CE

FF1000

FLANGE FACER

OPERATING MANUAL

SERIAL NUMBER RANGE:
11017900 - 15121870

ORIGINAL INSTRUCTIONS

FF1000 Flange Facer shown

CLIMAX
Portable Machining & Welding Systems

P/N 32139
May 2019
Revision 2

CLIMAX | BORTECH CALDER H&S TOOL

At CLIMAX, we value your opinion. For comments or questions about this manual or other CLIMAX documentation, please e-mail documentation@cpmt.com.

For comments or questions about CLIMAX products or services, please call CLIMAX or e-mail info@cpmt.com. For quick and accurate service, please provide your representative with the following:

- Your name
- Shipping address
- Telephone number
- Machine model
- Serial number (if applicable)
- Date of purchase

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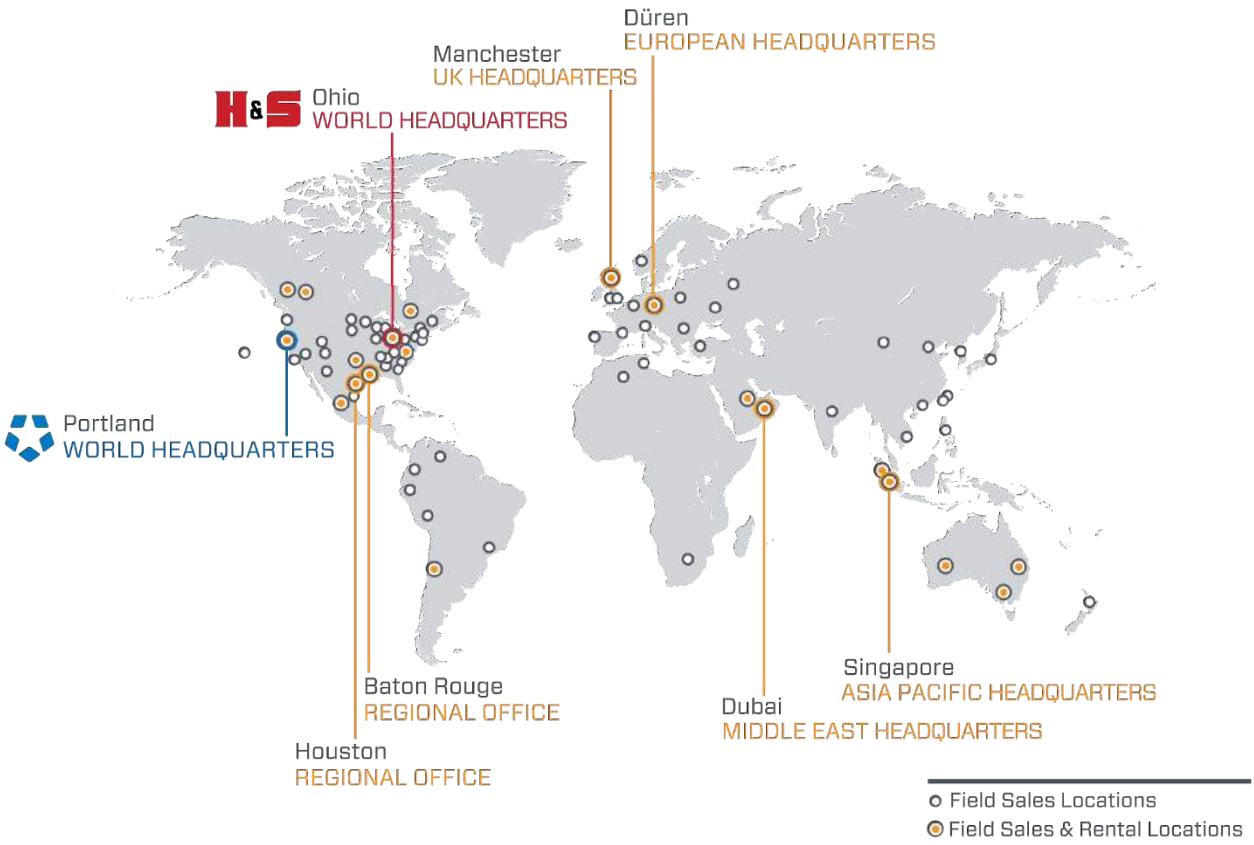

LIMITED WARRANTY

CLIMAX Portable Machine Tools, Inc. (hereafter referred to as “CLIMAX”) warrants that all new machines are free from defects in materials and workmanship. This warranty is available to the original purchaser for a period of one year after delivery. If the original purchaser finds any defect in materials or workmanship within the warranty period, the original purchaser should contact its factory representative and return the entire machine, shipping prepaid, to the factory. CLIMAX will, at its option, either repair or replace the defective machine at no charge and will return the machine with shipping prepaid.

CLIMAX warrants that all parts are free from defects in materials and workmanship, and that all labor has been performed properly. This warranty is available to the customer purchasing parts or labor for a period of 90 days after delivery of the part or repaired machine or 180 days on used machines and components. If the customer purchasing parts or labor finds any defect in materials or workmanship within the warranty period, the purchaser should contact its factory representative and return the part or repaired machine, shipping pre- paid, to the factory. CLIMAX will, at its option, either repair or replace the defective part and/ or correct any defect in the labor performed, both at no charge, and return the part or repaired machine shipping prepaid.

These warranties do not apply to the following:

- Damage after the date of shipment not caused by defects in materials or workmanship
- Damage caused by improper or inadequate machine maintenance
- Damage caused by unauthorized machine modification or repair
- Damage caused by machine abuse
- Damage caused by using the machine beyond its rated capacity

All other warranties, express or implied, including without limitation the warranties of merchantability and fitness for a particular purpose are disclaimed and excluded.

Terms of sale

Be sure to review the terms of sale which appear on the reverse side of your invoice. These terms control and limit your rights with respect to the goods purchased from CLIMAX.

About this manual

CLIMAX provides the contents of this manual in good faith as a guideline to the operator. CLIMAX cannot guarantee that the information contained in this manual is correct for applications other than the application described in this manual. Product specifications are subject to change without notice.

CE DOCUMENTATION

Climax Portable Machine Tools, Inc. Effective Date: April 1, 2011

Declaration of Conformity

CE

CLIMAX®
Portable Machine Tools, Inc.

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Climax GmbH is authorized to compile a technical file for this product.

We hereby declare that the machinery described:

Make:	Flange Facer
Models:	FF1000, FF3000, FF4000, FF5000, FF6000, FF6100, FF6200, FF7200, FF8000, FF8200
Serial Numbers:	11016661 - 15128700

Is in compliance with the following directives:

2006/42/EC - Machinery, 2004/108/EC - EMC

Compliance with the relevant EHSR of the above directives is by application of the following referenced harmonized standards:

EN 349, EN 982 + A1, EN 983 + A1, EN 3744, EN 11201, EN 12100-1, EN 12100-2, EN 12840, EN 13732-1, EN 13849-1, EN 14121-1

VP -Production
Climax Portable Machine Tools, Inc.
2712 E. Second St., Newberg, Oregon
USA 97132-8210

Signed in Newberg, Oregon 97132-8210 USA on: 1/5/2012
DATE

Introduction

The information in this manual is up to date at time of printing. Because Climax is committed to continued product improvement, the machine you receive may be slightly different than the one described here.

About this manual

WARNING

Moving machine parts can seriously injure untrained operators. Understand all instructions before operating this machine.

This manual describes how to use your Model FF1000 Flange Facer (the ModuLATHE). Every part meets Climax Portable Machining & Welding Systems' strict quality standards. For maximum safety and performance, read the entire instruction manual before operating the flange facer.

Typical application of the FF1000 flange facer

The FF1000 Flange Facer (ModuLATHE), featuring a power unit and facing head attachment, can re-face flanges up to 12" (304.8 mm) in diameter and cut O-ring grooves. The modular design and setup options allow you to be creative in solving difficult maintenance problems. Please follow the operating manual and maintain the integrity of the machine. For your own safety, do not modify this machine in any way.

Check the machine when you receive it

Inspect the machine for shipping damage. Be sure you received the parts listed on the invoice. Contact Climax immediately if there are any errors or questions about this machine.

Labeling Guidelines

The purpose of product safety signs and labels is to increase the level of awareness to possible dangers.

Safety Alert Symbols indicate **DANGER**, **WARNING** or **CAUTION**. These symbols may be used in conjunction with other symbols or pictographs. Failure to obey safety warnings can result in serious injury. Always follow safety precautions to reduce the risk of hazards and serious injury.

	**DANGER** **Indicates a hazardous situation that could be fatal or cause serious injury.**
	**WARNING** **Indicates a potentially hazardous situation that could be fatal or cause serious injury.**
	**CAUTION** **Indicates a potentially hazardous situation that could result in minor to moderate injury, damage to the machine or interruption of an important process.**
	**IMPORTANT** **Provides critical information for the completion of a task. There is no associated hazard to people or the machine.**
	**NOTE** **Provides important information regarding the machine.**

General Safety Guidelines

The primary challenge for most on-site maintenance is that repairs are often done under difficult conditions.

Portable Machining & Welding Systems leads the way in promoting the safe use of portable machine tools. Safety is a joint effort. As the operator of this machine, you are expected to do your part by closely examining the job site and following the operating procedures outlined in this manual, your own company rules, and local regulations.

WARNING

For maximum safety and performance, read and understand this entire manual and all other related safety instructions before using this equipment. Failure to follow the instructions and guidelines in this manual could cause personal injury, fatalities and property damage.

QUALIFIED PERSONNEL

Before operating this machine, you must receive training specific to this machine from a qualified trainer. Do not operate the machine If you are not familiar with the proper and safe operation.

OBEY WARNING LABELS

Obey all warning labels. Failure to follow instructions or heed warnings could result in injury, or even be fatal. Proper care is your responsibility. Contact Climax immediately for replacement manuals or safety decals.

INTENDED USE

Use this machine according to the instructions in this operating manual. Do not use this machine for any purpose other than its intended use as described in this manual.

STAY CLEAR OF MOVING PARTS

Keep clear of the machine during operation. Never lean toward or reach into the machine to remove chips or to adjust the machine while it is running.

ELECTRICAL HAZARDS

Electrically ground all machines. Be sure the electric power source matches the requirements of the machine and complies with appropriate electrical codes. Do not operate an electric machine in damp or explosive conditions. It may cause an explosion or expose the operator to electric shock.

ROTATING MACHINERY

Rotating machinery can seriously injure an operator. Lock out all power sources before you interact with the machine.

KEEP YOUR WORK AREA CLEAN AND TIDY

Keep all cords and hoses away from moving parts during operation. Do not clutter the area around the machine.

SECURE LOOSE CLOTHING AND LONG HAIR

Rotating machinery can cause serious injuries. Do not wear loose fitting clothing or jewelry. Tie back long hair or wear a hat.

HAZARDOUS ENVIRONMENTS

Do not use the machine near explosive chemicals, toxic fumes, inappropriate radiation hazards or other hazardous environments.

FLYING CHIPS

Flying metal chips can cut or burn. Do not remove chips until after the machine has been locked out, all power sources are off and the machine has stopped.

General safety practices

All aspects of the machine have been designed with safety in mind. Rotating parts are shielded by machine components or by the workpiece.

PERSONAL PROTECTIVE EQUIPMENT

Eye and hearing protection must be worn while using the machine. These safety items do not impose constraints to the safe operation of the machine.

OPERATING CONDITIONS

Do not operate the machine if it is not mounted to the workpiece as described in this manual.

TOOLING

The machine is provided with all the tools for the setup and operation of the machine.

LIFTING

Most of the machine components are heavy and must be moved or lifted with approved rigging and practices. Climax accepts no responsibility for the selection of lifting equipment.

Always follow your plant's procedures for lifting heavy objects. Do not lift heavy objects by yourself as serious injury can result.

CUTTING FLUIDS

There are no cutting or cooling fluids used with this machine.

CONTROLS

The machine controls are designed to withstand the rigors of normal use and external factors. The on-off switches are clearly visible and identifiable. If a compressed air supply failure occurs, be sure to turn off the on-off valve before leaving the machine.

DANGER ZONE

The operator and other persons can be anywhere in the vicinity of the machine. The operator must ensure there are no other persons in danger from the machine.

APPROPRIATE LIGHTING

Ensure your work area is well lit.

METAL FRAGMENT HAZARD

The machine produces metallic fragments during normal operation. You should wear eye protection and gloves at all times when working with the machine.

RADIATION HAZARDS

There are no systems or components on this machine that are capable of producing hazardous EMC, UV or other radiation hazards. The machine does not use lasers nor does it create hazardous materials such as gasses or dust.

ADJUSTMENTS AND MAINTENANCE

All adjustments, lubrication and maintenance should be done with the machine stopped, and locked out from all power sources. The shut-off valve should be locked and tagged out before any maintenance occurs.

WARNING LABELS

Warning labels are already attached to your machine. Contact Climax immediately if replacements are required.

MAINTENANCE

Be sure the machine components are free of debris and properly lubricated prior to use.

Machine specific Safety Information

Audible noise levels

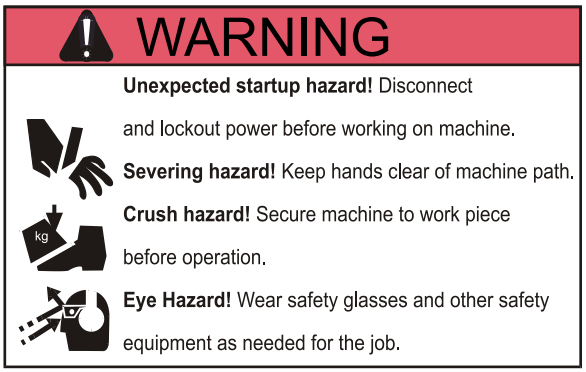
Pneumatically driven:

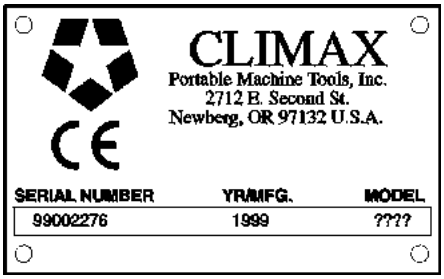
A-weighted sound pressure level 89 dBA

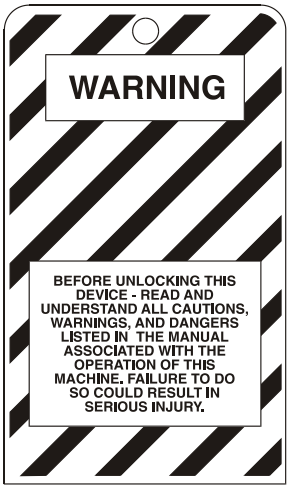
A-weighted sound power level 96.5 dBA

Warning labels

The labels shown are attached to your machine. Contact Climax immediately for replacements if any are defaced or missing.







Risk assessment and hazard mitigation

Machine Tools are specifically designed to perform precise material-removal operations.

Stationary Machine Tools include lathes and milling machines and are typically found in a machine shop. They are mounted in a fixed location during operation and are considered to be a complete, self-contained machine. Stationary Machine Tools achieve the rigidity needed to accomplish material-removal operations from the structure that is an integral part of the machine tool.

In contrast, Portable Machine Tools are designed for on-site machining applications. They typically attach directly to the workpiece itself, or to an adjacent structure, and achieve their rigidity from the structure to which it is attached. The design intent is that the Portable Machine Tool and the structure attached to it become one complete machine during the material-removal process.

To achieve the intended results and to promote safety, the operator must understand and follow the design intent, set-up, and operation practices that are unique to Portable Machine Tools.

The operator must perform an overall review and on-site risk assessment of the intended application. Due to the unique nature of portable machining applications, identifying one or more hazards that must be addressed is typical.

When performing the on-site risk assessment, it is important to consider the Portable Machine Tool and the workpiece as a whole.

Risk assessment checklist

Use these checklists as part of your on-site risk assessment and include any additional considerations that may pertain to your specific application.

TABLE 1. RISK ASSESSMENT CHECKLIST BEFORE SET-UP

Before Set-up	
☐	I took note of all the warning labels on the machine.
☐	I removed or mitigated all identified risks (such as tripping, cutting, crushing, entanglement, shearing, or falling objects).
☐	I considered the need for personnel safety guarding and installed any necessary guards.
☐	I read the machine assembly instructions and took inventory of all the items required but not supplied.
☐	I created a lift plan, including identifying the proper rigging, for each of the setup lifts required during the setup of the support structure and machine.
☐	I located the fall paths involved in lifting and rigging operations. I have taken precautions to keep workers away from the identified fall path.
☐	I considered how this machine operates and the best placement for the controls, cabling, and the operator.
☐	I evaluated and mitigated any other potential risks specific to my work area.

TABLE 2. RISK ASSESSMENT CHECKLIST AFTER SET-UP

After Set-up	
☐	I checked that the machine is safely installed and the potential fall path is clear. If the machine is elevated, I checked that the machine is safeguarded against falling.
☐	I identified all possible pinch points, such as those caused by rotating parts, and informed the affected personnel.
☐	I planned for containment of any chips or swarf produced by the machine.
	I followed the maintenance intervals with the recommended lubricants.
☐	I checked that all affected personnel have the recommended personal protective equipment, as well as any equipment required by the site or other regulations.
☐	I checked that all affected personnel understand the danger zone and are clear of it.
☐	I evaluated and mitigated any other potential risks specific to my work area.

Description

The FF1000 Flange Facer is intended to perform facing operations. Modular construction allows the machine to perform a variety of operations.

The machine consists of:

- Power module:
  - Drive box assembly
  - Quill support assembly
  - Vertical adjustment leadscrew assembly
  - Air motor assembly
  - Pneumatic conditioning unit
  - Tool kit
- Flange facing module:
  - Facing head gearbox assembly
  - Slide & tool head assembly
  - Mounting bell assembly
  - Facing head tool kit
- Optional assemblies:
  - Power feed module

Exploded-view drawings and part lists are at the end of this manual.

Setup

Preparation

WARNING

To avoid serious bodily injury, turn off and lock out the motor before setting up or adjusting the machine.

1. Mount the power module to the mounting bell.
2. Tighten the mounting screws.
3. Mount the feed cam onto the end of the quill housing.
4. Carefully align the setscrew holes with the slots on the quill housing.
5. Attach the facing head assembly to the end of the spindle, using the screws provided.
6. Measure the diameter of the flange.
7. Insert the setup fingers into the mounting bell.
8. Adjust the setup fingers so they will catch on the edge of the flange and support the machine during setup.

Setup

WARNING

To avoid serious bodily injury from rotating machinery, turn off and lock out the machine before setup.

1. Set the machine on the flange. The setup fingers will support the machine.
2. Center the machine to within .0625 by adjusting the clamping screws. Because the inside of the mounting bell is machined, it can be used to determine the center.
3. Completely tighten the clamping screws.

To level the machine:

1. Attach the dial indicator to the tool carrier

WARNING

To avoid serious bodily injury from rotating machinery, use the manual rotation tool to level the machine.

2. Remove the motor from the drive box.
3. Insert the manual rotation tool into the drive box.
4. Swing the dial indicator by turning the rotation tool with a 3/4" box-end wrench (in power module tool kit).
5. Adjust the leveling setscrews in the base of the quill housing until the dial indicator indicates a level surface.
6. Tighten the clamping screws.

To accurately center the machine:

1. Slightly loosen the level clamping screws.
2. With the indicator on a diameter, adjust the centering screw in the centering/leveling plate until centered.
3. Verify the adjustment and correct if needed.
2. Remove the setup fingers and indicator.

Tool setup

1. Loosen the quill support clamping screws.
2. Turn the vertical adjustment leadscrew counterclockwise to raise the tool bit carrier.

NOTE

Be careful not to raise the facing head too high. The feed cam will be forced off and you will have to set the machine up again.

3. Insert the tool bit into the tool carrier.
4. Position the tool bit for clockwise rotation (when looking down from the top of the power head).

Air power connection

WARNING

Rotating machinery can seriously injure the operator. Securely mount the machine to the work piece before connecting the air supply line.

Motor connection

If the air motor is to be mounted to the drive box:

1. Insert the drive key into the air motor output shaft keyway.
2. Align the air motor output shaft with the worm carrier shaft inside the drive box.
3. Insert the air motor shaft into the worm carrier shaft until the motor flange fits snugly against the drive box.
4. Tighten the motor mounting screws. Climax strongly recommends using the air filter and lubricator supplied with the machine. The lubricator should be set to deliver oil air at a rate of 2-4 drops per minute.

CAUTION

To avoid air motor damage and increase air motor performance, use the filter and lubricator provided.

Starting and stopping U.S. style machines

The U.S. style flange facer is equipped with needle valves and lockout valves.

NOTE

Use non-restrictive fittings for air connections.

To start the machine:

1. Push the lever (on the lockout valve) until the word CLOSED and the lockout can be seen from the bottom of the valve. Be sure the lever is pushed all the way in.
2. Turn the needle valve clockwise all the way. You will not see any colored bands when the valve is completely closed.
3. Connect the pneumatic conditioning unit and air supply line.
4. Press the lever (on the lockout valve) until the word OPEN can be seen from the top of the valve. Be sure the lever is pushed all the way in.
5. Slowly turn the needle valve counterclockwise until the machine is rotating at the desired speed. The more colored bands you see, the faster the machine rotation.

WARNING

In case of emergency, push the lockout valve lever closed.

To stop the machine:

1. Turn the air supply off all the way.
2. Push the lockout valve lever until the word CLOSED and the lockout can be seen from the bottom of the valve. Be sure the lever is pushed all the way in.
3. Lock out the machine.
4. Disconnect the air supply line.

Starting and stopping CE compliant machines

NOTE

Use non-restrictive fittings for air connections.

To start the machine:

1. Be sure the emergency valve assembly is connected to the air motor.
2. Turn the air supply valve OFF all the way.
3. Connect the pneumatic conditioning unit and air supply line to the valve assembly.
4. Pull the spring plunger out to let air into the valve assembly.
5. Slowly turn the air supply valve ON until the machine is rotating at the desired speed.

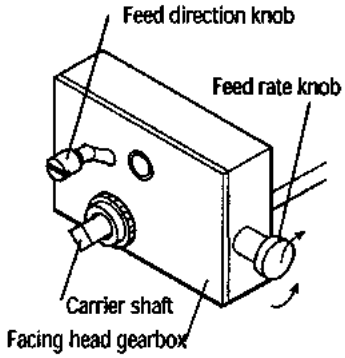
WARNING

In case of emergency, push the spring plunger closed.

To stop the machine:

1. Push the spring plunger to close the valve assembly.
2. Close the air supply valve all the way.
3. Lock out the machine.
4. Disconnect the air supply line.

Setting the feed rate



Set the feed rate before machining. The feed rate is adjustable from 0 to .035" (0 to 0.88 mm) per revolution. Turn the feed rate shaft counterclockwise to increase the feed rate or clockwise to decrease the feed rate. The machined rings on the shank of the feed rate shaft show the relative speed at which the machine will feed.

Setting the feed direction

Before machining, set the feed direction. The three positions are:

NEUTRAL - tool bit will not travel

OUT - tool bit will travel out from the center of the work piece

IN - tool bit will travel in toward the center of the work piece.

To set the feed direction:

1. Turn off and lock out the machine.
2. Place a crank on the dial carrier shaft.
3. While holding the carrier shaft with the crank, loosen the feed direction knob with a screwdriver (in the power module tool kit).
4. To ensure full movement to the desired position, jog the crank as you move the feed direction knob.
5. Tighten the feed direction knob with a screwdriver.

Operation

	WARNING
	**Wear ear and eye protection while operating the machine.**

1. Turn off and lock out the machine.
2. Be sure the incoming air valve system is closed.

	WARNING
	**Rotating machinery can seriously injure the operator. Stop and lock out the machine before connecting the air supply line.**

3. Set the feed direction to NEUTRAL.
4. Check that the tool bit is facing the correct direction.
5. Manually crank the dial carrier shaft until the tool bit is over, but not touching, the flange.
6. Close the mounting bell safety screens. Be sure they are latched.
7. Unlock the incoming air valve.
8. Slowly turn the air valve supply ON until the machine begins rotating

	WARNING
	**In case of emergency, push the lockout valve lever closed.**

9. Slowly crank the vertical feed shaft assembly clockwise to lower the tool bit until it just touches the face of the flange.
10. Set the dial to zero.
11. Move the tool bit up off the flange by cranking the vertical feed shaft assembly counterclockwise.
12. Stop the machine by turning the valve air supply OFF all the way.
13. Shut the incoming air valve.
14. Disconnect the incoming air hose.

15. Open the mounting bell safety screen.
16. Manually crank the dial carrier shaft to move the tool bit out past the edge of the flange.
17. Set the tool bit to the desired cutting depth by turning the dial. "0" will be at the face of the flange if you set the dial to zero in the previous steps.

NOTE

The dial is marked in .001" (.0254 mm) increments. One full turn equals .020" (.508 mm).

18. Tighten the quill clamping screws.
19. Set the feed direction to face OUT or IN.
20. Set the machine feed rate.
21. Close the mounting bell safety screens. Be sure they are latched.
22. Reconnect the pneumatic conditioning unit and the air supply line.
23. Open the incoming air valve.
24. Slowly turn the air valve until the machine is rotating at the desired speed.
25. Allow the machine to face the flange completely.

CAUTION

The facing head slide does not have a built-in stop mechanism. When facing out from the center, be sure to stop the facing head after machining to keep the facing head tool carrier from traveling off the end of the slide.

26. Stop the machine by turning the valve air supply OFF all the way.
27. Shut the incoming air valve. Lock out the machine.
28. Reset the feed direction to NEUTRAL.
29. Retract the tool bit by manually turning the vertical feed shaft assembly counterclockwise.
30. Repeat these steps as necessary.

Disassembly

WARNING

To avoid serious personal injury from rotating machinery, turn off and disconnect the power supply before disassembling the machine.

1. Turn the air valve OFF all the way.
2. Shut the incoming air valve.
3. Lock out the machine.
4. Disconnect the air supply line.
5. Set the feed direction to NEUTRAL.
6. Move the tool bit up off the flange by turning the vertical feed shaft assembly counterclockwise.
7. Loosen the tool bit set screws.
8. Remove the tool bit.
9. Loosen the clamping screws.
10. Pull the machine from the flange.

Optional Accessories

Power feed module

The electric power feed module automatically feeds the machine axially.

Power feed setup

1. Place the motor coupler onto the vertical feed shaft assembly.
2. Tighten the setscrews.
3. Mount the bracket onto the quill support using the two socket-head cap screws.

NOTE

If the bracket is being mounted to an older machine, tap two mating bracket holes 1/4-20 by at least 3/8" deep in the quill support.

4. Mount the electric motor to the bracket.
5. Connect the electric motor to the speed control with the motor control cord.

Power feed operation

1. Be sure the quill clamping screws are snug enough to cause tension on the quill without binding.

CAUTION

To avoid damaging the machine, do not loosen the quill clamping screws at any time during or between machining operations.

2. Close the incoming air valve. Lock out the machine.
3. Turn the air supply valve OFF all the way.
4. Route the air supply line through the pneumatic conditioning unit.

NOTE

Climax strongly recommends using the filter and lubricator supplied with the machine. Set the lubricator to deliver oil at a rate of 2-4 drops per minute.

CAUTION

To avoid air motor damage and increase air motor performance, use the filter and lubricator provided.

5. Retract the tool bit slightly.
6. Position the tool head at the desired depth.
7. Turn the direction lever on the speed control to BRAKE.
8. Turn the speed adjustment knob on the speed control counterclockwise to “0”.
9. Turn off the power switch.
10. Be sure all electrical components are properly connected.
11. Plug in the speed control.
12. Set the power switch on the speed control to either LO or HI. Maximum torque is only reached in LO.
13. Turn the speed control direction lever to the desired setting.
14. Machine the work piece.

Maintenance

Recommended lubricants

LUBRICANT	BRAND	WHERE USED
Gear grease	UNOBA EP #2	Gear box gears, thrust bearings
Light oil	WD-40	Unpainted surfaces
Cutting oil	UNOCAL KOOLKUT	Tool bits, work piece
Lubricating oil	Marvel Air Tool Oil	Lubricator oil cup
Lubricant	Bostik NEVER-SEEZ	Quill housing
Way oil	Mobil VACTRA Heavy-Medium Way Oil	Dovetail ways

CAUTION

To avoid damaging the machine, use recommended lubricants.

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Drive box assembly

Periodically check all drive box seals. Replace worn or cracked seals. Remove the gearbox lid and grease the worm and worm gear every 100 hours.

Quill support assembly

Grease the vertical feed shaft assembly every 100 hours.

Vertical adjustment leadscrew assembly

Leadscrew assembly parts are lubricated for life.

Air motor assembly and pneumatic conditioning unit

To protect the air motor:

- Route the air supply through the lubricator and air filter.
- Use non-restrictive air lines and fittings.
- Check the air system periodically to be sure the air pressure is 90 psi (620 kPa).
- Adjust the air motor speed by adjusting the needle valve.

CAUTION

To avoid damaging the motor, do not adjust the motor speed by changing the in-line air pressure from 90 psi (620 kPa).

- Fill the lubricator oil cup with air oil before using the machine. Use high-quality oil with rust inhibitors and emulsifiers such as Marvel Air Tool Oil. Set the lubricator to deliver oil the air at a rate of 2-4 drops per minute.
- Drain the air filter before and after machining.

CAUTION

To avoid damaging the air motor and voiding the warranty, route the incoming air through the air filter and lubricator.

Facing head gearbox assembly

After the machine has stopped, clean chips from the feed direction slot. The gearbox is sealed and lubricated for life.

Facing head slide assembly

Lightly oil the leadscrew periodically with light oil.

DO NOT GREASE THE LEADSCREW!

Mounting bell assembly

Mounting bell parts are lubricated for life.

Tool bit

If using HSS tool bits, be sure that they have the proper geometry. Grind the tool bits as needed during operation. If using carbide tools; replace the inserts and chip breakers as needed during operation.

For tool bit replacement information, contact your Climax factory representative by calling Climax toll free at 1-800-333-8311.

Power feed module

The power feed module needs no maintenance if used according to the instructions.

Storage

Proper storage of the machine will prevent undue deterioration or damage. Before storing the machine, clean it with solvent to remove grease, metal chips, and moisture. Spray the machine with a moisture-protective material (WD-40 for short-term storage, Cosmoline for long-term storage) to prevent rusting. Store the machine in the containers provided. Place desiccant bags or vapor wrap around the machine to absorb moisture.

To replace a storage container, order Part No. 18475 (large - holds 12" mounting bell) or Part No. 10860 (small).

Spare Parts

NOTE

Have a supply of HSS tool bits or carbide inserts and chip breakers on hand.

Parts listed below include items most frequently replaced due to wear, loss, or damage. To prevent unscheduled down time you may want to stock these parts.

SPARE PARTS			
PART NO.	**DESCRIPTION**	**QTY**	**WHERE USED**
10764	Modified worm gear 7.5:1 ratio	1	Drive box assembly
10902	Modified worm gear 15:1 ratio	1	
10858	Worm - 7.5:1 Ratio	1	
10903	Worm - 15:1 Ratio	1	
10167	1.000 ID x 1.375 OD x .250 seal	1	
10830	5/16-18 x 7/8 SHCS	8	Quill support assembly
10831	5/16-18 x 7/8 SHCSNI	2	
10828	Air motor	1	Air motor assembly
10119	Bearing	1	
10626	Plate - lower end non-reversible	1	
10627	Plate - lower end reversible	1	
13111	Roll pin	3	
16877	Rotor	1	
10120	Rotor blade	5	
10618	Cylinder sleeve	1	
10628	Cylinder sleeve reversible	1	
10625	Plate - upper end non-reversible	1	
10629	Plate - upper end reversible	1	
10121	Bearing	1	
16874	Retaining ring	1	
10123	Wave washer	1	
16875	Motor housing	1	
16876	Pipe plug	3	

SPARE PARTS			
PART NO.	**DESCRIPTION**	**QTY**	**WHERE USED**
11367	Crank assembly	1	Tool kit
11270	3/32" hex wrench	1	
11094	5/64" hex wrench	1	
11082	3/16" hex wrench	1	
10874	3/4" end wrench	1	
10199	1/4" hex wrench	1	
10110	Manual rotation tool	1	
10837	Nut #10-32 std	1	Facing head assembly - gear box
10838	#6-32 x 3/8 SHCS	2	
10798	Support cam follower	1	
10836	Bearing cam follower	1	
10794	Bearing roller clutch	1	
10966	Gear assembly	1	
10834	1/4-20 x 3/4 SSSCP	2	Slide & tool head assembly
10833	#8-32 x 1/4 SSSCP	2	
10615	5/16-18 x 1/2 SHCS	2	Facing head tool kit
10857	Dial indicator	1	
10881	Dial indicator mount	1	
10970	45o boring bar	1	
10971	90o boring bar	1	
10880	1/4" dia. x 5/8 roll pin	1	
11270	3/32" hex wrench	1	
11094	5/64" hex wrench	1	
10892	Flat top screwdriver	1	
10883	3/8" square tool bit	1	
10882	1/4" square tool bit	1	
10800	Screw 1/4-20 x 1/2 SHCS	1	
10615	Screw 5/16-18 x 1/2 SHCS	1	
10601	5/16" hex wrench	1	
10600	1/8" x 6" T-handle hex wrench	1	
10972	8" Safety screen assembly	2	Mounting bell assembly
10976	12" Safety screen assembly	2	
30960	Setup fingers	1 set	
30961	6" jaw	4	
30962	3" jaw	4	

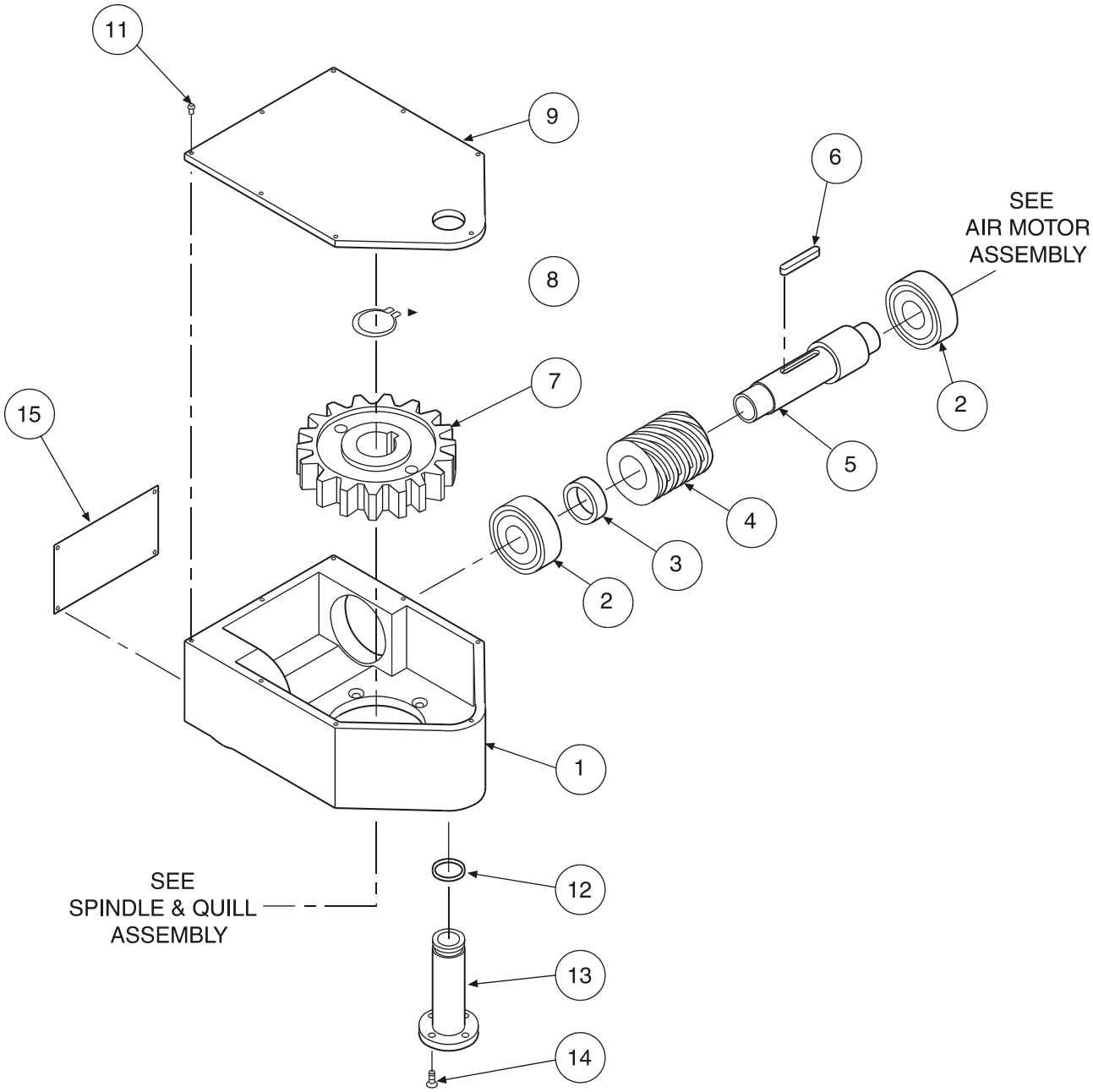
SPARE PARTS			
PART NO.	**DESCRIPTION**	**QTY**	**WHERE USED**
10882	Tool bit 1/4" square x 2" HSS	3	Facing head
10883	Tool bit 3/8" square x 3" HSS	3	
10516	Screw 5/16-18 x 3/4" FHSCS	1	CE emergency air shut-off valve
14035	7/8" OD Snap ring	1	
14348	3/32" x 11/16" ID x 7/8" OD O-ring	2	
17616	1/16" x 1-1/8" ID x 1-1/4" OD O-ring	1	
27135	1/16" x 1-3/4" ID x 1-7/8" OD O-ring	1	
27134	Compression spring	1	
27131	Spring retainer	1	
16185	1-7/8" ID snap ring	1	
10657	Screw 5/16-18 x 3/4" SHCS	1	

Exploded Views & Parts

The following diagrams and parts lists are for your reference purposes only. The machine Limited Warranty is void if the machine has been tampered with by anyone who has not been authorized in writing by Portable Machining & Welding Systems to perform service on the machine.

30969 BOX DRIVE ASSY 2nd 200 RPM 7.5:1 RATIO FF1000		
BALLOON No	**PART**	**DESCRIPTION**
1	10745	BOX DRIVE MAIN FF1000
2	10891	BRG BALL .7874 ID X 1.8504 OD X .5512 W/SEALS
3	10791	SPACER WORM DRIVE
4	10858	GEAR WORM 8DP 1.5PD 1.75 FACE QUAD LEAD
5	10782	SHAFT CARRIER WORM FF1000
6	10802	KEY 3/16 X .165 X 1.00 SQ BOTH ENDS
7	10764	GEAR WORM GEAR MODIFIED
8	10534	RING SNAP 1 OD
9	30735	COVER MAIN DRIVE BOX 2nd
11	11686	SCREW 6-32 X 1/2 BHSCS
12	10822	RING O 1/16 X 11/16 ID X 13/16 OD
13	10759	LEADNUT VERTICAL ADJUSTMENT
14	10823	SCREW 8-32 X 5/8 FHSCS
15	14684	PLATE SERIAL NUMBER SEE DWG

31678 BOX DRIVE ASSY 2ND 100 RPM 15:1 RATIO FF1000		
BALLOON No	**PART**	**DESCRIPTION**
1	10745	BOX DRIVE MAIN FF1000
2	10891	BRG BALL .7874 ID X 1.8504 OD X .5512 W/SEALS
3	10791	SPACER WORM DRIVE
4	10903	GEAR WORM 8DP DOUBLE LEAD RH HD
5	10782	SHAFT CARRIER WORM FF1000
6	10802	KEY 3/16 X .165 X 1.00 SQ BOTH ENDS
7	10902	GEAR WORM GEAR MODIFIED
8	10534	RING SNAP 1 OD
9	30735	COVER MAIN DRIVE BOX 2nd
11	11686	SCREW 6-32 X 1/2 BHSCS
12	10822	RING O 1/16 X 11/16 ID X 13/16 OD
13	10759	LEADNUT VERTICAL ADJUSTMENT
14	10823	SCREW 8-32 X 5/8 FHSCS
15	14684	PLATE SERIAL NUMBER SEE DWG

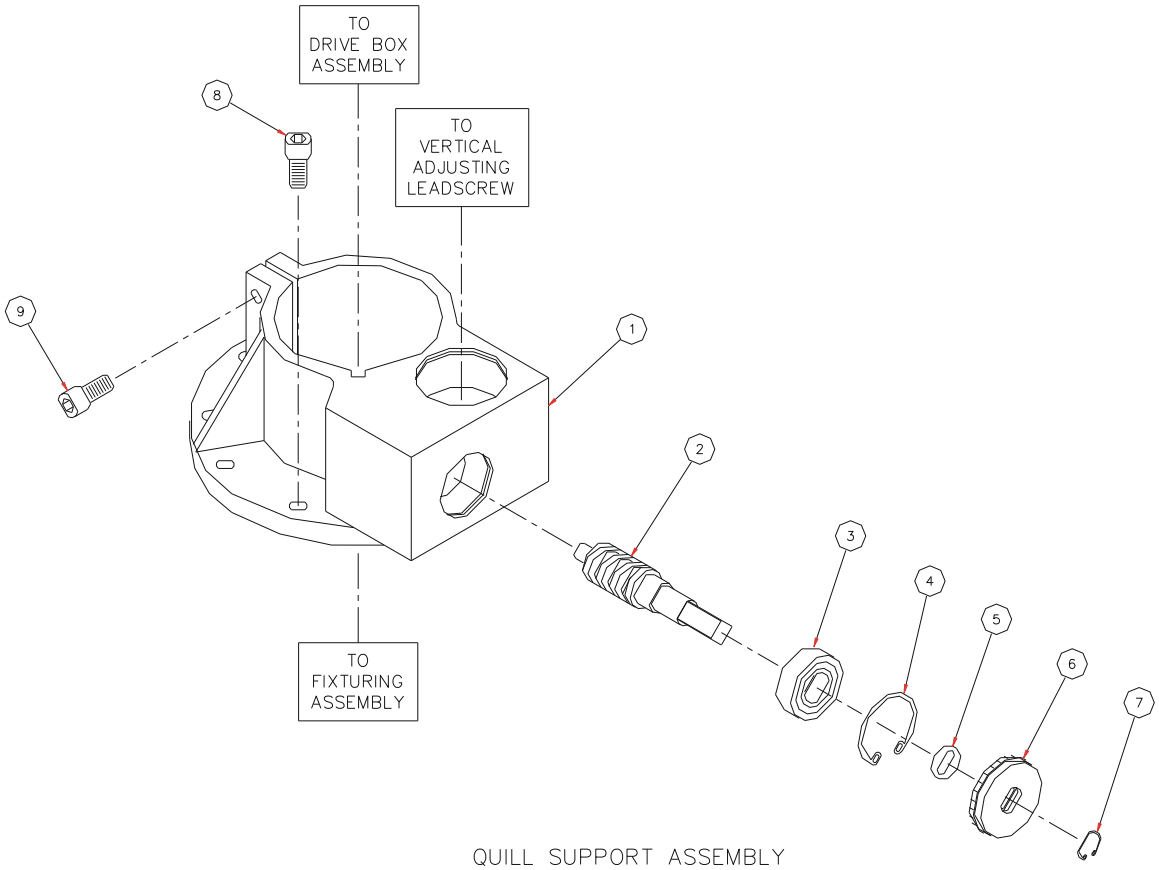


DRIVE BOX ASSEMBLY

(30969 - 200 RPM 7.5:1 RATIO CE)

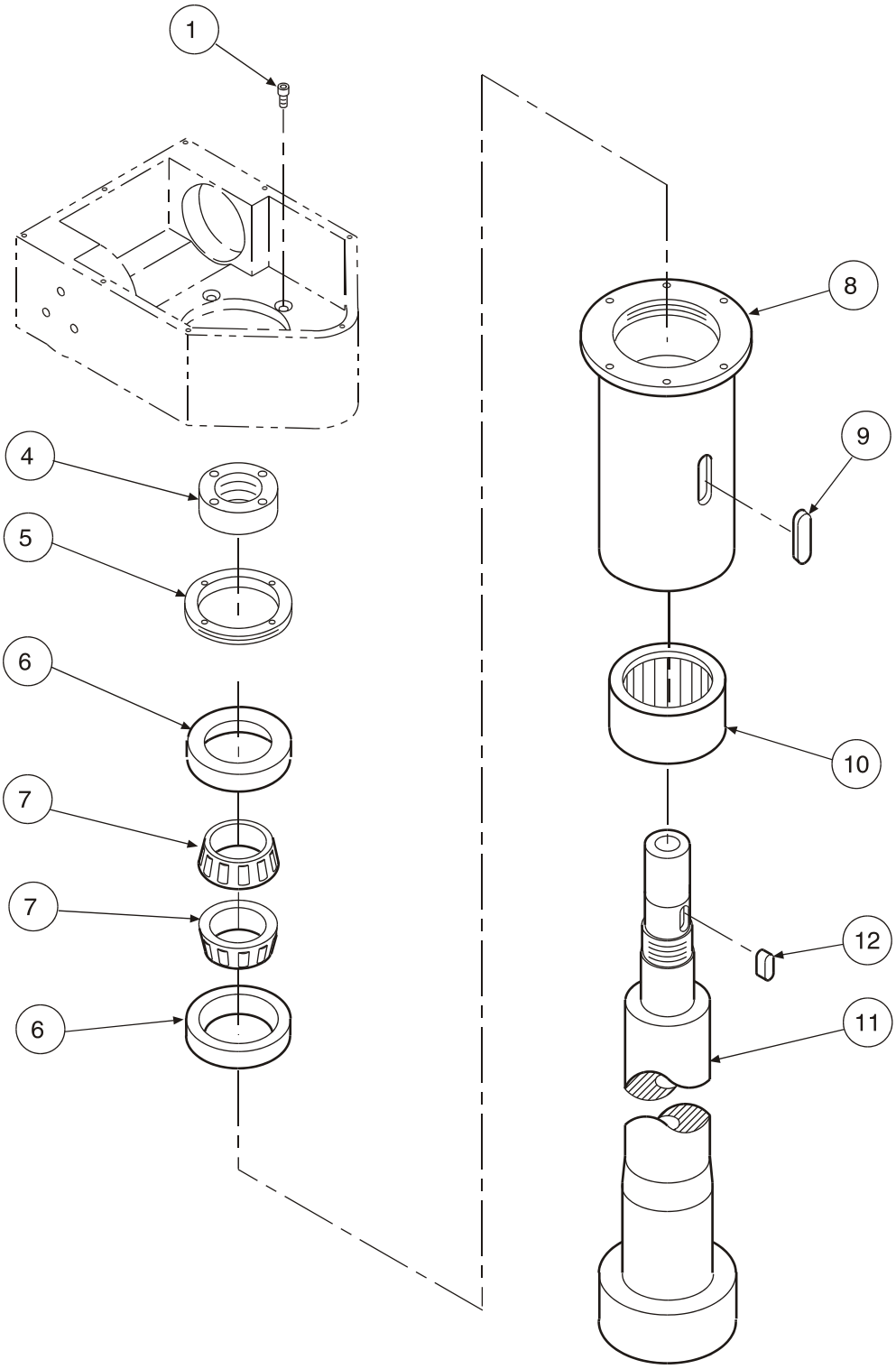
(31678 - 100 RPM 15:1 RATIO CE)

13886 SUPPORT QUILL ASSY 2 IN HIGH		
BALLOON No	**PART**	**DESCRIPTION**
1	10748	SUPPORT QUILL 2 IN. LONG
2	10956	SHAFT FEED
3	10820	BRG BALL .5906 ID X 1.2598 OD X .3543 W/SEALS
4	10813	RING SNAP 1-1/4 ID BEVELED
5	10840	RING O 1/16 X 1/2 ID X 5/8 OD
6	10853	DIAL
7	10829	RING SNAP 1/2 OD
8	10830	SCREW 5/16-18 X 7/8 SHCS
9	10831	SCREW 5/16-18 X 7/8 SHCSNI

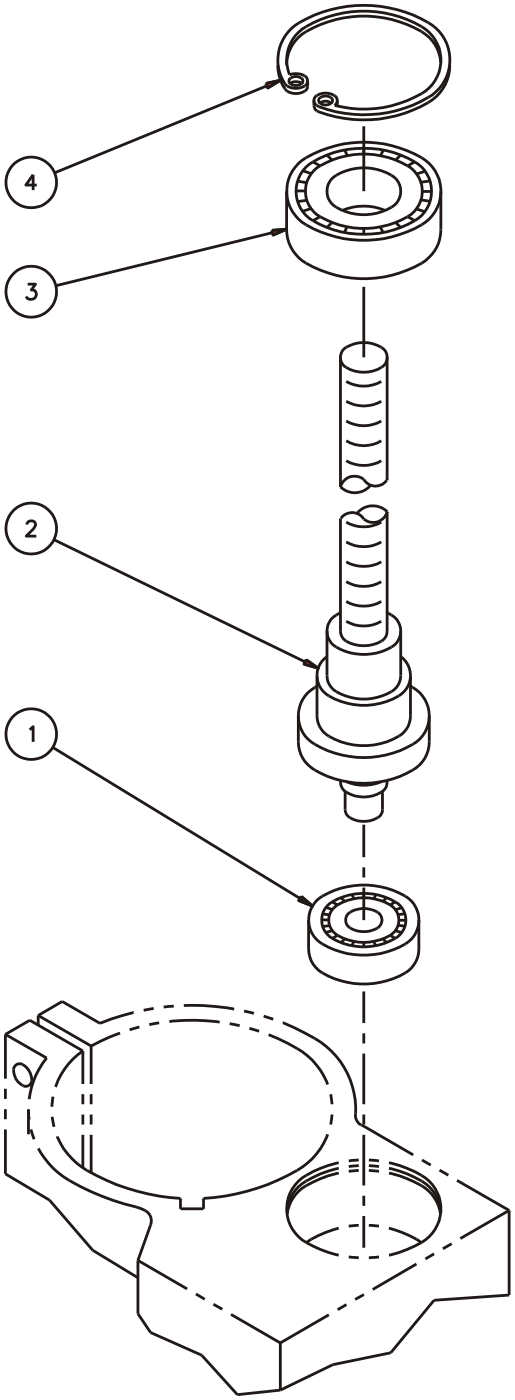


QUILL SUPPORT ASSEMBLY
(13886 – 2")
(13887 – 4")

30730 SPINDLE & QUILL ASSY 1 IN TRAVEL W/O #40 TPR		
BALLOON No	**PART**	**DESCRIPTION**
1	10877	SCREW 10-32 X 1/2 SHCS
4	10779	NUT BRG SPINDLE
5	10755	NUT ADJUSTMENT
6	10826	BRG CUP 2.3125 OD X .4219 WIDE
7	10827	BRG CONE 1.1875 ID X .5937 WIDE
8	10762	HOUSING QUILL 2 IN. TRAVEL 2 IN. CLAMP
9	11054	KEY 1/4 X 3/8 X 1.20 RADIUS BOTH ENDS
10	10825	BRG ROLLER 2.0011 ID X 2.5619 OD X 1.250
11	30731	SPINDLE FF1000 W/O #40 TAPER
12	10854	KEY 1/4 SQ X .37 SQ BOTH ENDS

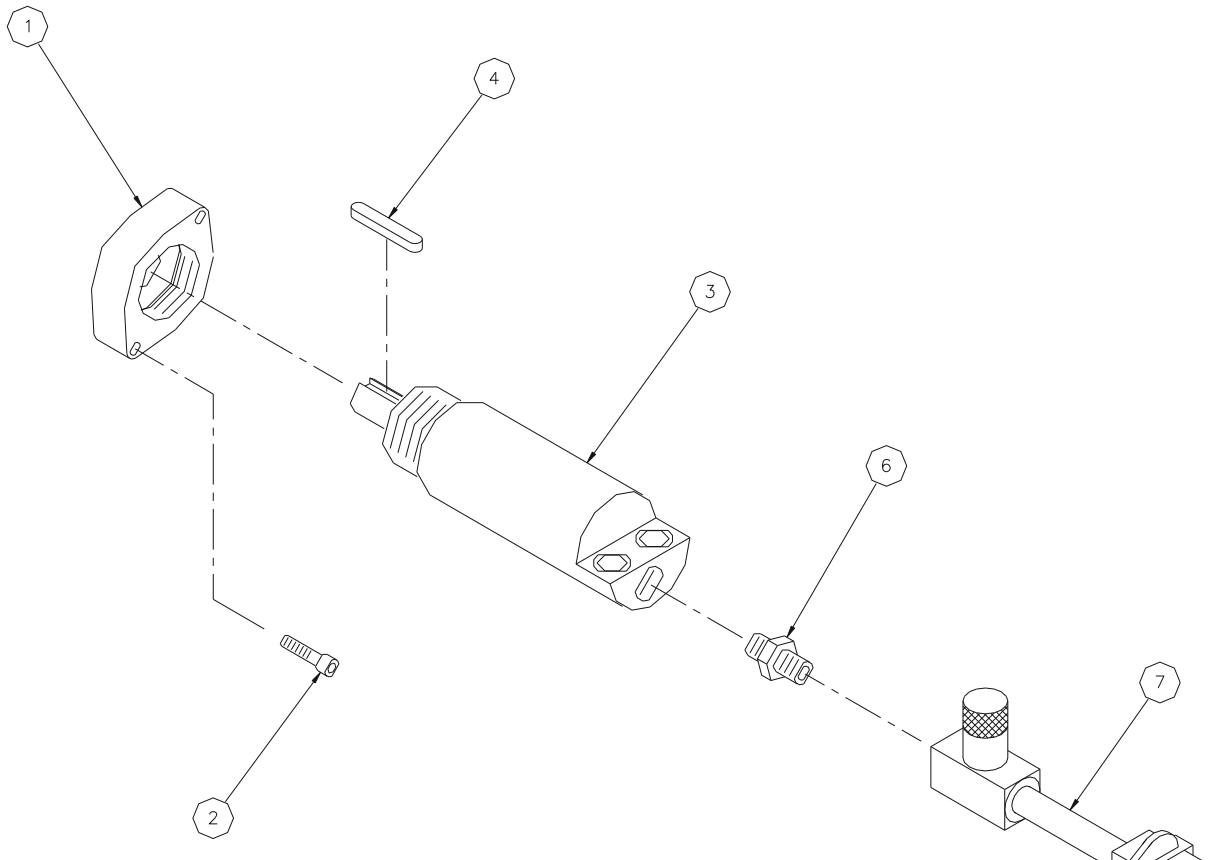


SPINDLE & QUILL ASSEMBLY
(30730 - 1" TRAVEL)


4
3
2
1

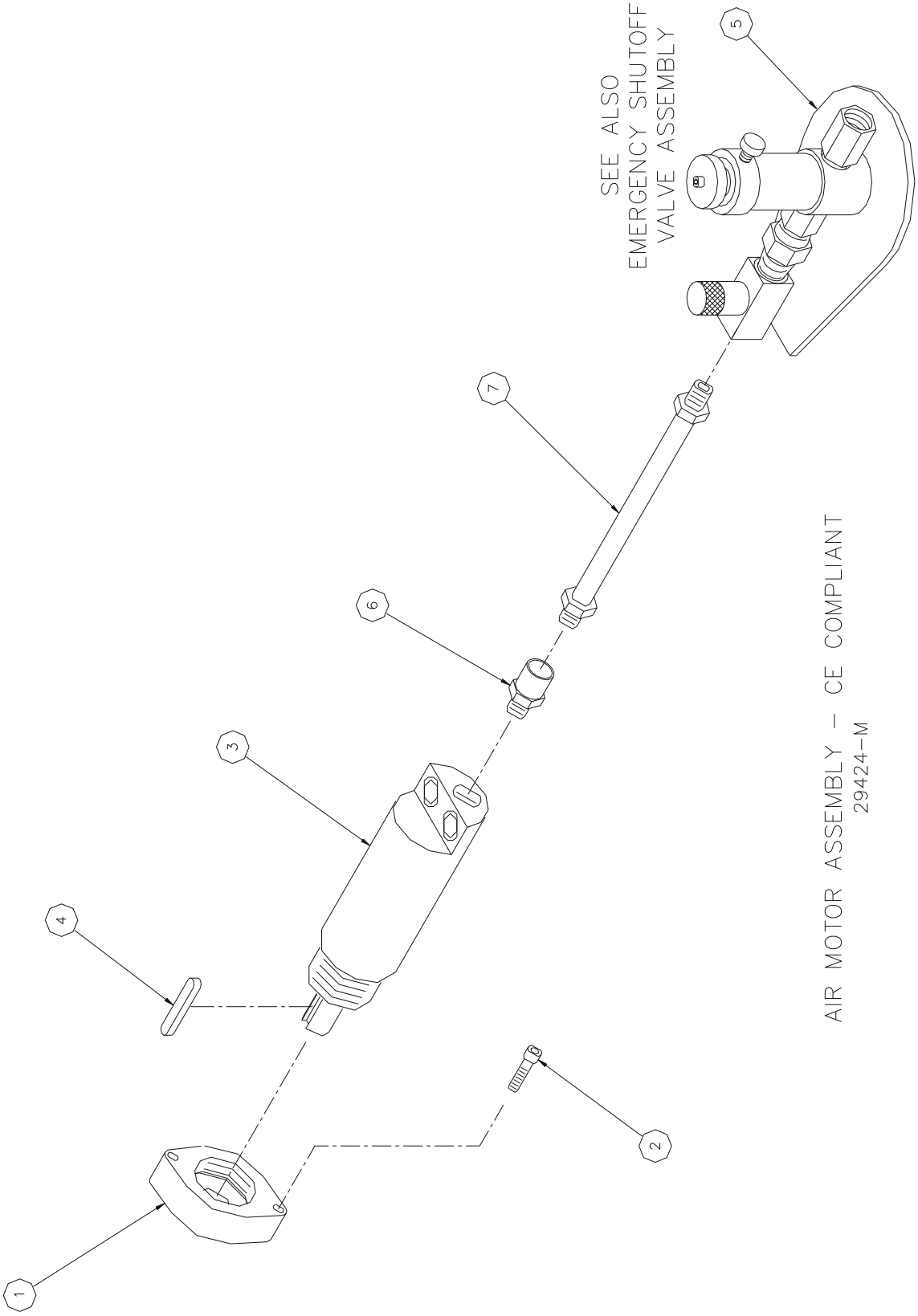
14389 LEADSCREW VERT ADJUSTMENT 3/4 IN. TRAVEL		
BALLOON No	**PART**	**DESCRIPTION**
1	10808	BRG BALL .3937 ID X 1.1811 OD X .3543
2	10960	CARRIER ASSY 3/4 IN. TRAVEL 2 IN. CLAMP
3	10807	BRG BALL .7874 ID X 1.6535 OD X .4724 W/SEALS
4	17857	RING SNAP INTERNAL 1.653 BORE (42 mm)

12983 MOTOR AIR ASSY STANLEY MODULATHE		
BALLOON No	**PART**	**DESCRIPTION**
1	10805	FLANGE MOTOR MODLTH
2	10431	SCREW 5/16-18 X 1 SHCS
3	10828	MOTOR AIR STANLEY 1600 RPM FS 820 RPM LS
4	10803	KEY 3/16 X .135 X 1.00 SQ BOTH ENDS
6	12918	FTG NIPPLE 3/8 NPTM X 1/2 NPTM
7	22530	VALVE NEEDLE ASSY W/LOCKOUT 1/2 IN
NOT SHOWN	22546	LABEL AIR MOTOR

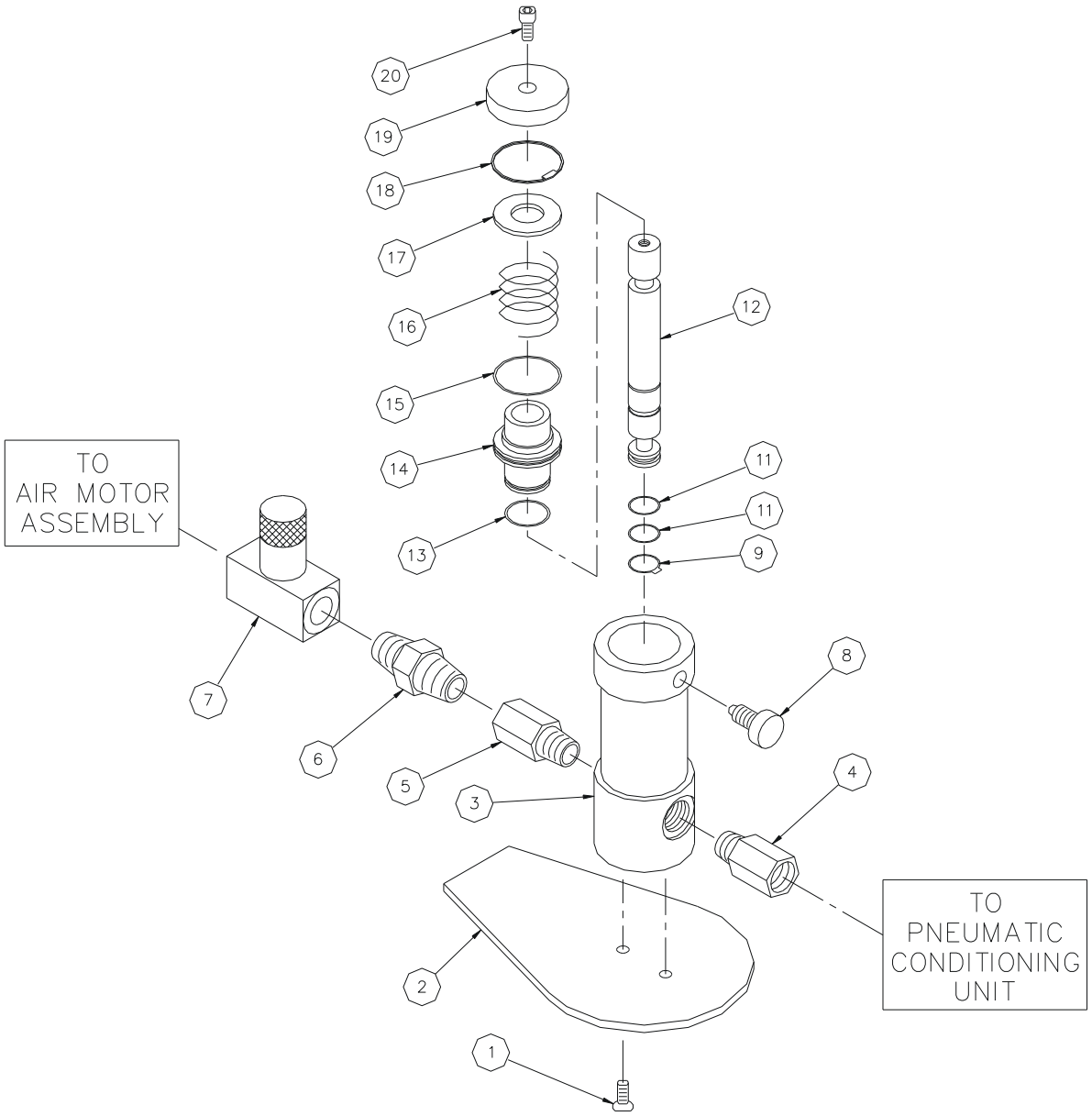


AIR MOTOR ASSEMBLY
12983

29424 MOTOR AIR ASSY STANLEY MODULATHE CE		
BALLOON No	**PART**	**DESCRIPTION**
1	10805	FLANGE MOTOR MODLTH
2	10431	SCREW 5/16-18 X 1 SHCS
3	10828	MOTOR AIR STANLEY 1600 RPM FS 820 RPM LS
4	10803	KEY 3/16 X .135 X 1.00 SQ BOTH ENDS
5	29175	VALVE ASSY EMERGENCY AIR SHUTOFF
6	29445	OBS USE 15970
7	15915	HOSE ASSY 801 1/2 X 1/2 NPTM X 1/2 NPTMS X 72
NOT SHOWN	22546	LABEL AIR MOTOR

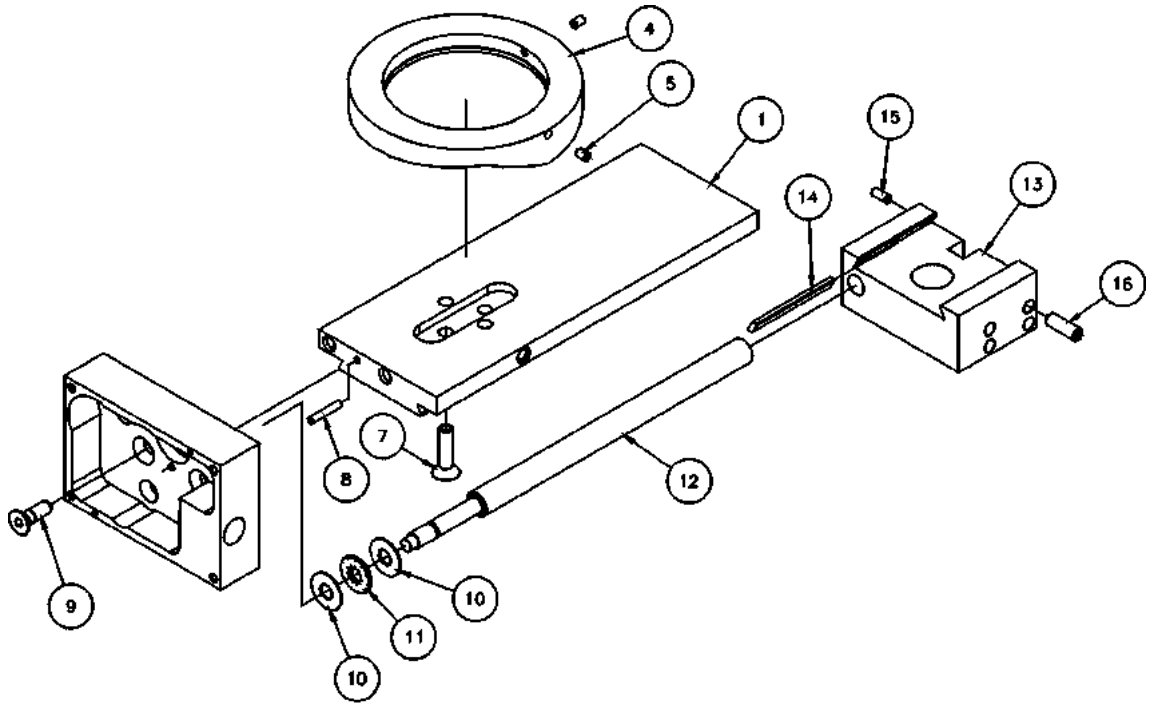

SEE ALSO
EMERGENCY SHUTOFF
VALVE ASSEMBLY
5
7
6
3
4
2
1
AIR MOTOR ASSEMBLY – CE COMPLIANT
29424-M

29175 VALVE ASSY EMERGENCY AIR SHUTOFF		
BALLOON No	**PART**	**DESCRIPTION**
1	10516	SCREW 5/16-18 X 3/4 FHSCS
2	29089	BASE MOUNTING CLIMAX AIR VALVE
3	27128	BODY AIR SHUT OFF VALVE
4	29444	FTG ADAPTER MODIFIED
5	15675	FTG ADAPTER 7/8 SAEM ORING X 1/2 NPTF
6	14704	FTG NIPPLE 1/2 NPTM X 1/2 NPTM
7	22229	VALVE NEEDLE 1/2 IN.
8	27136	SPRING PLUNGER WITH 1 IN. HAND KNOB 1/2-13
9	14035	RING SNAP 7/8 OD
11	14348	RING O 3/32 X 11/16 ID X 7/8 OD
12	27130	SPOOL SHUT OFF
13	17616	RING O 1/16 X 1-1/8 ID X 1-1/4 OD
14	27129	PISTON ACTUATION
15	27135	RING O 1/16 X 1-3/4 ID X 1-7/8 OD
16	27134	SPRING COMP 1.68 OD X .135 WIRE X 2.00 LONG
17	27131	RETAINER SPRING
18	16185	RING SNAP 1-7/8 ID
19	10613	KNOB SHUTOFF
20	10657	SCREW 5/16-18 X 3/4 SHCS
NOT SHOWN	26436	LABEL LOCKOUT TAG
NOT SHOWN	29412	LOCK 5-3/4 H X 5/16 DIA SHACKLE



EMERGENCY AIR SHUTOFF VALVE
CE COMPLIANT
29175–M

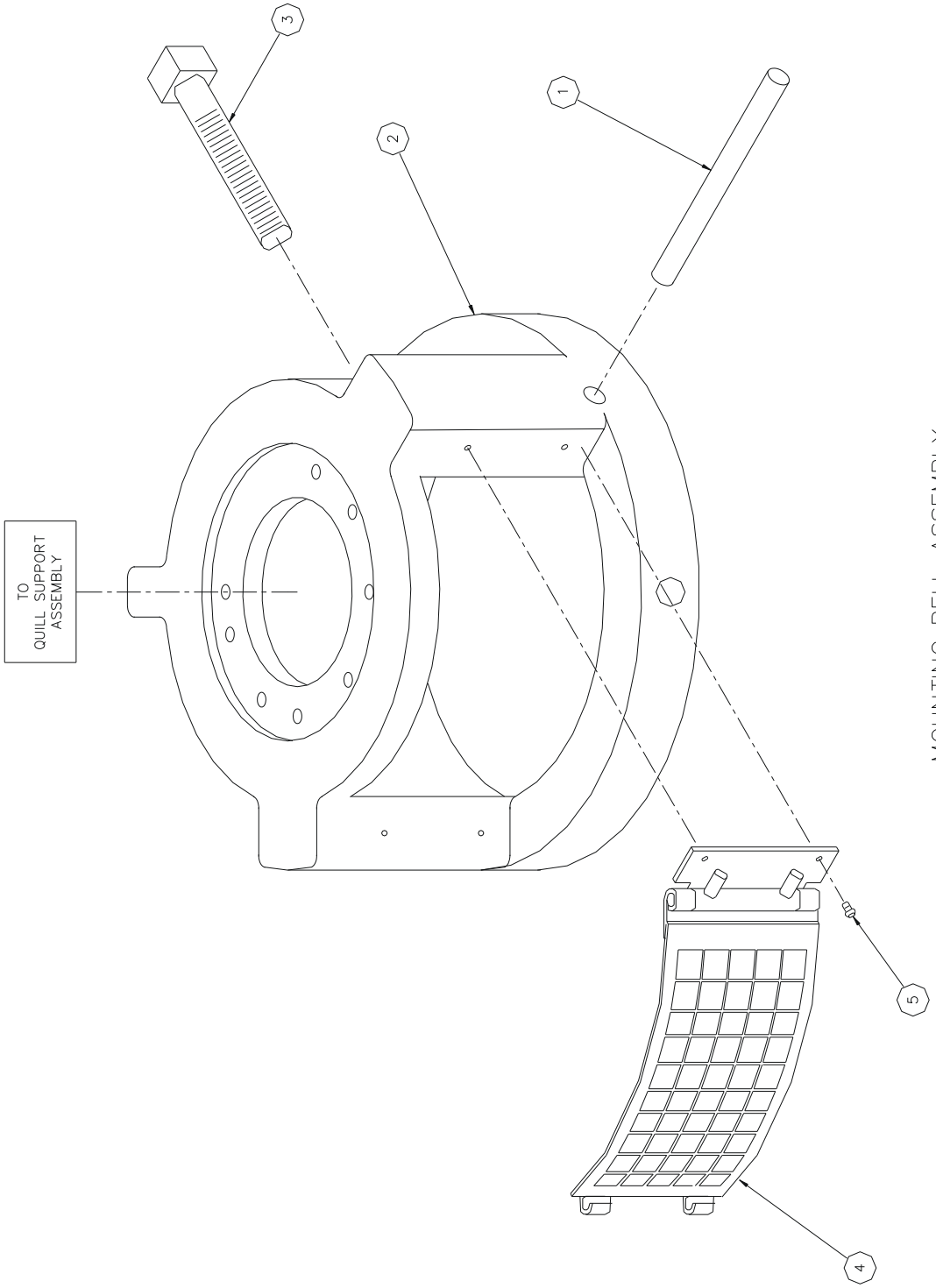
39491 SLIDE ASSY 12 DIA FACING MODULE		
BALLOON	**PART**	**DESCRIPTION**
1	39465	SLIDE 12 INCH
4	10799	CAM FEED
5	10833	SCREW 8-32 X 1/4 SSSCP
7	10888	SCREW 1/4-20 X 1 FHSCS
8	10847	PIN ROLL 1/8 DIA X 3/4
9	10843	SCREW 1/4-20 X 3/4 FHSCS
13	39588	CARRIER TOOL
14	10775	GIB CARRIER TOOL
15	11855	SCREW 8-32 X 3/8 SSSDPNI
16	10834	SCREW 1/4-20 X 3/4 SSSCP



SLIDE ASSEMBLY - 12″ DIA
FACING MODULE - 39491

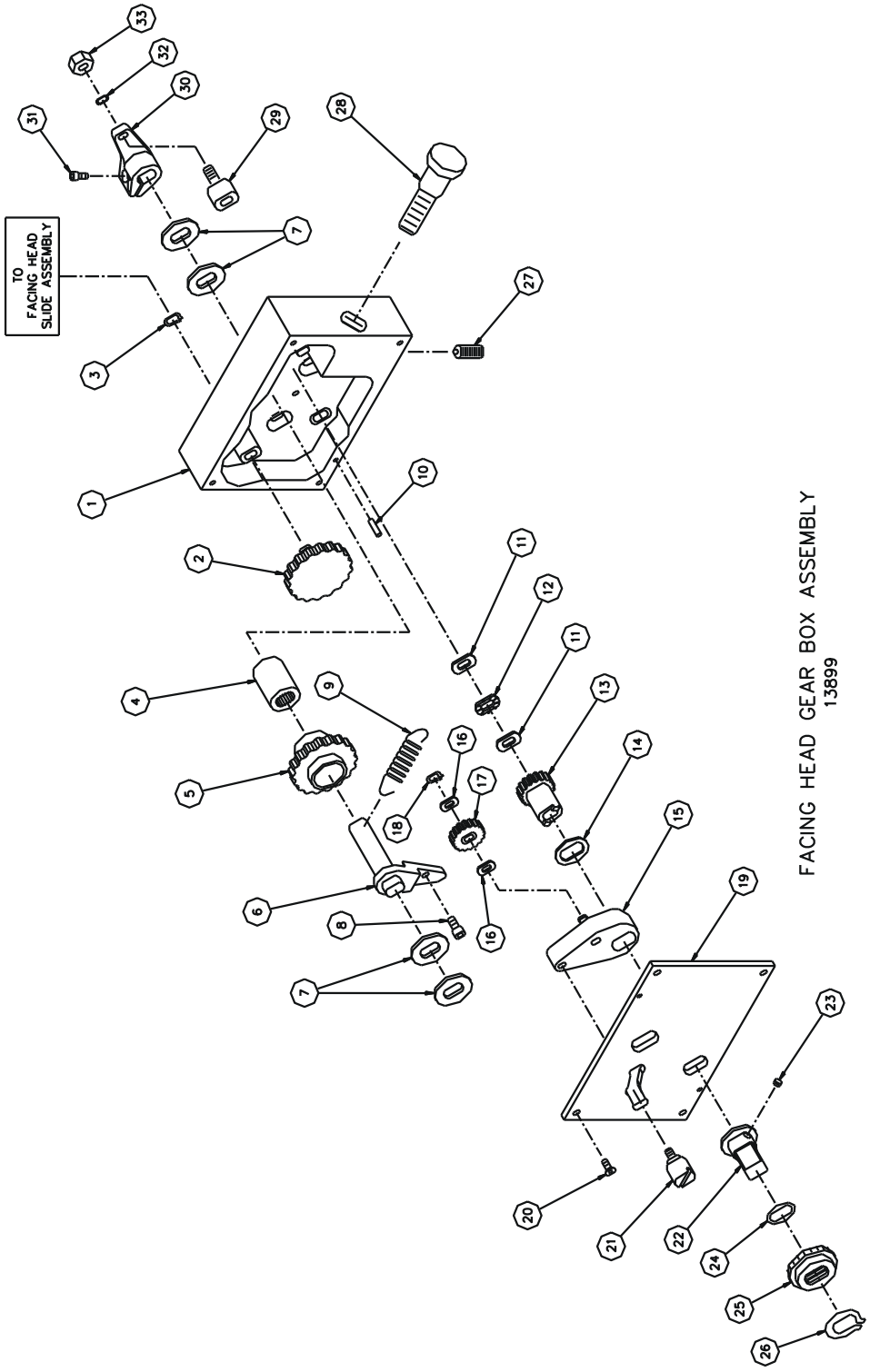
30719 BELL MTG ASSY 8 IN MODEL FF1000 2nd		
BALLOON No	**PART**	**DESCRIPTION**
1	30960	SET SETUP FINGERS FF1000 2nd
2	30791	BELL MTG 8 IN 2nd GEN FF1000
3	30962	SCREW 3/4-10 X 3 SQHSSCP
	30961	SCREW 3/4-10 X 6 SQHSSCP
4	30963	GUARD SAFETY ASSY 2nd FF1000 8 IN BELL
5	10839	SCREW 8-32 X 1/4 BHSCS
NOT SHOWN	35069	PLATE CENTERING FF1000
NOT SHOWN	10864	LABEL WARNING SCREEN
NOT SHOWN	27462	LABEL WARNING STICKER SINGLE POINT MACHINES
NOT SHOWN	34735	LABEL WARNING 3 ½ x 4

30990 BELL MTG ASSY 12 IN MODEL FF1000 2nd		
BALLOON No	**PART**	**DESCRIPTION**
1	30960	SET SETUP FINGERS FF1000 2nd
2	30991	BELL MTG 12 IN 2nd GEN FF1000
3	30962	SCREW 3/4-10 X 3 SQHSSCP
	30961	SCREW 3/4-10 X 6 SQHSSCP
4	30994	GUARD SAFETY ASSY 2nd FF1000 12 IN BELL
5	10839	SCREW 8-32 X 1/4 BHSCS
6	30694	PLATE CENTERING FF1000
NOT SHOWN	10864	LABEL WARNING SCREEN
NOT SHOWN	27462	LABEL WARNING STICKER POINT MACHINES
NOT SHOWN	34735	LABEL WARNING 3 ½ x 4



MOUNTING BELL ASSEMBLY
(30719 – 8" BELL)
(30990 – 12" BELL)

13899 BOX GEAR ASSY FACING HEAD FF1000		
BALLOON No	**PART**	**DESCRIPTION**
1	10957	HOUSING FEED DRIVE ASSY
2	10863	GEAR REVERSE
3	10856	RING SNAP 1/4 OD
4	10794	BRG ROLLER CLUTCH .39 ID X .63 OD X .787
5	10862	GEAR CLUTCH FEED
6	10967	CLUTCH ASSY MODLTH
7	10774	WASHER CLUTCH FEED
8	10226	SCREW 8-32 X 1/4 SHCS
9	10842	SPRING EXT .24 OD X .037 WIRE X 1.25 LONG
10	10846	PIN ROLL 3/32 DIA X 3/8
11	10770	WASHER THRUST .312 ID X .750 OD X .030
12	10835	BRG THRUST .312 ID X .750 OD X .0781
13	10788	GEAR
14	10787	SPACER GEAR
15	10974	CARRIER ASSY
16	10804	SPACER SELECTOR GEAR
17	10966	GEAR ASSY
18	10796	RING SNAP 3/16 OD
19	32262	COVER HOUSING FEED DRIVE MODULATHE
20	10844	SCREW 6-32 X 3/8 FHSCS
21	10768	KNOB SELECT
22	10806	CARRIER DIAL
23	11058	SCREW 8-32 X 1/8 SSSCP
24	10840	RING O 1/16 X 1/2 ID X 5/8 OD
25	10772	DIAL FEED CROSS
26	10829	RING SNAP 1/2 OD
27	10848	PLUNGER DETENT SPRING STUBBY 1/4-20 X .531
28	10792	SHAFT FEED RATE
29	19229	CAM FOLLOWER MODIFIED
30	10798	ARM CAM FOLLOWER
31	10838	SCREW 6-32 X 3/8 SHCS
32	10889	WASHER #10 ITSTRW
33	10837	NUT 10-32 STDN
NOT SHOWN	10765	BUSHING OILITE 1/4 ID X 7/16 OD X 3/8
NOT SHOWN	10865	BUSHING OILITE 5/16 ID X 7/16 OD X 1/4
NOT SHOWN	10763	BUSHING OILITE MODIFIED
NOT SHOWN	10784	PIN SPRING CLUTCH


TO
FACING HEAD
SLIDE ASSEMBLY
FACING HEAD GEAR BOX ASSEMBLY
13899

35185 KIT TOOL FF1000 COMPLETE	
PART	**DESCRIPTION**
10883	BIT TOOL 3/8 SQ X 1-3/8 HSS BLANK
31854	BIT TOOL HSS 3/8 X 1.3 LH FINISH SINGLE TC
31863	BIT TOOL HSS 3/8 X 1.3 LH ROUGHING SINGLE
11367	CRANK ASSY
10857	INDICATOR DIAL
32139	MANUAL INSTRUCTION - FF1000 2ND GEN
10881	MOUNT DIAL INDICATOR
10880	PIN ROLL 1/4 DIA X 5/8
10800	SCREW 1/4-20 X 1/2 SHCS
10615	SCREW 5/16-18 X 1/2 SHCS
10110	TOOL MANUAL ROTATION
10892	TOOL SCREWDRIVER FLAT TIP
10113	WRENCH HEX 1/8 X 6 T-HANDLE
33999	WRENCH HEX SET .050 - 3/8 BONDHUS BALL END

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