



SPEED FACER

ODF SPEED FACER

OPERATING MANUAL

ORIGINAL INSTRUCTIONS



OD40 MODEL SHOWN

H&S TOOL
A CLIMAX COMPANY

P/N 102615
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Revision 0

CLIMAX | BORTECH CALDER H&S TOOL

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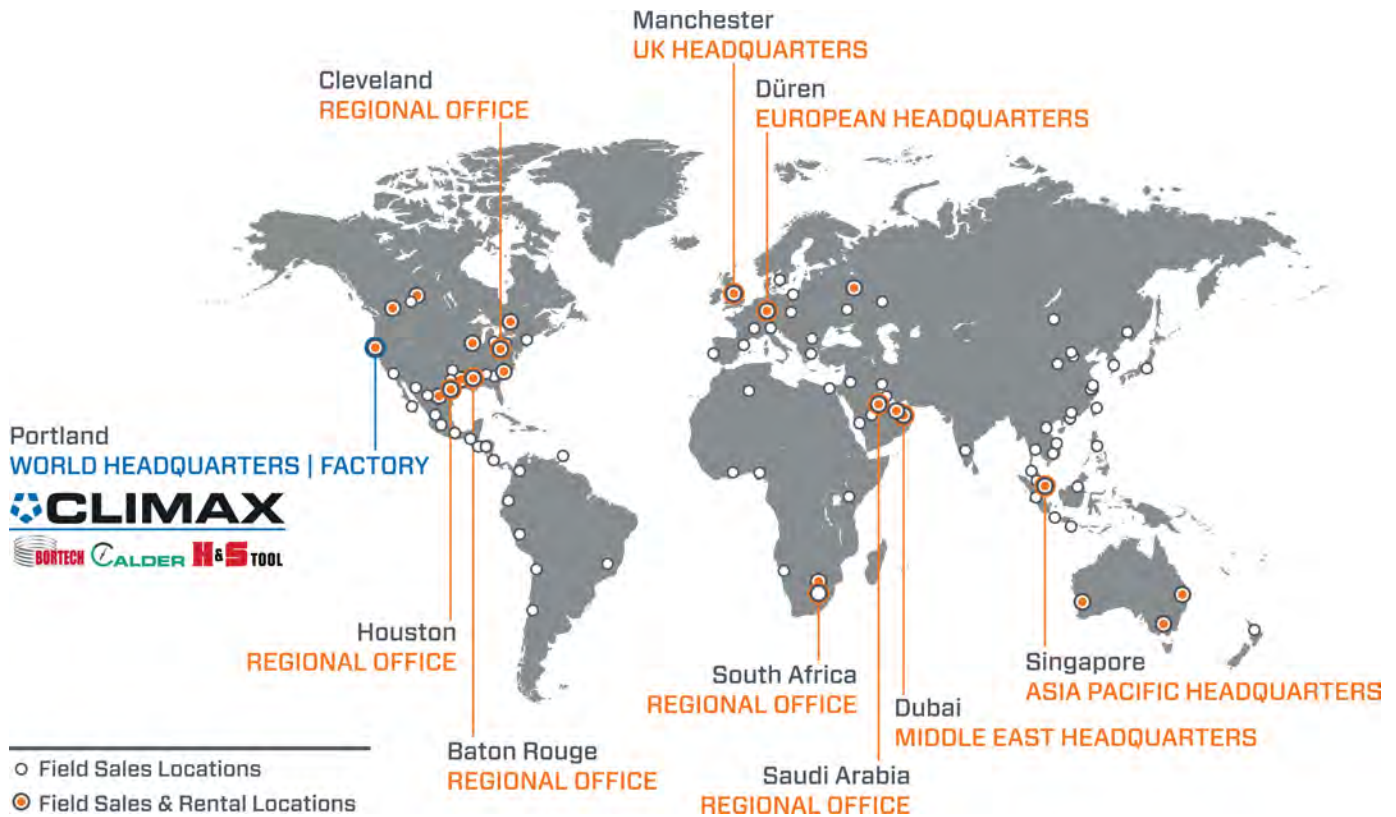
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1 INTRODUCTION

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1.1 HOW TO USE THIS MANUAL

This manual describes information necessary for the setup, operation, maintenance, storage, shipping, and decommissioning of the ODF Speed Facer.

The first page of each chapter includes a summary of the chapter contents to help you locate specific information. The appendices contain supplemental product

information to aid in setup, operation, and maintenance tasks.

Read this entire manual to familiarize yourself with the ODF Speed Facer before attempting to set it up or operate it.

1.2 SAFETY ALERTS

Pay careful attention to the safety alerts printed throughout this manual. Safety alerts will call your attention to specific hazardous situations that may be encountered when operating this machine.

Examples of safety alerts used in this manual are defined here¹:

DANGER

indicates a hazardous situation which, if not avoided, **WILL** result in death or severe injury.

1. For more information on safety alerts, refer to *ANSI/NEMA Z535.6-2011, Product safety Information in Product Manuals, Instructions, and Other Collateral Materials*.

WARNING

indicates a hazardous situation which, if not avoided, **COULD** result in death or severe injury.

CAUTION

indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

indicates a hazardous situation which, if not avoided, could result in property damage, equipment failure, or undesired work results.

1.3 GENERAL SAFETY PRECAUTIONS

H&S leads the way in promoting the safe use of portable machine tools. Safety is a joint effort. You, the end user, must do your part by being aware of your work

environment and closely following the operating procedures and safety precautions contained in this manual, as well as your employer's safety guidelines.

Observe the following safety precautions when operating or working around the machine.

Training - Before operating this or any machine tool, you should receive instruction from a qualified trainer. Contact H&S for machine-specific training information.

Risk assessment - Working with and around this machine poses risks to your safety. You, the end user, are responsible for conducting a risk assessment of each job site before setting up and operating this machine.

Intended use - Use this machine in accordance with the instructions and precautions in this manual. Do not use this machine for any purpose other than its intended use as described in this manual.

Personal protective equipment - Always wear appropriate personal protective gear when operating this or any other machine tool. Flame-resistant clothing with long sleeves and legs is recommended when operating the machine. Hot chips from the workpiece may burn or cut bare skin.

Work area - Keep the work area around the machine clear of clutter. Restrain cords and hoses connected to the machine. Keep other cords and hoses away from the work area.

Lifting - Many H&S machine components are very heavy. Whenever possible, lift the machine or its components using proper hoisting equipment and rigging. Always use designated lifting points on the machine. Follow lifting instructions in the setup procedures of this manual.

Lock-out/tag-out - Lock-out and tag-out the machine before performing maintenance.

Moving parts - H&S machines have numerous exposed moving parts and interfaces that can cause severe impact, pinching, cutting, and other injuries. Except for stationary operating controls, avoid contact with moving parts by hands or tools during machine operation. Remove gloves and secure hair, clothing, jewelry, and pocket items to prevent them from becoming entangled in moving parts.

Sharp edges - Cutting tools and workpieces have sharp edges that can easily cut skin. Wear protective gloves and exercise caution when handling a cutting tool or workpiece.

Hot surfaces - During operation, motors, pumps, HPU's, and cutting tools can generate enough heat to cause severe burns. Pay attention to hot surface labels, and avoid contact with bare skin until the machine has cooled.

1.4 MACHINE-SPECIFIC SAFETY PRECAUTIONS

Eye hazard - This machine produces metal chips during operation. Always wear eye protection when operating the machine.

Hazardous environments - Do not operate the machine in environments where potentially explosive materials, toxic chemicals, or radiation may be present.

Sound level - This machine produces potentially harmful sound levels. Hearing protection is required when operating this machine or working around it. During testing, the machine produced the sound levels¹ listed in Table 1-1.

TABLE 1-1. SOUND LEVELS

	Pneumatic Motor
Sound power	102.3 dBA
Operator sound pressure	87.6 dBA
Bystander sound pressure	85 dBA
	Hydraulic Motor
Sound power	85 dBA
Operator sound pressure	85 dBA
Bystander sound pressure	85 dBA

1. Machine sound testing was conducted in accordance with European Harmonized Standards EN ISO 3744:2010 and EN 11201:2010.

Machine mounting - Do not operate the machine unless mounted to a workpiece in accordance with this manual. If mounting the machine in an overhead or vertical position, do not remove hoist rigging until the machine is mounted to the workpiece in accordance with this manual.

In any mounting position, verify that the machine is tethered and mounted so that if the machine slips or rotates, no injury or damage will occur.

1.5 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.

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 to which it is attached 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.

1.6 RISK ASSESSMENT CHECKLIST

The following checklist is not intended to be an all inclusive list of things to watch out for when setting up and operating this Portable Machine Tool.

However, these checklists are typical of the types of risks the assembler and operator should consider. Use these checklists as part of your risk assessment:

TABLE 1-2. 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 (Section 3) and took inventory of all the items required but not supplied (Section 2.5).
☐	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 identified the best placement for the controls, cabling, and the operator.
☐	I evaluated and mitigated any other potential risks specific to my work area.

TABLE 1-3. RISK ASSESSMENT CHECKLIST AFTER SET-UP

	After set-up
☐	I checked that the machine is safely installed (according to Section 3) and the potential fall path is clear. If the machine is installed at an elevated position, 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 required Maintenance Intervals (Section 5.1) with the recommended lubricants (Section 5.2).
☐	I checked that all affected personnel have the recommended personal protective equipment, as well as any site-required or regulatory equipment.
☐	I checked that all affected personnel understand and are clear of the danger zone.
☐	I evaluated and mitigated any other potential risks specific to my work area.

1.7 LABELS

1.7.1 Label identification

The following warning labels should be on your machine. If any are defaced or missing, contact H&S immediately for replacements.

TABLE 1-4. LABELS

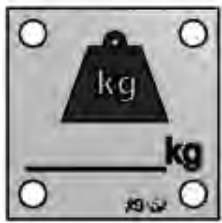
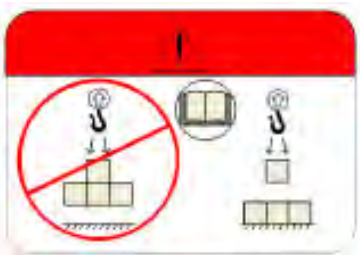
	P/N 29152 Mass plate		P/N 46902 Warning label: hot surface
	P/N 59039 Warning label: lift point		P/N 59042 Warning label: danger of hand caught in moving parts
HOSE ARR  BASE	P/N 60219 Hose connect schematic for red-red/blue-blue	HOSE ARR  BASE	P/N 60220 Hose connect schematic for blue-red/red-blue
	P/N 79324 Warning label: danger of hand entanglement in rotating gears		P/N 79385 Warning label: only lift the subassembly; check the operating manual

TABLE 1-4. LABELS

	P/N 82344 Bi-directional arrow label		P/N 84856 Warning label: tether machine before use
	P/N 89033 ODF30 Speed Facer label		
	P/N 87259 ODF30 Speed Facer label		
	P/N 87260 ODF50 Speed Facer label		
	P/N 87261 ODF60 Speed Facer label		
	P/N 87262 ODF70 ODF70 Speed Facer label		
	P/N 96008 ODF80 ODF80 Speed Facer label		
	P/N 98805 ODF90 ODF90 Speed Facer label		
	P/N 102381 ODF100 ODF100 Speed Facer label		
	P/N 100405 ODF110 ODF110 Speed Facer label		
	P/N 100406 ODF120 ODF120 Speed Facer label		

TABLE 1-4. LABELS

	PN 87271 Warning label: use eye and ear protection, and read the operating manual	Made in the U.S.A.	PN 87272 Made in the USA label
	P/N 89034 ODF30 Speed Facer labels		
	P/N 87427 ODF40 Speed Facer label		
	P/N 87428 ODF50 Speed Facer label		
	P/N 87429 ODF60 Speed Facer label		
	P/N 87430 ODF70 Speed Facer label		
	P/N 96007 ODF80 Speed Facer label		

TABLE 1-4. LABELS

 The label features the H&S TOOL logo in red and black on the left. To the right, 'ODF90' is written in large black font. Below 'ODF90', it says 'Powered by CLIMAX' in a smaller blue font.	P/N 98804 ODF90 Speed Facer label
 The label features the H&S TOOL logo in red and black on the left. To the right, 'ODF100' is written in large black font. Below 'ODF100', it says 'Powered by CLIMAX' in a smaller blue font.	P/N 102380 ODF100 Speed Facer label
 The label features the H&S TOOL logo in red and black on the left. To the right, 'ODF110' is written in large black font. Below 'ODF110', it says 'Powered by CLIMAX' in a smaller blue font.	P/N ODF110 ODF110 Speed Facer label
 The label features the H&S TOOL logo in red and black on the left. To the right, 'ODF120' is written in large black font. Below 'ODF120', it says 'Powered by CLIMAX' in a smaller blue font.	P/N 100408 ODF120 Speed Facer label

For further identification of location placement, refer to the exploded views in Appendix A.

2 OVERVIEW

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2.1 FEATURES AND COMPONENTS

The ODF Speed Facer is a portable, pneumatic (or optional hydraulic), belt-driven, outside-diameter (OD)-mounted single-point flange facing machine for use on workpieces with ODs specified in Table 2-1.

TABLE 2-1. SPEED FACER OD RANGES

Machine	Outer diameter range	OD range with optional extended mounting feet ¹
ODF30 Speed Facer	19.1 - 30.5" (489 - 779 mm)	9.1 - 20" (235 - 266 mm)
ODF40 Speed Facer	29.1 - 40.5" (739 - 1,029 mm)	19.1 - 30.0" (485 - 762 mm)
ODF50 Speed Facer	39.1 - 50.5" (993 - 1,283 mm)	29.1 - 40.0" (739 - 1016 mm)
ODF60 Speed Facer	49.1 - 60.5" (1,247 - 1,537 mm)	39.1 - 50.0" (993 - 1,270 mm)
ODF70 Speed Facer	59.1 - 70.5" (1,501 - 1,791 mm)	49.1 - 60.0" (1,247 - 1,524 mm)
ODF80 Speed Facer	69.1 - 80.5" (1,755 - 2,045 mm)	59.1 - 70.0" (1,501 - 1,778 mm)
ODF90 Speed Facer	79.2 - 90.5" (2,011 - 2,298 mm)	69.2 - 90.5" (1,757 - 2,298 mm)
ODF100 Speed Facer	89.2 - 100.5" (2,265 - 2,552 mm)	79.2 - 100.5" (2011 - 2552 mm)
ODF110 Speed Facer	99.1 - 110.5" (2,517 - 2,817 mm)	89.1 - 100" (2,263 - 2,540 mm)
ODF120 Speed Facer	109.1 - 120.5" (2,771 - 3,061 mm)	99.1 - 110" (2,517 - 2,794 mm)

1. See Figure 2-1.

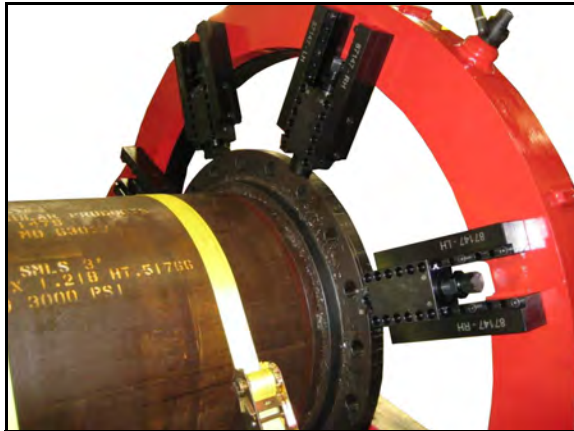


FIGURE 2-1. EXTENSION FEET INSTALLED

Principle components include the following:

Machine Frame — The ODF is an OD-mounted machine with a welded carbon steel frame and a rotating track ring. Mounting feet are attached directly to the main frame.

Drive motor — The ODF70 and smaller Speed Facers use a 1.35 hp (1.0 kW) pneumatic motor; the ODF80 and larger use a 3.0 hp (2.24 kW) pneumatic motor. For all Speed Facers, the hydraulic motor is 17.9 cubic inches (293 cm³) to be run by a 10 hp (7.5 kw) HPU. Both types of motor are reversible and may be installed from either the top or bottom of the machine depending on obstructions or operating mode.

Bridge radial axis — The radial axis incorporates linear ways and a ball screw for 13.9" (353 mm) of travel. It can be repositioned on the bridge to cut from the maximum OD to the zero center.

Tool holder assembly — The angle of the tool head is also adjustable 360 degrees for feeding axially at an angle. The tool post can be rotated independently to maintain tool geometry. The radial and axial position can be manually adjusted using a 3/8" ratchet driver.

Automatic feed unit — The automatic feed unit eliminates the need to manually manipulate the feed handles during operation. The ODF Speed Facer includes four feed trippers to actuate the adjustable feed unit. The feed can be adjusted from 0.001-0.032" (0.03-0.8 mm) per revolution and can be used on either axis.

Jacking foot assembly — The jacking foot assemblies are designed for OD mounting only. The leveling jacking feet have adjustable jaws and work with the setup fingers to level the machine. Refer to Section 3.2 on page 29 for more mounting dimensional constraints.

Backfacing attachment — The optional backfacing attachment allows machining access when there are bridge obstructions. It can also be used to machine the backside of pipe flanges.

Figure 2-2 on page 11 shows the ODF40 Speed Facer.

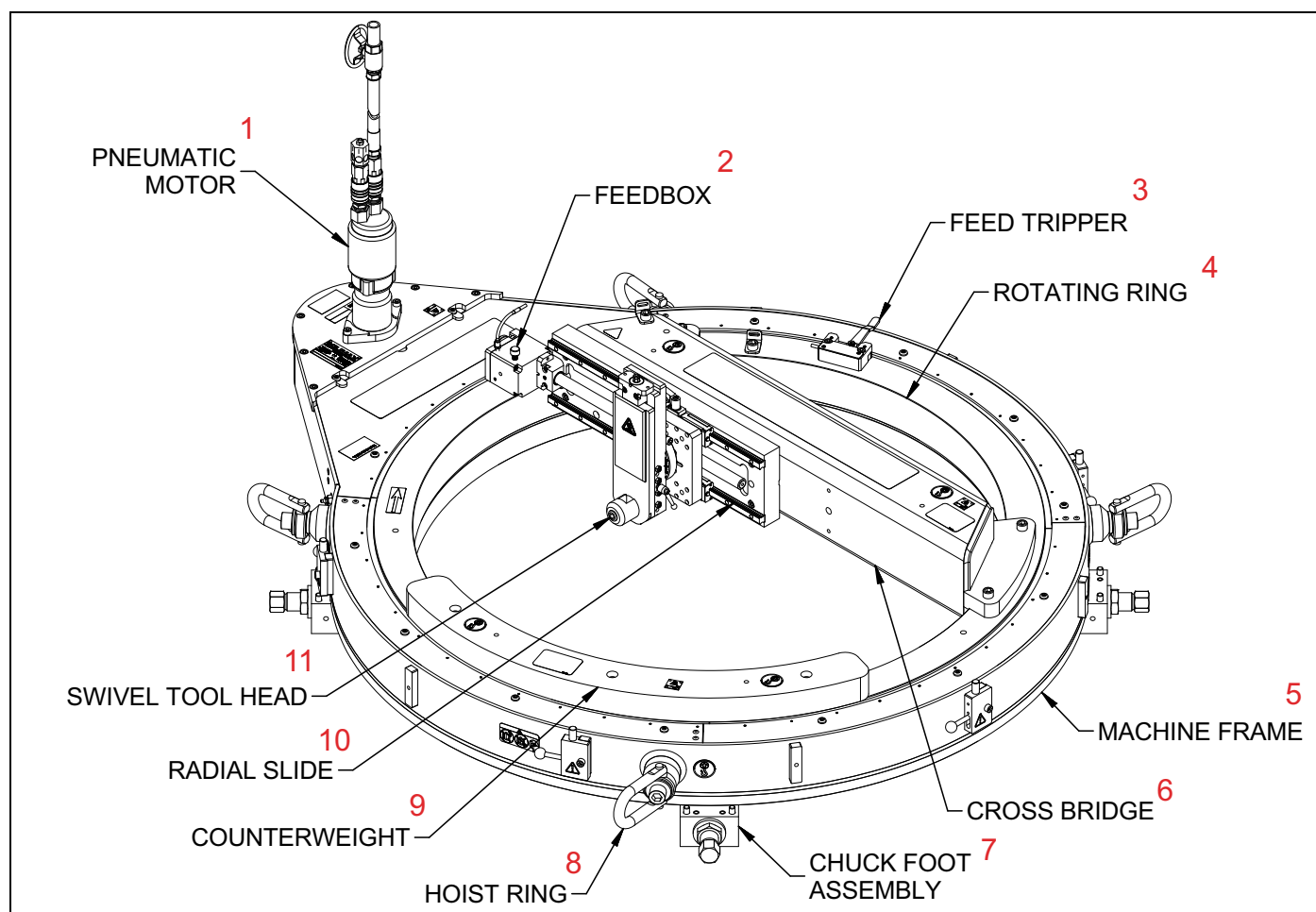


FIGURE 2-2. TYPICAL SPEED FACER COMPONENTS (MODEL ODF40 SHOWN)

TABLE 2-2. SPEED FACER COMPONENTS IDENTIFICATION

Number	Name
1	Pneumatic motor
2	Feedbox
3	Feed tripper
4	Rotating ring
5	Machine frame
6	Cross bridge
7	Chuck foot assembly
8	Hoist ring
9	Counterweight
10	Radial slide
11	Swivel tool head

2.2 CONTROLS

2.2.1 Pneumatic motor controls

The ODF Speed Facer pneumatic controls are located on the pneumatic conditioning unit (Air Caddy), shown in Figure 2-3 on page 12.

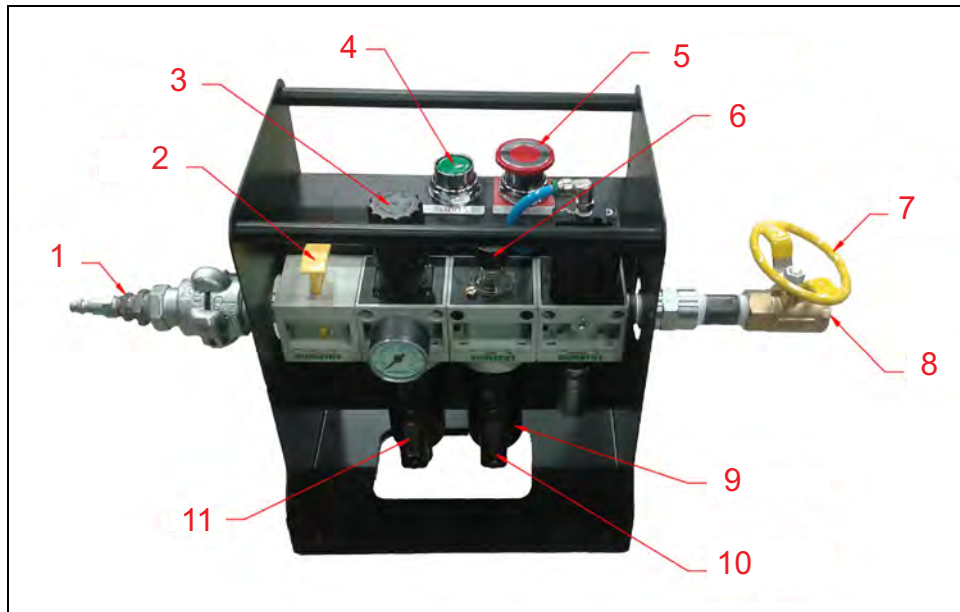


FIGURE 2-3. PCU COMPONENTS

TABLE 2-3. PCU CONTROLS IDENTIFICATION

Number	Component	Function
1	Air hose quick disconnect ¹	Connects the PCU to the operator's compressed air source.
2	Air supply lock-out	Isolates air pressure from the machine and provides the ability to lock the valve closed before performing maintenance.
3	Regulator	Controls the air pressure supplied to the machine. The regulator is preset at the factory and does not require adjustment.
4	Start (system reset)	Resets the low-pressure dropout.
5	Emergency STOP	Isolates the supply air and vents the downstream air. Press down to stop the machine; pull up to reset.
6	Oil drip rate dial	Controls the air lubricator drip rate. For more information, see Section 5.3.2 on page 74.
7	Speed adjustment valve	Controls the machine's rate of rotation and is located on the exhaust of the pneumatic assembly.
8	Air hose to the machine	Supplies the air to the machine.
9	Oil reservoir	Holds lubricating oil Mobil Almo 525 for the machine air motor.

TABLE 2-3. PCU CONTROLS IDENTIFICATION (CONTINUED)

Number	Component	Function
10	Oil reservoir sight glass	Shows the amount of oil in the reservoir.
11	Filter	Removes foreign particulates from the air supply and protects the downstream valves and motor.

1. Figure 2-3 shows the H&S quick disconnect. Your disconnect may look different.

WARNING

Always stop the machine and lock-out/tag-out the PCU before making adjustments to controls or machine components. Failure to follow this safety precaution may result in severe injury.

Emergency shutdown

To stop machine operation immediately, press the **EMERGENCY STOP** button on the Air Caddy.

Before restarting the ODF Speed Facer, do the following:

1. Close the speed adjustment valve.
2. Pull the **EMERGENCY STOP** button up.
3. Press the **START** button (repeat step 1 if necessary).

2.2.2 Hydraulic motor controls

Reference the included HPU (hydraulic power unit) operating instructions for controls information.

If the HPU is not being supplied as part of the rental or sale of this machine, read and thoroughly understand the controls for the HPU being used.

2.3 DIMENSIONS

The following figures show the machine and operating dimensions.

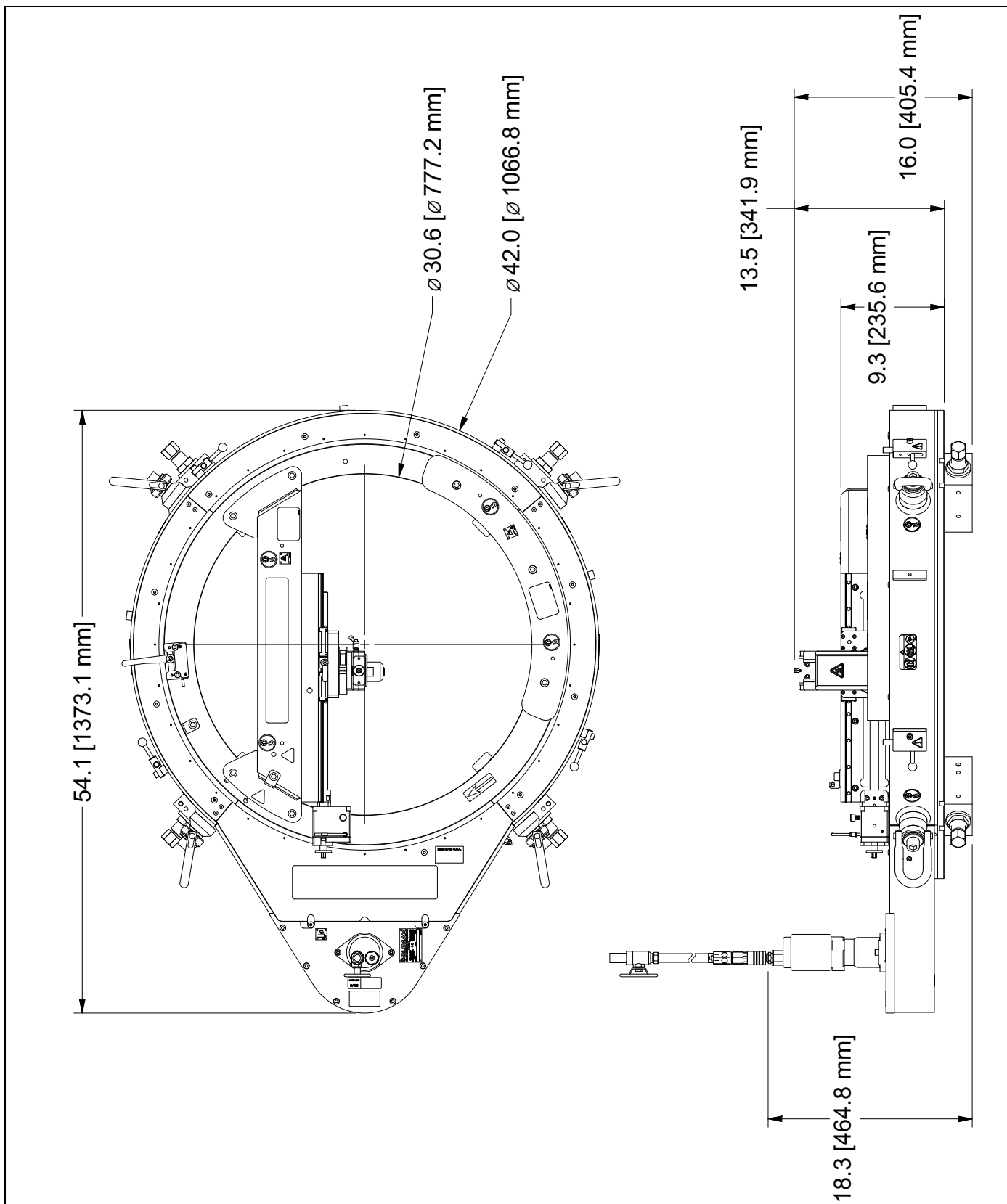


FIGURE 2-4. ODF30 SPEED FACER DIMENSIONS (P/N 88930)

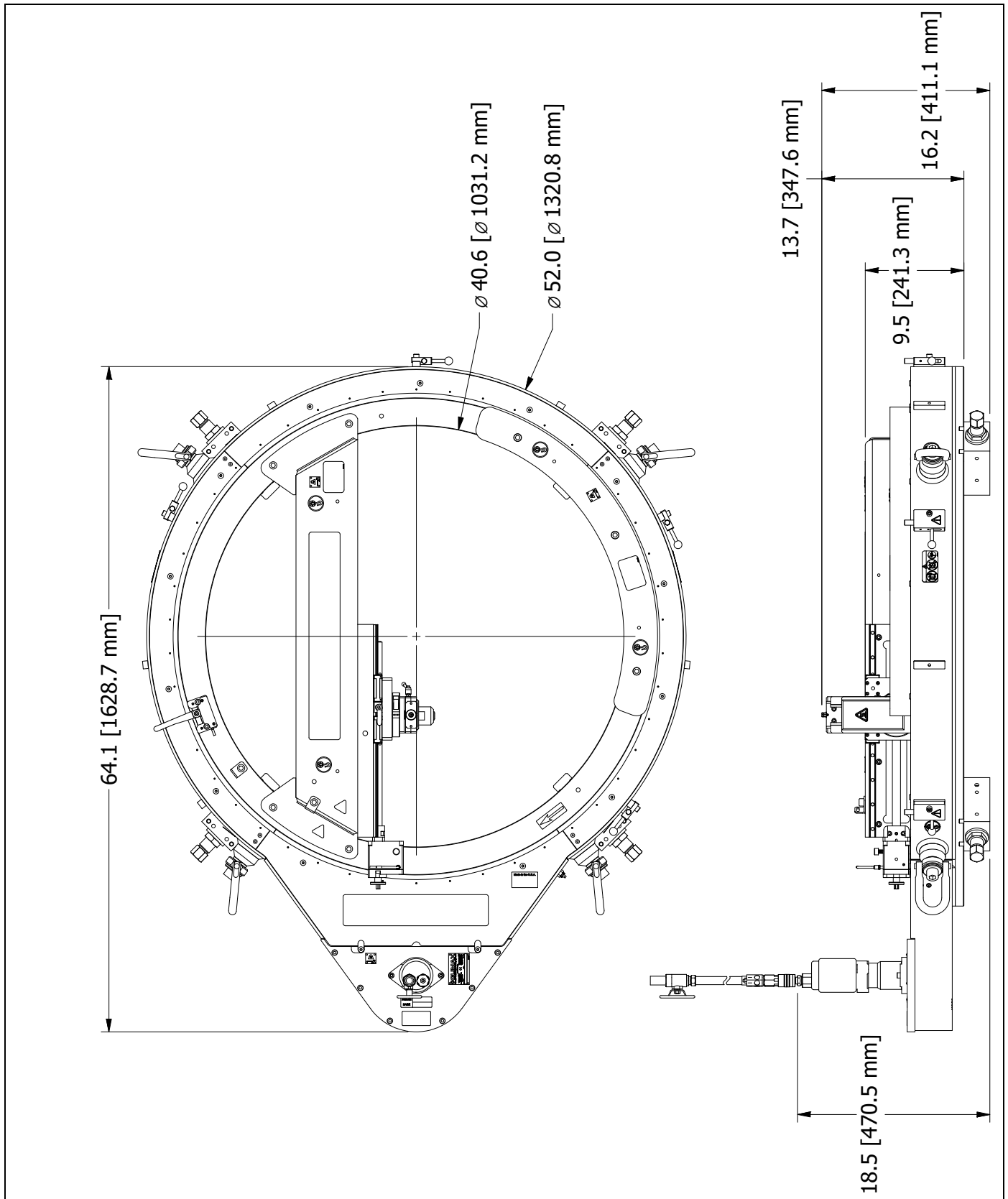


FIGURE 2-5. ODF40 SPEED FACER DIMENSIONS (P/N 86870)

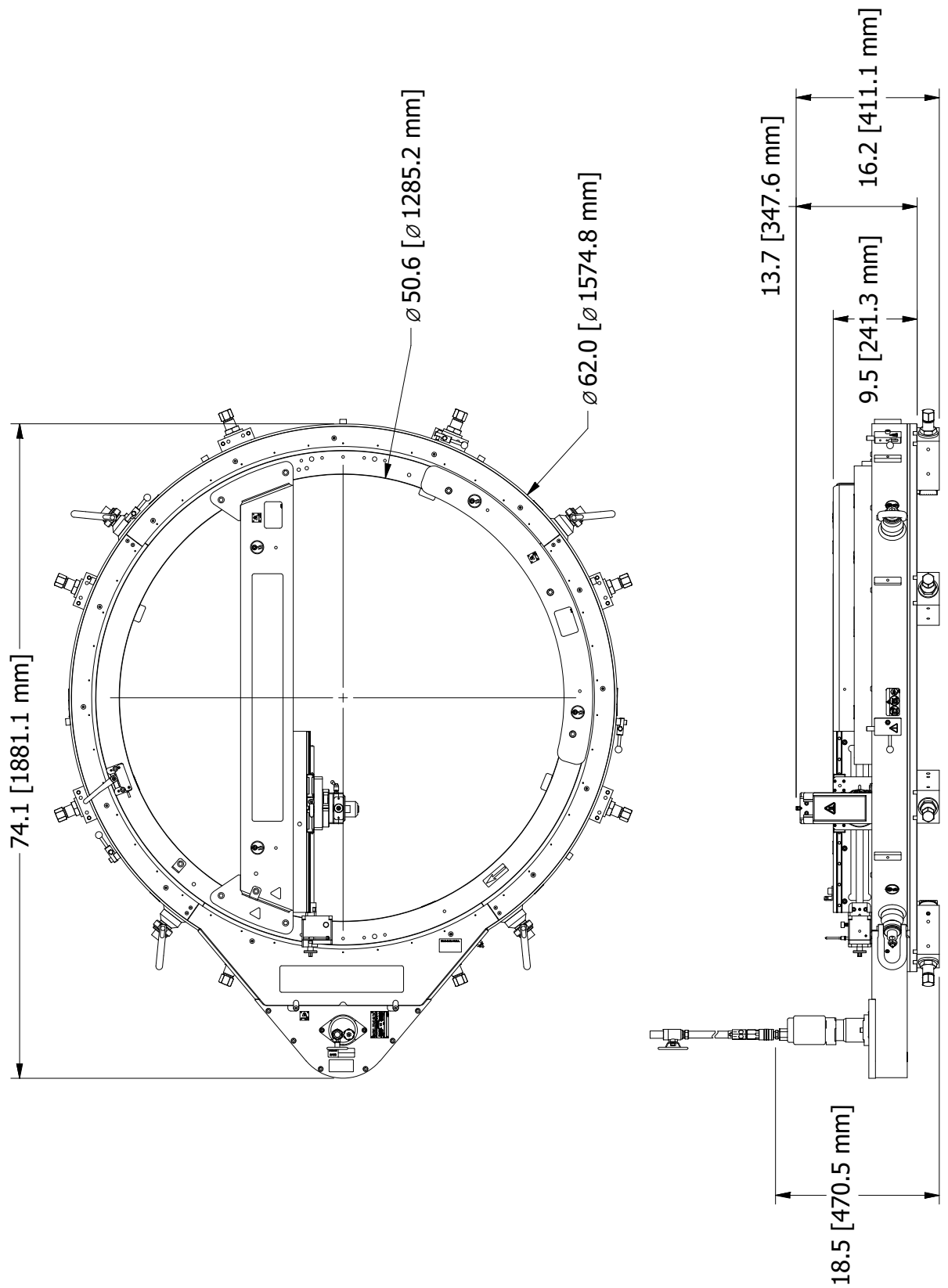


FIGURE 2-6. ODF50 SPEED FACER DIMENSIONS (P/N 86980)

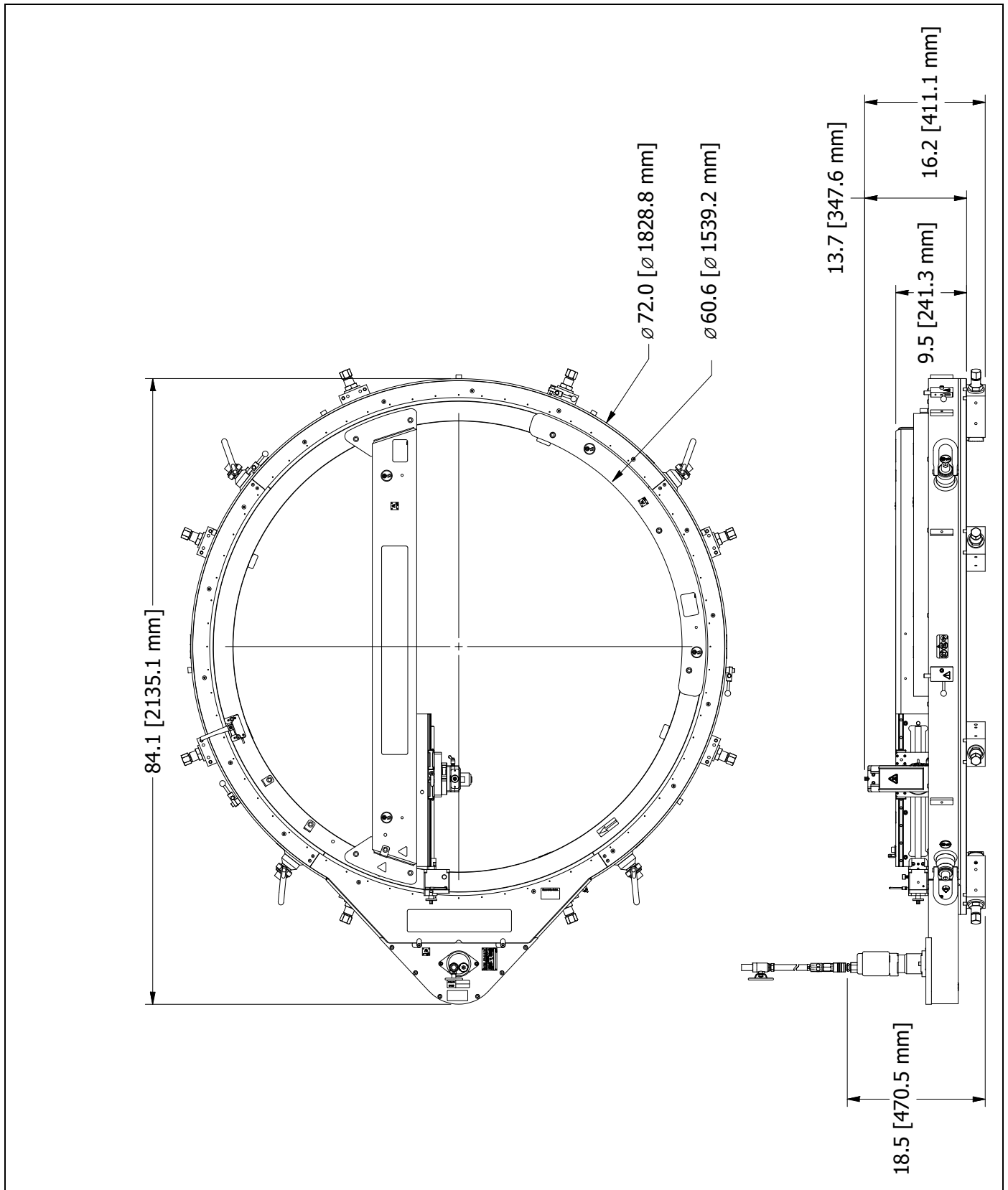


FIGURE 2-7. ODF60 SPEED FACER DIMENSIONS (P/N 86990)

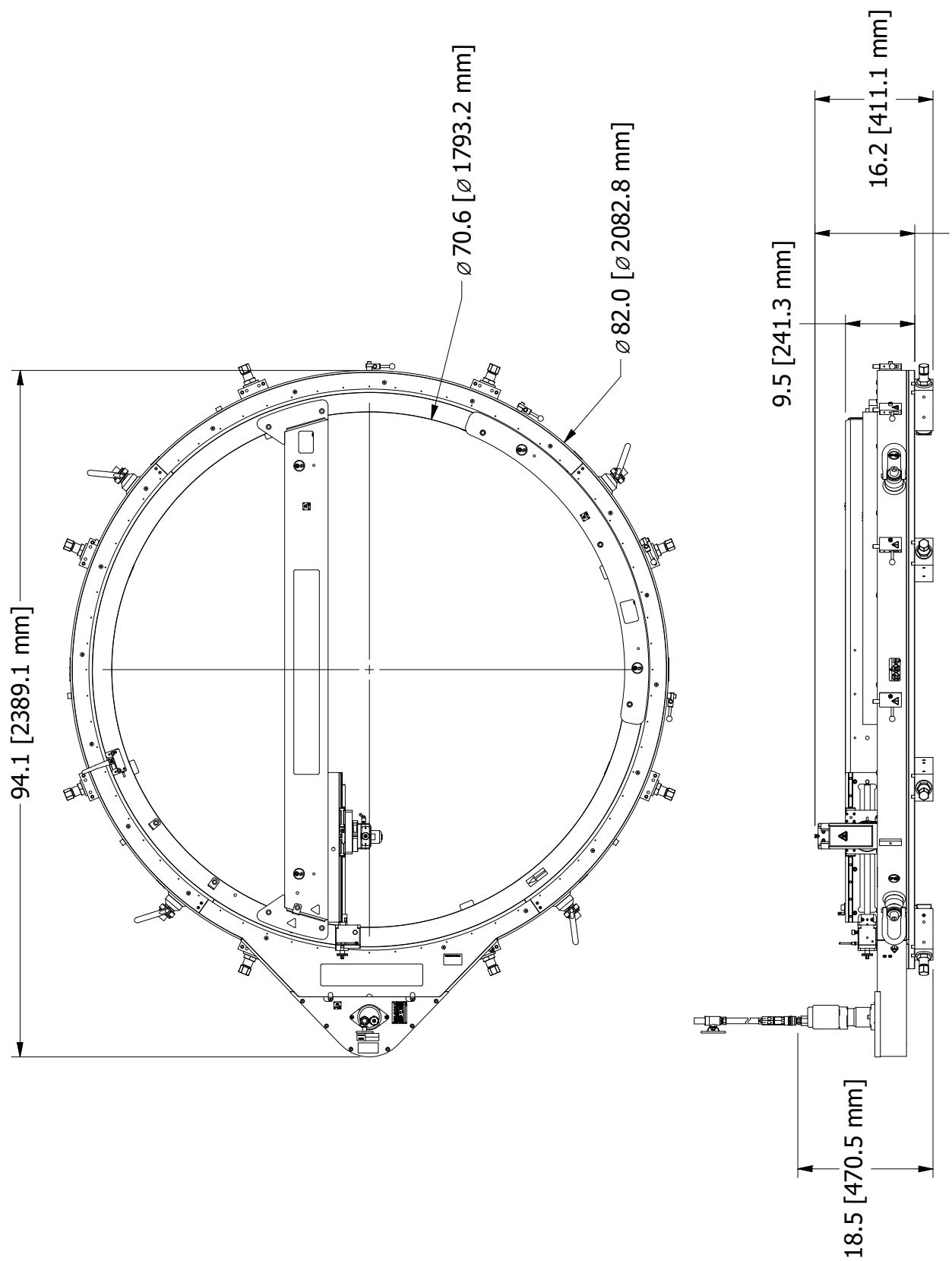


FIGURE 2-8. ODF70 SPEED FACER DIMENSIONS (P/N 87000)

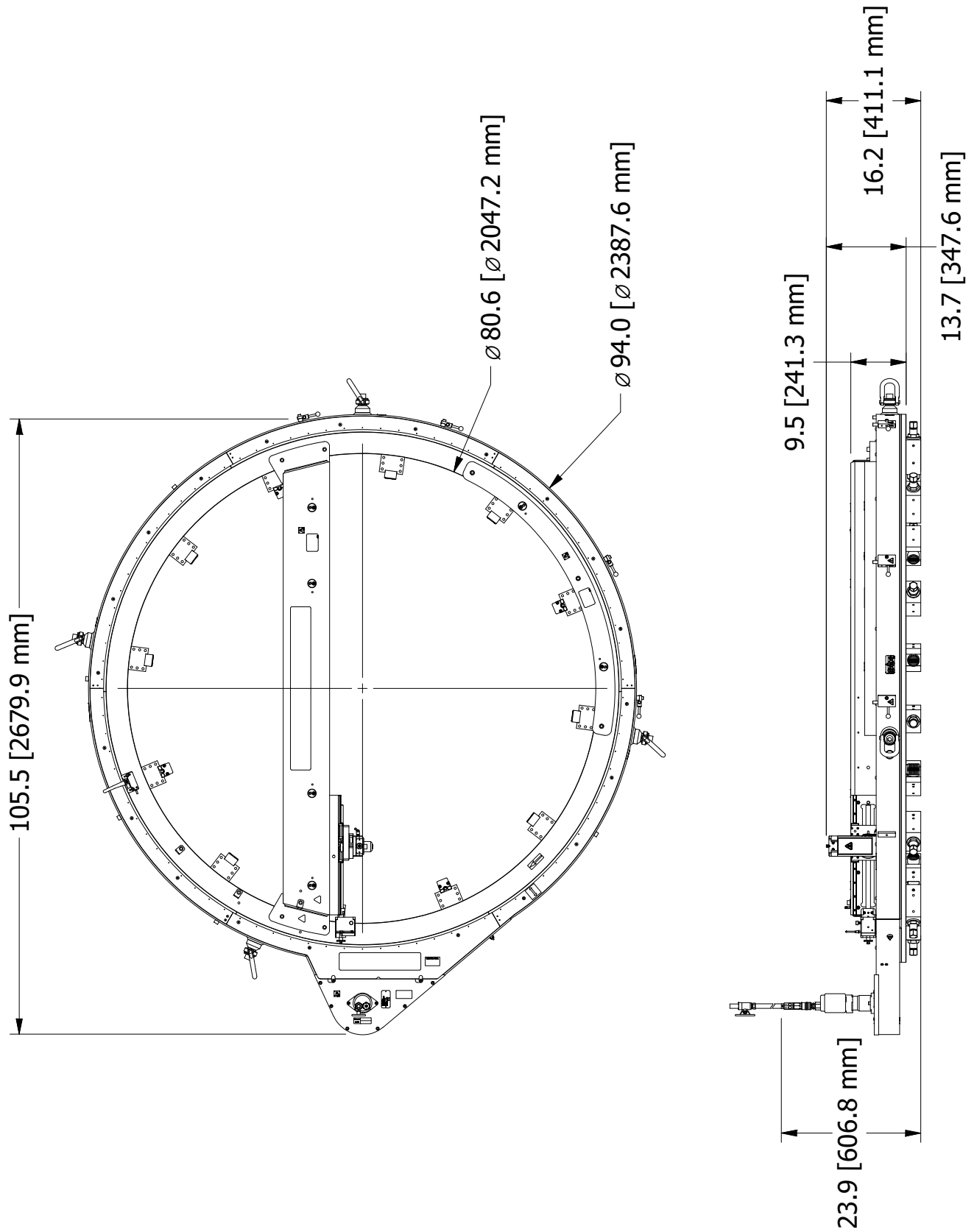


FIGURE 2-9. ODF80 SPEED FACER DIMENSIONS (P/N 94770)

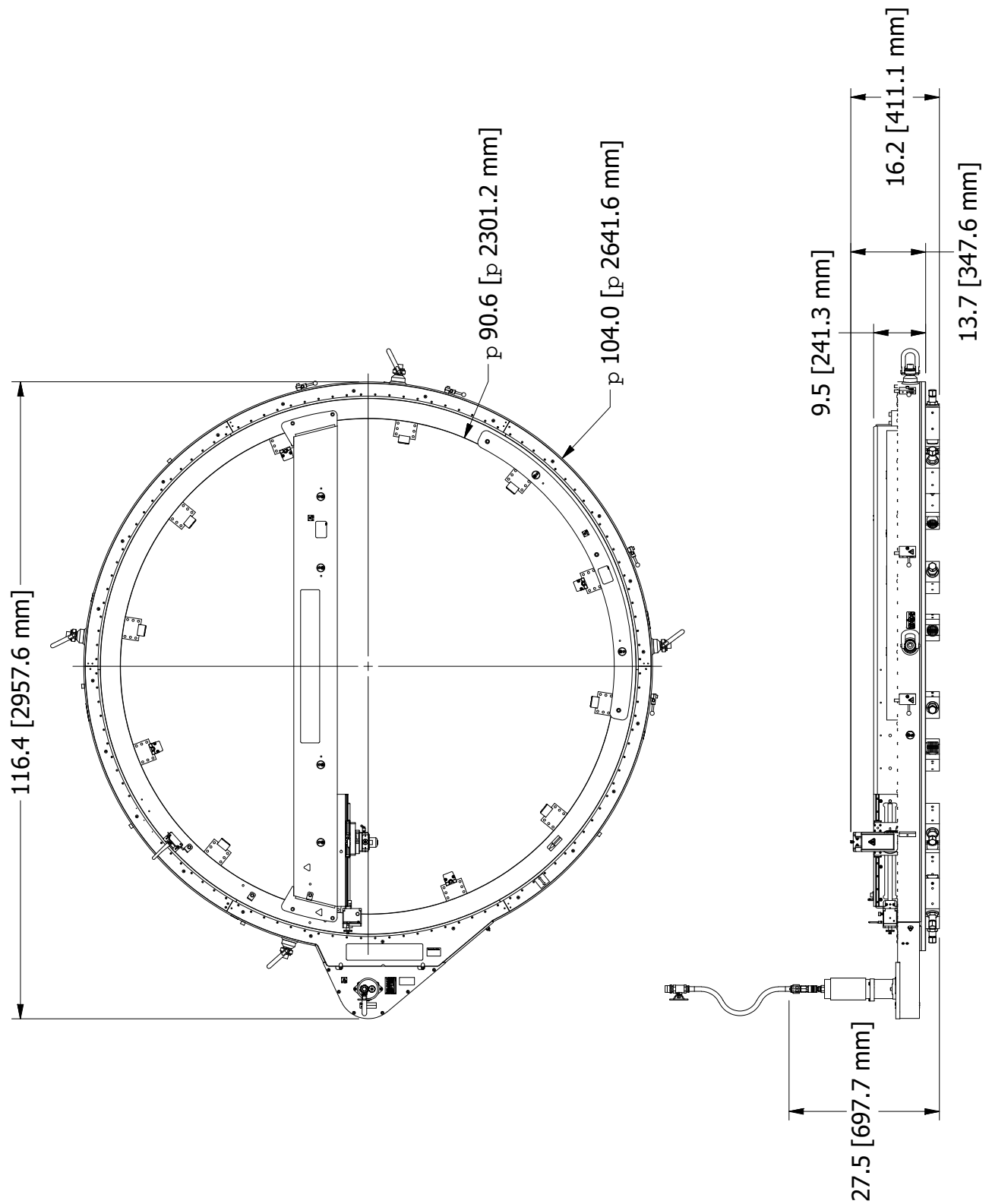


FIGURE 2-10. ODF90 SPEED FACER DIMENSIONS (P/N 94780)

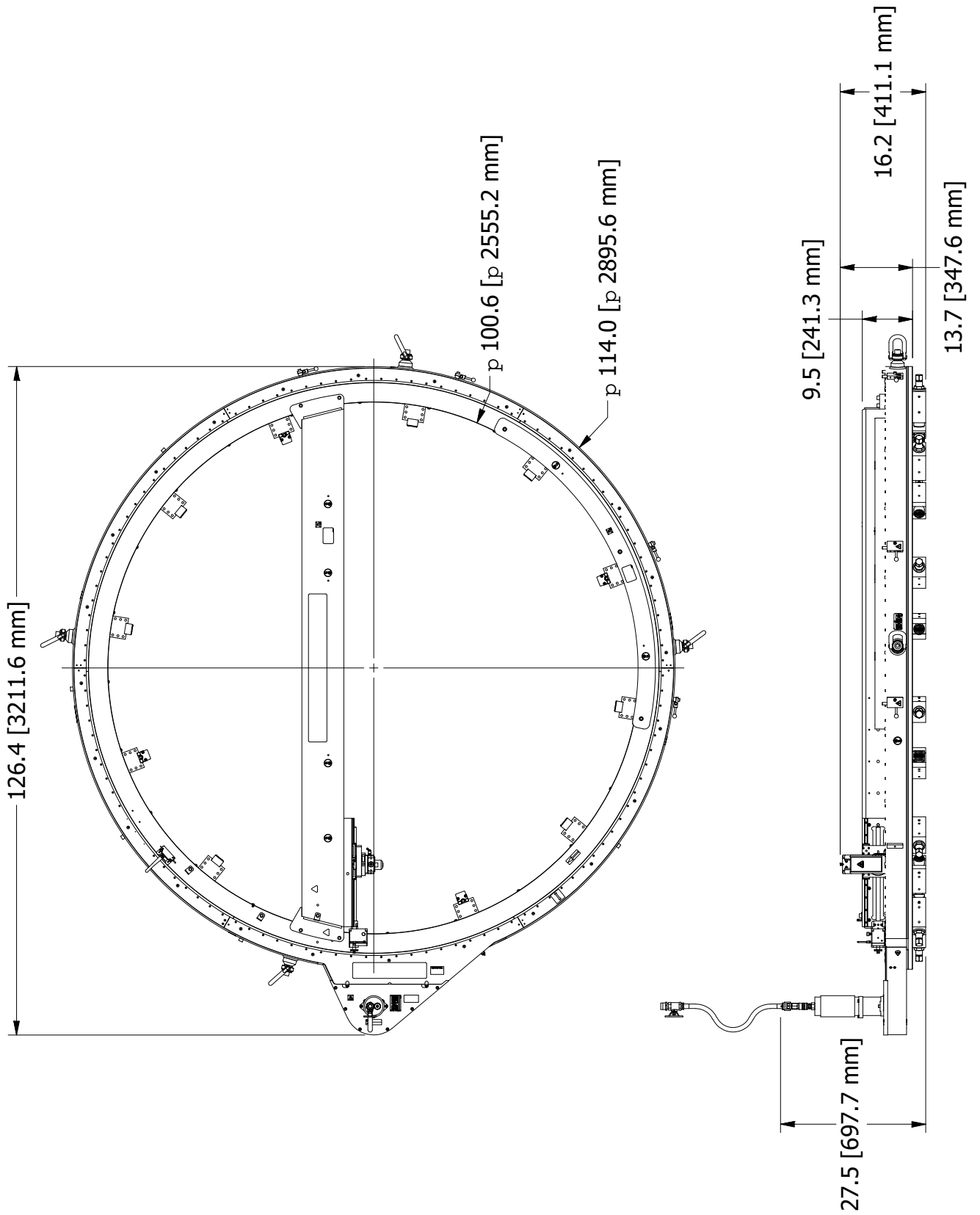


FIGURE 2-11. ODF100 SPEED FACER DIMENSIONS (P/N 94790)

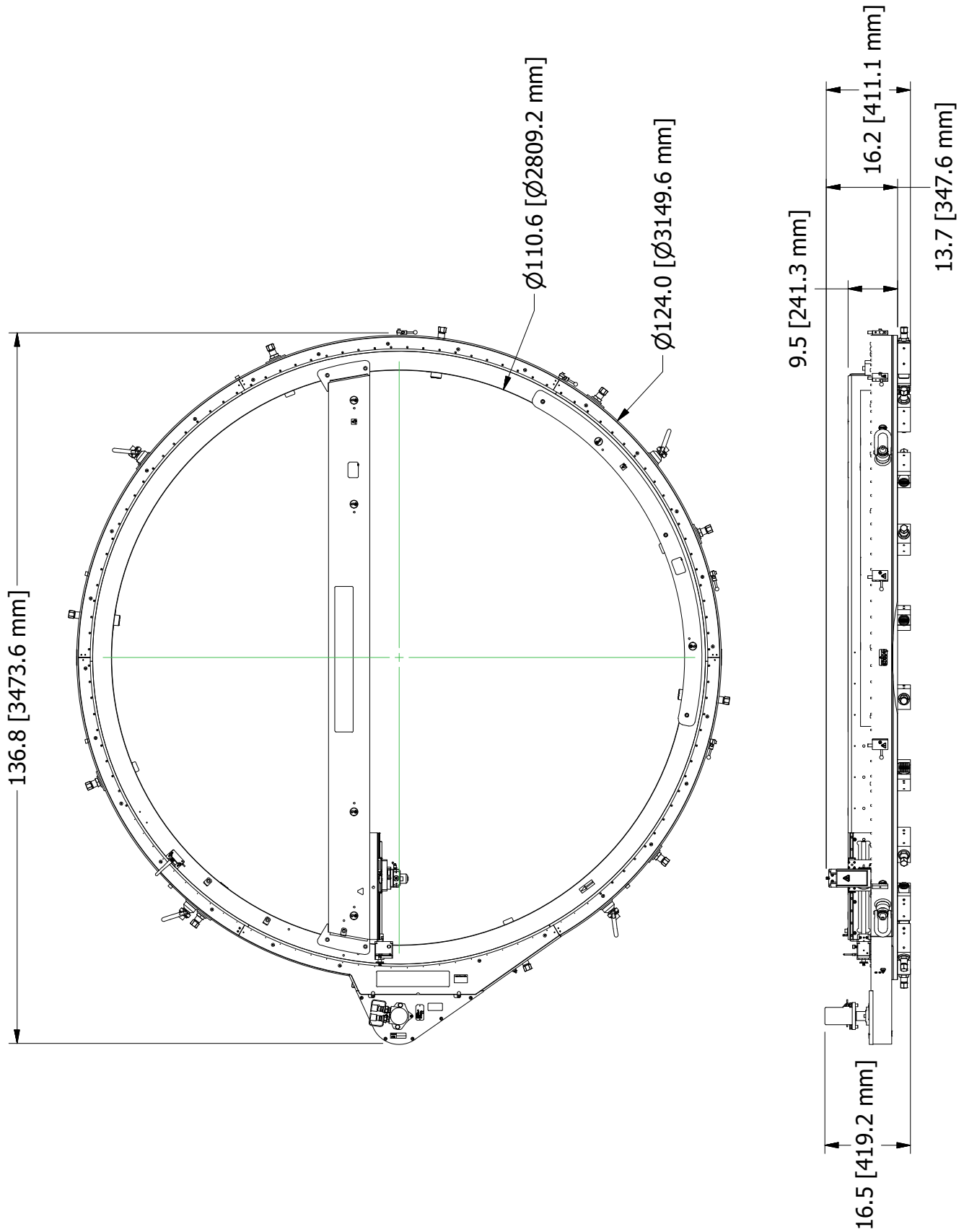


FIGURE 2-12. ODF110 SPEED FACER DIMENSIONS (P/N 93050)

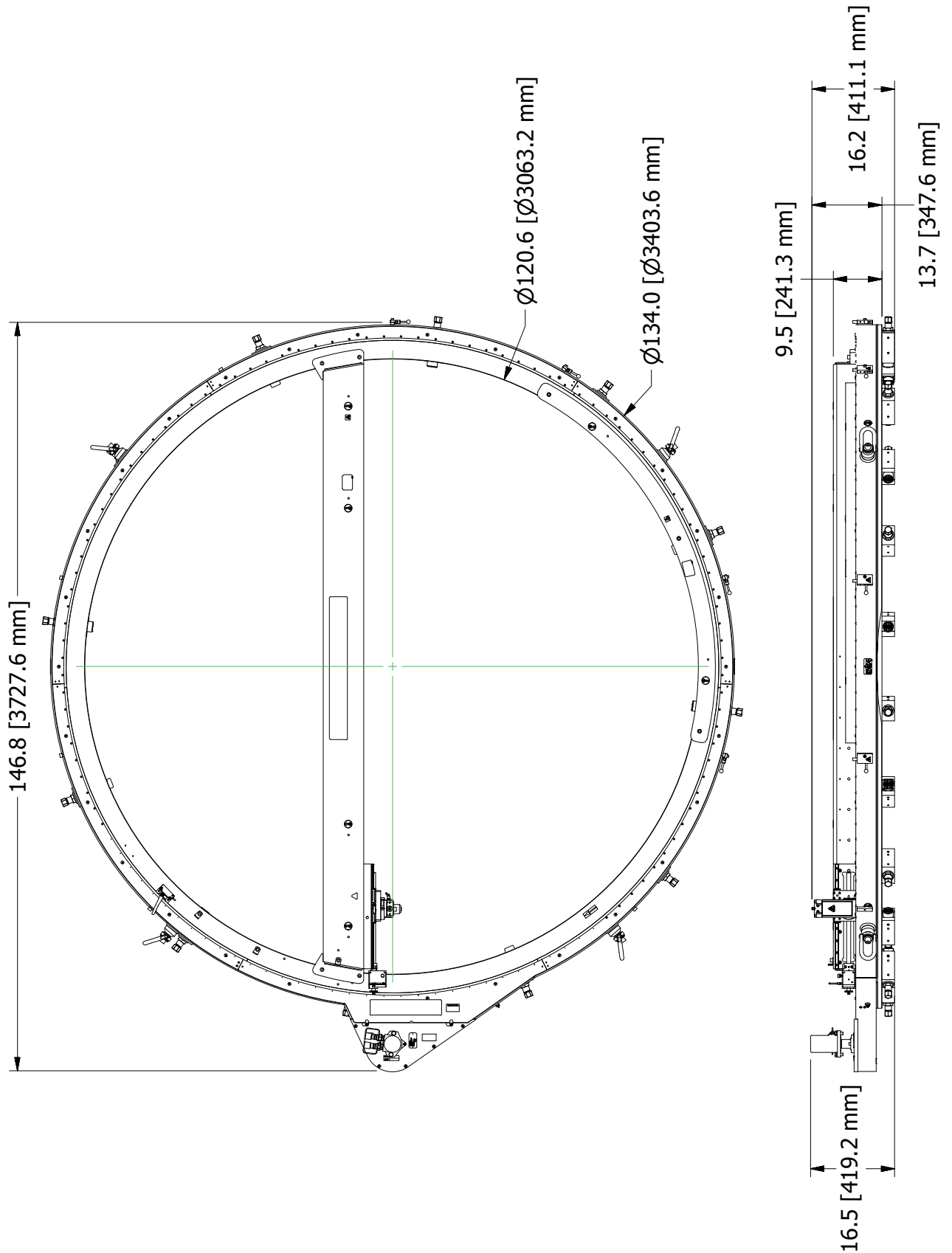


FIGURE 2-13. ODF120 SPEED FACER DIMENSIONS (P/N 7639-S1)

2.4 SPECIFICATIONS

The following tables list sub-component mass for each model of ODF Speed Facer.

TABLE 2-4. SMALL SPEEDFACER MODEL SPECIFICATIONS

	ODF30	ODF40	ODF50	ODF60	ODF70
Machine Performance Ranges					
Mounting range	19.2 - 30.5" (488 - 775 mm)	29.2 - 40.5" (742 - 1029 mm)	39.2 - 50.5" (996 - 1,283 mm)	49.2 - 60.5" (1,250 - 1,537 mm)	59.2 - 70.5" (1,511 - 1,791 mm)
Mounting range with feet extension	9.2 - 30.5" (234 - 775 mm)	19.2 - 40.5" (488 - 1,029 mm)	29.2 - 50.5" (742 - 1,283 mm)	39.2 - 60.5" (996 - 1,537 mm)	49.2 - 70.5" (1,250 - 1,791 mm)
Facing diameter range	0 - 30.5" (0 - 775 mm)	0 - 40.5" (0 - 1,029 mm)	0 - 50.5" (0 - 1,283mm)	0 - 60.5" (0 - 1,537 mm)	0 - 70.5" (0 - 1,791 mm)
Radial tool slide travel	14" (356 mm)				
Axial tool head travel	6" (152 mm)				
Feed rate (adjustable)	0.001 - 0.032 inch/rev (0.025 - 0.813 mm/rev)				
Rotational drive system					
Drive type	Pneumatic or Hydraulic - Belt Drive				
Turning arm speed range at max power	0 - 34 RPM	0 - 14.5 RPM	0 - 12 RPM	0 - 10 RPM	0 - 9 RPM
Power input requirements	1.35 hp pneumatic motor. Requires a 10 hp HPU with 8 - 10 gpm (32 - 38 l/m) @ 2000 psi (133 bar) flow rate				
Weight					
Machine	1,079 lbs (490 kg)	1,330 lbs (603 kg)	1,690 lbs (767 kg)	1,930 lbs (875 kg)	2,160 lbs (980 kg)
Wooden crate	377 lbs (171 kg)	430 lbs (195 kg)	490 lbs (222 kg)	550 lbs (249 kg)	860 lbs (390 kg)
Total shipping weight	1,456 lbs (662 kg)	1,760 lbs (798 kg)	2,180 lbs (989 kg)	2,480 lbs (1,125 kg)	3,020 lbs (1,370 kg)

TABLE 2-5. LARGE SPEEDFACER MODEL SPECIFICATIONS

	ODF80	ODF90	ODF100	ODF110	ODF120
Machine Performance Ranges					
Mounting range	69.2 - 80.5" (1,757 - 2,044 mm)	79.2 - 90.5" (2,011 - 2,298 mm)	89.2 - 100.5" (2,265 - 2,552 mm)	99.2 - 110.5" (2,519 - 2,806 mm)	109.2 - 120.5" (2,773 - 3,060 mm)
Mounting range with feet extension	59.2 - 80.5" (1,503 - 2,044 mm)	69.2 - 90.5" (1,757 - 2,298 mm)	79.2 - 100.5" (2,011 - 2,552 mm)	89.2 - 110.5" (2,265 - 2,806 mm)	99.2 - 120.5" (2,519 - 3,060 mm)
Facing diameter range	0 - 80.5" (0 - 2044 mm)	0 - 90.5" (0 - 2298 mm)	0 - 100.5" (0 - 2552 mm)	0 - 110.5" (0 - 2806 mm)	0 - 120.5" (0 - 3060 mm)
Radial tool slide travel	14" (356 mm)				
Axial tool head travel	6" (152 mm)				

TABLE 2-5. LARGE SPEEDFACER MODEL SPECIFICATIONS

	ODF80	ODF90	ODF100	ODF110	ODF120
Feed rate (adjustable)	0.001 - 0.032 inch/rev (0.025 - 0.813 mm/rev)				
Rotational drive system					
Drive type	Pneumatic or Hydraulic - Belt Drive				
Turning arm speed range at max power	0 - 8 RPM	0 - 7.5 RPM	0 - 6.5 RPM	0 - 5.5 RPM	0 - 5 RPM
Power input requirements	3 hp pneumatic motor. Requires a 10 hp HPU with 8 - 10 gpm (32 - 38 l/m) @ 2000 psi (133 bar) flow rate.				
Weight					
Machine	2,820 lbs (1,280 kg)	3,140 lbs (1,433 kg)	3,460 lbs (1,569 kg)	3,760 lbs (1,707 kg)	4,040 lbs (1,835 kg)
Incline shipping frame	1,100 lbs (499 kg)	1,140 lbs (517 kg)	1,260 lbs (572 kg)	1,360 lbs (617 kg)	1,460 lbs (662 kg)
Total shipping weight	3,920 lbs (1,780 kg)	4,280 lbs (1,940 kg)	4,720 lbs (2,140 kg)	5,120 lbs (2,320 kg)	5,500 lbs (2,500 kg)

TABLE 2-6. ODF30 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (four total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)
88937	ODF30 bridge weldment	69 lbs (31 kg)
88936	ODF30 counterweight	49 lbs (22 kg)
88930	ODF30 Speed Facer total	1,079 lbs (490 kg)

TABLE 2-7. ODF40 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (four total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)
86877	ODF40 bridge weldment	125 lbs (57 kg)
86876	ODF40 counterweight	65 lbs (30 kg)
86870	ODF40 Speed Facer total	1,382 lbs (627 kg)

TABLE 2-8. ODF50 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (four total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)

TABLE 2-8. ODF50 SPEED FACER SUB-COMPONENT MASS (CONTINUED)

P/N	Component	Mass
86987	ODF50 bridge weldment	155 lbs (70 kg)
86986	ODF50 counterweight	73 lbs (33 kg)
86980	ODF50 Speed Facer total	1,688 lbs (766 kg)

TABLE 2-9. ODF60 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (eight total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)
86997	ODF60 bridge weldment	187 lbs (85 kg)
86996	ODF60 counterweight	83 lbs (38 kg)
86990	ODF60 Speed Facer	1,926 lbs (874 kg)

TABLE 2-10. ODF70 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (eight total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)
87007	ODF70 bridge weldment	215 lbs (98 kg)
87006	ODF70 counterweight	95 lbs (43 kg)
87000	ODF70 Speed Facer total	2,159 lbs (979 kg)

TABLE 2-11. ODF80 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (12 total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)
95981	ODF80 bridge weldment	334 lbs (156 kg)
95986	ODF80 counterweight	102 lbs (46 kg)
94770	ODF80 Speed Facer total	2,911 lbs (1,320 kg)

TABLE 2-12. ODF90 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (12 total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)

TABLE 2-12. ODF90 SPEED FACER SUB-COMPONENT MASS (CONTINUED)

P/N	Component	Mass
95981	ODF90 bridge weldment	374 lbs (170 kg)
95986	ODF90 counterweight	115 lbs (52 kg)
94770	ODF90 Speed Facer total	3,196 lbs (1,450 kg)

TABLE 2-13. ODF100 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (12 total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)
95981	ODF100 bridge weldment	394 lbs (178 kg)
95986	ODF100 counterweight	128 lbs (58 kg)
94770	ODF100 Speed Facer total	3,532 lbs (1,600 kg)

TABLE 2-14. ODF110 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (12 total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)
92107	ODF110 bridge weldment	403 lbs (183 kg)
92106	ODF110 counterweight	140 lbs (64 kg)
93050	ODF110 Speed Facer	3,764 lbs (1,711 kg)

TABLE 2-15. ODF120 SPEED FACER SUB-COMPONENT MASS

P/N	Component	Mass
87164	Extension chuck foot kit assembly (12 total)	22.5 lbs (10.2 kg) each
87030	Backfacing attachment assembly	62 lbs (28 kg)
92117	ODF120 bridge weldment	438 lbs (199 kg)
92116	ODF120 counterweight	152 lbs (69 kg)
7639-S1	ODF120 Speed Facer total	4,045 lbs (1,839 kg)

2.5 ITEMS REQUIRED BUT NOT SUPPLIED

The following items are required but not supplied in your H&S product kit:

- Torque wrench
- Dial indicator
- Wood blocks

-
- Tape measure
 - A protective waterproof tarp for ODF80 and larger machines that are stored on a shipping frame

3 SETUP

IN THIS CHAPTER:

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This section describes the setup and assembly procedures for the ODF Speed Facer.

3.1 RECEIPT AND INSPECTION

Your H&S product was inspected and tested prior to shipment, and packaged for normal shipment conditions. H&S does not guarantee the condition of your machine upon delivery.

When you receive your H&S product, perform the following receipt checks:

1. Inspect the shipping containers for damage.
2. Check the contents of the shipping containers against the included invoice to make sure that all components have been shipped.
3. Inspect all components for damage.

Contact H&S immediately to report damaged or missing components.

NOTICE

Keep the shipping container and all packing materials for future storage and shipping of the machine.

The machine ships from H&S with a heavy coating of LPS 3. The recommended cleaner is LPS PreSolve Orange Degreaser. All parts must be cleaned before use.

3.2 LIFTING AND RIGGING

Before unpacking the shipping containers, complete the risk assessment checklist in Table 1-2 on page 4.

Before lifting, make sure all parts are securely attached to the machine.

! DANGER

The ODF Speed Facer can weigh between 1,000 and 5,000 lbs (490 and 1,840 kg) when fully assembled (see the tables in Section 2.4 on page 24). To prevent serious injury to yourself and others, always follow the operating procedures outlined in this manual, your own company rules, and local regulations for heavy lifting. Serious injury or fatalities can result from improper lifting methods.

Do the following for correct lifting:

1. Attach four 3/4" (19 mm) swivel hoist rings to the machine, if not already attached.

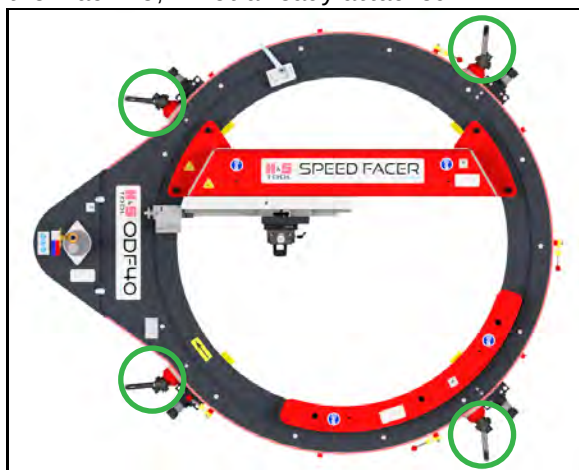


FIGURE 3-1. LIFTING POINTS (ODF40 MACHINE SHOWN)

! CAUTION

Falling or uncontrolled swinging of machinery can cause serious injury or be fatal to the operator and bystanders. Only lift the machine by the 3/4" hoist rings identified in Figure 3-1. Do not lift the ODF Speed Facer using smaller lifting points located on the bridge or counterweight.

2. Attach customer-supplied rigging to the hoist rings on the machine.

! CAUTION

Make sure the rigging is correctly attached before lifting the machine. Lift the machine slowly, making sure that no components will be crushed or bent if the machine is lifted in the vertical orientation. If the rigging causes the machine to swing or become unstable, lower it and adjust the rigging.

3. Rig the machine out of the shipping crate.

3.3 INSTALLATION HAZARDS

The installation stage can be dangerous, as it relies on the operator and other personnel following the recommended safety precautions. Consider the following warnings carefully before undertaking the assembly process.

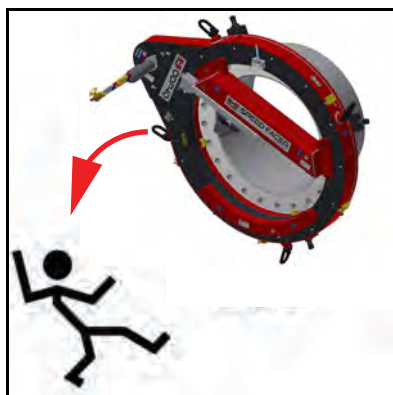


FIGURE 3-2. VERTICAL HAZARD

! WARNING

If not properly secured, this machine can fall and cause fatal injuries to personnel. Pay special attention to vertical flange and overhead mounting installations.

Secure all components to the machine before lifting. Use supplemental rigging during setup.

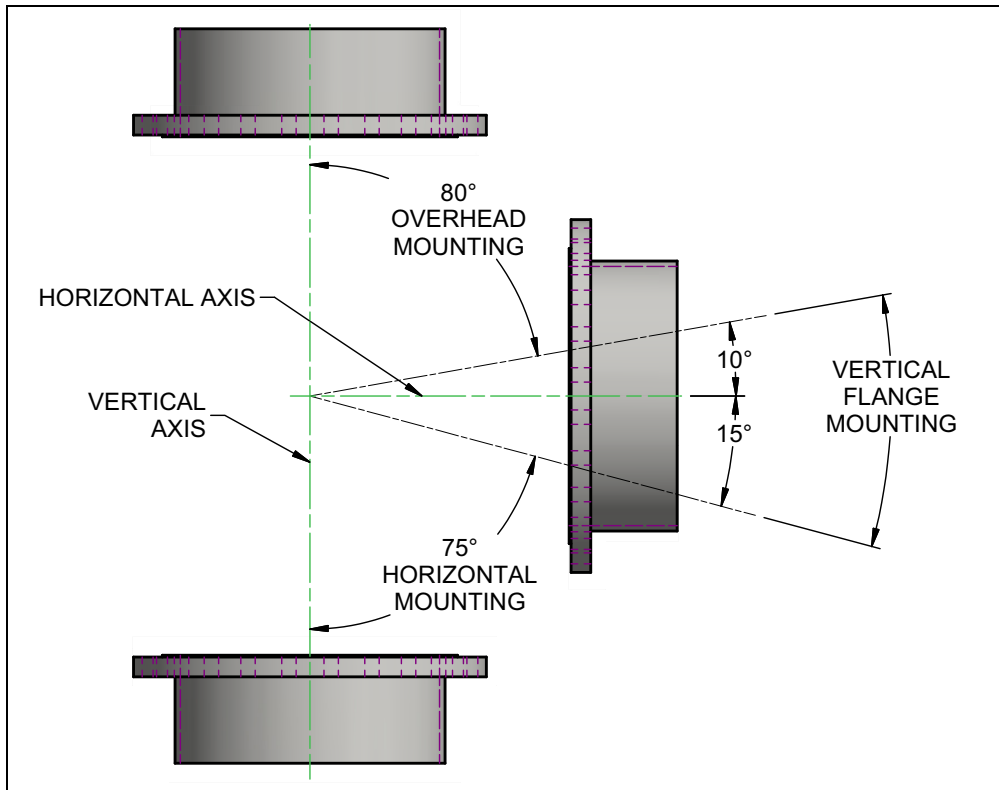


FIGURE 3-3. MOUNTING ARRANGEMENTS

Mitigations include one of the following arrangements:

3.3.1 Horizontal mounting

The hazard with horizontal mounting is the machine falling down until it hits the bridge weldment.

Mitigations include one of the following arrangements:

- Leave the setup fingers in place on the top of the leveling feet.
- If the setup fingers must be removed, block the machine up from below or secure the machine to anchor points above the machine using a minimum of two opposite swivel hoist rings with the customer-supplied anchor points and slings rated for the machine weight and sling angle. See Figure 3-3.

3.3.2 Vertical mounting

The hazard with vertical mounting is the machine falling off the flange.

- Install the setup fingers on the back of the flange, on the “bottom” of the leveling feet (see Figure 3-4).

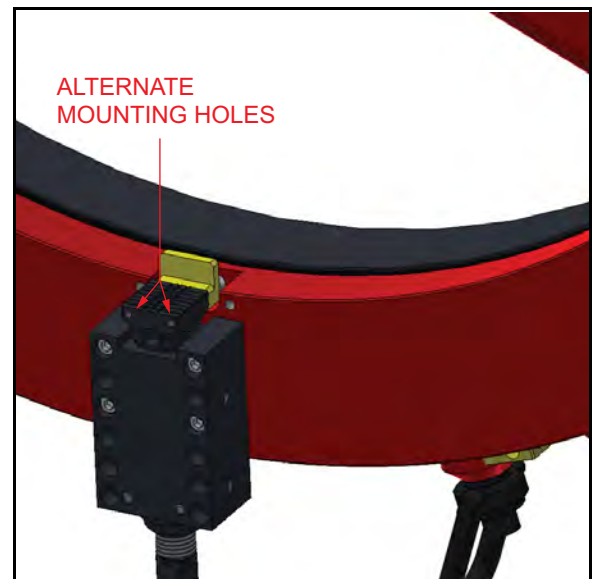


FIGURE 3-4. ALTERNATE MOUNTING HOLES

- If the flange is too thick to allow for the use of the setup fingers, secure the machine to anchor points above the machine using a minimum of

one swivel hoist ring with the customer-supplied anchor points and slings rated for the machine weight and sling angle. See Figure 3-3.

3.3.3 Overhead mounting

The hazard with overhead mounting is the machine falling off the flange.

Mitigations include one of the following arrangements:

- Install the setup fingers on the back (top) of the flange, on the “bottom” of the leveling feet (see Figure 3-4).
- If the flange is too thick to allow for the use of the setup fingers, secure the machine to anchor

points above the machine using a minimum of two opposite swivel hoist rings with the customer-supplied anchor points and slings rated for the machine weight and sling angle. See Figure 3-3.

! CAUTION

In all cases, these safety measures should be considered during the risk assessment and the machine restraints installed snug so that any swinging or other machine movement is kept to an absolute minimum.

3.4 MACHINE ASSEMBLY

Do the following to set up the ODF Speed Facer:

1. Complete the risk assessment checklist in Table 1-2 on page 4.
2. Measure the OD of the flange to be machined.
3. Position the machine on a solid support for installing the mounting feet (four feet for the ODF30 and ODF40 models; eight feet for all other models) according to the following tables.

! WARNING

Failure to properly mount and tether the machine may allow the machine to rotate or fall.

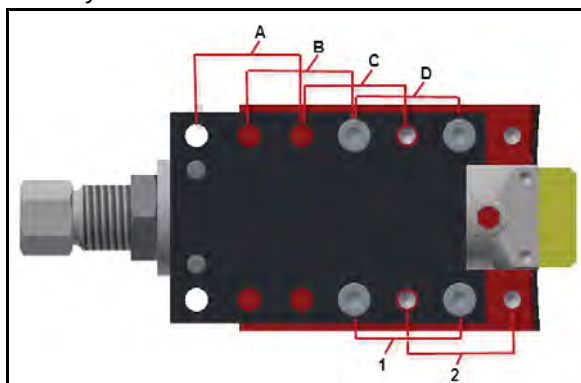


FIGURE 3-5. BOLT AND HOLE LOCATIONS

TABLE 3-1. ODF30 SPEED FACER MOUNTING FEET

Minimum OD in inches (mm)	Maximum OD in inches (mm)	Foot bolt location	Frame hole location
27.02" (686 mm)	30.5" (775 mm)	D	1

TABLE 3-1. ODF30 SPEED FACER MOUNTING FEET (CONTIN-

Minimum OD in inches (mm)	Maximum OD in inches (mm)	Foot bolt location	Frame hole location
25.02" (636 mm)	28.5" (724 mm)	C	1
23.02" (585 mm)	26.5" (673 mm)	C	2
21.02" (534 mm)	24.5" (622 mm)	B	2
19.02" (483 mm)	22.5" (572 mm)	A	2

TABLE 3-2. ODF40 SPEED FACER MOUNTING FEET

Minimum OD in inches (mm)	Maximum OD in inches (mm)	Foot bolt location	Frame hole location
37.02" (940 mm)	40.5" (1,029 mm)	D	1
35.02" (890 mm)	38.5" (978 mm)	C	1
33.02" (839 mm)	36.5" (927 mm)	C	2
31.02" (788 mm)	34.5" (876 mm)	B	2
29.02" (737 mm)	32.5" (826 mm)	A	2

TABLE 3-3. ODF50 SPEED FACER MOUNTING FEET

Minimum OD in inches (mm)	Maximum OD in inches (mm)	Foot bolt location	Frame hole location
47.02" (1,194 mm)	50.5" (1,283 mm)	D	1
45.02" (1,144 mm)	48.5" (1,232 mm)	C	1
43.02" (1,093 mm)	46.5" (1,181 mm)	C	2
41.02" (1,042 mm)	44.5" (1,130 mm)	B	2
39.02" (991 mm)	42.5" (1,080 mm)	A	2

TABLE 3-4. ODF60 SPEED FACER MOUNTING FEET

Minimum OD	Maximum OD	Foot bolt location	Frame hole location
57.02" (1,448 mm)	60.5" (1,537 mm)	D	1
55.02" (1,398 mm)	58.5" (1,486 mm)	C	1
53.02" (1,347 mm)	56.5" (1,435 mm)	C	2
51.02" (1,296 mm)	54.5" (1,384 mm)	B	2
49.02" (1,245 mm)	52.5" (1,334 mm)	A	2

TABLE 3-5. ODF70 SPEED FACER MOUNTING FEET

Minimum OD	Maximum OD	Foot bolt location	Frame hole location
67.02" (1,702 mm)	70.5" (1,791 mm)	D	1
65.02" (1,652 mm)	68.5" (1,740 mm)	C	1
63.02" (1,601 mm)	66.5" (1,689 mm)	C	2
61.02" (1,550 mm)	64.5" (1,638 mm)	B	2
59.02" (1,499 mm)	62.5" (1,588 mm)	A	2

TABLE 3-6. ODF80 SPEED FACER MOUNTING FEET

Minimum OD	Maximum OD	Foot bolt location	Frame hole location
77.02" (1,956 mm)	80.5" (2,045 mm)	D	1
75.02" (1,906 mm)	78.5" (1,994 mm)	C	1
73.02" (1,855 mm)	76.5" (1,943 mm)	C	2
71.02" (1,804 mm)	74.5" (1,892 mm)	B	2
69.02" (1,753 mm)	72.5" (1,842 mm)	A	2

TABLE 3-7. ODF90 SPEED FACER MOUNTING FEET

Minimum OD	Maximum OD	Foot bolt location	Frame hole location
87.02" (2,210 mm)	90.5" (2,299 mm)	D	1
85.02" (2,160 mm)	88.5" (2,248 mm)	C	1
83.02" (2,109 mm)	86.5" (2,197 mm)	C	2
81.02" (2,058 mm)	84.5" (2,146 mm)	B	2
79.02" (2,007 mm)	82.5" (2,096 mm)	A	2

TABLE 3-8. ODF100 SPEED FACER MOUNTING FEET

Minimum OD	Maximum OD	Foot bolt location	Frame hole location
97.02" (2,464 mm)	100.5" (2,553 mm)	D	1
95.02" (2,414 mm)	98.5" (2,502 mm)	C	1

TABLE 3-8. ODF100 SPEED FACER MOUNTING FEET (CONTIN-

Minimum OD	Maximum OD	Foot bolt location	Frame hole location
93.02" (2,363 mm)	96.5" (2,451 mm)	C	2
91.02" (2,312 mm)	94.5" (2,400 mm)	B	2
89.02" (2,261 mm)	92.5" (2,350 mm)	A	2

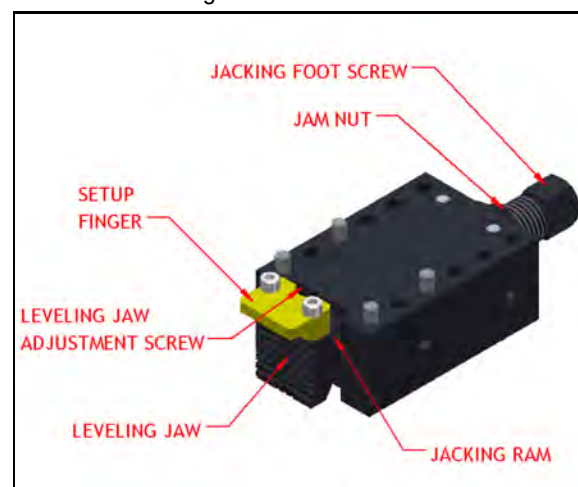
TABLE 3-9. ODF110 SPEED FACER MOUNTING FEET

Minimum OD	Maximum OD	Foot bolt location	Frame hole location
107.02" (2,718 mm)	110.5" (2,807 mm)	D	1
105.02" (2,668 mm)	108.5" (2,756 mm)	C	1
103.02" (2,617 mm)	106.5" (2,705 mm)	C	2
101.02" (2,566 mm)	104.5" (2,654 mm)	B	2
99.02" (2,515 mm)	102.5" (2,604 mm)	A	2

TABLE 3-10. ODF120 SPEED FACER MOUNTING FEET

Minimum OD	Maximum OD	Foot bolt location	Frame hole location
117.02" (2,972 mm)	120.5" (3,061 mm)	D	1
115.02" (2,922 mm)	118.5" (3,010 mm)	C	1
113.02" (2,871 mm)	116.5" (2,959 mm)	C	2
111.02" (2,820 mm)	114.5" (2,908 mm)	B	2
109.02" (2,769 mm)	112.5" (2,858 mm)	A	2

- Center the jacking leveling jaw with the jacking leveling ram on the leveling foot assemblies.
- Roughly adjust the leveling feet (one shown in Figure 3-6) by turning the jacking foot screw until approximately 0.125" (3 mm) larger than the flange OD.


FIGURE 3-6. LEVELING FOOT COMPONENTS

NOTICE

Jacking leveling and standard jaws only have 1.7" (43 mm) of travel.

6. Rig the machine onto the flange by placing the setup fingers against the bolting flange surface.
7. Tighten the leveling feet screws equally until the jaws are against the flange OD with 10 ft-lbs (14 Nm) of torque.

3.4.1 Chuck feet extensions

The ODF Speed Facer has chuck feet extensions that expand the OD range as shown in Table 3-11.

TABLE 3-11. SPEED FACER OD RANGES

Machine	Outer diameter range	OD range with optional extended mounting feet
ODF30 Speed Facer	19.1 - 30.5" (489 - 779 mm)	9.1 - 20.0" (235 - 266 mm)
ODF40 Speed Facer	29.1 - 40.5" (739 - 1,029 mm)	19.1 - 30.0" (485 - 762 mm)
ODF50 Speed Facer	39.1 - 50.5" (993 - 1,283 mm)	29.1 - 40.0" (739 - 1016 mm)
ODF60 Speed Facer	49.1 - 60.5" (1,247 - 1,537 mm)	39.1 - 50.0" (993 - 1,270 mm)
ODF70 Speed Facer	59.1 - 70.5" (1,501 - 1,791 mm)	49.1 - 60.0" (1,247 - 1,524 mm)
ODF80 Speed Facer	69.1 - 80.5" (1,755 - 2,045 mm)	59.1 - 70.0" (1,501 - 1,778 mm)
ODF90 Speed Facer	79.2 - 90.5" (2,011 - 2,298 mm)	69.2 - 90.5" (1,757 - 2,298 mm)
ODF100 Speed Facer	89.2 - 100.5" (2,265 - 2,552 mm)	79.2 - 100.5 in (2011 - 2552 mm)
ODF110 Speed Facer	99.1 - 110.5" (2,517 - 2,817 mm)	89.1 - 100" (2,263 - 2,540 mm)
ODF120 Speed Facer	109.1 - 120.5" (2,771 - 3,061 mm)	99.1 - 110" (2,517 - 2,794 mm)

3.4.2 Chuck foot spacers

Each chuck foot spacer provides 1.97" (50 mm) of clearance off the face of the workpiece. Up to two chuck foot spacers may be used on each mounting foot. These are normally used when the chucking diameter elevation is more than 1" (25 mm) below the elevation of the surface being machined.

Do the following to install the chuck foot spacers:

1. Securely position the machine to allow access to the mounting feet.
2. Remove the mounting foot noting the frame hole location being used.
3. Remove existing fasteners noting the mounting holes being used.
4. Install the supplied fasteners in the mounting foot using the same mounting holes.
5. Stack either one or two chuck foot spacers on top of the mounting foot and over the fasteners.
6. Reinstall the mounting foot to the machine using the same frame hole location.
7. Repeat for all mounting feet.



FIGURE 3-7. CHUCK FOOT SPACERS

3.4.3 Centering and leveling

Do the following to center and level the machine:

1. For coarse adjustment, check the distance between the inner diameter (ID) of the machine and the OD of the pipe with a tape measure at the four leveling feet.
2. For fine adjustment, use a dial indicator in the tool holder to check the same measurements between the ID of the machine and the OD of the pipe. Adjustment in both cases is made with the jacking foot screws.
3. As the setup fingers achieve the initial leveling, do the following to fine tune the level:
 - a) Mount a dial indicator in the tool holder centered over the raised flange surface.
 - b) Zero out the indicator over the first leveling foot and rotate the machine 180° to position the indicator in-line with the opposing foot.

- c) Using the leveling jaw adjustment screw, raise or lower the jaw half the difference between the two feet.
- d) Repeat step b and step c for the remaining leveling feet. Typical applications require machine alignment within 0.010" (0.25 mm) or less.



FIGURE 3-8. DIAL INDICATOR MOUNTED FOR LEVELING

4. Alternating between the four adjustable jacking feet, torque to 140 ft-lbs (190 Nm).

⚠ WARNING

Be sure to tighten the jacking feet to 140 ft-lbs (190 Nm) minimum. Insufficient clamping force may allow the machine to fall from the workpiece, which may result in machine damage or personnel injury or death.

NOTICE

Do not over-tighten the jacking feet screws. Over-tightening could warp the machine rotational frame and cause undesirable machining results.

5. For the ODF50 through ODF120 models only: Alternating between the four non-leveling feet, torque to 140 ft-lbs (190 Nm).

6. Tighten the jam nuts on all jacking feet.
7. Remove the setup fingers from the leveling feet, if necessary to machine completely to the OD. See Section 3.3.1 on page 31, Section 3.3.2 on page 31, and Section 3.3.3 on page 32 for information for securing the machine.

3.4.4 Installing the cutting bit or insert holder

NOTICE

The ODF Speed Facer is designed to drag the cutting tool behind the bridge weldment or backing facing attachment. Refer to the rotational direction label on the machine when installing the cutter.

Do the following to install the cutting bit or insert holder:

1. Adjust the tool holder to the correct position for the start of machining.
2. Adjust the tool holder to the desired swivel angle (see Figure 3-9).



FIGURE 3-9. LOCATION OF SWIVEL CLAMPING SCREW

3. To install the appropriate tool in the swivel tool post: Loosen the M20 tool clamp screw, insert the cutting tool, and tighten the M20 screw.

4. If using 0.50" (12.7mm) square tooling install the 0.50" tooling adapter against the top of the swivel tool post slot. The channel in the tooling adapter accepts the 0.50" square cutting tool.



FIGURE 3-10. .50" TOOL ADAPTER INSTALLED (P/N 89175)

5. Set the tool to the desired cutting depth.

TIP:

Always insert the cutting tool as far as possible into the tool holder for stability.

3.4.5 Installing the offset tool holder

The offset tool holder is reversible to allow additional clearance on both OD and ID operations.

TIP:

The offset tool holder is supplied with the backfacing attachment.

Do the following to install the offset tool holder onto the swivel tool post:

1. Remove any tool that may be installed in the swivel tool holder.
2. Slide the offset tool holder onto the swivel tool post.
3. Insert the bar tool clamp in the slot of the swivel tool holder in place of tooling.
4. Adjust the angle and position of the offset tool holder for the process.
5. Tighten the M20 tool clamp screw to secure.

6. The cutting tool can now be installed in the offset tool holder with the cutting edge facing the rotation direction of the machine. Secure with the four fasteners.

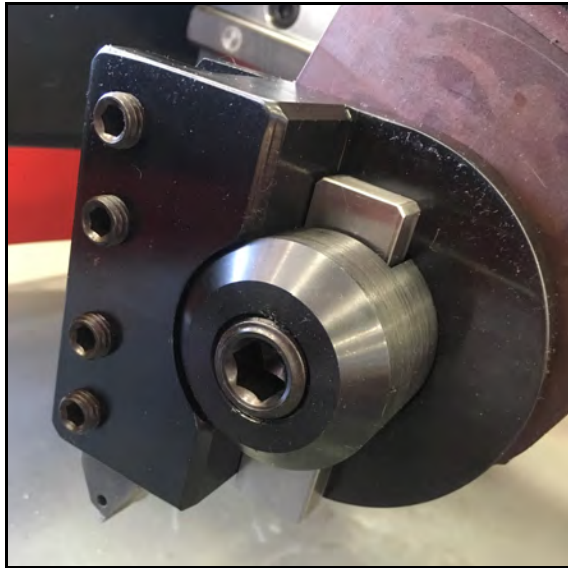


FIGURE 3-11. OFFSET TOOL HOLDER (P/N 89203)

7. To reverse the position of the offset tool holder, do the following:
 - a) Loosen the M20 tool holder screw.
 - b) Rotate the tool holder approximately 180°.
 - c) Tighten the M20 tool holder screw.
 - d) Remove and flip the cutting tool with the cutting edge facing the rotational direction of the machine.

3.4.6 Rotating the tool head

Do the following to rotate the tool head:

1. Loosen the two swivel clamping screws to free the circular clamp collar on the back of the tool head.

CAUTION

Do not loosen the tool head rapidly. Keep your hand on the tool head for stability. Quick disengagement of the tool head can cause it to swing unexpectedly, and may result in personnel injury or machine damage.

2. Position the tool head.
3. Secure the clamp collar by tightening the two swivel clamping screws.

Engraved markings on the clamp collar enable setting angles within $\pm 0.5^\circ$.

3.4.7 Adjusting the feed

NOTICE

The feed unit can be placed on either the radial or axial slides depending if the machining operation is facing or boring.

Do the following to adjust the feed:

1. Install the feed trippers as required (see Figure 3-12).

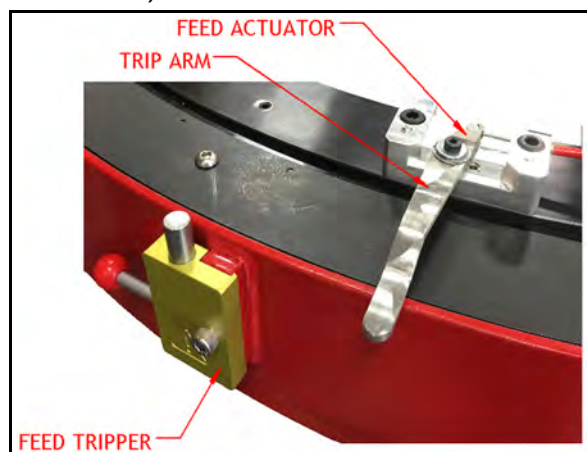


FIGURE 3-12. FEED TRIPPER LOCATION

TIP:

The number of feed trippers determines the feed rate and desired finish. Four feed trippers are included. The feed box is adjustable from 0.001–0.008" (0.025–0.2 mm) of revolution per trip. Finer finishes typically use one or two feed trippers with the feed adjustment set small per trip. Coarse or faster finishes use all four feed trippers.

2. Set the feed direction according to the following steps, as shown in Figure 3-13:
 - a) Push the feed direction knob in to feed the tool away from the feed box.
 - b) Pull out the feed direction knob out to feed the tool toward the feed box.

TIP:

It may be necessary to slightly twist the knob when changing the feed direction.

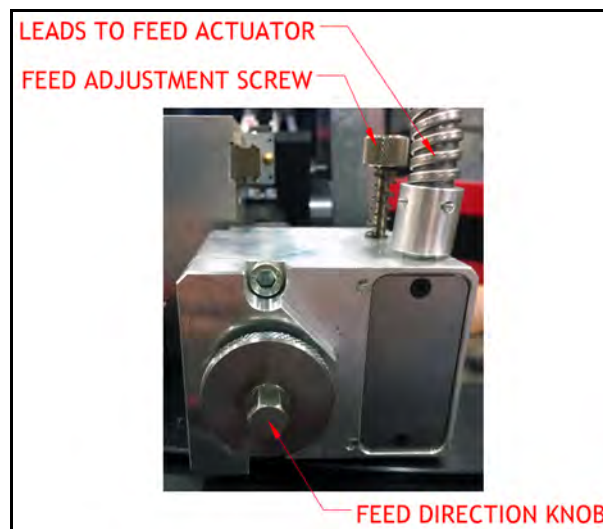


FIGURE 3-13. FEED ADJUSTMENTS

3. Set the feed amount per trip.

NOTICE

When the feed adjustment screw is unscrewed the maximum amount, feed is at the maximum amount of approximately 0.008" (0.2 mm) per trip. When the feed adjustment screw is screwed in, the feed is at the minimum. Adjusting the thumb screw will change the angle of the trip arm on the feed actuator.

4. Route and secure the feed cable to prevent it from kinking or catching on any obstructions.

3.4.8 Installing the drive

There are four options for drive motor. The ODF30 through ODF70 use a standard pneumatic or hydraulic motor with a 3/4" (19.0 5mm) shaft. The ODF80 through ODF120 use a larger pneumatic or hydraulic motor with a 1" (25.4 mm) shaft.

Red-blue labels (P/N 60219, 60220 shown in Table 1-4 on page 5) on either side of the machine that the drive motor is installed on shows the hose arrangement for correct motor run direction.

CAUTION

Pay careful attention to the machine direction and hose connections. If the machine is run opposite to the rotation direction, the feed tripper may be damaged. The correct direction is clockwise when viewed from above the bridge.

For example, when the motor is installed on the top, the red hose connects to the red motor port.



FIGURE 3-14. INSTALLED AIR MOTOR DRIVE

Do the following to install the drive motor:

1. Check that the drive key is present in the slot of the motor shaft.
2. Fit the motor drive shaft into the drive hub, aligning the drive key with the slot in the drive hub.
3. Tighten the two screws on the mounting collar to secure.

3.4.9 Connecting the Air Caddy

Connect the Air Caddy to the machine using the air hose disconnect on the speed adjustment valve.

Refer to Figure 2-3 on page 12 for a description of the Air Caddy.

CAUTION

Always lockout or disconnect the air supply before making machine or tool adjustments. Always use the Start and E-Stop power buttons on the Air Caddy to start and stop the machine instead of using the speed adjustment valve.

3.4.10 Installing the hydraulic motor

NOTICE

Pay careful attention to the machine direction and hose connections. If the machine is run opposite to the rotation direction, the feed tripper may be damaged. The correct direction is clockwise when viewed from above the bridge.

Do the following to install the drive motor:

1. Check that the drive key is present in the slot of the motor shaft.
2. Fit the hydraulic shaft adapter into the drive hub, aligning the drive key with the slot in the drive hub.
3. Tighten the two screws on the mounting collar to secure.

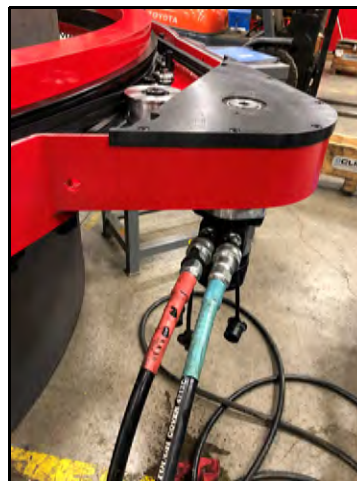


FIGURE 3-15. INSTALLED HYDRAULIC MOTOR DRIVE (BOTTOM SIDE)

3.4.11 Connecting the HPU (hydraulic power unit)

Reference the included HPU (hydraulic power unit) operating instructions for information on connecting the hydraulic motor to the HPU and the power source to the HPU.

If the HPU is not being supplied as part of the rental or sale of this machine, read and thoroughly understand the instructions for the HPU being used.

4 OPERATION

IN THIS CHAPTER:

4.1 PRE-OPERATION CHECKS	-39
4.2 OPERATION MODES	-39
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4.2.2 CONFIGURING FOR A COUNTERBORE	-40
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4.3.3 ADJUSTING THE MACHINE SETTINGS	-43

4.1 PRE-OPERATION CHECKS

Do the following checks before operating the machine:

1. Complete the risk assessment checklist in Table 1-3 on page 4.
2. Check that the work area is clear of non-essential personnel and equipment.
3. Check that the machine control/observation area will not be in the path of hot flying chips during machine operation.
4. Check the machine is securely mounted to the workpiece, according to Section 3. on page 30.
5. Check that air or hydraulic hoses are routed and secured to avoid tripping, entanglement, damage from hot chips, or other damage should a hose or connection fail.
6. Check the tool condition and sharpness.
7. On the Air Caddy, check that the oil drip rate is set to six drips per minute.
8. Check that all hand tools are removed from inside the machine and the work area.
9. Check that the machine is rotating in the correct direction (clockwise, when viewed from above the bridge).

4.2 OPERATION MODES

The ODF Speed Facer can machine a face, groove, or bevel on a flat or tapered flange. The following subsections explain how to set up the machine for these operating modes.

See Section 2.2 on page 12 for controls information.

4.2.1 Configuring for flange facing

Flat facing is the default operating mode of the ODF Speed Facer. Figure 4-1 on page 40 shows the standard configuration.

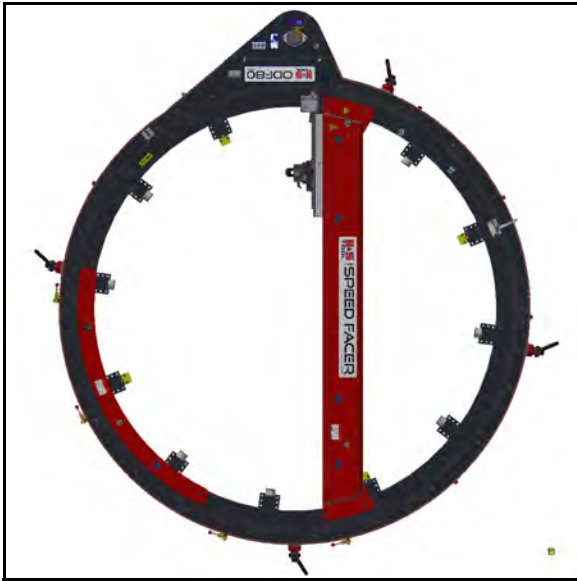


FIGURE 4-1. STANDARD CONFIGURATION (ODF80 SHOWN)

⚠ WARNING

Do not configure or adjust the machining direction unless the machine is turned off, the air or hydraulic hose has been disconnected, and any required lockout/tag out has been performed.

To configure the ODF Speed Facer for machining a face on a flat flange, complete the following steps:

1. Assemble the ODF Speed Facer on the work-piece (see Section 3. on page 30).
2. Complete all pre-operation checks (see Section 4.1).
3. Loosen both the radial and axial gib lock screws.

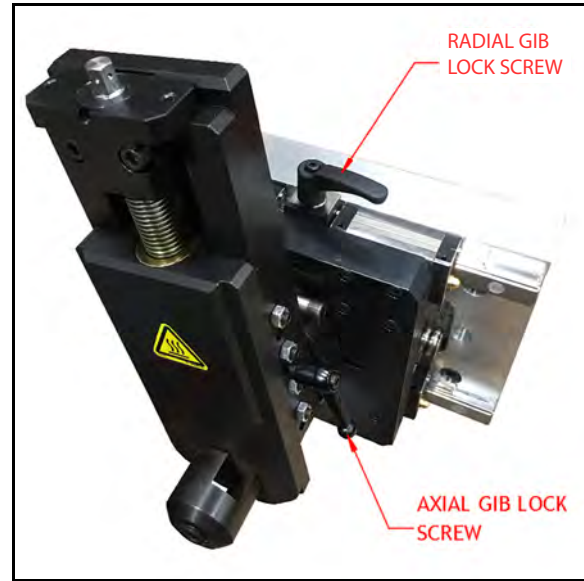


FIGURE 4-2. GIB LOCK SCREWS

4. Use a 3/8" ratchet driver on the radial and axial feed screws to position the cutting tool to the starting point of the cut.
5. Hand tighten only the axial gib lock screw.
6. Set the feed direction knob (shown in Figure 4-7 on page 43) to the desired direction.
7. Set the feed rate, referencing Section 3.4.7 on page 37 and using the feed adjustment screw on the feed box.

4.2.2 Configuring for a counterbore

Do the following to configure the machine for a counterbore:

1. Assemble the ODF Speed Facer on the work-piece (see Section 3. on page 30).
2. Complete all pre-operation checks (see Section 4.1).
3. Reposition the feed box from the radial feed screw to the axial feed screw, securing it with the two screws.
4. Loosen both the axial and radial gib lock screws.
5. Use a 3/8" (9.5 mm) ratchet driver on the radial and axial feed screws to position the cutting tool to the starting point of the cut.
6. Hand tighten only the radial gib lock screw.
7. Set the feed direction knob to the desired position. See Section 3.4.7 on page 37.

8. Set the feed rate, referencing Section 3.4.7 on page 37 and using the feed adjustment screw on the feed box.

4.2.3 Configuring for the backfacing attachment

The ODF Speed Facer can also be configured with the optional backfacing attachment. This configuration allows flange facing when there are obstructions running through the workpiece and also allows machining of the backside of the bolting flange (see Figure 4-3).

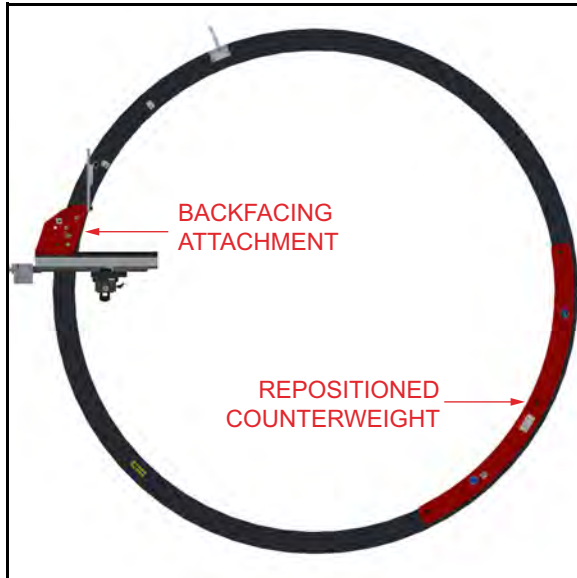


FIGURE 4-3. BACKFACING CONFIGURATION (ODF80 SHOWN)

Do the following to configure the machine for backfacing:

1. Remove the bridge weldment from the machine. Observe the posted masses and use proper lifting and moving procedures, as described in Section 3.2 on page 29.
2. Remove the radial slide assembly from the bridge weldment and install it onto the backfacing mount plate.
3. Relocate the motor to the bottom of the machine.

4. Install the brace (see Figure 4-4).

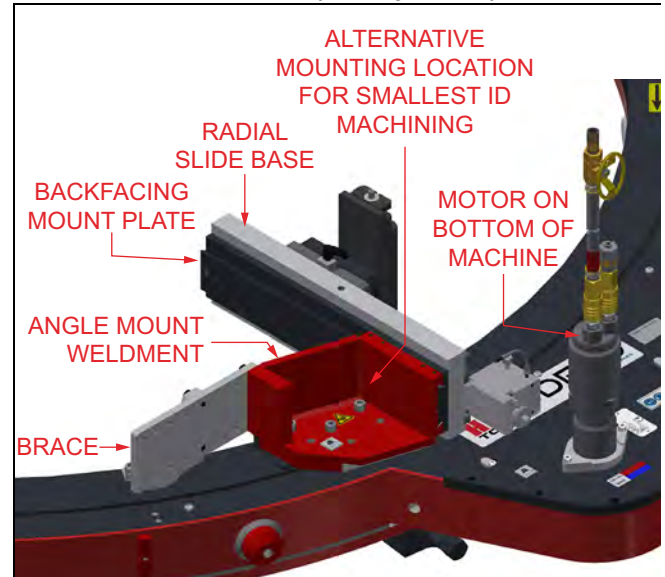


FIGURE 4-4. RELOCATED MOTOR AND BRACE LOCATION (ODF80 SHOWN)

5. Install the 1/4" (6.5 mm) thick backfacing spacer under the backfacing bracket and onto the machine and secure with the M12 x 50mm screws. There are two positions in which the angle mount weldment can be installed requiring the use of two or three screws.
6. Install the backfacing brace onto the machine with a M12 x 40mm screw but do not fully tighten.

TIP:

The brace has multiple configurations for various machine sizes and backfacing configurations. It enhances the backfacing rigidity. The ODF30 and ODF40 do not use the brace.

7. On ODF50 and larger models: Install four M12 x 1.75 x 25mm fasteners in brace plate-2 then slide brace plate-1 onto the fasteners using the four non-tapped holes. Secure the brace plates to the angle mount weldment by tightening the fasteners.
8. If the machine is mounted in the vertical position: Reposition the counterweight to oppose the backfacing attachment by shifting it counter-clockwise to the next series of three holes (see Figure 4-3 on page 41).
9. To reposition the feedbox from the radial slide to the axial slide do the following:

- a) Loosen the two screws on the face of the feedbox.
 - b) Pull out on the feedbox to free it from the drive shaft of the radial slide.
 - c) Install the feedbox on the end of the axial slide shaft and secure by tightening the two screws.
10. For ODF70 and larger machines only: Reposition a clip and Velcro strap to an empty hole on the extension plate and secure the trip cable.

On ODF60 and smaller machines: Reposition a clip and Velcro strap to an empty hole on the face of the machine and secure the trip cable.



FIGURE 4-5. REPOSITIONED BACKFACING COMPONENTS

4.3 OPERATION

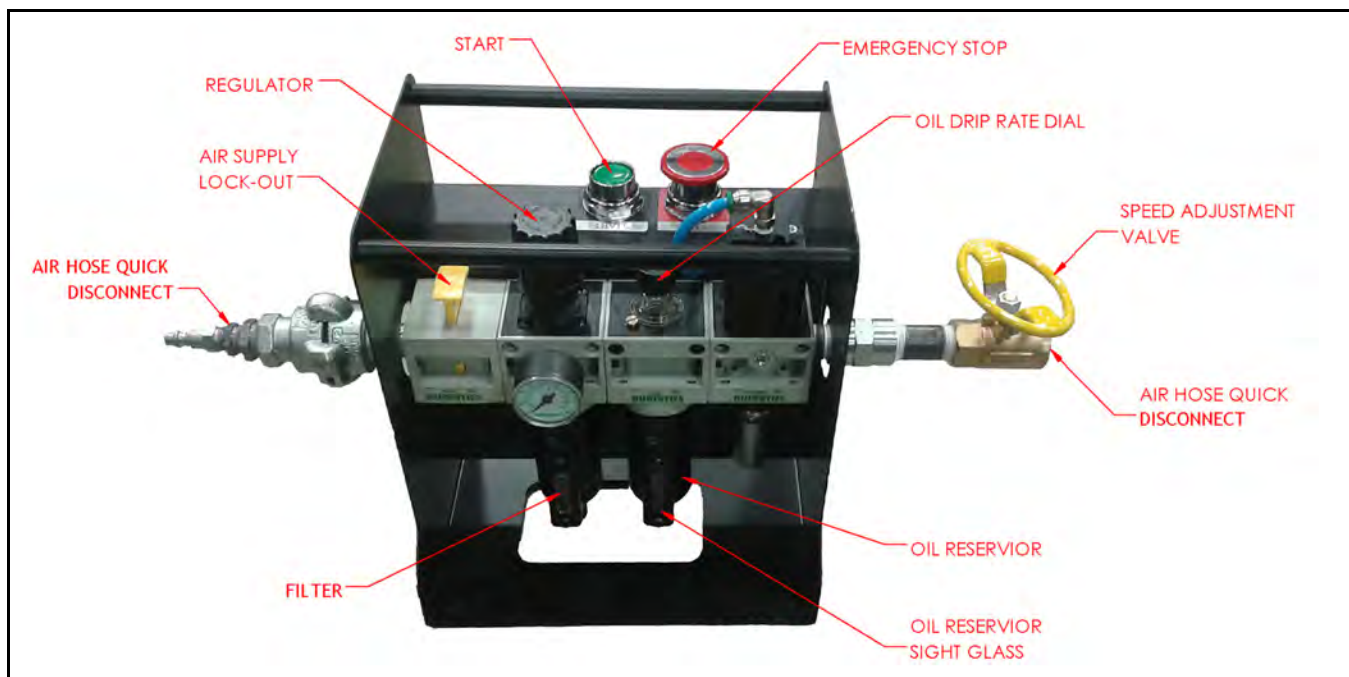


FIGURE 4-6. AIR CADDY CONTROLS

4.3.1 Starting the machine

Do the following to start the machine:

1. On the hydraulic motor drive machine, reference the included HPU (hydraulic power unit) operating instructions for powering up the unit. If the HPU is not being supplied as part of the

rental or sale of this machine, read and thoroughly understand the operating instructions for the HPU being used.

2. On the pneumatically powered machine, complete these steps on the Air Caddy (shown in Figure 4-6):
 - a) Open the AIR SUPPLY LOCK-OUT valve.
 - b) Pull up the EMERGENCY STOP button.
 - c) Press the START button.
 - d) Slowly open the SPEED ADJUSTMENT valve until the rotary speed reaches the desired rate.
3. Engage the number of feed trippers required for the finish type (see Section 3.4.7 on page 37).

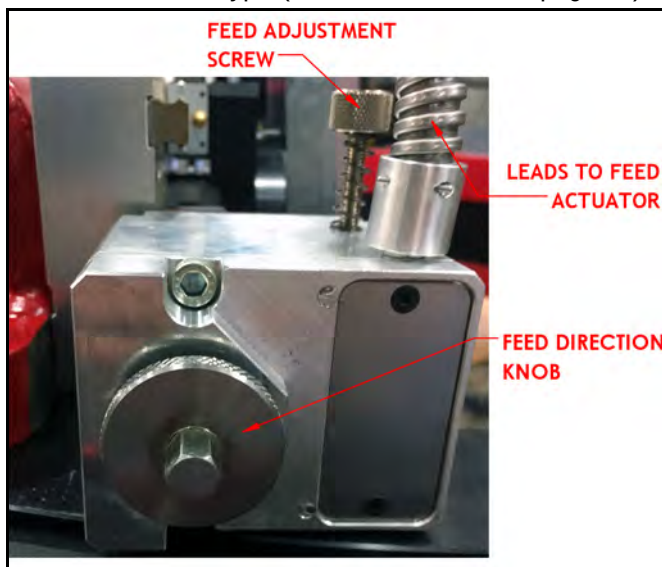


FIGURE 4-7. FEED ADJUSTMENT SCREW AND FEED DIRECTION KNOB

4. To adjust the feed rate: Stop the machine (see Section 4.3.2 on page 43), then fine-tune the feed adjustment screw setting based on the initial cut rate.
5. Adjust the feed rate and rotary speed as necessary to maintain the desired cut.
6. On a pneumatic motor drive machine, adjust the oil drip rate as needed (see Figure 4-6).

NOTICE

For best machine performance and service life, H&S recommends a minimum Air Caddy oil drip rate of six drips per minute.

4.3.2 Stopping the machine

Do the following to stop the ODF Speed Facer:

1. Disengage the feed trippers (see Figure 3-12 on page 37).
2. On a pneumatic motor drive machine:
 - a) Turn the SPEED ADJUSTMENT valve clockwise to close it.
 - b) Press the AIR SUPPLY LOCK-OUT valve down to close it (seen in Figure 4-6). This will release residual air pressure in the Air Caddy circuit.
3. On a hydraulic motor drive machine, reference the included HPU (hydraulic power unit) operating instructions for powering down and locking out the unit. If the HPU is not being supplied as part of the rental or sale of this machine, read and thoroughly understand the operating instructions for the HPU being used.

4.3.3 Adjusting the machine settings

Do the following to manually adjust the cutting tool position or angle:

1. Disengage the feed trippers (see Figure 4-7).
2. Stop and lock out the machine (see Section 4.3.2).
3. Manually adjust the cutting tool position or angle (see Section 3.4.3 on page 34 and Section 3.4.4 on page 35).

⚠ WARNING

Do not attempt to manually adjust the cutting tool angle or change the feed box settings during operation. Attempting to operate the feed box controls by hand or with hand tools while the machine is running may result in severe injury.

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5 MAINTENANCE

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5.1 MAINTENANCE CHECKLIST

Table 5-1 lists maintenance intervals and tasks.

TABLE 5-1. MAINTENANCE INTERVALS AND TASKS

Interval	Task	Reference
Before each use	Check the Air Caddy oil reservoir level and particulate filter trap.	5.3.1
	Check air lines for damage and wear.	--
	Check the cutting tool for sharpness. Replace as necessary.	5.4.3
	Perform a Air Caddy drop-out circuit check.	5.3.2
Before and after each use	Remove debris, oil, and moisture from machine surfaces.	--
Every ten operation cycles	Lubricate the radial and axial feed dovetail ways.	5.3.4
During use	Lubricate the roller bearings every four hours.	5.3.5

5.2 APPROVED LUBRICANTS

H&S recommends using the following lubricants at the locations indicated in Table 5-2 on page 46.

Failure to use the appropriate lubricants can result in damage and premature machine wear.

CAUTION

Avoid damage, premature machine wear, and protect your warranty by using only approved lubricants.

TABLE 5-2. APPROVED LUBRICANTS

Application Area	Lubricant	Biodegradable Lubricant	Viscosity (cSt)	Quantity	Frequency
Daily					
Rectangular & Dove-tail Ways ^a	Mobil Vactra Oil Heavy Medium	N/A	>68 @ 40C	As required	Daily during machine use
Each Use					
Air Caddy	Mobil Almo 525 Air Tool Oil	N/A	22-68 @ 40°C 4.3-8.7 @ 100°C	Refill oil lubricator	Each use
Unpainted Surfaces	LPS1 or LPS2	N/A	38 @ 25C	As required	Each use, and before storage
Bearing surface of track ring	LPS All-Purpose Anti-Seize Platinum Grade	N/A	N/A	As required	Weekly during machine use
Weekly					
Lead screw on single point tool head	NOOK E-100 spray lube NOOK PAG-1 grease	CASTROL BioTac EP 2	96 @ 40C 113 @ 100C	Light coating applied by hand or spray	Weekly during machine use
Jacking feet	Moly Grade Anti-Seize	N/A	N/A	1 cc per screw	Weekly during machine use, and before storage
During Use					
Bearing surface of track ring	ThermaPlex LPS bearing grease	N/A	N/A	6 strokes with a standard lube gun	Hourly during use

a. Use highly anti-corrosive, refined mineral or synthetic oil that forms a strong oil film and is not easily emulsified or washed away by coolant. Hydraulic oils are typically not suitable for slide way lubrication.

5.3 MAINTENANCE TASKS

Maintenance tasks are described in the following sections.

5.3.1 Checking the Air Caddy oil reservoir and particulate filter trap

Do the following to check the Air Caddy oil reservoir and particulate filter trap:

1. Check the Air Caddy oil reservoir sight glass (see Figure 4-6 on page 42). Refill as necessary.
2. Check the Air Caddy particulate filter trap sight glass. Empty as necessary.

5.3.2 Checking the Air Caddy drop-out circuit

The Air Caddy drop-out circuit prevents the machine from restarting unexpectedly after the air supply to the Air Caddy is lost and restored.

Do the following to check the Air Caddy drop-out circuit:

1. Check that the Air Caddy is connected to a shop air supply and the ODF Speed Facer.
2. Check that the air-supply lock-out is open (that is, pulled up). See Figure 4-6 on page 42.

3. Press the **START** button.
4. Slowly open the Air Caddy speed adjustment valve until the rotary drive engages.
5. Close (by pressing down) the Air Supply Lock-out valve.
6. Check that the ODF Speed Facer stops.
7. Open the **AIR SUPPLY LOCK-OUT** valve.
8. Check that the machine does not start.

5.3.3 Testing the emergency stop

Do the following to test the emergency stop:

1. With the machine running, press the **EMERGENCY STOP** button.
2. Check that the machine stops.
3. Reset the **EMERGENCY STOP** by pulling the button up.
4. Check that the machine does not re-start.

5.3.4 Dovetail ways

5.3.4.1 Radial dovetail ways

Do the following to perform maintenance on the radial dovetail ways:

1. On the slide assembly, use the radial feed screw to move the tool head to one end of the radial feed track.
2. Wipe down the exposed dovetail ways and lubricate them with Mobil VACTRA medium heavy way oil or equivalent.
3. Move the tool head assembly to the other end of the radial feed track.
4. Wipe down the remaining exposed dovetail ways and lubricate them with Mobil VACTRA medium heavy way oil or equivalent.

5.3.4.2 Axial dovetail ways

Do the following to perform maintenance on the axial dovetail ways:

1. On the slide assembly, use the axial feed screw to move the tool slide to one end of the axial feed track.
2. Wipe down the exposed dovetail ways and lubricate them with Mobil VACTRA medium heavy way oil or equivalent.
3. Move the tool slide to the other end of the axial feed track.
4. Wipe down the remaining exposed dovetail ways and lubricate them with Mobil VACTRA medium heavy way oil or equivalent.

5.3.5 Lubricating the roller bearing

Do the following to lubricate the roller bearings during use (every four hours):

1. Attach the grease gun nozzle to the grease fitting on the side of the machine.
2. Start the machine and bring it to normal operating speed.
3. Apply approximately 1/4 oz or 6 squeezes from a 14 oz grease gun of ThermaPlex LPS bearing grease.
4. Allow the machine to continue to rotate several times to evenly distribute the grease.
5. Stop the machine and remove the grease gun.

NOTICE

The rollers should be lubricated once for every 4 hours of use.



FIGURE 5-1. GREASE FITTING

5.3.6 Belt adjustment and replacement

The belts should be clean, dry, and properly tensioned.

Belts that are broken, frayed, or otherwise damaged must be replaced.

NOTICE

Always order and replace both belts together.

Do the following to check belt tension:

1. Remove the two 1/4 NPT pipe plugs from the side of the frame (near the grease fitting shown in Figure 5-1).

2. Use a 1/4" (6 mm) rod or similar with a smooth square end to push against each belt. The belt should displace approximately 1/4" for 5 lbs of force (6 mm for 2.3 kg of force).

To adjust the belt tension, do the following:

1. Remove the guard closest to the drive motor.
2. Loosen the M12 screw clamping the idler pulley position.
3. Adjust the tensioning set screw to reach the desired tension.
4. Retighten the M12 SHCS.
5. Replace the guard.

5.3.7 Guard installation and removal

Do the following to remove the guarding for maintenance procedures:

1. Unscrew all the M8 screws until they are free from the posts.
2. Locate a M8 screw central to one of the guard sections.
3. Place the closed end of a 9/16" box wrench over the screw head at an angle that traps it against the guard.



FIGURE 5-2. BOX WRENCH OVER SCREW

4. Pull the wrench up and out to remove the guard.
5. Repeat step 2 through step 4 for the remaining guard sections.

After maintenance work, do the following to reinstall the guard:

1. If still present, remove all M8 screws from the guard sections.
2. Place the first of the guard sections in the proper position on the machine.
3. In the center of the guard, insert two 3/16" punches (or similar) through the holes in the guard into the posts below. Larger machines

may require the process to start at one end rather than centrally.



FIGURE 5-3. PUNCHES USED FOR GUARD INSTALLATION

4. Lever the punches toward the inside of the machine, pulling the guard into position. At the same time, strike the face of the guard with a soft face mallet.
5. Repeat steps 2-4 for the remaining guard sections.
6. Reinstall and tighten all M8 screws.

5.3.8 Roller adjustment

While the machine is operating, each roller should rotate approximately two-thirds of the time. If the rollers are set too tight, the machine will bind. Ideal setup allows the machine to be rotated by hand power.

⚠ WARNING

Roller adjustment requires the machine to operate without the guarding in place. Never attempt to adjust the rollers while the machine is rotating, as this could cause serious injury or death.

Do the following to adjust the rollers:

1. Place the machine in the horizontal position, well supported across its diameter. Do not mount on a flange while adjusting the rollers.
2. Remove all guarding (See Section 5.3.8 on page 48.), the air motor and trip actuator.
3. Start the adjustment procedure at the four rollers located nearest to the mounting feet (see Figure 5-4 on page 49). These will be at about 90° to each other.

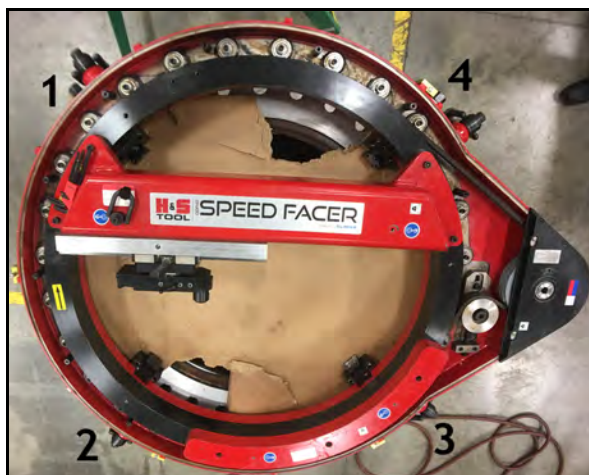


FIGURE 5-4. INITIAL ROLLER BEARING LOCATIONS

4. Place the roller adjusting wrench over the eccentric bushing and loosen the lock screw with a 5/16" Allen wrench. Apply a preload to these four rollers that will allow the machine to be rotated by hand with some resistance. The recommended torque setting for the eccentric bushings at these four locations only is 7ft-lb (9.5 NM)



FIGURE 5-5. ADJUSTING AND TIGHTENING OF THE BUSHINGS AND CAP SCREWS

5. Tighten the lock screw while maintaining the position of the eccentric bushing with the adjustment wrench. The recommended torque setting for the socket head cap screws at all roller bearing locations is 50 ft-lb (67.8 Nm).
6. Reinstall the air motor and activate the machine rotation. Adjust the speed to approximately 2-4 RPM.
7. Adjust the remaining intermediate rollers to make contact with the track ring. These rollers should be adjusted 180° to each other while working around the machine. The recom-

mended torque setting for the intermediate bearings is 3 ft-lb (4.1 Nm).

NOTICE

It is normal for some of the intermediate rollers to only rotate intermittently.



FIGURE 5-6. CHECKING FOR PLAY BETWEEN THE TRACK RING AND THE STATIONARY RING

8. Check for play between the stationary frame and the rotating track ring by inserting a pry bar device between the edge of the frame and the track ring. If movement is detected while applying pressure, repeat steps 3-7.
9. Apply anti-seize to the bearing surface of the ring gear and rollers as noted in Table 5-2.
10. Replace all guarding and the trip actuator.

5.3.9 Trip cable replacement

Do the following to replace the trip cable in the event it breaking or becoming damaged.

5.3.9.1 Cable removal

To remove the cable, do the following on the feedbox:

1. Remove the cover and set screw guarding the M4 fastener.
2. Set the feed adjustment screw to maximum by turning the screw all the way in.

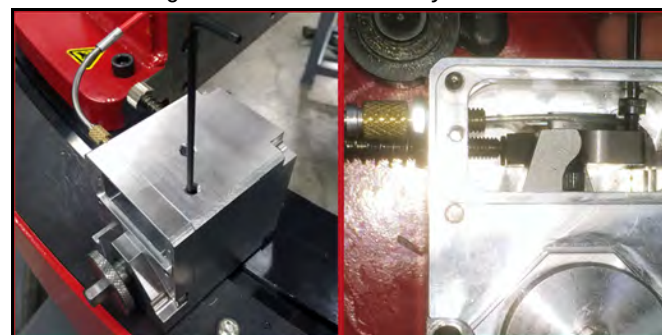


FIGURE 5-7. LOCATION OF M4 SCREW (LEFT); CABLE END UNDER M4 SCREW AND JAM NUT WITH ADJUSTING BOLT (RIGHT)

3. Loosen the M4 screw to free the cable end.

4. Loosen the jam nut and unscrew the adjusting bolt to free the cable from the feedbox.
5. Loosen the Velcro straps to free the protective cable conduit, remove and put aside.

Do the following on the trip actuator:

1. Remove the cover plate.
2. Lift the barrel end of the cable up and out of the trip arm and the cable out of the slot in the actuator block.



FIGURE 5-8. BARREL END OF CABLE REMOVAL (LEFT); CABLE AND HOUSING CUTTERS (RIGHT)

5.3.9.2 Cable preparation

Do the following to prepare the cable:

1. The use of a cable and jacket cutter is suggested (ParkTool #CN-10).
2. Cut only the cable jacket to the following length according to the ODF Speed Facer model:
 - ODF30: 22" (55.8 cm)
 - ODF40: 30.5" (77.5 cm)
 - ODF50: 38.5" (97.8 cm)
 - ODF60: 38.5" (97.8 mm)
 - ODF70: 44" (1,118 mm)
 - ODF80 and larger: and 60" (1,524 mm)

TIP:

Even with the use of a cable and jacket cutter, pinching of the internal jacket may occur. If it does, ream out with an awl or scribe before installing the cable. Install ferrules on both ends of the cable jacket by crimping.

3. Thread the spring onto the cable and up against the barrel end.

4. Thread the cable through the cable jacket.

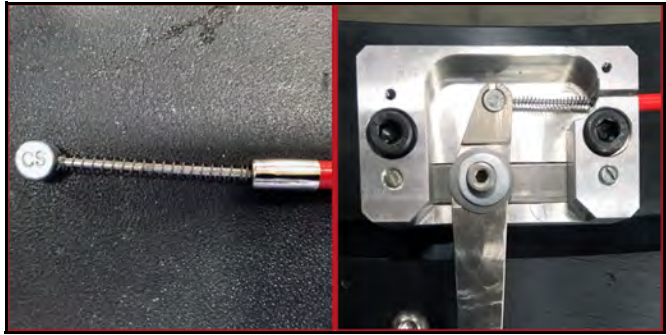


FIGURE 5-9. BARREL END OF CABLE WITH SPRING, FERRULE INSTALLED ON CABLE HOUSING (LEFT); CABLE INSTALLED IN ACTUATOR HOUSING (RIGHT)

5.3.9.3 Cable installation

To install the cable, do the following on the trip actuator (see Figure 5-9-right):

1. Install the barrel end of the cable into the pocket on the trip arm.
2. Trap the spring between the trip arm and the actuator body.
3. Insert the cable into the slot of the actuator body.
4. Reinstall the protective cable conduit over the trip cable.

Do the following on the feedbox:

1. Thread the cable free cable end through the 90° elbow, adjusting bolt and jam nut.
2. Screw the jam nut onto the adjusting bolt.
3. Set the adjusting bolt approximately halfway into the feedbox housing.
4. To determine the final length of the cable, take up the slack until the trip actuator arm is 90° to the trip actuator body. Trim the cable even with the far side of the feedbox wall.



FIGURE 5-10. 90° ELBOW, ADJUSTING NUT AND JAM NUT (LEFT); CABLE END SHOWN AT TRIMMING LOCATION (RIGHT)

5. Treat the cable end with solder to prevent fraying and the possibility of coming loose (see Figure 5-11).
6. Feed the cable end under the head of the M4 screw and tighten (see Figure 5-11).
7. Check for free movement of the mechanism by actuating the tripper arm (the feed adjustment screw may need advanced out). If interference is observed with cable end and the feedbox wall, bend the cable end away from the head of the M4 screw.

8. Secure the protective cable conduit with the Velcro straps.



FIGURE 5-11. SOLDER-TREATED CABLE END (LEFT); CABLE END SECURED UNDER THE M4 SCREW (RIGHT)

5.4 TROUBLESHOOTING

This section is intended to help you solve basic machine performance problems. For serious maintenance or if you have questions on the following procedures, contact H&S.

5.4.1 The machine isn't turning

If the machine is not rotating, check the following:

1. The power source is connected and energized (hydraulic motor powered units only).
2. The EMERGENCY STOP is reset (Section 4.3.1 on page 42 and Section 5.3.3 on page 47).
3. The air regulator is open and not broken (Figure 4-6 on page 42).
4. There is air pressure entering and leaving the Air Caddy. Check the air pressure by disconnecting the hose quick disconnects and checking for air bleed (Figure 4-6 on page 42).
5. All the valves are open (Figure 4-6 on page 42).
6. All the quick disconnects are fully engaged (Figure 4-6 on page 42).
7. Check machine movement by first checking that the power to the machine drive is isolated and locked out, then by manually rotating the machine using the lifting eyes on the bridge weldment.

5.4.2 The machine isn't feeding

If the machine isn't feeding properly, check the following:

1. The feed trippers are engaged (Section 3.4.7 on page 37).

2. The feed direction knob is either pushed in or pulled out, not in the neutral center position.
3. The feed cable has not been disconnected from either the tripper or the feedbox.

5.4.3 The machine is performing poorly

If the machine is performing poorly, check the following:

1. The tool is installed correctly (Section 3.4.4 on page 35).
2. The machine is tight to the workpiece (Section 3. on page 30).
3. The bridge weldment screws are secure.
4. The locking gib screws on the radial and axial slides are adjusted correctly (Section 4.2.1 on page 39 and Section 4.2.2 on page 40).
5. The swivel clamping screws on the rotating tool head are tight (Section 3.4.3 on page 34).
6. The cutting tool or insert is sharp and has the correct geometry for the material and type of cut.
7. The speed and feed rates are set correctly. If necessary, experiment with different speeds and feed rates. Typically, slower speeds and shallower cuts produce less tool chatter.
8. If the machine has been running for at least an hour, the roller bearings may require lubrication.

5.4.4 The machine isn't cutting flat

If the machine is not cutting flat, do the following:

1. Before making a critical finish pass, run the machine continuously for at least 15 minutes to

make sure that the machine is warmed up to operating temperature.

2. Check the machine for level (Section 3.4.3 on page 34).
3. Tram the tool holder to the flange face as necessary (Section 3.4.3 on page 34).

6 STORAGE AND SHIPPING

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6.1 STORAGE

WARNING

If not properly secured, this machine can fall and cause fatal injuries to personnel. Pay special attention to vertical flange and overhead mounting installations.

The machine must be properly rigged and attached to a crane or other suitable lifting apparatus before beginning any disassembly steps.

Proper storage of the ODF Speed Facer will extend its usefulness and prevent undue damage.

Before storing, do the following:

1. Clean the machine with solvent to remove grease, metal chips, and moisture.
2. Drain all liquids from the pneumatic conditioning unit.

Store the ODF Speed Facer in their original shipping container. Store the ODF80 and larger Speed Facers on the supplied inclined shipping frame. Keep all packing materials for repackaging the machine.

6.1.1 Short-term storage

Do the following for short-term storage (three months or less):

1. Remove all tooling.
2. Remove the motor and hoses.
3. Clean the machine to remove dirt, grease, metal chips, and moisture.

4. Spray all unpainted surfaces with LPS-2 to prevent corrosion.
5. Store the ODF70 and smaller models in their original shipping box (see Figure 6-8 on page 57).
6. Store the ODF80 and larger Speed Facers on their shipping frame (see Figure 6-9 on page 58) and store all accessories in the toolbox.

6.1.2 Long-term storage

Do the following for long-term storage (longer than three months):

1. Follow the short-term storage instructions, but use LPS-3 instead of LPS-2.
2. Add a desiccant pouch to the shipping container or toolbox. Replace according to manufacturer instructions.
3. Store the shipping container or shipping frame in an environment out of direct sunlight with temperature < 70°F (21°C) and humidity < 50%.

6.1.3 Storing the ODF80 and larger models

Do the following to store the ODF80 and larger models:

1. Rig the machine using the two lifting eyes as shown with squircle 1 in Figure 6-9 on page 58.
2. Lift the machine so it is hanging vertical.

3. Lower the machine carefully. Referring to Figure 6-1, align the arrow with the notch in the pivot support when setting the Speed Facer onto the shipping frame.

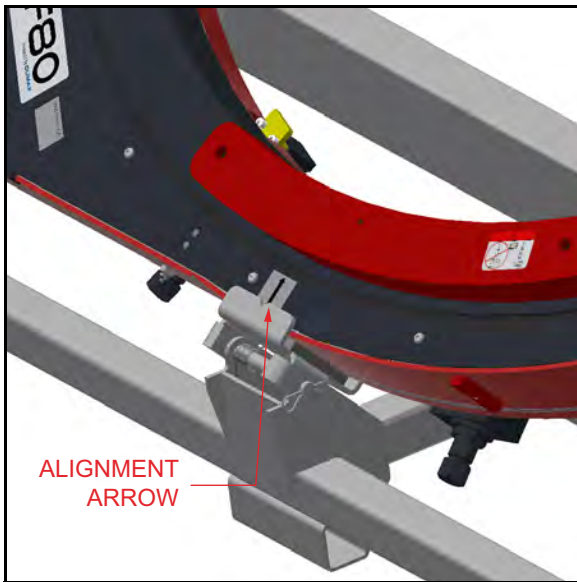


FIGURE 6-1. ALIGNMENT ARROW (ODF80 SHOWN)

4. With the machine frame resting in the pivot saddle, continue lowering the machine, allowing it to lean back to the same angle as the inclined shipping frame.
5. Loosen the screw marked as A in Figure 6-2, and then adjust the screw marked as B to approximately 50 in-lbf (6 Nm).
6. Repeat step 4 with the other lower outside set of A and B screws on the frame. This provides a uniform support of the machine frame.

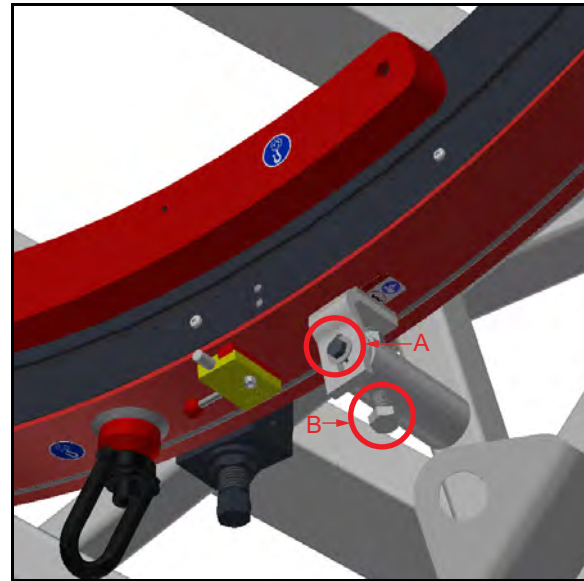


FIGURE 6-2. OUTSIDE SCREW LOCATIONS (ODF80 SHOWN)

7. Adjust the inner ring supports (see Figure 6-3) in the same manner as step 4 and step 6 to support the machine track ring and prevent roller damage during transport.
8. Secure the machine to the inclined shipping frame using the ratchet straps between the hoist ring, shown in Figure 6-3, and the strap attachment point.

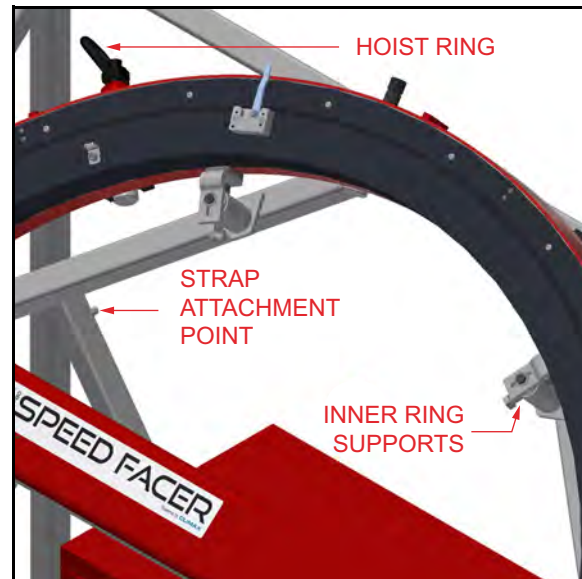


FIGURE 6-3. HOIST RING, STRAP ATTACHMENT POINT, AND INNER RING SUPPORTS (ODF80 SHOWN)

6.2 SHIPPING

The ODF70 and smaller models may be shipped in its original shipping container, as shown in Figure 6-8.

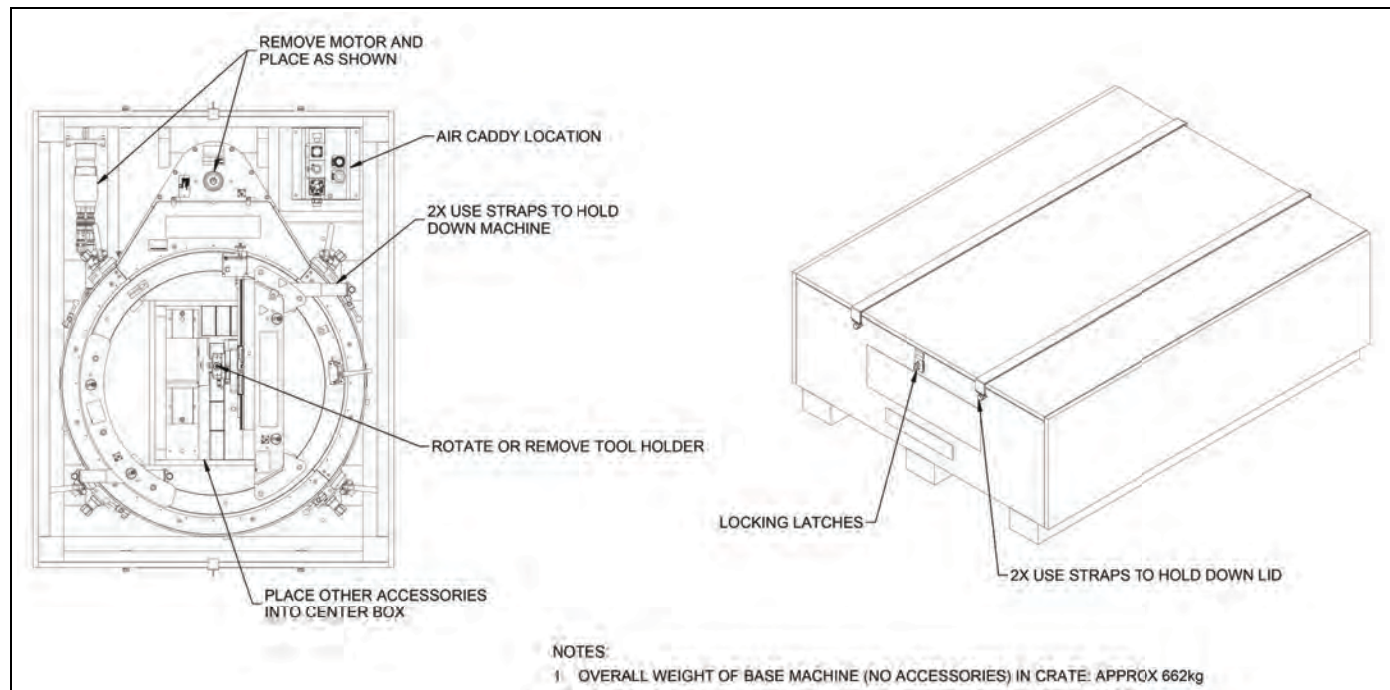


FIGURE 6-4. ODF30 SHIPPING CONTAINER

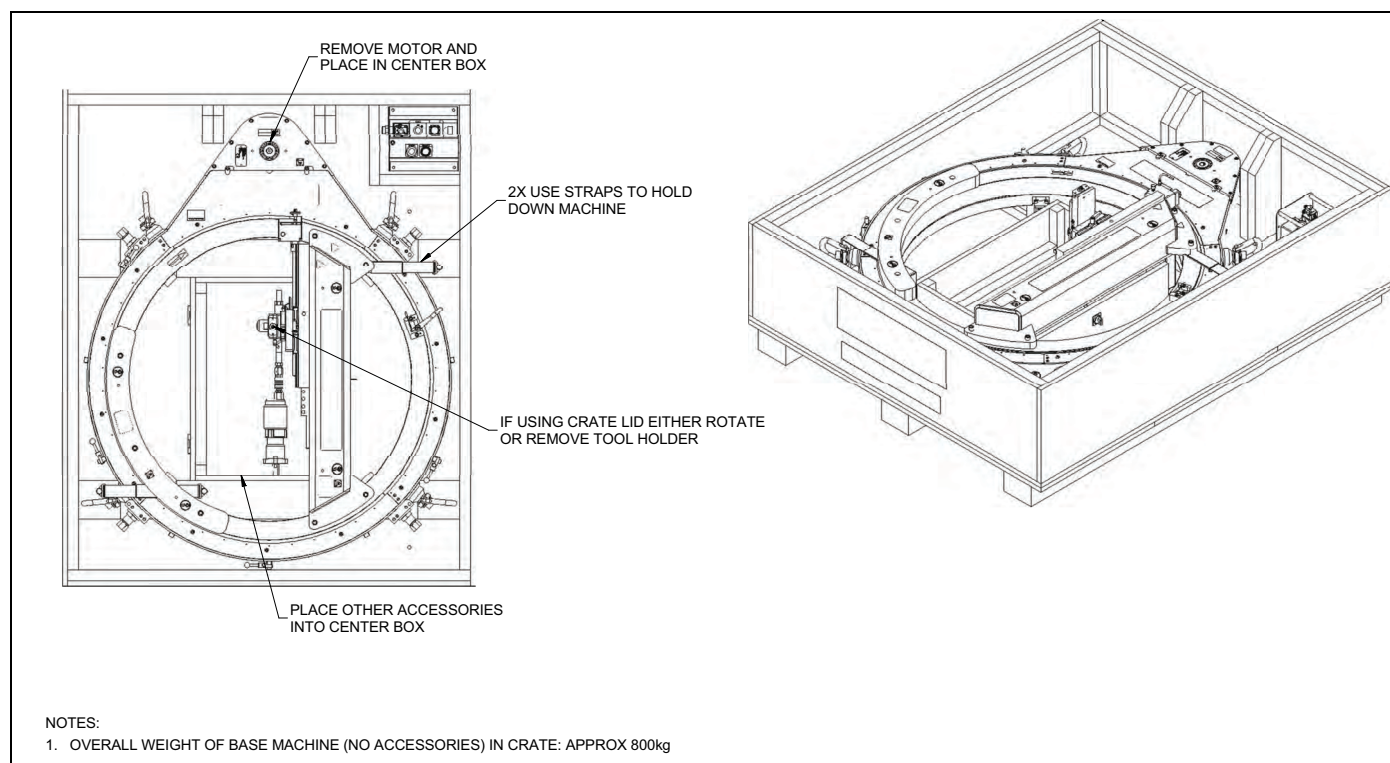


FIGURE 6-5. ODF40 SHIPPING CONTAINER

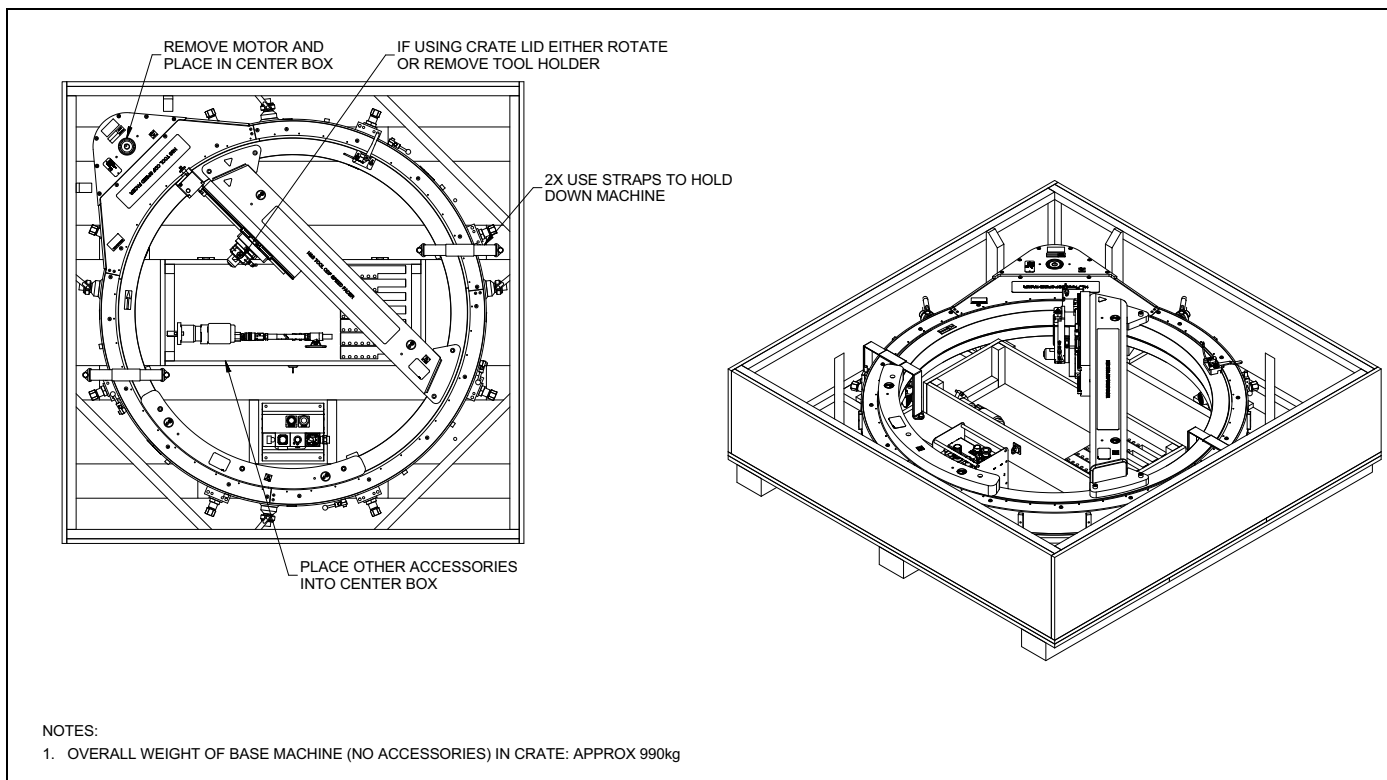


FIGURE 6-6. ODF50 SHIPPING CONTAINER

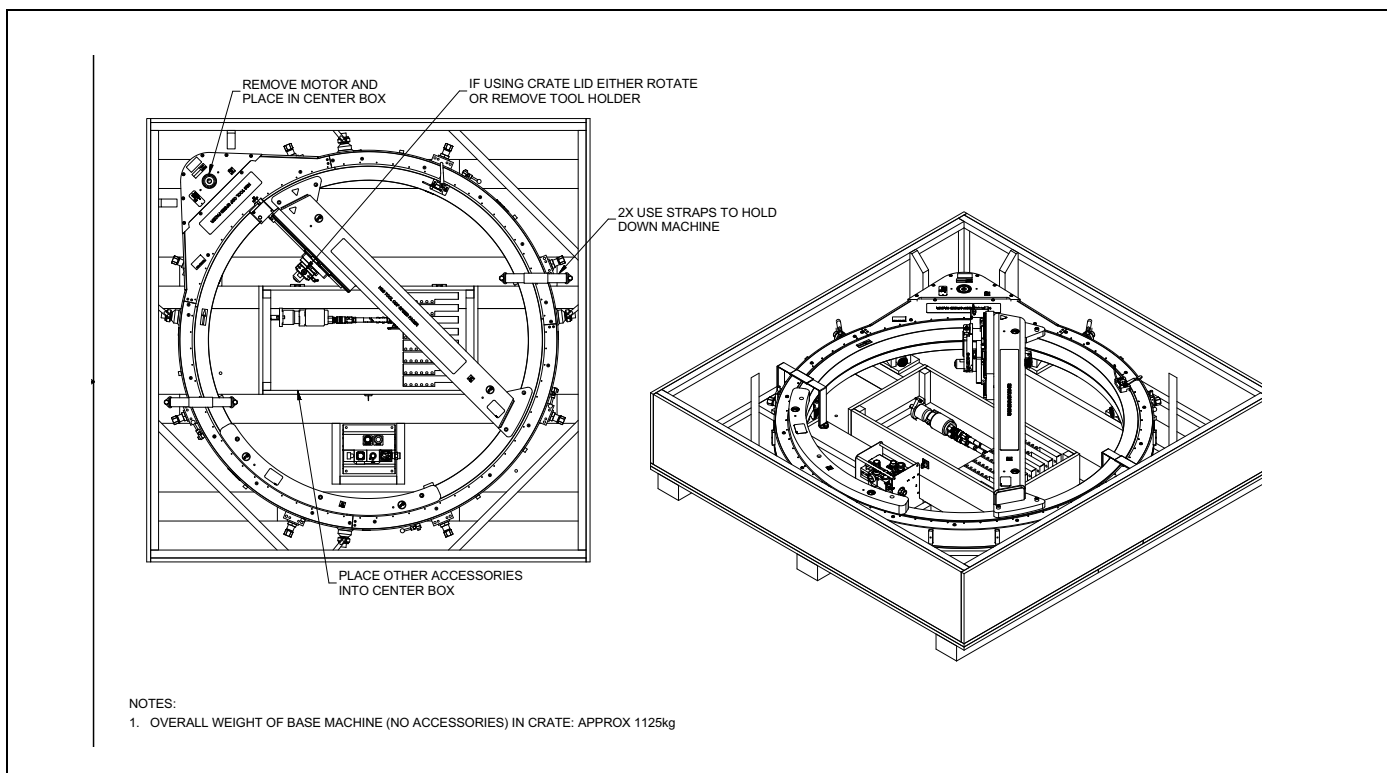


FIGURE 6-7. ODF60 SHIPPING CONTAINER

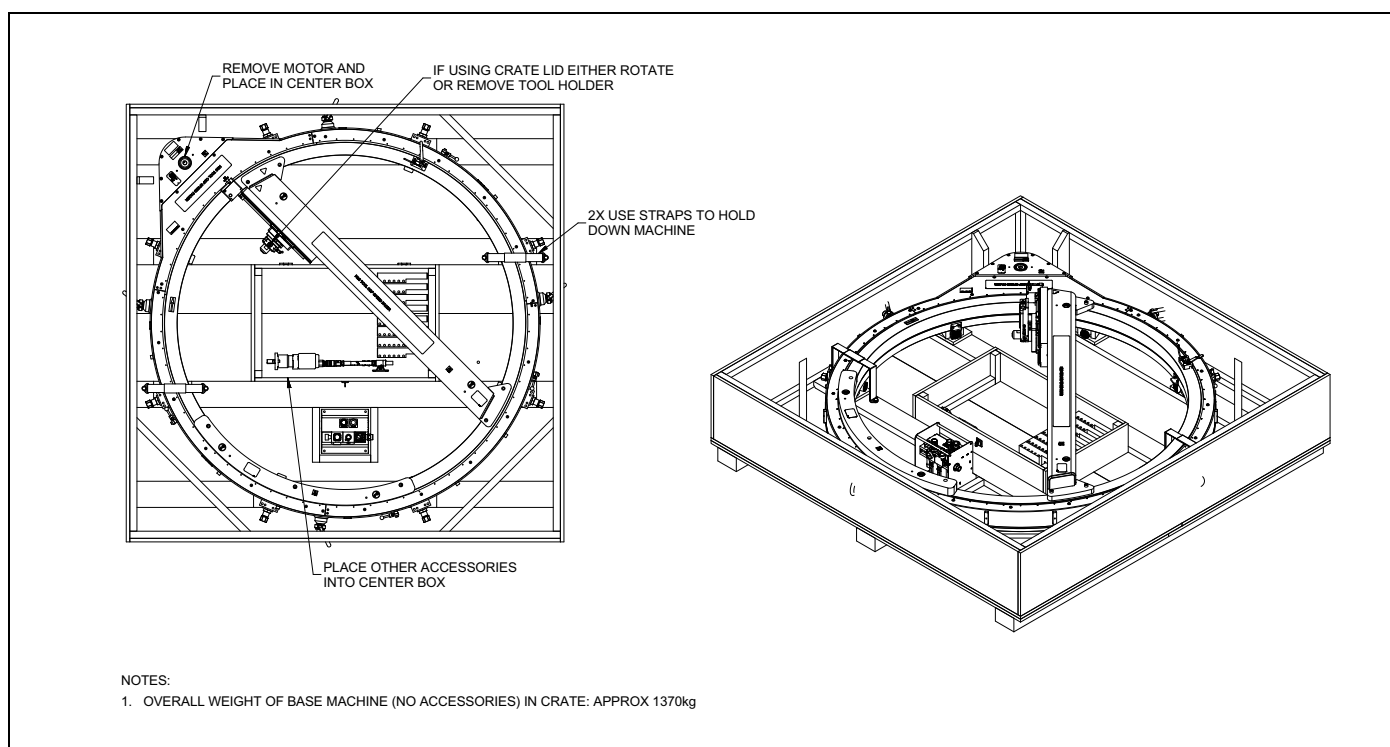


FIGURE 6-8. ODF70 SHIPPING CONTAINER

The ODF80 and larger models ship on their shipping frame and accessories are stored in the toolbox.

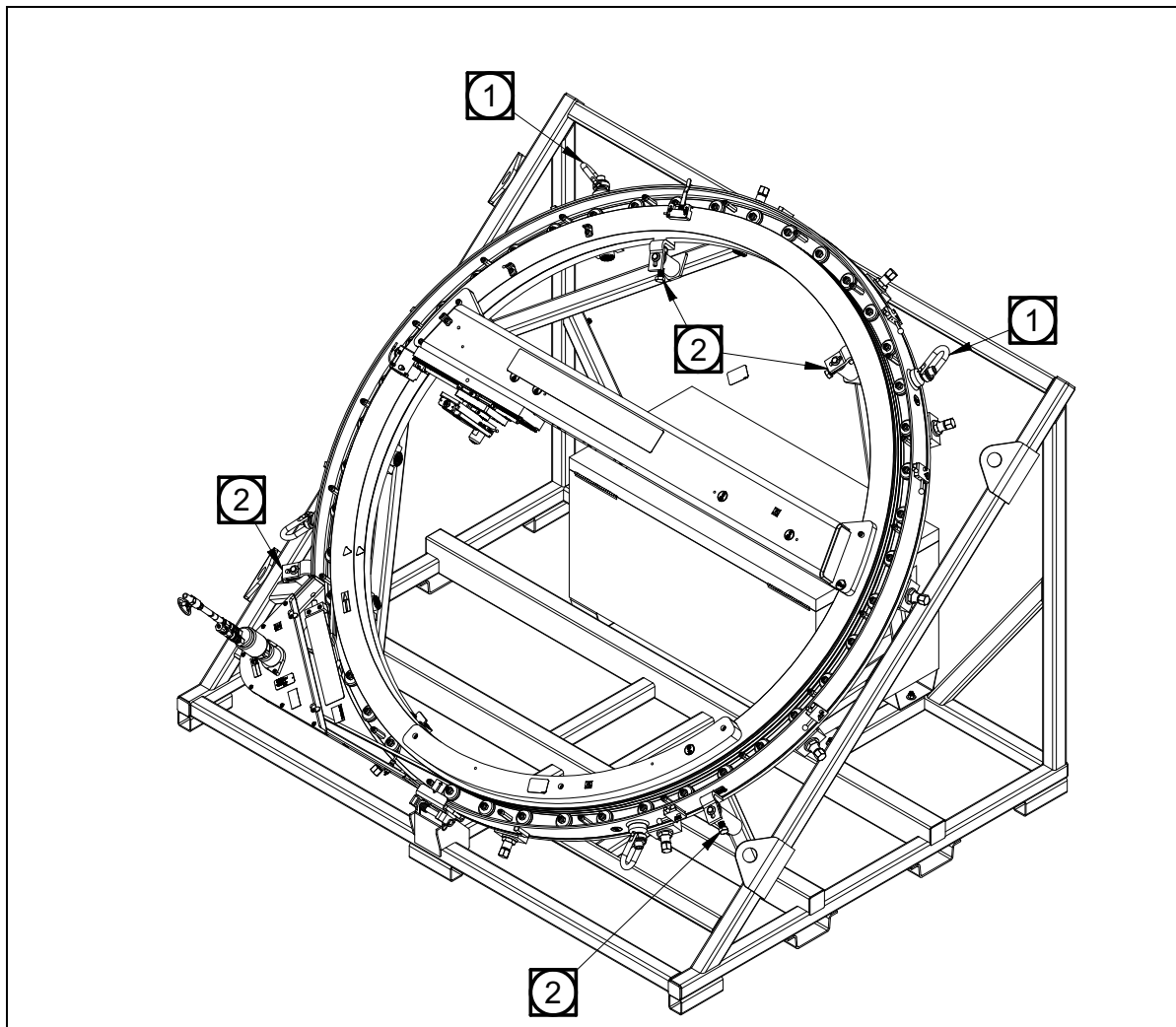


FIGURE 6-9. TYPICAL INCLINE SPEED FACER SHIPPING FRAME (ODF80 SHOWN)

Squire 1 in Figure 6-9 shows the lifting points for placing and removing the Speed Facer. These are also the tie-down points for the ratchet straps.

Squire 2 shows the support locations for uniform cradling of the machine during storage and transport.

6.3 DECOMMISSIONING

To decommission the ODF Speed Facer prior to disposal, remove the drive assembly and dispose of it separately

from the rest of the machine components. Refer to Appendix A for component assembly information.

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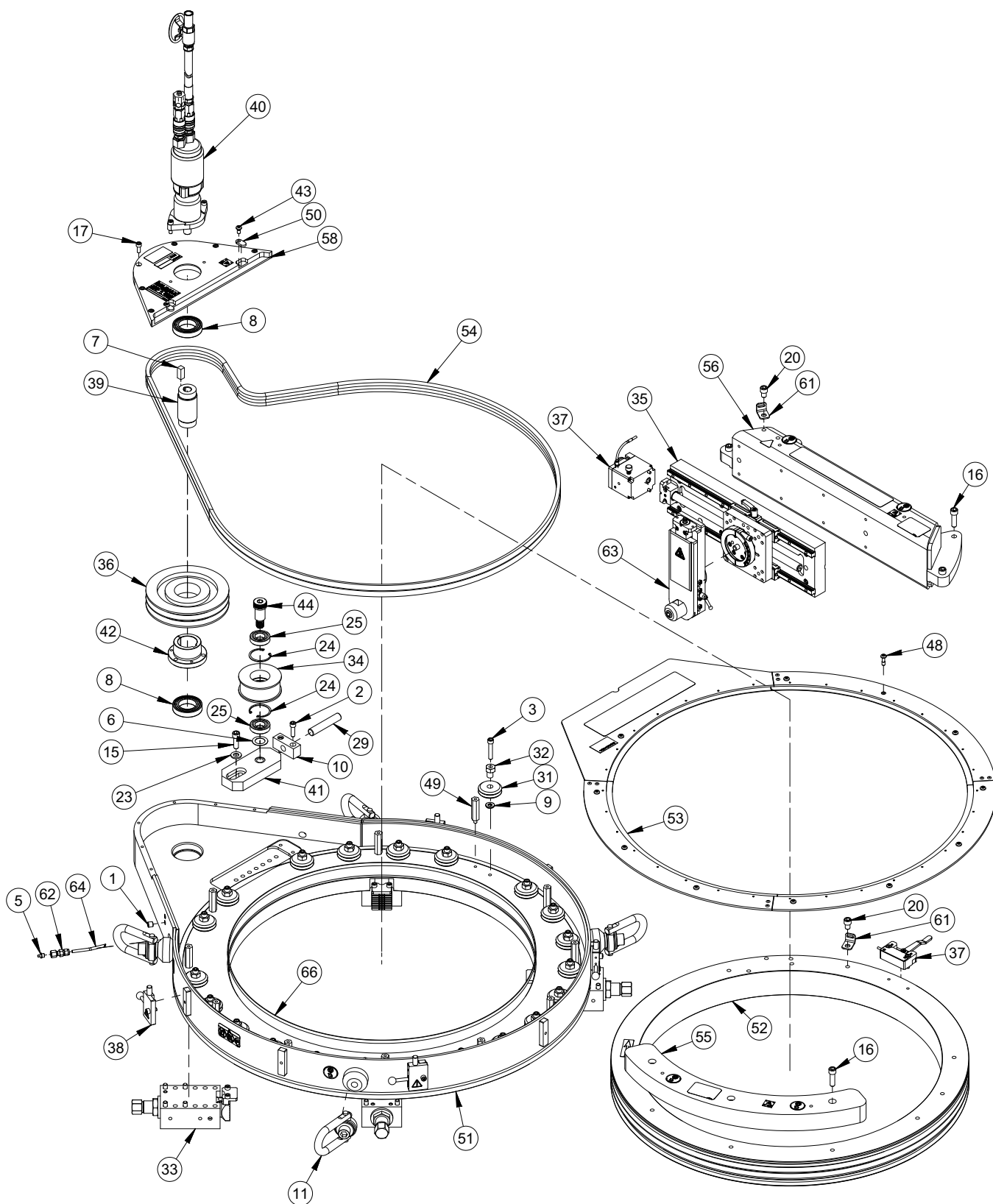


FIGURE A-1. ODF30 SPEED FACER ASSEMBLY (P/N 88930)

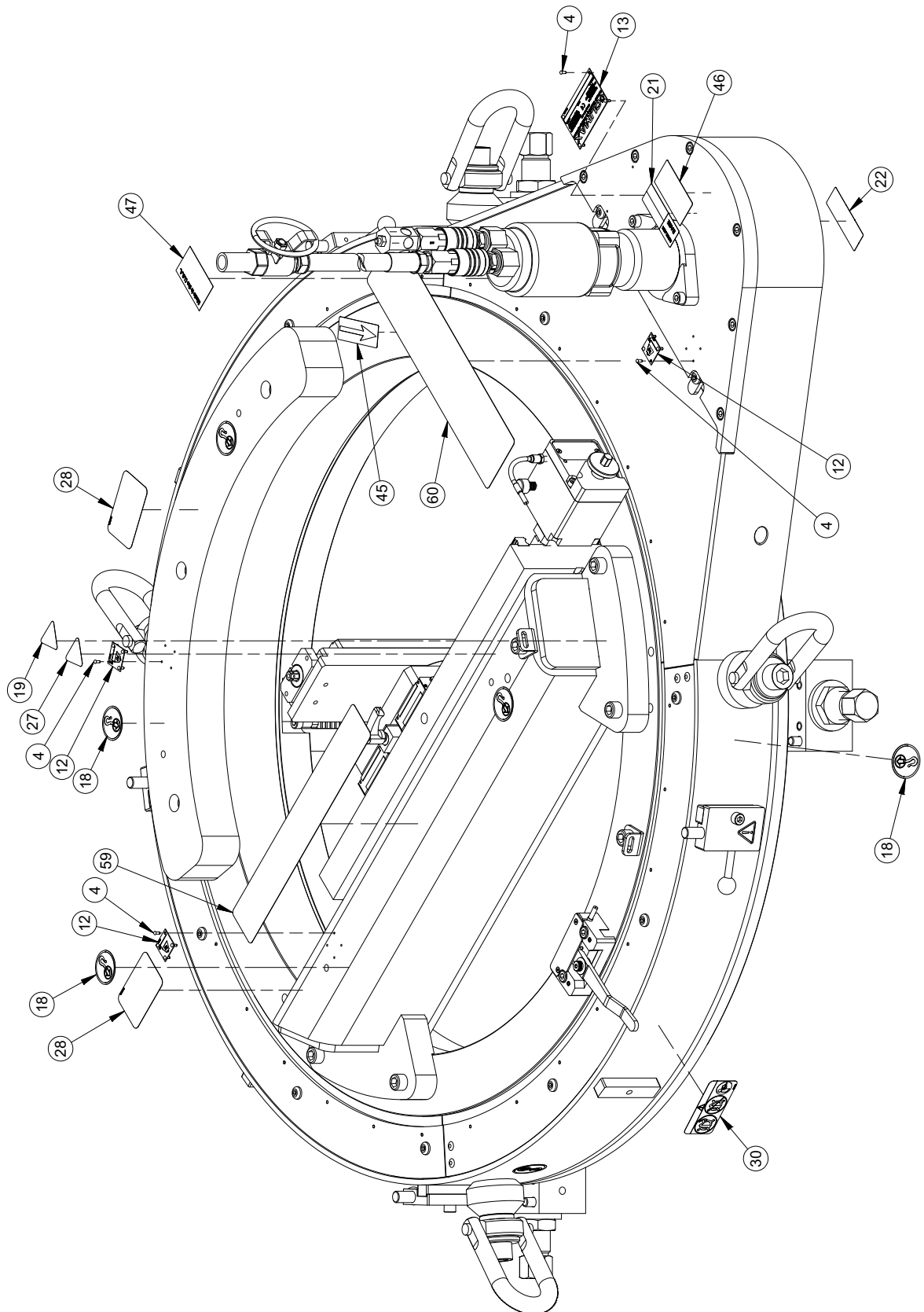


FIGURE A-2. ODF30 SPEED FACER ASSEMBLY LABELS ASSEMBLY (P/N 88930)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	2	10445	FTG PLUG 1/4 NPTM SOCKET	35	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE
2	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	36	1	86897	RING SNAP 1.937 OD X .031 SINGLE TURN SPIRAL
3	22	10557	SCREW 3/8-16 X 2 SHCS	37	1	86900	ASSY FEEDBOX PULL CABLE
4	14	10588	SCREW DRIVE #2 X 1/4 HOLE SIZE .089	38	98	86901	SEAL STRIP .062" THICK X 3/8" WIDE
5	1	11898	FTG GREASE 1/8 NPTM	39	4	86910	ASSY FEED TRIPPER
6	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	40	1	86972	SHAFT ODF DRIVE
7	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	41	1	86989	ASSY ODF DRIVE MOTOR
8	22	19236	WASHER 3/8 FLTW HARDENED	42	1	86998	PLATE TAKE UP ODF DRIVE
9	1	20956	BLOCK ADJUSTING	43	1	87008	BUSHING QD SK 1-15/16
10	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	44	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
11	3	29152	PLATE MASS CE				
12	1	30207	SCREW M12 X 1.75 X 35mm SHCS	45	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
13	7	35215	SCREW M12 X 1.75 X 40mm SHCS	46	1	87265	LABEL ARROW BLK/YEL 1" X 3"
14	6	50458	SCREW M8 X 1.25 X 20mm SHCS	47	1	87269	PLATE SERIAL YEAR MODEL BLANK CE 1.5 X 3.0
15	8	59039	LABEL WARNING LIFT POINT ROUND 1.5"	48	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
16	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS				
17	2	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	49	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
18	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/BLUE-BLUE	50	11	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
19	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/RED-BLUE	51	11	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
20	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK				
21	2	67743	RING SNAP 2.0 ID X .062 TH	52	2	87521	CLIP RETAINER
22	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	53	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
23	1	78530	(NOT SHOWN) TOOL KIT SF SERIES	54	1	88931	FRAME WELDMENT ODF30
24	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING	55	1	88932	RING TRACK ODF30
			GEARS 1.13 TALL TRIANGLE YELLOW	56	1	88933	GUARD AND SEAL ASSY ODF30
25	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	57	2	88934	BELT V B133
26	1	79635	SCREW 3/4-10 X 4 SSSFP	58	1	88936	COUNTERWEIGHT ODF30
27	1	83430	(NOT SHOWN) PNEUMATIC CONDITIONING UNIT W/SHEET METAL STAND	59	1	88937	WELDMENT BRIDGE ODF30
28	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	60	1	89030	(NOT SHOWN) CRATE ODF30 59 X 71 X 21-1/4 3/4 PLY
29	3.9 in	85644	TUBING 1/4 OD X .035 WALL STAINLESS STEEL 316/316L	61	1	89032	PLATE COVER DRIVE ODF30
			ASTM A269 & A213 (FORM PER DETAIL)	62	1	89033	LABEL H&S ODF30 LOGO 2.5 X 13.0
30	22	86878	ROLLER W4	63	1	89034	LABEL H&S ODF30 LOGO 3.0 X 13.0
31	22	86879	BUSHING ECCENTRIC SIZE 4	64	2	89174	CLIP FORMED 1/8 X 1 SS304
32	4	86880	ASSY JACKING FOOT LEVELING	65	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
33	1	86889	IDLER TAKE UP ODF DRIVE				
34	1	86890	ASSY RADIAL AXIS 356MM TRAVEL				

FIGURE A-3. ODF30 SPEED FACER ASSEMBLY PARTS LIST (P/N 88930)

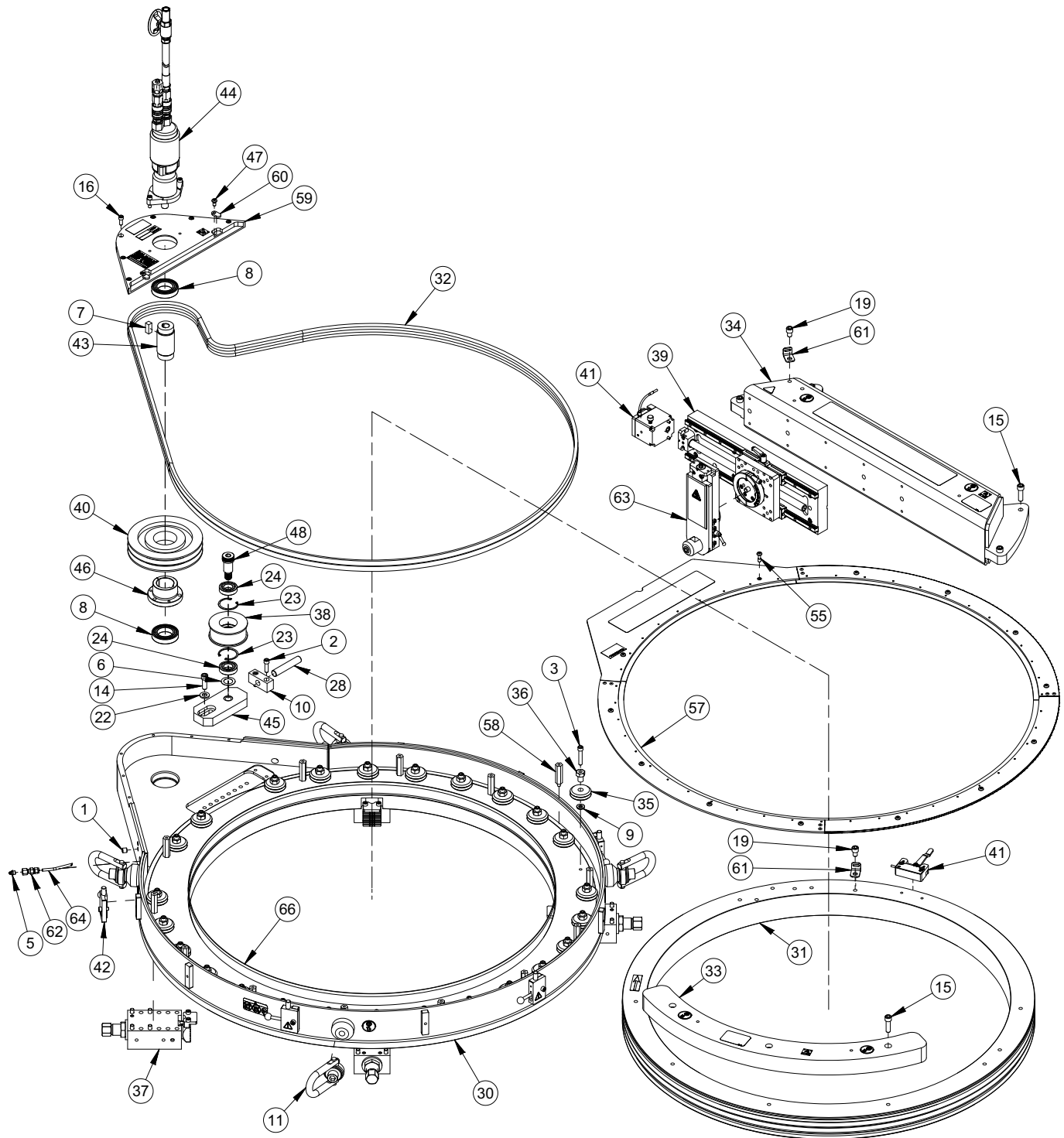


FIGURE A-4. ODF40 SPEED FACER ASSEMBLY (P/N 86870)

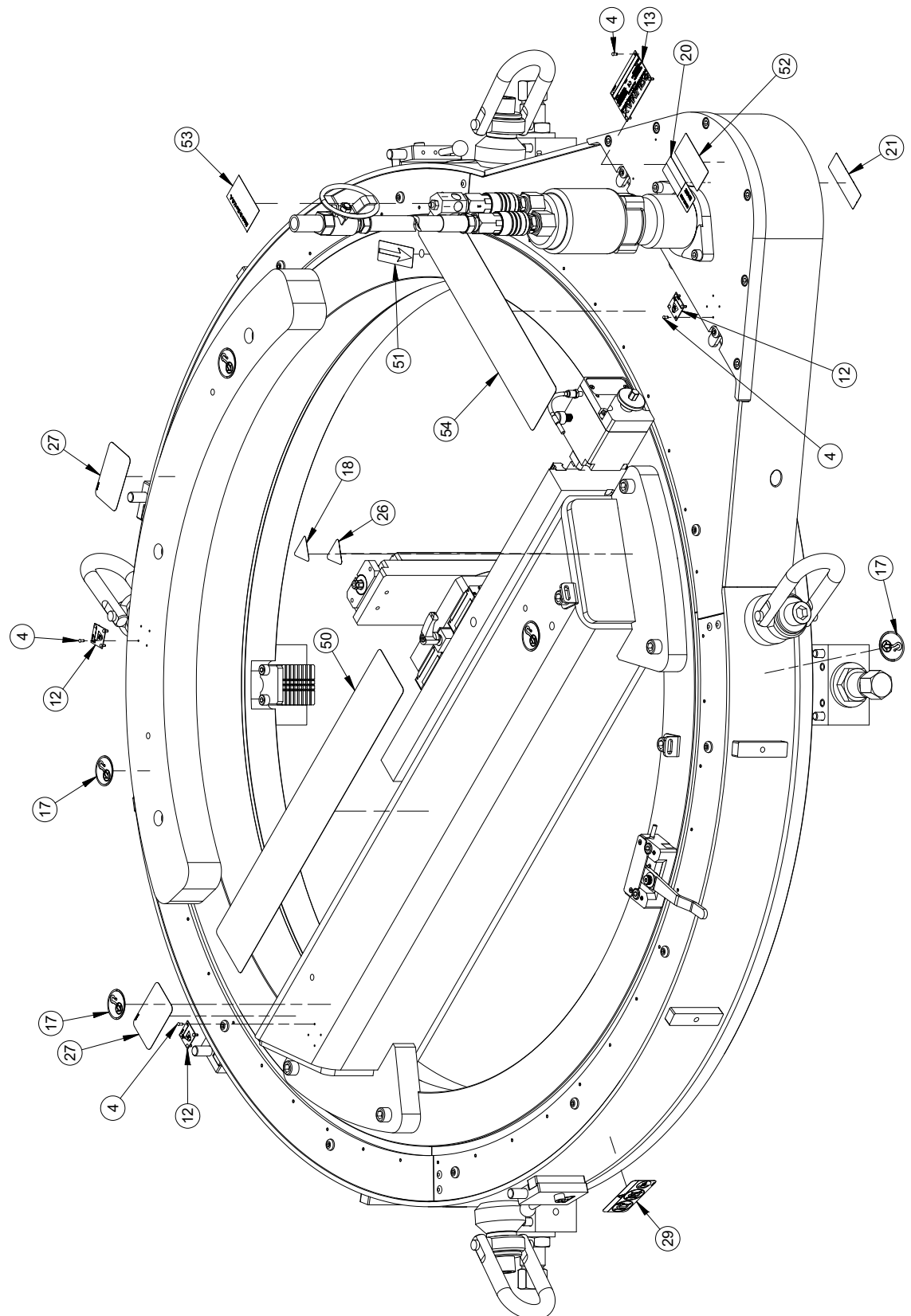


FIGURE A-5. ODF40 SPEED FACER LABELS ASSEMBLY (P/N 86870)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	2	10445	FTG PLUG 1/4 NPTM SOCKET	37	4	86880	ASSY JACKING FOOT LEVELING
2	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	38	1	86889	IDLER TAKE UP ODF DRIVE
3	26	10557	SCREW 3/8-16 X 2 SHCS	39	1	86890	ASSY RADIAL AXIS 356MM TRAVEL
4	16	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	40	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE
5	1	11898	FTG GREASE 1/8 NPTM	41	2	86900	*Varies*
6	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	42	4	86910	ASSY FEED TRIPPER
7	1	15389	KEY 1/2 SQ X 1.25 SQ BOTH ENDS	43	1	86972	SHAFT ODF DRIVE
8	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	44	1	86989	ASSY ODF DRIVE MOTOR
9	26	19236	WASHER 3/8 FLTW HARDENED	45	1	86998	PLATE TAKE UP ODF DRIVE
10	1	20956	BLOCK ADJUSTING	46	1	87008	BUSHING QD SK 1-15/16
11	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	47	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
12	3	29152	PLATE MASS CE				
13	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0	48	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
14	1	30207	SCREW M12 X 1.75 X 35mm SHCS	49	1	87222	(SHOWN ON SHT 3) CRATE ODF40 59 X 71 X 21-1/4 3/4 PLY
15	7	35215	SCREW M12 X 1.75 X 40mm SHCS	50	1	87259	LABEL H&S ODF40 LOGO 3.0 X 20.0
16	6	50458	SCREW M8 X 1.25 X 20mm SHCS	51	1	87265	LABEL ARROW BLKVEL 1" X 3"
17	8	59039	LABEL WARNING - LIFT POINT ROUND 1.5"	52	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
18	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	53	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
19	2	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	54	1	87427	LABEL H&S ODF40 LOGO 3.0 X 14.0
20	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/ BLUE-BLUE	55	13	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
21	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	56	1	87499	(NOT SHOWN) MANUAL INSTRUCTION 7432 OD40 SPEEDFACER
22	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	57	1	87518	GUARD AND SEAL ASSY SF40
23	2	67743	RING SNAP 2.0 ID X .062 TH	58	13	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
24	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	59	1	87520	PLATE COVER DRIVE ODF40
25	1	78530	(NOT SHOWN) TOOL KIT SF SERIES	60	2	87521	CLIP RETAINER
26	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	61	2	89174	CLIP FORMED 1/8 X 1 SS304
27	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	62	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
28	1	79635	SCREW 3/4-10 X 4 SSSFP	63	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
29	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	64	1	90116	TUBE GREASE 1/4 OD ODF40
30	1	86871	FRAME WELDMENT SF40	65	1	96550	(SHOWN ON SHT 3) PNEUMATIC CONDITIONING UNIT W/SHEET METAL STAND
31	1	86872	RING TRACK SF40	66	1	99261	SEAL STRIP .062" THICK X 3/8" WIDE X 129" LONG
32	2	86874	BELT V B164				
33	1	86876	COUNTERWEIGHT SF40				
34	1	86877	WELDMENT BRIDGE ODF40				
35	26	86878	ROLLER W4				
36	26	86879	BUSHING ECCENTRIC SIZE 4				

FIGURE A-6. ODF40 SPEED FACER PARTS LIST (P/N 86870)

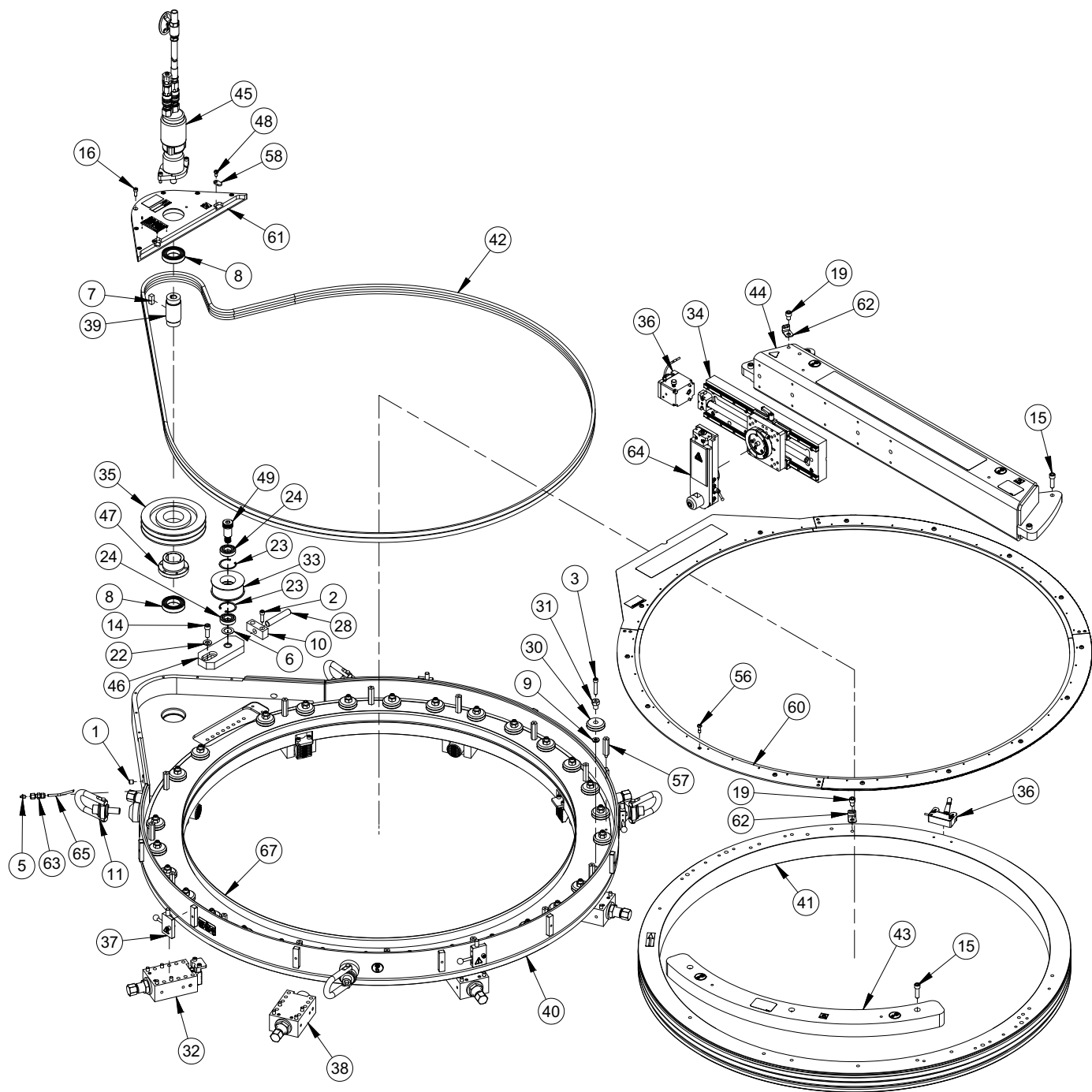


FIGURE A-7. ODF50 SPEED FACER ASSEMBLY (P/N 86980)

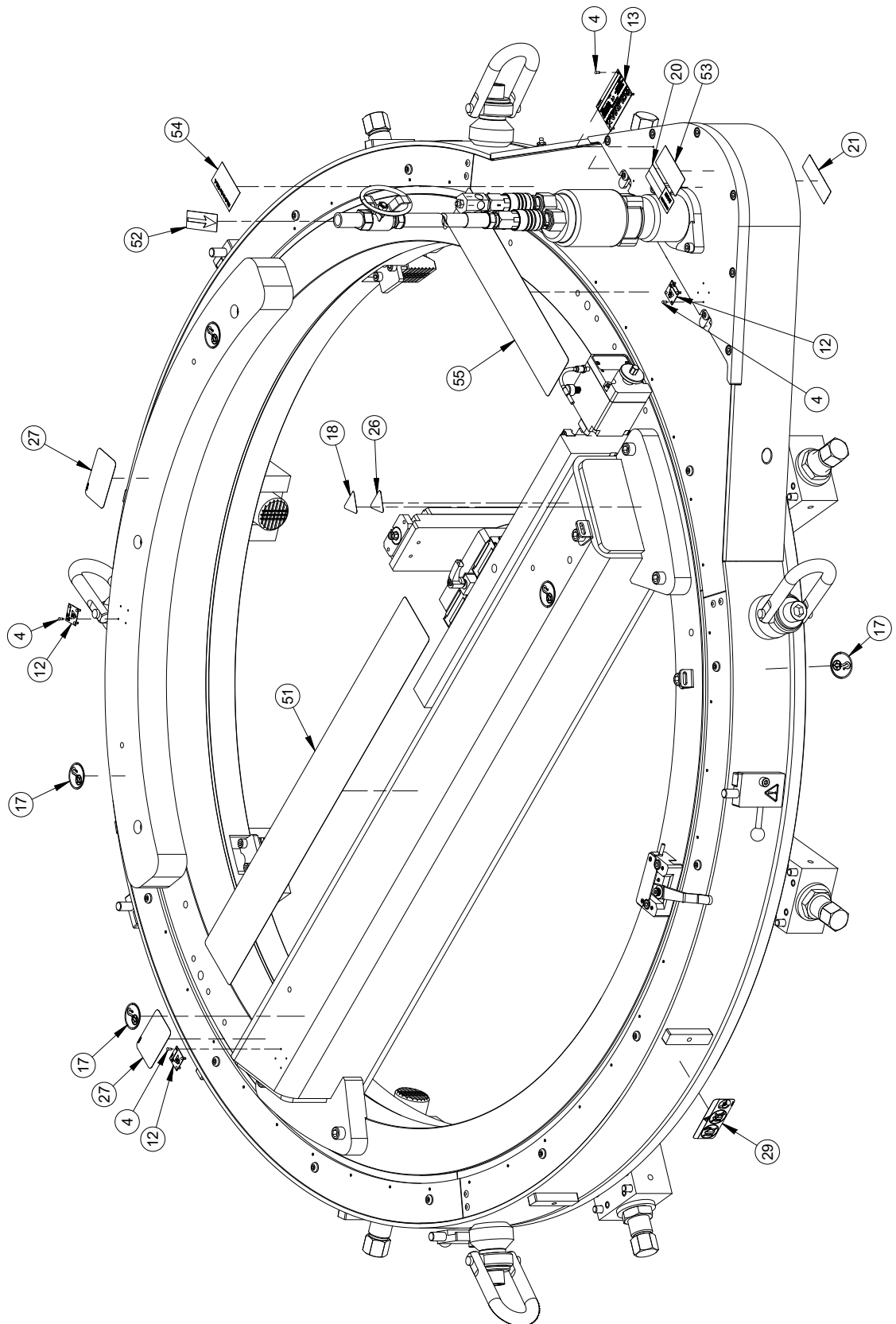


FIGURE A-8. ODF50 SPEED FACER LABELS ASSEMBLY (P/N 86980)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	2	10445	FTG PLUG 1/4 NPTM SOCKET	36	2	86900	*Varies*
2	1	10453	SCREW 3/8-16 X 1-1/4 SHCS	37	4	86910	ASSY FEED TRIPPER
3	30	10557	SCREW 3/8-16 X 2 SHCS	38	4	86970	ASSY JACKING FOOT NON-LEVELING
4	16	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	39	1	86972	SHAFT ODF DRIVE
5	1	11898	FTG GREASE 1/8 NPTM	40	1	86981	FRAME WELDMENT SF50
6	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	41	1	86982	RING TRACK SF50
7	1	15389	KEY 1/2 SQ X 1.25 SQ BOTH ENDS	42	2	86984	BELT V B195
8	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	43	1	86986	COUNTERWEIGHT SF50
9	30	19236	WASHER 3/8 FLTW HARDENED	44	1	86987	WELDMENT BRIDGE SF50
10	1	20956	BLOCK ADJUSTING	45	1	86989	ASSY ODF DRIVE MOTOR
11	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	46	1	86998	PLATE TAKE UP ODF DRIVE
12	3	29152	PLATE MASS CE	47	1	87008	BUSHING QD SK 1-15/16
13	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0	48	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
14	1	30207	SCREW M12 X 1.75 X 35mm SHCS	49	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
15	7	35215	SCREW M12 X 1.75 X 40mm SHCS	50	1	87221	(SHOWN ON SHT 3) CRATE ODF50 74 X 74 X 21-1/4 3/4 PLY
16	6	50458	SCREW M8 X 1.25 X 20mm SHCS	51	1	87260	LABEL H&S ODF50 LOGO 3.5 X 28.0
17	8	59039	LABEL WARNING LIFT POINT ROUND 1.5"	52	1	87265	LABEL ARROW BLK/YEL 1" X 3"
18	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	53	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
19	2	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	54	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
20	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/ BLUE-BLUE	55	1	87428	LABEL H&S ODF50 LOGO 3.0 X 14.0
21	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	56	15	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
22	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	57	15	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
23	2	67743	RING SNAP 2.0 ID X .062 TH	58	2	87521	CLIP RETAINER
24	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	59	1	87522	(NOT SHOWN) MANUAL INSTRUCTION 7432 OD50 SPEEDFACER
25	1	78530	(NOT SHOWN) TOOL KIT SF SERIES	60	1	87538	GUARD AND SEAL ASSY SF50
26	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	61	1	87539	PLATE COVER DRIVE ODF50
27	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	62	2	89174	CLIP FORMED 1/8 X 1 SS304
28	1	79635	SCREW 3/4-10 X 4 SSSFP	63	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
29	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	64	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
30	30	86878	ROLLER W4	65	1	90117	TUBE GREASE 1/4 OD ODF50
31	30	86879	BUSHING ECCENTRIC SIZE 4	66	1	96550	(SHOWN ON SHT 3) PNEUMATIC CONDITIONING UNIT W/SHEET METAL STAND
32	4	86880	ASSY JACKING FOOT LEVELING	67	1	99262	SEAL STRIP .062" THICK X 3/8" WIDE X 160" LONG
33	1	86889	IDLER TAKE UP ODF DRIVE				
34	1	86890	ASSY RADIAL AXIS 356MM TRAVEL				
35	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE				

FIGURE A-9. ODF50 SPEED FACER PARTS LIST (P/N 86980)

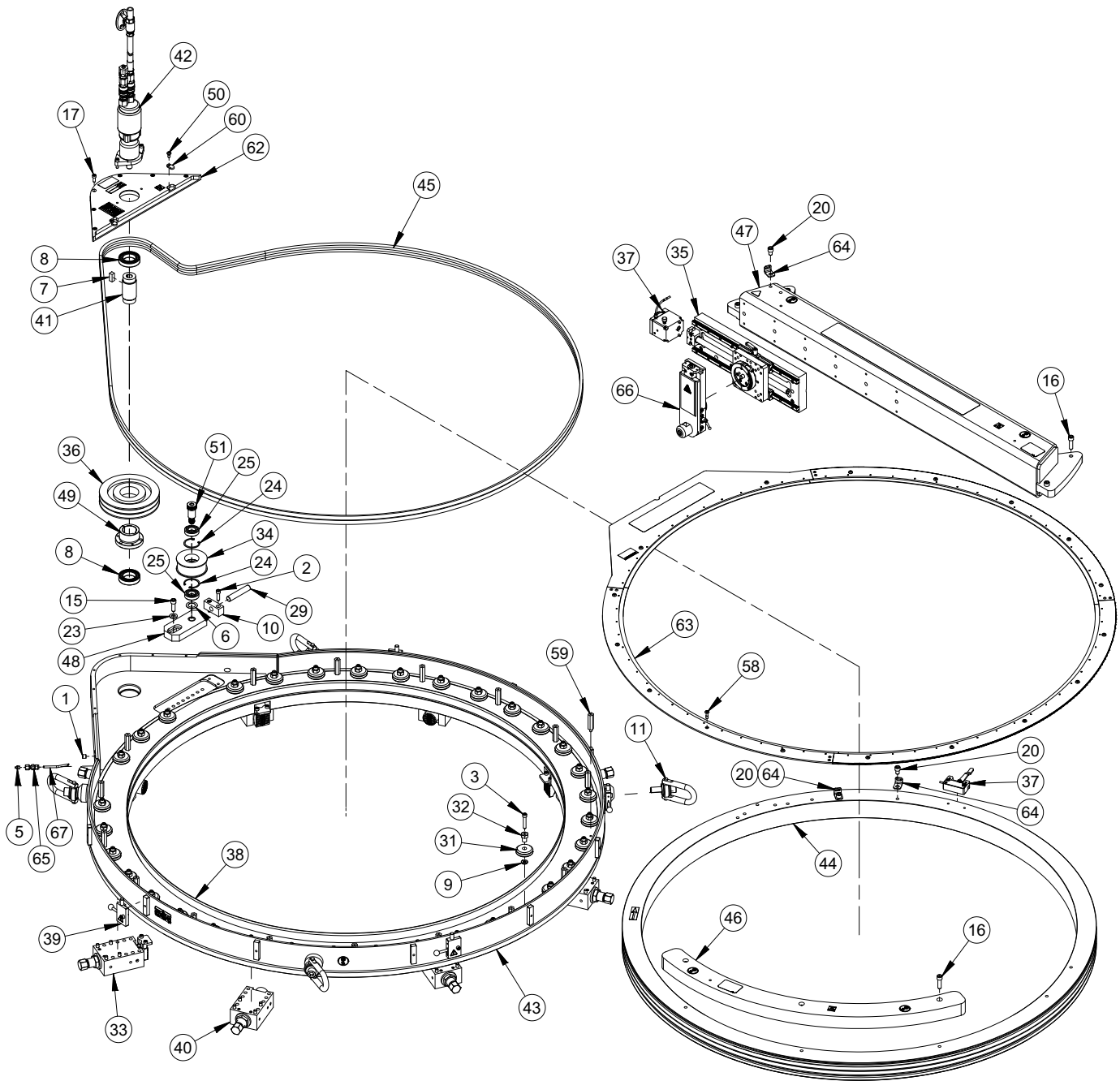


FIGURE A-10. ODF60 SPEED FACER ASSEMBLY (P/N 86990)

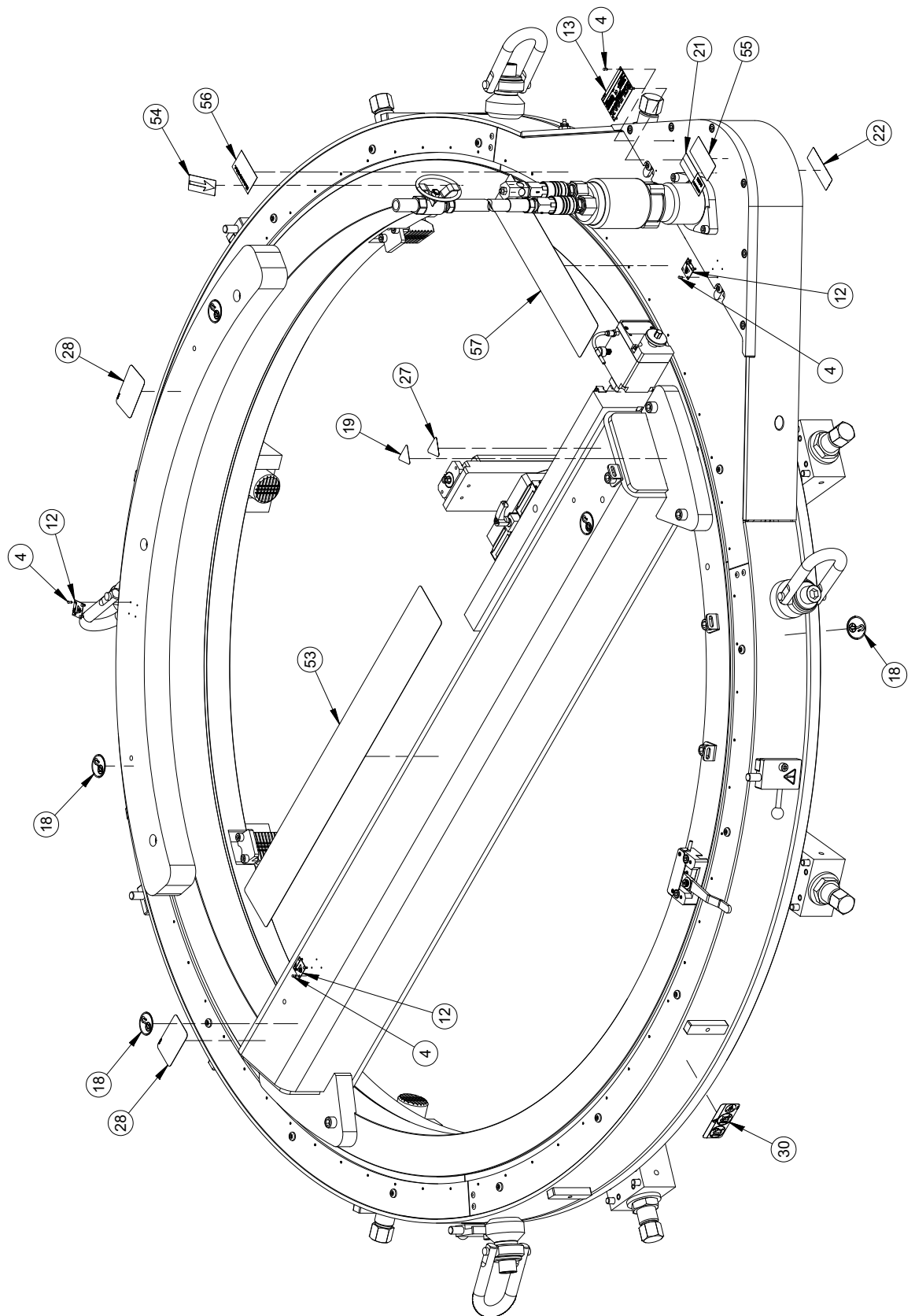


FIGURE A-11. ODF60 SPEED FACER LABEL LOCATIONS (P/N 86990)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	2	10445	FTG PLUG 1/4 NPTM SOCKET	36	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE
2	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	37	2	86900	*Varies*
3	34	10557	SCREW 3/8-16 X 2 SHCS	38	1	86901	SEAL STRIP .062" THICK X 3/8" WIDE X 192" LONG
4	16	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	39	4	86910	ASSY FEED TRIPPER
5	1	11898	FTG GREASE 1/8 NPTM	40	4	86970	ASSY JACKING FOOT NON-LEVELING
6	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	41	1	86972	SHAFT ODF DRIVE
7	1	15389	KEY 1/2 SQ X 1.25 SQ BOTH ENDS	42	1	86989	ASSY ODF DRIVE MOTOR
8	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	43	1	86991	FRAME WELDMENT SF60
9	34	19236	WASHER 3/8 FLTW HARDENED	44	1	86992	RING TRACK ODF60
10	1	20956	BLOCK ADJUSTING	45	2	86994	BELT V B225
11	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	46	1	86996	COUNTERWEIGHT SF60
12	3	29152	PLATE MASS CE	47	1	86997	WELDMENT BRIDGE ODF60
13	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0	48	1	86998	PLATE TAKE UP ODF DRIVE
14	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0	49	1	87008	BUSHING QD SK 1-15/16
15	1	30207	SCREW M12 X 1.75 X 35mm SHCS	50	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
16	7	35215	SCREW M12 X 1.75 X 40mm SHCS	51	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
17	6	50458	SCREW M8 X 1.25 X 20mm SHCS	52	1	87220	(SHOWN ON SHT 3) CRATE ODF60 84 X 84 X 21-1/4 3/4 PLY
18	8	59039	LABEL WARNING LIFT POINT ROUND 1.5"	53	1	87261	LABEL H&S ODF60 LOGO 3.5 X 28.0
19	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	54	1	87265	LABEL ARROW BLKYEL 1" X 3"
20	3	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	55	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
21	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/ BLUE-BLUE	56	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
22	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	57	1	87429	LABEL H&S ODF60 LOGO 3.0 X 14.0
23	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	58	17	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
24	2	67743	RING SNAP 2.0 ID X .062 TH	59	17	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
25	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	60	2	87521	CLIP RETAINER
26	1	78530	(NOT SHOWN) TOOL KIT SF SERIES	61	1	87523	(NOT SHOWN) MANUAL INSTRUCTION 7432 OD60 SPEEDFACER
27	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	62	1	87547	PLATE COVER DRIVE ODF60
28	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	63	1	87548	GUARD AND SEAL ASSY SF60
29	1	79635	SCREW 3/4-10 X 4 SSSFP	64	3	89174	CLIP FORMED 1/8 X 1 SS304
30	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	65	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
31	34	86878	ROLLER W4	66	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
32	34	86879	BUSHING ECCENTRIC SIZE 4	67	1	90118	TUBE GREASE 1/4 OD ODF60
33	4	86880	ASSY JACKING FOOT LEVELING	68	1	96550	(SHOWN ON SHT 3) PNEUMATIC CONDITIONING UNIT W/SHEET METAL STAND
34	1	86889	IDLER TAKE UP ODF DRIVE				
35	1	86890	ASSY RADIAL AXIS 356MM TRAVEL				

FIGURE A-12. ODF60 SPEED FACER PARTS LIST (P/N 86990)

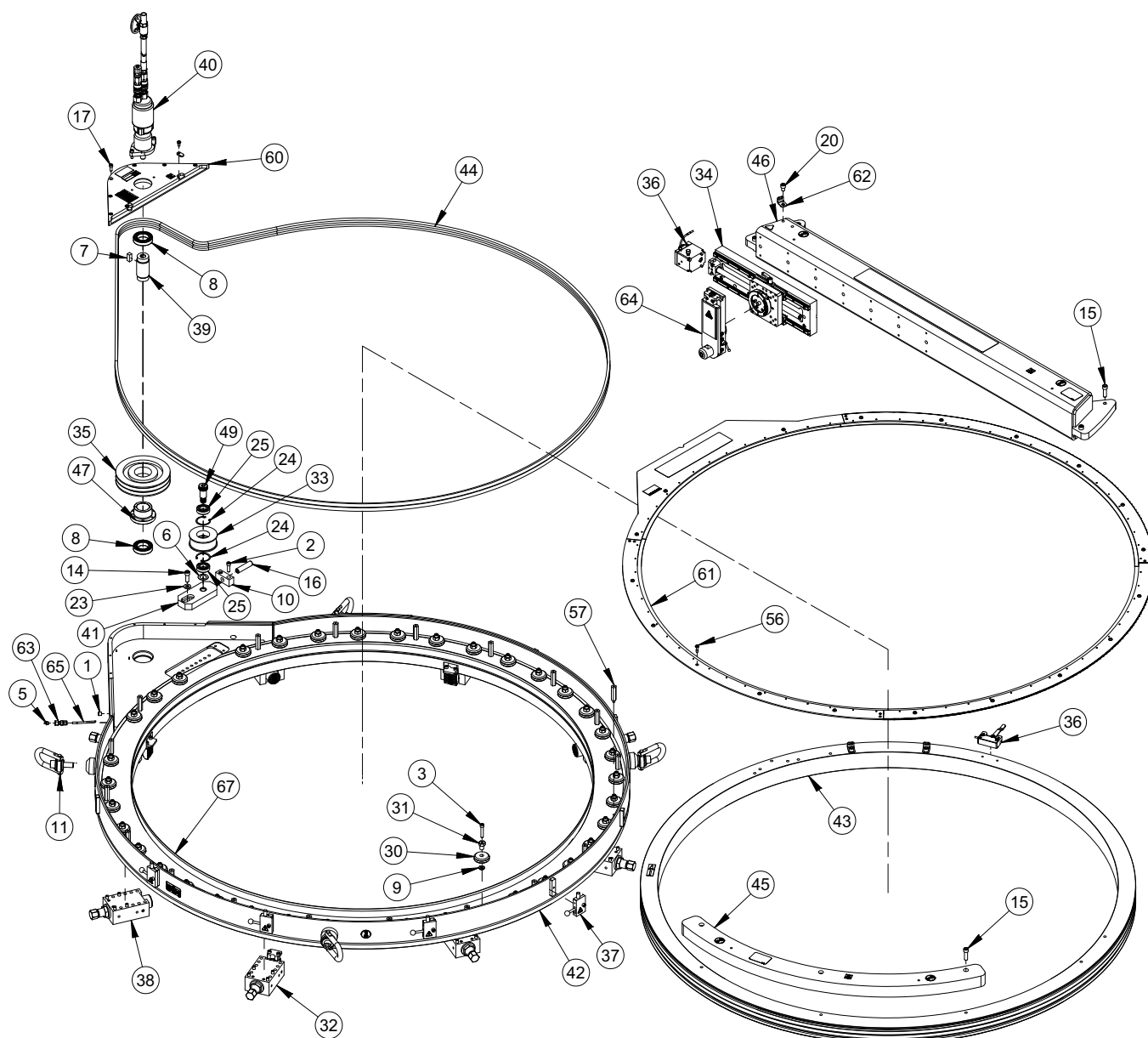


FIGURE A-13. ODF70 SPEED FACER ASSEMBLY (P/N 87000)

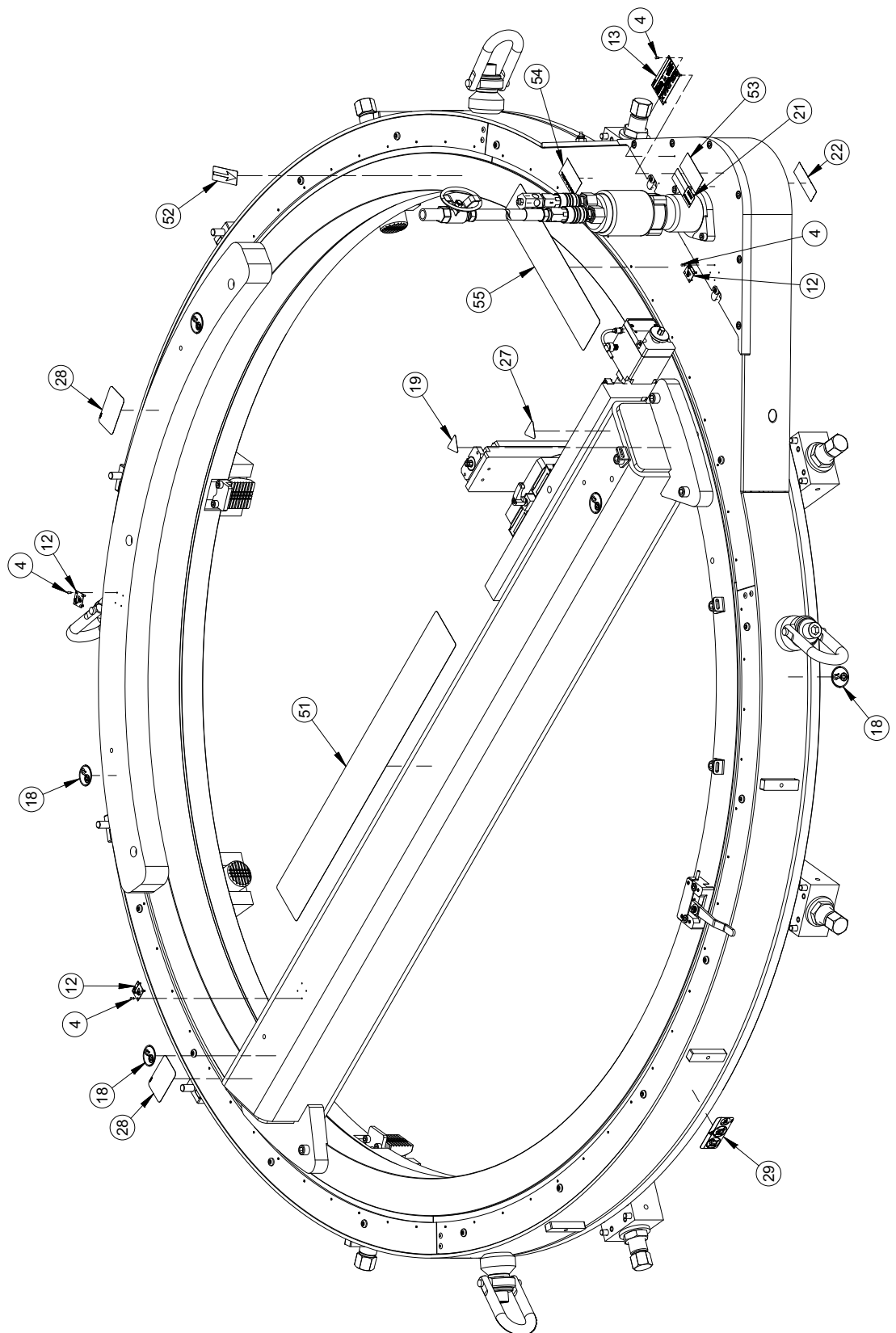


FIGURE A-14. ODF70 SPEED FACER LABEL LOCATIONS (P/N 87000)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	2	10445	FTG PLUG 1/4 NPTM SOCKET	36	2	86900	*Varies*
2	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	37	4	86910	ASSY FEED TRIPPER
3	38	10557	SCREW 3/8-16 X 2 SHCS	38	4	86970	ASSY JACKING FOOT NON-LEVELING
4	16	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	39	1	86972	SHAFT ODF DRIVE
5	1	11898	FTG GREASE 1/8 NPTM	40	1	86989	ASSY ODF DRIVE MOTOR
6	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	41	1	86998	PLATE TAKE UP ODF DRIVE
7	1	15389	KEY 1/2 SQ X 1.25 SQ BOTH ENDS	42	1	87001	FRAME WELDMENT SF70
8	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	43	1	87002	RING TRACK ODF70
9	38	19236	WASHER 3/8 FLTW HARDENED	44	2	87004	BELT V 5VX2650
10	1	20956	BLOCK ADJUSTING	45	1	87006	COUNTERWEIGHT SF70
11	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	46	1	87007	WELDMENT BRIDGE ODF70
12	3	29152	PLATE MASS CE	47	1	87008	BUSHING QD SK 1-15/16
13	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0	48	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
14	1	30207	SCREW M12 X 1.75 X 35mm SHCS	49	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
15	7	35215	SCREW M12 X 1.75 X 40mm SHCS	50	1	87149	(SHOWN ON SHT 3) CRATE ODF70 92 X 92 X 21-1/4 3/4 PLY
16	1	39513	SCREW 3/4-10 X 3 SSSCP	51	1	87262	LABEL H&S ODF70 LOGO 3.5 X 28.0
17	6	50458	SCREW M8 X 1.25 X 20mm SHCS	52	1	87265	LABEL ARROW BLKYEL 1" X 3"
18	8	59039	LABEL WARNING LIFT POINT ROUND 1.5"	53	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
19	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	54	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
20	3	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	55	1	87430	LABEL H&S ODF70 LOGO 3.0 X 14.0
21	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/BLUE-BLUE	56	19	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
22	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	57	19	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
23	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	58	2	87521	CLIP RETAINER
24	2	67743	RING SNAP 2.0 ID X .062 TH	59	1	87524	(NOT SHOWN) MANUAL INSTRUCTION 7432 OD70
25	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS				SPEEDFACER
26	1	79530	(NOT SHOWN) TOOL KIT SF SERIES	60	1	87549	PLATE COVER DRIVE ODF70
27	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	61	1	87553	GUARD AND SEAL ASSY SF70
28	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	62	3	89174	CLIP FORMED 1/8 X 1 SS304
29	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	63	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
30	38	86878	ROLLER W4	64	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
31	38	86879	BUSHING ECCENTRIC SIZE 4	65	1	90119	TUBE GREASE 1/4 OD ODF70
32	4	86880	ASSY JACKING FOOT LEVELING	66	1	96550	(SHOWN ON SHT 3) PNEUMATIC CONDITIONING UNIT W/SHEET METAL STAND
33	1	86889	IDLER TAKE UP ODF DRIVE				
34	1	86890	ASSY RADIAL AXIS 356MM TRAVEL				
35	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE	67	1	99264	SEAL STRIP .062" THICK X 3/8" WIDE X 223" LONG

FIGURE A-15. ODF70 SPEED FACER PARTS LIST (P/N 87000)

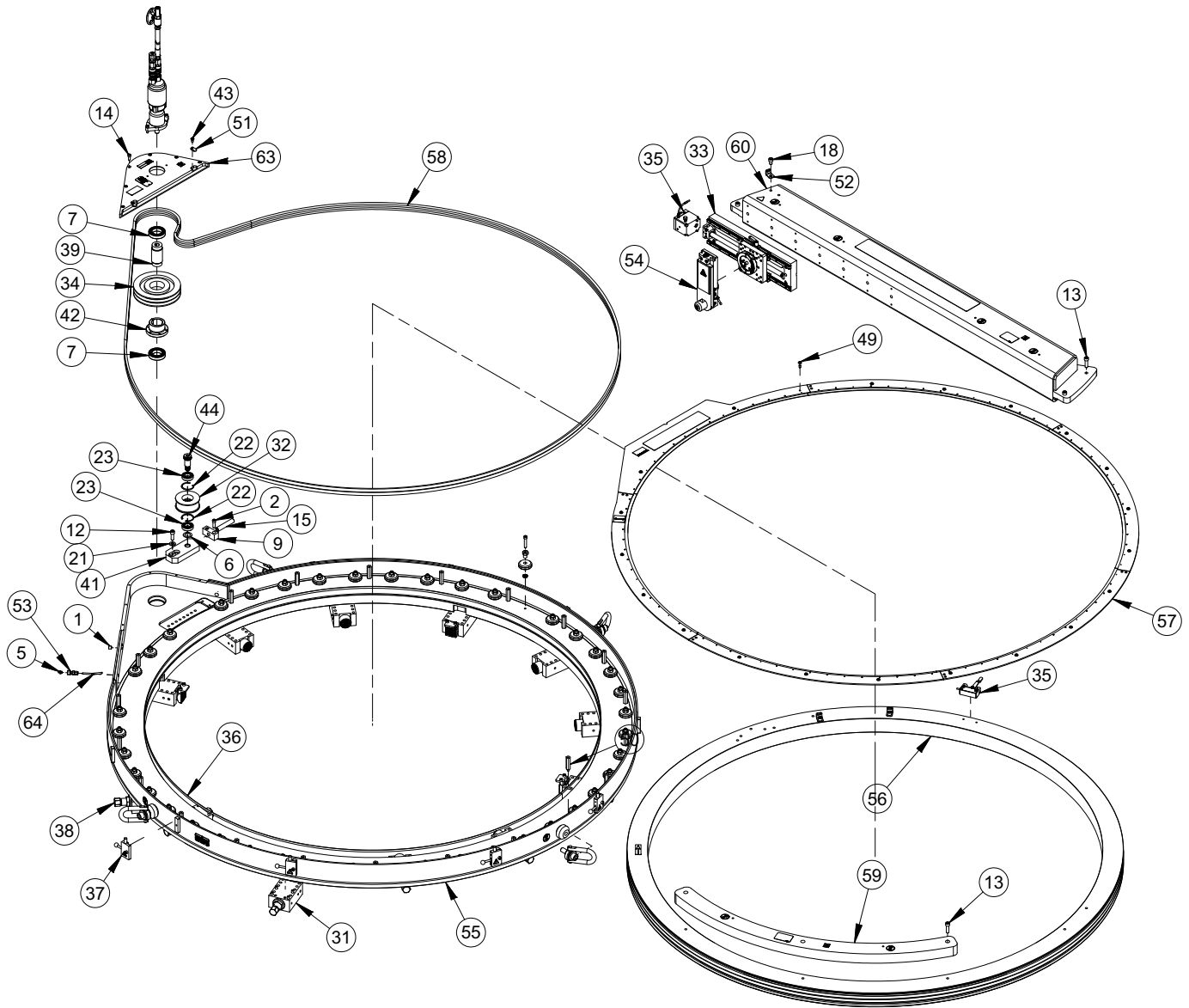


FIGURE A-16. ODF80 SPEED FACER ASSEMBLY 1 (P/N 94770)

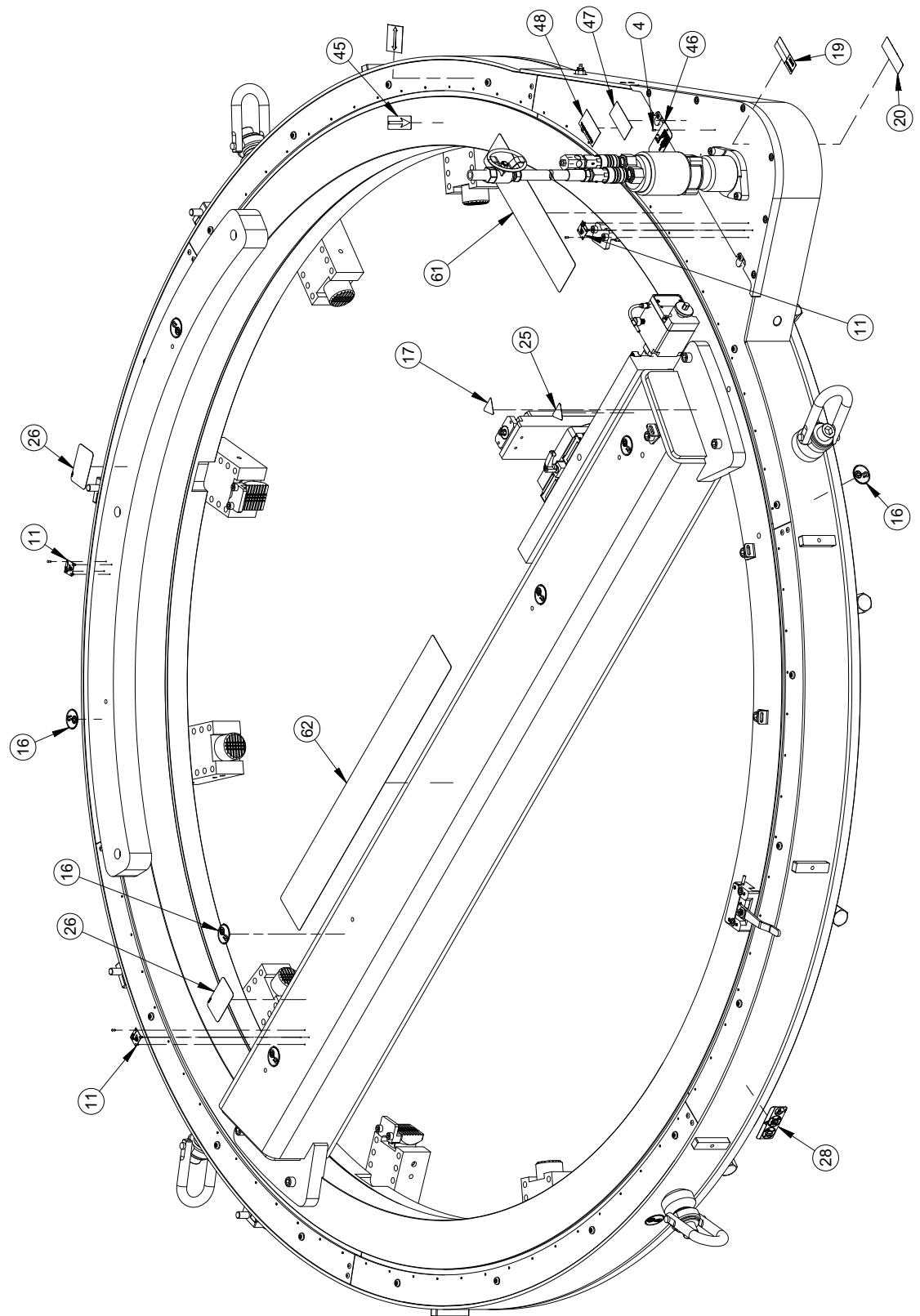


FIGURE A-17. ODF80 SPEED FACER LABEL LOCATIONS (P/N 94770)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	2	10445	FTG PLUG 1/4 NPTM SOCKET	35	1	86900	ASSY FEEDBOX PULL CABLE
2	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	36	255	86901	SEAL STRIP .062" THICK X 3/8" WIDE
3	42	10557	SCREW 3/8-16 X 2 SHCS	37	4	86910	ASSY FEED TRIPPER
4	14	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	38	8	86970	ASSY JACKING FOOT NON-LEVELING
5	1	11898	FTG GREASE 1/8 NPTM	39	1	86972	SHAFT ODF DRIVE
6	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	40	1	86989	ASSY ODF DRIVE MOTOR
7	2	16111	BRG BALL 1.7717 ID X 2.9628 OD X .6299 SEALS	41	1	86988	PLATE TAKE UP ODF DRIVE
8	42	19236	WASHER 3/8 FLTW HARDENED	42	1	87008	BUSHING QD SK 1-15/16
9	1	20956	BLOCK ADJUSTING	43	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
10	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	44	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
11	3	29152	PLATE MASS CE	45	1	87265	LABEL ARROW BLK/YEL 1" X 3"
12	1	30207	SCREW M12 X 1.75 X 35mm SHCS	46	1	87269	PLATE SERIAL YEAR MODEL BLANK CE 1.5 X 3.0
13	7	35215	SCREW M12 X 1.75 X 40mm SHCS	47	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
14	6	50458	SCREW M8 X 1.25 X 20mm SHCS				
15	1	55719	SCREW 3/4-10 X 4 SSSCP	48	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
16	10	59039	LABEL WARNING LIFT POINT ROUND 1.5"	49	21	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
17	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	50	21	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
18	3	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	51	2	87521	CLIP RETAINER
19	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/ BLUE-BLUE	52	3	89174	CLIP FORMED 1/8 X 1 SS304
20	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	53	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
21	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	54	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
22	2	67743	RING SNAP 2.0 ID X .062 TH	55	1	95981	FRAME WELDMENT ODF80
23	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	56	1	95982	RING TRACK ODF80
24	1	78530	(NOT SHOWN) TOOL KIT SF SERIES	57	1	95983	GUARD AND SEAL ASSY ODF80
25	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	58	2	95984	BELT V B300
26	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	59	1	95986	COUNTERWEIGHT ODF80
27	1	82344	LABEL ARROW MOVEMENT RED / WHITE	60	1	95987	WELDMENT BRIDGE ODF80
28	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	61	1	96007	LABEL H&S ODF80 LOGO 3.0 X 14.0
29	42	86878	ROLLER W4	62	1	96008	LABEL H&S ODF80 LOGO 3.5 X 28.0
30	42	86879	BUSHING ECCENTRIC SIZE 4	63	1	96011	PLATE COVER DRIVE ODF80
31	4	86880	ASSY JACKING FOOT LEVELING	64	1	96016	TUBE GREASE 1/4 OD ODF80
32	1	86889	IDLER TAKE UP ODF DRIVE	65	1	96022	(NOT SHOWN) SHIPPING FRAME ODF80
33	1	86890	ASSY RADIAL AXIS 356MM TRAVEL	66	1	96550	(NOT SHOWN) ASSY PNEUMATIC CONDITIONING UNIT W/ SHEET METAL STAND
34	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE	67	1	HS-100438	(NOT SHOWN) MANUAL INSTRUCTION ODF80 SPEEDFACER

FIGURE A-18. ODF80 SPEED FACER ASSEMBLY PARTS LIST (P/N 94770)

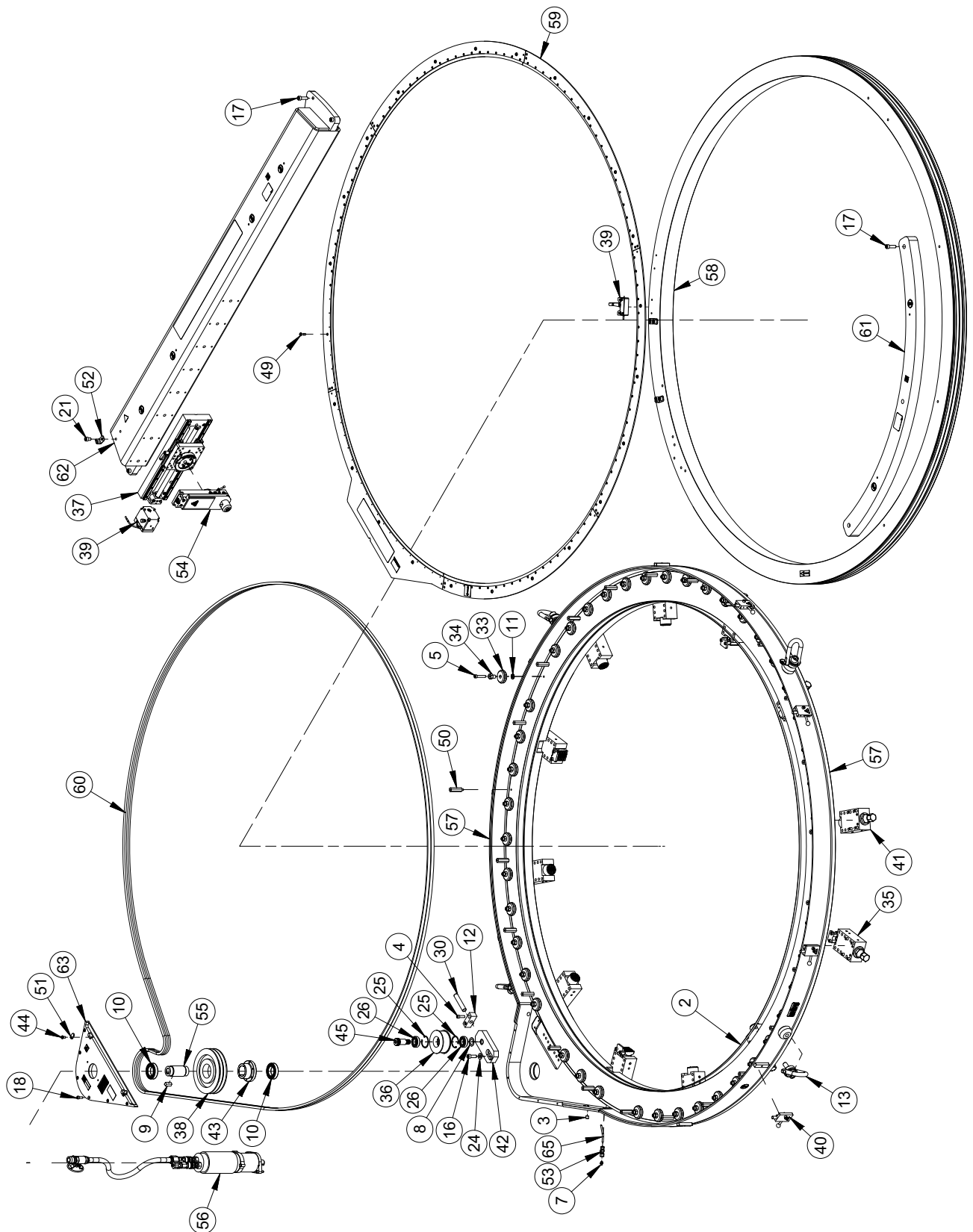


FIGURE A-19. ODF90 SPEED FACER ASSEMBLY 1 (P/N 94780)

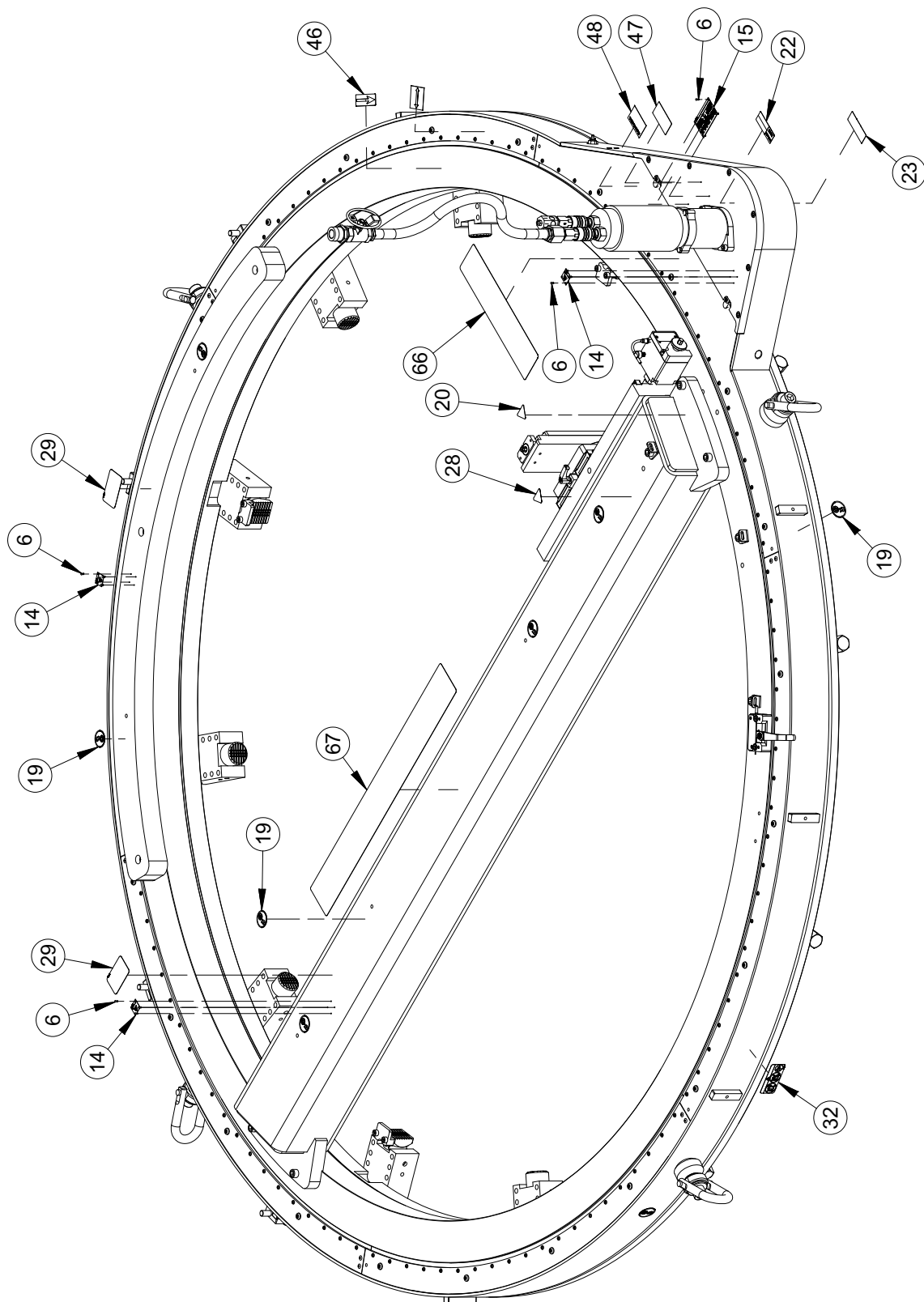


FIGURE A-20. ODF90 SPEED FACER LABEL LOCATIONS (P/N 94780)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	1	100438	(NOT SHOWN) MANUAL INSTRUCTION ODF90 SPEEDFACER	36	1	86889	IDLER TAKE UP ODF DRIVE
2	1	100849	SEAL STRIP .062" THICK X 3/8" WIDE X 286" LONG	37	1	86890	ASSY RADIAL AXIS 356MM TRAVEL
3	2	10445	FTG PLUG 1/4 NPTM SOCKET	38	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE
4	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	39	2	86900	ASSY FEEDBOX PULL CABLE
5	46	10557	SCREW 3/8-16 X 2 SHCS	40	4	86910	ASSY FEED TRIPPER
6	16	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	41	8	86970	ASSY JACKING FOOT NON-LEVELING
7	1	11898	FTG GREASE 1/8 NPTM	42	1	86998	PLATE TAKE UP ODF DRIVE
8	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	43	1	87008	BUSHING QD SK 1-15/16
9	1	15389	KEY 1/2 SQ X 1.25 SQ BOTH ENDS	44	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
10	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	45	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
11	46	19236	WASHER 3/8 FLTW HARDENED	46	1	87265	LABEL ARROW BLK/YEL 1" X 3"
12	1	20956	BLOCK ADJUSTING	47	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
13	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	48	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
14	3	29152	PLATE MASS CE	49	24	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
15	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0	50	24	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
16	1	30207	SCREW M12 X 1.75 X 35mm SHCS	51	2	87521	CLIP RETAINER
17	7	35215	SCREW M12 X 1.75 X 40mm SHCS	52	3	89174	CLIP FORMED 1/8 X 1 SS304
18	6	50458	SCREW M8 X 1.25 X 20mm SHCS	53	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
19	10	59039	LABEL WARNING LIFT POINT ROUND 1.5"	54	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
20	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	55	1	94771	SHAFT ODF DRIVE XL
21	3	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	56	1	94773	ASSY ODF DRIVE MOTOR XL
22	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/ BLUE-BLUE	57	1	95721	FRAME WELDMENT ODF90
23	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	58	1	95722	RING TRACK ODF90
24	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	59	1	95723	GUARD AND SEAL ASSY ODF90
25	2	67743	RING SNAP 2.0 ID X .062 TH	60	2	95724	BELT V B330
26	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	61	1	95726	COUNTERWEIGHT ODF90
27	1	79530	(NOT SHOWN) TOOL KIT SF SERIES	62	1	95727	WELDMENT BRIDGE ODF90
28	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	63	1	96011	PLATE COVER DRIVE ODF80
29	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	64	1	96757	(NOT SHOWN) PNEUMATIC CONDITIONING UNIT WITH LOCAL START STOP 1 IN PORTS
30	1	79635	SCREW 3/4-10 X 4 SSSFP	65	1	98663	TUBE GREASE 1/4 OD ODF90
31	1	82344	LABEL ARROW MOVEMENT RED / WHITE	66	1	98804	LABEL H&S ODF90 LOGO 3.0 X 14.0
32	2	84856	LABEL DANGER - ODFFF TETHER MACHINE BEFORE USE	67	1	98805	LABEL H&S ODF90 LOGO 3.5 X 28.0
33	46	86878	ROLLER W4				
34	46	86879	BUSHING ECCENTRIC SIZE 4				
35	4	86880	ASSY JACKING FOOT LEVELING	68	1	99291	(SHEET 4) SHIPPING FRAME ODF90

FIGURE A-21. ODF90 SPEED FACER ASSEMBLY PARTS LIST (P/N 94780)

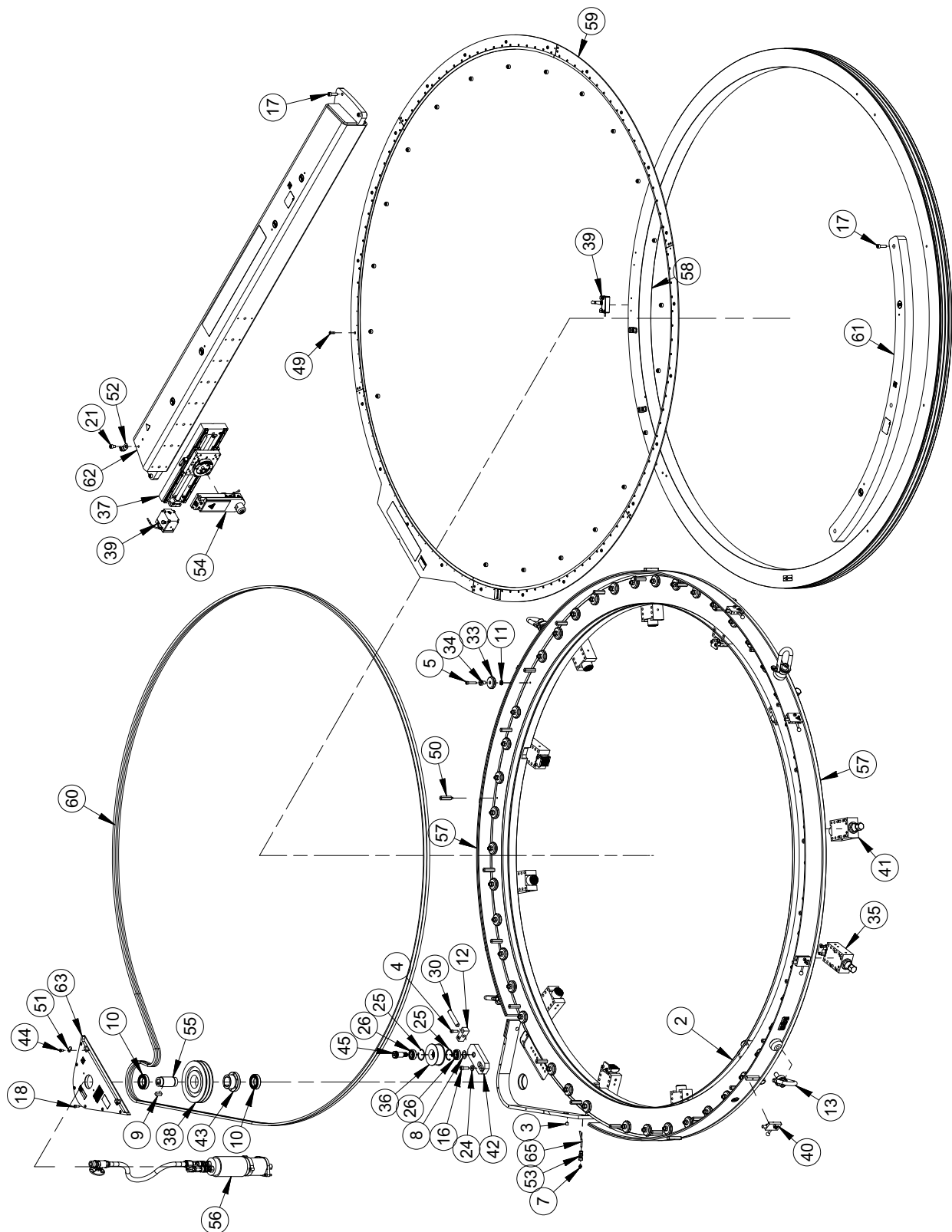


FIGURE A-22. ODF100 SPEED FACER ASSEMBLY 1 (P/N 94790)

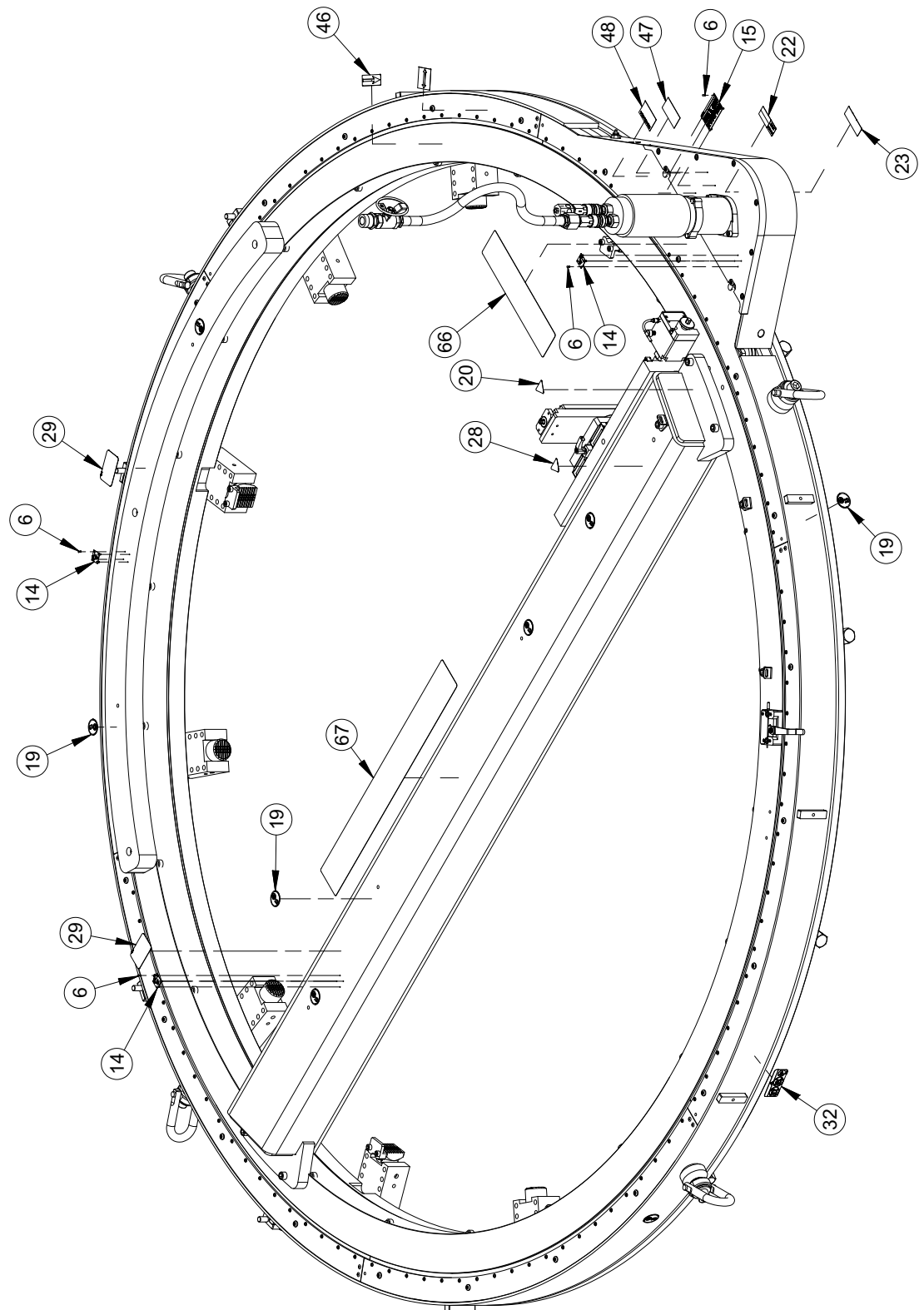


FIGURE A-23. ODF100 SPEED FACER LABEL LOCATIONS (P/N 94790)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	1	100438	(NOT SHOWN) MANUAL INSTRUCTION ODF90 SPEEDFACER	36	1	86889	IDLER TAKE UP ODF DRIVE
2	1	102579	SEAL STRIP .062" THICK X 3/8" WIDE X 286" LONG	37	1	86890	ASSY RADIAL AXIS 356MM TRAVEL
3	2	10445	FTG PLUG 1/4 NPTM SOCKET	38	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE
4	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	39	2	86900	*Varies*
5	46	10557	SCREW 3/8-16 X 2 SHCS	40	4	86910	ASSY FEED TRIPPER
6	16	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	41	8	86970	ASSY JACKING FOOT NON-LEVELING
7	1	11898	FTG GREASE 1/8 NPTM	42	1	86998	PLATE TAKE UP ODF DRIVE
8	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	43	1	87008	BUSHING QD SK 1-15/16
9	1	15389	KEY 1/2 SQ X 1.25 SQ BOTH ENDS	44	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
10	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	45	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
11	46	19236	WASHER 3/8 FLTW HARDENED	46	1	87265	LABEL ARROW BLK/YEL 1" X 3"
12	1	20956	BLOCK ADJUSTING	47	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
13	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	48	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
14	3	29152	PLATE MASS CE	49	24	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
15	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0	50	24	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
16	1	30207	SCREW M12 X 1.75 X 35mm SHCS	51	2	87521	CLIP RETAINER
17	7	35215	SCREW M12 X 1.75 X 40mm SHCS	52	3	89174	CLIP FORMED 1/8 X 1 SS304
18	6	50458	SCREW M8 X 1.25 X 20mm SHCS	53	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
19	10	59039	LABEL WARNING LIFT POINT ROUND 1.5"	54	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
20	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	55	1	94771	SHAFT ODF DRIVE XL
21	3	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	56	1	94773	ASSY ODF DRIVE MOTOR XL
22	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/ BLUE-BLUE	57	1	102571	FRAME WELDMENT ODF100
23	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	58	1	102572	RING TRACK ODF100
24	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	59	1	102573	GUARD AND SEAL ASSY ODF100
25	2	67743	RING SNAP 2.0 ID X .062 TH	60	2	102574	BELT V B330
26	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	61	1	102576	COUNTERWEIGHT ODF100
27	1	78530	(NOT SHOWN) TOOL KIT SF SERIES	62	1	102577	WELDMENT BRIDGE ODF100
28	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	63	1	96011	PLATE COVER DRIVE ODF80
29	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	64	1	96757	(NOT SHOWN) PNEUMATIC CONDITIONING UNIT WITH LOCAL START STOP 1 IN PORTS
30	1	79635	SCREW 3/4-10 X 4 SSSFP	65	1	98663	TUBE GREASE 1/4 OD ODF90
31	1	82344	LABEL ARROW MOVEMENT RED / WHITE	66	1	102380	LABEL H&S ODF100 LOGO 3.0 X 14.0
32	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	67	1	102381	LABEL H&S ODF100 LOGO 3.5 X 28.0
33	46	86878	ROLLER W4	68	1	99291	(SHEET 4) SHIPPING FRAME ODF90
34	46	86879	BUSHING ECCENTRIC SIZE 4				
35	4	86880	ASSY JACKING FOOT LEVELING				

FIGURE A-24. ODF100 SPEED FACER ASSEMBLY PARTS LIST (P/N 94790)

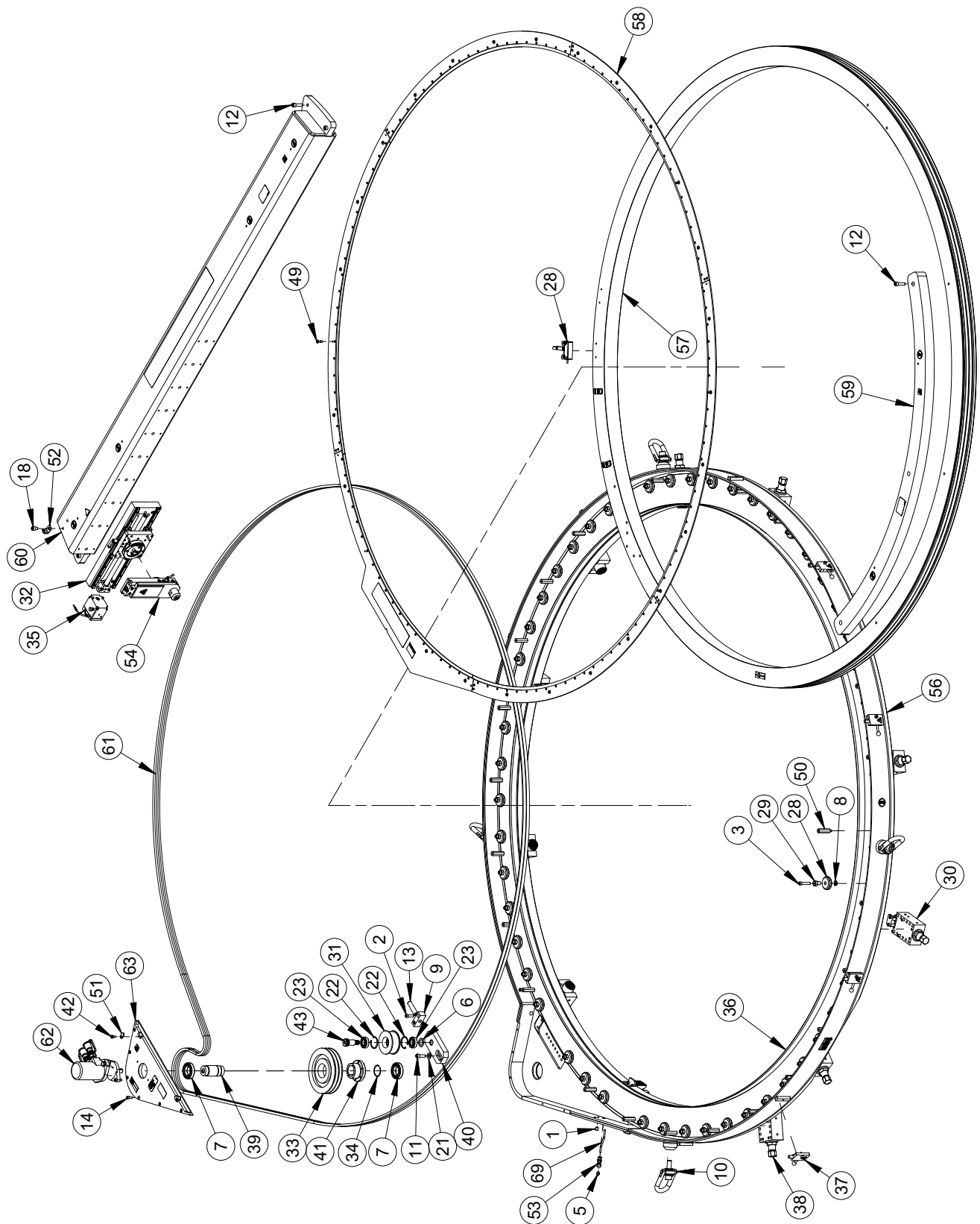


FIGURE A-25. ODF110 SPEED FACER ASSEMBLY 1 (P/N 7639-S2)

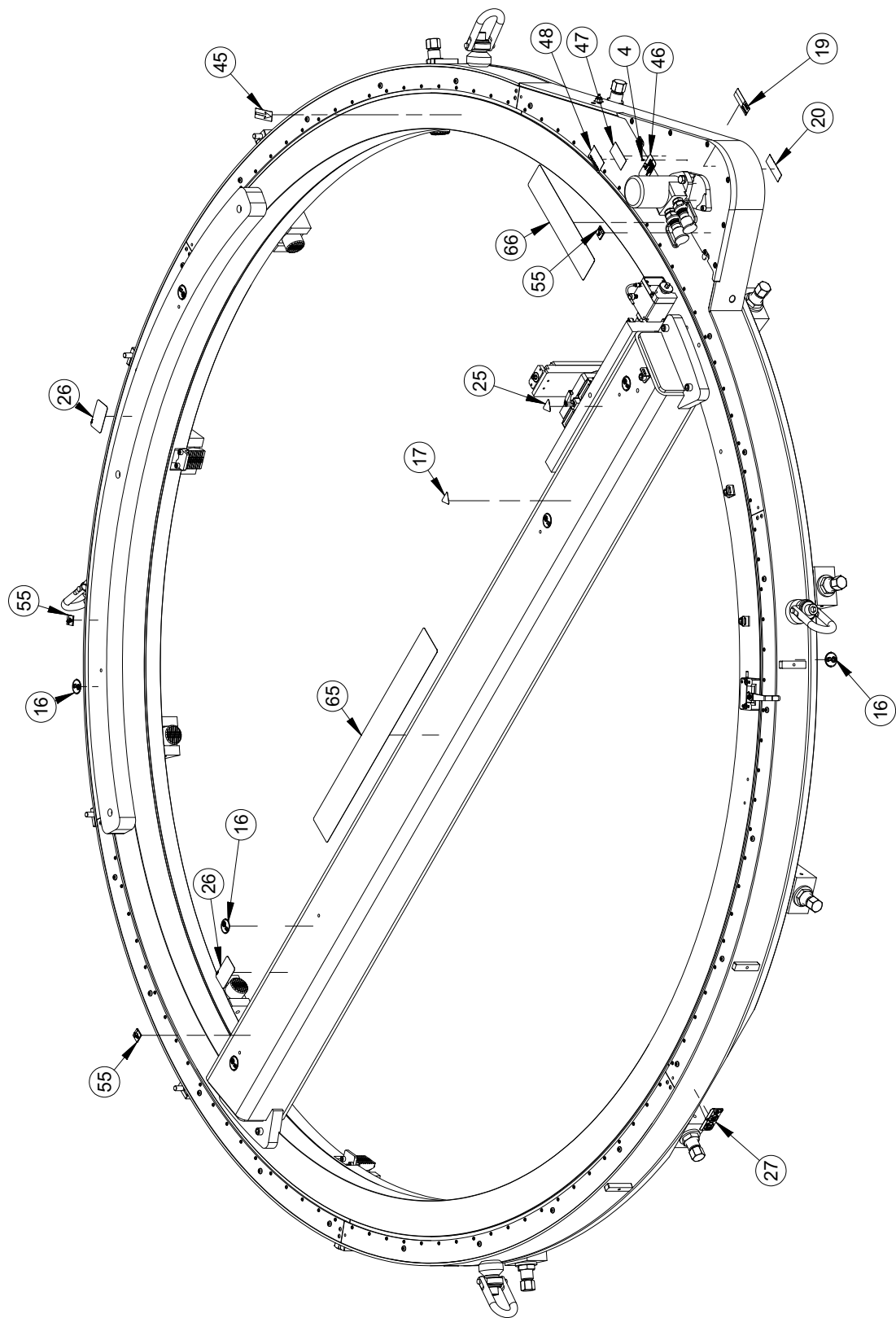


FIGURE A-26. ODF110 SPEED FACER LABEL LOCATIONS (P/N 7639-S2)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	2	10445	FTG PLUG 1/4 NPTM SOCKET	36	350	86901	SEAL STRIP .062" THICK X 3/8" WIDE
2	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	37	4	86910	ASSY FEED TRIPPER
3	54	10557	SCREW 3/8-16 X 2 SHCS	38	8	86970	ASSY JACKING FOOT NON-LEVELING
4	2	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	39	1	86972	SHAFT ODF DRIVE
5	1	11898	FTG GREASE 1/8 NPTM	40	1	86998	PLATE TAKE UP ODF DRIVE
6	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	41	1	87008	BUSHING QD SK 1-15/16
7	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	42	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
8	54	19236	WASHER 3/8 FLTW HARDENED	43	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
9	1	20956	BLOCK ADJUSTING	44	12	87164	ASSY EXTENSION FOOT (NOT SHOWN)
10	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	45	1	87265	LABEL ARROW BLK/YEL 1" X 3"
11	1	30207	SCREW M12 X 1.75 X 35mm SHCS	46	1	87269	PLATE SERIAL YEAR MODEL BLANK CE 1.5 X 3.0
12	7	35215	SCREW M12 X 1.75 X 40mm SHCS	47	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
13	1	39513	SCREW 3/4-10 X 3 SSSCP	48	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
14	6	50458	SCREW M8 X 1.25 X 20mm SHCS	49	27	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
15	1	55856	(NOT SHOWN) MODEL HPU 10HP 4FUNCT 380-415V	50	27	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
16	10	59039	PRSRCONT P4FN050 H1/2 050	51	2	87521	CLIP RETAINER
17	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	52	3	89174	CLIP FORMED 1/8 X 1 SS304
18	3	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	53	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
19	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/BLUE-BLUE	54	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
20	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	55	3	91217	PLATE MASS CE 1.0 X 1.0 KG ADHESIVE BACKED
21	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	56	1	92102	FRAME WELDMENT ODF110
22	2	67743	RING SNAP 2.0 ID X .062 TH	57	1	92103	RING TRACK ODF110
23	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	58	1	92104	GUARD AND SEAL ASSY ODF110
24	1	78530	(NOT SHOWN) TOOL KIT SF SERIES	59	1	92106	COUNTERWEIGHT ODF110
25	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	60	1	92107	WELDMENT BRIDGE ODF110
26	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	61	2	92109	BELT V B386
27	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	62	1	92110	ASSY HYDRAULIC DRIVE SPEEDFACER
28	54	86878	ROLLER W4	63	1	92128	PLATE COVER DRIVE ODF120
29	54	86879	BUSHING ECCENTRIC SIZE 4	64	1	92140	(NOT SHOWN) ASSY BACKFACING ACCESSORY ODF LARGE DIA
30	4	86880	ASSY JACKING FOOT LEVELING	65	1	92161	LABEL H&S ODF110 LOGO 3.5 X 28.0
31	1	86889	IDLER TAKE UP ODF DRIVE	66	1	92163	LABEL H&S ODF110 LOGO 3.0 X 14.0
32	1	86890	ASSY RADIAL AXIS 366MM TRAVEL	67	1	92190	(NOT SHOWN) ASSY HD TOOL HOLDER
33	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD QD BORE	68	1	92253	(NOT SHOWN) MANUAL INSTRUCTION ODF110 SPEEDFACER
34	1	86897	RING SNAP 1.937 OD X .031 SINGLE TURN SPIRAL	69	1	92256	TUBE GREASE 1/4 OD ODF110
35	1	86900	ASSY FEEDBOX PULL CABLE				

FIGURE A-27. ODF110 SPEED FACER ASSEMBLY PARTS LIST (P/N 7639-52)

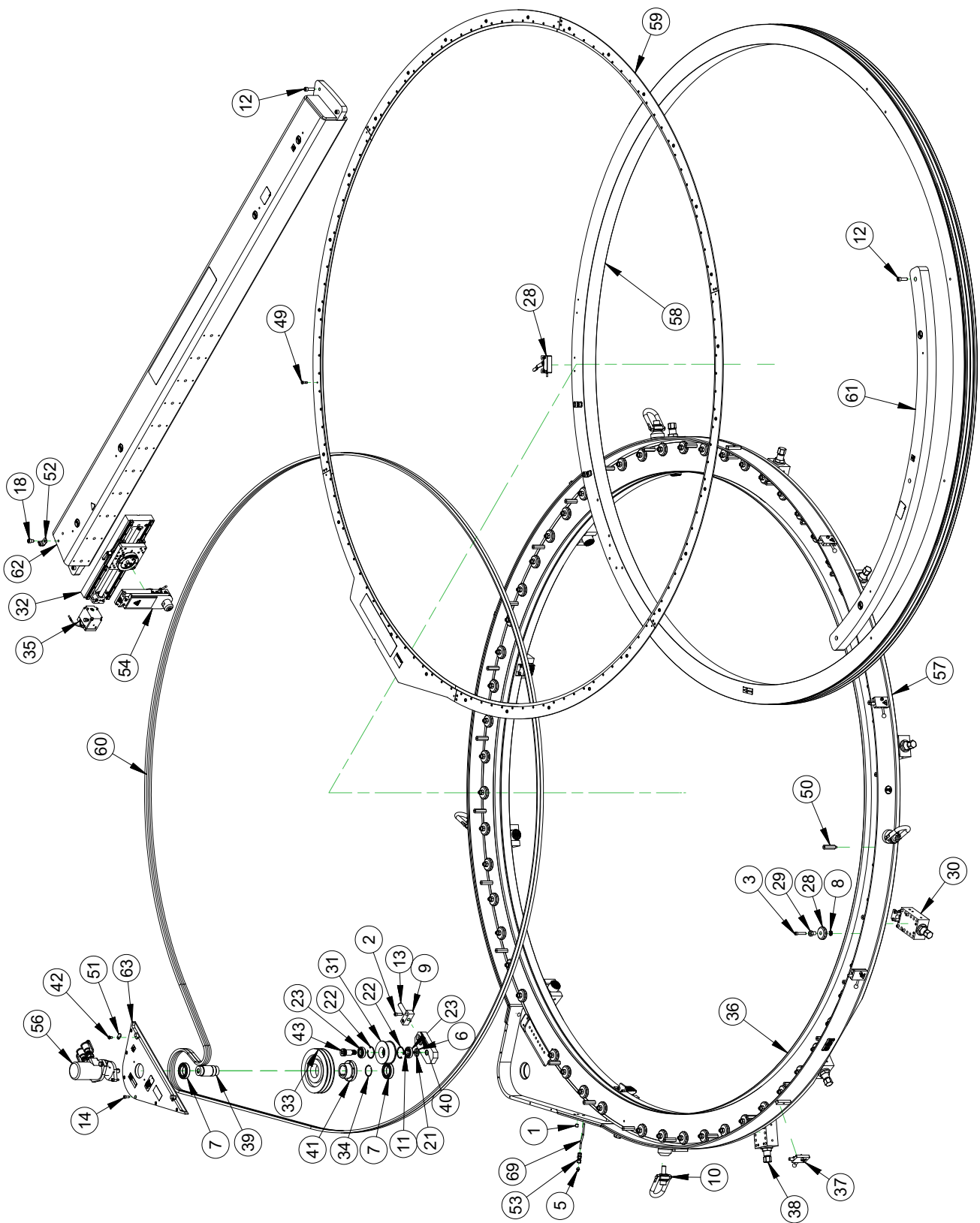


FIGURE A-28. ODF120 SPEED FACER ASSEMBLY (P/N 7639-S1)

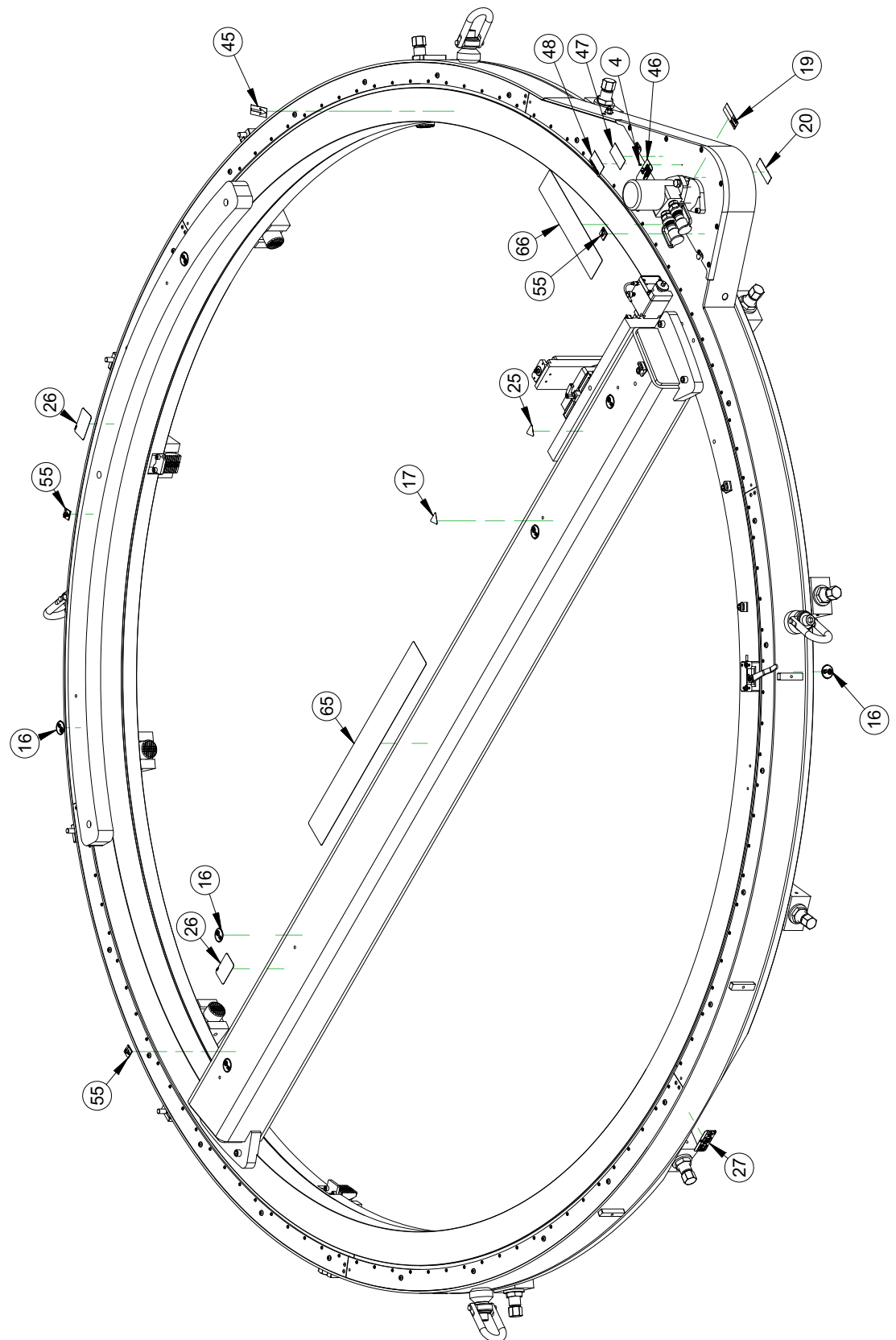


FIGURE A-29. ODF120 SPEED FACER LABEL LOCATIONS (P/N 89210)

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N:	DESCRIPTION
1	2	10445	FTG PLUG 1/4 NPTM SOCKET	36	381	86901	SEAL STRIP .062" THICK X 3/8" WIDE
2	2	10453	SCREW 3/8-16 X 1-1/4 SHCS	37	4	86910	ASSY FEED TRIPPER
3	58	10557	SCREW 3/8-16 X 2 SHCS	38	8	86970	ASSY JACKING FOOT NON-LEVELING
4	2	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	39	1	86972	SHAFT ODF DRIVE
5	1	11898	FTG GREASE 1/8 NPTM	40	1	86998	PLATE TAKE UP ODF DRIVE
6	1	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030	41	1	87008	BUSHING QD SK 1-15/16
7	2	16111	BRG BALL 1.7717 ID X 2.9528 OD X .6299 SEALS	42	2	87020	SCREW M8 X 1.25 X 15MM BHCS CAPTIVE 10 THD STAINLESS
8	58	19236	WASHER 3/8 FLTW HARDENED	43	1	87022	SCREW 1 DIA X 1.5 X 3/4-10 SHLDCS
9	1	20956	BLOCK ADJUSTING	44	12	87164	ASSY EXTENSION FOOT (NOT SHOWN)
10	4	22814	RING HOIST 3/4-10 X 1-1/2 5000 LB	45	1	87265	LABEL ARROW BLK/YEL 1" X 3"
11	1	30207	SCREW M12 X 1.75 X 35mm SHCS	46	1	87269	PLATE SERIAL YEAR MODEL BLANK CE 1.5 X 3.0
12	7	35215	SCREW M12 X 1.75 X 40mm SHCS	47	1	87271	LABEL WARNING - EYE EAR MANUAL PROTECTION 1-3/8 X 2-3/4
13	1	39513	SCREW 3/4-10 X 3 SSSCP				
14	6	50458	SCREW M8 X 1.25 X 20mm SHCS	48	1	87272	LABEL MADE IN THE U.S.A 1.5" X 2.5"
15	1	55856	(NOT SHOWN) MODEL HPU 10HP 4FUNCT 380-415V PRSRCONT P4FN050 H1/2 050	49	29	87473	SCREW M8 X 1.25 X 25MM BHCS CAPTIVE 10 THD STAINLESS
16	10	59039	LABEL WARNING LIFT POINT ROUND 1.5"	50	29	87519	POST 17MM HEX X 62MM M8 X 1.25 TAPPED AND THRD EACH END
17	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS	51	2	87521	CLIP RETAINER
18	3	59209	SCREW M12 X 1.75 X 16 mm SHCS CL 12.9 ZINC PLATED	52	3	89174	CLIP FORMED 1/8 X 1 SS304
19	1	60219	LABEL HOSE CONNECT SCHEME RED-RED/ BLUE-BLUE	53	1	89192	FTG BULKHEAD 1/8 NPTF X 1/4 TUBE
20	1	60220	LABEL HOSE CONNECT SCHEME BLUE-RED/ RED-BLUE	54	1	89210	ASSY SLIDE TOOL HOLDER LONG ODF
21	1	62978	WASHER M12 FLTW 27MM OD 3.1 MM THICK	55	3	91217	PLATE MASS CE 1.0 X 1.0 KG ADHESIVE BACKED
22	2	67743	RING SNAP 2.0 ID X .062 TH	56	1	92110	ASSY HYDRAULIC DRIVE SPEEDFACER
23	2	67910	BRG BALL 1.000 ID X 2.000 OD X .500 2 SEALS	57	1	92111	FRAME WELDMENT ODF120
24	1	78530	(NOT SHOWN) TOOL KIT SF SERIES	58	1	92112	RING TRACK ODF120
25	1	79324	LABEL WARNING - HAND ENTANGLEMENT/ROTATING GEARS 1.13 TALL TRIANGLE YELLOW	59	1	92113	GUARD AND SEAL ASSY ODF120
26	2	79385	LABEL WARNING - LIFT SUB ASSY ONLY GRAPHIC 2 X 3	60	2	92114	BELT V B430
27	2	84856	LABEL DANGER - ODF TETHER MACHINE BEFORE USE	61	1	92116	COUNTERWEIGHT ODF120
28	58	86878	ROLLER W4	62	1	92117	WELDMENT BRIDGE ODF120
29	58	86879	BUSHING ECCENTRIC SIZE 4	63	1	92128	PLATE COVER DRIVE ODF120
30	4	86880	ASSY JACKING FOOT LEVELING	64	1	92140	(NOT SHOWN) ASSY BACKFACING ACCESSORY ODF LARGE DIA
31	1	86889	IDLER TAKE UP ODF DRIVE	65	1	92162	LABEL H&S ODF120 LOGO 3.5 X 28.0
32	1	86890	ASSY RADIAL AXIS 356MM TRAVEL	66	1	92164	LABEL H&S ODF120 LOGO 3.0 X 14.0
33	1	86894	SHEAVE SIZE B 2 GROOVE 8.35 OD OD BORE	67	1	92190	(NOT SHOWN) ASSY HD TOOL HOLDER
34	1	86897	RING SNAP 1.937 OD X .031 SINGLE TURN SPIRAL	68	1	92254	(NOT SHOWN) MANUAL INSTRUCTION ODF120 SPEEDFACER
35	1	86900	ASSY FEEDBOX PULL CABLE	69	1	92257	TUBE GREASE 1/4 OD ODF120

FIGURE A-30. ODF120 SPEED FACER ASSEMBLY PARTS LIST (P/N 89210)

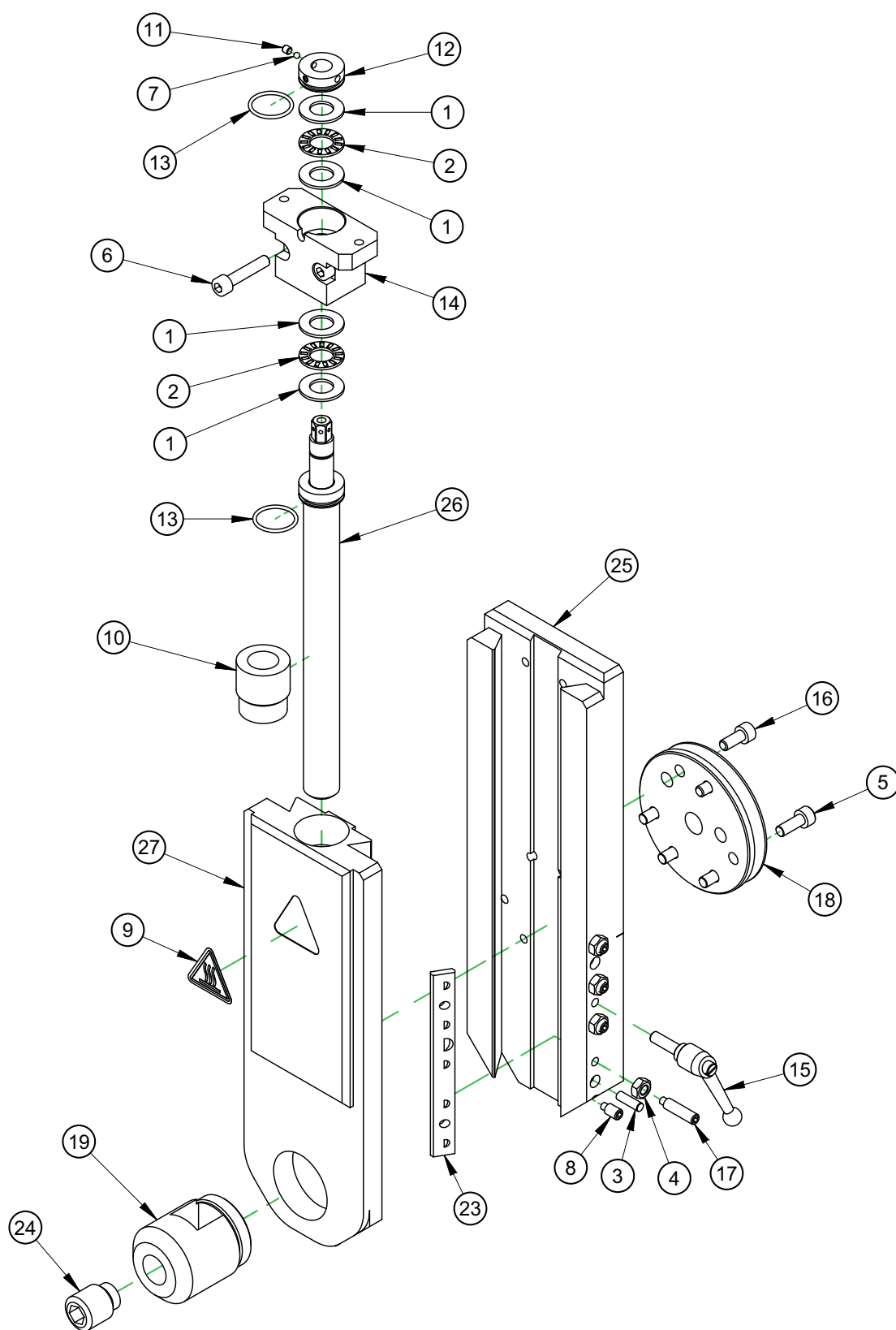


FIGURE A-31. SLIDE TOOL HOLDER ASSEMBLY (P/N 89210)

PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	4	10436	WASHER THRUST .500 ID X .937 OD X .060
2	2	10437	BRG THRUST .500 ID X .937 OD X .0781
3	2	16953	PIN DOWEL 3/16 DIA X 5/8
4	4	20772	NUT M6 X 1.0 STDN ZINC PLATED
5	4	35014	SCREW M6 X 1.0 X 16mm SHCS
6	2	35505	SCREW M6 X 1.0 X 30 SHCS
7	2	43489	BALL NYLON 1/8 DIA
8	1	45034	SCREW M6 X 1.0 X 12MM SSSDPPL
9	1	46902	LABEL WARNING HOT SURFACE GRAPHIC 1.13" TALL
10	1	48526	NUT LEADSCREW ACME 3/4-10 BRONZE LH
11	2	53365	SCREW M4 X 0.7 X 4 mm SSSFP
12	1	57214	BRG RETAINING NUT AXIAL FEED LEADSCREW
13	2	57320	RING O 1/16 X 13/16 ID X 15/16 OD
14	1	57793	BEARING BLOCK LEADSCREW
15	1	58133	HANDLE ADJUSTABLE M6 X 1 X 20MM
16	2	59003	SCREW M6 X 1.0 X 14MM SHCS
17	4	74658	SCREW M6 X 1 X 25MM SSSDP
18	1	79826	PLATE DOVE CIRCULAR
19	1	80309	CLAMP TOOL BIT 3/4 SQ
20	AR	80419	(NOT SHOWN) SHIM 1.8 ID X 3.2 OD .001 THICK
21	AR	80420	(NOT SHOWN) SHIM 1.8 ID X 3.2 OD .002 THICK
22	AR	80421	(NOT SHOWN) SHIM 1.8 ID X 3.2 OD .005 THICK
23	1	82224	GIB TOOLHEAD
24	1	82280	SCREW M20 X 2.5 X 25MM SSSDP
25	1	89209	BASE TOOL HOLDER ODF LONG
26	1	89211	LEADSCREW TOOL HOLDER LONG
27	1	89212	TOP SLIDE TOOL HOLDER LONG

FIGURE A-32. SLIDE TOOL HOLDER PARTS LIST (P/N 89210)

PCU REPLACEMENT PARTS:

MFG=AVENTICS SERIES 652 AIR PREP UNIT COMPONENTS

A T652AT502468001 = END PLATES

B P652AT502466001 = BODY CONNECTOR

C P699AT502467001 = BRACKET ATTACHMENT FOR BODY CONN

① 8652A3M04011100 = SHUT OFF VALVE

D M652AY524218002 = SIDE COVER PLASTIC

E M2MN = METAL SILENCER

② 8652APAM4FA00GA = FILTER/REGULATOR

F M652AU440511003 = BOWL POLYIMIDE

G M699AQ501862001 = DRAIN COCK

D M652AY524218002 = SIDE COVER PLASTIC

H M652AE433582003 = ELEMENT 40 MICRON

J M699AG438047004 = GAUGE 0-175 PSI

③ 8652AL0M40A0000 = LUBRICATOR

F M652AU440511003 = BOWL POLYIMIDE

K M699AQ440512001 = DRAIN COCK PLUG

L M699AY506842001 = SIGHT DOME ASSEMBLY NBR

④ 8652A4E04NA0000 = SOFT START VALVE

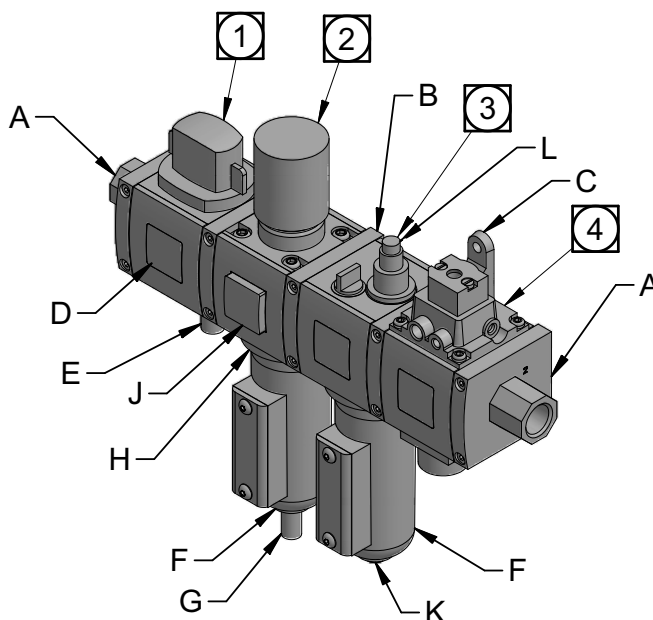
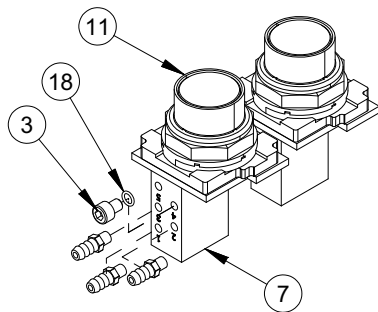
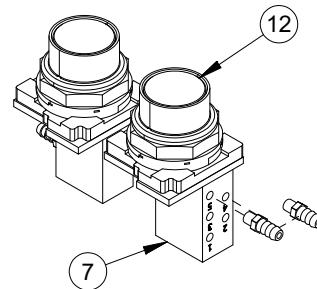


FIGURE A-33. PNEUMATIC CONDITIONING UNIT ASSEMBLY (P/N 101920)



DETAIL A
SCALE 1/3



DETAIL B
SCALE 1/3

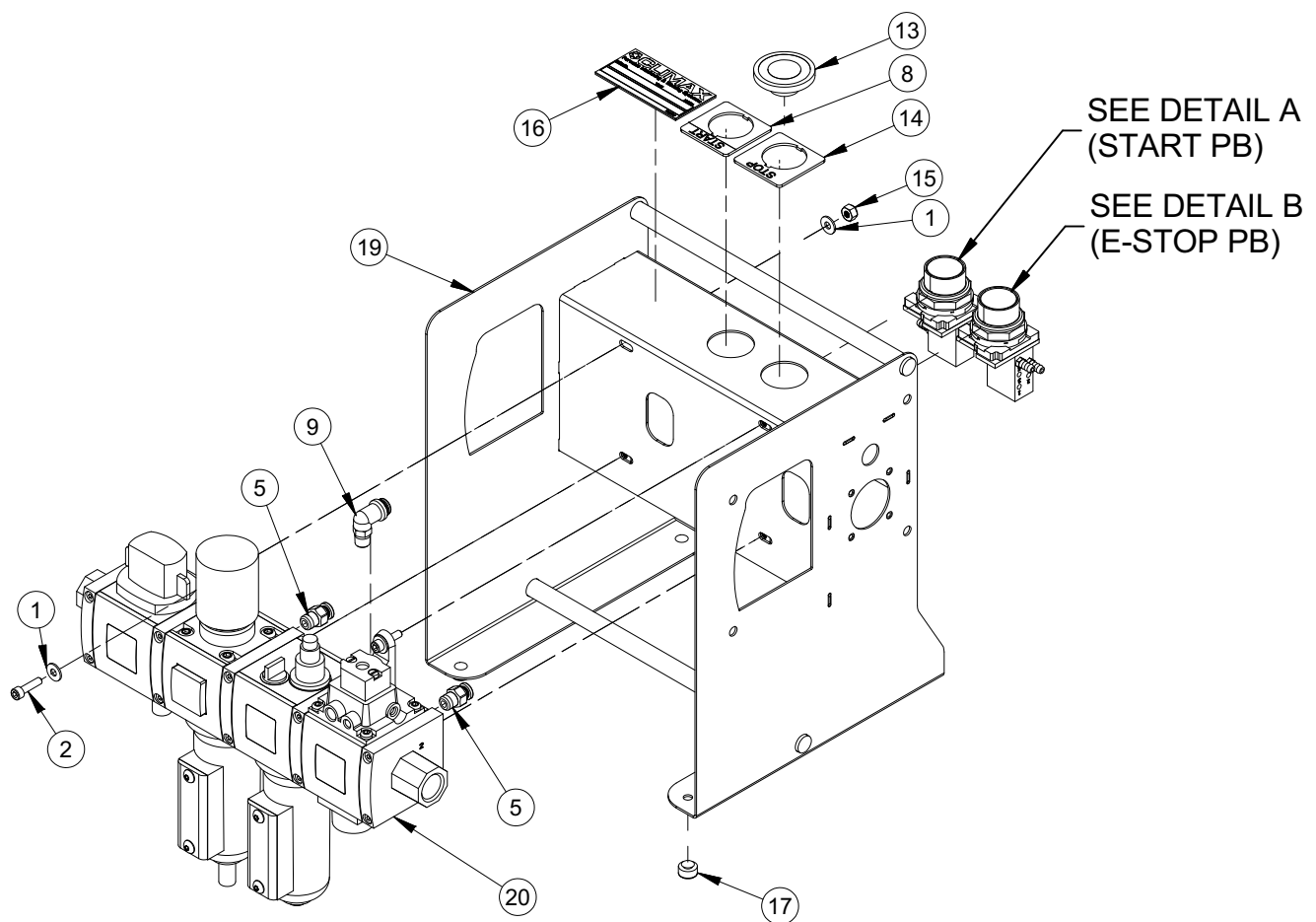
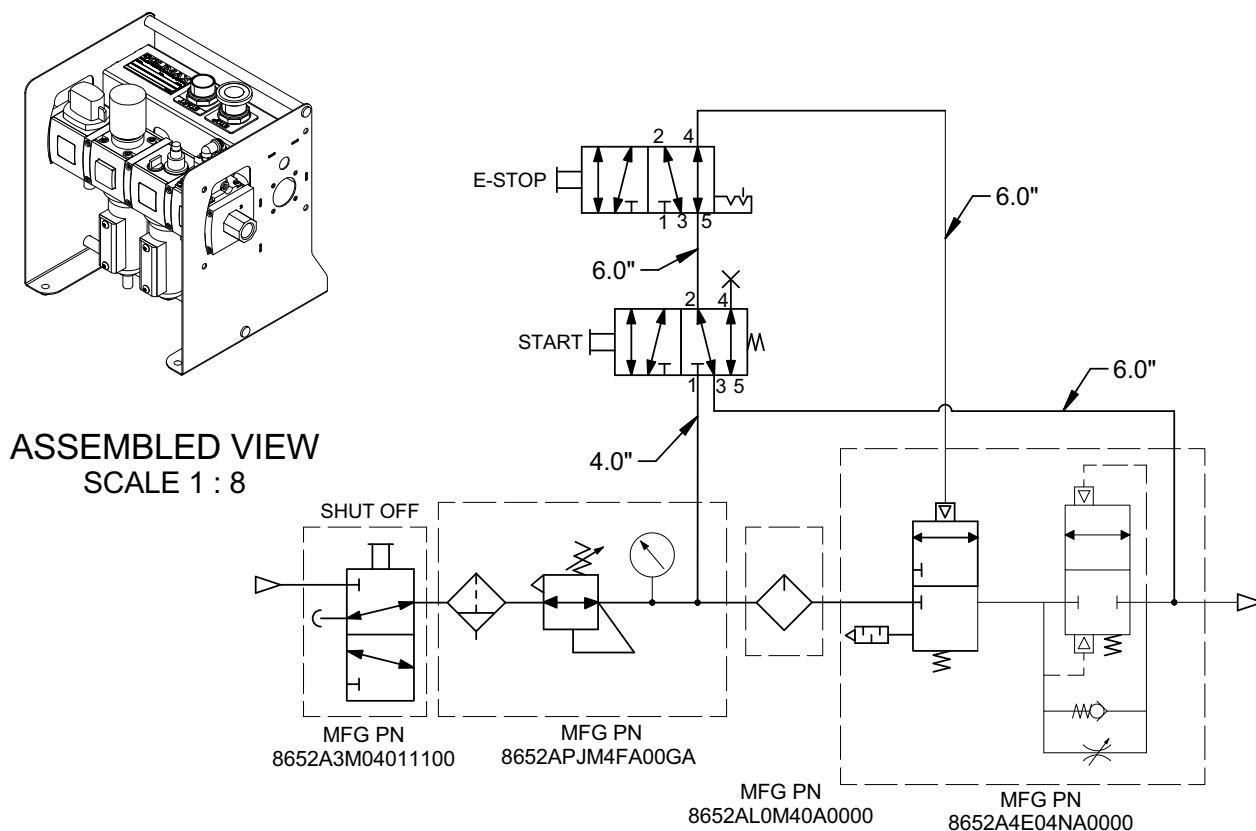
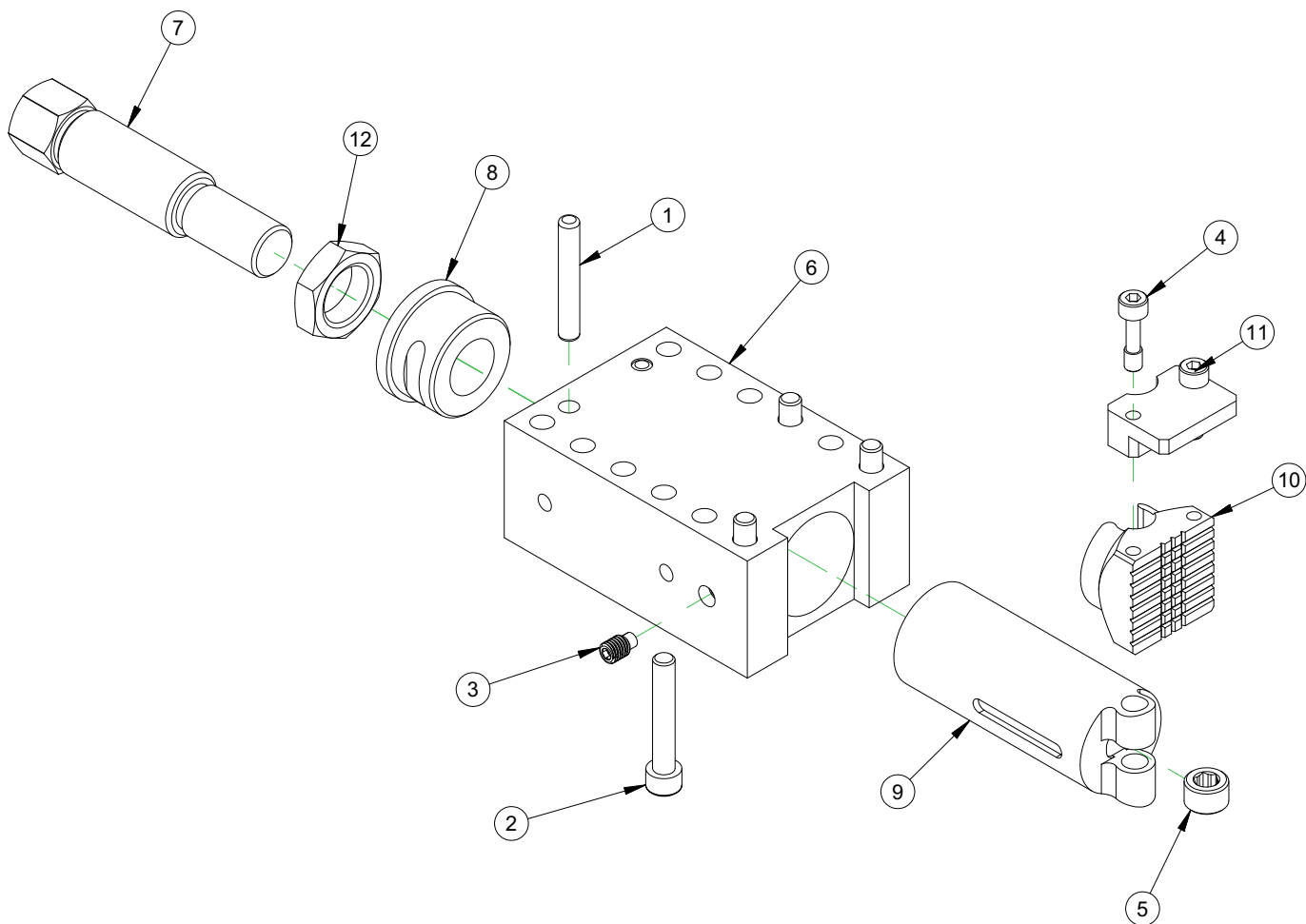


FIGURE A-34. PNEUMATIC CONDITIONING UNIT ASSEMBLY PARTS LIST (P/N 101920)



PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	8	11315	WASHER #10 FLTW BLACK OXIDE
2	4	12648	SCREW 10-24 X 3/4 SHCS
3	1	14726	SCREW 10-32 X 1/4 SHCS
4	2	15285	(NOT SHOWN) FTG REDUCING ADAPTER 1 NPTF X 1/2 NPTM
5	2	18439	FTG ADAPTER 1/8 NPTM X 1/4 TUBE F PRESTOLOK NICKEL PLATED
6	5	22235	FTG BARB #10-32 X 1/8 HOSE
7	2	46785	VALVE PUSHBUTTON 5 PORT PNEUMATIC
8	1	46797	LEGEND PLATE START 10250 SERIES
9	1	48648	FTG ELBOW 1/8 NPTM X 1/4 TUBE PRESTOLOK
10	24	48650	(NOT SHOWN) TUBING 1/4 OD POLYURETHANE (INCHES)
11	1	59458	PUSHBUTTON GREEN FLUSH
12	1	59459	PUSH BUTTON PUSH PULL MAINTAINED (M-M)
13	1	59462	PUSH BUTTON OPERATOR RED 1-5/8
14	1	59825	LEGEND PLATE STOP 10250SERIES YELLOW BACKGROUND
15	4	87533	NUT 10-24 STDNYLOC SS
16	1	91792	PLATE PART NO YEAR MODEL 1.5 X 3.0 ADHESIVE BACKED
17	4	96348	BUMPER RUBBER 1/4" ID X 1/2" OD 1/16" MATL THICKNESS
18	1	98553	O-RING 4.5MM ID X 6.5MM OD X 1MM W NITRILE 70A DUROMETER
19	1	101003	STAND PCU
20	1	101206	FILTER REGULATOR LUBRICATOR CONTROL VALVE W SEMI AUTO DRAIN
21	2	2151012	(NOT SHOWN) FTG COUPLER 1/2 NPTM X CHICAGO W/ SAFETY PIN & LANYARD

FIGURE A-35. PNEUMATIC CONDITIONING UNIT ASSEMBLY PARTS LIST AND SCHEMATIC (P/N 101920)



PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	2	14297	PIN DOWEL 3/8 DIA X 2-1/2
2	4	45754	SCREW M10 x 1.5 x 60mm SHCS
3	1	48998	SCREW M10 X 1.5 X 16mm SSSHDP
4	2	74632	SCREW M8 X 1.25 X 30 OAL X 10 THD L STAINLESS
5	1	80430	SCREW MODIFIED M20 X 1.5 X 12.7MM HOLLOW LOCK
6	1	86881	HOUSING JACKING FOOT
7	1	86882	SCREW JACKING FOOT
8	1	86883	BUSHING THD 1-1/4-7
9	1	86884	RAM JACKING LEVELING
10	1	86885	JAW JACKING LEVELING
11	1	86886	SETUP FINGER
12	1	86908	NUT 1-1/4-7 JAMN 1/2 THICK

FIGURE A-36. JACKING FOOT LEVELING ASSEMBLY (P/N 86880)

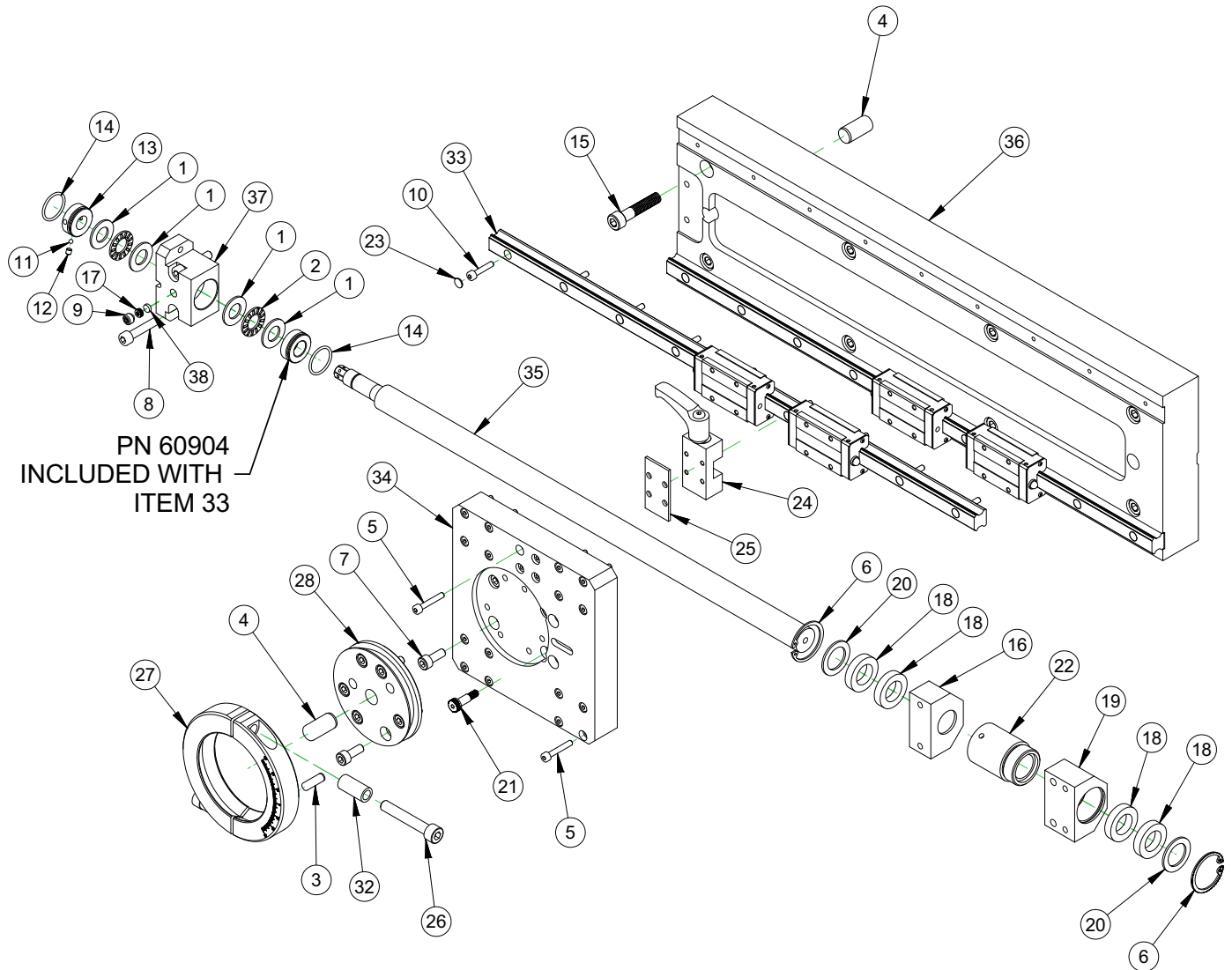
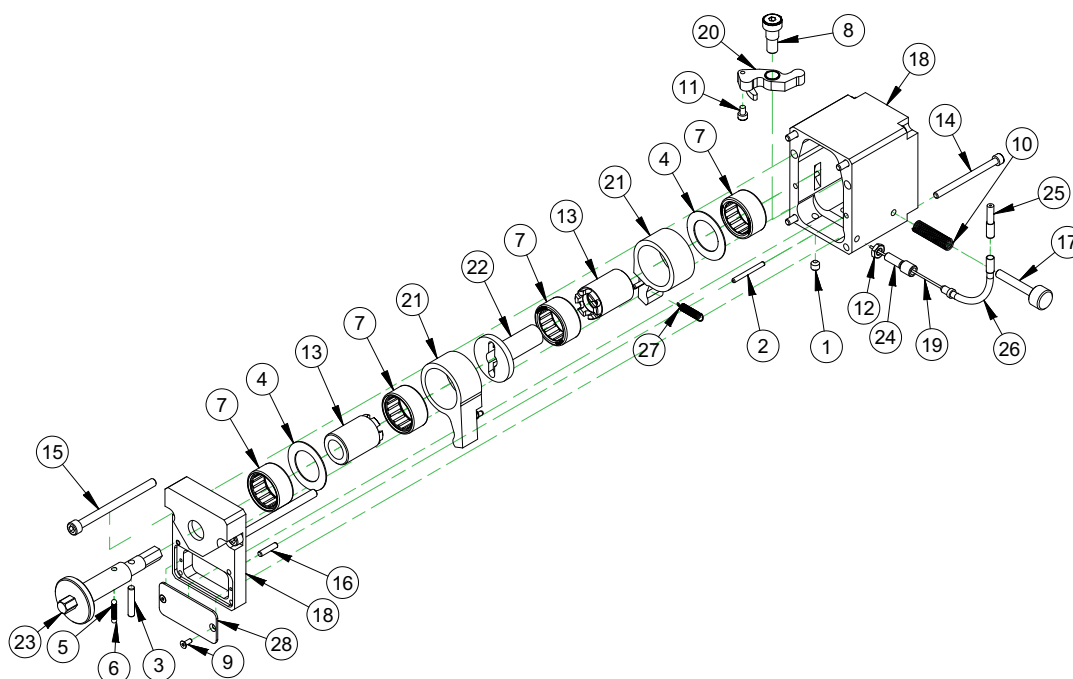


FIGURE A-37. RADIAL AXIS ASSEMBLY (P/N 86890)

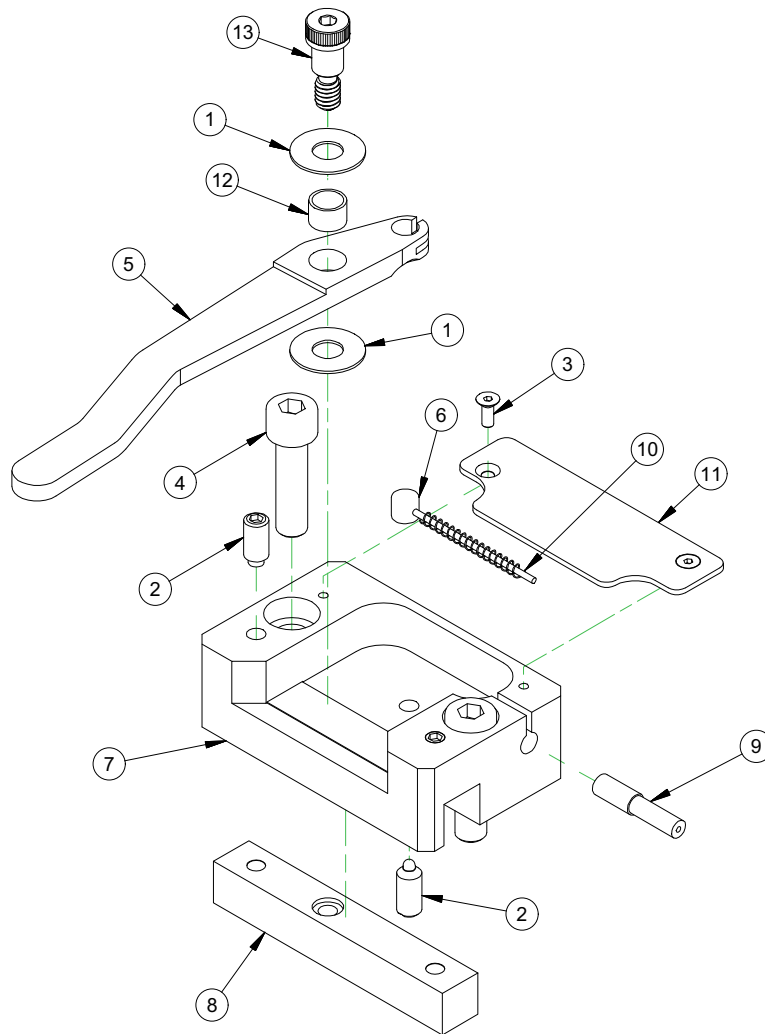
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	4	10436	WASHER THRUST .500 ID X .937 OD X .060
2	2	10437	BRG THRUST .500 ID X .937 OD X .0781
3	1	11729	PIN DOWEL 1/4 DIA X 3/4
4	3	20398	PIN DOWEL 1/2 DIA X 1
5	20	22572	SCREW M4 X 0.7 X 25mm SHCS
6	2	33777	RING SNAP 1-3/16 ID (30MM)
7	10	35014	SCREW M6 X 1.0 X 16mm SHCS
8	2	35505	SCREW M6 X 1.0 X 30 SHCS
9	1	36087	SCREW M8 X 1.25 X 6MM SSSFP
10	18	38061	SCREW M4 X 0.7 X 20 SHCS
11	2	43489	BALL NYLON 1/8 DIA
12	2	53365	SCREW M4 X 0.7 X 4 mm SSSFP
13	1	57214	BRG RETAINING NUT AXIAL FEED LEADSCREW
14	2	57320	RING O 1/16 X 13/16 ID X 15/16 OD
15	8	61225	SCREW M8 X 1.25 X 40MM SHCS
16	1	62321	HOLDER FELT WIPER MILLING HEAD
17	6	62376	WASHER SPRING BELLEVILLE 1/8 ID X 1/4 OD X .013 THK
18	4	62379	SEAL FELT 16MM BALL SCREW 1.015 OD MILLING HEAD
19	1	62423	MOUNT BALL NUT MILLING HEAD
20	2	62903	WASHER SHIM .75 ID 1.125 OD .062 THICK STEEL
21	2	62909	SCREW 6MM DIA X 12MM X M5 X 0.8 SHLDCS
22	1	62960	BALL SCREW NUT 20MM X 5MM LEAD LEFT HAND 33 MM OD EICHENBERGER ROUND
23	18	68500	CAP RAIL 15MM METAL THK SHS
24	1	72636	ZIMMER BRAKE 15MM RAIL
25	1	72637	ZIMMER ADAPTER 15MM RAIL
26	2	72753	SCREW M8 X 1.25 X 50MM SHCS
27	1	79793	CLAMP COLLAR
28	1	79826	PLATE DOVE CIRCULAR
29	AR	80419	(NOT SHOWN) SHIM 1.8 ID X 3.2 OD .001 THICK
30	AR	80420	(NOT SHOWN) SHIM 1.8 ID X 3.2 OD .002 THICK
31	AR	80421	(NOT SHOWN) SHIM 1.8 ID X 3.2 OD .005 THICK
32	2	82226	COLLAR 8MM ID X 12MM OD X 25MM
33	2	86891	SLIDE RAIL THK SHS15 520MM LG PRELOADED METAL SCRAPERS 2 SHORT BLOCKS
34	1	86892	PLATE RADIAL SADDLE
35	1	86895	BALL SCREW 20MM DIA SF RADIAL AXIS
36	1	86896	PLATE RADIAL AXIS BASE
37	1	86898	BEARING BLOCK BALLSCREW
38	1	87033	PAD POLYURETHANE 1/4 DIA X .08 THICK

FIGURE A-38. RADIAL AXIS ASSEMBLY PARTS LIST (P/N 86890)



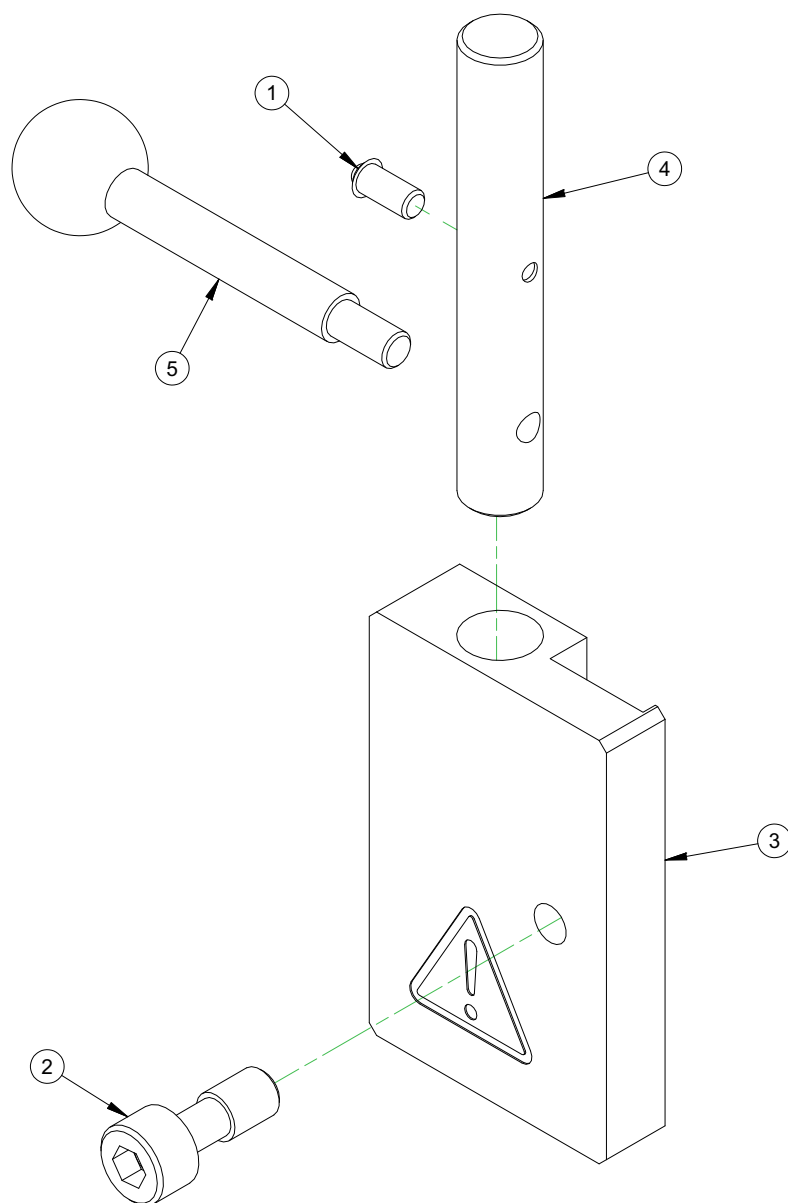
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	10464	SCREW 1/4-20 X 1/4 SSSCP
2	2	11884	PIN DOWEL 1/8 DIA X 1-1/4
3	1	14284	PIN DOWEL 3/16 DIA X 1
4	2	15079	WASHER THRUST 1.000 ID X 1.562 OD X .030
5	1	19561	SPRING COMP .148 OD X .023 WIRE X .50 LONG STAINLESS
6	2	19562	BALL STEEL 5/32 DIA
7	4	25957	BRG ROLLER CLUTCH 1 X 1.312 X .625
8	1	29286	SCREW 3/8 X 3/8 X 5/16-18 SHLDCS
9	2	35876	SCREW M3 X .5 X 8MM FHSCS
10	1	36148	SPRING COMP .36 OD X .032 WIRE X 1.25 LONG
11	1	36152	SCREW M4 X 0.7 X 6mm SHCS
12	1	43019	NUT M6 X 1.0 JAMN ZINC PLATED
13	2	44721	DRIVE BUSHING
14	4	56357	SCREW 10-24 X 2.5 SHCS
15	2	59057	SCREW M6 X 1.0 X 80 mm SHCS CL12.9 ZINC COATED
16	2	60165	PIN DOWEL 5/32 DIA X 11/16
17	1	76599	SCREW M6 X 1.0 X 40MM KNURLED HEAD
18	1	86899	HOUSING FEEDBOX PULL CABLE
19	1	86905	CABLE BRAKE PULL 1.5MM
20	1	86909	PIVOT LINK PULL CABLE FEED
21	2	86973	CLUTCH ARM PULL CABLE FEED
22	1	86978	COUPLING FLANGED 3/8 INTERNAL HEX
23	1	86979	SHAFT PULL CABLE FEED BOX
24	1	87038	BOLT ADJUSTING M6 5MM BRAKE CABLE
25	A/R	87181	HOUSING 5MM DIA BRAKE CABLE
26	1	87198	BEND 90 DEG BRAKE CABLE
27	2	87528	SPRING EXT .18 OD X .023 WIRE X 1-1/4
28	1	87535	COVER FEEDBOX PULL CABLE

FIGURE A-39. PULL CABLE FEEDBOX ASSEMBLY (P/N 86900)



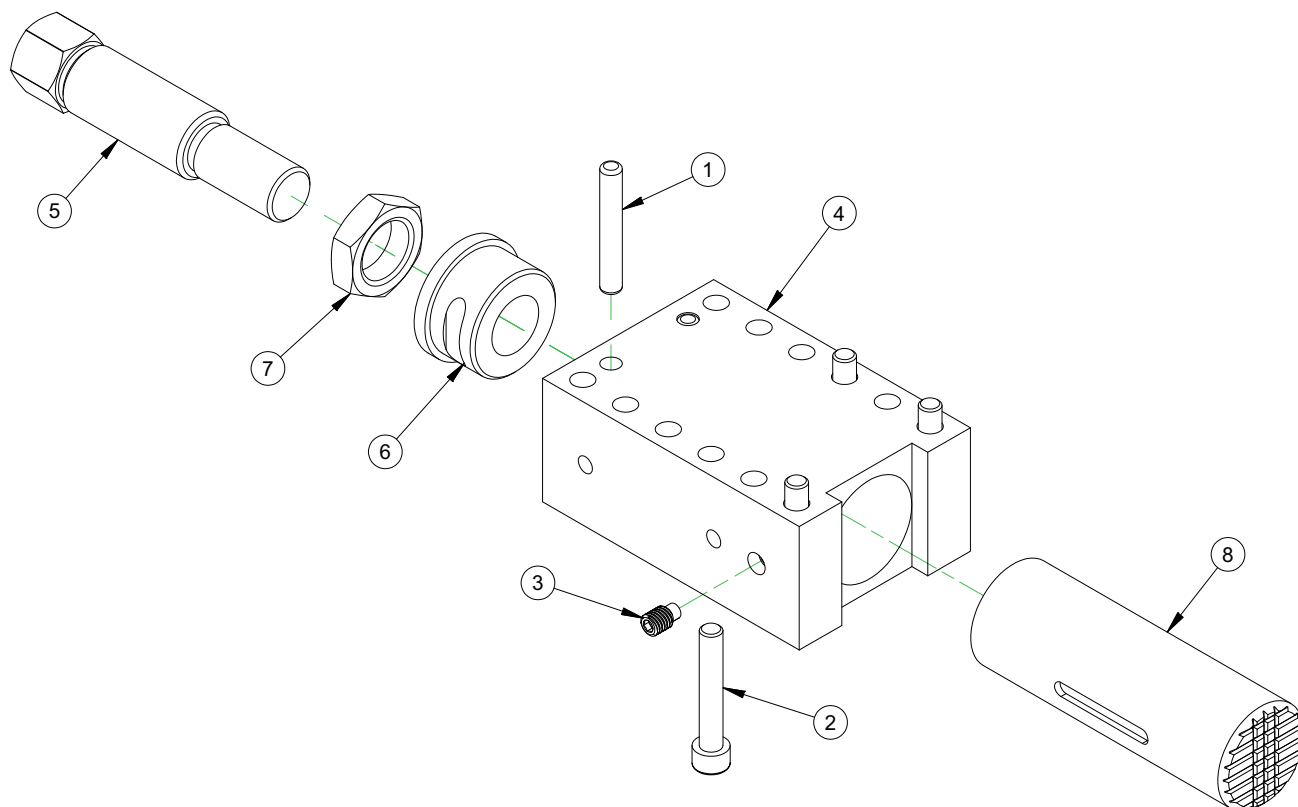
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	2	10770	WASHER THRUST .75 OD X .312 ID X .03
2	3	10848	PLUNGER DETENT SPRING STUBBY 1/4-20 X .531
3	2	35876	SCREW M3 X .5 X 8MM FHSCS
4	2	45530	SCREW M8 X 1.25 X 30mm SHCS
5	1	86904	TRIP ARM CABLE FEED
6	1	86905	CABLE BRAKE PULL 1.5MM X 1700MM
7	1	86906	BLOCK FEED TRIP ACTUATOR
8	1	86907	KEY PIVOT PULL CABLE FEED
9	A/R	87181	HOUSING 5MM DIA BRAKE CABLE
10	1	87529	SPRING COMP .136 OD X .010 WIRE X 1.34 LONG
11	1	87610	COVER FEED ACTUATOR
12	1	88151	BUSHING OILITE 1/4 ID X 3/8 OD X 1/4
13	1	88152	SCREW 5/16 DIA X 3/8 X 1/4-20 SHLDCS
14	A/R	89190	(NOT SHOWN) CONDUIT FLEXIBLE 3/8 SS
15	2	89559	(NOT SHOWN) SLEEVE END PROTECTIVE 3/8 FLEXIBLE CONDUIT

FIGURE A-40. FEED ACTUATOR IN THE PULL CABLE FEEDBOX ASSEMBLY (P/N 86900)



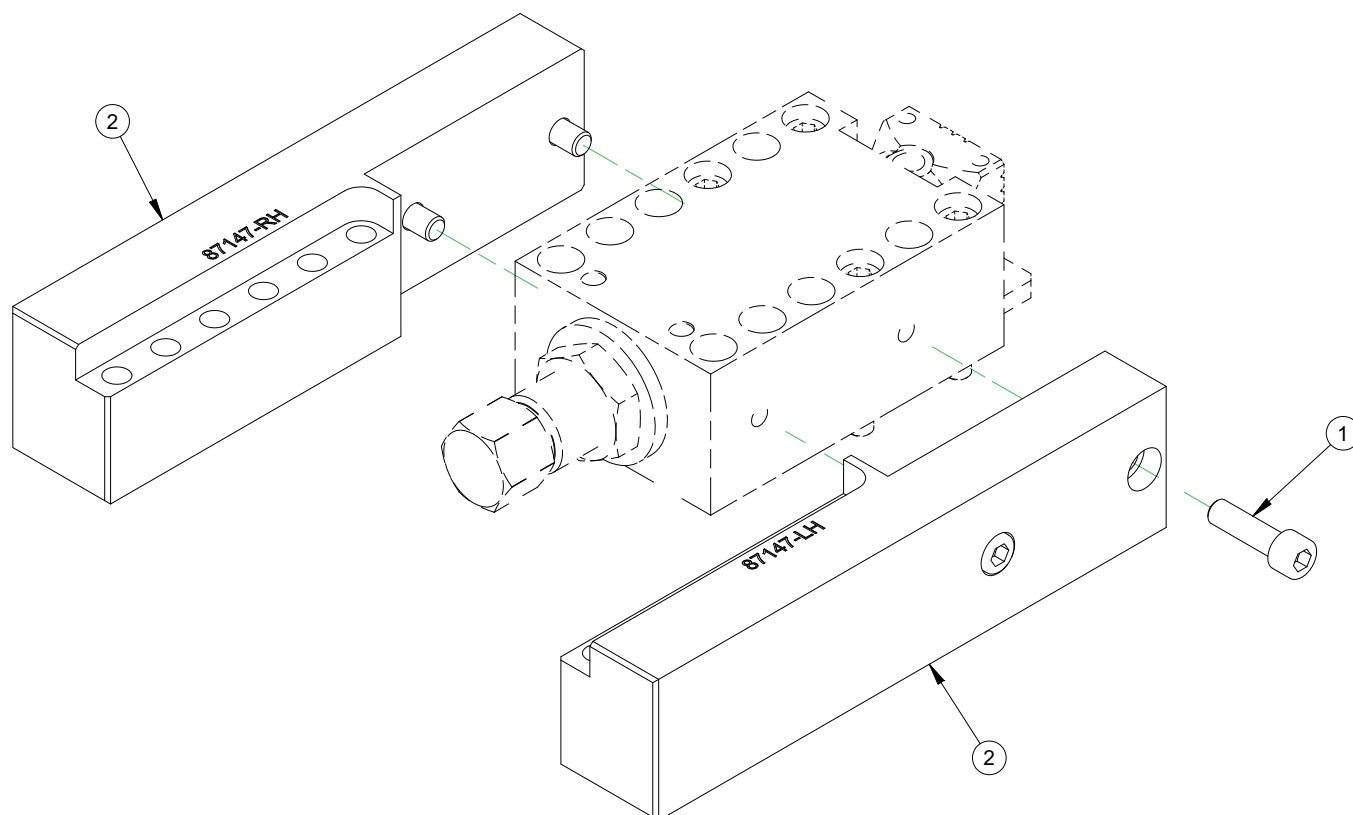
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	26828	PLUNGER BALL PUSHFIT
2	1	84563	SCREW M8 X 1.25 X 20MM SHCS CAPTIVE 10 THD STAINLESS
3	1	86902	BLOCK FEED TRIP
4	1	86903	ROD FEED TRIP
5	1	87023	LEVER M6 X 1.0 X 63MM ROUND RED HANDLE

FIGURE A-41. FEED TRIPPER ASSEMBLY (P/N 86910)



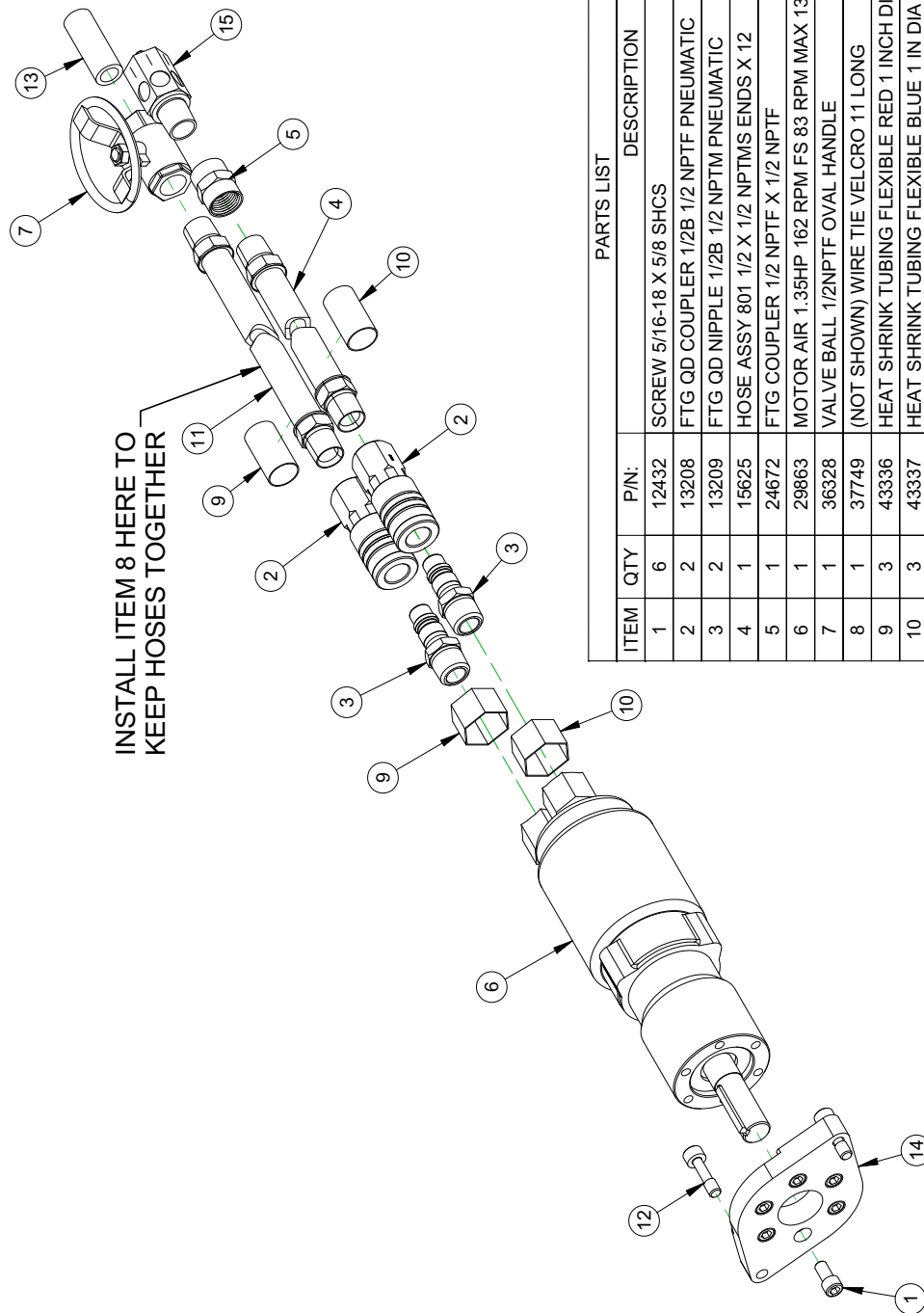
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	2	14297	PIN DOWEL 3/8 DIA X 2-1/2
2	4	45754	SCREW M10 x 1.5 x 60mm SHCS
3	1	48998	SCREW M10 X 1.5 X 16mm SSSHDP
4	1	86881	HOUSING JACKING FOOT
5	1	86882	SCREW JACKING FOOT
6	1	86883	BUSHING THD 1-1/4-7
7	1	86908	NUT 1-1/4-7 JAMN 1/2 THICK
8	1	86971	RAM JACKING NON-LEVELING

FIGURE A-42. ODF50-ODF120 MODELS ONLY: NON-LEVELING JACKING FOOT ASSEMBLY (P/N 86970)



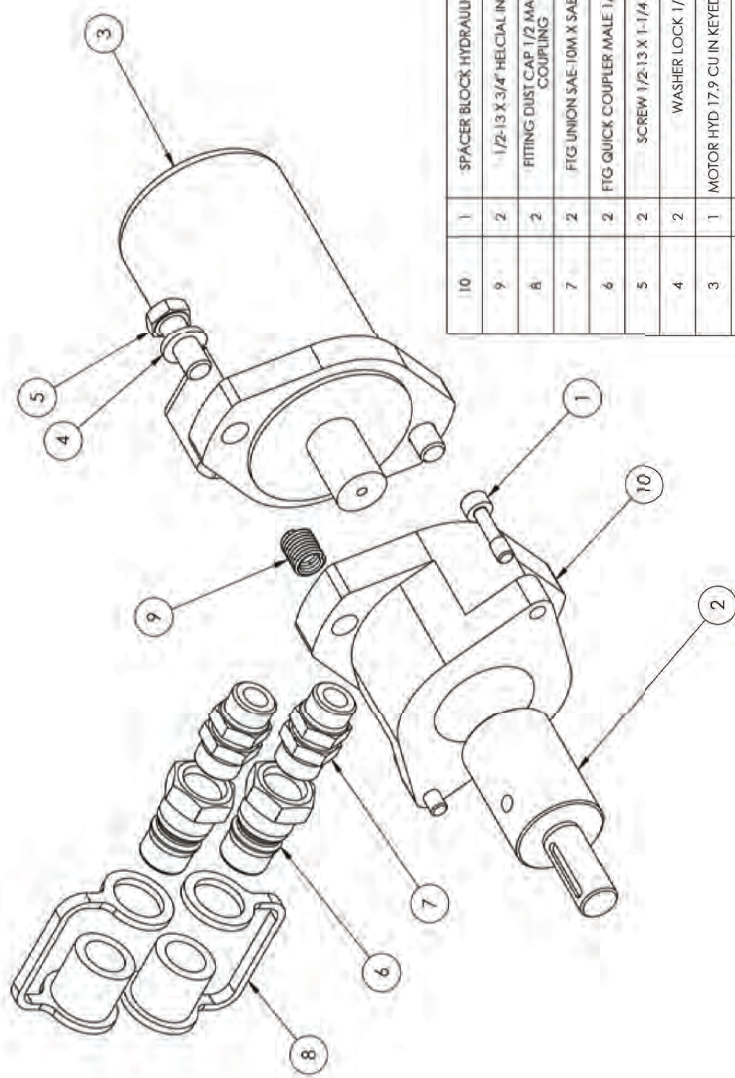
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	4	36079	SCREW M10 X 1.5 X 35mm SHCS
2	1	87147	BAR SF MOUNTING FOOT EXTENSION SET

FIGURE A-43. EXTENSION FOOT ASSEMBLY (P/N 87164)



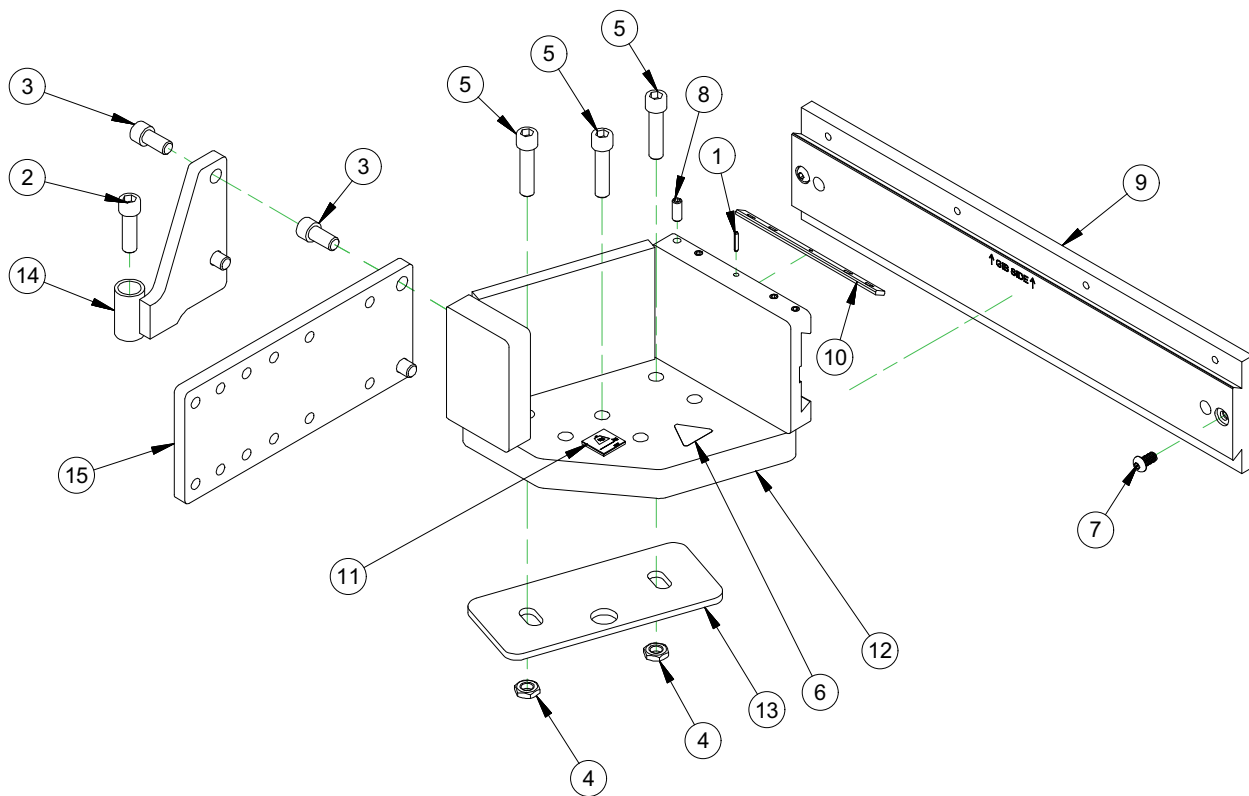
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	6	12432	SCREW 5/16-18 X 5/8 SHCS
2	2	13208	FTG QD COUPLER 1/2B 1/2 NPTF PNEUMATIC
3	2	13209	FTG QD NIPPLE 1/2B 1/2 NPTM PNEUMATIC
4	1	15625	HOSE ASSY 801 1/2 X 1/2 NPTMS ENDS X 12
5	1	24672	FTG COUPLER 1/2 NPTF X 1/2 NPTF
6	1	29863	MOTOR AIR 1.35HP 162 RPM FS 83 RPM MAX 134TQ REVERSE ROTATION
7	1	36328	VALVE BALL 1/2NPTF OVAL HANDLE
8	1	37749	(NOT SHOWN) WIRE TIE VELCRO 11 LONG
9	3	43336	HEAT SHRINK TUBING FLEXIBLE RED 1 INCH DIA
10	3	43337	HEAT SHRINK TUBING FLEXIBLE BLUE 1 IN DIA
11	1	59376	HOSE ASSY 801 1/2 X 1/2 NPTMS ENDS X 180
12	2	74632	SCREW M8 X 1.25 X 30 OAL X 10 THD L STAINLESS
13	1	76030	FTG NIPPLE 1/2 NPTM X 2 INCH BRASS
14	1	86893	PLATE AIR MOTOR MOUNT
15	1	87263	FTG MUFFLER EXHAUST FLOW CONTROL 1/2 NPTM

FIGURE A-44. PNEUMATIC DRIVE MOTOR ASSEMBLY (P/N 86989)



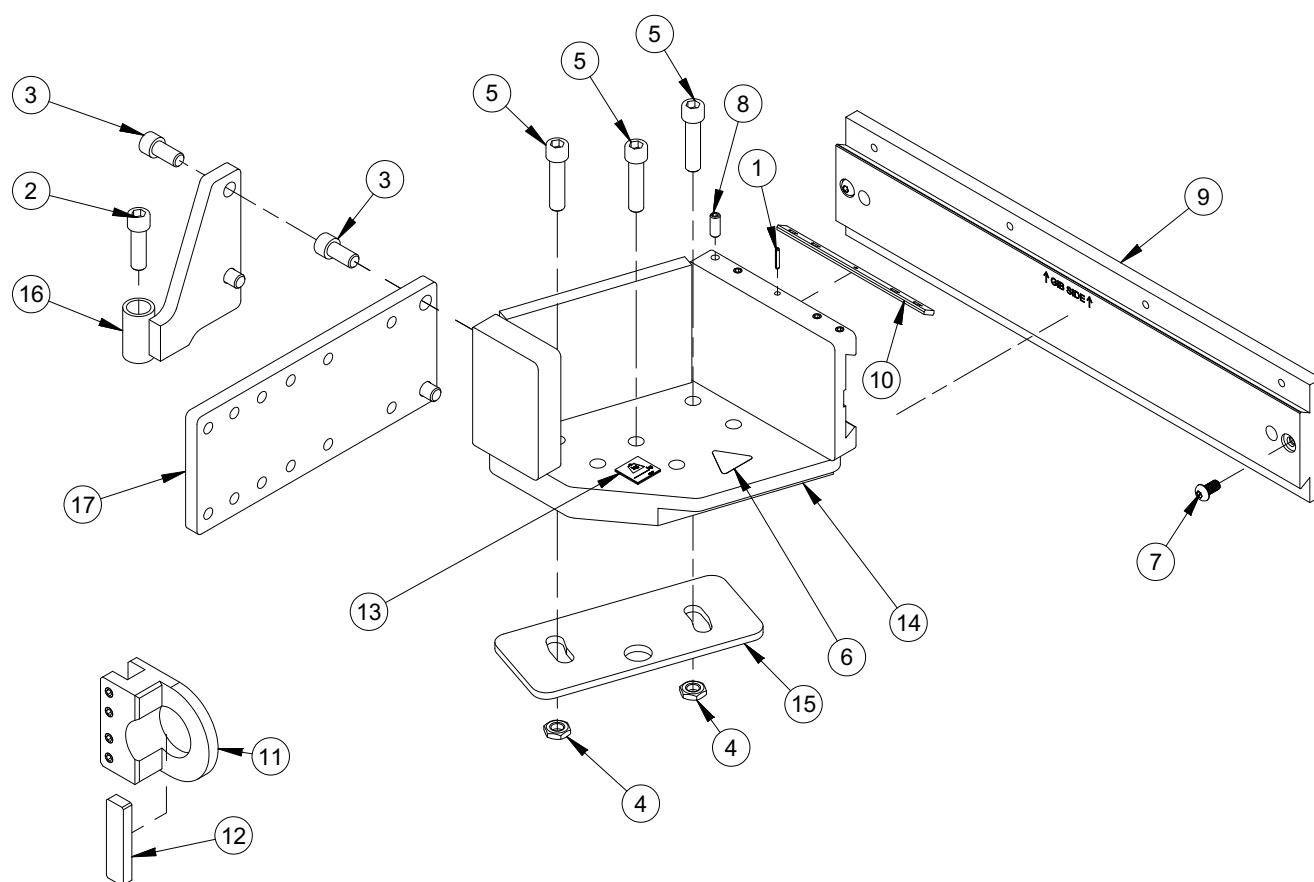
ITEM NO.	QTY.	PART NAME	PART NUMBER	VENDOR/SUPPLIER	WEIGHT
10	1	SPACER BLOCK HYDRAULIC MOTOR	92189	MANUFACTURED	2.27
9	2	1/2-13 X 3/4" HELICAL INSERT RH	5001082	MCMASTER CARR #91732A216	0.04
8	2	FITTING DUST CAP 1/2 MALE QUICK COUPLING	27978		0
7	2	FTG UNION SAE-10M X SAE-10M (M3)	29100		0
6	2	FTG QUICK COUPLER MALE 1/2B X SAE-10F	40614		0
5	2	SCREW 1/2-13 X 1-1/4 HHCS	11826		0
4	2	WASHER LOCK 1/2	11238		0
3	1	MOTOR HYD 17.9 CU IN KEYS SAE O-RING	21534		0
2	1	ADAPTER SHAFT HYDRAULIC	92191	MANUFACTURED	1.44
1	2	SCREW M8 X 1.25 X 30 OAL X 10 THD L STAINLESS	74632		0

FIGURE A-45. HYDRAULIC DRIVE MOTOR ASSEMBLY (P/N 91110)



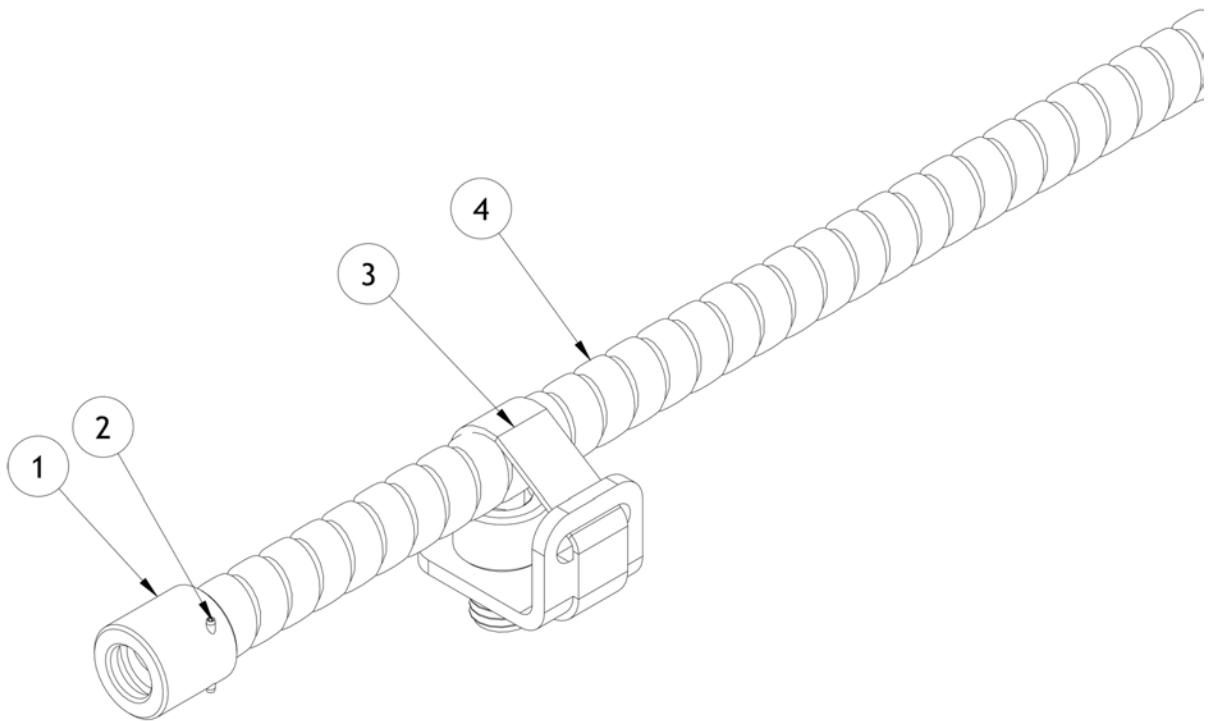
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	10847	PIN ROLL 1/8 DIA X 3/4
2	1	35215	SCREW M12 X 1.75 X 40mm SHCS
3	4	42094	SCREW M12 X 1.75 X 25mm SHCS
4	2	43121	NUT M12 X 1.75 STAINLESS STEEL
5	3	57907	SCREW M12 X 1.75 X 50 MM SHCS ZINC COATED
6	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS
7	2	59827	SCREW M8 X 1.25 X 16MM BHSCS
8	4	83708	SCREW M8 X 1.25 X 20 SSSFP
9	1	87309	PLATE BACKFACING MOUNT
10	1	87416	GIB .435 X .156 X 6.5 0-1 4 SS W/ DOWEL
11	1	91217	PLATE MASS CE 1.0 X 1.0 KG ADHESIVE BACKED
12	1	92197	BRACKET BACK FACING LARGE DIA
13	1	92208	SPACER BACK FACING
14	1	92209	BRACE BACKFACING
15	1	92210	PLATE EXTENSION BACKFACING BRACE

FIGURE A-46. BACKFACING ATTACHMENT ASSEMBLY (P/N 87310)



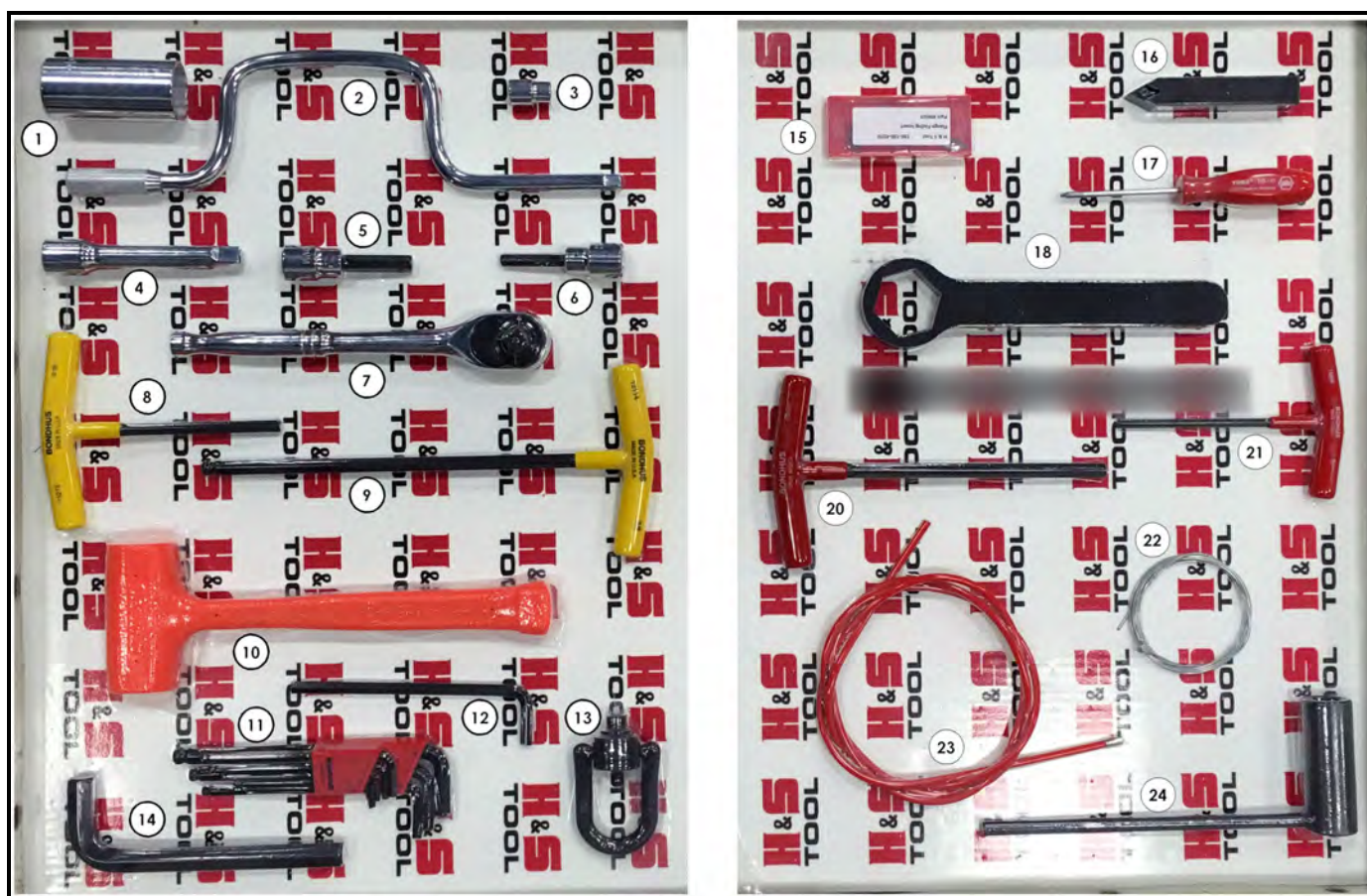
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	10847	PIN ROLL 1/8 DIA X 3/4
2	1	35215	SCREW M12 X 1.75 X 40mm SHCS
3	4	42094	SCREW M12 X 1.75 X 25mm SHCS
4	2	43121	NUT M12 X 1.75 STAINLESS STEEL
5	3	57907	SCREW M12 X 1.75 X 50 MM SHCS ZINC COATED
6	1	59042	LABEL WARNING - HAND CRUSH/MOVING PARTS
7	2	59827	SCREW M8 X 1.25 X 16MM BHSCS
8	4	83708	SCREW M8 X 1.25 X 20 SSSFP
9	1	87309	PLATE BACKFACING MOUNT
10	1	87416	GIB .435 X .156 X 6.5 0-1 4 SS W/ DOWEL
11	1	89203	HOLDER OFFSET TOOL
12	1	89223	BAR TOOL CLAMP
13	1	91217	PLATE MASS CE 1.0 X 1.0 KG ADHESIVE BACKED
14	1	92197	BRACKET BACK FACING LARGE DIA
15	1	92208	SPACER BACK FACING
16	1	92209	BRACE BACKFACING
17	1	92210	PLATE EXTENSION BACKFACING BRACE

FIGURE A-47. BACKFACING ACCESSORY ASSEMBLY (P/N 92140)



PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	2	100253	END CAP CONDUIT 3/4
2	2	100252	PIN SPRING 1/16 X 5/8
3	2	37749	STRAP VELCRO 8" LONG
4	A/R	89190	FLEX CONDUIT SS 3/8

FIGURE A-48. CABLE PROTECTION COMPONENTS


PARTS LIST

ITEM	QTY	P/N:	DESCRIPTION
1	1	86612	WRENCH SOCKET 1-1/4 X 1/2 DRIVE 12 POINT DEEP
2	1	13076	WRENCH SPEED HANDLE 3/8 DRIVE
3	1	19261	WRENCH SOCKET 3/8 6 POINT X 3/8 DRIVE
4	1	58354	EXTENSION DRIVE WRENCH 1/2 DRIVE X 5
5	1	46250	WRENCH HEX BIT SOCKET 10MM X 1/2
6	1	46251	WRENCH HEX BIT SOCKET 8MM X 1/2
7	1	14818	WRENCH RATCHET 1/2 DRIVE
8	1	40806	WRENCH HEX 5/16 X 6 T-HANDLE
9	1	55924	WRENCH HEX 3/8 X 12 T-HANDLE
10	1	35516	HAMMER DEAD BLOW 1-3/4 DIA HEAD (KB)
11	1	38678	WRENCH HEX SET 1.5-10MM BONDHUS BALL END (KB)
12	1	67461	WRENCH HEX 5/16 LONG ARM
13	2	41741	HOIST RING 3/8-16 X .56 1.3 ID OD 3.79 OAL 1000LBS SWIVEL
14	1	41060	WRENCH HEX 5/8 SHORT ARM
15	5	87266	INSERT CARBIDE 55 DEG DIAMOND IC8250
16	1	87268	HOLDER INSERT 55 DEGREE DIAMOND 3/4 SHANK NEUTRAL
17	1	36954	WRENCH TORX FT-15
18	1	87542	WRENCH BOX 1-5/8 X 1/2 THICK
20	1	87541	WRENCH HEX 10MM X 9 T-HANLDLE
21	1	35821	WRENCH HEX 6MM X 6 T-HANDLE
22	1	86905	CABLE BRAKE PULL 1.5MM X 1700MM
23	1	87181	HOUSING 5MM BRAKE CABLE
24	1	86988	WRENCH SOCKET 7/8 WITH HANDLE
25	1	86988A	ROUND STEEL ROD 3/8 (9 LONG)
26	1	89175	ADAPTER 3/4 SQ TO 1/2 SQ TOOL CLAMP

FIGURE A-49. TOOL KIT (P/N 78530)

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APPENDIX B SDS

Contact CLIMAX for the current list of Safety Data Sheets.

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 **BORTECH**  **CALDER** **H&S** **TOOL**