

# Outside Diameter Mount Flange Facing Machines Operating Manual

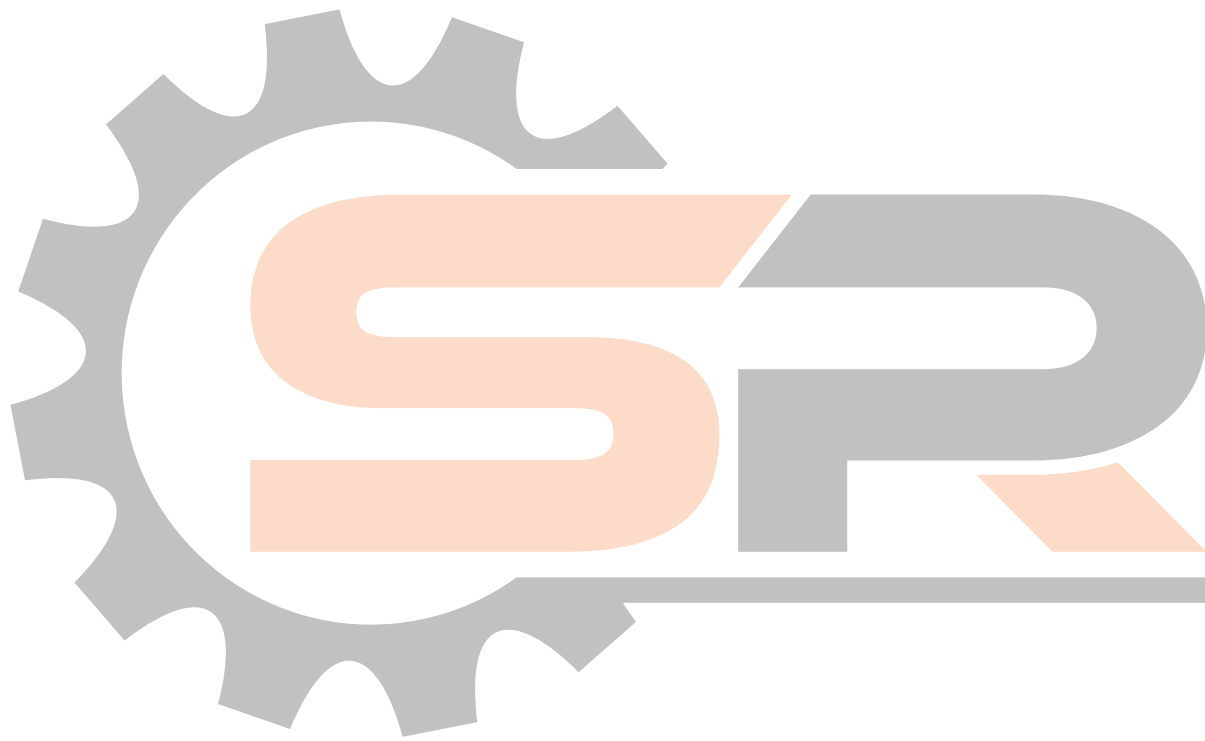


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## ABOUT US

Superior Plant Rentals, LLC. (SPR) specializes in portable machining, bore welding, line isolation, and testing solutions, providing equipment and tools manufactured under the highest standards of quality control and engineering expertise along with 24/7 service and support. Designed with the operator in mind, our tools and equipment deliver dependable and precise performance, providing cost-effective solutions and reduced downtime, making them beneficial resources in the Oil and Gas, Mining, Heavy Construction, Shipbuilding, Aerospace, Defense, and Power Generation industries.

SPR rents and sells equipment and tools; we offer our own line of portable ID/OD flange facers, linear/gantry and rotary mills, end prep bevelers, isolation and test plugs, line boring, and bore welders, as well as custom-designed equipment and tools.

Our team includes machining, test and isolation, and engineering experts, all with a thorough working knowledge of applications to support you with our equipment on any job. We understand the urgency of your projects and are committed to delivering the highest quality equipment and tools to satisfy the requirements of your clients.

SPR delivers outstanding customer service, specialized training by seasoned professionals, and tools as tough as the jobs you need them to do.



**WARNING:**

SPR is committed to continued product improvement; therefore, the machine you received may be slightly different than the one described herein. This manual and the information provided is a basic guideline for our customers. SPR will do its best to ensure that the information and procedures contained in this manual are correct and up-to-date. Superior cannot guarantee that the information and procedures contained herein are correct for all applications or situations.

The contents of this manual are subject to change without notice. It is the obligation of the user to read all information in this manual, become familiar with the equipment to be used, and exercise the utmost care in equipment operation. **Do not make any modifications to this equipment. Any modifications will void all warranty claims, as well as increase the risk of injury or harm.** Do not operate this equipment if all parts are not functioning at 100% efficiency. Notify us immediately for any needed repairs.



***Note: SPR will supply all repair and replacement parts necessary for maintenance and operation of this machine. For repair, service, or additional information, please locate repair and replacement part description/part numbers within the O&M manual in the exploded view section and contact us for ordering.***

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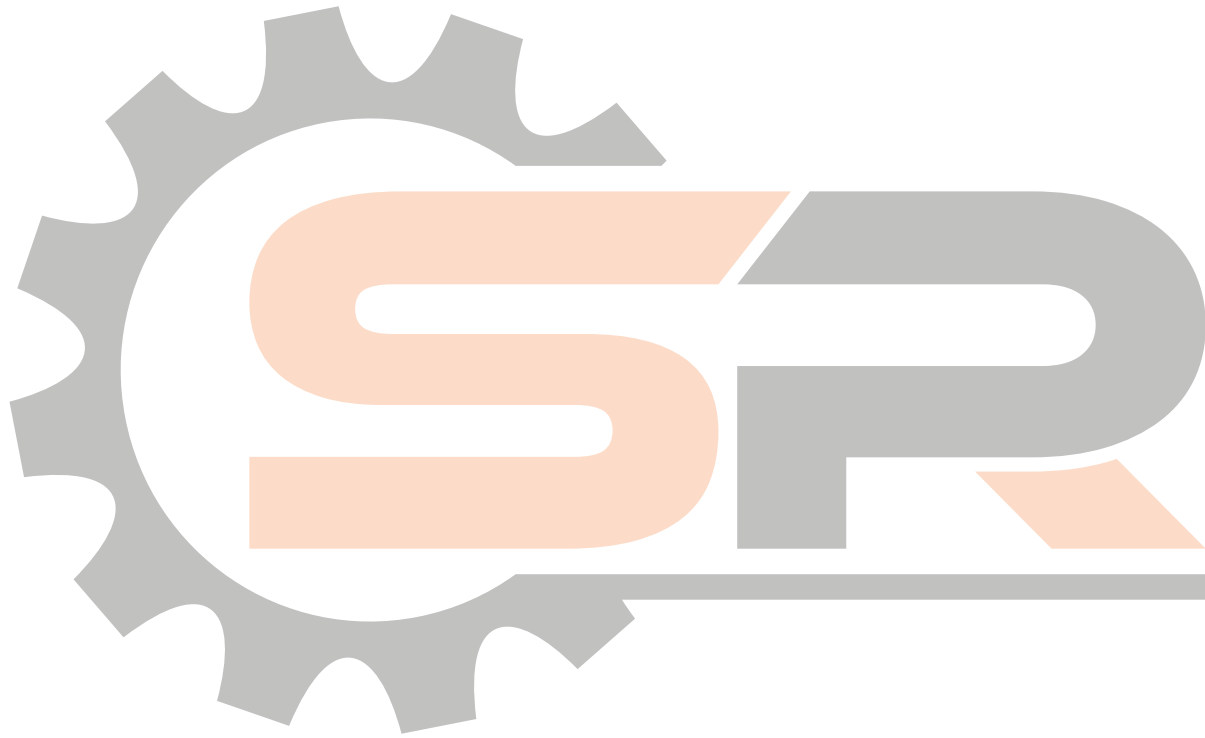
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## INTRODUCTION

### APPLICATIONS

SPR's OD Mount Flange Facers (ODFFs) are designed to cover a wide range of applications with operator efficiency built into the overall design, rigging, and packaging of each unit. SPR's machines are belt-driven with adjustable cam bearings, driven with a pneumatic motor, allowing them to be used in more precise applications.

**When you receive the OD Mount Flange Facer:** The ODFF is generally shipped in one crate. Inspect the machine for shipping damage. Verify that all of the parts listed below, or on the Bill of Materials, are present. If any parts are missing, or if you have questions regarding the ODFF, please contact a Superior Plant Rentals or SPR York location nearest you immediately.



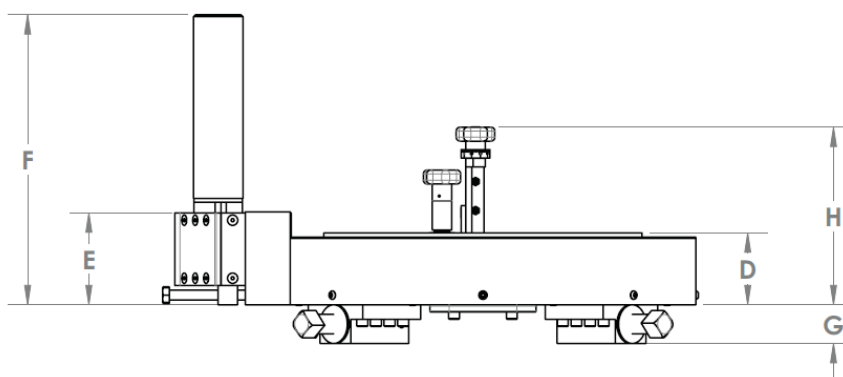
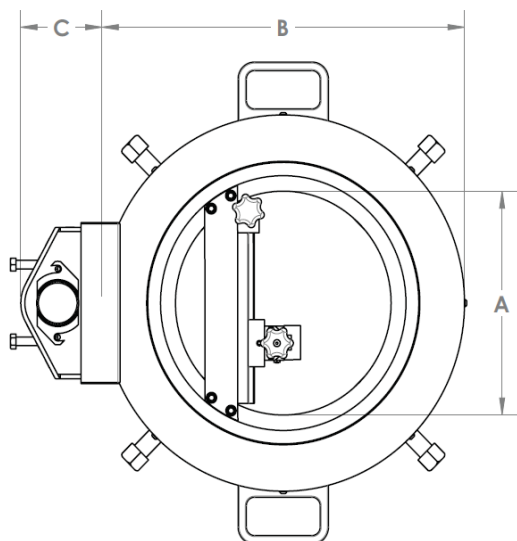
# SPECIFICATIONS CHART

Aluminum FF	A	B	C	D	E	F	G	H
AFF 10"	10.125" (257.175 mm)	15.5" (393.7 mm)	4" (101.6 mm)	2.313" (58.75 mm)	2.563" (65.1 mm)	13" (330.2 mm)	1.25" (31.75 mm)	7.5" (190.5 mm)
AFF 13"	13.125" (333.375 mm)	22" (558.8 mm)	2.75" (69.85 mm)	3.75" (95.25 mm)	5" (127 mm)	15" (381 mm)	2" (50.8 mm)	9.5" (241.3 mm)
AFF 16"	16.125" (409.575 mm)	25.5" (647.7 mm)	2.75" (69.85 mm)	3.75" (95.25 mm)	5" (127 mm)	15" (381 mm)	2" (50.8 mm)	9.5" (241.3 mm)
AFF 20"	20.125" (511.175 mm)	29.75" (755.65 mm)	2.75" (69.85 mm)	3.75" (95.25 mm)	5" (127 mm)	15" (381 mm)	2" (50.8 mm)	9.5" (241.3 mm)

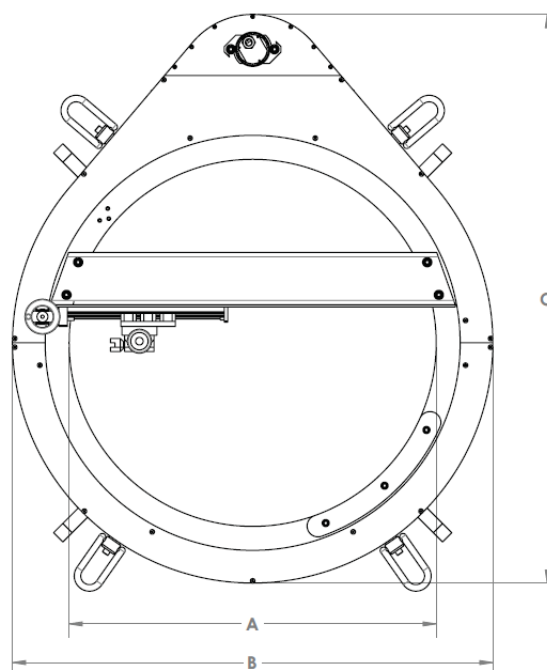
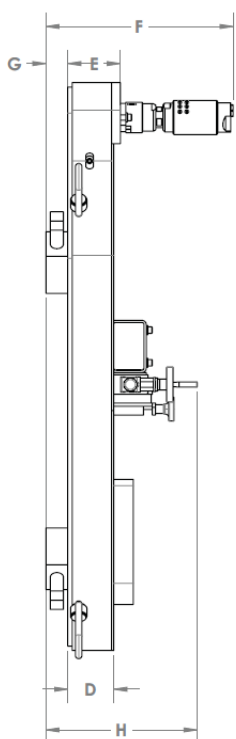
Steel FF	A	B	C	D	E	F	G	H
SFF 21"	21.125" (536.575 mm)	34.5" (876.3 mm)	41.5" (1054.1 mm)	4.375" (111.125 mm)	5" (127 mm)	20" (508 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 30"	30" (762 mm)	43.375" (1101.725 mm)	57" (1447.8 mm)	5.25" (133.35 mm)	5.75" (146 mm)	20" (508 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 32"	32.125" (815.975 mm)	45.125" (1146.175 mm)	67.25" (1708.15 mm)	5.25" (133.35 mm)	5.75" (146 mm)	20.75" (527 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 40"	40" (1016 mm)	54.625" (1387.475 mm)	67.25" (1708.15 mm)	5.25" (133.35 mm)	5.75" (146 mm)	20.75" (527 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 42"	42.125" (1069.975 mm)	54.625" (1387.475 mm)	67.25" (1708.15 mm)	5.25" (133.35 mm)	5.75" (146 mm)	20.75" (527 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 52"	52.125" (1323.975 mm)	66.75" (1695.45 mm)	79.5" (2019.3 mm)	5.25" (133.35 mm)	6.25" (158.75 mm)	21.25" (539.75 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 62"	62.125" (1577.975 mm)	75.25" (1911.35 mm)	88.25" (2241.55 mm)	5.25" (133.35 mm)	6.25" (158.75 mm)	21.25" (539.75 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 72"	72.125" (1831.975 mm)	83.375" (2117.725 mm)	97" (2463.8 mm)	5.25" (133.35 mm)	6.25" (158.75 mm)	21.25" (539.75 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 82"	82.125" (2085.975 mm)	95.25" (2419.35 mm)	108.25" (2749.55 mm)	5.25" (133.35 mm)	6.25" (158.75 mm)	21.25" (539.75 mm)	3.5" (88.9 mm)	13.5" (342.9 mm)
SFF 102"	102.125" (2593.975 mm)	115.625" (2936.875 mm)	128.75" (3270.25 mm)	5.5" (139.7 mm)	6.5" (165.1 mm)	21.75" (552.45 mm)	3.5" (88.9 mm)	14" (355.6 mm)



### Aluminum Flange Facer (AFF)



### Steel Flange Facer (SFF)



## SAFETY PRECAUTIONS

The operator must read and understand this entire manual before attempting to operate any SPR O.D. mount machine. Failure to do so and to follow all safety precautions may result in serious personal injury and/or damage to the equipment.

When operating the O.D. mount machines, follow the safety guidelines below:

- Always follow company and OSHA safety rules.
- Guards and covers must be securely in place during machine use. If removed for inspection purposes, they must be reinstalled before machine operation.
- Never attempt to disconnect or override the safety features or mechanisms on the machine.
- Before operating the machine, you must receive training specific to the safe operation of this machine by a qualified person.
- Do not operate the machine while under the influence of drugs or alcohol.
- Protective clothing must be worn, including safety glasses, steel toe footwear, ear plugs, gloves, and proper clothing.
- Loose clothing, jewelry, and long hair must be kept away from the machine during operation. Personal injury may occur.
- Obey all warnings sign and labels.
- Stay clear of all rotating and moving parts. Never reach or lean into an operating machine.
- Do not use the machine in any hazardous environments, such as radiation areas, flammable or explosive areas, and around toxic fumes.
- Only use this machine for it's intended use. Do not modify or change any parts on the machine without written permission from SPR personnel.
- Keep all cords, hoses, lanyards, etc. away from moving and rotating parts.
- Establish a work zone around the vicinity of the machine. Keep this area clean and free of any debris, or any other persons not involved in the safe operation of the machine.
- Do not place hands or any other body parts on any sharp edges on the machine while the machine is operating.
- Disconnect the air source before changing tool bits or performing any machine set up, disassembly, or maintenance.

- Make sure all components are securely tightened before starting the machine.
- Make sure the work piece is stable and can fully support the weight of the machine before mounting.
- Only lift the machine at designated points with proper lifting equipment, straps, chokers, etc., and use tag lines when necessary.
- Close air control valves before connecting the air supply lines to the air motor.
- Use only proper air supply lines with 90 psig and follow all OSHA guidelines.

**For maximum safety and performance, read the entire instruction manual before operating this machine.**



**WARNING!**  
**MOVING PARTS.**

Keep hands, loose clothing, and hair away from rotating or moving parts. Disconnect the air supply from the machine and unplug all equipment prior to adjusting or servicing. If electric, remove power from the machine prior to adjusting or servicing.



**WARNING!**  
**ELECTRICAL SHOCK.**

Possible shock if not handled properly.



**WARNING!**  
**KEEP DRY.**

Keep all equipment and components away from any water source.



**WARNING!**  
**EYE PROTECTION.**

Eye protection must be worn while operating or working near powered equipment.

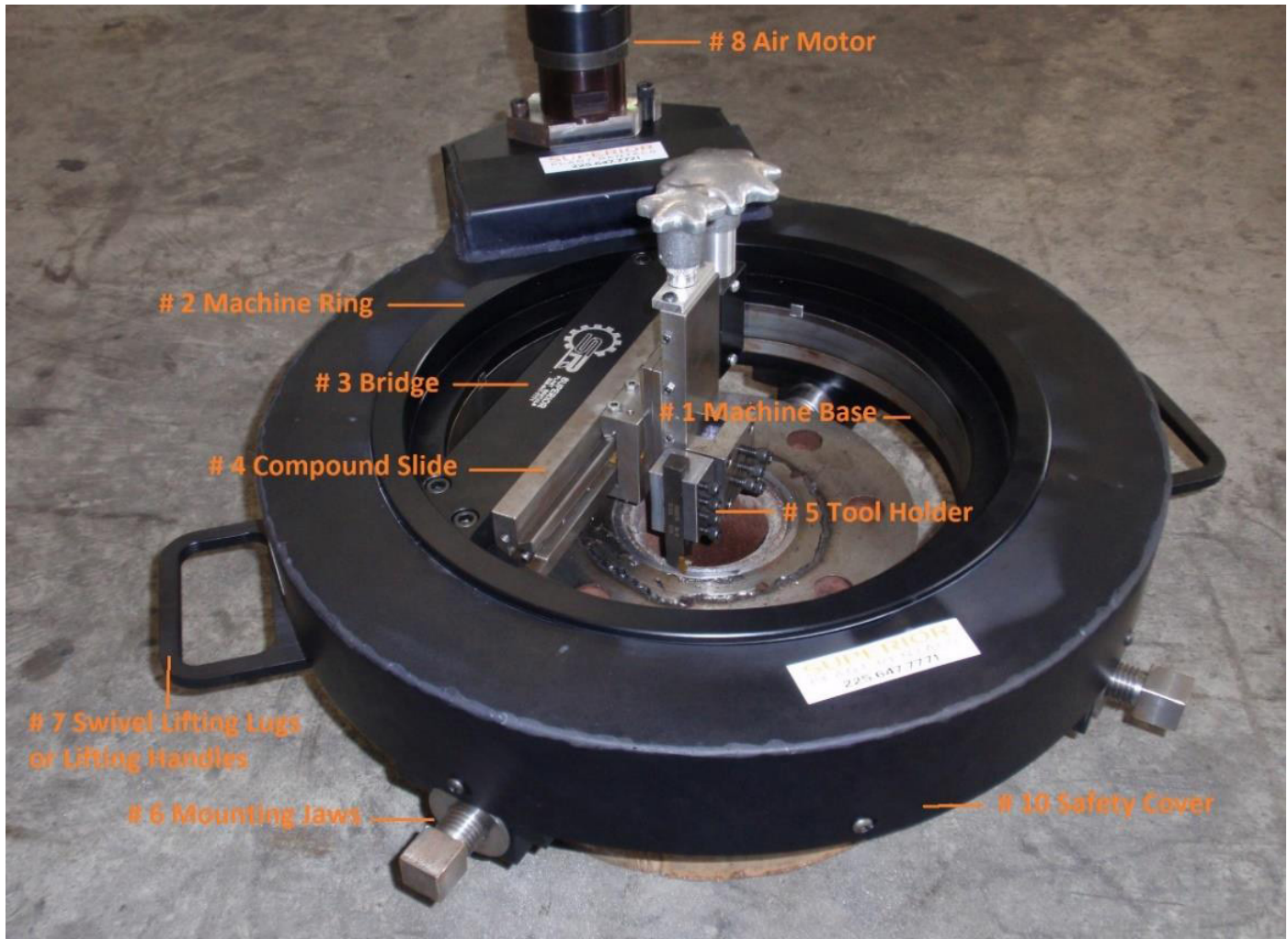


**WARNING!**  
**EAR PROTECTION.**

Ear protection should be worn while operating or working near loud equipment.

## GENERAL OVERVIEW

The Superior Plant Rentals outside diameter mount machines can perform a variety of flange facing operations including facing, boring, beveling and different RMS finishes. It can machine raised face, flat face, male/female, lens rings, Graylocs, and Ring Type Joint flanges as well as exchangers and others.



## MACHINE COMPONENTS

1. **Machine Base** - The base is designed to allow the machine to operate with minimal deflection and vibration.
2. **Machine Ring** - The ring is designed to resist the loads and forces generated from the tool pressure, bearing loads, and rotational forces of the machine.
3. **Bridge** - The bridge is attached to the ring and holds the compound and slide.
4. **Compound and Slide** - Holds the tool holder and is used to perform the cutting operation. It allows different machining configurations and RMS finishes to be accomplished.
5. **Tool holders** - Several different tool holders are provided depending on which type of flange needs to be machined.
6. **Mounting Jaws** - Two type of jaws are used; fixed and adjustable. The jaws are used to securely mount the machine to the work piece and align the machine to the flange.
7. **Swivel Lifting Lugs or Lifting Handles** - Used to lift the machine into place. Small aluminum machines have lifting handles instead of swivel lifting lugs.
8. **Air Motor** - Used as the driving force to rotate the machine. It rotates the machine with the combination of vee belts and pulleys.
9. **Air Caddy and Hose (not shown)** - Used to provide the air motor with dry compressed air and lubrication. The valve on the hose is also used to turn the machine rotation on and off.
10. **Safety Cover** - Used to protect the operator from rotating parts and keeps dirt and debris from getting into the bearings.

## SET-UP AND OPERATION

While setting up the machine, make sure the air supply line is disconnected to prevent accidental start up while hands are being placed inside the machine.



**Note:** *Chips and shavings created during the cutting process can be extremely sharp and can cause lacerations. Do not grab chips. Take precautions and use a brush to sweep and pick up these chips.*

### SELECTING THE RIGHT MACHINE

- Measure the largest diameter of the workpiece or flange to be machined.
- Choose the machine that has an inside diameter larger than the diameter measured.

### MACHINE SET UP

- Using the measurement taken above, position the jaws on the machine so that they are spaced far enough apart to mount to the outside diameter of the flange.
- Lift the machine into place so that the jaws are near the flange O.D.
- Tighten the jaws so that they come in contact with the outside edge of the flange while keeping the machine centered to the flange and in the right plane.
- Using an indicator placed on the tool holder or slide, slowly rotate the machine to check the position of the machine to the flange plane.
- Adjust the machine parallel to the flange face so that opposite readings of the indicator 180 degrees apart are equal to each other and the machine is in the same plane as the flange.
- Measure the distance from the inside edge of the ring to the gasket edge on opposite sides and adjust the jaws to center the machine if necessary. Go back and re-indicate the machine in the proper plane if necessary.
- Once the machine is centered and in the proper position, tighten the jaws for the cutting operation.

## SETTING UP THE TOOL BIT

- Choose the correct style tool bit to be used for this flange surface.
- Use an indicator on the machine and place it on the flange surface. Rotate the machine to find the high spot on the flange.
- Remove the indicator and rotate the machine until the tool holder stops at the location over the high spot on the flange.
- Place the tool bit in the tool holder and move it down until it lightly touches the flange surface. Tighten the tool bit in the holder.
- Using the handle on the cross slide, turn the handle to travel the tool bit off of the flange surface.
- Place the indicator on the tool holder or slide and dial down the desired depth of cut.
- Remove the indicator to allow for the cutting process.

## MAKING A CUT ACROSS THE FLANGE

- Make sure the valve is in the closed position and connect the air hose to the air motor.



**Note:** *When opening air supply valves, sudden start up of rotation can occur. Slowly open air valves at first, to eliminate this possibility.*

- Open the valve on the air motor until the desired rotational speed is achieved.
- On every rotation of the machine, turn the handle on the cross slide approximately 1/8 of a turn so the tool bit travels across the flange surface.



**NOTE:** *This can be achieved without the use of hands by using the “hands free attachment” and gears.*

- If necessary, increase or decrease the amount of turn on the handle to achieve the proper RMS finish needed.
- Keep turning the handle until the tool bit cuts across the whole flange surface.
- If the flange surface still has areas that did not clean up or get machined, dial in another depth of cut and proceed again by following the steps above and make another cut across the surface. Continue this until the flange is completely machined and the RMS surface finish is achieved.

## MACHINE REMOVAL AND CLEAN-UP

- Disconnect the air hose from the air motor.
- Using a clean rag, wipe off any oil, water, dirt, and debris on the machine.
- Remove the tool bit and tool holder from the machine.
- Connect the proper lifting straps to the machine before loosening any jaws.
- Loosen the jaws and remove the machine off the flange.
- Clean up the work area.
- Place the machine and other components back in the work box for transport.



## WARRANTY

Superior Plant Rentals, LLC (SPR) warrants that the equipment manufactured by it will: (i) conform to SPR's written specifications and descriptions, and (ii) be free from substantial defects in design, materials, and workmanship for a period of one year from date of shipment to the original buyer, or six months from date of placing in service by buyer, whichever date is earlier.

During this period, if any equipment is proved to SPR's satisfaction to be defective, SPR will, at our sole and absolute discretion, and as SPR's sole warranty liability and buyer's sole remedy, repair, replace, or credit buyer's account for any equipment that fails to conform to the warranties, provided that: (i) SPR is notified in writing within 10 days following discovery of such failure with a detailed explanation of any alleged deficiencies; (ii) SPR is given a reasonable opportunity to investigate all claims; and (iii) SPR's examination of such equipment confirms the alleged deficiencies and that the deficiencies were not caused by accident, misuse, neglect, improper use, unauthorized alteration, repair, or improper testing.

Shipping cost of the alleged defective equipment to SPR is to buyer's account. However, if SPR agrees that the equipment is defective, then pursuant to this warranty, SPR will reimburse buyer its shipping cost to return the equipment to SPR.

The warranty against defects does not apply to: (1) consumable components or ordinary wear items, and (2) use of the equipment with equipment, components, or parts not specified or supplied by SPR or contemplated under the equipment documentation.

The following actions will void the one-year warranty:

1. Repairs or attempted repairs have been made by persons other than SPR personnel, or authorized service repair personnel;
2. Repairs are required because of normal wear;
3. The tool has been abused or involved in an accident;
4. There is evidence of misuse, such as overloading of the tool beyond its rated capacity, use after partial failure, or use with improper accessories.
5. Damage to the motor due to lack of oiler/mister while tool was in use (pending motor type).

## **NO OTHER WARRANTY IS VALID**



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