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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.

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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

# **MANUAL SECTIONS**

MANUAL SECTIONS	3
INTRODUCTION	4
Introduction	4
To validate the warranty on your new Rottler machine, please be sure to sign and comp	lete
the "Installation Report" located in the Installation Chapter of this manual	4
Description	5
Disclaimer	5
Limited Warranty	6
Online Documentation Access	7
INSTALLATION	1
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	tho
machine is operating correctly and given the operators operation and maintenance trai	ning.
machine is operating correctly and given the operators operation and maintenance trai	ning.
machine is operating correctly and given the operators operation and maintenance trai	ning. 2 3
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup	ning. 2 3 8
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup Location	ning. 2 3 8 8
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup Location Unpacking and Lifting	ning. 2 3 8 8
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup Location Unpacking and Lifting. Placement and Leveling.	ning. 2 3 8 8 8
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup Location Unpacking and Lifting Placement and Leveling Power Supply and Electrical Wiring	ning. 2 8 8 8 8 8
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup Location Unpacking and Lifting. Placement and Leveling. Power Supply and Electrical Wiring Grounding.	ning. 2 8 8 8 8 8 
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup Location Unpacking and Lifting Placement and Leveling. Power Supply and Electrical Wiring Grounding. Transformer Connections	ning. 2 3 8 8 8 8 9 10 10
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup Location Unpacking and Lifting. Placement and Leveling. Power Supply and Electrical Wiring Grounding. Transformer Connections	ning. 2 3 8 8 8 8 8 9 10 10
machine is operating correctly and given the operators operation and maintenance trai INSTALLATION REPORT Installation and Machine Setup Location Unpacking and Lifting Placement and Leveling. Power Supply and Electrical Wiring Grounding. Transformer Connections Air Supply	ning. 2 3 3 8 8 8 8 8 8 8 8 8 8 9 10 10 10 10 11

# INTRODUCTION

### 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 **F10XS** read the **CONTROL DEFINITIONS** to get an idea how the machine operates.

The Operating Instructions chapter should be read 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 F10X 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 model F10XS Boring and Surfacing Machine is a precision multipurpose CNC machine tool for remanufacturing Engine Blocks, Cylinder Heads, and other various automotive components.

The F10XS can be equipped with various optional equipment including fixtures and tooling for reboring and re-surfacing most American passenger car and truck engines, various fixtures are available for 90-degree V-blocks, 60-degree V-blocks, as well as inline 4 and 6 cylinder blocks commonly found in Asian and European auto manufacturers.

This machine is designed for two purposes:

- 1. Re-boring and sleeving cylinder bores to factory or remanufactured block specification.
- 2. Milling and re-surfacing of cylinder block and head deck surfaces to within factory flatness and surface finish specifications or better.

The machine overcomes challenges in remanufacturing by utilizing efficient fixturing options designed to reference key factory datums such as the main bearing locations, engine block pan rail, and fire deck surfaces. Ultimately providing an often better than factory result for critical alignments.

The F10XS incorporates a highly capable modern CNC control with "point and shoot" programming comprised of canned cycles for, **Cylinder Boring**, **Surface Milling**, and Lower Receiver Boring. The CNC control takes user data for feeds and speeds, material removal amount, and hole locations to process cylinder blocks and heads automatically without operator intervention.

The programmable CNC control and efficient fixturing makes this machine perfect for the automotive job shop where flexibility and labor efficiency are critical to business success. One operator can process a typical American V8 in 30 minutes or less without the use of multiple machines that would encroach on valuable floor space.

### Disclaimer

The F10XS 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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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 training of Rottler equipment.

### **Limited Warranty**

Rottler Manufacturing Company Model F10XS parts and equipment is warranted as to materials and workmanship. This limited warranty remains in effect for one year from the date of installation or two years from the date of the original shipment from Rottler or whichever date occurs first. This only applies is the machine is owned and operated by the original purchaser and is operated and maintained as per the instructions in the manual. A machine is warranted only if the Installation Report has been properly executed by a certified installation person and received by Rottler at the time of actual installation.

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

Merchandise cannot be returned to Rottler without prior approval. Customers 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 an RGR **DOES NOT** guarantee credit - it is only authorization for the return of the goods. Credit for return merchandise is at the sole discretion of Rottler. Credit will be issued only after inspection of returned goods.

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

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

## **Online Documentation Access**

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

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



Use of this site is subject to Terms of Use which constitute a legal agreement between you and Rottler Manufacturing, LLC. Privacy Statement

# **INSTALLATION**

# **ATTENTION OWNER/BUSINESS MANAGER**

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

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

ROTTLER MANUFACTURING	INSTALLATION REPORT		
DATTLED	F10X		
	REV 010924		
OFFICE USE ONLY			
Route to:			
Orders Notified Eng Mgr Srvc Mgr Assem M	/Igr Andy Srvc Filing		
Warranty Exp Date			

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

Customer:		Address:		
City:		State:	Zip:	Phone:
Country:		_		
Machine Model:	Serial Number:			
Representative:		MACHINE INST	ALLATION: EI	ectrical information MUST

be complete to validate this report.

**CAUTION** WERY IMPORTANT: Modern design machines contain electronic low voltage circuitry that provides great advantages and a better machine life. **BUT**, you must have an excellent, stable power supply along with good earth ground. If not, electrical noise problems are likely to interfere with machine operation unexpectedly.

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

- **BEFORE** turning power on to the machine. Check all wires for security by using the correct screwdriver and turning CW until movement stops. Stranded wire can "spread" slightly from vibration during transport.
- Install electrical component covers inside the electrical enclosure with fasteners provided. Check machine level for equal support on feet.
- This machine requires between 208 and 240 Volts AC, Single Phase, 50/60 Hz power supply.
- \_\_\_\_\_Measure the incoming voltage between L1 and L2. Current requirements for this machine are 30 amps. Measure the incoming AC voltage at least twice during installation.

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.



1) \_\_\_\_

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



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

- Air of the proper pressure and capacity connected to the machine. Air supply must be free from oil and water. Oil or water will damage electrical and air components. A pressure of at least 80 PSI will use 1 cu. Ft./min. Maximum.
- Each main system is protected internally by circuit breakers. Green the breaker is "tripped" and red indicates the breaker is "Hot" (conducting electricity).
  - Loosen the shipping bolt and adjust in accordance with the machine manual.
- Clean any rust inhibitor from the machine surfaces. Slide the spindle base from side to side continually cleaning the machine base until all inhibitor is removed.
- 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**

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 at the main disconnect switch located on the rear enclosure. If any of the circuit breakers "trip", reset and call factory for possible trouble shooting.

### MACHINE MOVEMENTS

- Make sure there is nothing obstructing the full vertical and horizontal travel of the machine.
- Loosen the Castle Nut for The Spindle Base Workhead and Set Cotter Pin on Lowest Setting Allowed Perform the Inner and Outer spindle adjustments per the instructions in the manual. NOTE: These adjustments must be performed at machine start-up, or the machine performance will not be as advertised
- Put the machine in hand wheel mode and verify operation. Put an indicator on the cutter head and verify .001" movement per detent in coarse mode and .0001" in fine mode. If the indicator is jumpy the outer spindle adjustment may be too tight. Refer to manual and re-adjust.
- Put machine in handwheel mode and verify Horizontal operation. Put an indicator on the cutter head and verify .001" movement per detent in coarse mode and .0001" in fine mode.
- \_\_\_\_Use the rapid buttons and verify proper vertical travel.
- \_\_\_\_Start spindle and verify proper operation through RPM range
- \_\_\_\_\_Move the machine to its horizontal limits and verify operation.
- \_\_\_\_\_Move the machine to its vertical limits and verify Home and down limit operation.
- \_\_\_\_\_Check the spindle sweep of the machine. It should be within .0005" in all directions
- Engage Mill Wedge and Verify Spindle Tilt Amount of .002-.003" at Left Spindle orientation and 7" away From spindle centerline radially.

### INSTRUCTING THE OPERATOR:

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

Using the operating manual as a guide explain the function of all buttons.

- \_\_\_\_Cycle all machine movements and supervise the handling of same by operator.
- \_\_\_\_\_Demonstrate the differences between Manual Jog and Centering and Auto-cycle operation.
- \_\_\_\_\_Fully explain the entire Auto Cylinder Boring Cycle from Centering to Auto Retract.

\_\_\_Fully Explain the entire Auto Mill Cycle from Touch off to Finish Pass

Explain machine parameters and error messages. It is very important that the customer does not change parameter settings without first checking with Rottler Manufacturing. If certain parameters are changed the machine may make uncontrolled move or not operate at all.

Point out safety features to customer and operator. Do not push any buttons without thinking of safety first. **Caution**: Do not assume the cutterhead micrometer has been calibrated.

Install a work piece in the machine and perform an undersized test bore to qualify the micrometer setting to the customers measuring tools. Note adjustments: +

Explain micrometer best practices and setting of tool in cutterhead.

The following is a checklist to go through every time the machine is started to begin a cut or automatic cycle.

- Work Piece Secure
- Correct Program Selected
- Program Zero's Set/Correct
- Spindle RPM Set/Correct
- Feed rate Set/Correct
- Centering Range Adequate for Boring
- Cutterhead Centered for Milling
- Guards in place
- Cutterhead secure
- · Tool holder adjusted to the correct size
- Tool holder locked in place

Proceed to have operator bore block and check final size.

- Explain the difference between various boring inserts and their applications. Refer the customer to the Cutting Inserts Bulletin for further details.
- Explain the difference between various surfacing inserts and their applications. Specifically CBN and PCD for Cast Iron and Aluminum Applications. Refer the customer to the Cutting Inserts Bulletin for further details.
  - \_\_\_\_Demonstrate Changing Tools between Boring bars and Fly Cutters and Vis Versa.

Parts ordering, refer the to the operating manual for part numbers and description.

\_\_\_\_Review Emergency stop procedure with operator per operating manual.

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- Computer Viruses will cause the machine control system to become unstable. This may cause the machine to make uncontrolled moves which could create a dangerous environment for the machine operator.
- \_\_\_\_Connect customer supplied Internet to the machine. Verify that the Internet is accessible from the machine.
- Connect and check name on the LOGMEIN client to ensure remote access will be viable

# **IMPORTANT**

Refer to Section 4, Control Definitions of the Machine Manual, Section 3, Computer and Controller System Safety. Explain and discuss this section carefully with Owner/Manager/Operator and have them sign off. Failure to do so will result in the machine warranty being Null and Void.

Signature / Title

Explain to the customer the importance of backing up the block profiles to a separate device. Any computer failure or possible operator input error can result in the loss of all block profiles that were created for the machine. Refer to Chapter 5 of the machine manual for detailed instructions on backing up and restoring block profiles.

### MAINTENANCE SECTION

\_\_\_\_\_Use the manual as a reference when explaining routine maintenance and lubrication.

- Overload devices, There are no mechanical overload devices on this machine. The machine is protected from overload by the motor controllers. If the system is overloaded the controllers shut the motors off. The controllers can be reset by turning the main power off for at least 1 minute, then turning it back on.
- \_\_\_\_\_Explain again the proper Inner and Outer spindle adjustment to the operator.
- \_\_\_\_Air float adjustment.
- \_\_\_\_Cutterhead counterweight cleaning.
- \_\_\_\_Centering and finger changing.
- Inspection of insert pocket in tool holders (deformation due to accidental impact).

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.

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

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

Instructions given to:	
Sales/Service Technician:	Date
Shop Foreman/Superintendent or Owner:	Date
Once completed e-mail this form to:	
service@rottlermfg.com	

### Installation and Machine Setup

### Location

Care should be taken when selecting the location of the F10XS in the shop. A minimum of 24" of space should be left on the sides of the machine and 36" should be left between any objects at the rear of the machine. This will ensure proper space in the event of maintenance being needed. If there is not enough space left around the machine and specifically behind the machine, Rottler service technicians may deny service until space constraints are resolved.

It is recommended that a slow travel (6' to 10' per minute) power hoist operated from either a jib crane or bridge crane arrangement is used in the area that the F10XS is placed. In general, a 1,000lb hoist is adequate for lifting all fixtures and workpiece to be machined on the F10XS.

### **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 Toolbox, Parallels and Optional Equipment crates from the machine. Remove all tie-down bolts that secure the machine to the shipping skid. Use a 5000lb forklift with 6-foot minimum forks to pick the machine up from the front and off the shipping skid. It is not recommended to ever lift the F10XS from the rear of the machine as damage to the electrical enclosure could occur.

### **Placement and Leveling**

Move the machine to the selected location to be placed. While the machine is off the ground, run the 4 leveling bolts down to equal heights. Approximately 2 inches of thread should be exposed beneath the support locations.

There are 4 leveling pads supplied with the F10XS. Place the leveling pads on the floor beneath the machine so that the leveling bolts rest on the pads when the machine is set on the floor on its own weight.

Level the machine using a quality machinists' level. A level with a .001"/foot resolution should be used at minimum. It is recommended to level the machine front to back first and then left to right. Failure to correctly level the machine may result in issues with centering and cutting. It is recommended to check the machine for level after it has settled for 24 hours, and then again after 2 weeks and adjust as needed.



## **Power Supply and Electrical Wiring**

This machine has the following power requirements:

- 208 to 240 VAC
- Single Phase Power
- 50 or 60 Hz
- 30 Amps

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

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





### Grounding

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

## **Transformer Connections**

This machine has the following minimum transformer size requirement:

• 10 kVA

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



### Air Supply

**Note:** It is very important that the air source for the F10XS machine is moisture free. Water and/or oil in the line will result in early cylinder or valve failure. It can also cause premature corrosion and rust to the work head float area.

Attach a 90-100 PSI air source to the main side of the air regulator located on the lower right side of the machine. Adjust the regulator after connecting the air to make sure it is between 90-95 PSI.



### Shipping Bracket Removal and Cleaning

Remove all Red Shipping brackets from the machine.

Remove all rust inhibitor from machine surfaces and metal components. A moderate degreaser or simple green may be used for this. To save time a plastic scraper may be used to remove a bulk of the rust inhibitor prior to wiping with solvent and shop towels.

Allow the degreaser or simple green to soak into the applied surfaces for a few minutes prior to wiping to aid in removal of the inhibitor.

Note: It is critical that all rust inhibitor is removed from surfaces it was applied to at the factory. Failure to do so will result in considerable amounts of debris collecting on the surfaces which will cause premature wear, especially to float and sliding surfaces such as the work head.

Once all the rust inhibitor has been removed, apply way oil and/or WD-40 to all metallic surfaces such as the machine base, way covers, and float plate. This will ensure that these surfaces do not rust.

Remove the sheet metal cover from the rear of the Spindle Base by removing the four (4) round head Allen screws.

#### Spindle Base Adjustment and Test

Pull out the cotter key from the Castle nut located in the center of the Spindle Base and loosen the nut.

Turn the machine on and open the program. Select **Neutral Clamp**, hand tighten the castle nut to take out all the play in the clamp assembly. Loosen the nut approximately 1/12 of a turn. Place the cotter key in the nearest slot of the castle nut.

Test the machine by placing it in **Float**. The work-head should move freely on the float plate with approximately 3 inches of travel. Place the machine in **Full Clamp** and check to make sure that the work-head cannot be moved in any direction