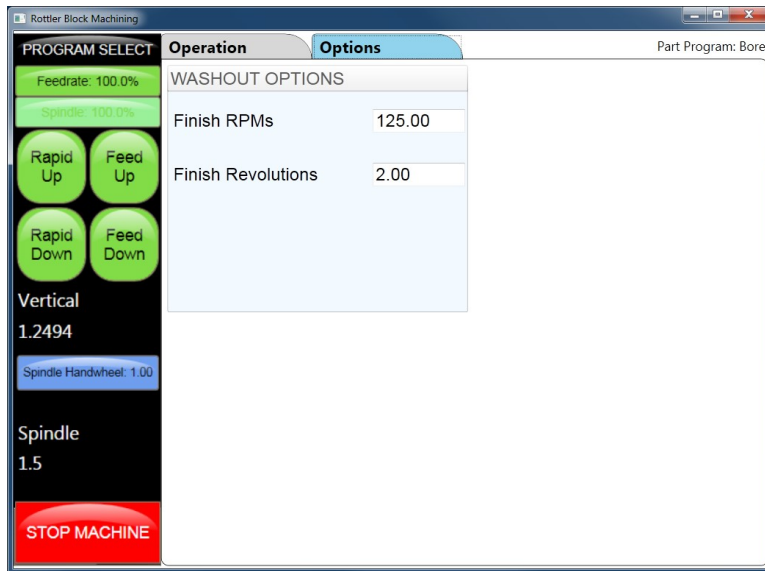
START AUTOCYCLE

This button causes the spindle to move vertically to the Clearance Height position then move to Centering Height, Auto Center, move to the Start Cutting Height, start spindle rotation, feed down to the Finish Cutting Depth, index the tool, turn on the tilt function and move the spindle vertically up to the selected SET position.

The operator can press the START SPINDLE button and then press the Feed Up or Feed Down button. The spindle will rotate and feed continuously in the desired direction until either:

- a. The operator presses the Feed Up or Feed Down button, then the START SPINDLE.
- b. The operator presses the STOP MACHINE button to stop all motion.
- c. The machine reaches the end of vertical travel in either direction.

Options Screen



Finish RPMs default value is 125. When the machine reaches the Finish Cutting Depth the spindle RPMs change to this speed, rotate the number of times set by the Finish Revolutions parameter and index the tool to the index position. The operator can change this value to any value he chooses.

Finish Revolutions default value is 2.00. When the machine reaches the Finish Cutting Depth, the spindle RPMs change to the Finish RPMs value, rotate the number of times set by this parameter, then index the tool to the index position. The operator can change this value to any value he chooses.

OPERATING INSTRUCTIONS

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Operating Instructions

The purpose of this chapter is to explain and then guide the operator from loading a block through running an automatic cycle.

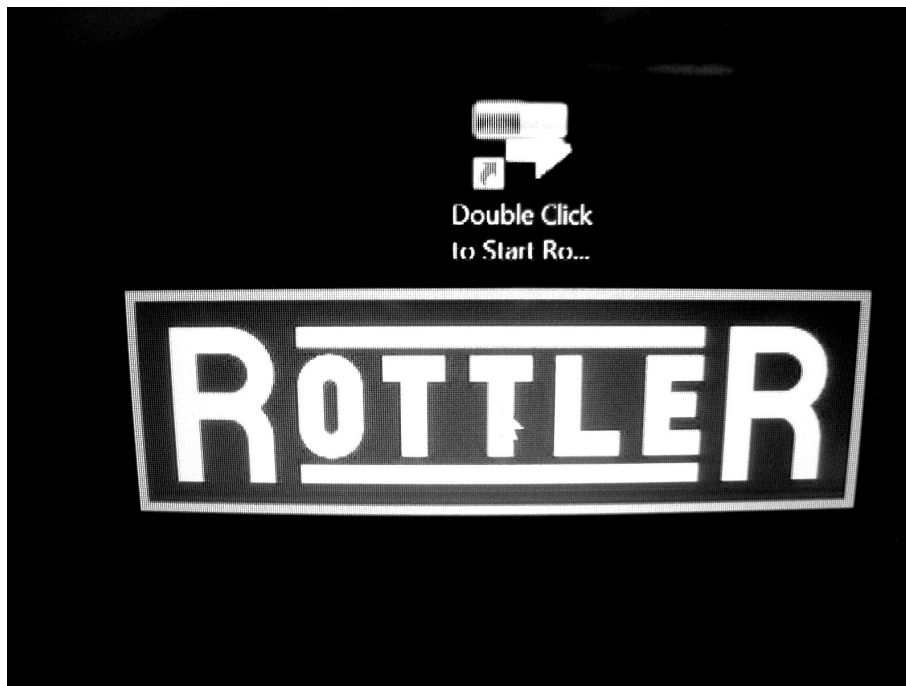
All modes of operation will be discussed in this chapter.

Note: We recommend, particularly for operators unfamiliar with the boring machine, to practice on a junk block in order to become familiar with the controls and procedures of the boring machine.

A keyboard will need to be connected to the machine so that information can be entered. A mouse can be connected to click on various buttons or you can use a stylus or your fingertip. These devices can be attached at the USB ports located on the electrical enclosure.



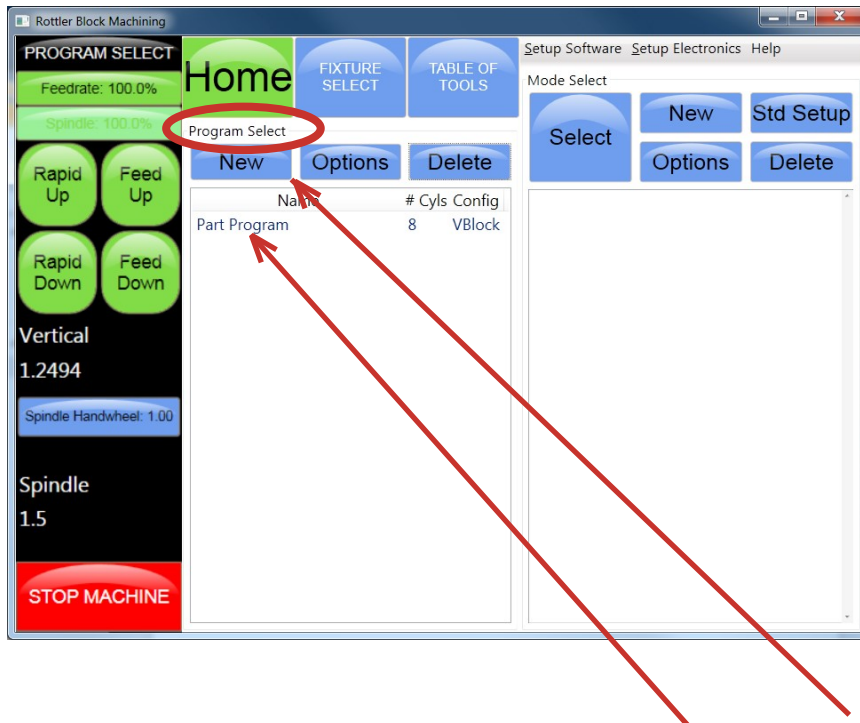
Turn on the power to the electrical enclosure. The display will show the operating system loading and when it is complete the Windows 7 screen with the Rottler logo will be displayed.



Go to HOME screen by double clicking the icon that's labeled Double Click to Start Rottler. A SelectLanguage pop window will appear. Choose the language to be used, click the button Use the selected language and then click OK.

Home Screen

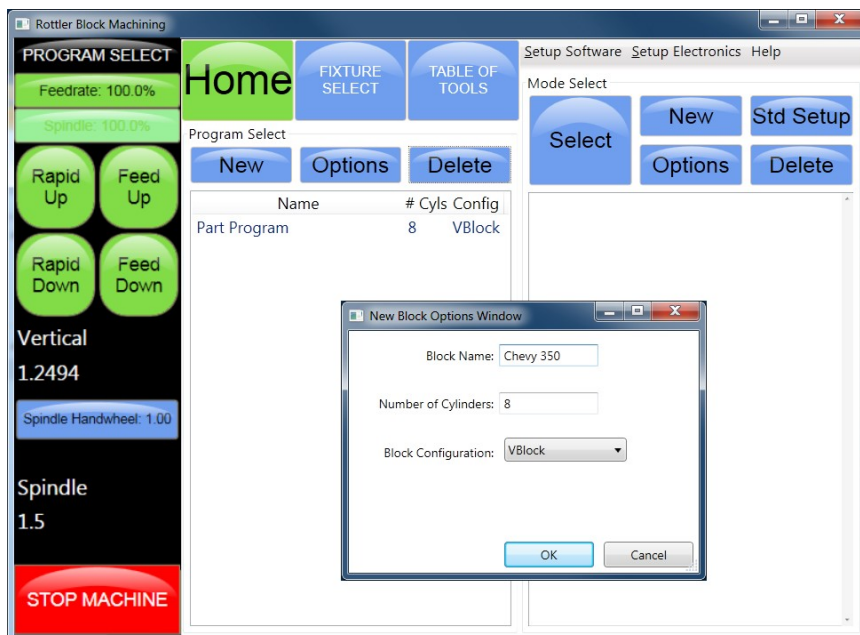
The Home screen will then appear on the display.



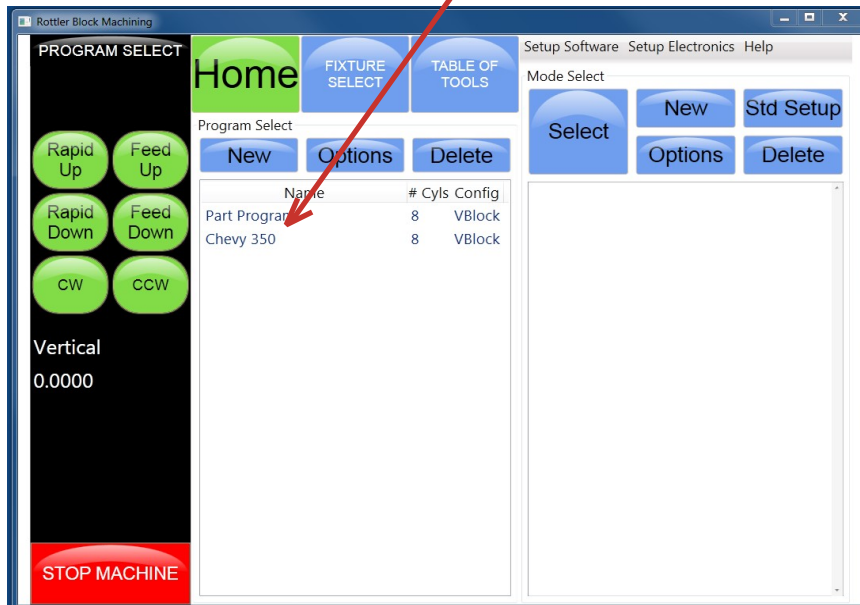
Program Select section of screen click an existing block program or New to create a new program.

Block Select

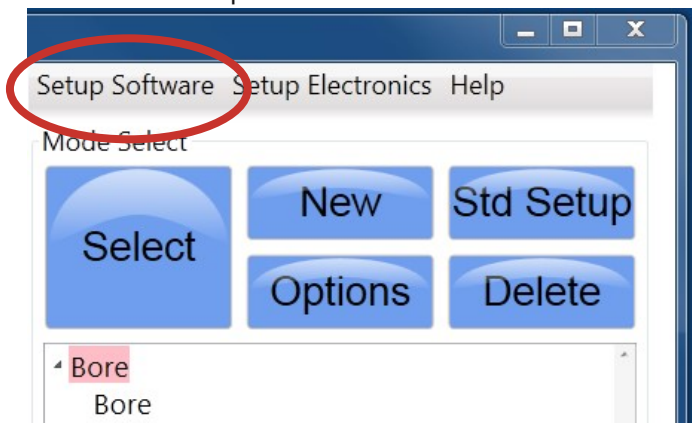
If New is selected a new window will open to enter to block information. Enter with keyboard Block Name, Number of Cylinders, and select either VBlock or Inline. Click OK.



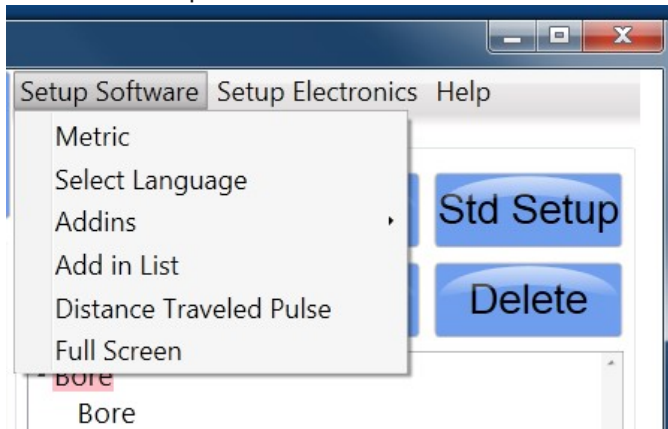
The Home screen will now show the new block you have entered.



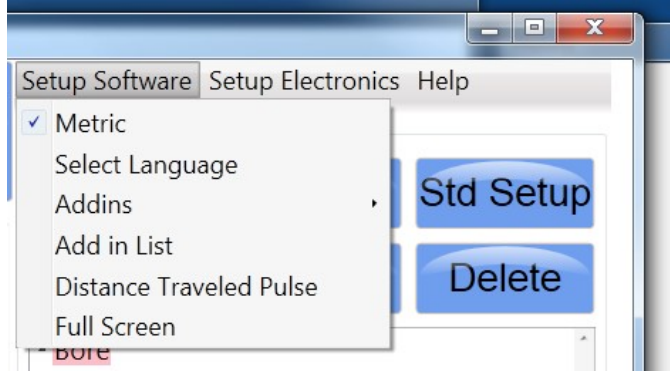
NOTE: If this machine is located in country that uses the metric system you can switch to metric values. Click on the Setup Software tab.



A menu will drop down. Click on the Metric Tab.



Click on the Setup Software tab again and confirm that the metric tab is checked. You can also change the Operating System language by clicking on the Select Language tab and select a language.

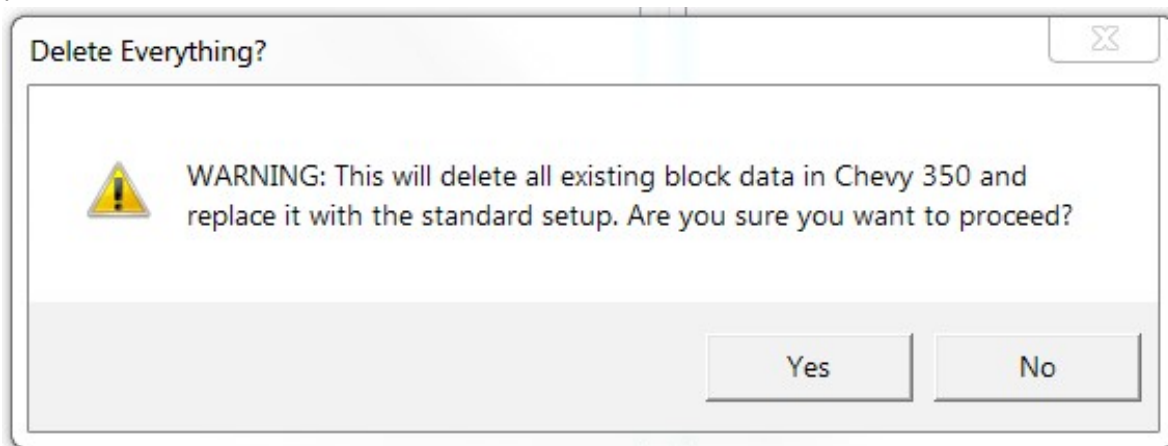


Mode Select

Click on the new block that was created to choose and highlight it.



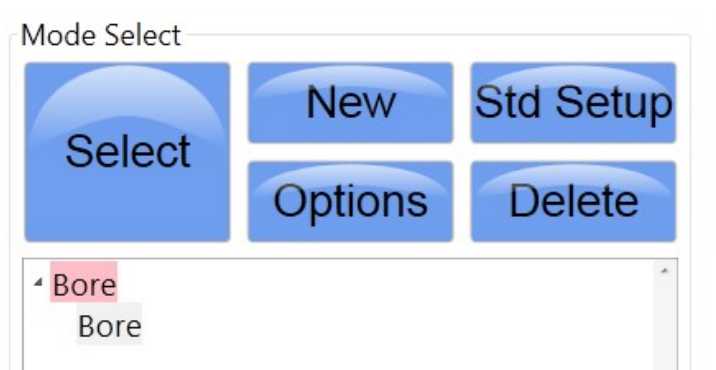
Mode Select section of screen click Std Setup button, a pop warning will appear on the screen. Since this is a new block program there is no existing data to delete., click yes to proceed. and the Bore process will be loaded.



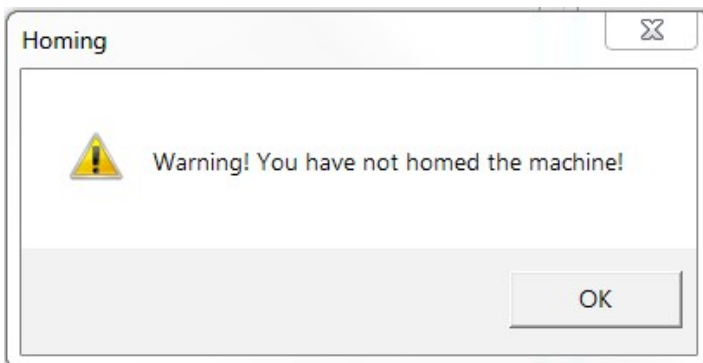
Mode Select section of screen will now show the Bore process.



Click on Bore to select and highlight it.



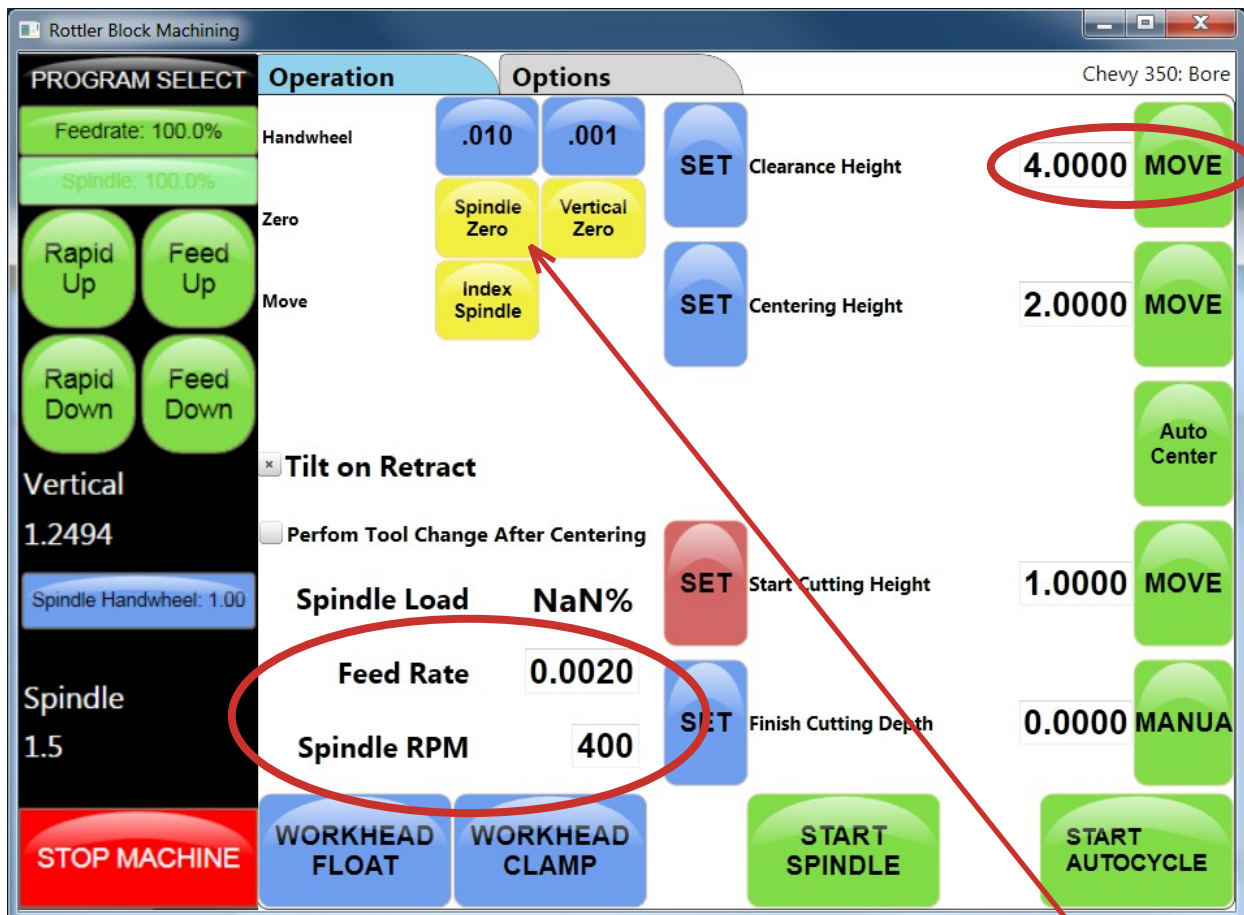
Click Select button.



A Homing Warning screen will appear. This warning is for multi axis machines and does not apply to this machine. Click OK.

Operation Screen

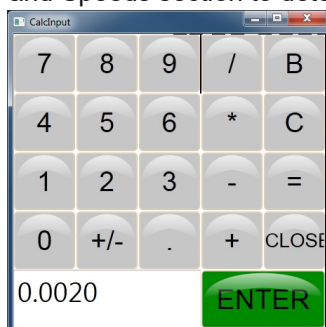
This will show which program is loaded into memory and all the settings from that program. Since this a new program, you will have to enter all the values before running the bore process.



Position toolholder slot at the 3:00 o'clock position, pointing to the right side of the machine. Click Spindle Zero button. This will tell the operating system that this is the home position of the cutterhead.

Set Feed Rate by clicking on value box and entering value in pop up number pad. (See Boring Feeds and Speeds section to determine values)

Set Spindle RPM by clicking on value box and entering value in pop up number pad. (See Boring Feeds and Speeds section to determine values)



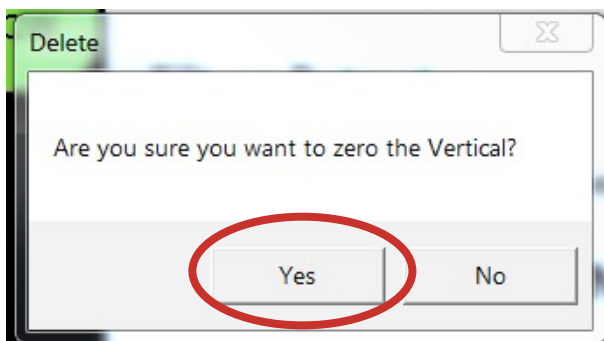
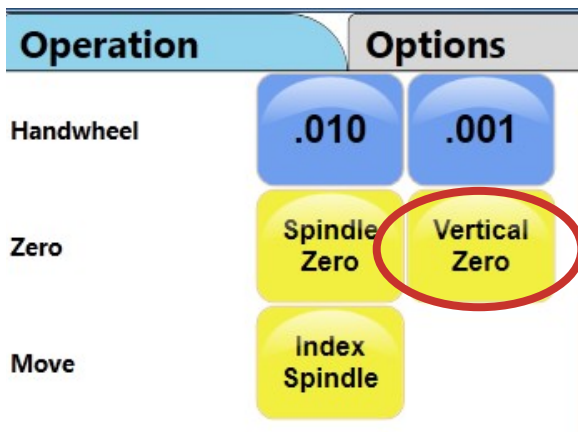
Click WORKHEAD FLOAT button to activate air float. The WORKHEAD FLOAT button will turn red to indicate that the air float is active.



Move cutterhead over the first cylinder to be bored. Push WORKHEAD CLAMP button again to deactivate float and lock the workhead.



Insert preset toolholder and lock in position. Lower spindle until the cutting edge of the insert or toolbit are even with the deck of the block. Click the Vertical Zero button, confirm by clicking yes in pop up warning.



Move spindle until centering fingers are in correct position. Push and hold the SET Centering Height button until the value appears in the value box. This is the height at which the centering fingers will be extended when the spindle is centered in the bore.



Move spindle up until bottom of cutterhead clears deck. Push and hold SET Start Cutting Height button until value appears in the value box. This is the height at which the cutterhead will start rotating when the spindle motor is turned on.



Move the spindle up for additional clearance when moving workhead. Push and hold SET Clearance Height button until value appears in the value box. This is the height where the spindle can be move between cylinders.



Click SET Clearance Height button to set it as finish point of bore cycle. The button will turn a reddish color when it is active. This will set the Clearance height as the finish point of the boring cycle.



Measure bore length, then enter the length into the value box next to the MANUA button. Enter the value as a negative number because the cutterhead is going below the zero position of the cutterhead.



Click Centering Height MOVE button. This will move the spindle into position for deployment of the centering fingers.



Lower the cutterhead into the bore.

Click Auto Center button. **Warning: Do not press Auto Center Button if cutterhead is not in the cylinder bore.** This will cause the WORKHEAD FLOAT button to turn red indicating that the air float is active. The centering fingers will then deploy automatically to center the spindle in the bore. The WORKHEAD CLAMP button will then turn red indicating that the air float has deactivated and that the clamping system has been activated. The centering fingers will then retract automatically.



Click on the Start Cutting Height MOVE button to move the spindle in position to begin the boring process.



Click MANUA button. This will start the spindle motor and start the spindle feed. When the spindle reaches the Finish Cutting Depth the Spindle motor will turn off and the cutterhead will rotate to the home position. The spindle will then Rapid Up to the Clearance Height setting. This will complete the boring process for that cylinder. The machine is now ready to be moved to the next cylinder to be bored.



After completion of first bore, click WORKHEAD FLOAT button. Move to next cylinder to be bored. Click WORKHEAD CLAMP button to deactivate float.

Click START AUTOCYCLE button. This will activate the automated boring process. The spindle will lower to the Centering Height setting. The centering fingers will deploy, center the spindle in the bore and then retract. The spindle will move to the Start Cutting Height. The Spindle motor will start and then feed the

cutterhead into the bore. After the boring process has finished the spindle will stop and the cutterhead will rotate to the home position. The spindle will then move to the Clearance Height to finish the automated process. The workhead can then be move to the next cylinder and the process repeated as needed.



Loading Blocks: Small Gas and Diesel

Manual V6/V8 Combination Fixture 502-1-72H



WARNING Handle the block and fixture with **EXTREME** care and guidance. A block hoist is **REQUIRED**. Mishandling of a heavy engine block and fixture may result in the dropping of parts and personal injury.

The Model 502-1-72H manual V6/V8 combination fixture is a fast, simple and universal system to properly and accurately hold most 60 degree V-type engine blocks for either cylinder boring or deck surfacing.

See illustration on the following page.

Boring Application

NOTE: The block must have the main bearing caps in place and torqued.

Care must be taken to assure the contact edges of the locator bar are near the cap split line. A pair of 3/8" and 1/2" spacers are provided for blocks with large main bearing bores, to enable the bar to locate near the main bearing split line. (See figure 2)

V-blocks

(blocks with main bearing center lines no more than 1/2" higher than the pan rail plane) are mounted with the 502-3-8B V-block frame in place. Select the 90-degree option placement of the frame to suit block length, or main bearing caps will interfere with frame. Rotate frame 90 degrees by moving its shoulder screws to alternate set of holes.

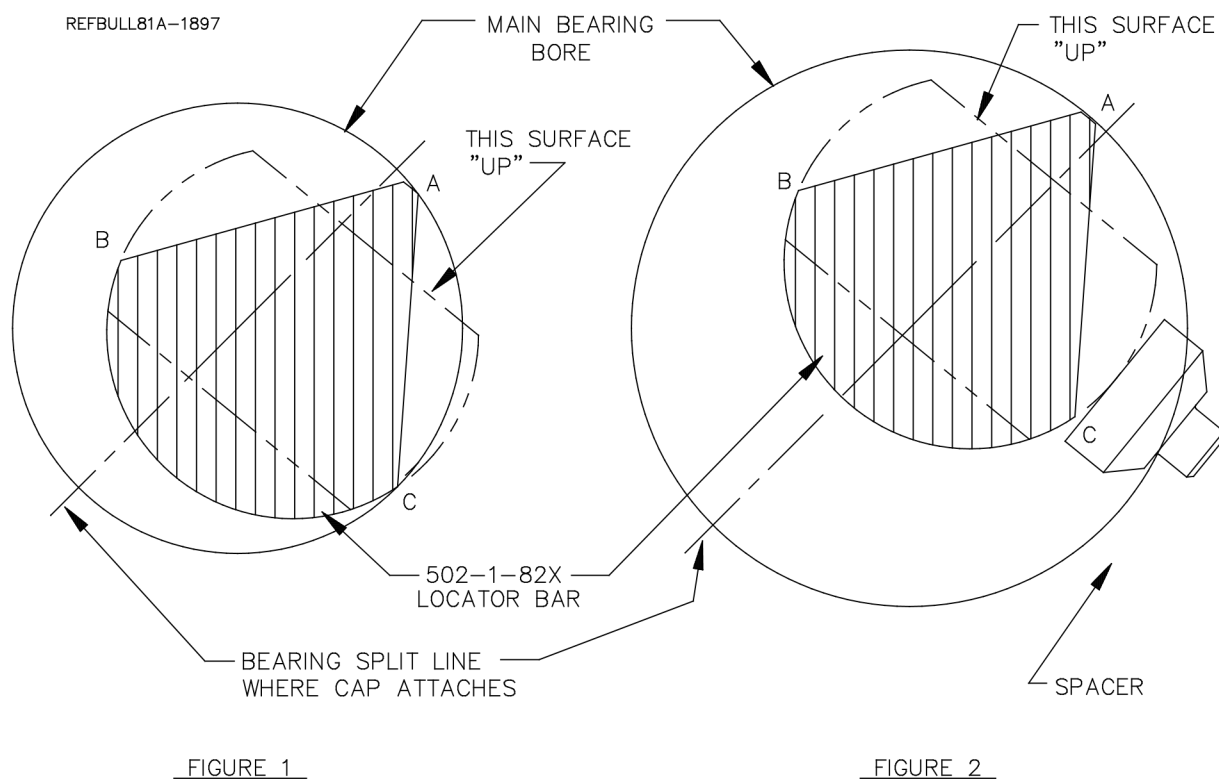
Y-Blocks

(blocks with main bearing center lines 2-3/8" to 3-1/2" higher than the pan rail plane) are mounted directly on the fixture. Some Y-blocks (GM 60 degree) have too narrow pan rails and some have too low main bearing location which will require the use of the 502-1-15C precision 1-1/4" x 3" parallel set to raise and or support the block. Use the shoulder screw from the V-block frame and hook the parallels over the back of the V-fixture.

This fixture may be easily repositioned on the support parallels (without a block in place) to shift from the 60 degree support surface to the 90 degree support surface or vice versa.

WARNING

Extreme care must be taken by operator whenever handling large blocks. Large blocks may cause fixture to tip when floated too far outward. We recommend leaving hoist attached when moving these blocks. Large blocks should be lifted from the block bank surface. DO NOT use the 502-195 block handler assembly on these blocks.



Normal Operating Procedure

The normal operation procedure on smaller V-blocks is to first pick up the block. If using the optional 5021-95 block handler attach it to the block making sure the cam lifters are COMPLETELY engaged, and that the lift hook is approximately centered in the block lengthwise. Place the 502-1-82X locator bar through the main bearings and hoist the block into the fixture. Pulling the block towards you, with the locator against the positioners, will prevent jamming in the slot of the guides during the loading and unloading operations. The locator bar is positioned with the word 'UP' that is on the end of the bar facing up and away from the operator. (see figure 1) After the locator bar is engaged in the positioners, pivot block outwards as you lower it. Slide block to the far left (this is the non adjustable position).

Make sure the block is firmly seated in place and not resting on pan-rail burrs or other interference points. Accurate seating can also be a problem with extremely warped, distorted blocks. Another cause of problems is failure to remove main bearing inserts. The locator bar has a relief for blocks with a small main bearing or seal. Rotate locator bar clamps into position & lightly tighten the hand screws, applying even pressure to both. Clamp the block securely with the main base clamp arms.

Warped or distorted blocks may require leveling of the deck surface in the long direction. This is possible with the hand-screw assembly in the left-hand bar positioner. Loosen both clamp hand-screws and slide the locator bar to the far right position. Retighten both clamp hand-screws. Raise or lower the adjusting hand-screw as required. For the non-adjustable position slide locator bar to the far left.

Push fixture back into bore position. There is a guide block (502-1-105) attached to the bottom of the fixture to aid in guiding the fixture along the support ways.

Operate the block clamp arms, bore, and pull fixture back to the load position.

Loosen locator bar hand screws and rotate clamps out of the way. Lift the block, either from the deck surface or with the optional 502-1-95 block handler. Turn the block 180 degrees & reload to duplicate the operation on the other bank.

After turning the engine block 180 degrees the locator bar must be twisted 180 degrees also. Again the word 'UP' must enter into the positioners facing up and away from the operator. (See figure 1).

Figure 1

502-1-82X main bearing locator bar indexes at point A. When bank is reversed and the bar is twisted 180 degrees, point A still indexes the main bearing.

Point C holds the block down. When bank is reversed and the bar is twisted 180 degrees, point B holds the block down.

Figure 2

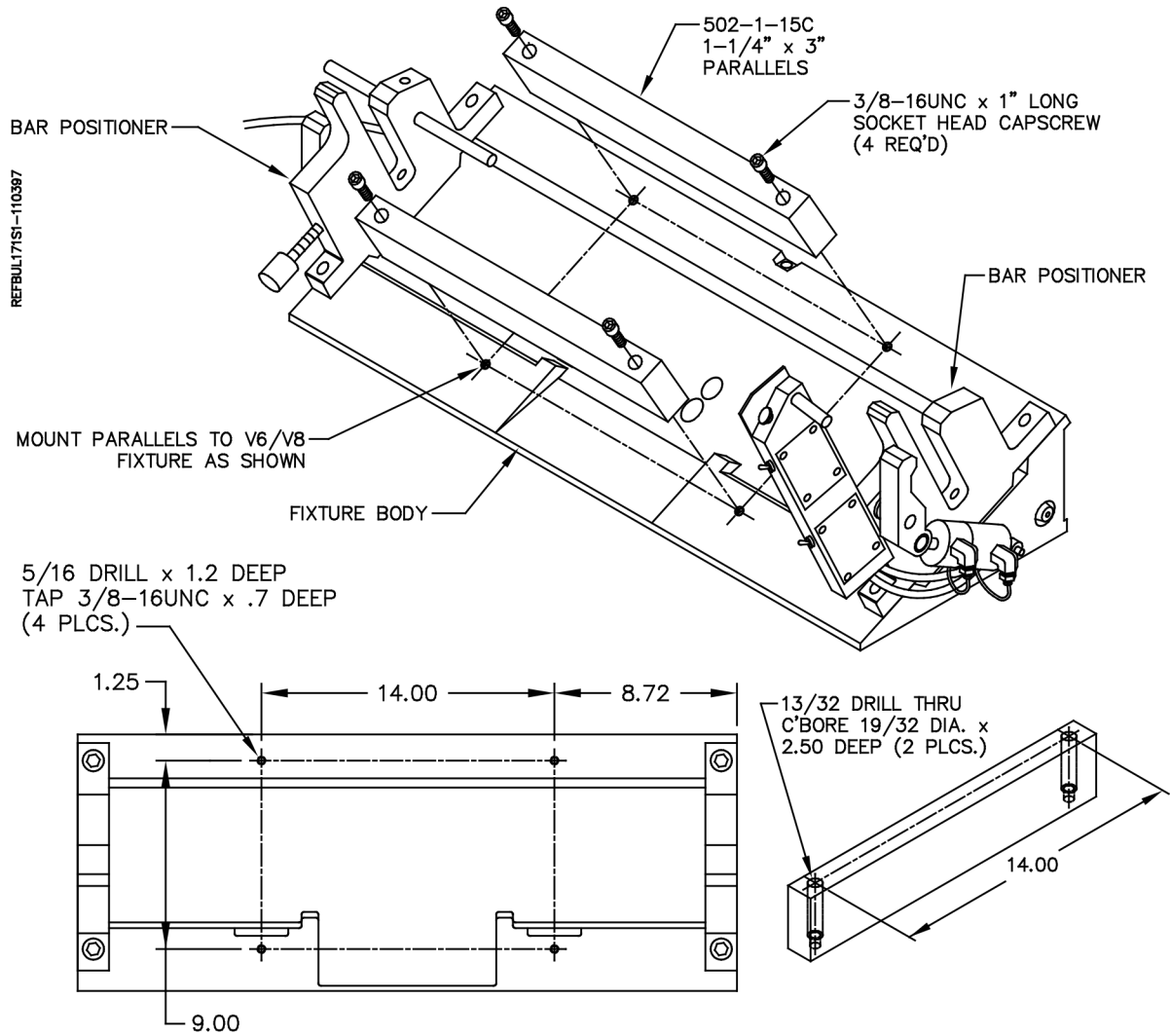
502-1-82X main bearing locator bar indexes near bearing split line. Point C does not contact the bearing cap but rests on matched spacers that are provided to fit in the bar positioners slot. If there is a means of holding the block down such as block clamp towers, this method may be used in large bores in order to properly index near the bearing split line. If extreme care is used this method may be used to index blocks without bearing caps attached. (Optional clamp down must be provided).

Retrofitting 502-1-15C Parallels to V6/V8 Combination Fixture

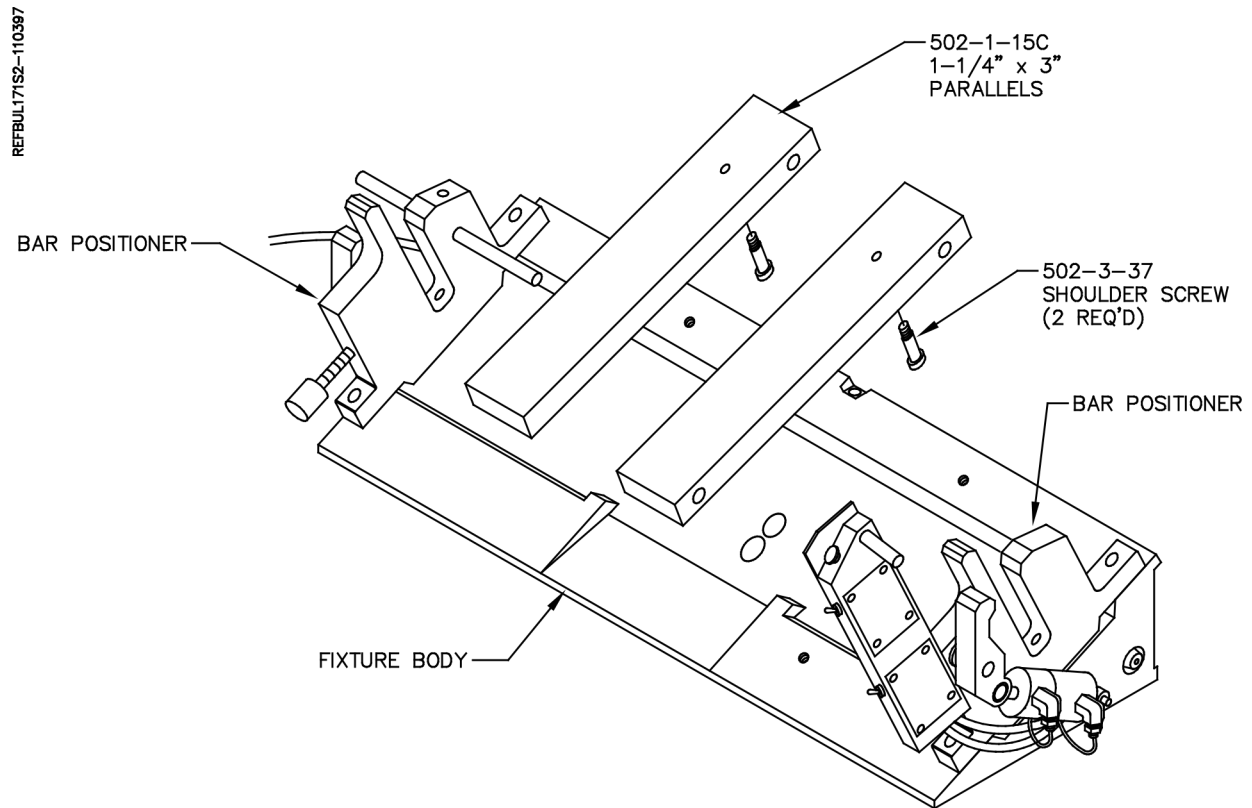
(Special Applications)

Some engine blocks with large main bores (3-1/8" and larger) cause a problem of the locator bar bottoming out in the bar positioners and/or the V-shaped relief's of the 502-3-8B V-block frame before clamping the block properly. Mounting the 502-1-15C parallel set as shown below in place of the V-block frame will provide proper clearance for clamping. Older style fixtures and parallels can be modified to this configuration using illustrations below.

V-6 blocks with one-piece 'caged' main bearing caps (all caps are connected) can interfere with 502-3-8B V-block frame. The parallel arrangement shown below will allow proper support and clamping of these blocks.



Some V-6 engine blocks (for example Buick V-6) have main bearing bores that are too low in respect to the pan rails. This presents a problem of the locator bar bottoming out in the bar positioners before the block is properly clamped. Positioning the 502-1-15C parallel set as shown below will raise the block enough to provide proper clamping.



General Machine Information

Before starting to build or use any of the Rottler operating programs it is important to understand how the machine operates internally.

The Rottler F9A & F10A model uses Computerized Numeric Control (CNC). The CNC is always operating when the machine is turned on. However, you will not see the CNC controls unless you switch over to the CNC operating screen.

Be certain that you have read and understand the control definitions section of this manual.

It is recommended that you use a scrap block to learn the operation of this machine.

Install & Remove Cutterhead

CAUTION: Turn off power to machine before changing cutterhead.

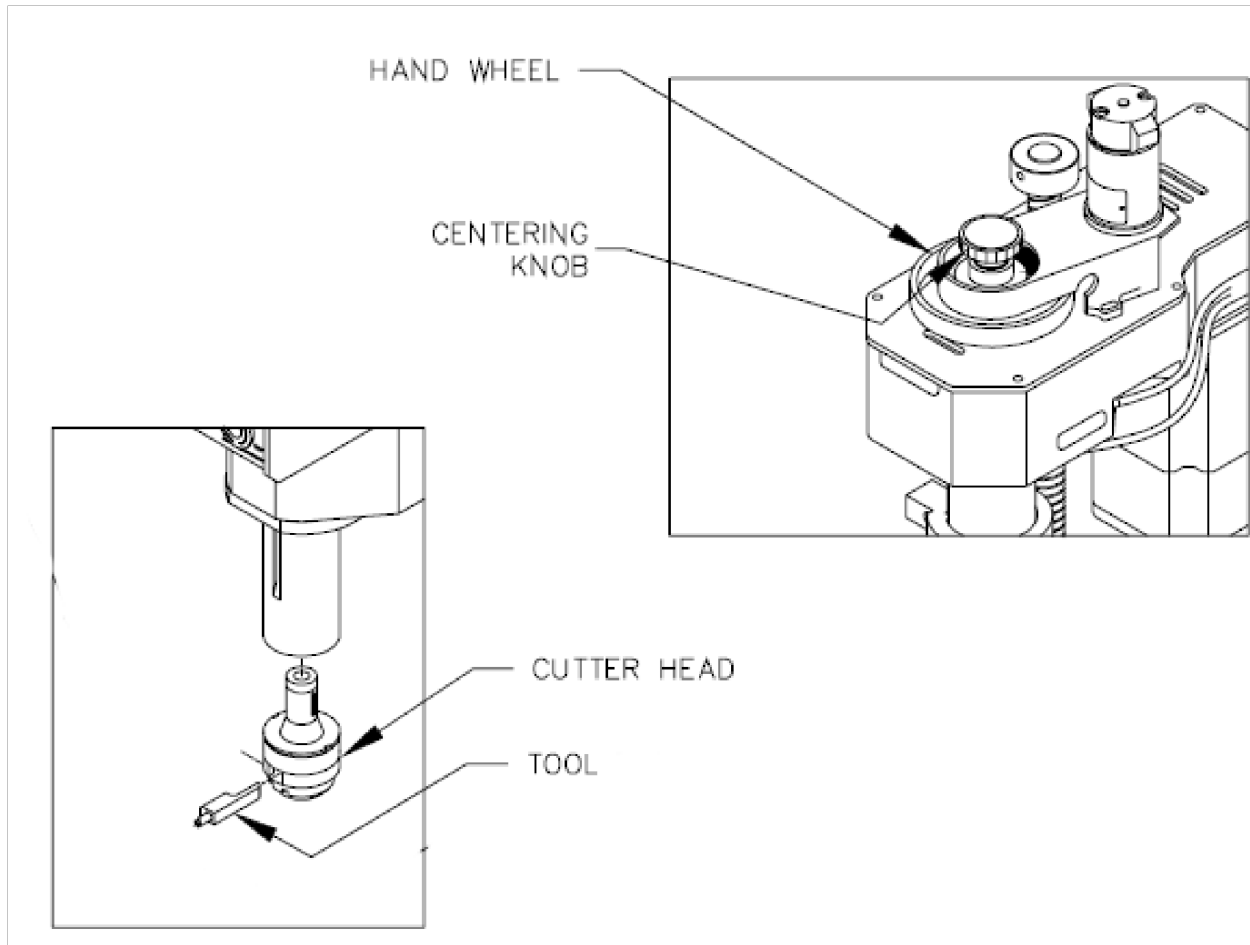
Centering fingers must be removed before changing cutterheads. Damage to the centering fingers could result if they are left in.

Turn the hand wheel counter clockwise (looking from the top). The hand wheel will be tight. There are a couple of ways to get it to come loose. It may be necessary to insert a long tool holder in the cutterhead to use for leverage. Be careful to avoid damage.

Unscrew the hand wheel the rest of the way. Keep your hand under the cutterhead so it doesn't fall out.

Thoroughly clean the end, including the threads, of the cutterhead that is going to be installed. Line up the key in the cutterhead, with the key way in the inner spindle and lift the cutterhead in.

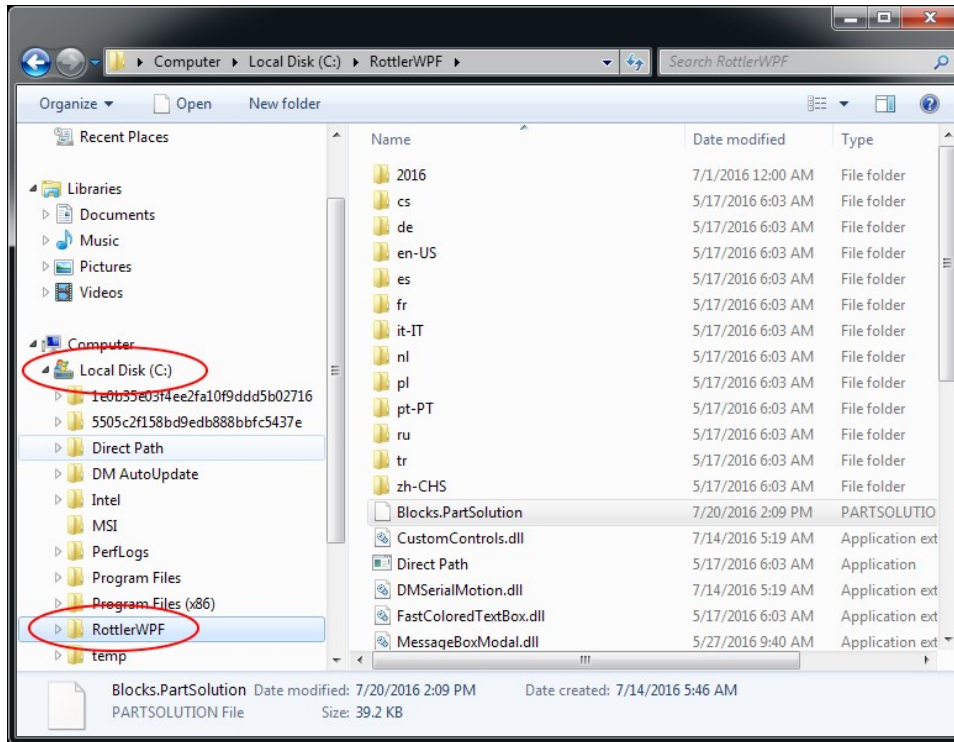
Turn the centering knob on top of the machine, to engage spline inside cutterhead. Holding the cutterhead firmly lock upper hand wheel.



Backing Up and Restoring Block Profiles

This section will explain how to back up and restore the operator created block profiles for DM controlled machines for archival purposes or to transfer to a different machine.

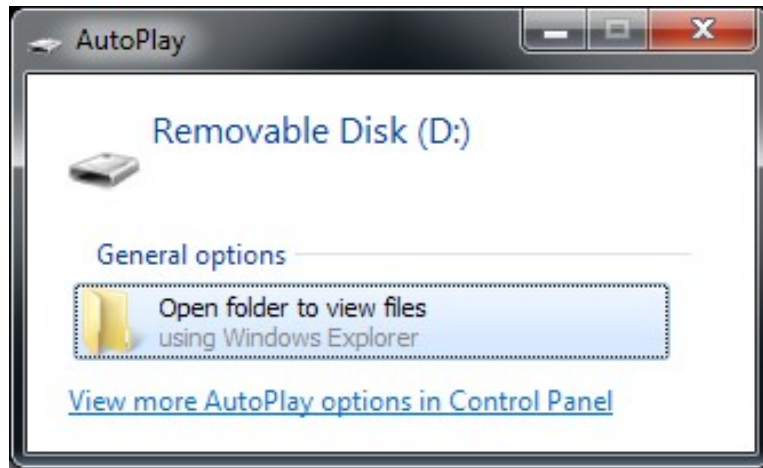
First step is to open your file browser and locate the RottlerWPF file on the C disk drive.



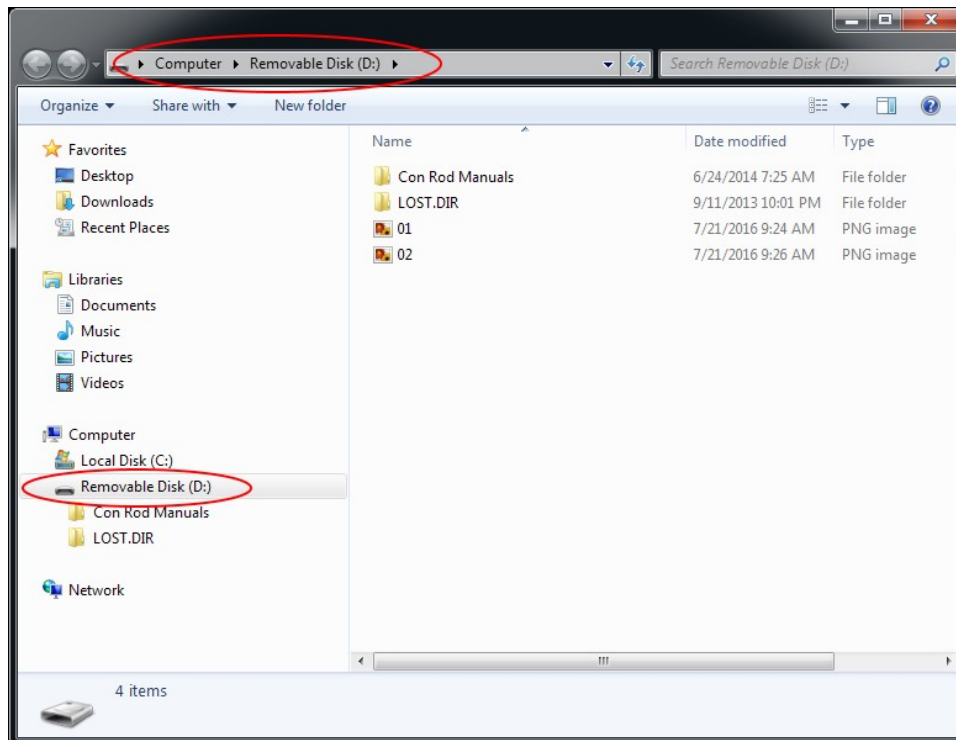
The next step is to plug in a flash drive to an open USB port



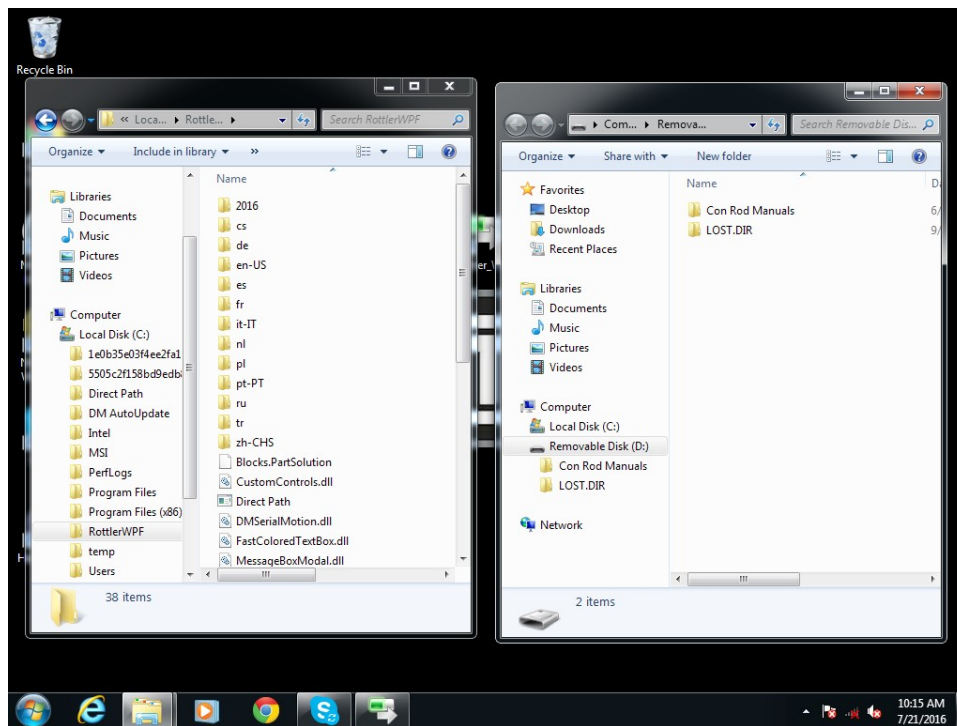
The following pop up box will appear on your screen.



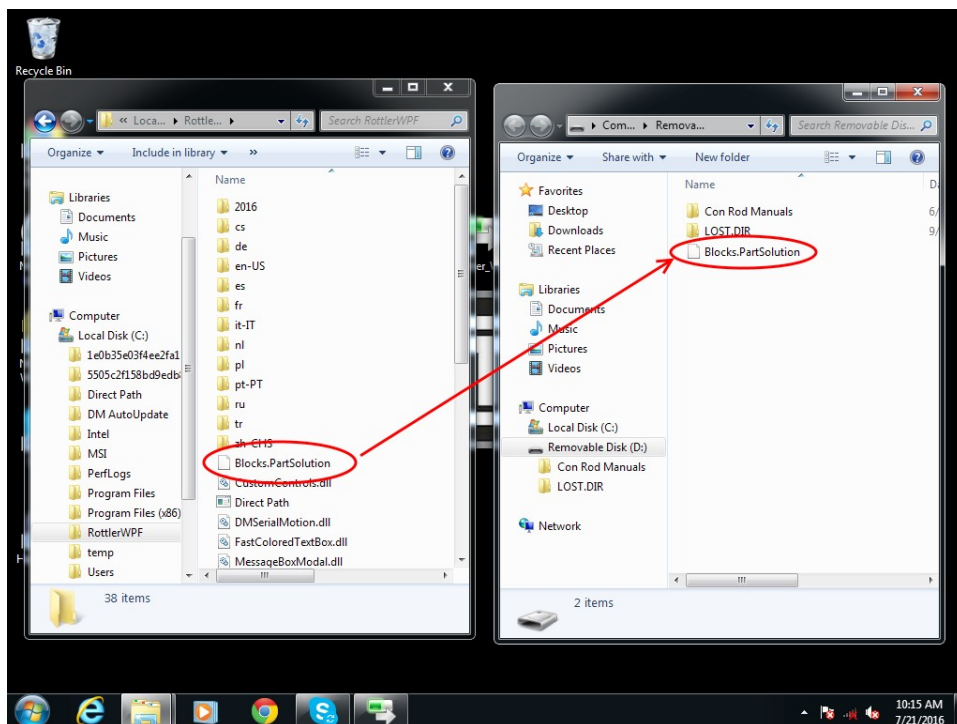
Click on the Open folder to view files option and the following screen will appear. This is the contents of the flash drive you just plugged in.



Next resize and arrange both file browsers so that they are side by side.



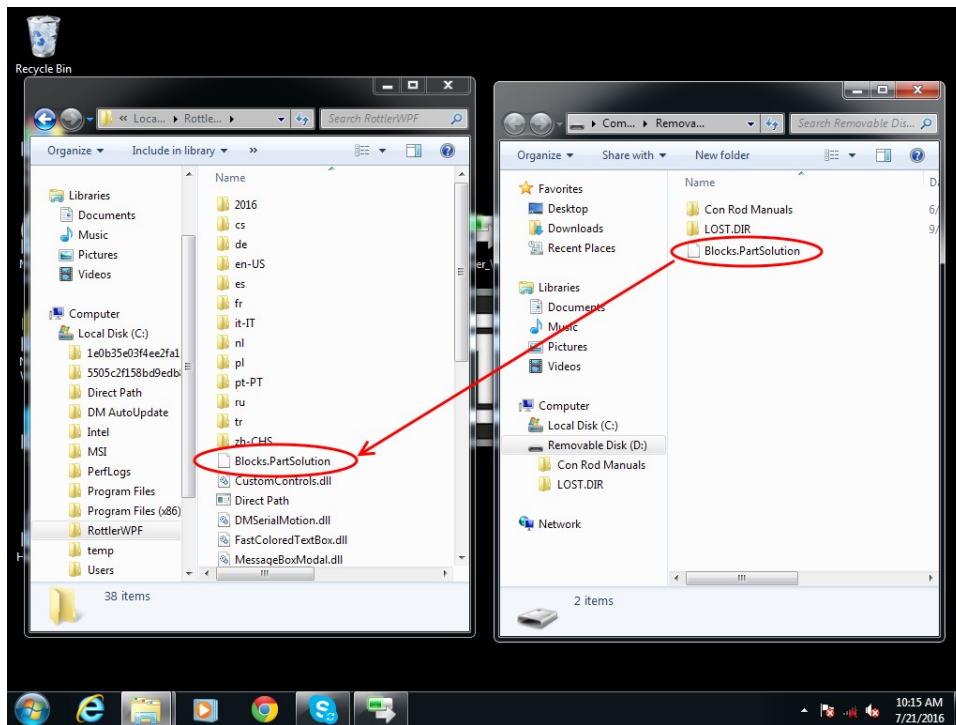
Block profiles are backed up each time the machine is run with the current profiles being shown in the RottlerWPF folder. All that needs to be done to back up the current profile is to simply drag it from the RottlerWPF folder to the flash drive folder. A copy of the file will be placed on the flash drive.



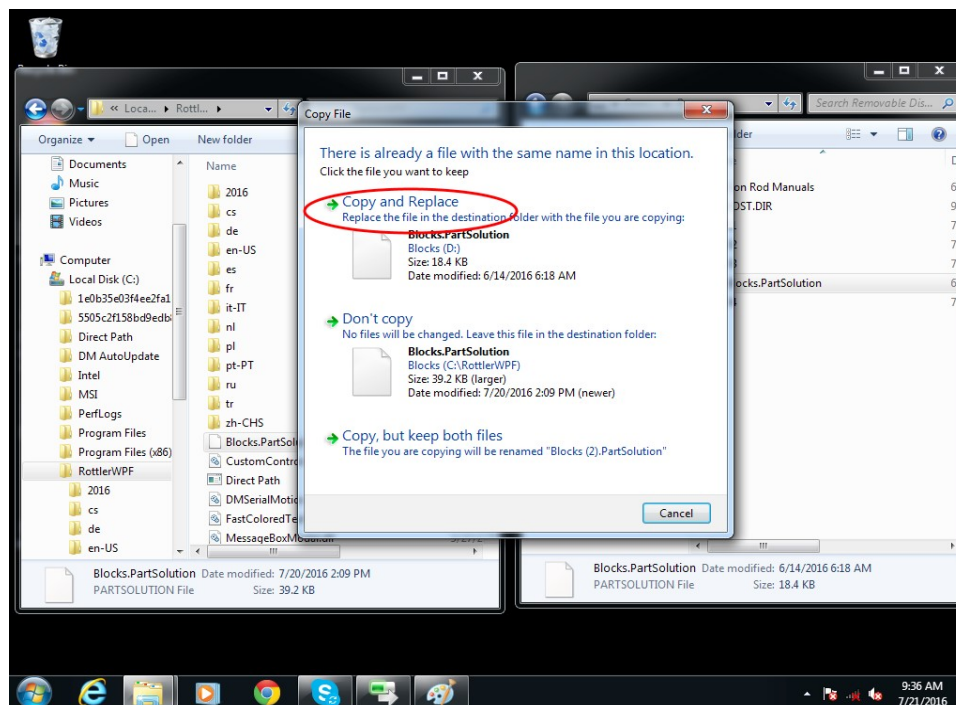
Backup is now complete. Close both file browser windows and remove the flash drive.

To restore or add block profiles go through the first 5 steps explained previously.

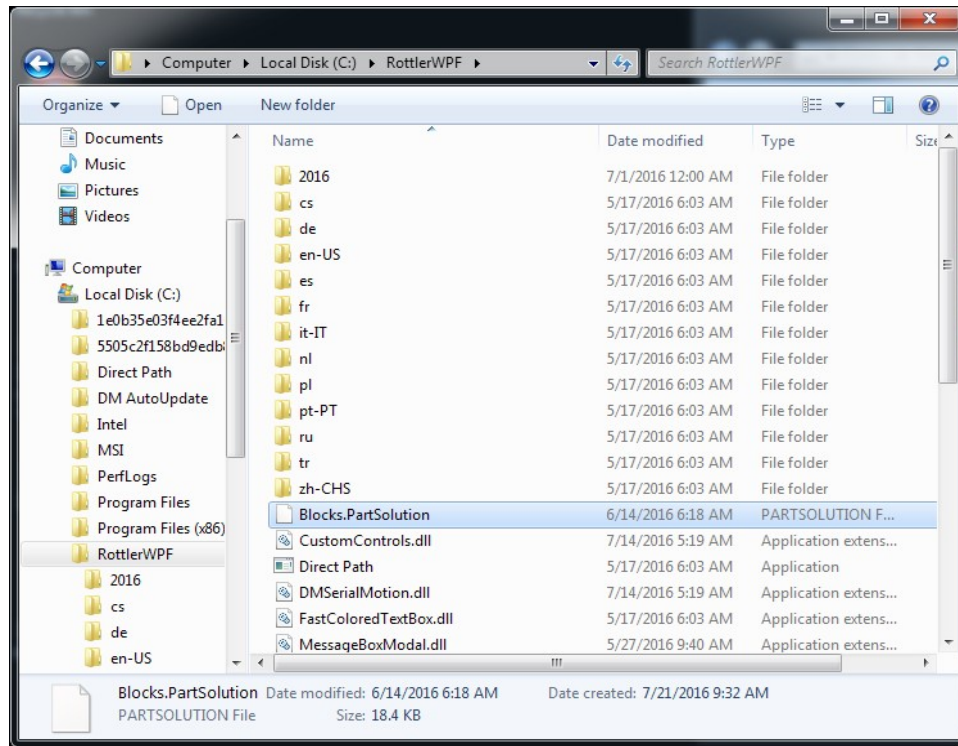
Highlight the block profiles file in the flash drive and drag it into the RottlerWPF folder on the local hard drive.



You will get a pop up window about there being a file of the same name in the destination folder. Click on the Copy and Replace option.



The archived block profiles will now be installed.



Close both browser windows and remove the flash drive. The restore process is now complete.