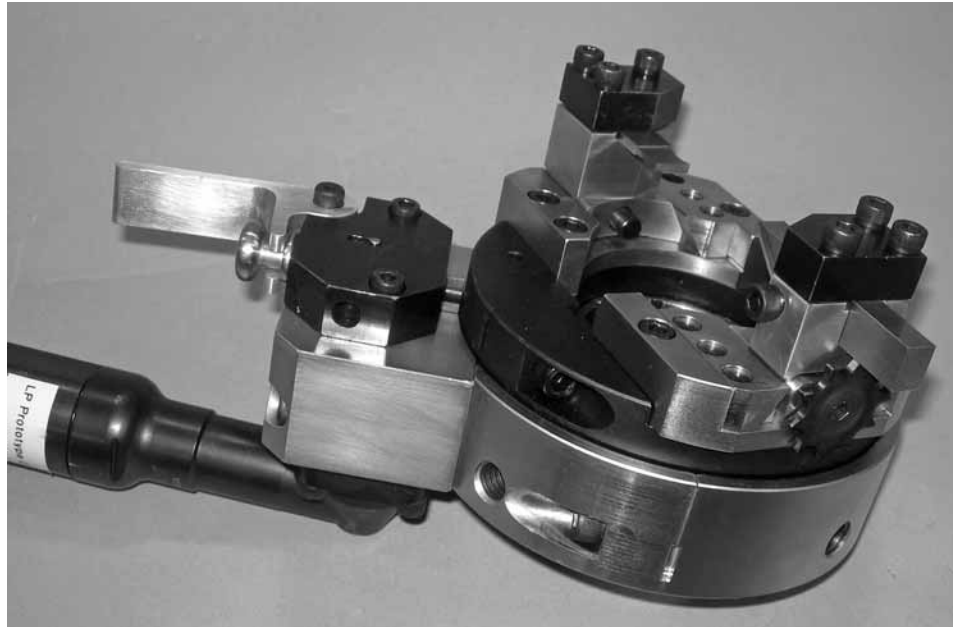




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Small Diameter Split Frame User's Manual



E.H. Wachs Part No. 80-MAN-01
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**EU DECLARATION OF CONFORMITY
WITH
COUNCIL DIRECTIVE 2006/42/EC**

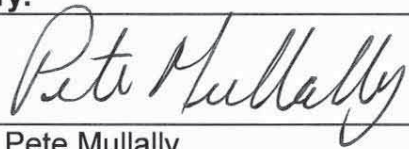
Issue Details:	Date: 1/1/2011	Place: E.H. Wachs, Lincolnshire, IL USA
Directives:	Machinery Safety Directive 2006/42/EC	
Conforming Machinery:	Split Frame Machines: Low-Clearance Split Frame (LCSF) Small-Diameter Split Frame (SDSF)	
Model Number:	60-000-XX, 60-AIR-XX, 60-HYD-XX 80-0000-AX, 80-0000-RA, 80-4000-XX	
Serial Number:		
Manufacturer:	E.H. Wachs 600 Knightsbridge Parkway Lincolnshire IL 60069 USA	
Responsible Representative:	Orbitalum Tools GmbH Josef-Schüttler-Str. 17, 78224 Singen Germany Tel. +49 (0) 7731 - 792 872 Fax +49 (0) 7731 - 792 566	
Harmonised Standards & Other Technical Standards/Specifications Applied or Referenced:	EN ISO 12100-1:2003 + A1:2009 EN ISO 12100-2:2003 + A1:2009 EN 60204-1:2006 (for electric machines) EN ISO 13857:2008 EN 982:1996 + A1:2008 (E) (for hydraulic machines) EN 983:1996 (for pneumatic machines) EN 13732-1:2006 EN ISO 14121-1:2007 EN ISO 13850:2008 (for pneumatic machines)	
Provisions with which Conformity is Declared:	Essential Health and Safety Requirements of Annex 1 of the Machinery Directive	
We hereby certify that the machinery described above conforms to the provisions of Council Directive 2006/42/EC on the approximation of the laws of the Member States relating to the safety of machinery.		
Signed:		
Signatory:	Pete Mullally Quality Manager E.H. Wachs	

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Chapter 1

About This Manual

PURPOSE OF THIS MANUAL

This manual explains how to operate and maintain the Small Diameter Split Frame (SDSF). It includes instructions for set-up, operation, and maintenance. It also contains parts lists, diagrams, and service information to help you order replacement parts and perform user-serviceable repairs.

Before operating the SDSF, you should read through this manual and become familiar with all instructions. At a minimum, make sure you read and understand the following chapters:

- Chapter 1, About This Manual
- Chapter 2, Safety
- Chapter 3, Introduction to the Equipment
- Chapter 5, Operating Instructions
- Chapter 9, Accessories and Spare Parts

If you will be performing service or repairs, make sure you read and understand these chapters:

- Chapter 1, About This Manual
- Chapter 4, Assembly, Disassembly, and Storage
- Chapter 6, Routine Maintenance
- Chapter 7, Service and Repair.

In This Chapter

PURPOSE OF THIS MANUAL
HOW TO USE THE MANUAL
SYMBOLS AND WARNINGS
MANUAL UPDATES AND
REVISION TRACKING

Throughout this manual, refer to this column for warnings, cautions, and notices with supplementary information.

You will also want to refer to Chapter 8, Parts Lists and Drawings.

HOW TO USE THE MANUAL

This manual is organized to help you quickly find the information you need. Each chapter describes a specific topic on using or maintaining your equipment.

Each page is designed with two columns. This large column on the inside of the page contains instructions and illustrations. Use these instructions to operate and maintain the equipment.

The narrower column on the outside contains additional information such as warnings, special notes, and definitions. Refer to it for safety notes and other information.

SYMBOLS AND WARNINGS

The following symbols are used throughout this manual to indicate special notes and warnings. They appear in the outside column of the page, next to the section they refer to. Make sure you understand what each symbol means, and follow all instructions for cautions and warnings.



WARNING

A WARNING alert with the safety alert symbol indicates a potentially hazardous situation that **could** result in **serious injury or death**.



This is the **safety alert symbol**. It is used to alert you to **potential personal injury hazards**. Obey all safety messages that follow this symbol to avoid possible injury or death.

This is the **equipment damage alert symbol**. It is used to alert you to **potential equipment damage situations**. Obey all messages that follow this symbol to avoid damaging the equipment or workpiece on which it is operating.



NOTE

This symbol indicates a user note. **Notes** provide additional information to supplement the instructions, or tips for easier operation.



CAUTION

A CAUTION alert with the safety alert symbol indicates a potentially hazardous situation that **could** result in **minor or moderate injury**.



CAUTION

A CAUTION alert with the damage alert symbol indicates a situation that **will** result in **damage to the equipment**.



IMPORTANT

An IMPORTANT alert with the damage alert symbol indicates a situation that **may** result in **damage to the equipment**.



NOTE

A NOTE provides supplementary information or operating tips.

Current versions of E.H. Wachs manuals are also available in PDF format. You can request an electronic copy of this manual by emailing customer service at sales@ehwachs.com.

MANUAL UPDATES AND REVISION TRACKING

Occasionally, we will update manuals with improved operation or maintenance procedures, or with corrections if necessary. When a manual is revised, we will update the revision history on the title page.

You may have factory service or upgrades performed on the equipment. If this service changes any technical data or operation and maintenance procedures, we will include a revised manual when we return the equipment to you.

Chapter 2

Safety

E.H. Wachs takes great pride in designing and manufacturing safe, high-quality products. We make user safety a top priority in the design of all our products.

Read this chapter carefully before operating your E.H. Wachs equipment. It contains important safety instructions and recommendations.

SAFE OPERATING GUIDELINES

Follow these guidelines for safe operation of all E.H. Wachs equipment.

- **READ THE OPERATING MANUAL.** Make sure you understand all setup and operating instructions before you begin. Keep this manual with the machine.
- **INSPECT MACHINE AND ACCESSORIES BEFORE USE.** Before starting the machine, look for loose bolts or nuts, leaking lubricant, rusted components, and any other physical conditions that may affect operation. Properly maintaining the machine can greatly decrease the chances for injury.
- **ALWAYS READ STICKERS AND LABELS.** Make sure all labels and stickers are in place, clearly legible, and in good condition. Refer to “Safety Labels” later in this chapter for label locations on the machine. Replace any damaged or missing safety labels; see Chapter 10 for ordering information.

In This Chapter

SAFE OPERATING GUIDELINES

SAFE OPERATION OF THE SDSF



Look for this symbol throughout the manual. It indicates a personal injury hazard.

- **KEEP CLEAR OF MOVING PARTS.** Keep hands, arms, and fingers clear of all rotating or moving parts. Always turn the machine off and disconnect the power source before doing any adjustments or service.
- **SECURE LOOSE CLOTHING AND JEWELRY.** Secure or remove loose-fitting clothing and jewelry, and securely bind long hair, to prevent them from getting caught in moving parts of the machine.
- **FOLLOW SAFE PROCEDURES FOR HANDLING LUBRICANTS.** Refer to the manufacturer's instructions and the Material Safety Data Sheets.

Safe Operating Environment

- Do not use this equipment in a potentially explosive atmosphere. Fire or explosion could result, with the risk of serious injury or death.
- Provide adequate lighting to use the equipment, in accordance with worksite or local regulations.
- **KEEP WORK AREA CLEAR.** Keep all clutter and nonessential materials out of the work area. Only people directly involved with the work being performed should have access to the area.

Operating and Maintenance Safety

- This equipment is to be operated and maintained only by qualified, trained personnel.
- Make sure the equipment is stable when attached to the workpiece for the operation. Ensuring stability of the installed tool is the responsibility of the operator.
- Make sure the workpiece is supported adequately for installation of the equipment. This includes supporting any workpiece “fall-off” section when severing the workpiece. Ensuring support of the workpiece is the responsibility of the operator.
- Tooling on any cutting equipment—including lathe tools, saw blades, milling tools, etc.—may get very hot. Do not touch tooling until you have made sure it is cool enough to handle.
- Wear gloves when removing or cleaning up chips and cutting debris. Chips can be very sharp and cause cuts.
- Before performing any service on the equipment, disconnect the power source. Follow all lock-out/tag-out procedures required at the worksite.

Hydraulic Powered Equipment

- Hydraulic components such as hoses, motors, and manifolds will get hot during operation and may cause burns. Do not touch hydraulic components, except for operator controls, during or after operating the machine.
- **Hydraulic injection injury**—A pinhole in a hydraulic hose or fitting can eject fluid with enough force to pierce skin. Check hoses and fittings regularly for leaks. **Do not use bare hands to check for leaks while the system is pressurized.** If you suspect a leak, move a piece of paper or cardboard at least 6 inches (15 cm) over the suspicious area and watch for fluid spraying on the surface.

Pneumatic Powered Equipment

- Air motors may get hot during operation and may cause burns. Do not touch the air motor, except for operator controls, during or after operating the machine.
- Before disconnecting the air line from the equipment, always turn off air at the source and bleed all residual air pressure at the air motor.

Loss or Shut-Off of Power Supply

- If the power source to the equipment is lost, disconnect power from the equipment and lock out the power supply immediately to prevent accidental restarting of the machine.
- **ELECTRIC POWERED EQUIPMENT**—If the electric drive shuts off because of its built-in thermal protection, disconnect the motor from the power source immediately.
- For all power sources, follow all lock-out/tag-out procedures required at the worksite when disconnecting or servicing the equipment.

Safety Alerts in This Manual

The following alerts are used throughout this manual to indicate operator safety hazards. In all cases, these alerts include a notice describing the hazard and the means to avoid or reduce risk. Carefully read all safety alerts.

**WARNING**

Injection of hydraulic fluid through the skin is a serious injury that can result in infection, tissue damage, and possible loss of limb. **Seek medical treatment immediately.** First aid is not sufficient treatment for injection injury.



This icon is displayed with any safety alert that indicates a personal injury hazard.

 **WARNING**

This safety alert, with the personal injury hazard symbol, indicates a potentially hazardous situation that, if not avoided, **could** result in **death or serious injury**.

 **CAUTION**

This safety alert, with the personal injury hazard symbol, indicates a potentially hazardous situation that, if not avoided, **could** result in **minor or moderate injury**.

Protective Equipment Requirements

Protective Clothing

Wear safety shoes when operating or servicing the equipment. Serious injury could result from dropping the machine or its components.

Do not wear gloves while operating the machine. Gloves can become entangled in moving parts, resulting in serious injury. Gloves may be worn when setting up the machine or cleaning up after the operation, but take them off when operating the machine.

Eye Protection

Always wear impact-resistant eye protection while operating or working near this equipment.

For additional information on eye and face protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.133., Eye and Face Protection and



NOTE

Gloves should be worn when cleaning up chips and other cutting debris. Chips can be very sharp and can cause serious cuts. **Do not wear gloves when the machine is operating.**

American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection.

Hearing Protection

This equipment can produce noise levels above 80 dB. Hearing protection is required when operating the equipment. The operation of other tools and equipment in the area, reflective surfaces, process noises, and resonant structures can increase the noise level in the area.

For additional information on hearing protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.95, Occupational Noise Exposure and ANSI S12.6 Hearing Protectors.

SAFE OPERATION OF THE SDSF

Intended Uses

The small diameter split frame is designed to O.D. mount on in-line or open-ended pipe, and perform cut-off and weld prep (beveling, counterboring, and J-prep) operations. It uses cold-cutting lathe techniques, with a variety of accessories and tooling for different cutting applications.

Make sure to follow all safety guidelines and procedures required for machining operations at the work site, including personal protective equipment (PPE). Do not use the SDSF in a manner that violates these guidelines.

Proper Use of the SDSF

- The SDSF should only be used by trained, qualified operators.
- The workpiece must be within the operating capacity of the SDSF model you are using. See operating envelope information and drawings in Chapter 3.
- Make sure the operating environment allows you to mount the machine securely and squarely on the workpiece.

- Make sure there is adequate clearance around the SDSF and workpiece to operate the machine controls as described in the operating instructions (Chapter 5).
- Mount the SDSF with the pinion housing positioned for convenient mounting and operation of the drive motor.
- Use the SDSF only on empty, depressurized pipe or tubing.

Misuse

- Do not attempt to mount or operate the SDSF on non-cylindrical workpieces.
- Do not attempt to mount or operate the SDSF on any workpiece to which it cannot be securely mounted.
- Do not attempt to mount or operate the SDSF on any workpiece that is not stable enough to hold the SDSF.
- Do not mount the SDSF on the “fall-off” side of the cut line, unless you adequately rig and support the SDSF and workpiece.
- Do not disable any safety feature of the SDSF or remove any safety labeling. Replace worn or damaged safety labels immediately. (See “Safety Labels” later in this chapter.)

Potential Hazards

The following figures illustrate potential hazards of operating the small diameter split frame. Refer to the description of each hazard for guidelines on safe operation.

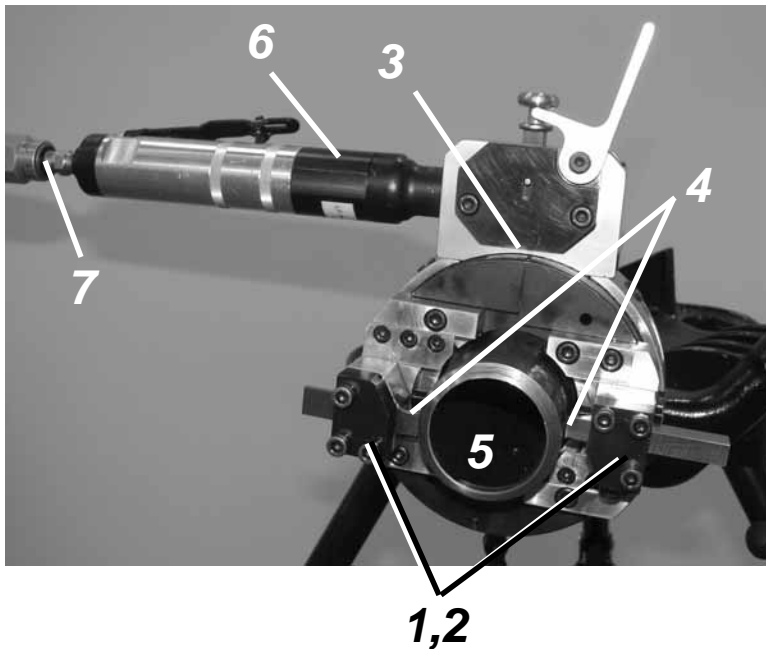


Figure 2-1. Potential operating hazards of the SDSF.
See the descriptions in the side column.

SDSF Safety Features

The design of the small diameter split frame incorporates the following features for safe operation.

Enclosed Bearing and Drive Gear System

The SDSF bearings and drive gears are enclosed inside the machine to prevent operator contact with them while the machine is running.

1. Rotating ring—Keep clear of the rotating ring and tool slides when operating the SDSF. Contact with moving parts can cause serious injury.
2. Entanglement hazard for gloves or clothing—Do not wear gloves or loose-fitting clothing when operating the SDSF. They can become entangled with moving parts, resulting in serious injury.
3. Starwheel/trip pinch point—Operate the trip using the trip lever only. Do not touch any part of the trip assembly, other than the lever, when operating the SDSF or when rotating it manually for any reason.
4. Sharp cutting tools—Cutting tools used with the SDSF can be very sharp. Be careful when handling the tools, and stay clear of them when the machine is operating.
5. Chips—The metal debris from the cutting process can be very sharp and very hot. Use care in cleaning debris from the machine and cleaning up the work area. Stop the machine before clearing chips. Use appropriate gloves when handling chips.
6. Hot surfaces—Air motors and hydraulic components such as hoses, manifolds, and motors can become very hot during operation. Make sure these components are not hot before touching them.
7. Air motor connection—A pressurized air line can cause serious injury if it comes loose. Make sure the air line is secured to the equipment with a pin or other appropriate fastener.



WARNING

Do not disable or override the stop-on-release feature. Letting the machine run when you are not holding the power control could result in serious injury.

Stop-on-Release Power Control

All drives for the SDSF (pneumatic and electric) require the operator to hold the power control on to operate the machine. When the operator releases the power control, the SDSF stops immediately.

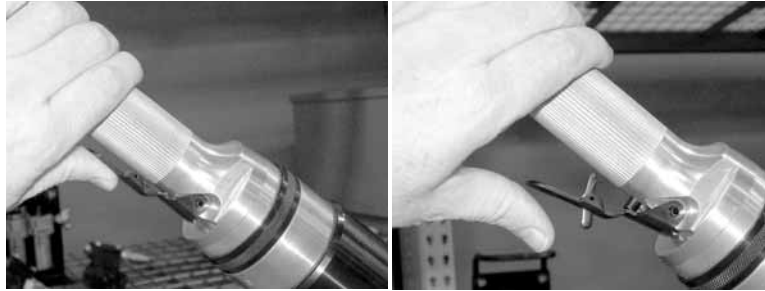


Figure 2-2. Hold the air motor trigger to operate the SDSF (left). When you release the trigger (right), the air motor shuts off.

Paddle-Style Trip Lever

The SDSF trip design allows the operator to engage and disengage the trip from beside or behind the machine, without reaching into the operating space of the rotating ring and slides. The paddle trip lever moves the trip pin in and out to control engagement of the trip.

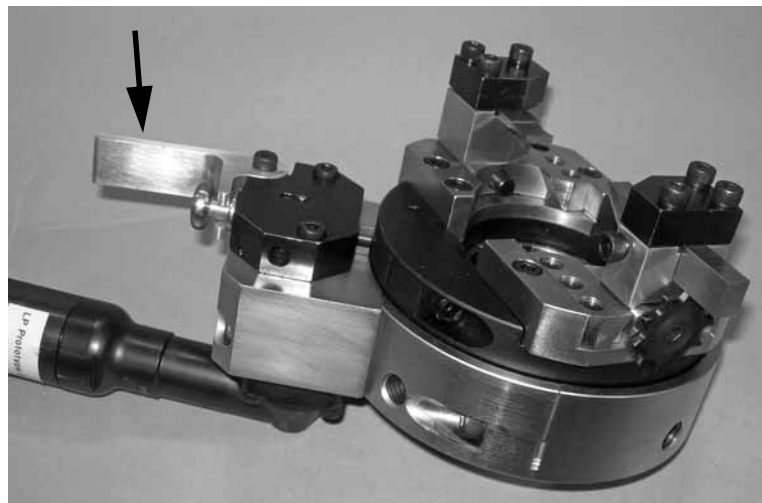


Figure 2-3. The paddle-style trip lever allows you to engage and disengage the trip from the back of the SDSF, without putting your hands in the way of moving components.

Remote Operation Option

Remotely controlled operation is available as an option for all SDSF drives types.

- For pneumatic drives, order the remote control panel (part no. 80-4200-00). See the ACM operating instructions in Chapter 5.
- For electric drives, contact E.H. Wachs customer service to discuss your operating environment and requirements.

Guidelines for Safe Setup, Operation, and Service

Pre-Operation Checklist

Every time you use the SDSF, perform the following checks to make sure it is in good operating condition:

- Check that all safety components are operating properly.
- Inspect it for damage or wear that could affect operation and safe use of the machine. Repair any defective component before using the machine.
- Make sure the machine is clean and properly lubricated.
- Make sure that tooling is sharp and in good condition. Poor quality tooling can cause difficult cutting and the possibility of machine malfunction and/or injury.
- Check power connections (pneumatic or electric) to make sure they are in good condition.

Operating Safety

- Stop the SDSF drive motion to clear chips or make any machine adjustments.
- For parting (cut-off) operations, use a catch device to prevent the cut-off piece of the pipe from falling.
- Keep air hoses and electrical cords away from moving parts while operating the machine.

Operator Position

The preferred position for operating the SDSF is to the side of the machine (behind the stationary ring if possible). Make sure you install the machine so that you can operate the controls without coming in contact with moving parts.

Service Checklist

- Disconnect power from the SDSF during service. See instructions in the following section.
- Remove accessories such as drive assemblies and tool slides unless they are part of the service procedure.

Disconnecting Power

When disconnecting power for the SDSF, follow all lock-out/tag-out procedures at your work site.

- **PNEUMATIC POWER**—To disconnect power from the pneumatic SDSF, remove the air line from the air motor coupling.



WARNING

Before disconnecting the air line, always turn off air at the source and bleed all residual air pressure at the air motor. Disconnecting the air line while under pressure could result in serious injury.



Figure 2-4. Disconnect pneumatic power by removing the air line from the pneumatic drive.

- **ELECTRIC POWER**—To disconnect power from the electric SDSF, unplug the power cord from the power outlet.

Safe Lifting and Handling

- Machines or assemblies over 40 lb (18 kg) must be lifted by two people or a lifting device. See the machine weight tables in the following section.
- All SDSF models weigh less than 40 lb (18 kg). However, it is the responsibility of the end user to determine whether a machine or assembly can be lifted by one person. For machines or assemblies that are difficult to handle, have two people lift the machine or use a lifting device.

- Do not rig or lift the SDSF while power is attached. Whenever possible, remove all accessories (slides, trips, drive assembly, etc.) while lifting and handling the machine.

Installation Procedures

See the detailed instructions in Chapter 5 for installing the SDSF on the workpiece. Safe installation procedures are provided for mounting the machine on both horizontal and vertical workpieces.

Safety Labels

The following safety labels are on the SDSF.



Figure 2-5. This label is on the pinion housing. The motor clamps must be secure to operate the SDSF safely.



Figure 2-6. This label is on the pinion housing. Keep hands and fingers clear of moving parts while the SDSF is in operation.

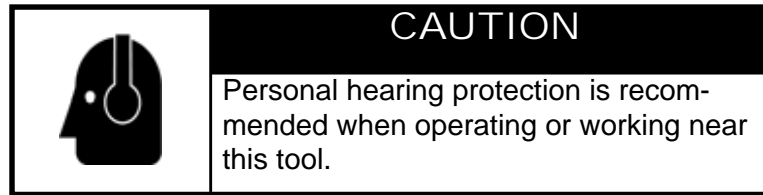


Figure 2-7. This label is on the air motor. Wear hearing protection to protect against high noise levels when operating the air motor. Lack of hearing protection can cause loss of hearing.



Figure 2-8. This label is on the air motor. Do not use air pressure greater than 90 psi (6.2 bar).



Figure 2-9. This label is on the air motor. Wear eye protection while the SDSF is operating.

Chapter 3

Introduction to the Equipment

.....

The Small Diameter Split Frame (SDSF) is designed to part, end prep, and counterbore pipes and tubes with wall thickness up to 0.44” (11 mm), and is capable of axial and radial socket weld removal.

The SDSF is lightweight and flexible, making it ideal for use in low-clearance environments. It offers simple setup and operation, featuring a self-squaring clamping system for precise cutting results typically available only with fixed machine tools.

A range of machine sizes up to 6” is available, as shown in Table 1. All machines are powered by an air or electric motor.

In This Chapter

MACHINE COMPONENTS

MOUNTING OPTIONS

TOOL SLIDE OPTIONS

TOOL KIT

DRIVE OPTIONS

DRIVE OPTIONS

BENCH MOUNTING OPTION

OPERATING ENVELOPES

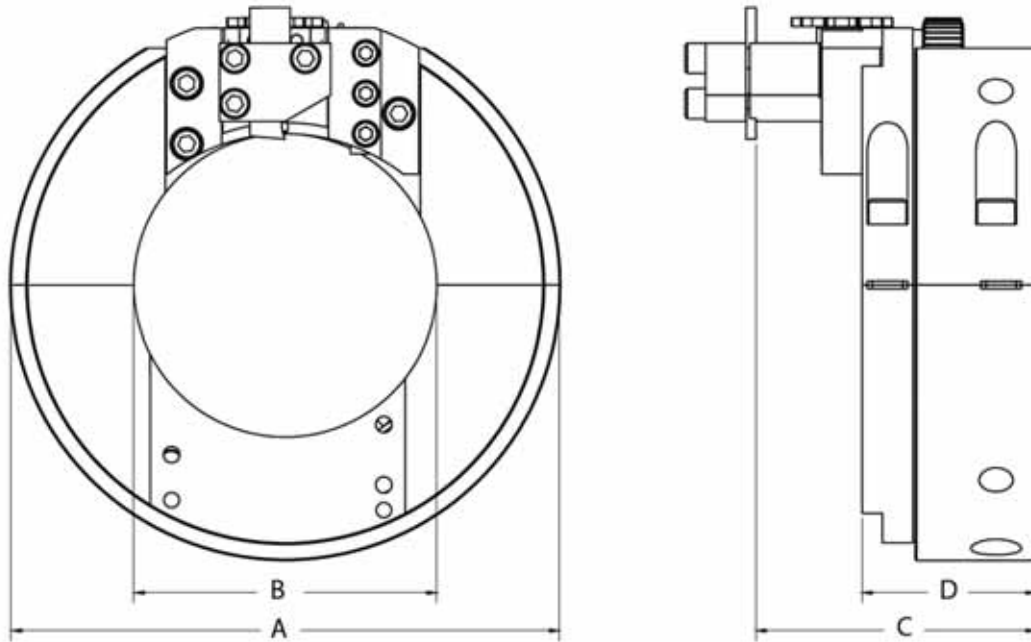


Table 1: SDSF Machine Sizes

Machine Size and Model No.	Standard Pipe Range	DIM A Machine O.D.	DIM B Machine I.D.	DIM C Parting Line	DIM D Machine Thickness
1" 80-4000-10	NPS 1/2"–1" DN 15–25	5.00" (127.0 mm)	1.56" (39.6 mm)	3.47" (88.1 mm)	2.53" (64.3 mm)
1-1/2" 80-4000-15	NPS 1"–1-1/2" DN 25–40	5.38" (136.7 mm)	2.13" (54.1 mm)	3.47" (88.1 mm)	2.16" (54.9 mm)
2" 80-4000-20	NPS 1-1/4"–2" DN 32–50	5.69" (144.5 mm)	2.63" (66.8 mm)	3.47" (88.1 mm)	2.16" (54.9 mm)
2-1/2" 80-4000-25	NPS 1-1/2"–2-1/2" DN 40–65	6.19" (157.2 mm)	3.13" (79.5 mm)	3.47" (88.1 mm)	2.16" (54.9 mm)
3" 80-4000-30	NPS 2"–3" DN 50–80	6.81" (173.0 mm)	3.75" (95.3 mm)	3.47" (88.1 mm)	2.16" (54.9 mm)
3-1/2" 80-4000-35	NPS 2-1/2"–3-1/2" DN 65–90	7.31" (185.7 mm)	4.25" (108.0 mm)	3.47" (88.1 mm)	2.16" (54.9 mm)
4" 80-4000-40	NPS 3"–4" DN 80–100	7.81" (198.4 mm)	4.75" (120.7 mm)	3.47" (88.1 mm)	2.16" (54.9 mm)
5" 80-4000-50	NPS 4"–5" DN 100–125	8.94" (227.1 mm)	5.88" (149.4 mm)	3.47" (88.1 mm)	2.16" (54.9 mm)
6" 80-4000-60	NPS 5"–6" DN 125–150	9.94" (252.5 mm)	6.88" (174.8 mm)	3.47" (88.1 mm)	2.16" (54.9 mm)

MACHINE COMPONENTS

Major components of the SDSF are shown in Figure 3-1 and Figure 3-2. Note that some machine components may have different finishes.

Threaded starwheel mechanisms advance the cutting tools into the pipe as the machine rotates. A mechanical trip turns the starwheel, indexing the threaded tool block forward along the feed screw as shown in Figure 3-3.

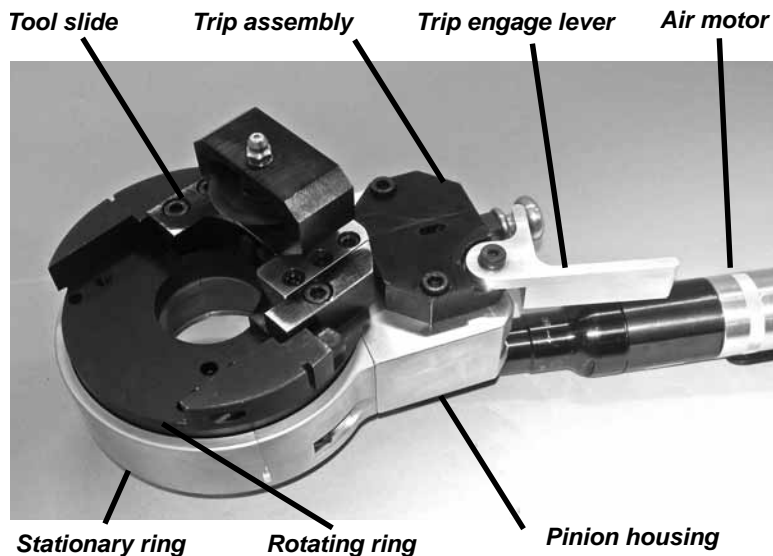


Figure 3-1. This photo shows major components of the SDSF.

Tool slides kits are available for the following applications:

- parting (cut-off)
- parting and O.D. beveling
- counterboring
- socket weld removal (radial or axial)
- chipless severing (thin-wall).

The kits include the tool slide(s) and trip for the cutting application.

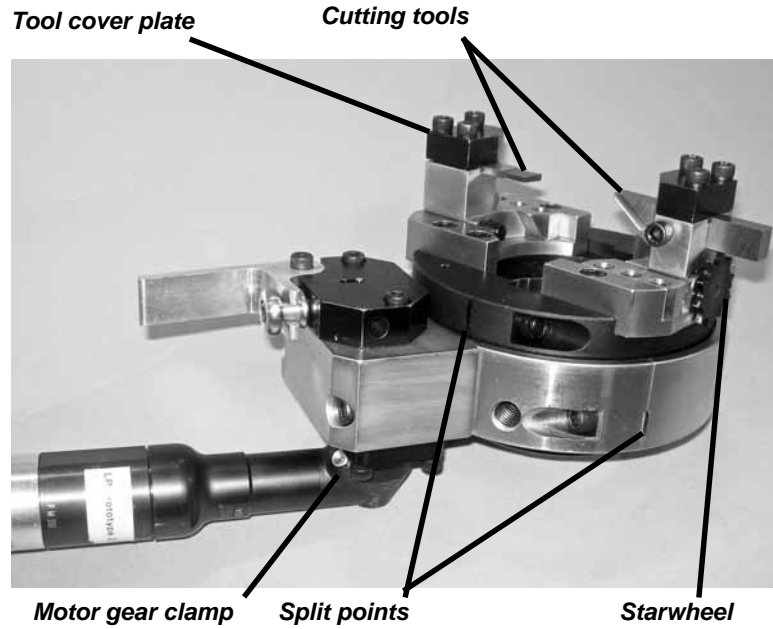


Figure 3-2. This photo shows the SDSF fitted with standard parting and beveling slides.

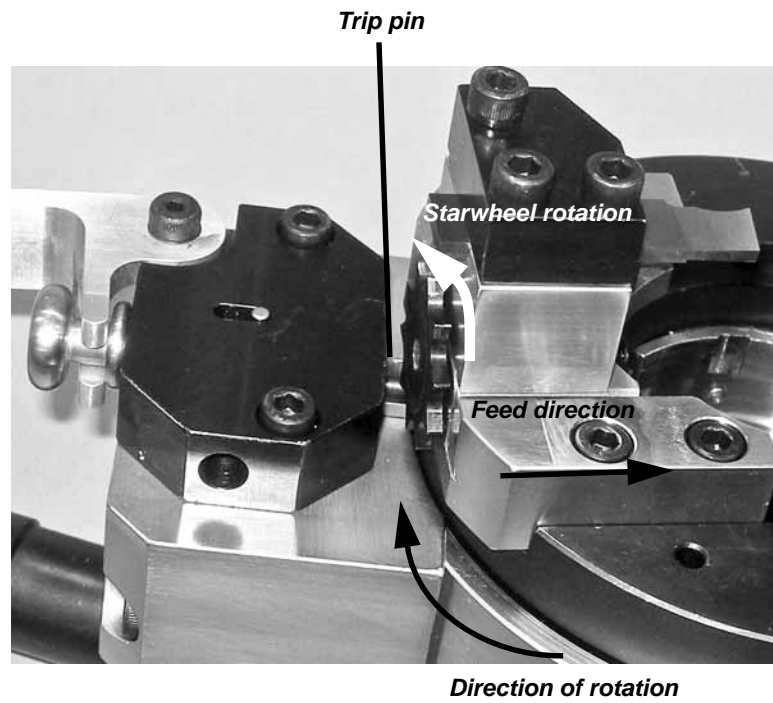


Figure 3-3. The trip pin advances the starwheel, advancing the tool bits into the workpiece.

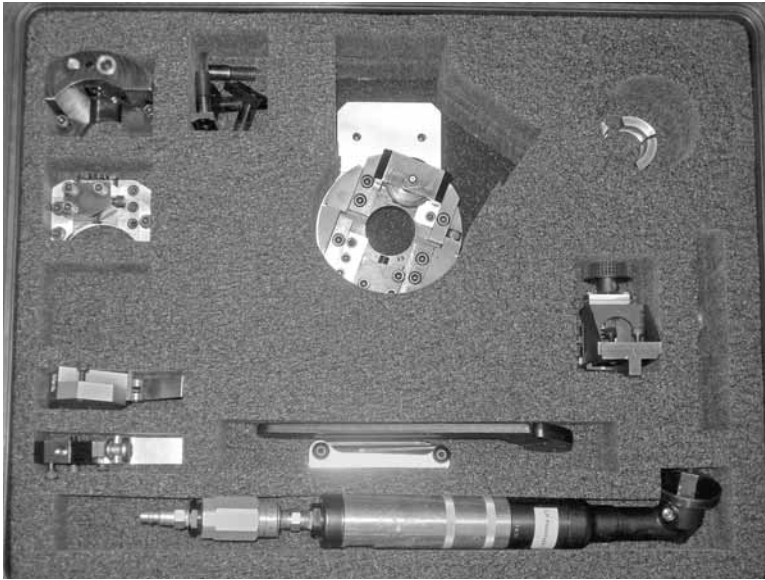


Figure 3-4. The SDSF ships disassembled in a waterproof carrying case.

MOUNTING OPTIONS

The SDSF mounts using either clamp feet or a collet. (The 1" and 1-1/2" SDSF models mount only using a collet.) Standard clamp pads are provided with each SDSF machine for mounting to the full O.D. range of the machine. Collets for specific pipe sizes are available as an option, and custom collets are available for any pipe O.D. up to 6"

Clamp Feet

Clamp feet are adjustable for the entire O.D. range of the machine. Each clamp foot is mounted to a captivated adjustment screw in the SDSF stationary ring. When installing the SDSF using the clamp feet, you need to manually center the machine on the pipe; see instructions in Chapter 5.

For clamp foot mounting, order the standard clamp foot extension kit (part no. 80-5001-00) with your SDSF machine. The kit includes two sets of clamp foot extensions:

- four 0.31" (7.9 mm) extensions
- four 0.56" (14.2 mm) extensions.



NOTE

Collets are recommended for wall thicknesses of 0.134" (3.40 mm) or less. Clamp legs may deform a thin-walled workpiece

Optional clamp foot extensions are also available by special order. Two sizes are available:

- 0.81” (20.6 mm) extensions (part no. 80-0078-08)
- 1.06” (26.9 mm) extensions (part no. 80-0078-11).

Table 2 describes the configurations for all SDSF models and clamp foot extensions.

Table 2: SDSF Clamp Foot Configurations

Machine Size (Model No.)	Clamping O.D. Range	With No Extension	With 0.31” Extension	With 0.56” Extension	With 0.81” Extension	With 1.06” Extension
2” (81-000-20)	Min	1.94” (49.3 mm)	1.31” (33.3 mm)	0.84” (21.3 mm)	not applicable	not applicable
	Max	2.56” (65.0 mm)	1.94” (49.3 mm)	1.44” (36.6 mm)	not applicable	not applicable
2-1/2” (81-000-25)	Min	2.44” (62.0 mm)	1.81” (45.0 mm)	1.31” (33.3 mm)	1.08” (27.4 mm)	0.84” (21.3 mm)
	Max	3.06” (77.7mm)	2.44” (62.0 mm)	1.94” (49.3 mm)	1.71” (43.4 mm)	1.12” (28.4 mm)
3” (81-000-30)	Min	3.06” (77.7 mm)	2.44” (62.0 mm)	1.94” (49.3 mm)	1.59” (40.4 mm)	1.12” (28.4 mm)
	Max	3.69” (93.7 mm)	3.06” (77.7 mm)	2.56” (65.0 mm)	2.21” (56.1 mm)	1.75” (44.5 mm)
3-1/2” (81-000-35)	Min	3.56” (90.4 mm)	2.94” (74.7 mm)	2.44” (62.0 mm)	2.08” (52.8 mm)	1.59” (40.4 mm)
	Max	4.19” (106.4 mm)	3.56” (90.4 mm)	3.06” (77.7 mm)	2.71” (68.8 mm)	2.31” (58.7 mm)
4” (81-000-40)	Min	4.06” (103.1 mm)	3.44” (87.4 mm)	2.94” (74.7 mm)	2.57” (65.3 mm)	2.08” (52.8 mm)
	Max	4.69” (119.1 mm)	4.06” (103.1 mm)	3.56” (90.4 mm)	3.19” (81.0 mm)	2.71” (68.8 mm)
5” (81-000-50)	Min	5.19” (131.8 mm)	4.56” (115.8 mm)	4.06” (103.1 mm)	3.68” (93.5 mm)	3.19” (81.0 mm)
	Max	5.81” (147.6 mm)	5.19” (131.8 mm)	4.69” (119.1 mm)	4.31” (109.5 mm)	3.81” (96.8 mm)
6” (81-000-60)	Min	6.19” (157.2 mm)	5.56” (144.2 mm)	5.06” (128.5 mm)	4.68” (118.9 mm)	4.18” (106.2 mm)
	Max	6.81” (173.0 mm)	6.19” (157.2 mm)	5.69” (144.5 mm)	5.31” (134.9 mm)	4.81” (122.3 mm)

Shaded cells: These configurations may require extended tooling or custom tool slides. Contact E.H. Wachs customer service to discuss your requirements.

Figure 3-5 illustrates adjusting the clamp leg with the adjustment screw.



Figure 3-5. Turn the adjustment screw to tighten or loosen the clamp foot.

Collets

Collets are constructed for specific pipe O.D.s. The collet fastens around the pipe using a spring mechanism, and is secured inside the SDSF I.D. with a collet nut. The collet is self-centering and is ideal for low clearance operations.

Table 3 describes the collet configurations for all SDSF models.



IMPORTANT

Tighten the clamp leg screws to a **maximum** of 50 lb-ft (67 N-m).

Table 3: Collet Configurations

Machine size	Pipe O.D. with collet	Standard collet part numbers	Custom collet part no. and available size range*
1"	0.84" (21.3 mm) 1.05" (26.7 mm) 1.315" (33.4 mm)	80-4010-05 80-4010-07 80-4010-10	80-4010-xx 0.375"–1.315" (9.5–33.4 mm)
1-1/2"	1.315" (33.4 mm) 1.66" (42.2 mm) 1.9" (48.3 mm)	80-4015-10 80-4015-12 80-4015-15	80-4015-xx 0.375"–1.9" (9.5–48.3 mm)
2"	1.66" (42.2 mm) 1.9" (48.3 mm) 2.375" (60.3 mm)	80-4020-12 80-4020-15 80-4020-20	80-4020-xx 0.5"–2.375" (12.7–60.3 mm)
2-1/2"	1.9" (48.3 mm) 2.375" (60.3 mm) 2.875" (73.0 mm)	80-4025-15 80-4025-20 80-4025-25	80-4025-xx 0.75"–2.875" (19.1–73.0 mm)
3"	2.375" (60.3mm) 2.875" (73.0 mm) 3.5" (88.9 mm)	80-4030-20 80-4030-25 80-4030-30	80-4030-xx 1.0"–3.5" (25.4–88.9 mm)
3-1/2"	2.875" (73.0 mm) 3.5" (88.9 mm) 4.0" (101.6 mm)	80-4035-25 80-4035-30 80-4035-35	80-4035-xx 1.5"–4.0" (38.1–101.6 mm)
4"	3.5" (88.9 mm) 4.0" (101.6 mm) 4.5" (114.3 mm)	80-4040-30 80-4040-35 80-4040-40	80-4040-xx 2.0"–4.5" (50.8–114.3 mm)
5"	4.5" (114.3 mm) 5.56" (141.2 mm)	80-4050-40 80-4050-50	80-4050-xx 3.06"–5.56" (77.7–141.2 mm)
6"	5.56" (141.2 mm) 6.625" (168.3 mm)	80-4060-50 80-4060-60	80-4060-xx 4.13"–6.625" (104.9–168.3 mm)

* = *Special order collets; specify your exact pipe O.D. Depending on pipe O.D., may require extended tooling or custom tool slides. Contact E.H. Wachs customer service to discuss your requirements.*

Refer to the collet table in Chapter 9 for collet kit ordering information.

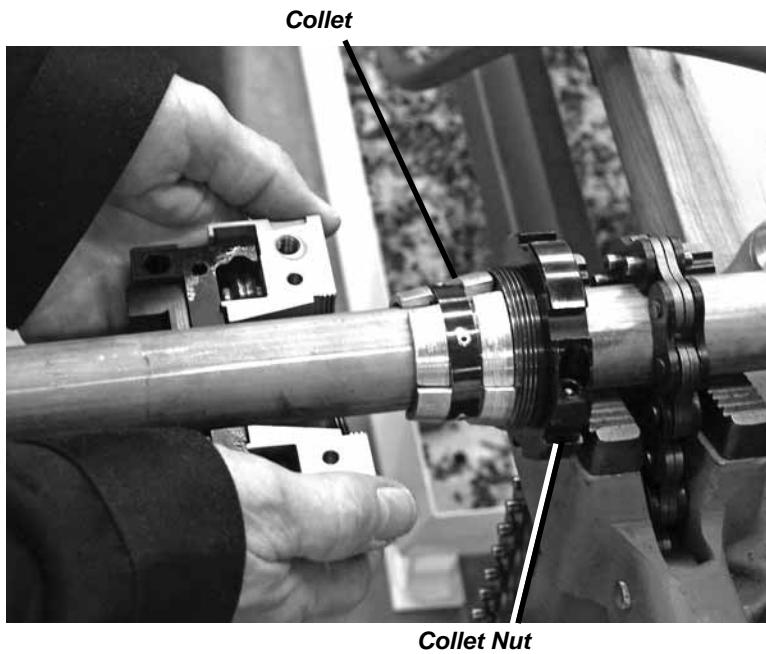


Figure 3-6. The collet fits around the pipe, and is secured into the bore of the SDSF machine with the collet nut.

TOOL SLIDE OPTIONS

The SDSF uses a modular tool slide system to accommodate tool slides to fit varied applications.

Table 4: Tool Slide Part Numbers

Machine Size	Parting Slide	Beveling Slide	Counterbore Slide	Axial Slide	FME Slide	Radial Socket Weld Slide
1"	80-4101-10	80-4102-10	80-4107-00	80-4104-10	80-4106-10	80-4100-10
1-1/2"	80-4101-20	80-4102-20	80-4107-00	80-4104-20	80-4106-20	80-4100-20
2"	80-4101-20	80-4102-20	80-4107-00	80-4104-20	80-4106-20	80-4100-20
2-1/2"	80-4101-20	80-4102-20	80-4107-00	80-4104-20	80-4106-20	80-4100-20
3"	80-4101-40	80-4102-40	80-4107-00	80-4104-40	80-4106-40	—
3-1/2"	80-4101-40	80-4102-40	80-4107-00	80-4104-40	80-4106-40	—
4"	80-4101-40	80-4102-40	80-4107-00	80-4104-40	80-4106-40	—
5"	80-4101-60	80-4102-60	80-4107-00	80-4104-60	80-4106-60	—
6"	80-4101-60	80-4102-60	80-4107-00	80-4104-60	80-4106-60	—



NOTE

Even if you are only doing a straight parting cut-off, you will need both the parting and parting/beveling slides. The slides have offset parting tool holders to prevent the parting tool from binding in the cut.

Parting/Beveling

For parting or parting/beveling operations, order slide kit 80-5101-XX (where XX is the size of your SDSF machine). The kit includes a radial parting slide (80-4101-XX), radial parting/beveling slide (80-4102-XX), and radial trip assembly (80-4103-00, same for all SDSF models). You can also order the slides or trips separately.

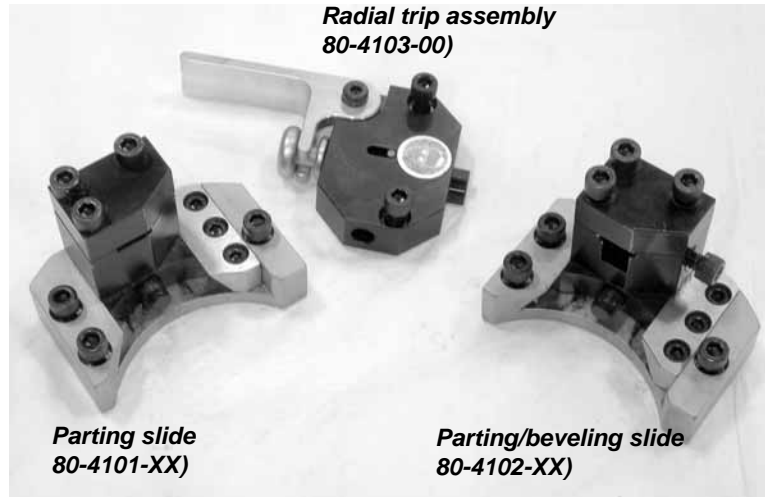


Figure 3-7. The radial parting/beveling kit (80-5101-XX) includes a parting slide, radial trip assembly, and parting/beveling slide.

Socket Weld Removal

The SDSF can be configured for either radial or axial socket weld removal. The radial socket weld slide (80-4100-XX) uses the standard radial trip. The axial socket weld slide (80-4104-XX) uses an axial trip assembly (80-4105-00, same for all SDSF models).

Turn-key socket weld removal kits are available, including 1” and 2” SDSF machines with all accessories for socket weld removal on standard sizes. Order 80-0000-AX for the axial kit, or 80-0000-RA for the radial kit.

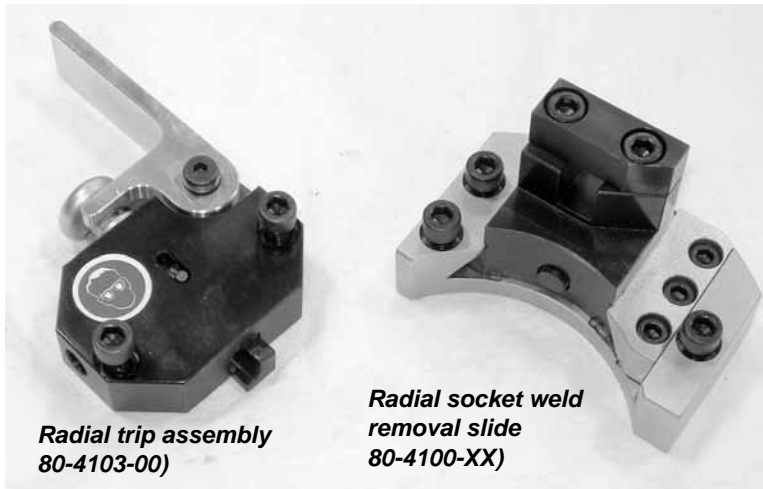


Figure 3-8. The radial socket weld removal slide (80-4100-XX) uses the standard radial trip assembly.

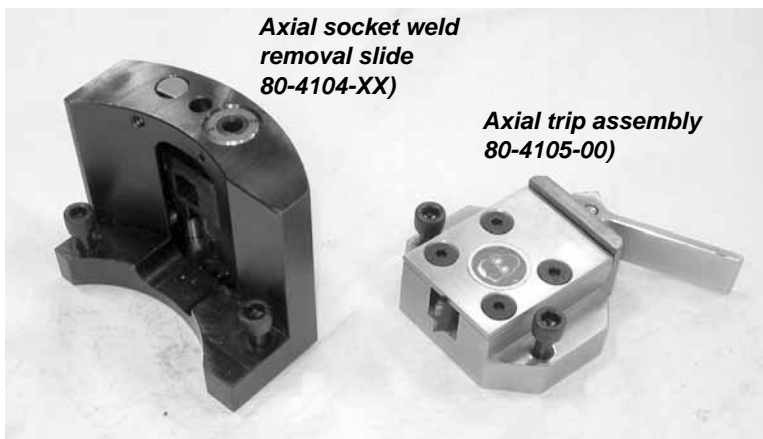


Figure 3-9. The axial socket weld removal slide (80-4104-XX) uses the axial trip assembly (80-4105-00).

Socket Weld Removal Kits

SDSF kits are available with all components for socket weld removal. Two configurations are available:

- Axial socket weld removal kit (80-0000-AX)
- Radial socket weld removal kit (80-0000-RA).

The drawings on the following pages illustrate the components supplied with each kit.



NOTE

The axial socket weld slide can be used on all 3000# and 6000# sockets. For heavier sockets, check the clearances on the axial socket weld slide envelope drawing at the end of this chapter.

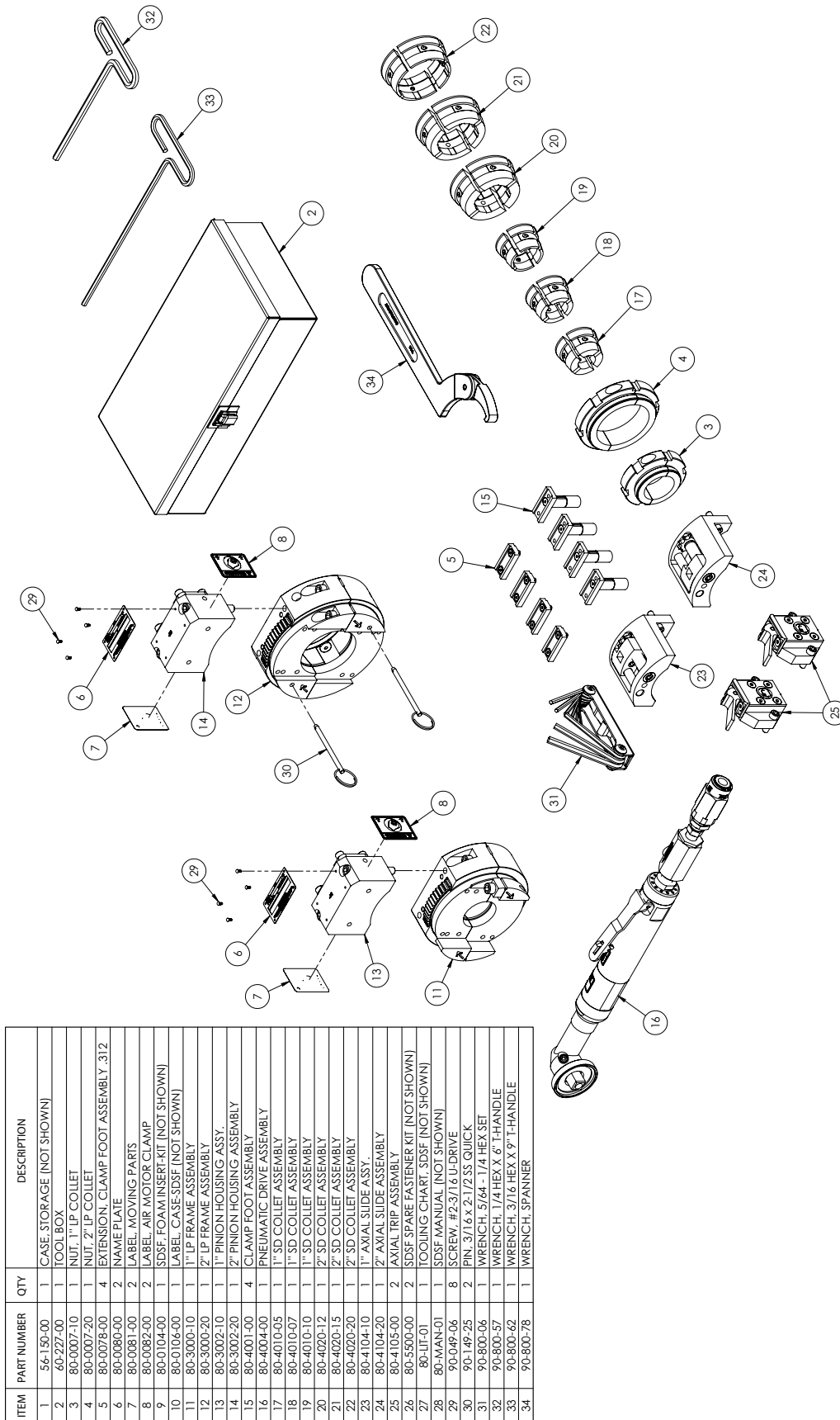


Figure 3-10. Axial Socket Weld Removal Kit, 80-0000-AX.

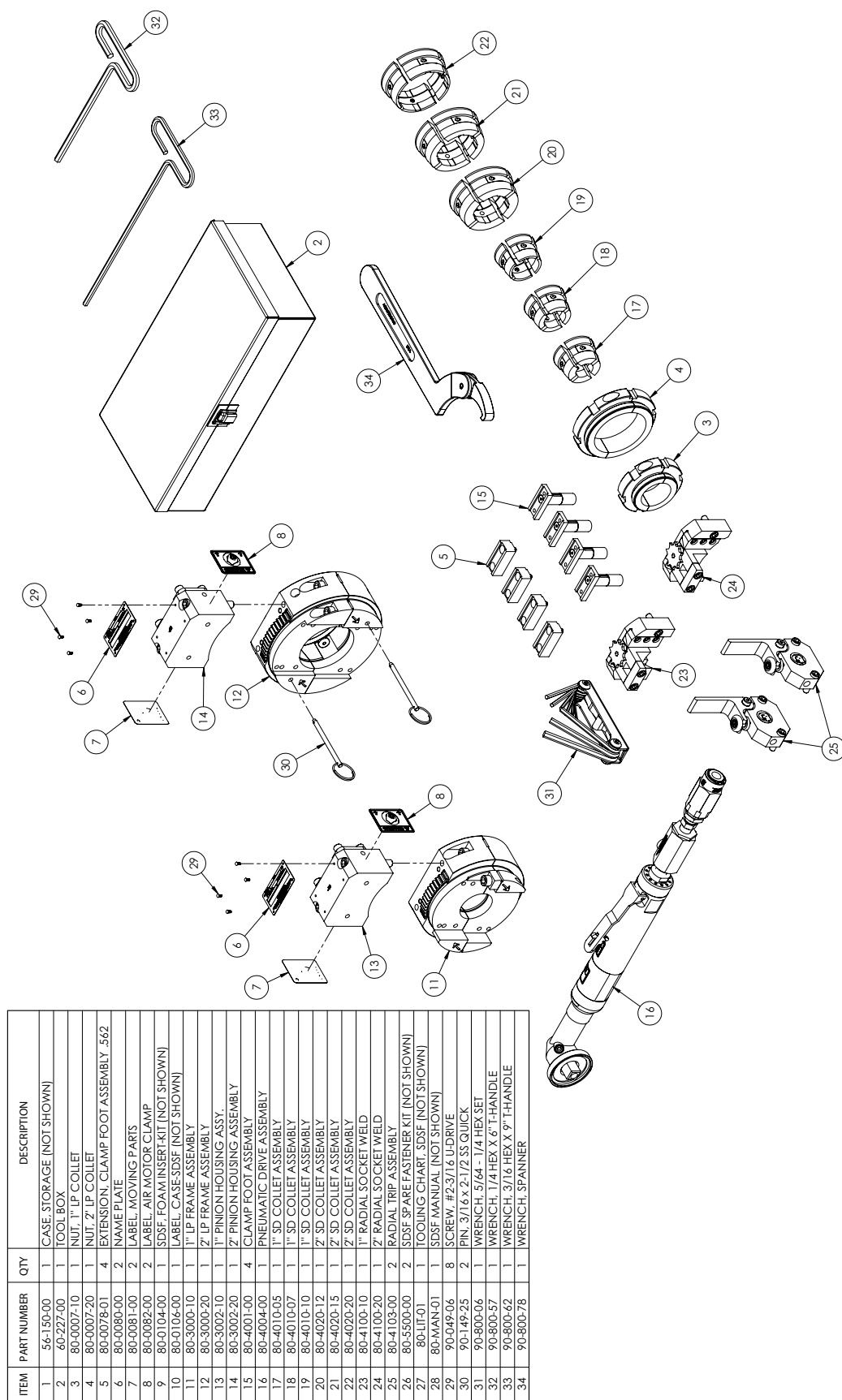


Figure 3-11. Radial Socket Weld Removal Kit, 80-0000-RA.

Counterboring

The SDSF counterbore slide (80-4107-00) can be used with all SDSF models. The slide mounts to the tool holder of the parting/beveling slide; remove the tool cover to install the counterbore slide.



Figure 3-12. The counterbore slide is used with all SDSF models.

Chipless Wheel Cutting

The SDSF foreign material exclusion (FME) slide (80-4106-XX) uses a cutting wheel for chipless severing of thin-wall pipe or tube. Depending on material, the FME slide can cut up to approximately 1/8" (3 mm) thickness. The FME slide uses the standard radial trip assembly.

For FME applications on thicker wall pipe or tube, use the parting/beveling slide kit to groove the workpiece down to less than 1/8" (3 mm) thickness. Then install the FME slide to complete the severing operation.

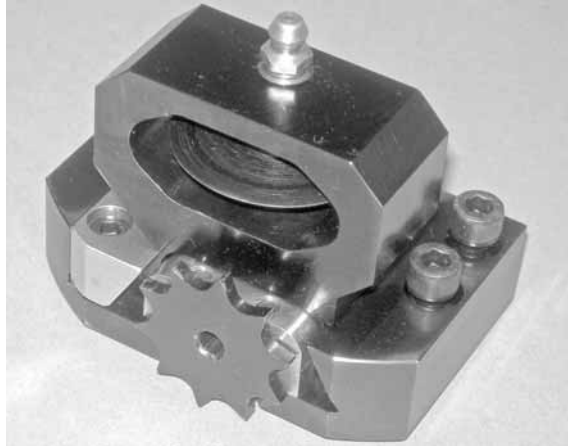


Figure 3-13. This photo shows the Foreign Material Exclusion (FME) slide available with the SDSF. The FME slide is used for chipless cutting in thin-wall and high-purity applications.

TOOL KIT

The SDSF has a simplified fastener inventory, and requires only three hex wrench sizes to operate (1/8", 3/16", 1/4"). The hex-through torque wrench (90-800-84) is used to adjust the bearings.

Table 5: Tool Kit

Description	Part Number
Hex Wrench Cluster	98-800-06
Spare Fastener Kit	80-5500-00
Collet Wrench (Collet mounting only)	90-800-78 (for 1" to 2-1/2" SDSF) 90-800-79 (for 3" to 4" SDSF) 90-800-80 (for 5" to 6" SDSF)

DRIVE OPTIONS

Three drives are available for the SDSF. Any drive will fit any size SDSF:

- a 0.8 HP pneumatic drive (part no. 80-4004-00)
- a 110 V electric drive (part no. 80-4005-01)
- a 220 V electric drive (part no. 80-4006-01).



Figure 3-14. The pneumatic drive (80-4004-00) can be used to power any size SDSF.



Figure 3-15. The electric drive (110 V: 80-4005-01; 220 V: 80-4006-01) can power any size SDSF.

BENCH MOUNTING OPTION

A bench mounting bracket is available to securely mount the SDSF to a workbench. Two bracket sizes are available; order the size appropriate for your SDSF model.

- For 1" to 2-1/2" SDSF models, use bracket 80-4201-20.
- For 3" to 6" SDSF models, use bracket 80-4201-60.

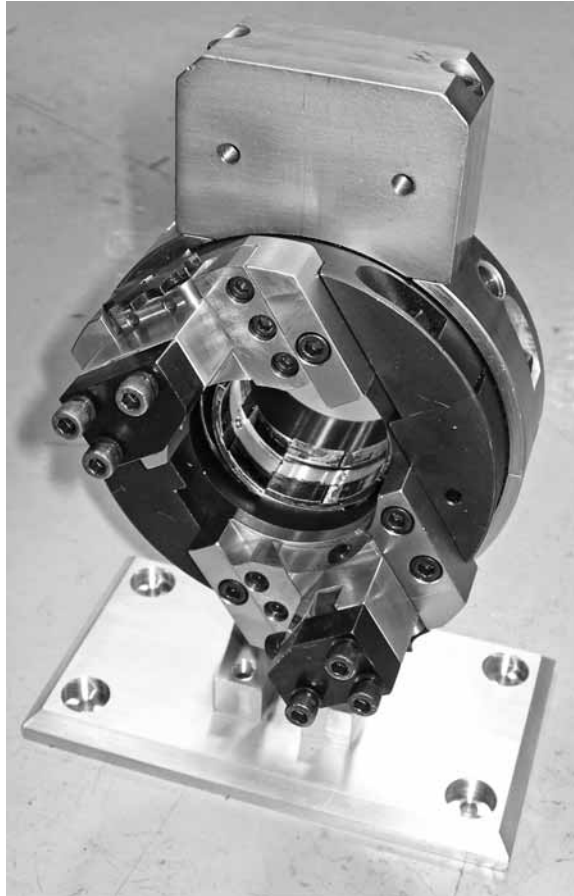
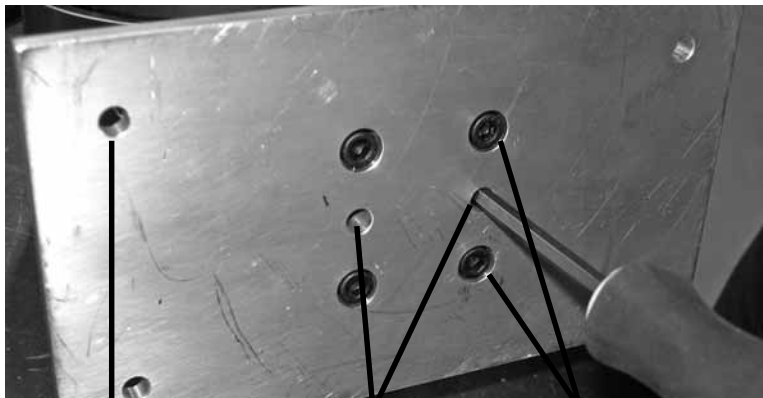


Figure 3-16. The SDSF is shown attached to the bench mounting bracket.

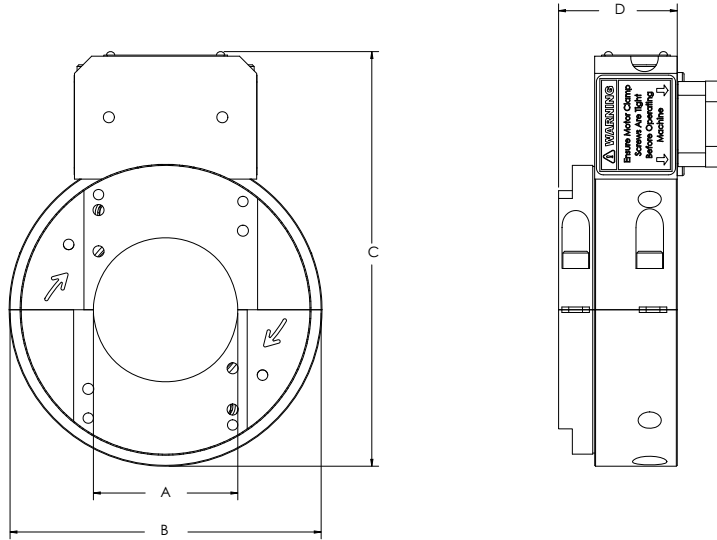


Mounting fasteners Machine fasteners Bracket fasteners

Figure 3-17. The photo shows the bottom of the bench mounting bracket, with fastener locations noted.

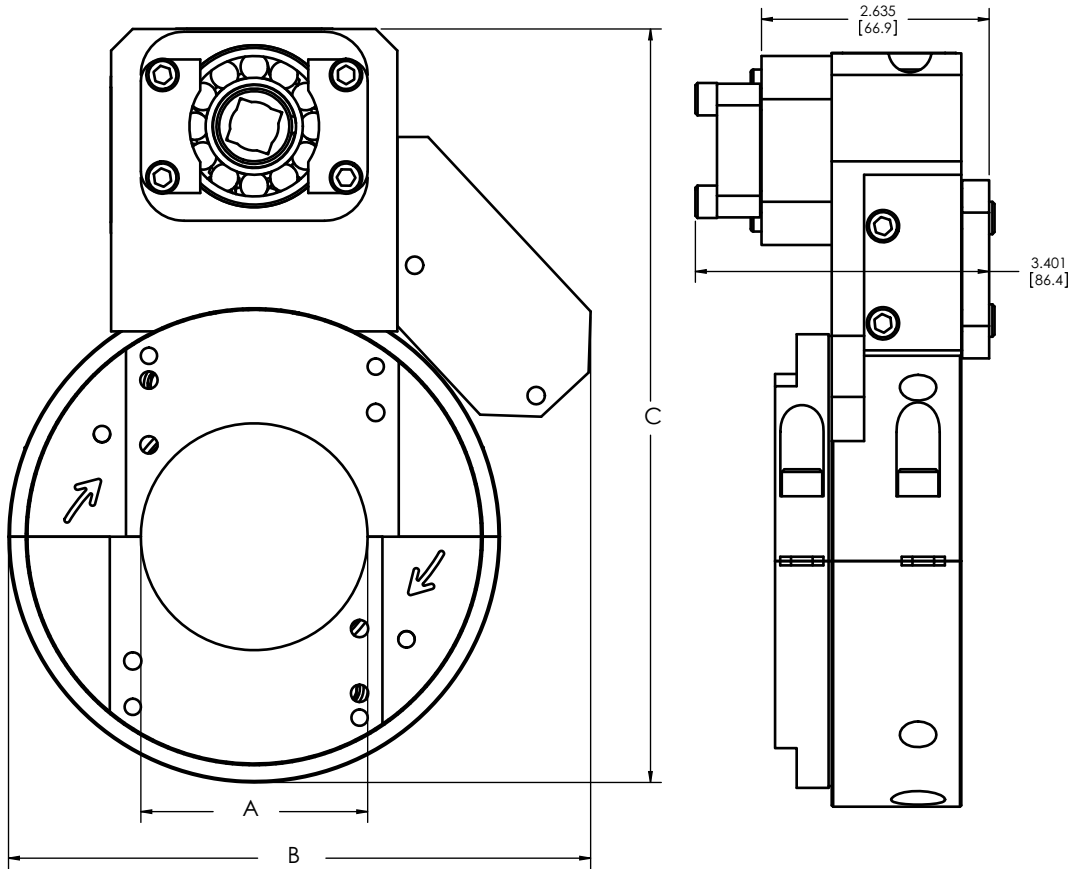
OPERATING ENVELOPES

The following drawings and tables illustrate the dimensions and operating envelopes for all SDSF sizes and configurations.



SDSF Base Machine Dimensions

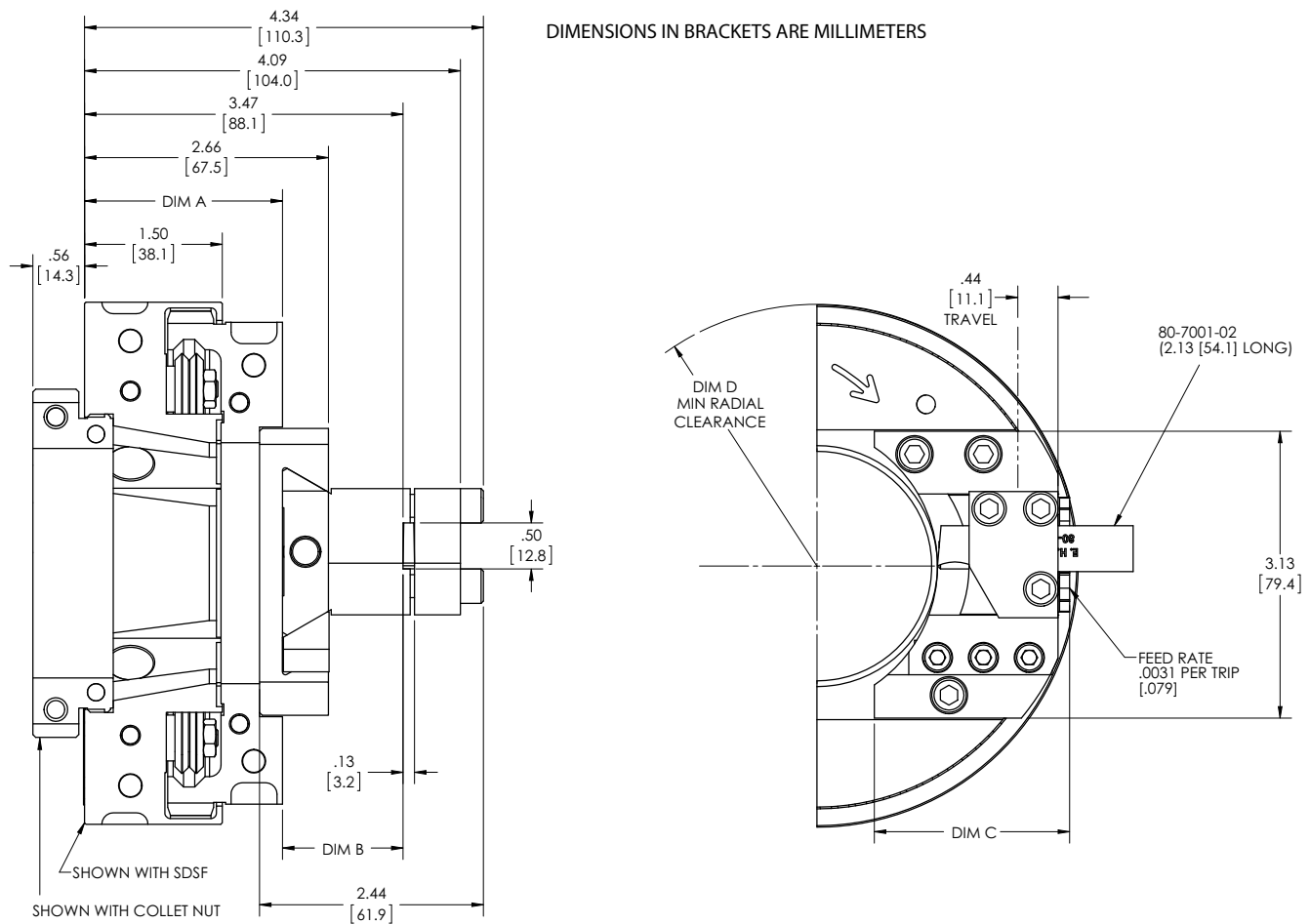
SDSF Model (Size)	DIM A	DIM B	DIM C	DIM D
80-4000-10 (1")	Ø1.563" (39.7 mm)	5.000" (127.0 mm)	6.694" (170.0 mm)	2.531" (64.3 mm)
80-4000-15 (1-1/2")	Ø2.125" (54 mm)	5.375" (136.5 mm)	7.132" (181.2 mm)	2.155" (54.8 mm)
80-4000-20 (2")	Ø2.625" (66.7 mm)	5.656" (143.7 mm)	7.538" (191.5 mm)	2.155" (54.8 mm)
80-4000-25 (2-1/2")	Ø3.125" (79.4 mm)	6.188" (157.2 mm)	8.038" (204.2 mm)	2.155" (54.8 mm)
80-4000-30 (3")	Ø3.750" (95.3 mm)	6.813" (173.1 mm)	8.664" (222.1 mm)	2.155" (54.8 mm)
80-4000-35 (3-1/2")	Ø4.250" (108.0 mm)	7.313" (185.8 mm)	9.163" (232.7 mm)	2.155" (54.8 mm)
80-4000-40 (4")	Ø4.750" (120.7 mm)	7.813" (198.5 mm)	9.585" (243.5 mm)	2.155" (54.8 mm)
80-4000-50 (5")	Ø5.875" (149.2 mm)	8.938" (227.0 mm)	10.788" (274.0 mm)	2.155" (54.8 mm)
80-4000-60 (6")	Ø6.875" (174.6 mm)	9.938" (252.4 mm)	11.710" (297.4 mm)	2.155" (54.8 mm)



Front Pinion Housing Dimensions

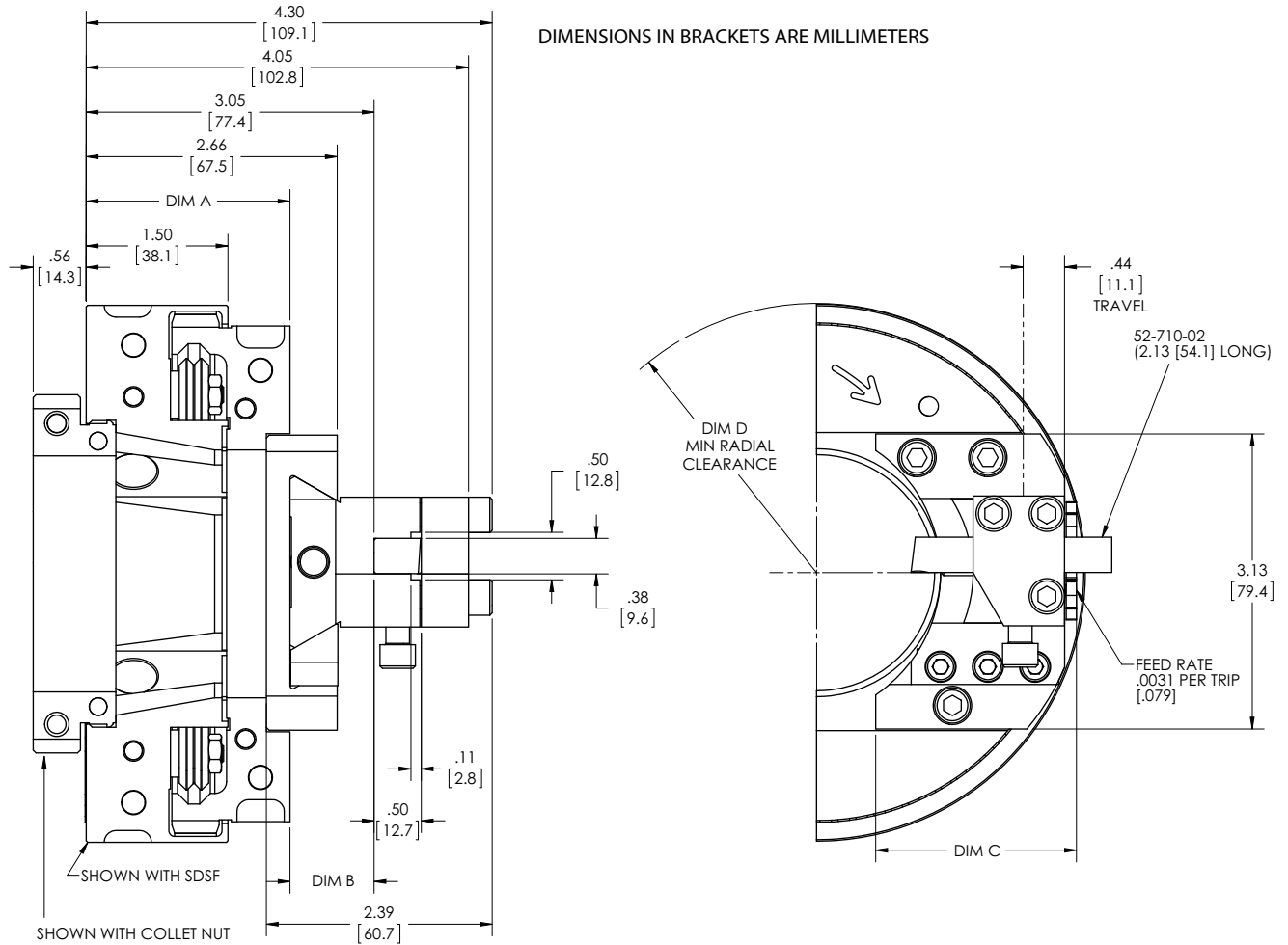
SDSF Model (Size)	Pinion Housing Part No.	DIM A	DIM B	DIM C
80-4000-10 (1")	80-4003-10	Ø1.563" (39.7 mm)	6.310" (160.3 mm)	7.876" (200.1 mm)
80-4000-15 (1-1/2")	80-4003-15	Ø2.125" (54 mm)	6.506" (165.3 mm)	8.314" (211.2 mm)
80-4000-20 (2")	80-4003-20	Ø2.625" (66.7 mm)	6.738" (171.1 mm)	8.720" (221.5 mm)
80-4000-25 (2-1/2")	80-4003-25	Ø3.125" (79.4 mm)	7.071" (179.6 mm)	9.220" (234.2 mm)
80-4000-30 (3")	80-4003-30	Ø3.750" (95.3 mm)	7.377" (187.4 mm)	9.846" (250.1 mm)
80-4000-35 (3-1/2")	80-4003-35	Ø4.250" (108 mm)	7.665" (194.7 mm)	10.345" (262.8 mm)
80-4000-40 (4")	80-4003-40	Ø4.750" (120.7 mm)	7.967" (202.4 mm)	10.846" (275.5 mm)
80-4000-50 (5")	80-4003-50	Ø5.875" (149.2 mm)	8.938" (227 mm)	11.970" (304 mm)
80-4000-60 (6")	80-4003-60	Ø6.875" (174.6 mm)	9.938" (252.4 mm)	12.970" (329.5 mm)

Parting Slide (80-4101-XX)



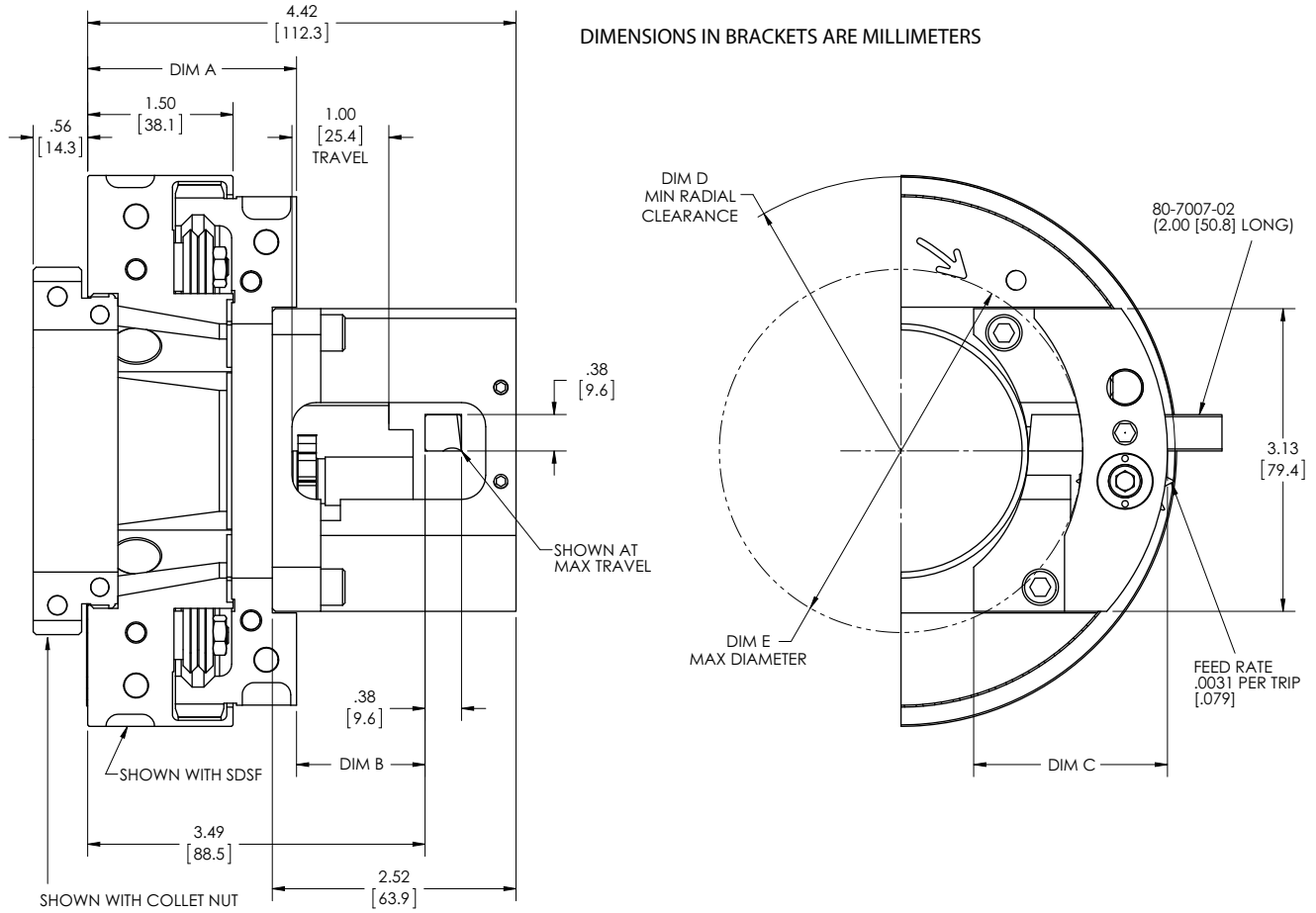
SDSF Model (Size)	Slide Part No.	DIM A	DIM B	DIM C	DIM D RADIUS
80-4000-10 (1")	80-4101-10	2.53" (64.3 mm)	0.94" (23.8 mm)	2.13" (54.0 mm)	2.37" (60.3 mm)
80-4000-15 (1-1/2")	80-4101-20			2.13" (54.0 mm)	2.61" (66.3 mm)
80-4000-20 (2")					2.85" (72.4 mm)
80-4000-25 (2-1/2")					3.09" (78.6 mm)
80-4000-30 (3")	80-4101-40	2.16" (54.8 mm)	1.31" (33.3 mm)	1.94" (49.2 mm)	3.40" (86.3 mm)
80-4000-35 (3-1/2")					3.64" (92.5 mm)
80-4000-40 (4")					3.89" (98.7 mm)
80-4000-50 (5")	80-4101-60			1.86" (47.3 mm)	4.44" (112.8 mm)
80-4000-60 (6")					4.93" (125.3 mm)

Beveling Slide (80-4102-XX)



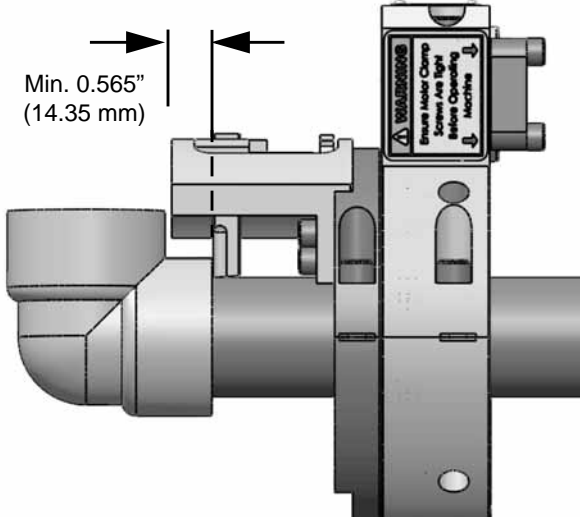
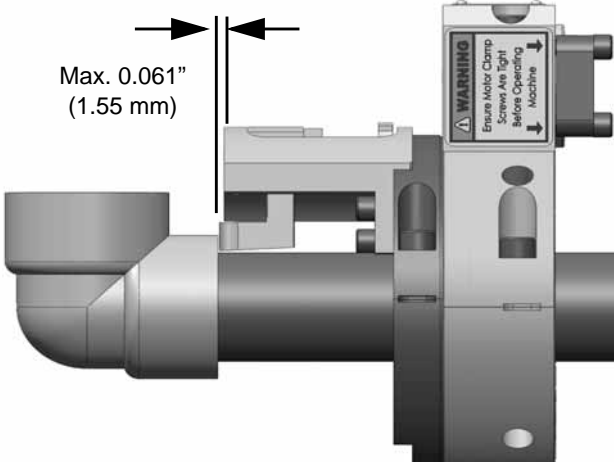
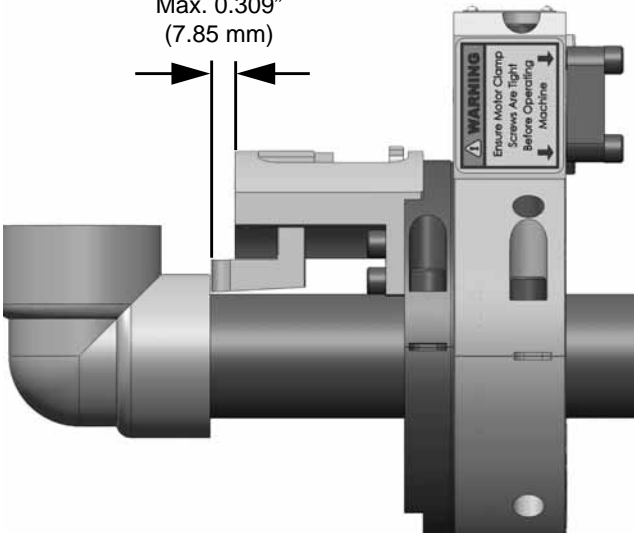
SDSF Model (Size)	Slide Part No.	DIM A	DIM B	DIM C	DIM D RADIUS
80-4000-10 (1")	80-4102-10	2.53" (64.3 mm)	0.52" (13.1 mm)	2.13" (54.0 mm)	2.37" (60.3 mm)
80-4000-15 (1-1/2")	80-4102-20			2.13" (54.0 mm)	2.61" (66.3 mm)
80-4000-20 (2")					2.85" (72.4 mm)
80-4000-25 (2-1/2")					3.09" (78.6 mm)
80-4000-30 (3")	80-4102-40	2.16" (54.8 mm)	0.89" (22.6 mm)	1.94" (49.2 mm)	3.40" (86.3 mm)
80-4000-35 (3-1/2")					3.64" (92.5 mm)
80-4000-40 (4")					3.89" (98.7 mm)
80-4000-50 (5")	80-4102-60			1.86" (47.3 mm)	4.44" (112.8 mm)
80-4000-60 (6")					4.93" (125.3 mm)

Axial Slide (80-4104-XX)

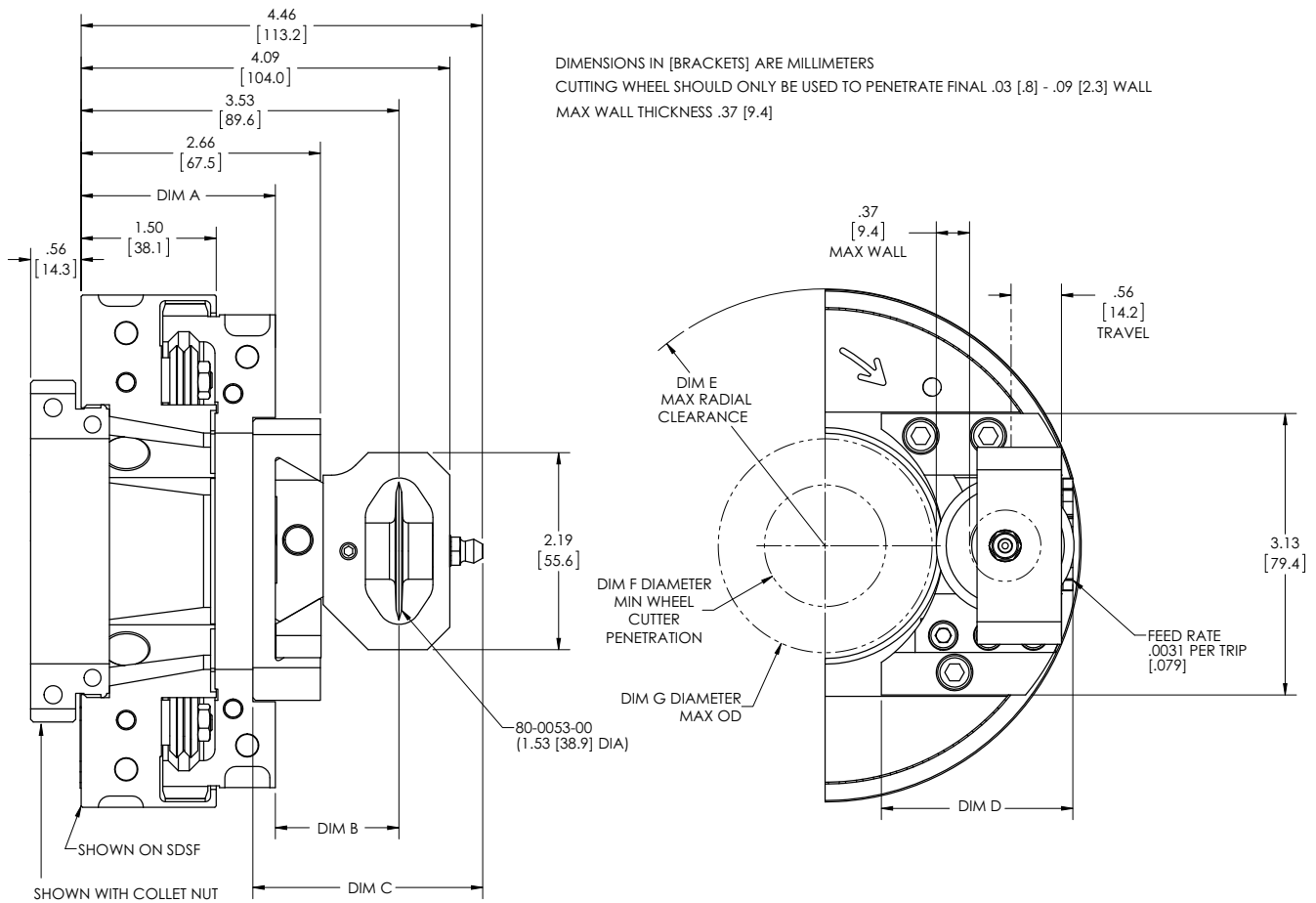


SDSF Model (Size)	Slide Part No.	DIM A	DIM B	DIM C	DIM D RAD.	DIM E DIA.
80-4000-10 (1")	80-4104-10	2.53" (64.3 mm)	0.95" (24.2 mm)	2.13" (54.0 mm)	2.33" (59.3 mm)	2.75" (69.8 mm)
80-4000-15 (1-1/2")	80-4104-20	2.16" (54.8 mm)	1.33" (33.7 mm)	2.00" (50.8 mm)	2.58" (65.6 mm)	3.25" (82.6 mm)
80-4000-20 (2")	80-4104-20				2.83" (71.9 mm)	3.75" (95.3 mm)
80-4000-25 (2-1/2")	80-4104-20				3.08" (78.2 mm)	4.25" (108.0 mm)
80-4000-30 (3")	80-4104-40	2.16" (54.8 mm)	1.33" (33.7 mm)	1.94" (49.2 mm)	3.39" (86.1 mm)	4.87" (123.8 mm)
80-4000-35 (3-1/2")	80-4104-40				3.64" (92.4 mm)	5.38" (136.5 mm)
80-4000-40 (4")	80-4104-40				3.89" (98.7 mm)	5.88" (149.2 mm)
80-4000-50 (5")	80-4104-60	2.16" (54.8 mm)	1.33" (33.7 mm)	1.63" (41/3 mm)	4.45" (113.0 mm)	7.00" (177.8 mm)
80-4000-60 (6")	80-4104-60				4.95" (125.7 mm)	8.00" (203.2 mm)

Axial Slide Tooling Clearances

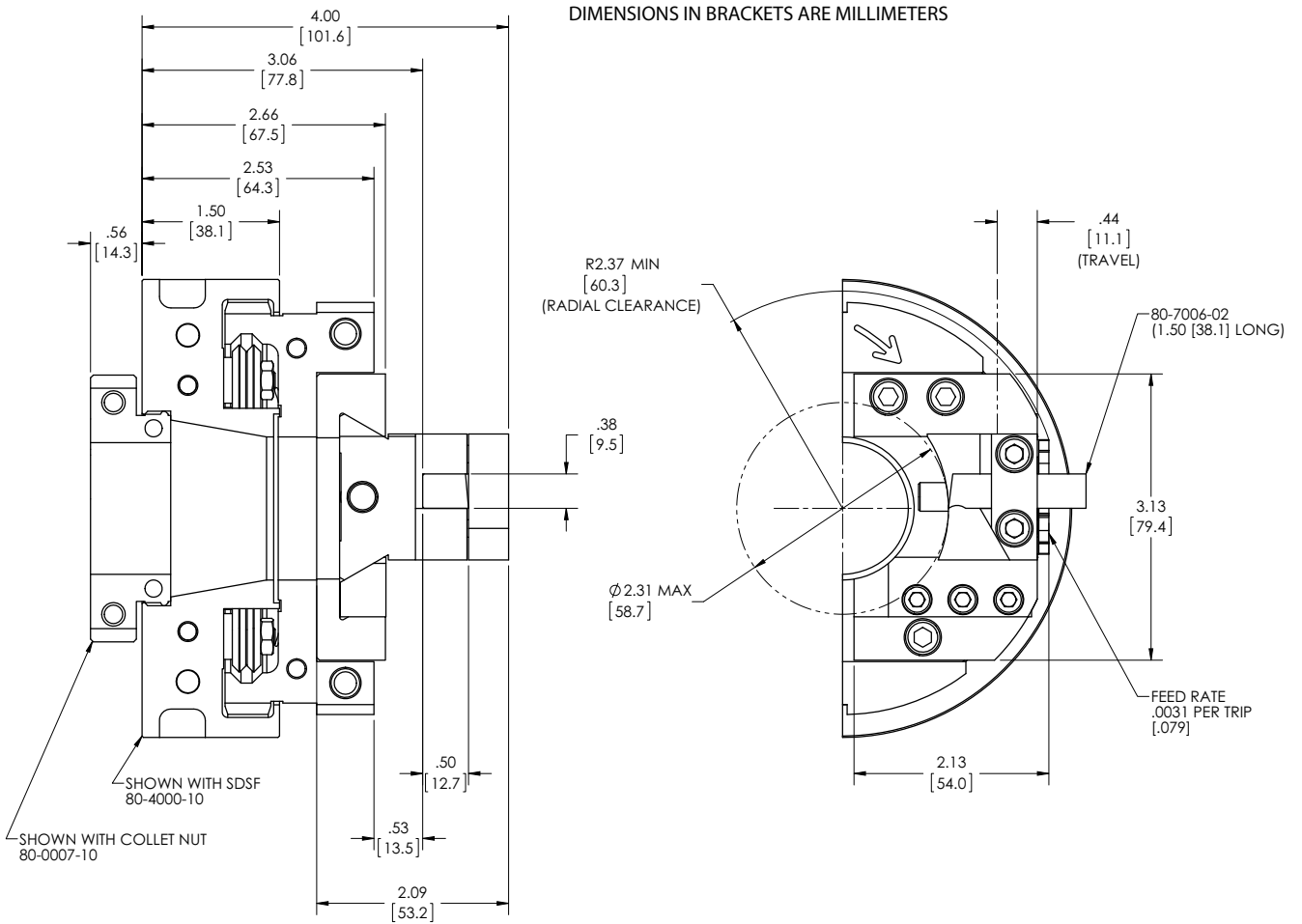
 <p>Min. 0.565" (14.35 mm)</p>	<p>Tool Part No: 52-701-01 80-7007-02 80-7007-03 52-702-01</p>
 <p>Max. 0.061" (1.55 mm)</p>	<p>Tool Part No: 52-701-02 52-702-02</p>
 <p>Max. 0.309" (7.85 mm)</p>	<p>Tool Part No: 52-701-03</p>

FME Slide (80-4106-XX)

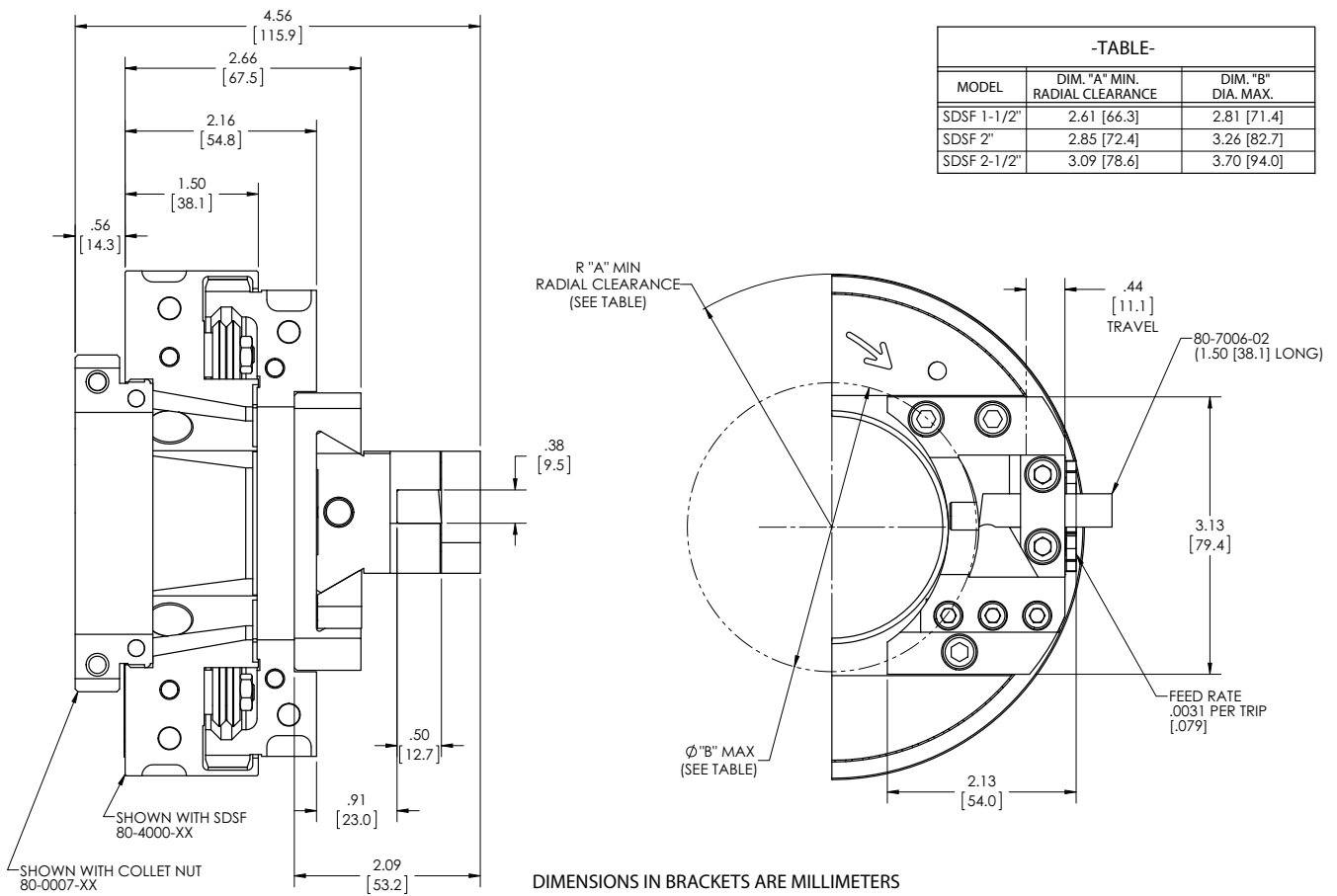


SDSF Model (Size)	Slide Part No.	DIM A	DIM B	DIM C	DIM D	DIM E RAD.	DIM F DIA.	DIM G DIA.
80-4000-10 (1")	80-4106-10	2.53" (64.3 mm)	1.00" (25.3 mm)	2.30" (58.5 mm)	2.13" (54.0 mm)	2.39" (60.7 mm)	0.35" (8.8 mm)	1.315" (33.40 mm)
80-4000-15 (1-1/2")	80-4106-20	2.16" (54.8 mm)	1.37" (34.9 mm)	2.55" (64.8 mm)		2.61" (66.3 mm)	0.85" (21.5 mm)	1.900" (48.26 mm)
80-4000-20 (2")	80-4106-20					2.85" (72.4 mm)	1.35" (34.3 mm)	2.375" (60.33 mm)
80-4000-25 (2-1/2")	80-4106-20					3.09" (78.6 mm)	1.85" (46.9 mm)	2.875" (75.03 mm)
80-4000-30 (3")	80-4106-40				1.94" (49.2 mm)	3.40" (86.3 mm)	2.47" (62.8 mm)	3.500" (88.90 mm)
80-4000-35 (3-1/2")	80-4106-40	3.64" (92.5 mm)	2.97" (75.5 mm)	4.000" (101.60 mm)				
80-4000-40 (4")	80-4106-40	3.89" (98.7 mm)	3.47" (88.2 mm)	4.500" (114.30 mm)				
80-4000-50 (5")	80-4106-60	1.86" (47.3 mm)	1.37" (34.9 mm)	2.55" (64.8 mm)	4.44" (112.8 mm)	4.60" (116.8 mm)	5.560" (141.22 mm)	
80-4000-60 (6")	80-4106-60				4.93" (125.3 mm)	5.60" (142.2 mm)	6.625" (168.28 mm)	

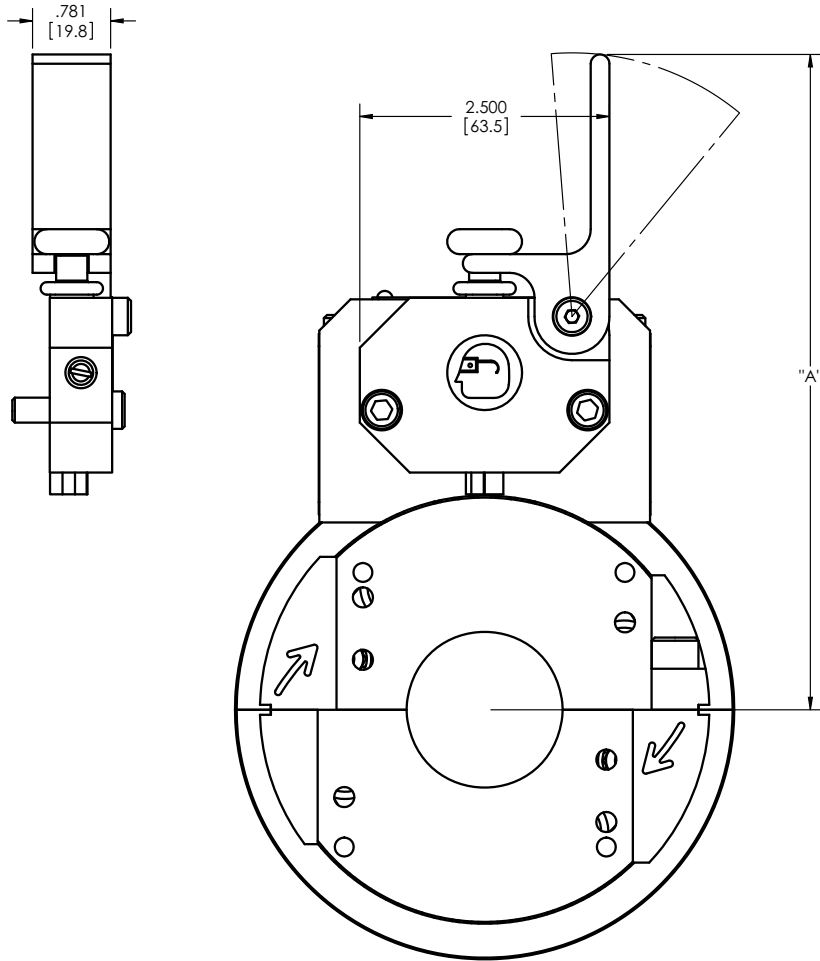
Radial Socket Weld Removal Slide (80-4100-10 Slide for 1" SDSF)



Radial Socket Weld Removal Slide (80-4100-20 Slide for 1-1/2", 2", and 2-1/2" SDSF)



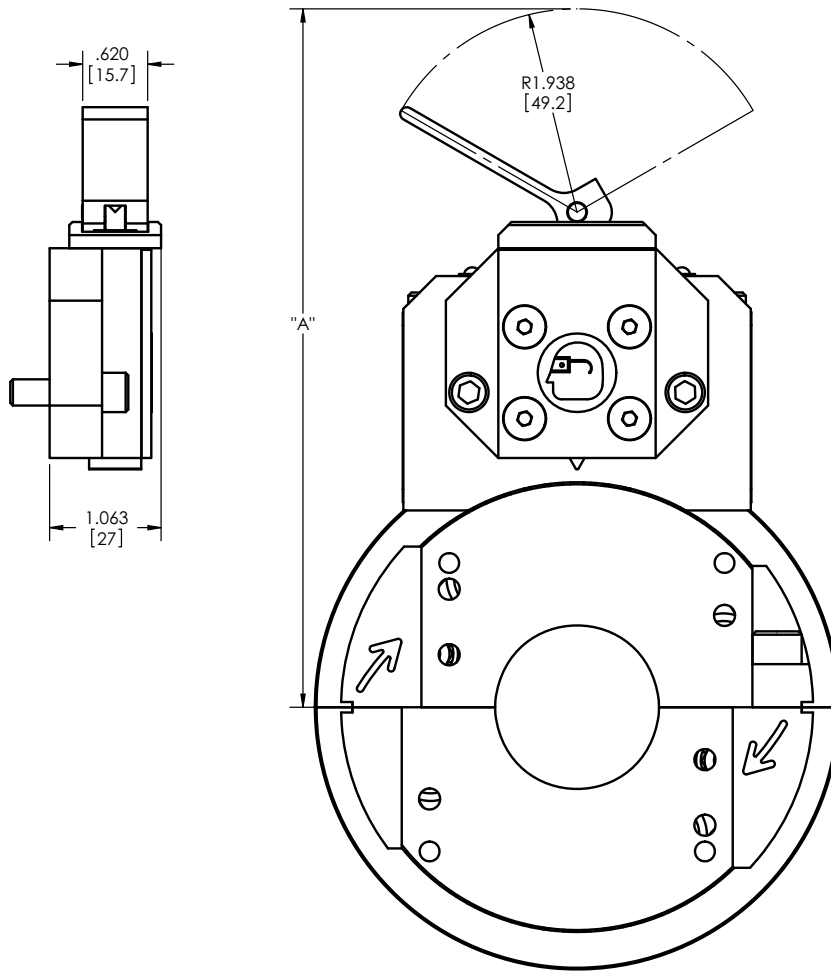
Radial Trip (80-4103-00)



RADIAL TRIP 80-4103-00

RING SIZE	DIM "A"
1" (80-4000-10)	6.564 [166.7]
1-1/2" (80-4000-15)	6.784 [172.3]
2" (80-4000-20)	7.064 [179.4]
2-1/2" (80-4000-25)	7.284 [185]
3" (80-4000-30)	7.597 [192.9]
3-1/2" (80-4000-35)	7.846 [199.2]
4" (80-4000-40)	8.097 [205.6]
5" (80-4000-50)	8.659 [219.9]
6" (80-4000-60)	9.159 [232.6]

Axial Trip (80-4105-00)

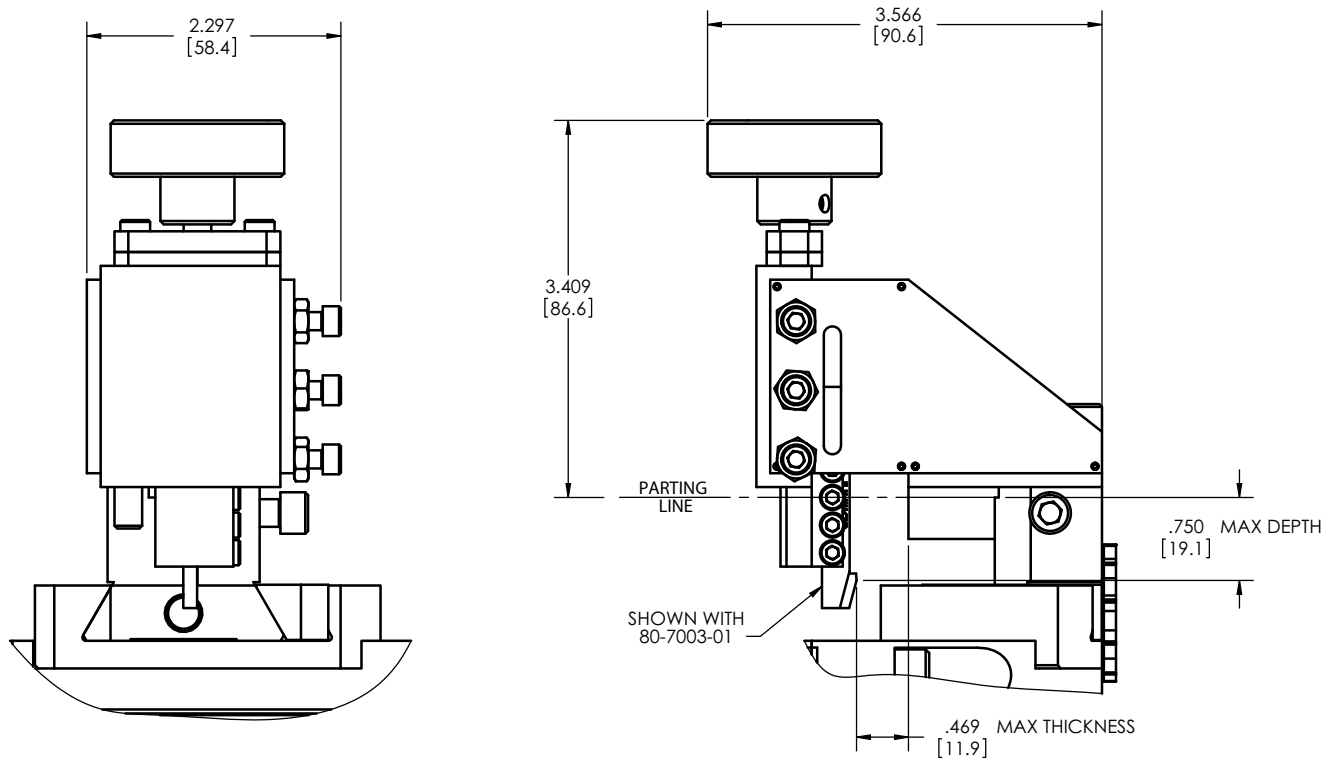


AXIAL TRIP 80-4105-00

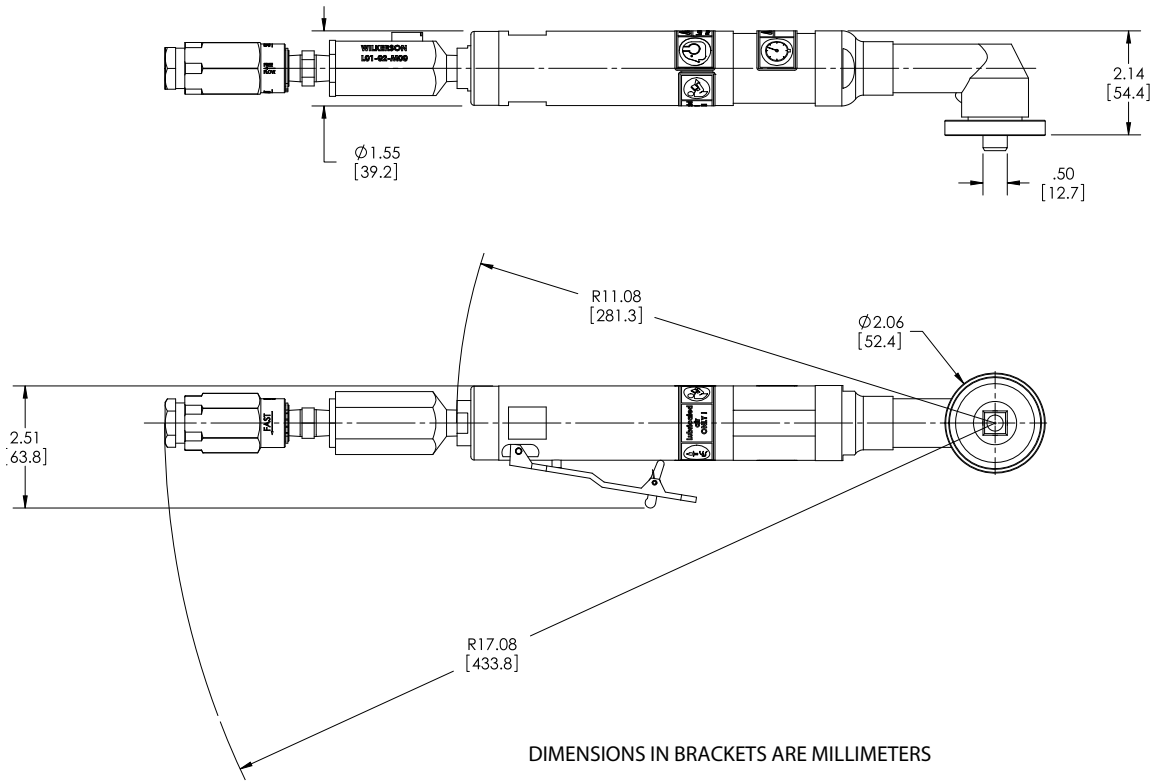
RING SIZE	DIM "A"
1" (80-4000-10)	6.657 [169.1]
1-1/2" (80-4000-15)	6.908 [175.4]
2" (80-4000-20)	7.158 [181.8]
2-1/2" (80-4000-25)	7.408 [188.1]
3" (80-4000-30)	7.722 [196.1]
3-1/2" (80-4000-35)	7.972 [202.4]
4" (80-4000-40)	8.222 [208.8]
5" (80-4000-50)	8.784 [223.1]
6" (80-4000-60)	9.284 [235.8]

Counterbore Slide (80-4107-00)

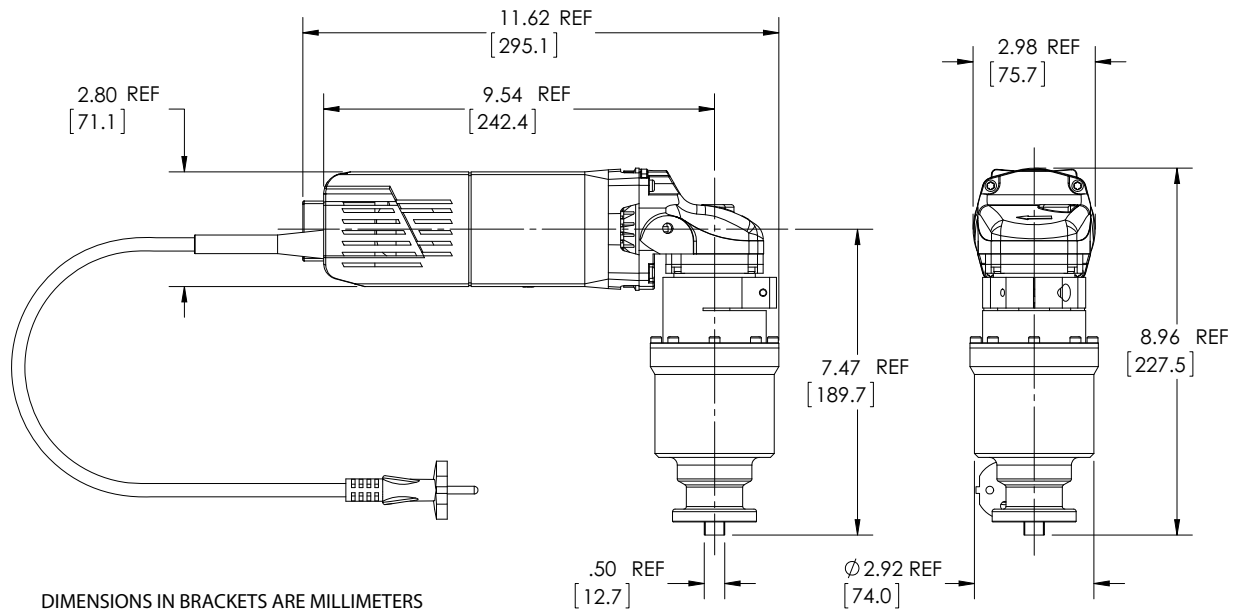
COUNTERBORE SLIDE 80-4107-00



Pneumatic Drive (80-4004-00)



Electric Drive (80-4005-01/80-4006-01)



Chapter 4

Assembly, Disassembly, and Storage

MACHINE DISASSEMBLY AND STORAGE

1. Disconnect the power source (air or electric) from the drive.
2. Remove the drive assembly from SDSF. Leave the motor clamps in place.
3. Retract the tool slides.
4. Loosen the four clamp feet, or loosen and remove the collet nut and collet.
5. Unscrew the frame locking screws.
6. Remove SDSF from pipe.
7. Clean the machine of debris such as metal chips and excess coolant.
8. Split the machine halves and examine the bearing raceway for metal chips.
9. Apply two drops of Wachs way oil (60-1184-00) to the felt wiper before storing the machine.

In This Chapter

MACHINE DISASSEMBLY AND
STORAGE



Figure 4-1. Oil the felt wiper after every use of the machine.



Figure 4-2. Store the SDSF in its carrying case when not in use.

Chapter 5

Operating Instructions

PRE-OPERATION CHECKLIST

To avoid damaging the equipment, follow these usage guidelines.

1. Lubricate the machinery according to the recommendations in Chapter 6.
2. Before starting the machine, make sure the tooling is inserted and fastened securely.
3. Make sure that the air connection is secure (pneumatic drive only).
4. If using clamp feet, make sure the machine is centered and squared on the pipe or tube.
5. If using clamp feet, the clamp feet must be securely tightened.
6. If using a collet, make sure the collet nut is securely tightened.

In This Chapter

PRE-OPERATION CHECKLIST
CONFIGURING THE SDSF FOR THE APPLICATION
MOUNTING THE MACHINE ON THE PIPE
MOUNTING THE DRIVE MOTOR
PARTING AND BEVELING
COUNTERBORING
SOCKET WELD REMOVAL
FOREIGN MATERIAL EXCLUSION CUTTING
REMOVING THE MACHINE
REMOTE OPERATION WITH THE SF ACM

CONFIGURING THE SDSF FOR THE APPLICATION

Selecting Feet or Collet for Mounting

Determine whether a collet or clamping feet will work best for your application. Generally, a collet will provide easier and more accurate clamping, but the collet must be exactly the right size for the pipe O.D. Use the clamp feet if you do not have a correctly sized collet to fit the pipe you are cutting.

Installing the Clamp Feet

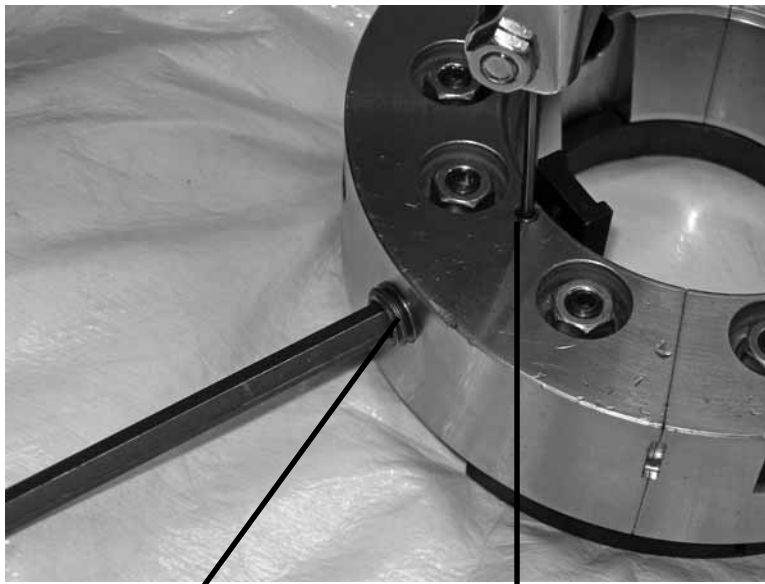
You do not need to remove the clamp feet each time you use the machine. If you need to install the clamp feet, follow this procedure.

1. Insert the clamp feet into the clamp foot holes on the I.D. of the SDSF.
2. Insert a 1/4" hex wrench through the clamp foot screw hole in the frame. Turn the clamp foot screw counter-clockwise to snug the clamp foot screws.
3. Turn the set screws clockwise until they snug against the clamp feet.
4. Turn the set screws 1/4 turn counter-clockwise.



NOTE

The 1" and 1-1/2" SDSF models do not have clamp feet. They install with collets only.



Clamp Foot Screw

Set Screw

Figure 5-1. Install the clamp feet as shown.

5. Ensure the clamp feet can move freely by turning the clamp foot screws.

Adding Clamp Foot Extensions

Measure the O.D of the pipe to be machined and determine whether clamp foot extensions will be necessary. Refer to the table on page 22. Attach the clamp foot extensions to the clamp feet.

Removing the Clamp Feet for Collet Mounting

1. Loosen the set screws. Refer to Figure 5-1.
2. Unscrew and remove the clamp feet.

Selecting the Slides, Tooling, and Trip

Use this table to determine which slide(s) are needed for the cutting application you are performing.

Table 1: Slide and Tooling Application

Application	Slide(s)	Tooling	Trip
Cut-off	Radial Parting Slide AND Radial Parting/ Beveling Slide	Parting AND Parting	Radial
Parting and Beveling	Radial Parting Slide AND Radial Parting/ Beveling Slide	Parting AND Beveling	Radial
Counterboring	Counterbore Slide	Counterbore	Not used
FME Cutting	Radial Parting Slide AND FME Slide	Parting AND Wheel	Radial
Socket Weld Removal	Axial Slide	Standard OR Extended	Axial
Socket Weld Removal	Radial Slide	Standard OR Extended	Radial

Installing the Radial Slides

1. Align and tighten the three tool slide mounting screws. Use a 3/16" hex wrench to attach each tool slide (parting and parting/beveling) to the SDSF.

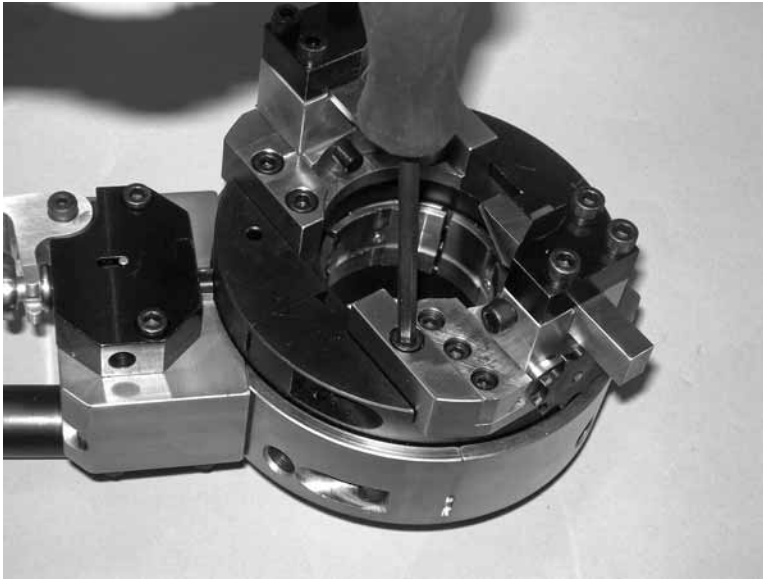
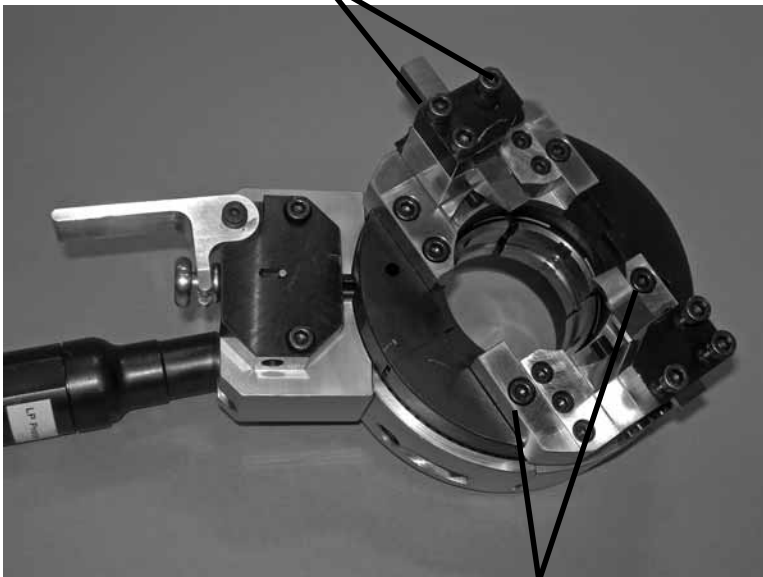


Figure 5-2. Secure the mounting screws as shown.

2. Use a 3/16" hex wrench to turn the starwheel clockwise to fully retract the tool slides.
3. Loosen the three screws on the tool cover plate with a 3/16" hex wrench.

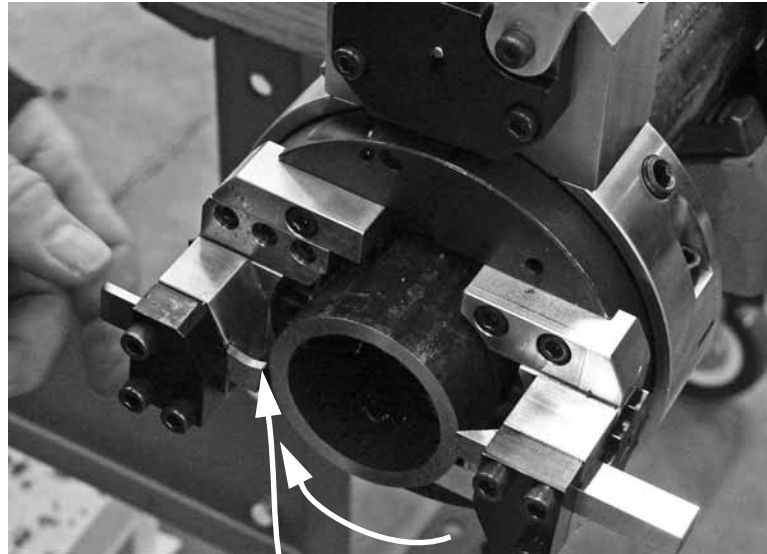
Tool Cover Plate Screws



Tool Slide Mounting Screws

Figure 5-3. Use the screws noted to mount the radial tool slides.

4. Select the tool bits appropriate for the desired cut, and slide the tool bits into the tooling slots. The cutting edge of each tool bit must face clockwise when viewing the SDSF from the front.



Cutting Edge

Direction of Rotation

Figure 5-4. The cutting edges on both the parting and beveling tools must face clockwise.

5. Tighten the three screws on the tool cover plate.

Installing the Trip Assembly

1. Align the mounting screws on the trip assembly with the holes on the pinion housing.
2. Tighten the trip assembly mounting screws with a 3/16" hex wrench.

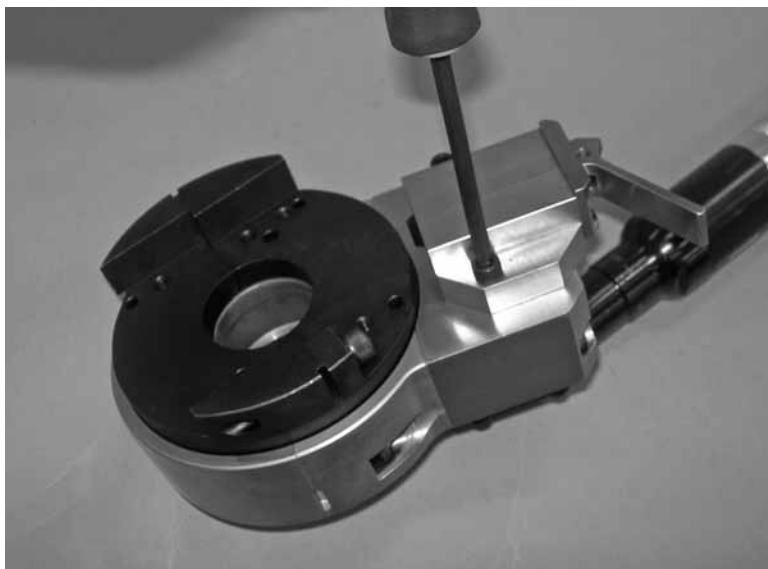


Figure 5-5. Install the radial or axial trip assembly as shown.

3. Always use the radial trip assembly with radial tool slides and the axial trip assembly with the axial tool slides. Refer to Table 1 on page 52.

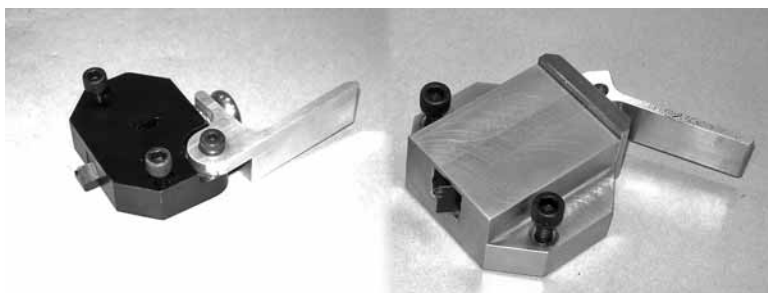


Figure 5-6. Use the radial trip (left) with the radial tool slides, and use the axial trip (right) with the axial tool slides.

Installing the Axial Slide

1. Use a 3/16" hex wrench to turn the starwheel clockwise to fully retract the tool slide.




NOTE

The axial trip pin should be flush with the edge of the assembly when disengaged.



CAUTION


Using the wrong trip for the installed slides will cause damage. Refer to Table 1 on page 52.

 **NOTE**
Axial tool slides must be detached from the SDSF before tooling is inserted or removed.

2. Loosen the tool set screw with a 3/16" hex wrench.
3. Select the tool bit appropriate for the desired cut, and slide the tool bit into the tooling slot.
4. Tighten the tool set screw.
5. Align and tighten the two mounting screws to attach the tool slide to the SDSF.



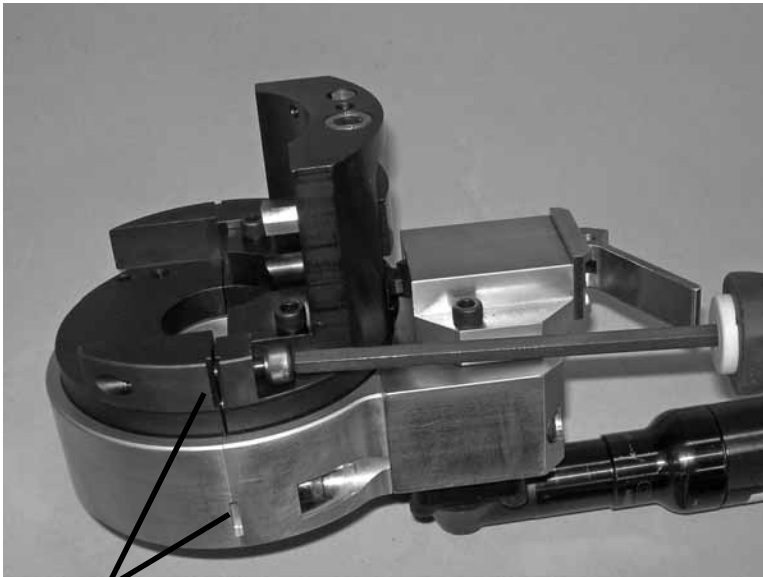
Figure 5-7. Attach the axial slide to the SDSF after mounting the desired tooling.

 **NOTE**
The SDSF does not need to be split if mounting the machine on open-ended pipe. Simply install it over the end of the pipe with the tool slides out (towards the cut-off end).

MOUNTING THE MACHINE ON THE PIPE

The SDSF is designed to mount on inline pipe. All components split open so they can be assembled around the workpiece.

1. Turn the rotating ring so that the split points of the rotating and stationary rings are aligned.
2. Loosen the frame locking screws with a 1/4" hex wrench to separate the two halves of the SDSF. Pull the halves of the SDSF apart.



Split points

Figure 5-8. The split points on the rotating ring and stationary ring must be aligned to separate the halves of the SDSF.

3. Place the two halves of the SDSF around the pipe to be cut. If necessary, insert frame locking detent pins into the pinholes to prevent the rotating ring from moving while the SDSF is split.
4. Partially tighten one frame locking screw on the stationary ring and one screw on the rotating ring.



CAUTION

The SDSF will rotate freely on the pipe until the clamp legs or collet are tightened. Support the machine so it does not spin or shift on the pipe. Failure to do so could result in injury.

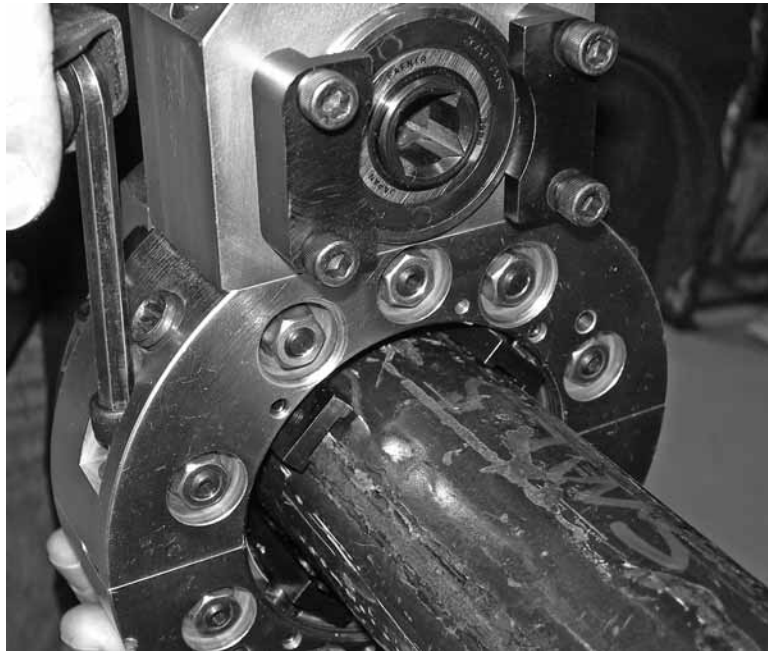


Figure 5-9. Tighten the frame locking screws to attach the SDSF around inline pipe.

5. Remove all frame locking detent pins (if used).
6. Securely tighten all four frame locking screws.

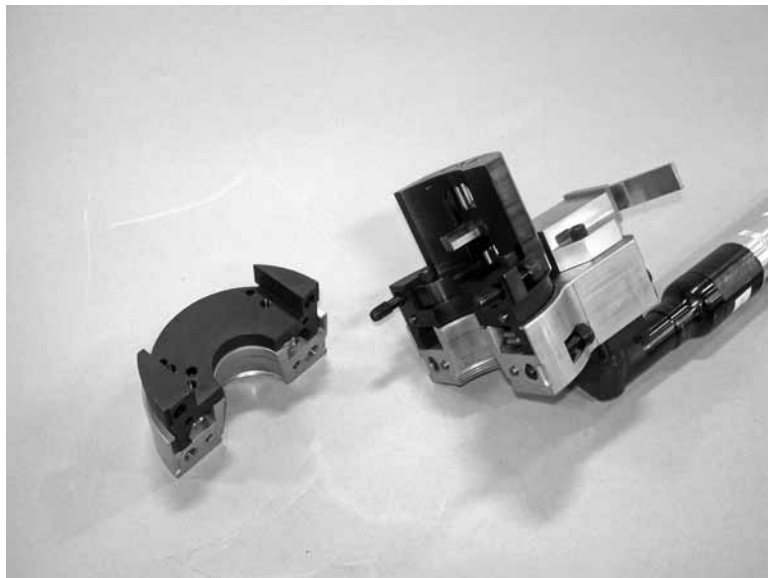


Figure 5-10. The photo shows the two halves of the SDSF split apart.

Adjusting the Clamp Feet

Most Small Diameter Split Frame machines mount using clamp feet. If using a collet, go to the next section.

1. Starting with the clamp foot closest to the 12 o'clock position, tighten the clamp foot screw with a 1/4" hex wrench until the gap at the top and the bottom of the machine are approximately equal.
2. Snug the clamp foot at the 6 o'clock position.

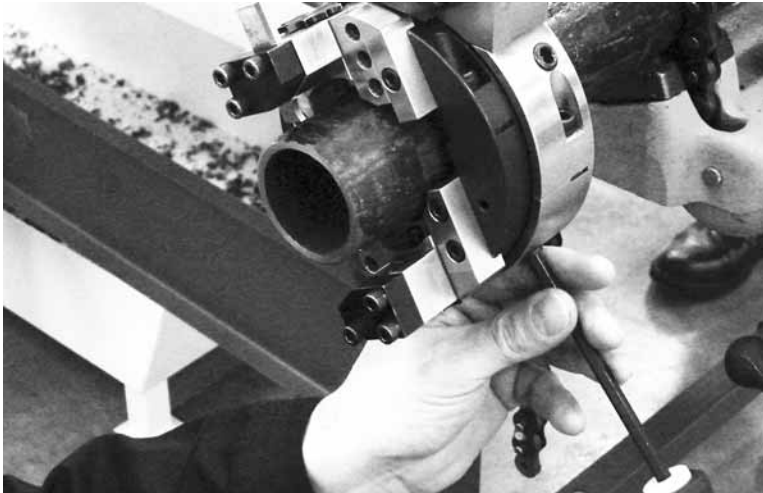


Figure 5-11. Use a hex driver to square the SDSF with the clamp pads.

3. Measure the gap between the pipe and the SDSF at the 6 o'clock and 12 o'clock positions. Loosen the clamp foot on the side with the larger gap, and snug the opposite foot. Continue until both gaps are within 0.03" (0.78 mm).
4. Repeat the centering procedure for the clamp feet at the 3 and 9 o'clock positions. At this point the machine should be fairly square.
5. When the machine is squared and centered, tighten down all 4 clamp feet to a maximum of 50 lb-ft (67 N-m).



IMPORTANT

Tighten the clamp leg screws to a **maximum** of 50 lb-ft (67 N-m).



Figure 5-12. Tighten the clamp feet as indicated.

Collet Mounting

The SDSF is best mounted using a collet if you have a collet precisely sized for the pipe you are cutting. The 1" and 1-1/2" SDSF only use collet mounting.

1. Remove the collet nut from the machine. Use the collet wrench to loosen it if necessary.
2. Loosen the captivated screws in the collet nut.



NOTE

The SDSF does not need to be split if mounting the machine on open-ended pipe. Simply install it over the end of the pipe with the tool slides out (towards the cut-off end).



Figure 5-13. Remove the collet from the SDSF before mounting the machine on the pipe.

3. Turn the rotating ring so that the split points of the rotating and stationary rings are aligned.

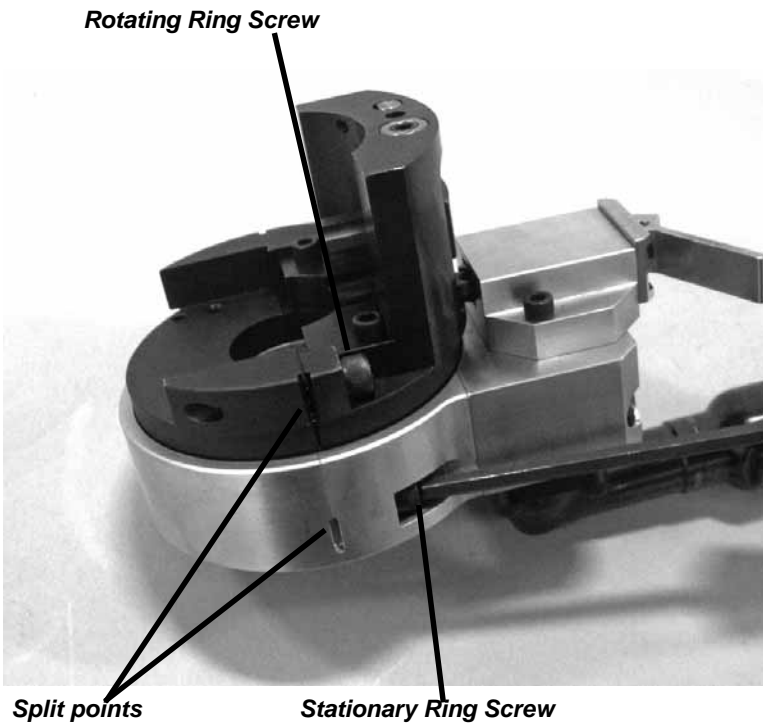


Figure 5-14. The SDSF split points can be wedged apart if necessary.

4. Loosen the two captivated screws in the stationary ring with a 1/4" hex wrench.
5. Loosen the two captivated screws in the rotating ring using a 1/4" hex wrench.



Figure 5-15. Loosen the frame locking screws in both the rotating and stationary rings.

6. Pull the two halves of the machine apart.
7. Assemble the collet nut around the work piece. Tighten the captivated screws.
8. Assemble the collet around the work piece. The wider edge of the collet plates should face toward the collet nut threading.

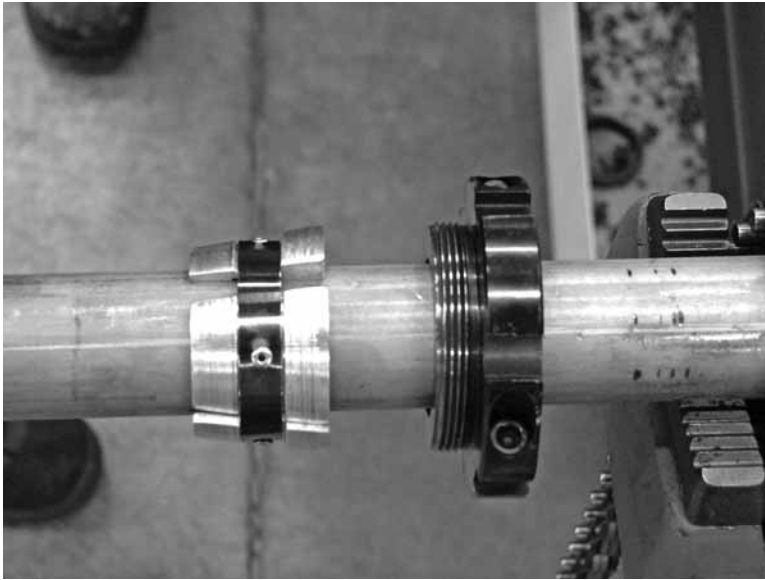


Figure 5-16. Arrange the collet and collet nut as shown.

9. Attach the SDSF around the work piece. The narrow edge of the collet plates should face toward the SDSF.



Figure 5-17. The collet mounting is self-centering when assembled properly.

10. Slide the collet into the I.D. of the SDSF with finger pressure.



Figure 5-18. Slide the collet into the SDSF near the cut line.

11. Screw the collet nut into the SDSF. The collet nut has left handed threading.
12. Tighten the collet nut using the collet wrench.



Figure 5-19. Turn the collet nut counter-clockwise to tighten it.

MOUNTING THE DRIVE MOTOR

Pneumatic Drive

1. Loosen the motor clamp screws farthest from the SDSF stationary ring using a 3/16" hex wrench.
2. Swing the clamps down, clearing space for the drive flange.



Figure 5-20. Pivot the clamps downward to attach the drive.

3. Attach the drive to the pinion housing. Turn the motor as required to engage the square shaft in the pinion.
4. Swing the clamps back into place, and tighten all screws.



WARNING

Ensure the motor clamps are secure before operating the SDSF. Keep hands clear while the machine is operating.



NOTE

Use of an air treatment module (80-4202-00) is recommended when using the air motor. Lubricate the air motor with air motor oil daily.



NOTE

The clamps hold the gear in place. Do not remove the clamps completely unless you are replacing the gear.



NOTE

If the motor covers one screw, snug it using finger pressure, and tighten the other three. Do not overtighten the clamp screws.



Figure 5-21. Tighten the motor clamp screws to secure the motor in place.

110 V Electric Drive

The electric drive mounts using motor clamps with hex head screws. This is so that you can tighten the screws with a combination wrench (provided).



NOTE

When the electric drive is purchased as an accessory, it includes clamps with hex head screws and a 7/16" combination wrench to tighten them.

If your SDSF came in electric drive configuration, it is pre-fitted with the hex head screws. If you are installing the electric drive on an air configuration SDSF, you will need to remove the clamps with socket head cap screws and install the clamps with the hex head screws.

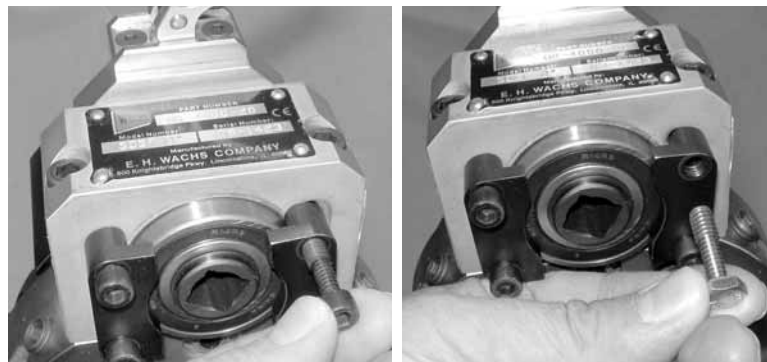


Figure 5-22. To convert an air drive SDSF to use the electric drive, remove the socket head cap screws in the motor clamps and install the hex head screws.

1. Loosen the hex head motor clamp screws farthest from the SDSF stationary ring, using the 7/16" combination wrench if necessary.
2. Swing the clamps down, clearing space for the drive flange.



Figure 5-23. Loosen the clamp screws and swing the clamps downward to provide clearance for attaching the electric drive.

3. Attach the drive to the pinion housing. Turn the motor as required to engage the square shaft in the pinion.

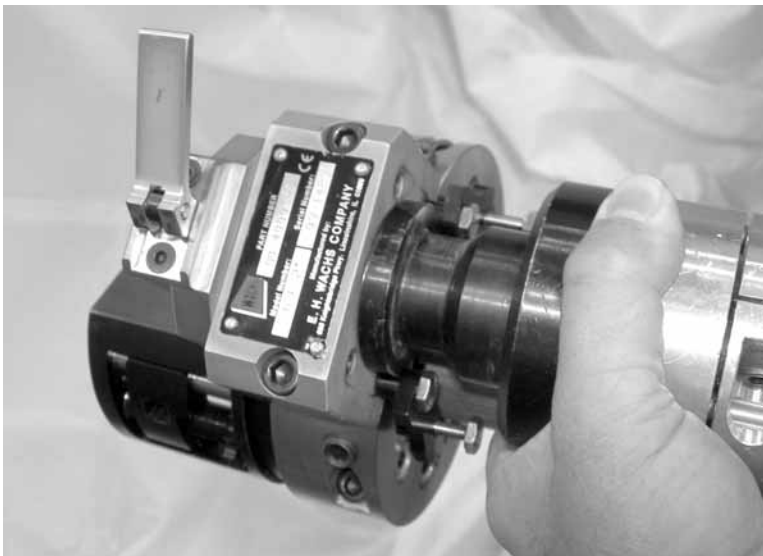


Figure 5-24. Install the electric drive, pressing the drive flange flush against the pinion housing.



NOTE

The clamps hold the gear in place. Do not remove the clamps completely unless you are replacing the gear.



WARNING

Ensure the motor clamps are secure before operating the SDSF. Keep hands clear while the machine is operating.

4. Swing the clamps back into place, and tighten all screws.



Figure 5-25. Put the clamps back in place over the flange and tighten the clamp screws with the supplied 7/16" combination wrench.

PARTING AND BEVELING

1. Attach a compressed air hose to the pneumatic drive, or supply power to the electric drive.
2. Turn the starwheels on the tool slides counterclockwise to remove backlash.
3. Engage the trip by pushing the trip lever so the starwheel strikes the trip pin.



NOTE

Make sure the pipe is supported on both sides of the cut line.

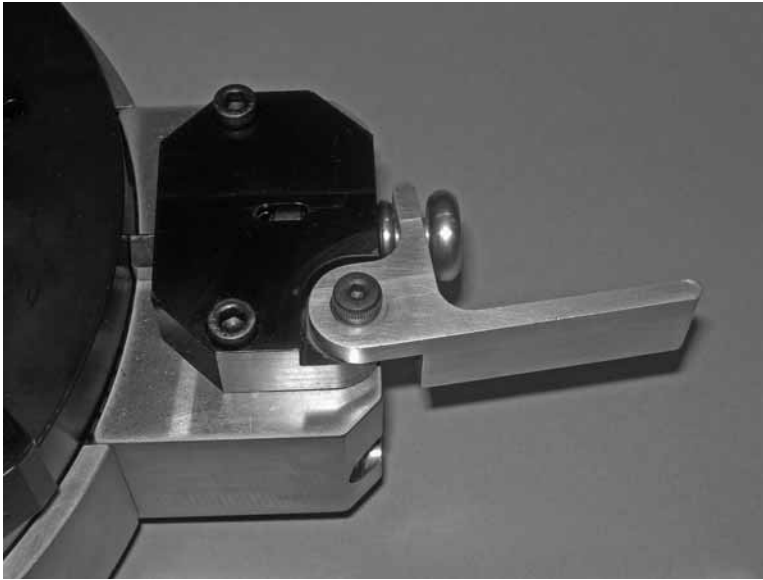


Figure 5-26. The radial trip is shown in the engaged position.

4. Engage the drive motor at low speed through one revolution to check the tool clearance around the pipe O.D.
5. Disengage the drive motor, and stop the machine where you can access the starwheel on the parting slide.
6. Turn the starwheel counterclockwise until the tip of the tool is about 1/16" from the pipe surface at its closest point to the pipe.
7. Repeat step 6 for the parting/beveling slide.



CAUTION

Keep hands and clothing clear of moving parts when the machine is operating. Failure to do so could result in injury.

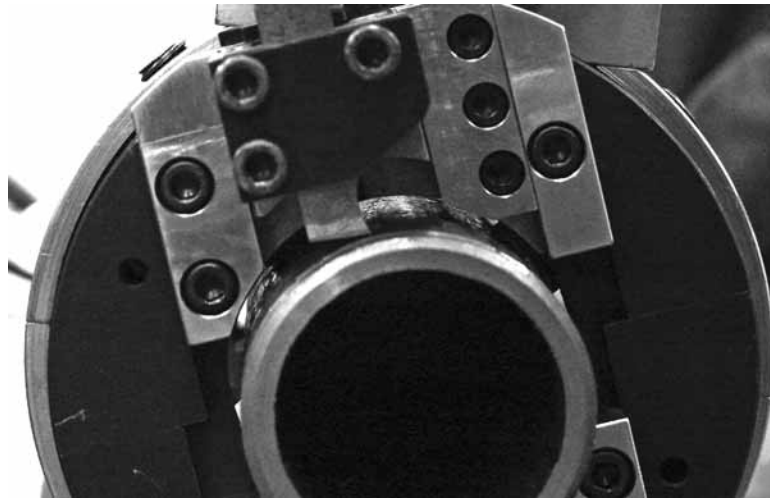


Figure 5-27. The tool bit should only contact the pipe after the machine begins to run.



NOTE

After the cut, loosen the parting tool cover plate before retracting the slide to avoid chipping the parting tool.

8. Start the drive motor to run the machine. When the tool starts cutting the pipe, apply water soluble coolant (02-406-00) frequently to keep the cutting surface lubricated.
9. The beveling tool should closely follow the parting tool. To adjust this, stop the machine and turn the starwheel on the parting/beveling slide.
10. Operate the machine until the pipe is cut through. Turn off the drive motor, and disconnect power or air supply.
11. Leave the machine mounted on the pipe if you will be performing a counterbore.

COUNTERBORING

The universal counterbore assembly is used to counterbore tube and pipe. The counterbore assembly mounts on the radial parting/beveling slide. The starwheel is used to set the I.D. of the counterbore, and the hand wheel is used to feed the tool into the pipe axially.

1. Retract the parting slide completely by rotating the starwheel clockwise using a 3/16" hex wrench.
2. Retract the beveling slide roughly halfway.

3. Remove the parting and beveling tooling.
4. Remove the parting/beveling tool cover plate.
5. Remove the trip assembly.
6. Mount the universal counterbore assembly to the parting/beveling slide. Snug the side screws first, and then tighten the top screws.

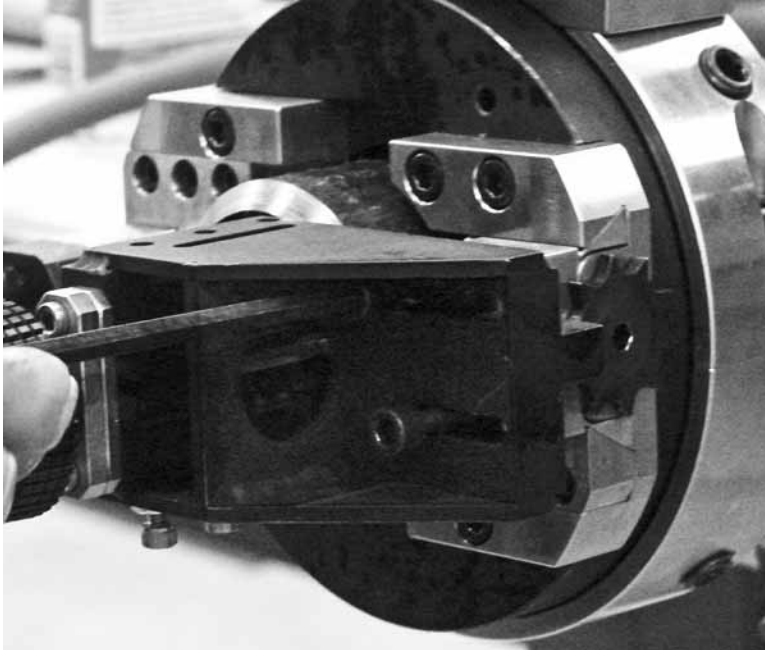


Figure 5-28. Tighten the top screws after securing the counterbore slide with the side screws.

7. Rotate the starwheel counterclockwise until the counterbore tool lightly touches the I.D. of the pipe.
8. Measure the radial depth of the counterbore.
9. Turn the hand wheel to move the tool axially away from the pipe face.

**NOTE**

Each point on the starwheel adds 0.006" to the diameter of the counterbore.

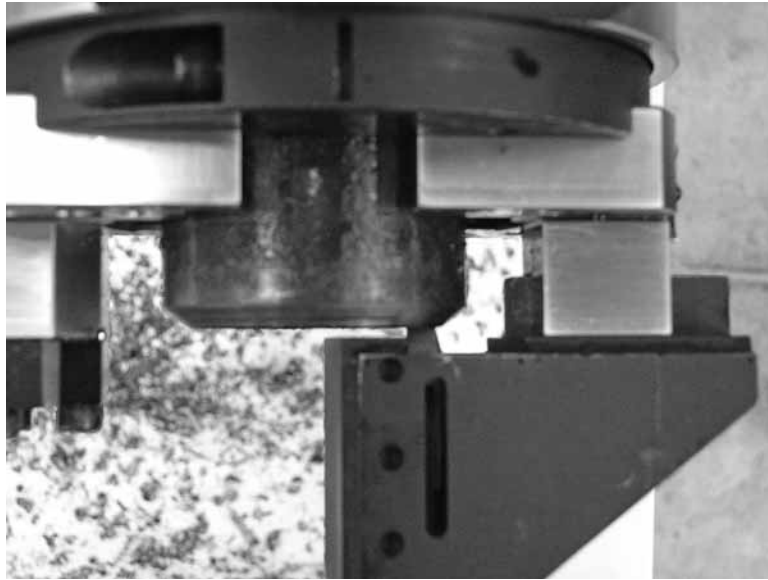


Figure 5-29. Do not start the drive motor with the counterbore tool touching the I.D. of the pipe.

10. Engage the air motor.
11. Grab and hold the feed wheel to engage the tool.

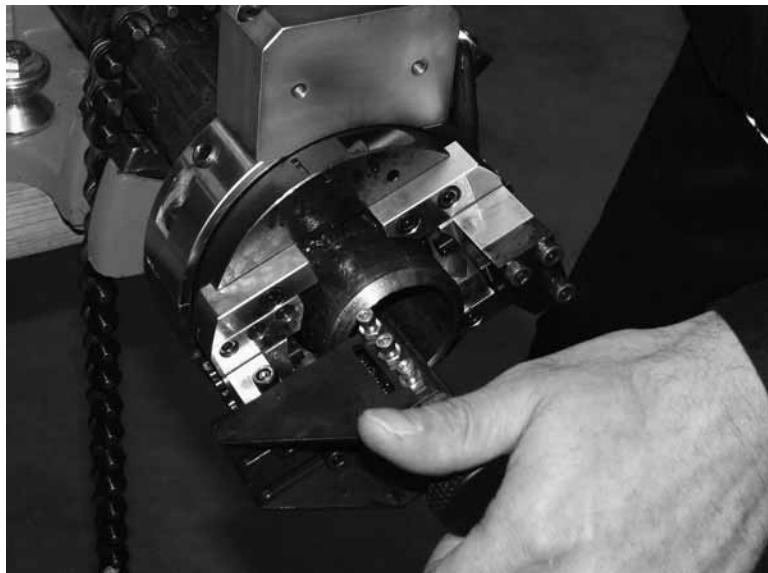


Figure 5-30. Run the machine until the desired counterbore depth is reached.

12. Once the tool begins to cut, release the feed wheel.

13. Hold the feed wheel for approximately 1/8 turn per revolution to gradually feed the tool into the pipe axially to the required depth of the counterbore.
14. Withdraw the tool when the counterbore depth is reached.
15. Turn the starwheel clockwise to adjust the diameter of the counterbore.
16. Repeat the above steps until the desired diameter of the counterbore is reached.
17. Once the counterbore is complete, turn off the motor and disconnect the air or power supply.

SOCKET WELD REMOVAL

As a general rule, use the radial slide if you wish to reuse the socket, and use the axial slide if you want to save the pipe. However, both operations can be performed with either slide.

Radial Socket Weld Removal

1. Mount the radial socket weld slide and the radial trip to the SDSF.
2. Fully retract the tool slide using a 3/16" hex wrench.
3. Mount the SDSF close to the socket weld so the tool slide can be as far back as possible when beginning the cut.
4. Turn the starwheel counter-clockwise until the tip of the tooling is about 1/16" from the weld material at its closest point to the pipe.
5. Start the drive motor to run the machine. When the tool starts cutting the pipe, apply water-soluble coolant (02-406-00) frequently to keep the cutting surface lubricated.
6. When all welding material is removed, the socket and pipe will easily separate.



NOTE

Remove all other slides and trip assemblies before configuring the SDSF for socket weld removal.



NOTE

Remove all other slides and trip assemblies before configuring the SDSF for socket weld removal.



NOTE

The axial socket weld slide can be used on all 3000# and 6000# sockets. For heavier sockets, check the clearance on the axial socket weld slide envelope drawing at the end of Chapter 3.

Axial Socket Weld Removal

1. Mount the axial socket weld slide and the axial trip to the SDSF.



Figure 5-31. The photo shows the axial socket weld slide in position for socket weld removal.

2. Fully retract the tool slide using a 3/16" hex wrench.
3. Mount the SDSF close to the socket weld so the tool slide can be as far back as possible when beginning the cut.

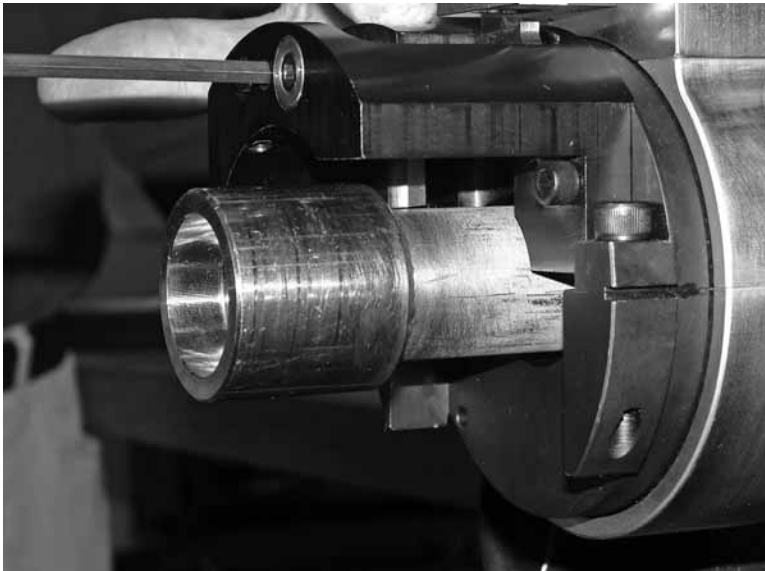


Figure 5-32. Adjust the tooling so it is close to the weld material before beginning the cut.

4. Turn the starwheel counter-clockwise until the tip of the tooling is about 1/16" from the weld material at its closest point to the pipe.
5. Start the drive motor to run the machine. When the tool starts cutting the pipe, apply water-soluble coolant (02-406-00) frequently to keep the cutting surface lubricated.
6. When all welding material is removed, the socket and pipe will easily separate.

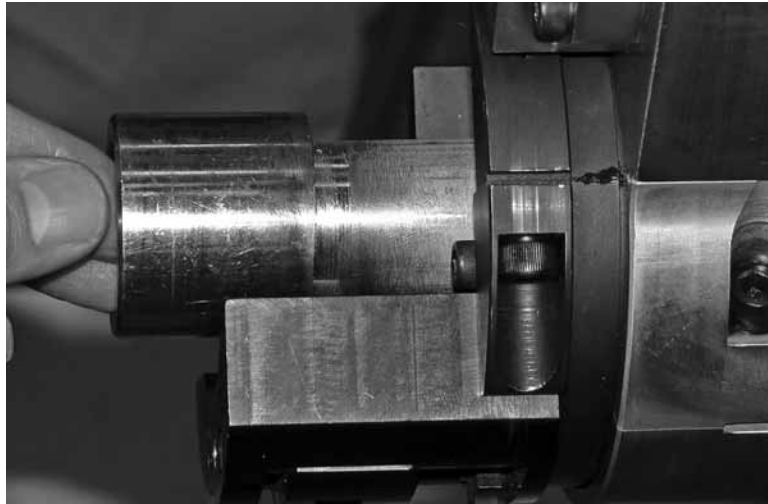


Figure 5-33. The socket can be reused after it is removed from the pipe.

FOREIGN MATERIAL EXCLUSION CUTTING

Foreign material exclusion cutting (FME), also known as blue-line cutting, is used for high-purity applications. Mount the machine normally, and then follow these steps.

1. Mount the radial slides on the SDSF.
2. Insert parting tools into both of the radial slides. Using parting tools in both slides prevents burrs from entering the I.D.
3. Run the machine until the cut is within 0.03" - 0.09" (0.8 - 2.3 mm) of the pipe I.D.
4. Stop the machine and remove the radial slides.
5. Install the FME slide by aligning and tightening the three slide mounting screws. Adjust the slide using the starwheel so that the wheel cutter is almost touching the pipe surface in the groove.

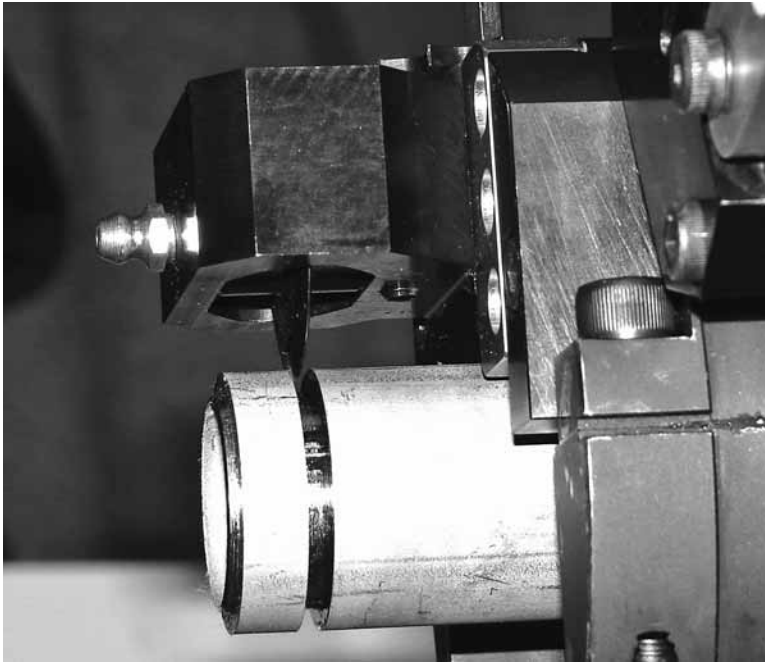


Figure 5-34. The cutting wheel should be just above the O.D. of the cut before the machine is turned on.

6. Operate the machine until the pipe is cut through. Turn off the drive motor, and disconnect the power or air supply.

REMOVING THE MACHINE

Clamp Feet Mounting

1. Remove the drive (pneumatic or electric) from the SDSF.
2. Retract the tool slides and loosen the tool bits. If using a parting tool, loosen the parting tool cover plate slightly to avoid chipping the tool bit.
3. Loosen the clamp foot screws with a 1/4" hex wrench
4. Align the split points on the rotating ring and the stationary ring.
5. Loosen the frame locking screws, and pull the SDSF apart. Use equal pressure on both halves of the rings.



CAUTION

The SDSF will rotate freely on the pipe when the clamp legs or collet are loosened. Support the machine so it does not spin or shift on the pipe. Failure to do so could result in injury.



CAUTION

The SDSF will rotate freely on the pipe when the clamp legs or collet are loosened. Support the machine so it does not spin or shift on the pipe. Failure to do so could result in injury.

Collet Mounting

1. Remove the drive (pneumatic or electric) from the SDSF.
2. Retract the tool slides and loosen the tool bits. If using a parting tool, loosen the parting tool cover plate slightly to avoid chipping the tool bit.
3. Remove the collet nut using the collet wrench.



Figure 5-35. Turn the collet nut clockwise to loosen it.

4. Loosen the collet nut screws with a 3/16" hex wrench, and pull the collet nut apart.
5. Align the split points on the rotating ring and stationary ring of the SDSF.
6. Loosen the frame locking screws, and pull the SDSF apart. Use equal pressure on both halves of the rings.
7. Remove the collet from the pipe.

REMOTE OPERATION WITH THE SF ACM

The split frame air control module (SF ACM) provides remote operation for E.H. Wachs split frame machines. The ACM is fully self-contained, requiring no power source other than compressed air. It is enclosed in a durable case that includes a handle and wheels for easy portability.

The SF ACM works with all LCSF and SDSF pneumatic drives:

- adapter 90-302-02 is required to operate the LCSF
- adapter 90-302-01 is required to operate the SDSF.

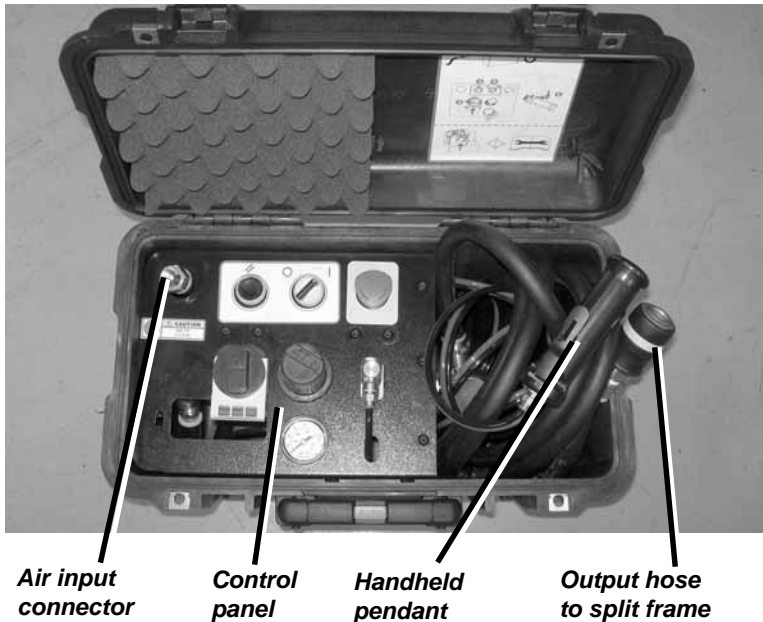


Figure 5-36. The photo shows the major components of the SF ACM. The case includes wheels and a retractable handle for easy transport.

Connectors

Input	1/2" female NPT (1/2-18 NPT per ANSI B1.20.1). Install appropriate fitting for your air supply.
Output	Quick disconnect to air motor fitting, provided (part no. 90-302-01 for SDSF; part no. 90-302-02 for LCSF).

Control Panel Reference

Figure 5-37 illustrates and describes the features of the ACM control panel.

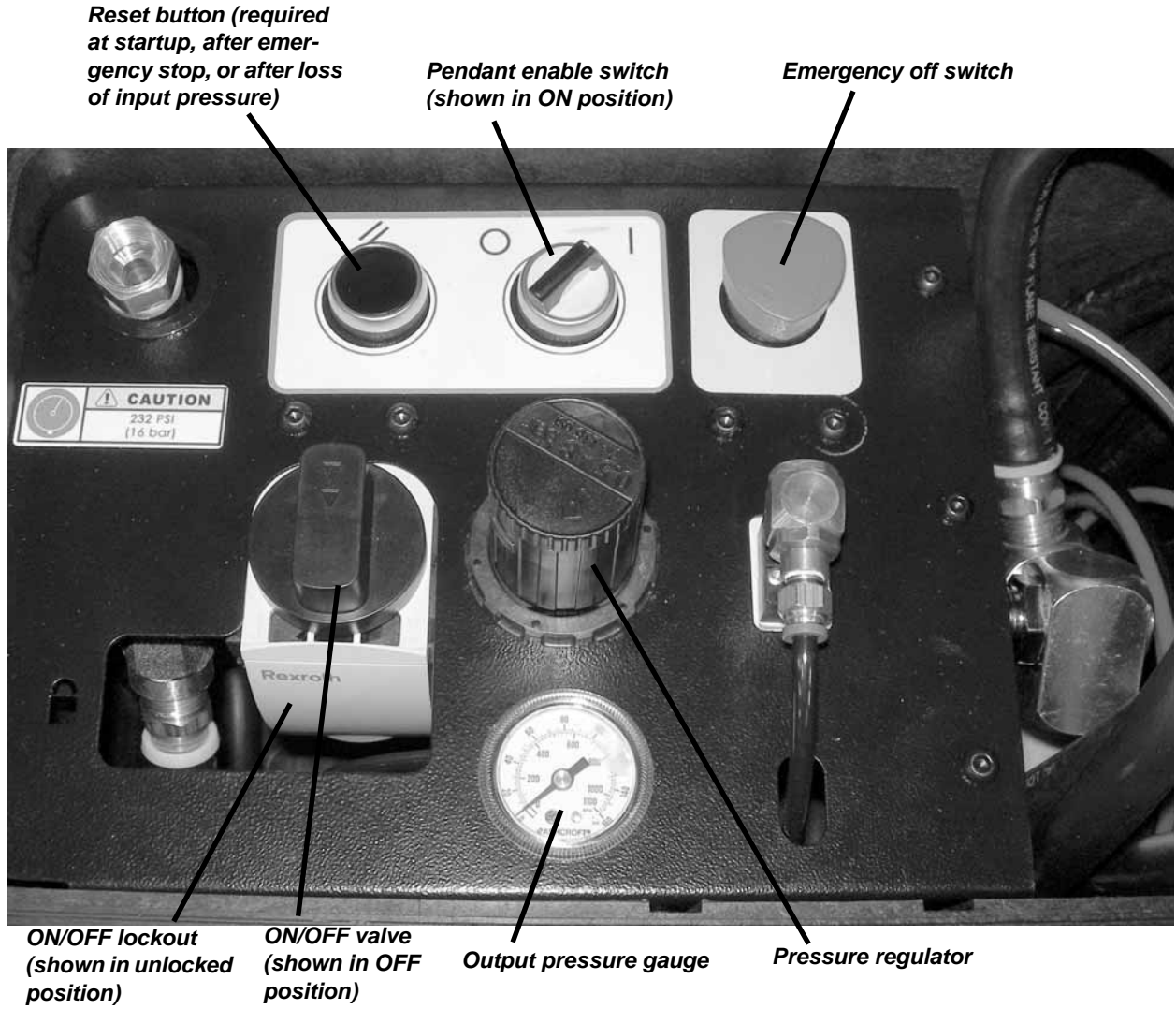


Figure 5-37. The photo illustrates the ACM controls.

Locating the ACM at the Worksite

Before you connect the ACM, decide where you will locate it for operating the split frame machine.

- The ACM has a 15 ft (4.6 m) output hose, allowing you to locate it up to 15 ft from the split frame.
- The ACM remote pendant has a 6 ft (1.8 m) hose. You must stand within this distance of the ACM while operating the split frame, so that you have ready access to the controls and emergency stop.

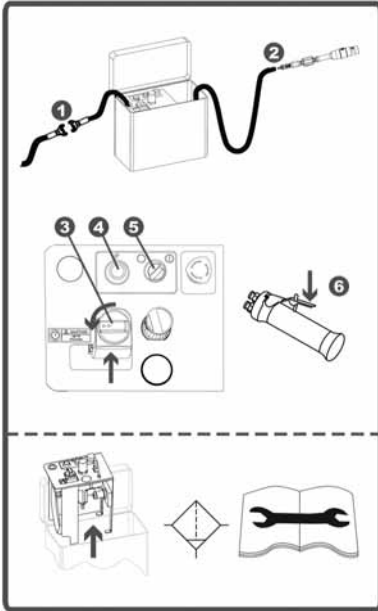


Figure 5-38. Position the ACM at a convenient distance from the split frame machine.



NOTE

An instruction sticker for setting up and operating the ACM is attached to the inside of the case lid.



ACM Operation Sticker (part no. 60-1296-00).



NOTE

The ACM is supplied with a female 1/2" NPT fitting on the input connector. Install an appropriate coupling for your air supply line.

Operating the ACM

Before connecting the ACM, mount the split frame machine on the workpiece as described in the machine's user manual. Set up the machine so that it is ready to operate, and install the air drive on the machine.

The air drive must be configured to be "always on" for use with the ACM. See "Configuring the Air Drive for the ACM" on page 90.

Before connecting the ACM, the control panel should be in the pre-operation state, as shown in Figure 5-39.



Figure 5-39. The ACM controls should be in the pre-operation state, as shown, before connecting the air lines.

1. Make sure the air supply is turned off at the source.
2. Attach the air supply line to the input connector of the ACM.



Figure 5-40. Connect the line from the air source to the input connector on the ACM.

3. Remove the output hose and control pendant from the case. Connect the output hose to the air drive connector on the split frame machine.
4. Align the air motor and route all hoses so that the hoses do not come in contact with any moving parts.



Figure 5-41. Route the hoses so they do not touch moving parts of the split frame.



CAUTION

Do not allow the hoses to contact moving parts. This could damage the hoses or components of the split frame.



NOTE

The quick disconnect on the ACM output hose requires a specific fitting on the air motor. This fitting is provided with the ACM (90-302-01 for SDSF; 90-302-02 for LCSF).

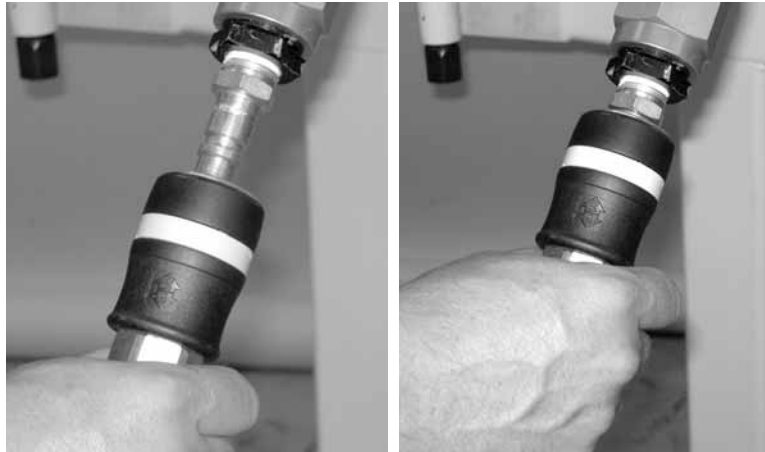


Figure 5-42. Connect the ACM output hose to the air motor fitting.

5. Turn on the air supply at the source.
6. Make sure the emergency stop button on the control panel is pulled out.
7. Push in the lock-out tab on the ON/OFF valve.



Figure 5-43. Press in the lock-out tab to enable the ON/OFF valve.

8. Turn the ON/OFF valve counter-clockwise to the ON position.



Figure 5-44. Turn the ON/OFF valve counter-clockwise to the ON position (shown in OFF position).

9. Press the Reset button on the control panel.



Figure 5-45. The Reset button resets the ACM after a loss of pressure or an emergency stop.

10. Turn the Remote Enable switch to the ON position.



NOTE

You do not need to press Reset every time you restart the machine. Reset is required only after loss of supply pressure or an emergency stop.



CAUTION

Keep the pendant and its hoses away from moving parts. Allowing hoses to contact the equipment could damage them.



NOTE

The maximum output pressure is 116 psi (8.0 bar).

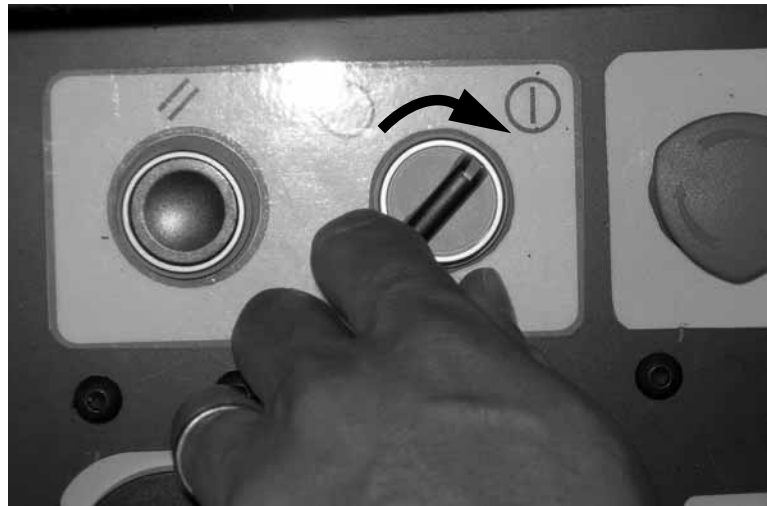


Figure 5-46. Turn the Remote Enable switch on to allow operation using the handheld pendant.

11. The handheld pendant will now operate the split frame machine.



Figure 5-47. Squeeze the trigger on the handheld pendant to operate the machine.

Adjusting the Output Pressure

Use the pressure regulator on the control panel to adjust the output pressure to 90 psi (6.2 bar).

1. Pull the knob up and turn it to adjust the pressure.

- To **increase** pressure, turn it **clockwise**.
- To **decrease** pressure, turn it **counter-clockwise**.

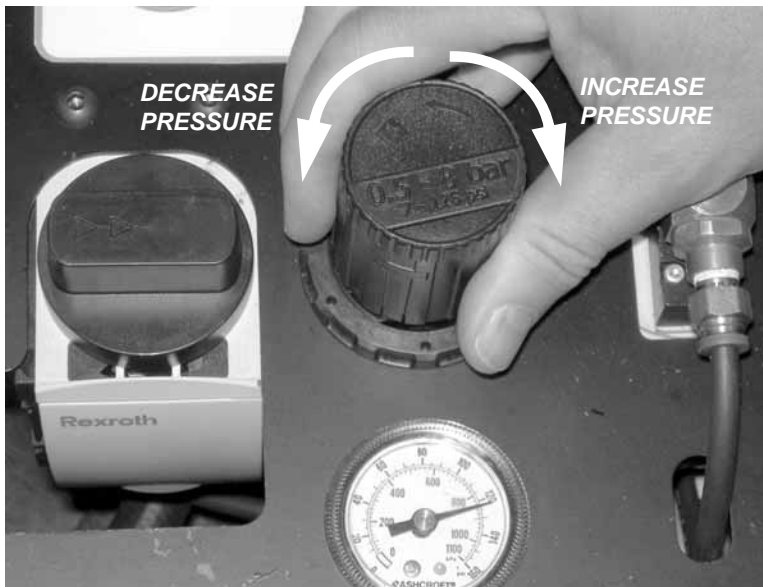


Figure 5-48. Pull up on the pressure knob and turn it to adjust the pressure.

2. To lock the pressure regulator so that it can't be adjusted, turn the knob (without pulling it) to expose the lock tabs. You can install a lock on the tabs.



Figure 5-49. Without pulling the pressure knob, you can turn it to expose the lock tabs. Put a lock through the tab to prevent the pressure from being adjusted.

Using the Venting Quick Disconnect

A venting quick disconnect is provided on the air line that connects to the air drive of the split frame machine. This disconnect offers two convenient features:

- A “release position” vents line pressure before you disconnect the air line from the drive.
- The connector closes when it is disconnected, preventing air flow from a loose air line.

Operate the venting quick disconnect as shown in the following figures.

1. To connect the air line, push the disconnect onto the fitting until it clicks and locks in place.



Figure 5-50. Push the air line disconnect onto the air drive fitting until it locks in place.

2. To release the air line, first pull the collar back to the release position. The disconnect will come partly off the fitting and the line pressure is released.

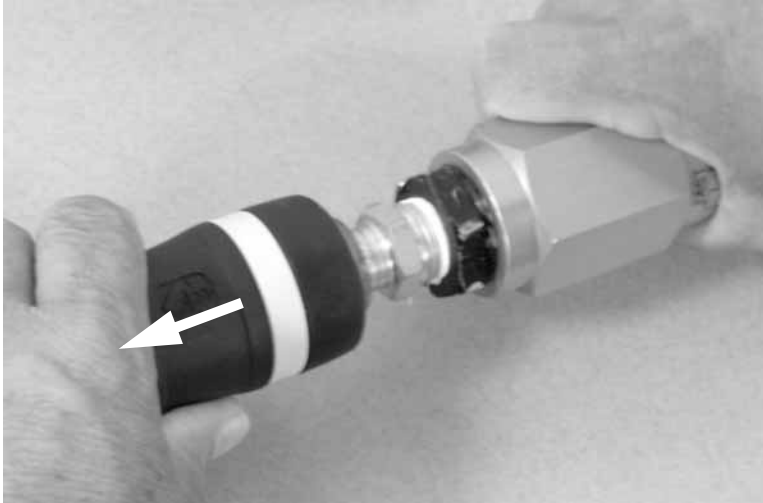


Figure 5-51. To release the disconnect, pull the collar back. The disconnect will snap back to the release position. (This will vent air in the air line.)

3. To fully remove the air line, press the collar forward and pull the disconnect off the fitting.



Figure 5-52. Push the collar forward and pull the disconnect to remove it from the fitting.



NOTE

A symbol on the disconnect shows the steps to remove it from the fitting.



Configuring the Air Drive for the ACM

Air Fitting

The quick disconnect on the ACM output hose requires a specific air nipple fitting on the air motor. This nipple is provided with the ACM (part no. 90-302-01 for the SDSF; part no. 90-302-02 for the LCSF). Remove the existing fitting on the air motor and install the replacement nipple.



Figure 5-53. Install the supplied nipple onto the air motor for use with the ACM.

Air Trigger Modification

For remote operation, the air drive on the split frame must be modified for an “always on” configuration. Two alternatives for this configuration are provided with the ACM:

- A trigger strap for temporary use.
- An “open throttle plate” for long-term or permanent use.

Both devices fully open the on/off valve on the air drive. *Use the air drive with these devices installed **only** when you are operating the split frame with the ACM.*

To use the trigger strap, wrap it around the air drive trigger, pull it tight through the buckle, and attach the Velcro.

Use the following procedure to install the open throttle plate.

1. Disconnect the air supply from the air drive, and remove it from the split frame machine. Set it on a workbench or stable work surface.
2. With a hammer or mallet and a punch, drive out the mounting pin holding the trigger to the air drive. Remove the trigger.



Figure 5-54. Use a punch to drive out the pin holding the air trigger.

3. Put the open throttle plate in place at the trigger location, and insert the pin.



Figure 5-55. Attach the open throttle plate with the trigger pin.

4. With the hammer and punch, drive in the pin until it is flush

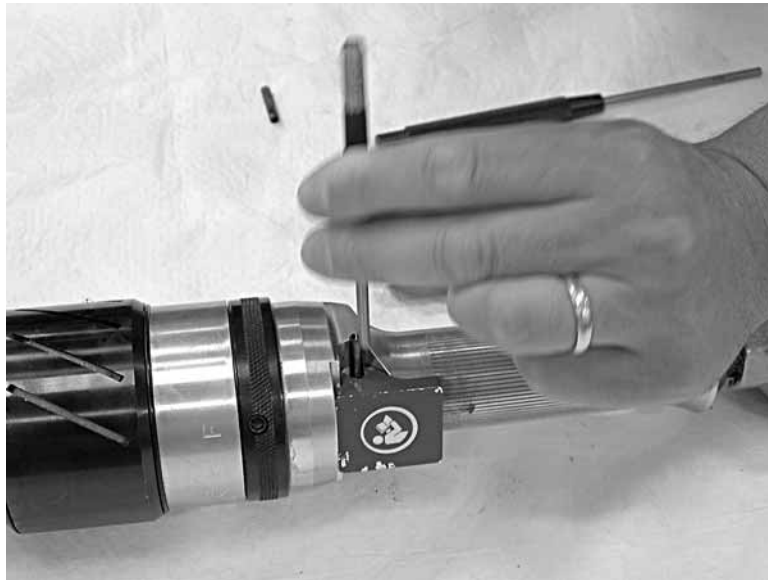


Figure 5-56. Drive in the pin to secure the open throttle plate.

5. The open throttle plate holds the air valve open on the motor.



Figure 5-57. The photo shows the correct installation of the open throttle plate.



CAUTION

When the open throttle plate is installed, do not connect the air drive directly to an air source. Use it only with the ACM. Turning on the air supply with the throttle open could cause damage or injury.

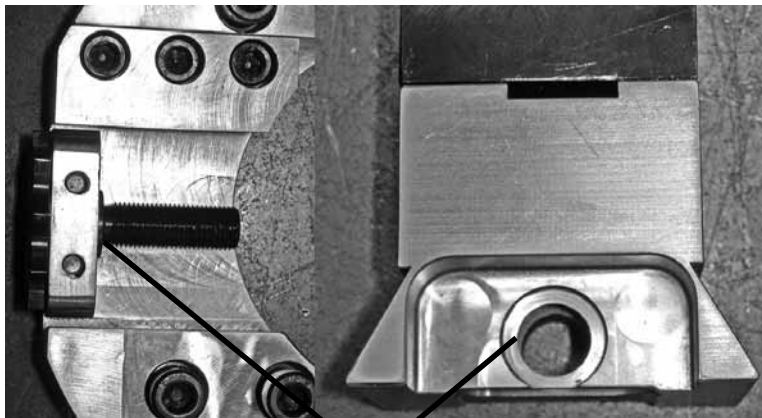
Chapter 6

Routine Maintenance

LUBRICATION

Slides

Clean and oil the threads on the tool block and slide block each time you use the machine. Lubricate using way oil.



Lubrication point

Figure 6-1. Lubricate the tool slides in the locations shown.

In This Chapter

LUBRICATION

BEARING ADJUSTMENT

TOOL SLIDE TENSION
ADJUSTMENTS

AIR MOTOR MAINTENANCE

Air Treatment Module

Air Filter Housing



Air Motor

Air Motor Oiler

Speed control valve

Figure 6-2. The air treatment module (80-4202-00) is shown with the air motor above. The speed control valve should be oriented so the speed dial is adjacent to the air motor.

Use of an Air Treatment Module (ATM) is recommended when operating the SDSF. If you have an ATM from an E.H. Wachs Low Clearance Split Frame machine, you can use it with the SDSF.

Use a suitable air motor oil when running the air motor.

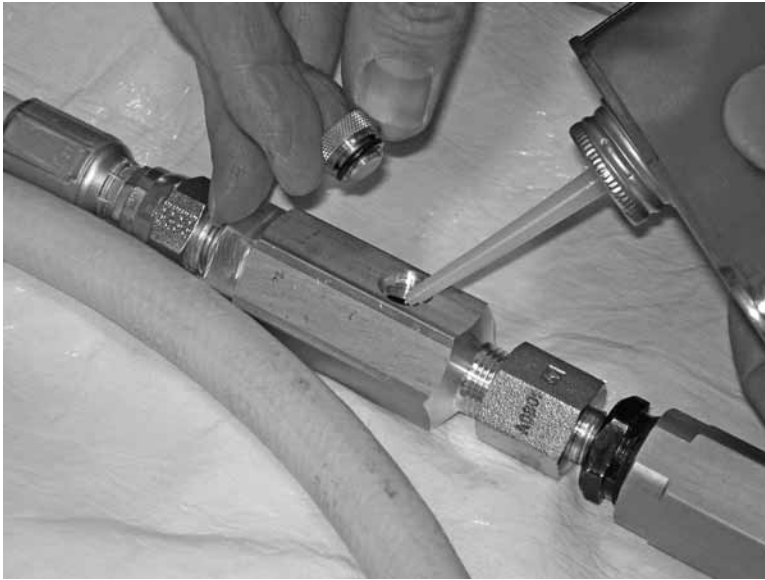


Figure 6-3. Fill the ATM with air motor oil daily.



Figure 6-4. Inspect the air filter weekly. Replace as needed.

If you disassemble the air motor components for service, make sure you replace the speed control valve in the correct direction.

Split Frame

Apply two drops of way oil to the felt wiper every time before storing the SDSF. If the SDSF does not have a felt wiper, apply two drops of oil to the bearing raceway before storing the SDSF.



Felt oil wiper

Figure 6-5. Apply oil to the felt wiper before storing the SDSF.

BEARING ADJUSTMENT

If there is wobble between the rotating and stationary rings, or if the rotating ring binds or is hard to turn, the bearings need to be adjusted. The SDSF can be returned to the factory for this, or you can perform the adjustment.

Adjust the bearings in numerical order as indicated in Figure 6-9 (for 1" to 2-1/2" models), or in Figure 6-10 (for 3" to 6" models).

1. Remove the motor clamps and pinion gear.
2. Tighten the frame locking screws on the rotating ring and the stationary ring.
3. Lock the SDSF pinion housing in a soft-jaw vice to make adjustment easier.

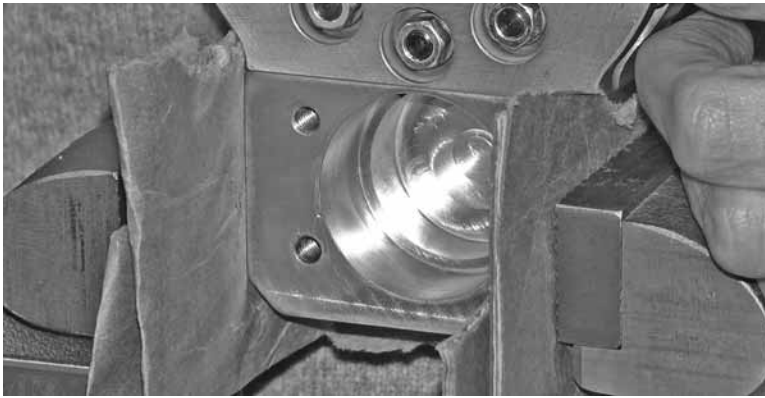
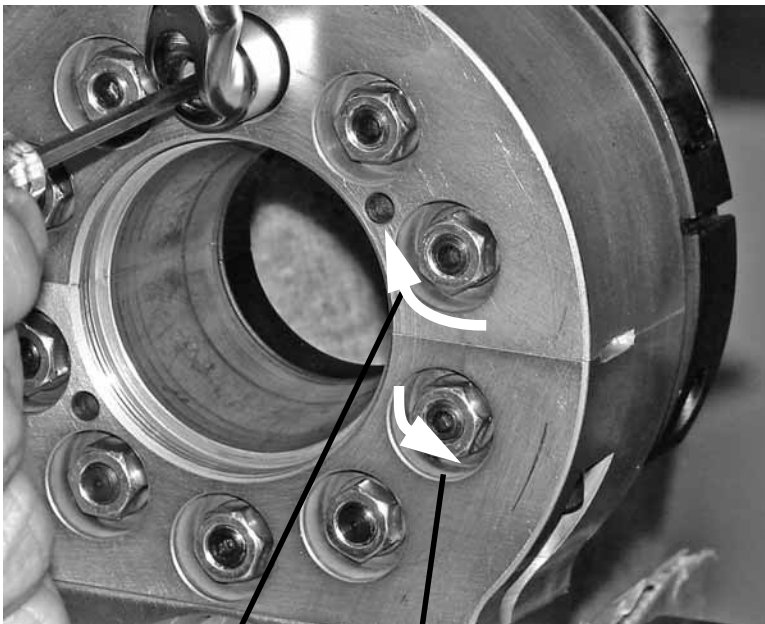


Figure 6-6. Use of a soft-jaw vice prevents damage to the SDSF pinion housing.

4. Use a 7/16" socket wrench to loosen all bearing nuts except those on the fixed bearing shafts at 5 and 7 o' clock.
5. Using a 1/8" hex wrench, turn all bearing shafts clockwise to loosen them.
6. Turn the topmost bearing shaft counterclockwise with a 1/8" hex wrench to firmly seat the bearing in the raceway.



**Bearing nut rotation to
tighten nut**

**Bearing shaft rotation to
tighten bearing**

Figure 6-7. Loosen the bearing nuts and bearing shafts as indicated.

7. Securely tighten (75-95 lb-in) the topmost bearing nut with the 7/16" hex-through torque wrench (90-800-84).



Figure 6-8. Tightening the topmost bearing centers all of the bearings.

8. Refer to the bearing adjustment order in Figure 6-9 for 1" to 2-1/2" machines, or Figure 6-10 for 3" to 6" machines. Using the 1/8" hex wrench, turn the bearing shaft lightly counter-clockwise until the bearing just touches. Hold the shaft and tighten the bearing nut using the 7/16" torque wrench.
9. Adjust the bottom-most bearings last. There is one bottom bearing on 1" to 2-1/2" machines, and two bottom bearings on 3" to 6" machines. (The bottom bearings are between the fixed bearings.)
10. Look through the slide mounting holes while turning the rotating ring to confirm all bearings turn. If more than one bearing isn't turning, loosen all bearings and start over. If all bearings are properly turning, the rotating ring will turn with a slight drag and will not spin freely.

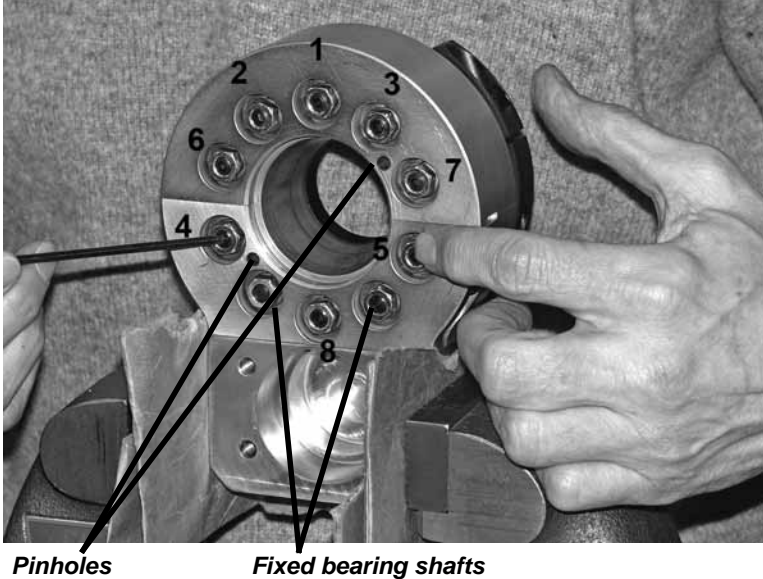


Figure 6-9. Adjust the bearings in numerical order as indicated.

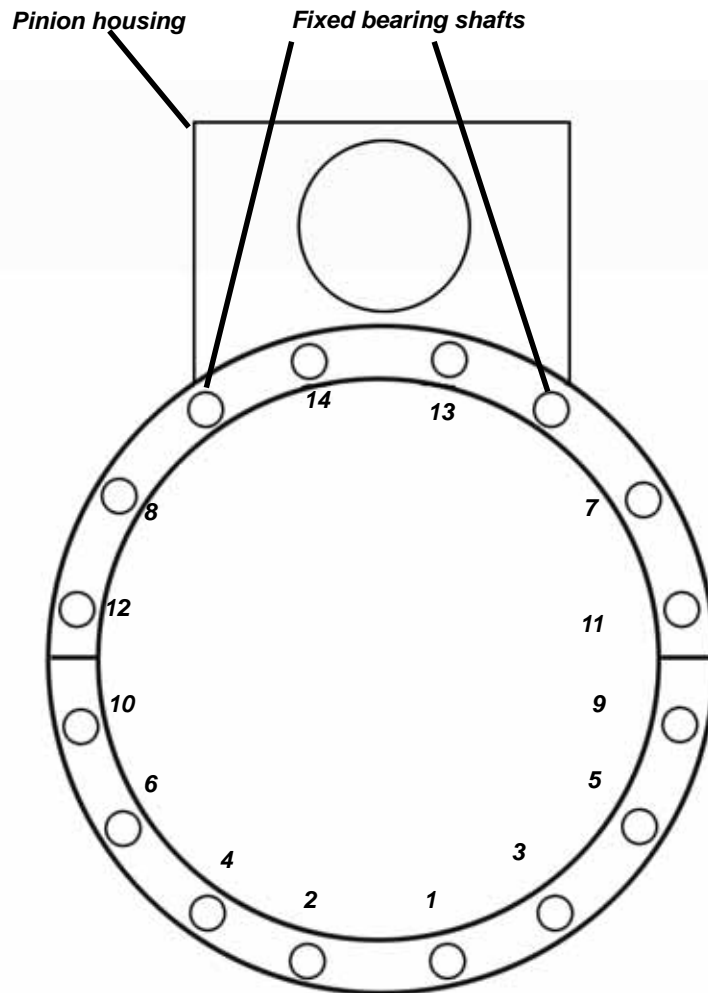
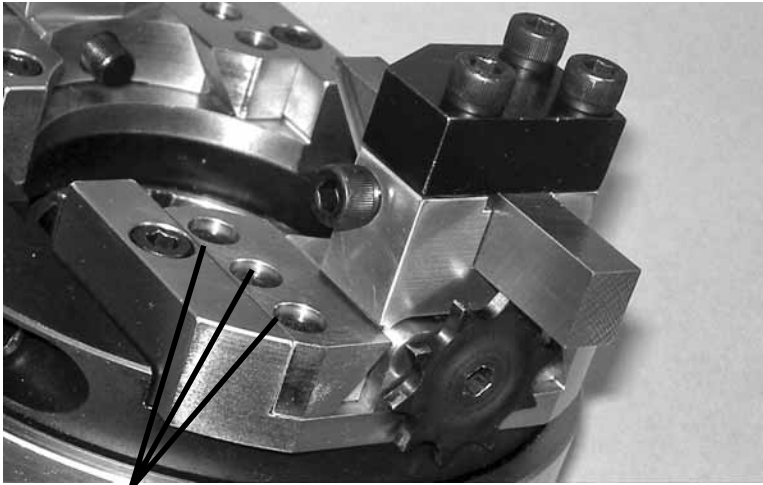


Figure 6-10. Adjust the bearings in numerical order as indicated.

TOOL SLIDE TENSION ADJUSTMENTS

The tool slide starwheel tension can be increased or decreased by adding or removing dovetail shims.

1. Remove the tool slide from the SDSF by loosening the tool slide mounting screws.
2. Loosen the three dovetail screws.



Dovetail screws

Figure 6-11. Loosen the dovetail screws shown to adjust the slide tension.

3. Carefully remove the dovetail from the tool slide.
4. Add one shim to decrease the tool slide tension, or remove one shim to increase the tool slide tension.
5. Store all unused shims for reuse later.
6. Replace the dovetail, making sure the holes in the shims are aligned with the dovetail screws.
7. Test the tool slide tension. The tool slide starwheel should turn with 5-15 inch pounds of force.
8. Repeat steps 2-6 if necessary.



NOTE

Each shim is 0.002" thick.

AIR MOTOR MAINTENANCE

Gear Train Disassembly

1. Unscrew and remove the gear case.
2. Remove the motor unit from the front of the handle.
3. Unscrew (left hand threads) the spindle bearing retainer.
4. Press the spindle out of the spindle bearings.



CAUTION

Take care not to damage the rotor during motor disassembly.

Motor Disassembly

1. Secure the cylinder in a vise with the rear bearing plate facing upward.
2. Using a 1/8" diameter punch, tap the rotor out of the rear bearing plate.
3. Remove cylinder and rotor blades.
4. Rest the front bearing plate on the jaws of the vise with the rotor hanging loosely between the jaws, and tap the rotor out of the front bearing.

DL Backhead Disassembly

1. Unscrew and remove the air inlet bushing.
2. Remove the throttle valve and related components for inspection.

General Reassembly

1. Wash all parts in solvent and inspect them for damage and wear. Particular attention should be paid to all bearings, gears, gear pins, and rotor blades. Damage to these parts can cause damage to more expensive parts.
2. Particular inspection should also be given to the governor assembly. Replace any parts of the governor assembly that show wear or damage.
3. Rotor blades must measure a minimum 3/16" at both ends. If not, replace the rotor blades.
4. Inspect and replace any O rings or seals that show signs of wear or deterioration.
5. Apply No. 2 Moly grease to all gears, gear pins, and open bearings.
6. Reassemble all of the various sub-assemblies in the reverse order of disassembly.

Gear Case Assembly

The front spindle bearing must be installed on the spindle with its shielded side out.

Motor Reassembly

1. As the motor unit is assembled, the rear face of the rotor should be set to within 0.0015" of the face of the rear bearing plate.
2. After final assembly, the cylinder should be held firmly, but not tightly, between the two bearing plates.
3. The rotor should turn freely and not rub either of the bearing plates.

136DL Series Motor Installation

When installing the motor unit into the backhead, the rear bearing plate pin must engage the 1/8" hole in the rear motor bore. The front of the backhead is marked to aid this operation.

Complete Reassembly

1. The rotor pinion (if required) should be installed on the rotor shaft with the undercut side toward the rotor.
2. Install (left hand threads) the spindle bearing retainer on the front of the gear case. Put a few drops of 10W machine oil into the tool's air inlet to ensure immediate lubrication of all motor parts when the tool is tested.

ELECTRIC MOTOR MAINTENANCE

The electric motor (80-4004-00) comes with a circuit breaker (80-0091-00) to prevent overload damage. If the electric motor stops working during operation, reset the circuit breaker. Refer to the drawing in Chapter 8 for details.



CAUTION

Remove the control panel from the case before tipping it. The panel is not fastened in the case and can fall out if you turn the case over.



NOTE

Remove the output hose and control pendant before lifting the control panel out of the case.



NOTE

The 5 micron filter element is available from E.H. Wachs or from the manufacturer (Rexroth, part no. 1829207068).

SERVICING THE ACM

After each use, check for water in the bottom of the ACM case. The ACM includes a draining filter that can release a small amount of water during operation. Lift the control panel out of the case and pour out any water that has accumulated. Wipe the case dry and replace the control panel.



Figure 6-12. Lift the control panel out of the case for service or to drain out accumulated water.

The filter should be checked periodically. The filter is accessible when you have the control panel out of the case. To remove the filter, pull the locking tab down and turn the filter to the left.

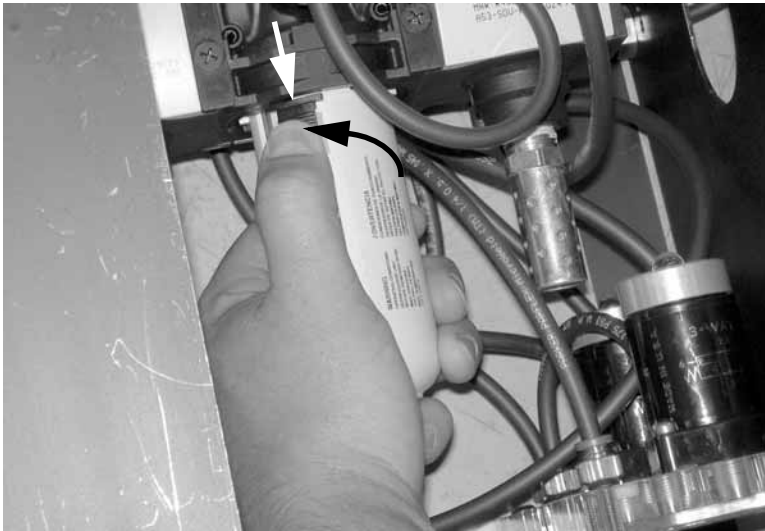


Figure 6-13. To remove the filter, pull the locking tab down with your thumb and turn the filter to the left.



Chapter 7

Service and Repair

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SLIDE FEED NUT REPLACEMENT

The slide feed nut may need to be replaced if the tool slide crashes. Always replace the slide feed nut if it breaks or its threads are stripped.

1. Remove the slide from the SDSF.
2. Loosen the dovetail screws. Do not remove the dovetail.
3. Remove the male tool slide by unscrewing the star-wheel completely. If the slide does not come off, loosen the dovetail screws further.

In This Chapter

SLIDE FEED NUT
REPLACEMENT

SLIDE FEED SCREW
REPLACEMENT



Figure 7-1. Use a hex wrench to turn the starwheel clockwise to remove the male tool slide.

4. Remove the feed nut (80-0030-00).



Figure 7-2. Replace the old feed nut in the slide.

5. Insert the new feed nut so it is centered.
6. Hold the feed nut in the slide and turn the starwheel counterclockwise to engage the feed screw and remove any play.
7. Tighten the dovetail screws.

SLIDE FEED SCREW REPLACEMENT

If the slide stops feeding correctly when the star wheel trips, the slide feed screw may need to be replaced. If the threads are stripped, replace the slide feed screw.

1. Remove the slide from the SDSF.
2. Loosen the dovetail screws. Do not remove the dovetail.
3. Remove the male tool slide.
4. Remove the bushing screws on the bottom of the slide.

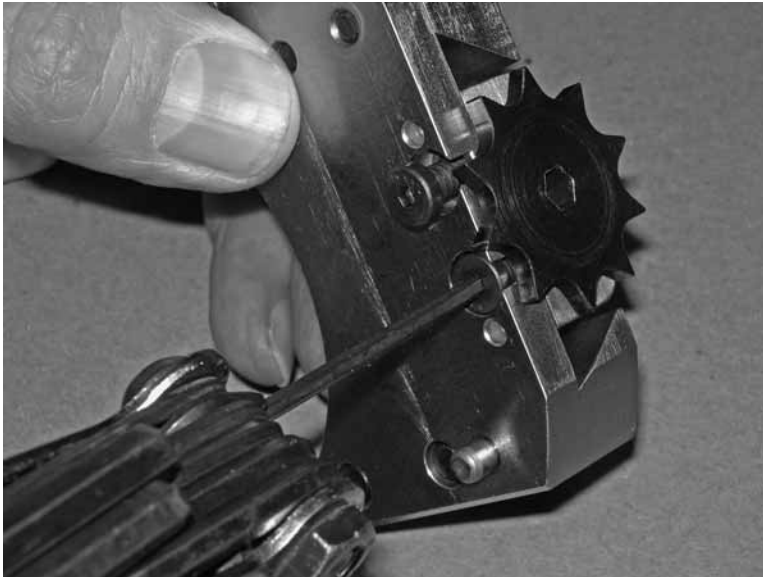


Figure 7-3. The bushing screws hold the feed bushing in place.

5. Separate the two halves of the feed bushing by tapping on the bushing pins with a mallet.



Figure 7-4. Use a mallet to separate the feed bushing as shown.

6. Replace the starwheel feed screw.
7. If necessary, use a mallet to affix the feed bushing around the new feed screw.



Figure 7-5. Align the bushing pins by hand, and then tap the bushing halves flush with a mallet.

8. Align and tighten the bushing screws.
9. Replace the male tool slide, and engage the feed nut by turning the starwheel counterclockwise.
10. Tighten the dovetail screws.

Chapter 8

Parts Lists and Drawings

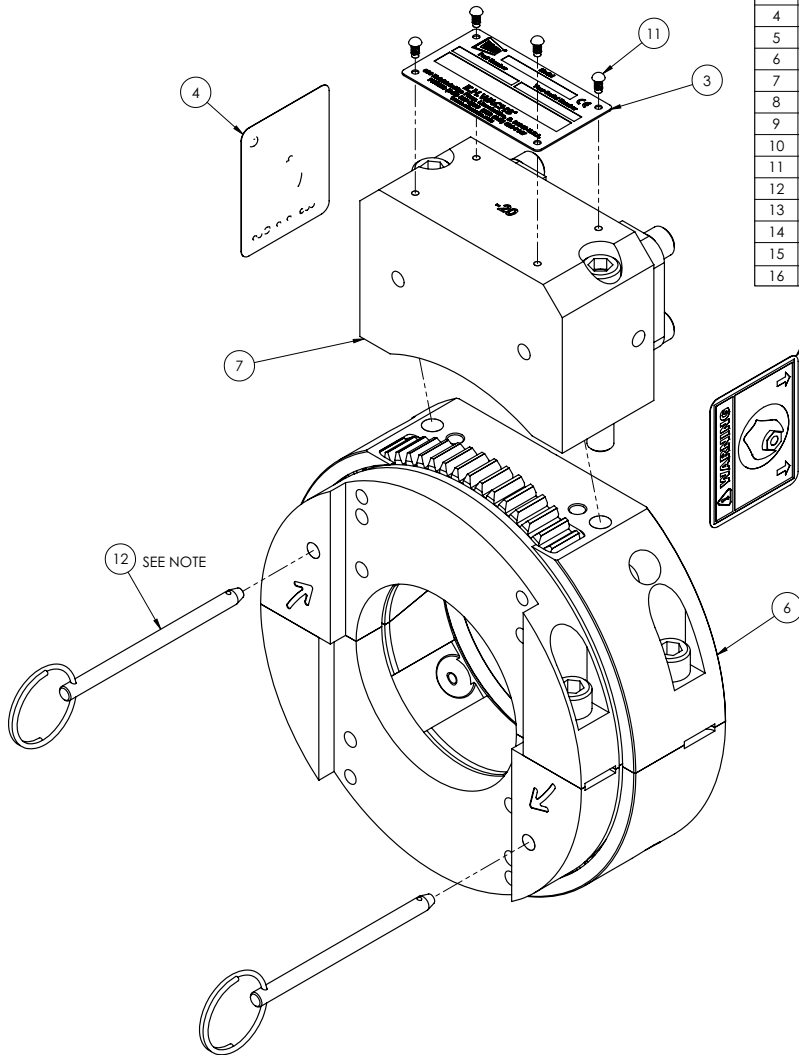
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The following pages illustrate the components for the Small Diameter Split Frame. Use the parts list on each drawing to order replacement parts.

SDSF Base Machine (80-4000-XX)

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	See Table	1	CASE (NOT SHOWN)
2	See Table	1	SDSF, FOAM INSERT (NOT SHOWN)
3	80-0080-00	1	PLATE, IDENTIFICATION
4	80-0081-00	1	LABEL, MOVING PARTS
5	80-0082-00	1	LABEL, AIR MOTOR CLAMP
6	See Table	1	LP FRAME ASSEMBLY
7	See Table	1	PINION HOUSING ASSEMBLY
8	80-5500-00	1	SDSF SPARE FASTENER KIT (NOT SHOWN)
9	80-LIT-01	1	TOOLING CHART, SDSF (NOT SHOWN)
10	80-MAN-01	1	SDSF, MANUAL (NOT SHOWN)
11	90-049-06	4	SCREW, #2-13/16" U-DRIVE
12	90-149-25	2	PIN, 3/16 x 2-1/2 SS QUICK (SEE NOTE)
13	90-800-06	1	WRENCH, 5/64 - 1/4 HEX SET (NOT SHOWN)
14	90-800-57	1	WRENCH, 1/4 HEX X 6" T-HANDLE (NOT SHOWN)
15	90-800-62	1	WRENCH, 3/16 HEX X 9" T-HANDLE (NOT SHOWN)
16	80-0106-00	1	LABEL, CASE SDSF (NOT SHOWN)

NOTE: Pins (Item12) not included with 80-4000-10 or 80-4000-15.



SDSF Model (Size)	LP Frame Assembly	Pinion Housing Assembly	Case	Case Foam
80-4000-10 (1")	80-3000-10	80-3002-10	16-082-00	80-0071-00
80-4000-15 (1-1/2")	80-3000-15	80-3002-15		
80-4000-20 (2")	80-3000-20	80-3002-20		
80-4000-25 (2-1/2")	80-3000-25	80-3002-25		
80-4000-30 (3")	80-3000-30	80-3002-30		
80-4000-35 (3-1/2")	80-3000-35	80-3002-35		
80-4000-40 (4")	80-3000-40	80-3002-40	56-150-00	80-0105-00
80-4000-50 (5")	80-3000-50	80-3002-50		
80-4000-60 (6")	80-3000-60	80-3002-60		

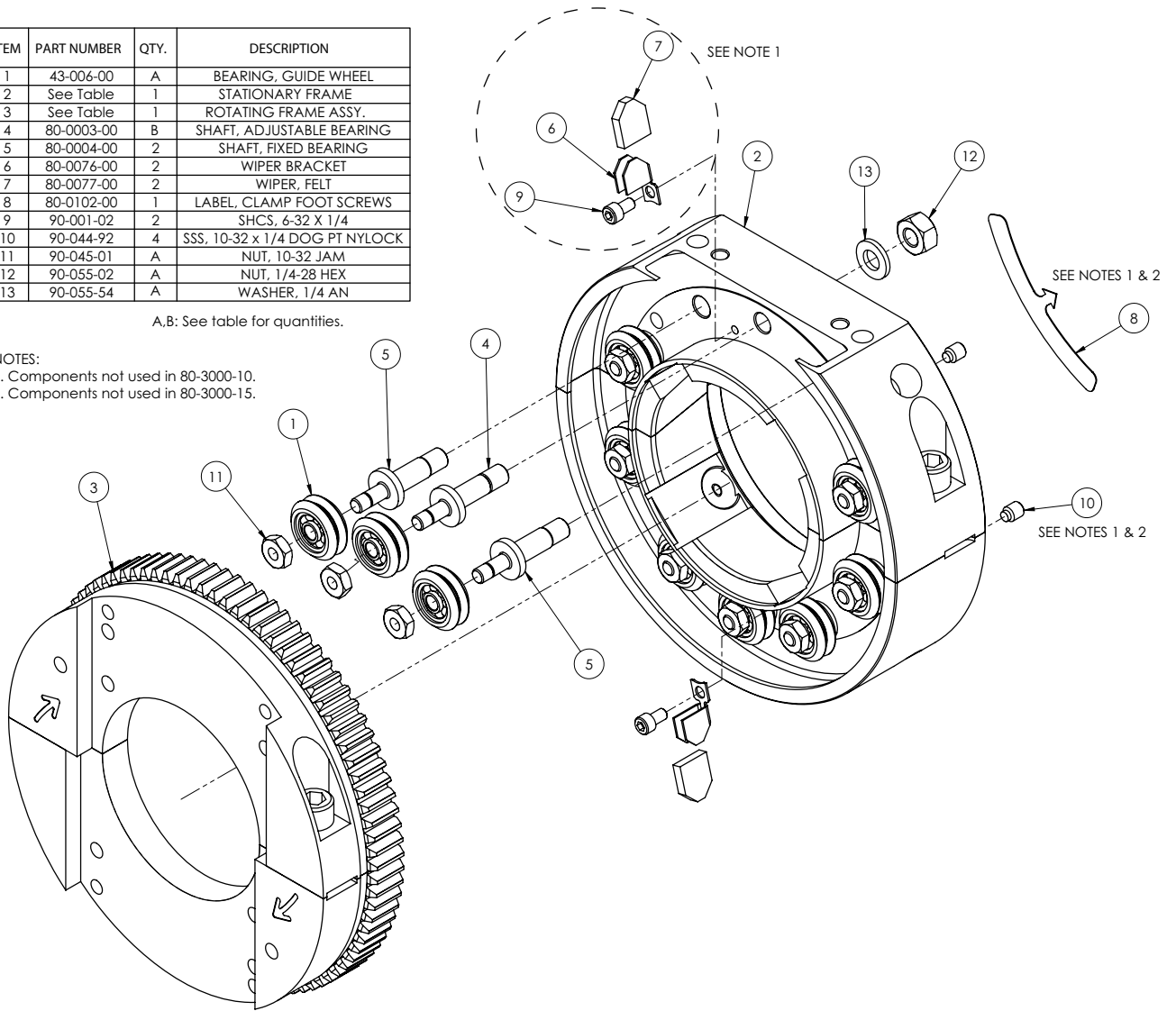
SDSF Frame Assembly (80-3000-XX)

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	43-006-00	A	BEARING, GUIDE WHEEL
2	See Table	1	STATIONARY FRAME
3	See Table	1	ROTATING FRAME ASSY.
4	80-0003-00	B	SHAFT, ADJUSTABLE BEARING
5	80-0004-00	2	SHAFT, FIXED BEARING
6	80-0076-00	2	WIPER BRACKET
7	80-0077-00	2	WIPER, FELT
8	80-0102-00	1	LABEL, CLAMP FOOT SCREWS
9	90-001-02	2	SHCS, 6-32 X 1/4
10	90-044-92	4	SSS, 10-32 x 1/4 DOG PT NYLOCK
11	90-045-01	A	NUT, 10-32 JAM
12	90-055-02	A	NUT, 1/4-28 HEX
13	90-055-54	A	WASHER, 1/4 AN

A,B: See table for quantities.

NOTES:

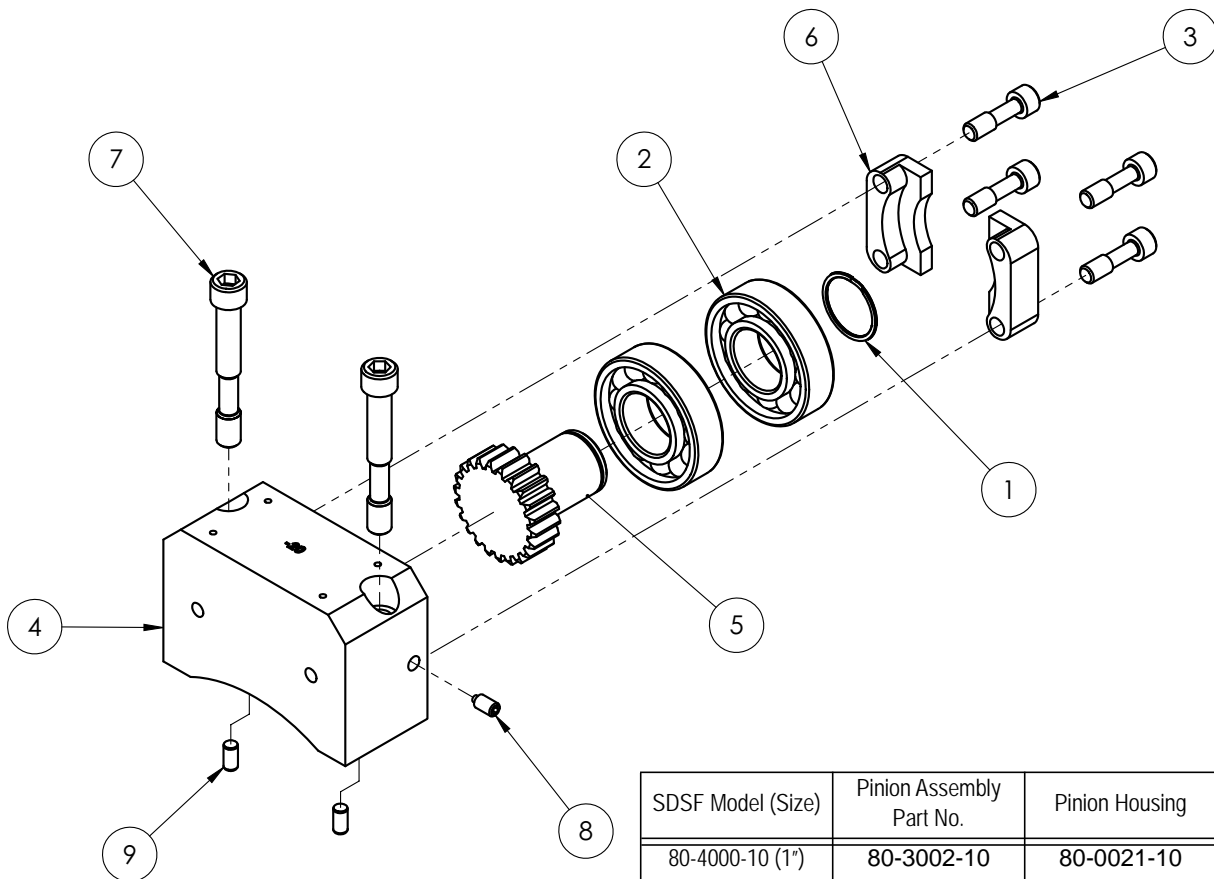
- 1. Components not used in 80-3000-10.
- 2. Components not used in 80-3000-15.



SDSF Model (Size)	Stationary Frame Assembly	Rotating Frame Assembly	Bearing Component Quantity (A)	Adjustable Bearing Shaft Quantity (B)
80-4000-10 (1")	80-0001-10	80-0002-10	10	8
80-4000-15 (1-1/2")	80-0001-15	80-0002-15	10	8
80-4000-20 (2")	80-0001-20	80-0002-20	10	8
80-4000-25 (2-1/2")	80-0001-25	80-0002-25	10	8
80-4000-30 (3")	80-0001-30	80-0002-30	16	14
80-4000-35 (3-1/2")	80-0001-35	80-0002-35	16	14
80-4000-40 (4")	80-0001-40	80-0002-40	16	14
80-4000-50 (5")	80-0001-50	80-0002-50	16	14
80-4000-60 (6")	80-0001-60	80-0002-60	16	14

Pinion Assembly (80-3002-XX)

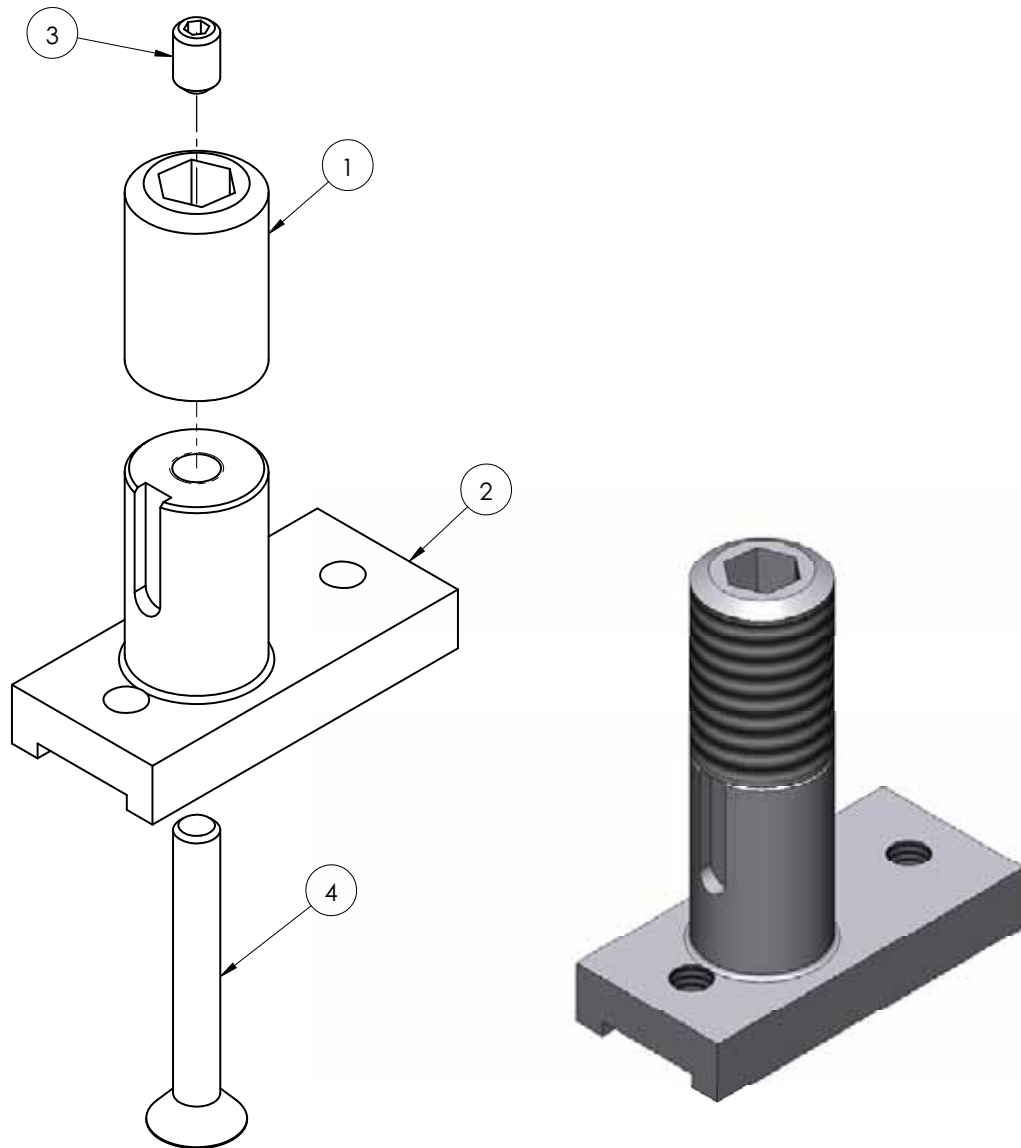
ITEM	PART NUMBER	QTY.	DESCRIPTION
1	52-145-00	1	RING RETAINING
2	60-125-00	2	BEARING, PINION-REAR
3	80-0008-00	4	SHCS, 1/4-20 x 7/8 CAPTIVATED
4	See Table	1	PINION HOUSING
5	80-0022-00	1	GEAR, PINION
6	80-0023-00	2	CLAMP, MOTOR
7	80-0099-00	2	SHCS, 5/16-18 x 2-1/4 CAPTIVATED
8	90-044-93	1	SSS, 10-32 x 3/8 NYLON SOFT POINT
9	90-046-03	2	PIN, 3/16 x 3/8 DOWEL



SDSF Model (Size)	Pinion Assembly Part No.	Pinion Housing
80-4000-10 (1")	80-3002-10	80-0021-10
80-4000-15 (1-1/2")	80-3002-15	80-0021-20
80-4000-20 (2")	80-3002-20	80-0021-20
80-4000-25 (2-1/2")	80-3002-25	80-0021-30
80-4000-30 (3")	80-3002-30	80-0021-30
80-4000-35 (3-1/2")	80-3002-35	80-0021-40
80-4000-40 (4")	80-3002-40	80-0021-40
80-4000-50 (5")	80-3002-50	80-0021-60
80-4000-60 (6")	80-3002-60	80-0021-60

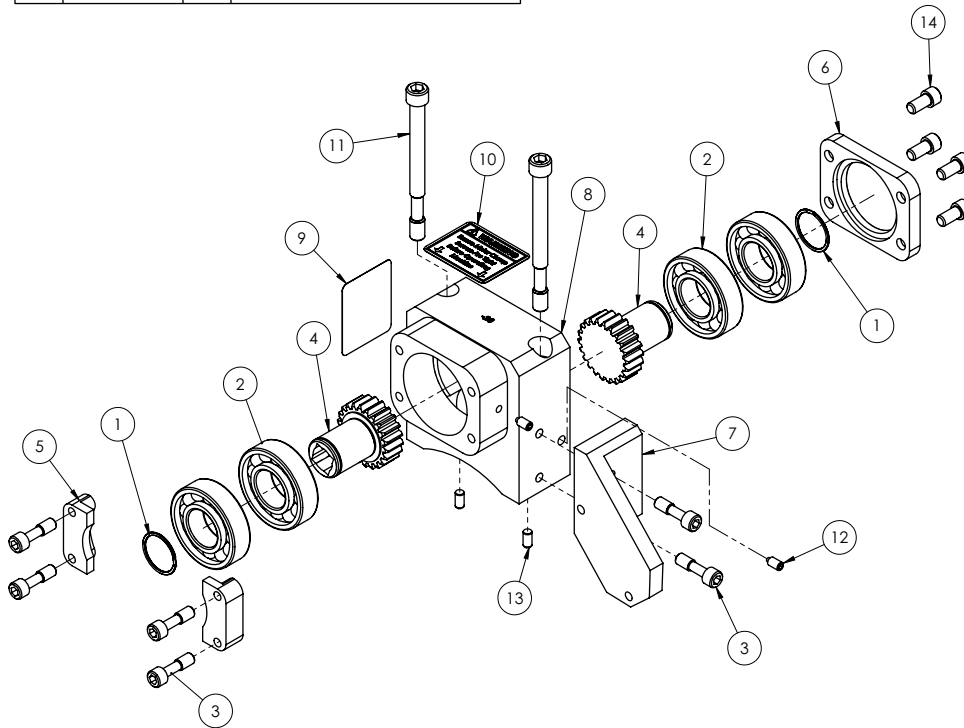
Clamp Foot Assembly (80-4001-00)

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	80-0006-00	1	SCREW, CLAMP FOOT
2	80-0068-00	1	CLAMP FOOT
3	90-024-02	1	SSS, 8-32 x 1/4 CUP PT
4	90-023-12	1	FHCS, 8-32 x 1-1/4



Front Drive Pinion Assembly (80-4003-XX)

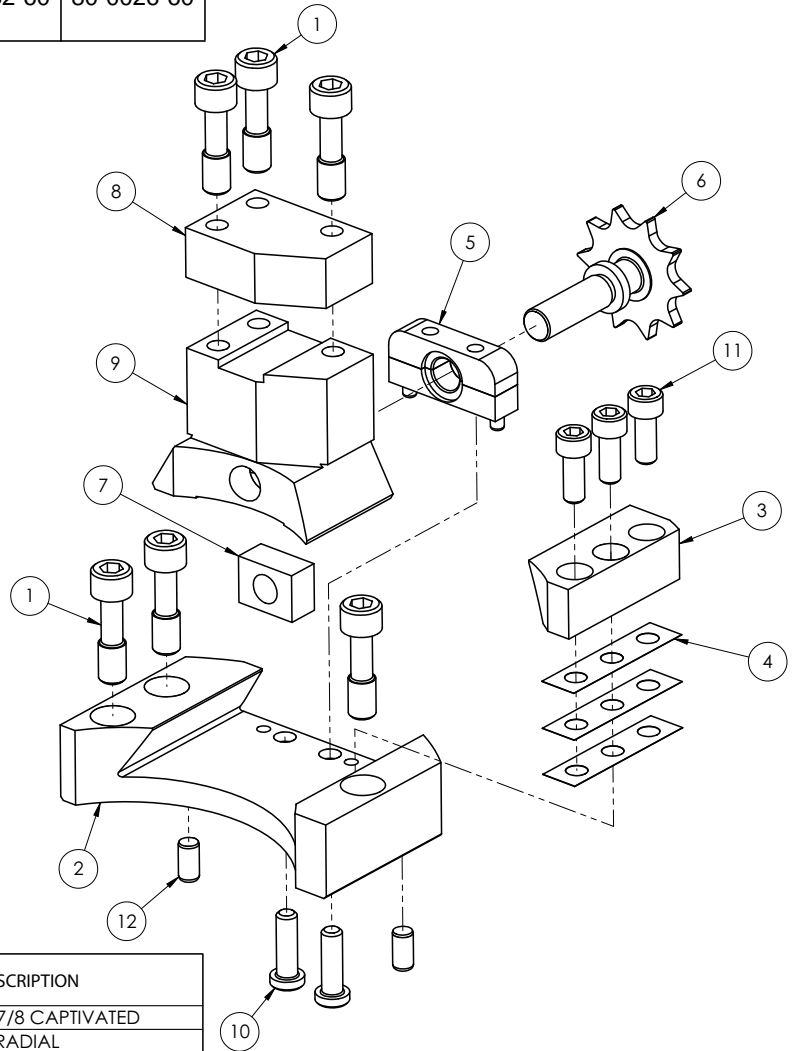
ITEM	PART NUMBER	QTY.	DESCRIPTION
1	52-145-00	2	RING RETAINING
2	60-125-00	4	BEARING, PINION-REAR
3	80-0008-00	6	SHCS, 1/4-20 x 7/8 CAPTIVATED
4	80-0022-00	2	GEAR, PINION
5	80-0023-00	2	CLAMP, MOTOR
6	80-0050-00	1	CAP. BEARING
7	See Table	1	BRACKET, FRONT DRIVE TRIP
8	See Table	1	HOUSING, FRONT DRIVE PINION
9	80-0081-00	1	LABEL, MOVING PARTS
10	80-0082-00	1	LABEL, AIR MOTOR CLAMP
11	80-0100-00	2	SHCS, 5/16-18 x 3-1/2 CAPTIVATED
12	90-044-93	2	SSS, 10-32 x 3/8 NYLON SOFT POINT
13	90-046-03	2	PIN, 3/16 x 3/8 DOWEL
14	90-050-05	4	SHCS, 1/4-20 X 1/2



SDSF Model (Size)	Front Drive Pinion Assembly Part No.	Front Drive Trip Bracket	Front Drive Pinion Housing
80-4000-10 (1")	80-4003-10	80-0051-10	80-0067-10
80-4000-15 (1-1/2")	80-4003-15	80-0051-15	80-0067-20
80-4000-20 (2")	80-4003-20	80-0051-20	80-0067-20
80-4000-25 (2-1/2")	80-4003-25	80-0051-25	80-0067-30
80-4000-30 (3")	80-4003-30	80-0051-30	80-0067-30
80-4000-35 (3-1/2")	80-4003-35	80-0051-35	80-0067-40
80-4000-40 (4")	80-4003-40	80-0051-40	80-0067-40
80-4000-50 (5")	80-4003-50	80-0051-50	80-0067-60
80-4000-60 (6")	80-4003-60	80-0051-60	80-0067-60

Parting Slide (80-4101-XX)

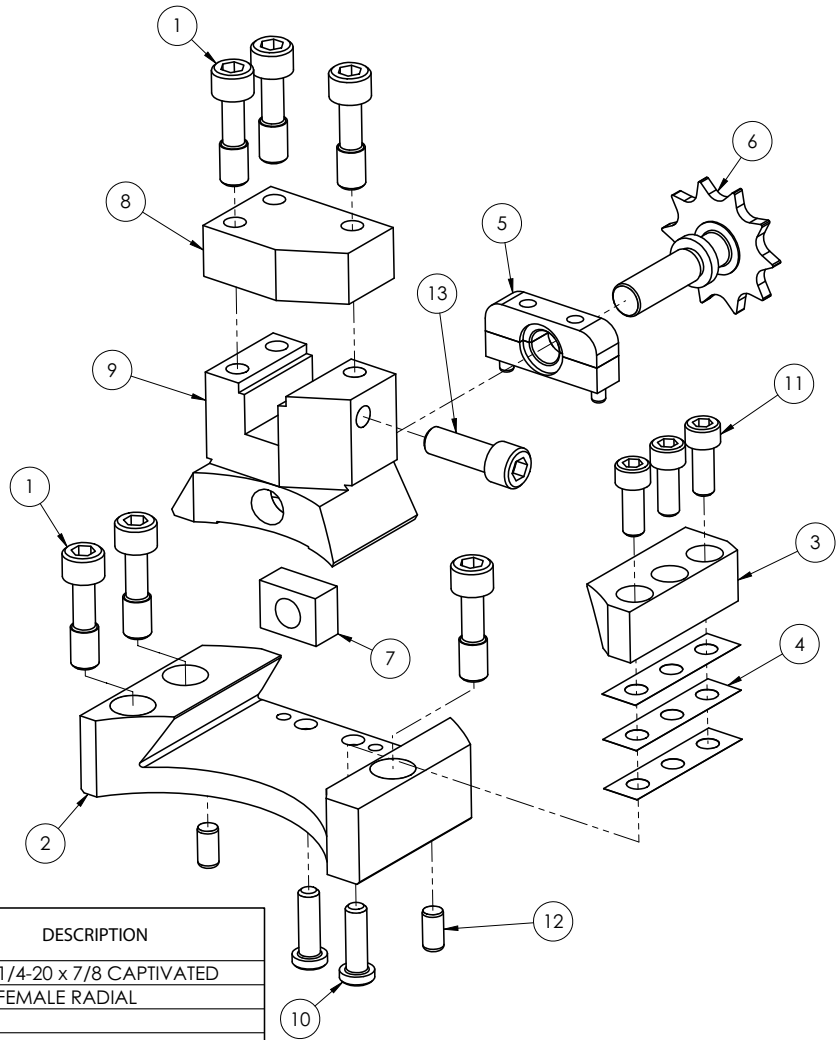
SDSF Model (Size)	Slide Part No.	Female Radial Slide	Male Parting Slide	Gib
80-4000-10 (1")	80-4101-10	80-0025-10	80-0032-20	80-0026-10
80-4000-15 (1-1/2")	80-4101-20	80-0025-20	80-0032-20	80-0026-20
80-4000-20 (2")				
80-4000-25 (2-1/2")				
80-4000-30 (3")	80-4101-40	80-0025-40	80-0032-40	80-0026-40
80-4000-35 (3-1/2")				
80-4000-40 (4")				
80-4000-50 (5")	80-4101-60	80-0025-60	80-0032-60	80-0026-60
80-4000-60 (6")				



ITEM	PART NUMBER	QTY.	DESCRIPTION
1	80-0008-00	6	SHCS, 1/4-20 x 7/8 CAPTIVATED
2	See Table	1	SLIDE, FEMALE RADIAL
3	See Table	1	GIB
4	80-0027-00	3	SHIM
5	80-0028-00	1	FEED BUSHING
6	80-0029-00	1	STAR WHEEL
7	80-0030-00	1	NUT, FEED
8	80-0031-00	1	PLATE, TOOL COVER
9	See Table	1	SLIDE, MALE PARTING
10	90-039-06	2	LHCS, 10-24 x 5/8
11	90-040-05	3	SHCS, 10-24 X 1/2
12	90-046-03	2	PIN, 3/16 x 3/8 DOWEL

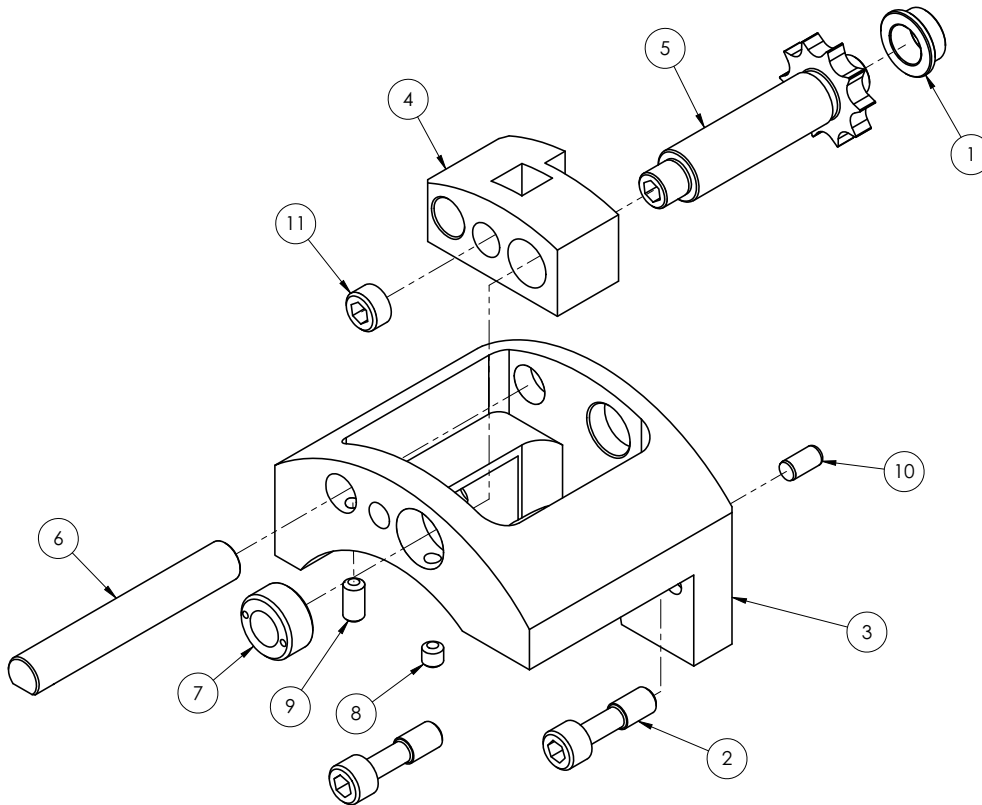
Beveling Slide (80-4102-XX)

SDSF Model (Size)	Slide Part No.	Female Radial Slide	Male Beveling Slide	Gib
80-4000-10 (1")	80-4102-10	80-0025-10	80-0033-20	80-0026-10
80-4000-15 (1-1/2")	80-4102-20	80-0025-20	80-0033-20	80-0026-20
80-4000-20 (2")				
80-4000-25 (2-1/2")				
80-4000-30 (3")	80-4102-40	80-0025-40	80-0033-40	80-0026-40
80-4000-35 (3-1/2")				
80-4000-40 (4")				
80-4000-50 (5")	80-4102-60	80-0025-60	80-0033-60	80-0026-60
80-4000-60 (6")				



ITEM	PART NUMBER	QTY.	DESCRIPTION
1	80-0008-00	6	SHCS, 1/4-20 x 7/8 CAPTIVATED
2	See Table	1	SLIDE, FEMALE RADIAL
3	See Table	1	GIB
4	80-0027-00	3	SHIM
5	80-0028-00	1	FEED BUSHING
6	80-0029-00	1	STAR WHEEL
7	80-0030-00	1	NUT, FEED
8	80-0031-00	1	PLATE, TOOL COVER
9	See Table	1	SLIDE, MALE BEVELING
10	90-039-06	2	LHCS, 10-24 x 5/8
11	90-040-05	3	SHCS, 10-24 X 1/2
12	90-046-03	2	PIN, 3/16 x 3/8 DOWEL
13	90-050-07	1	SHCS, 1/4-20 X 3/4

Axial Slide (80-4104-XX)

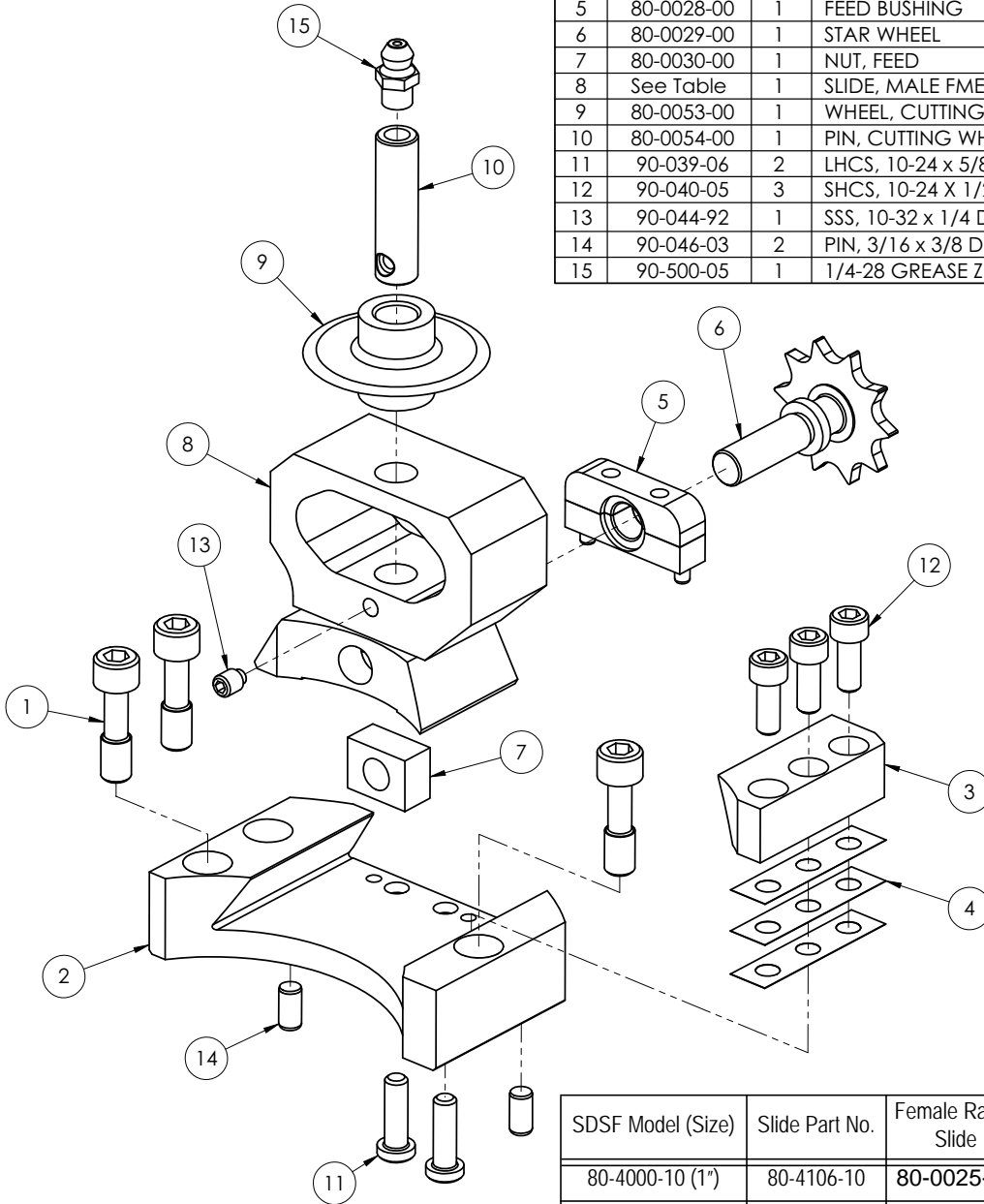


ITEM	PART NUMBER	QTY.	DESCRIPTION
1	18-048-00	1	BEARING, FLANGE
2	80-0008-00	2	SHCS, 1/4-20 x 7/8 CAPTIVATED
3	SEE TABLE	1	SLIDE, FEMALE AXIAL
4	80-0039-00	1	SLIDE, MALE AXIAL
5	80-0040-00	1	SCREW, FEED
6	80-0041-00	1	SHAFT, AXIAL
7	80-0042-00	1	BUSHING, ADJUSTABLE
8	90-044-00	1	SSS, 10-24 x 3/16
9	90-044-03	1	SSS, 10-24 X 3/8
10	90-046-03	2	PIN, 3/16 x 3/8 DOWEL
11	90-074-52	1	SSS, 3/8-24 x 1/4

SDSF Model (Size)	Slide Part No.	Female Axial Slide
80-4000-10 (1")	80-4104-10	80-0038-10
80-4000-15 (1-1/2")	80-4104-20	80-0038-20
80-4000-20 (2")		
80-4000-25 (2-1/2")		
80-4000-30 (3")	80-4104-40	80-0038-40
80-4000-35 (3-1/2")		
80-4000-40 (4")		
80-4000-50 (5")	80-4104-60	80-0038-60
80-4000-60 (6")		

FME Slide (80-4106-XX)

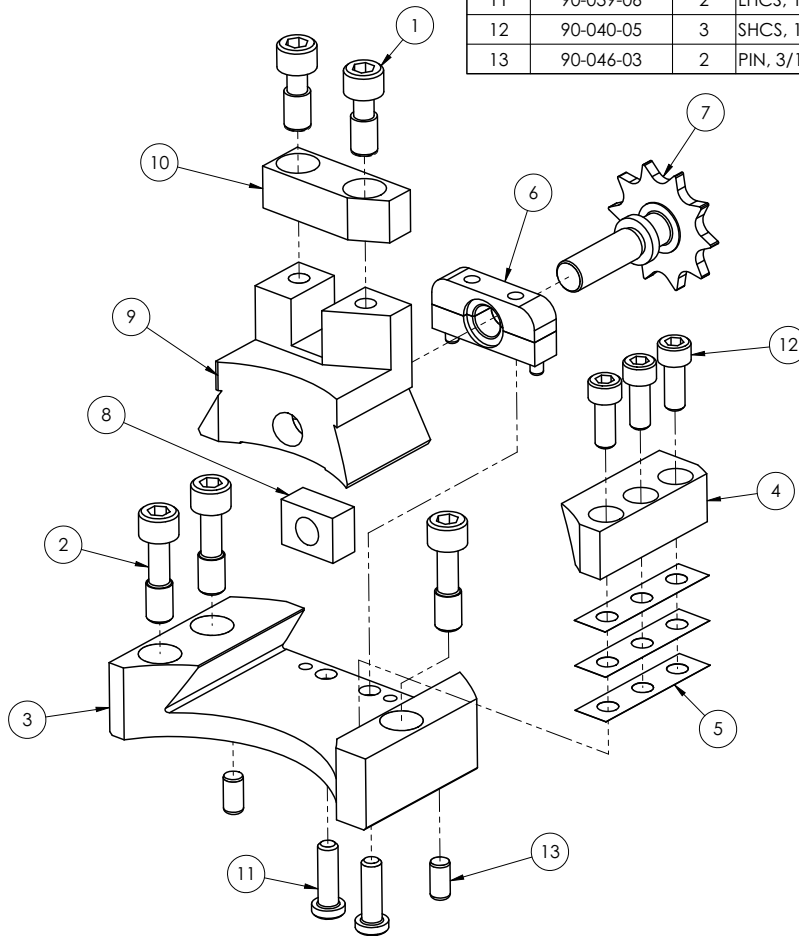
ITEM	PART NUMBER	QTY.	DESCRIPTION
1	80-0008-00	3	SHCS, 1/4-20 x 7/8 CAPTIVATED
2	See Table	1	SLIDE, FEMALE RADIAL
3	See Table	1	GIB
4	80-0027-00	3	SHIM
5	80-0028-00	1	FEED BUSHING
6	80-0029-00	1	STAR WHEEL
7	80-0030-00	1	NUT, FEED
8	See Table	1	SLIDE, MALE FME
9	80-0053-00	1	WHEEL, CUTTING
10	80-0054-00	1	PIN, CUTTING WHEEL
11	90-039-06	2	LHCS, 10-24 x 5/8
12	90-040-05	3	SHCS, 10-24 X 1/2
13	90-044-92	1	SSS, 10-32 x 1/4 DOG PT NYLOCK
14	90-046-03	2	PIN, 3/16 x 3/8 DOWEL
15	90-500-05	1	1/4-28 GREASE ZERK



SDSF Model (Size)	Slide Part No.	Female Radial Slide	Male FME Slide	Gib
80-4000-10 (1")	80-4106-10	80-0025-10		80-0026-10
80-4000-15 (1-1/2")	80-4106-20	80-0025-20	80-0052-20	80-0026-20
80-4000-20 (2")				
80-4000-25 (2-1/2")	80-4106-40	80-0025-40	80-0052-40	80-0026-40
80-4000-30 (3")				
80-4000-35 (3-1/2")				
80-4000-40 (4")	80-4106-60	80-0025-60	80-0052-60	80-0026-60
80-4000-50 (5")				
80-4000-60 (6")				

Radial Socket Weld Removal Slide (80-4100-XX)

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	66-086-00	2	SHCS, 1/4-20 X 5/8 CAPTIVATED
2	80-0008-00	3	SHCS, 1/4-20 x 7/8 CAPTIVATED
3	See Table	1	SLIDE, FEMALE RADIAL
4	See Table	1	GIB
5	80-0027-00	3	SHIM
6	80-0028-00	1	FEED BUSHING
7	80-0029-00	1	STAR WHEEL
8	80-0030-00	1	NUT, FEED
9	80-0072-20	1	SLIDE, MALE SOCKET WELD
10	80-0073-00	1	PLATE, SOCKET WELD COVER
11	90-039-06	2	LHCS, 10-24 x 5/8
12	90-040-05	3	SHCS, 10-24 X 1/2
13	90-046-03	2	PIN, 3/16 x 3/8 DOWEL

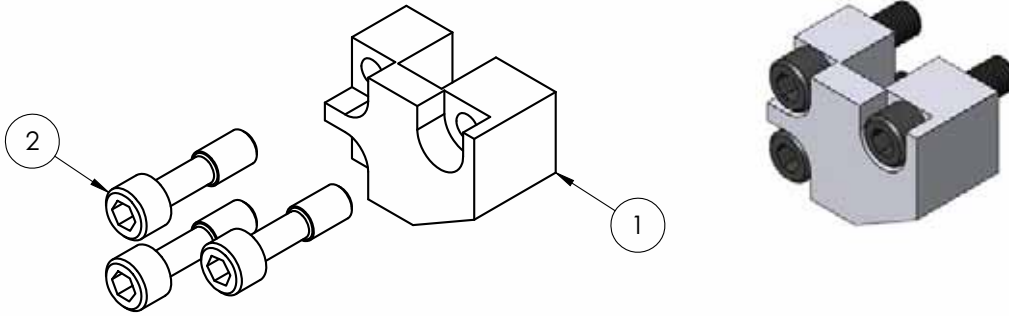


SDSF Model (Size)	Slide Part No.	Female Radial Slide	Gib
80-4000-10 (1")	80-4100-10	80-0025-10	80-0026-10
80-4000-15 (1-1/2")	80-4100-20	80-0025-20	80-0026-20
80-4000-20 (2")			
80-4000-25 (2-1/2")			

Outside Bevel Tool Cover Plate Ass'y (80-4108-00)

80-4108-00

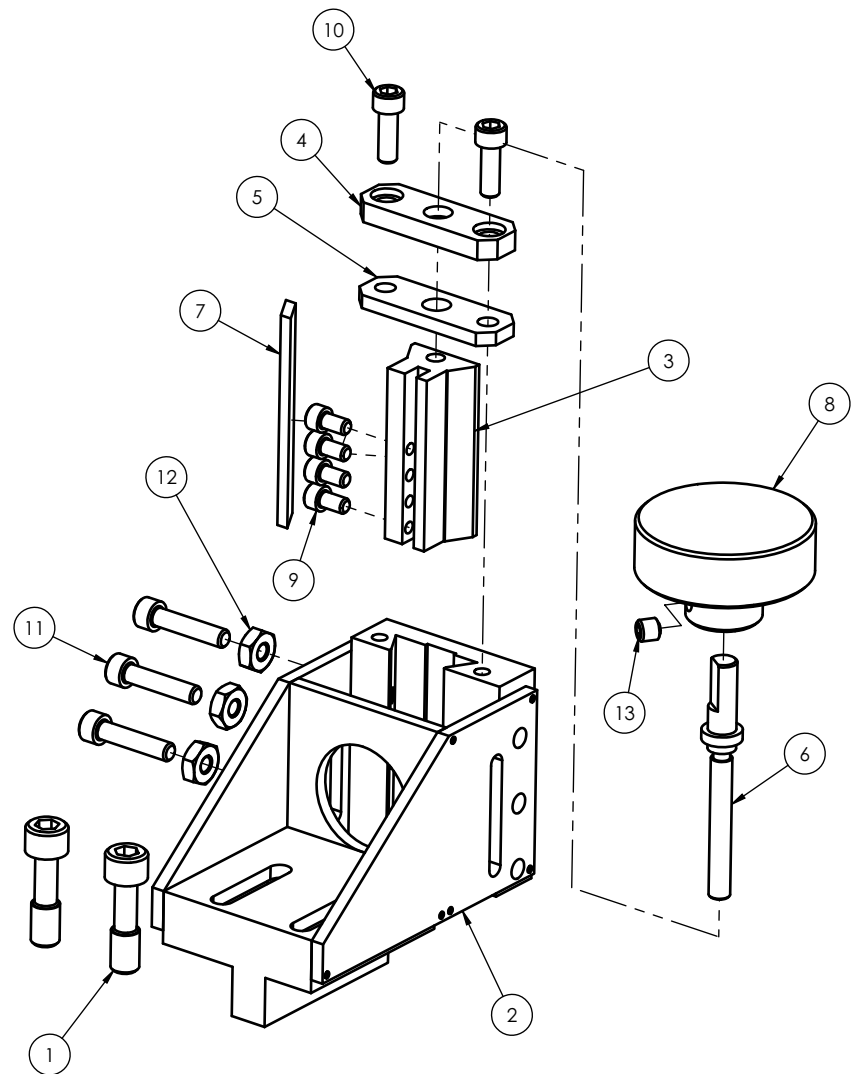
ITEM	PART NUMBER	QTY.	DESCRIPTION
1	80-0098-00	1	PLATE, TOOL COVER
2	80-0008-00	3	SHCS, 1/4-20 x 7/8 CAPTIVATED



Counterbore Slide (80-4107-00)

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	80-0008-00	3	SHCS, 1/4-20 x 7/8 CAPTIVATED
2	80-0055-00	1	WLDMNT, COUNTERBORE SLIDE
3	80-0060-00	1	SLIDE, MALE COUNTERBORE
4	80-0061-00	1	PLATE, THRUST
5	80-0062-00	1	PLATE, BACKING
6	80-0063-00	1	SCREW, FEED
7	80-0064-00	1	GIB, COUNTERBORE
8	80-0065-00	1	KNOB
9	90-001-02	4	SHCS, 6-32 X 1/4
10	90-020-05	2	SHCS, 8-32 x 1/2
11	90-020-07	3	SHCS, 8-32 x 3/4
12	90-029-06	3	NUT, 8/32 HEX
13	90-044-51	1	SSS, 10-32 x 3/16

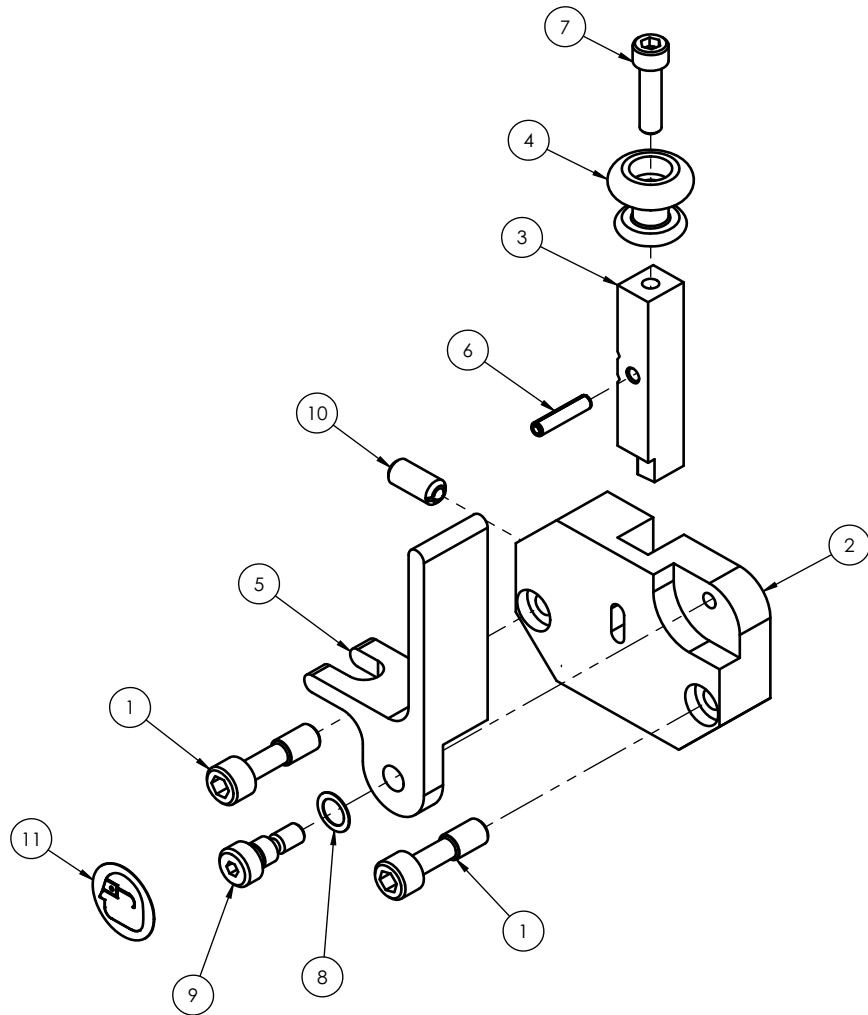
80-4107-00



Radial Trip (80-4103-00)

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	80-0008-00	2	SHCS, 1/4-20 x 7/8 CAPTIVATED
2	80-0034-00	1	HOUSING, RADIAL TRIP
3	80-0035-00	1	TRIP, RADIAL
4	80-0036-00	1	SPOOL
5	80-0037-00	1	LEVER, RADIAL TRIP
6	90-026-56	1	PIN, 1/8 x 5/8 ROLL
7	90-040-07	1	SHCS, 10-24 X 3/4
8	90-055-55	1	WASHER, 1/4 WAVE
9	90-057-52	1	SHSB, 1/4 X 1/4
10	90-059-07	1	PLUNGER, 1/4-20 x 1/2 LT-SPRNG SS BALL
11	90-401-05	1	LABEL, 3/4" DIA EYE PROTECTION

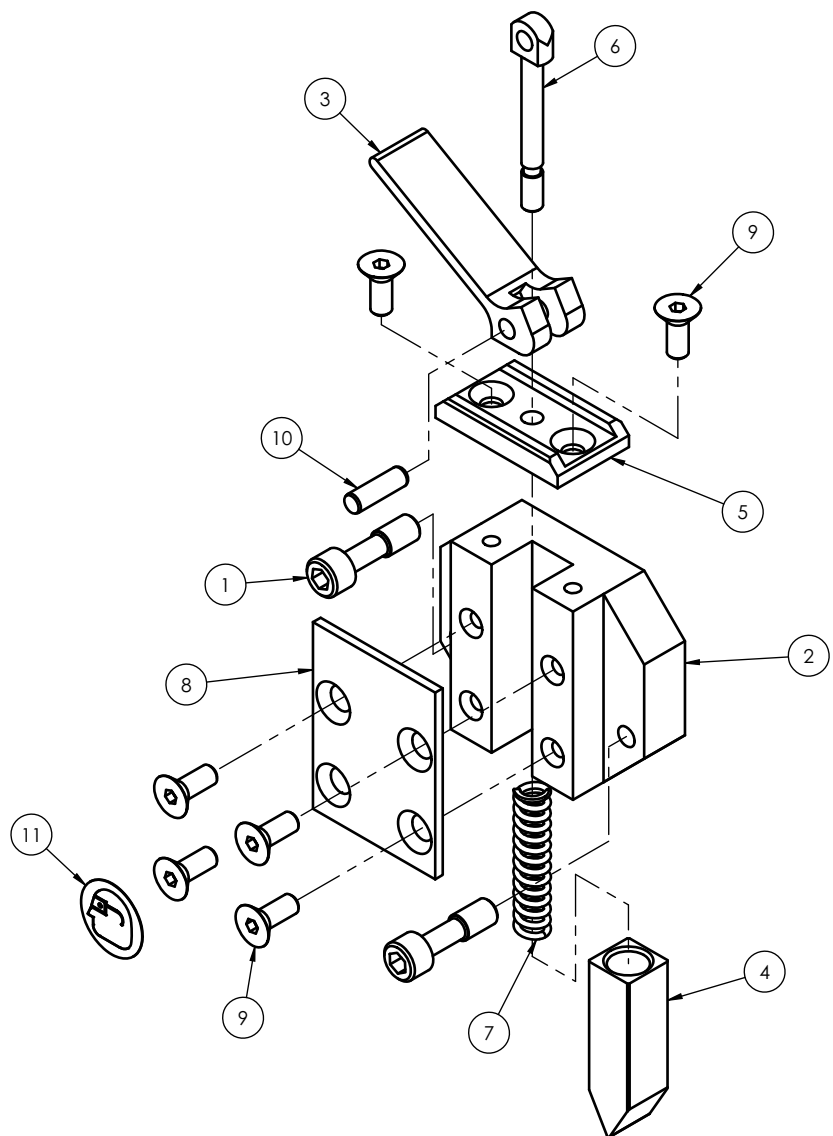
80-4103-00



Axial Trip (80-4105-00)

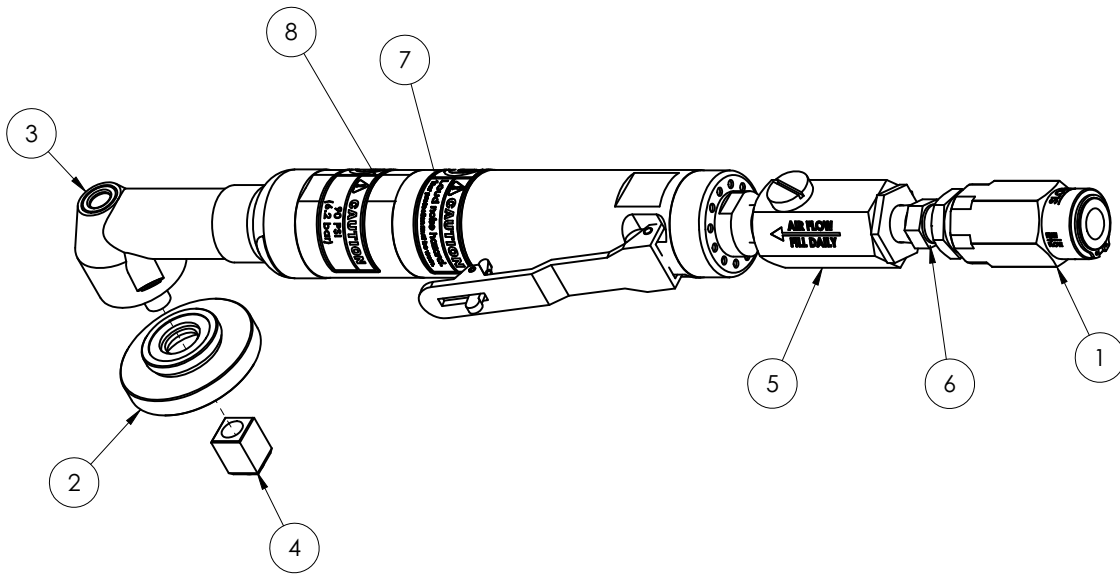
ITEM	PART NUMBER	QTY.	DESCRIPTION
1	80-0008-00	2	SHCS, 1/4-20 x 7/8 CAPTIVATED
2	80-0044-00	1	HOUSING, AXIAL TRIP
3	80-0045-00	1	LEVER, AXIAL TRIP
4	80-0046-00	1	TRIP, AXIAL
5	80-0047-00	1	PLATE, CAM
6	80-0048-00	1	ROD, CAM
7	80-0049-00	1	SPRING, .325 OD x .058 DIA x 1.5 Lg
8	80-0079-00	1	COVER, AXIAL TRIP
9	90-043-05	6	FHCS, 10-24 X 1/2
10	90-046-06	1	DOWEL PIN 3/16 X 5/8
11	90-401-05	1	LABEL, 3/4" DIA EYE PROTECTION

80-4105-00

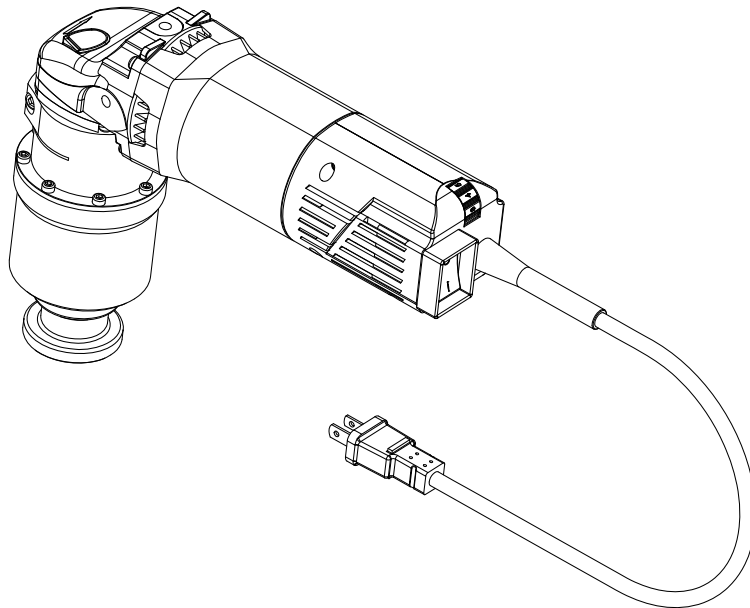


Pneumatic Drive (80-4004-00)

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	16-060-00	1	VALVE, SPEED CONTROL
2	80-0024-00	1	FLANGE, AIR MOTOR
3	80-0069-00	1	AIR MOTOR
4	80-0075-00	1	DRIVE, SQUARE
5	80-0101-00	1	LUBRICATOR, IN-LINE 1/4"
6	90-058-58	1	NIPPLE, 1/4 HEX H.P.
7	90-401-00	1	LABEL, EAR PROTECTION
8	90-401-02	1	LABEL, PRESSURE-AIR



110 V Electric Drive (80-4005-01)



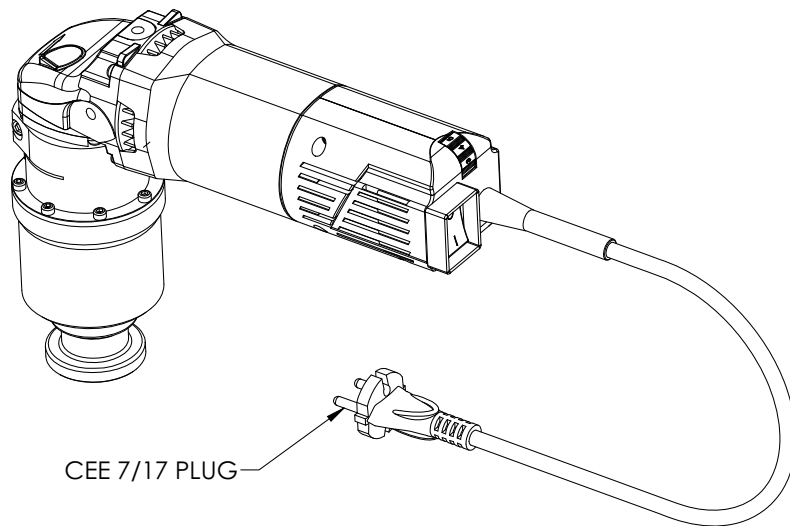
SPECIFICATIONS:

1. VOLTS: 120
2. AMPS: 12
3. POWER: 1530W
4. HERTZ: 50-60
5.

SPEED	RPM
1	80
2	115
3	150
4	190
5	225
6	240
6. WEIGHT: 10.2 LB. [4.6 kg]

INCLUDES 3/16" STUBBY
ALLEN KEY (NOT SHOWN)

220 V Electric Drive (80-4006-01)



SPECIFICATIONS:

1. VOLTS: 230
2. AMPS: 6
3. POWER: 1530W
4. HERTZ: 50-60
5.

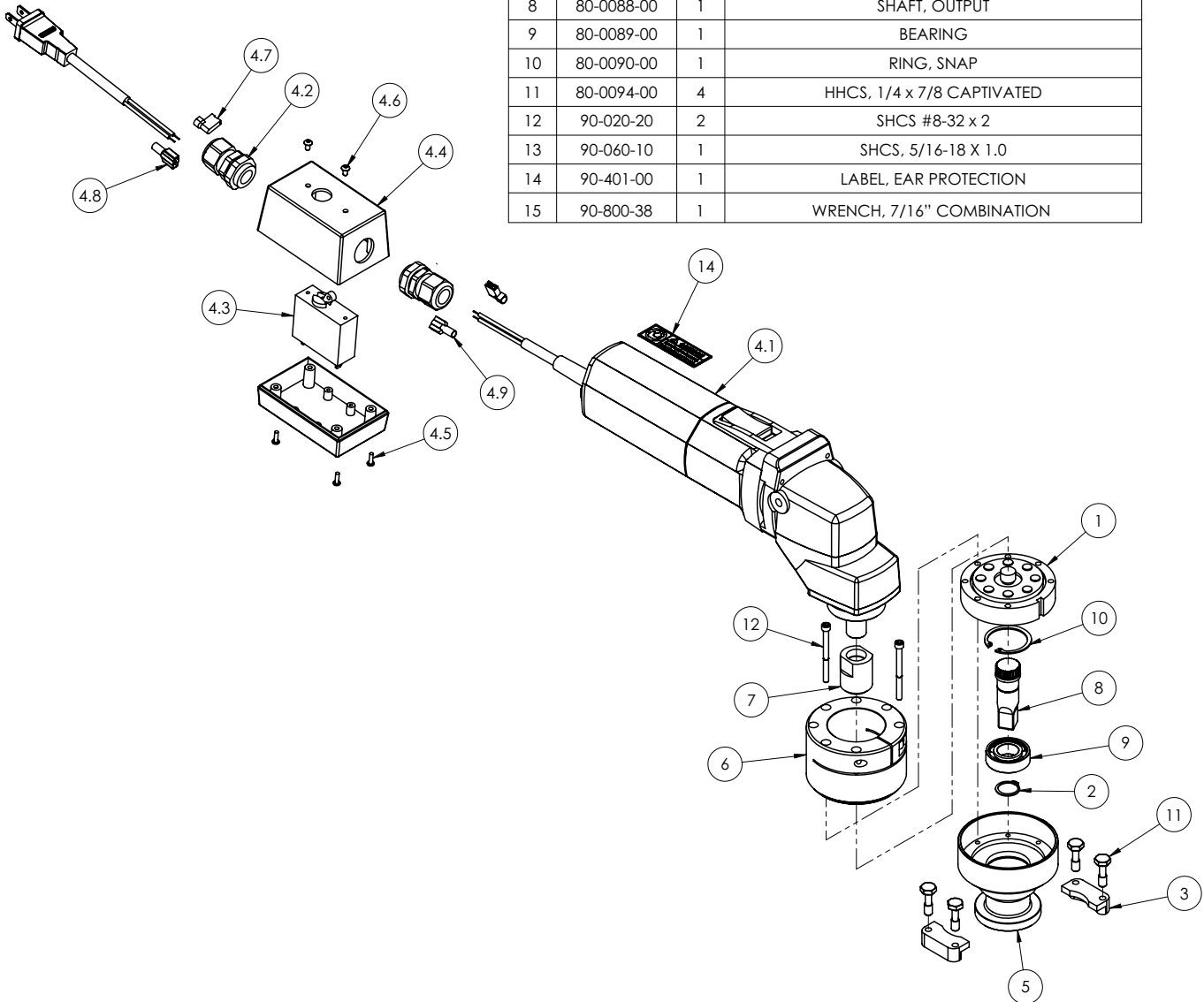
SPEED	RPM
1	80
2	115
3	150
4	190
5	225
6	240
6. WEIGHT: 10.2 LB. [4.6 kg]

INCLUDES 3/16" STUBBY
ALLEN KEY (NOT SHOWN)

110 V Electric Drive (80-4005-00, OBSOLETE)

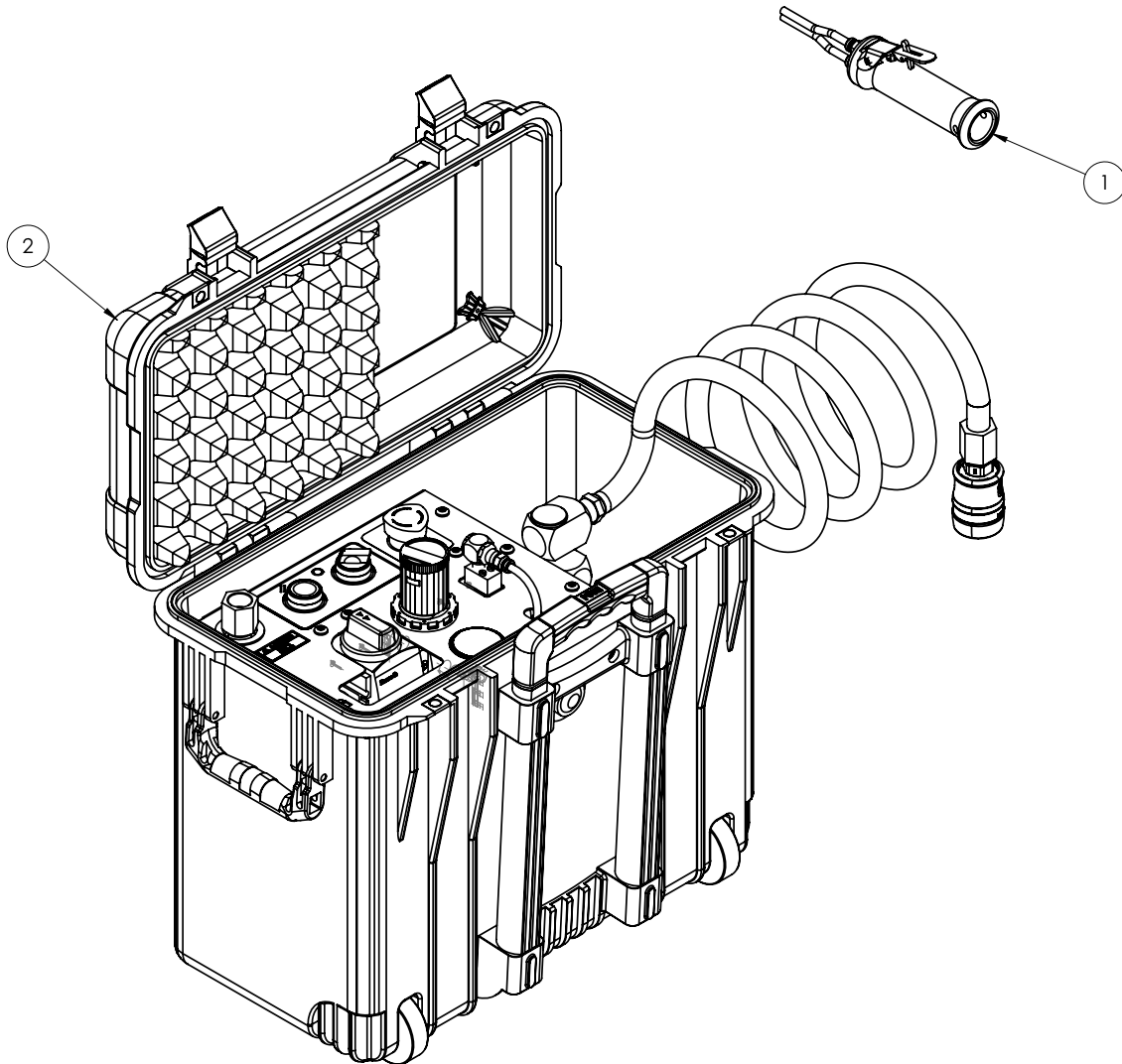
110 V ELECTRIC DRIVE
80-4005-00

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	11-103-00	1	GEARBOX, PLANETARY OUTPUT
2	76-175-00	1	RETAINING RING, 43/64
3	80-0023-00	2	CLAMP, MOTOR
4	80-0084-01	1	MOTOR, 110V CIRCUIT BREAKER ASSY.
4.1	80-0084-00	1	MOTOR, 110V
4.2	11-004-00	2	GRIP, CORD
4.3	80-0091-00	1	CIRCUIT BREAKER, 10A
4.4	80-0093-00	1	ENCLOSURE, BREAKER
4.5	90-002-04	4	PHMS, 4-40 x 7/16
4.6	90-002-02	2	BHCS, 6-32 x 1/4
4.7	90-501-49	2	TERMINAL, 16-14 AWG 1/4 FLAG INSULATED
4.8	90-501-50	1	TERMINAL, 16-14 AWG 1/4 SPADE MALE INSULATED
4.9	90-501-51	1	TERMINAL, 16-14 AWG 1/4 SPADE FEMALE INSULATED
5	80-0085-00	1	HOUSING, PLANETARY DRIVE
6	80-0086-00	1	COLLAR, CLAMP
7	80-0087-00	1	ADAPTER, INPUT
8	80-0088-00	1	SHAFT, OUTPUT
9	80-0089-00	1	BEARING
10	80-0090-00	1	RING, SNAP
11	80-0094-00	4	HHCS, 1/4 x 7/8 CAPTIVATED
12	90-020-20	2	SHCS #8-32 x 2
13	90-060-10	1	SHCS, 5/16-18 X 1.0
14	90-401-00	1	LABEL, EAR PROTECTION
15	90-800-38	1	WRENCH, 7/16" COMBINATION



Split Frame Air Control Module (60-420-00)

ITEM	PART NUMBER	QTY	DESCRIPTION
1	60-373-00	1	HAND PENDANT ASSEMBLY, SF REMOTE CONTROL
2	60-375-00	1	AIR CONTROL MODULE

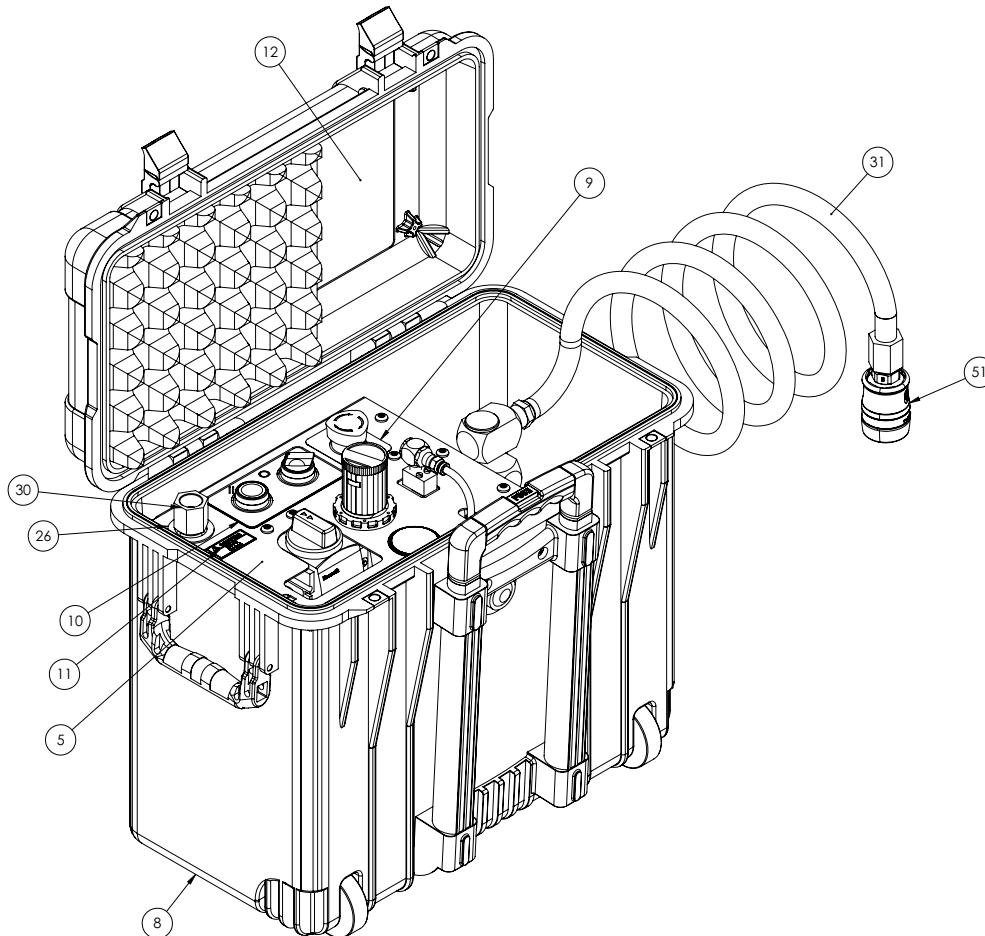


Air Control Module Subassembly (60-375-00)

Page 1 of 2

ITEM	PART NUMBER	QTY	DESCRIPTION
1	60-1283-00	1	FILTER, PRESSURE REGULATOR
2	60-1284-00	1	VALVE, 3/2-SHUT OFF
3	60-1285-00	1	3/2 DIR DUMP VALVE - PNEUM OPERATED
4	60-1286-00	2	AS3 BLOCK ASSEMBLY
5	60-1289-00	1	CASE PANEL
6	60-1290-00	1	CASE SEPERATOR PLATE
7	60-1291-00	2	AS3 BRACKET
8	60-1292-00	1	CASE, 1440
9	60-1293-00	1	LABEL, E-STOP BACKGROUND
10	60-1294-00	1	LABEL, RESET-ON/OFF
11	60-1295-00	1	LABEL, PRESSURE-AIR
12	60-1296-00	1	LABEL, ACM OPERATION
13	60-1297-00	1	NO AIR SPOOL VALVE
14	60-1298-00	2	NC AIR SPOOL VALVE
15	60-1299-00	1	MANIFOLD, AIR
16	60-1300-01	1	MODULAR 3 WAY AIR VALVE
17	60-1300-10	1	MODULAR 3 WAY MEMORY AIR VALVE
18	60-1301-01	1	22 mm MUSHROOM BUTTION, PUSH/TURN
19	60-1301-02	1	SWITCH, TWIST 90-DEG.
20	60-1301-03	1	BUTTON, PUSH
21	60-1301-11	1	ADAPTER, PB-22-K
22	60-1301-12	1	ADAPTER, PB-22-T
23	60-1301-13	1	ADAPTER, PB-22-P
24	60-1302-00	1	GAUGE, BACK MOUNT W/U-CLAMP
25	60-1303-00	2	3/8 BANTAM MUFFLER
26	60-1304-00	1	GROMMET, 1.5" PANEL
27	60-1307-00	1	NUT, AS3 PANEL

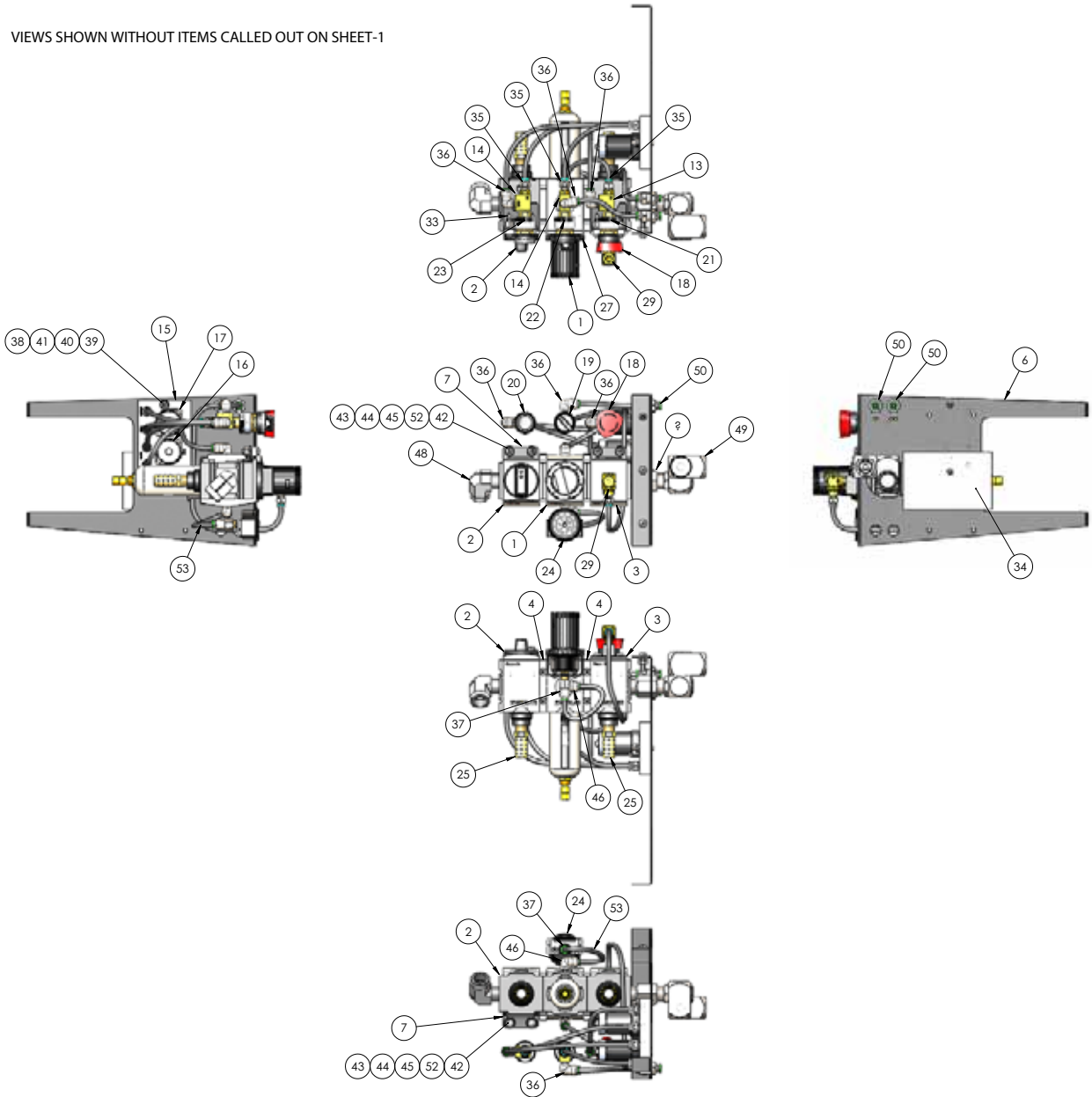
ITEM	PART NUMBER	QTY	DESCRIPTION
28	60-1308-00	1	LABEL, ACM CASE (NOT SHOWN)
29	60-1309-00	1	QUICK EXHAUST VALVE
30	60-1310-01	1	1/2" HOSE ASSEMBLY
31	60-1310-02	1	1/2" HOSE ASSEMBLY
32	60-1311-00	1	STRAP, 9" VELCRO CINCH (NOT SHOWN)
33	90-002-10	4	PHTF, M3 X 10 MM
34	90-010-01	1	BAG, 3 x 5 COTTON DRAWSTRING
35	90-038-02	4	ADAPTER, 1/8 NPTM X 1/4 PTC BRASS
36	90-038-03	3	ELBOW, 1/8 NPTF x 1/4 PTC 90 BRASS
37	90-038-04	1	ADAPTER, 1/8" FPT x 1/4" PTC
38	90-042-12	2	BHCS, 10-24 X 1-1/8
39	90-045-03	2	NUT, 10-24 HEX
40	90-045-51	2	WASHER, #10 FLAT
41	90-045-52	2	WASHER, #10 SPLIT RING
42	90-052-08	7	BHCS 1/4-20 X .875 LG
43	90-055-01	7	NUT, 1/4-20 HEX
44	90-055-52	7	WASHER, 1/4 SPLIT RING
45	90-055-53	7	WASHER, 1/4 FLAT
46	90-058-10	2	ADAPTER, 1/4" MPT X 1/4" PTC 90 ELBOW
47	90-098-15	1	ADAPTER, 08MP - 08FP STRAIGHT
48	90-098-56	1	STREET ELBOW, 1/2 X 1/2
49	90-200-05	1	SWIVEL, 1/2"
50	90-220-01	2	BULKHEAD, 1/4" PTC
51	90-302-04	1	QD AIR COUPLING, 1/2" X 1/2" MPT
52	90-501-62	4	SPACER
53	90-902-01	5-Ft.	HOSE, 1/4" OD X 1/8" ID POLYURETHANE



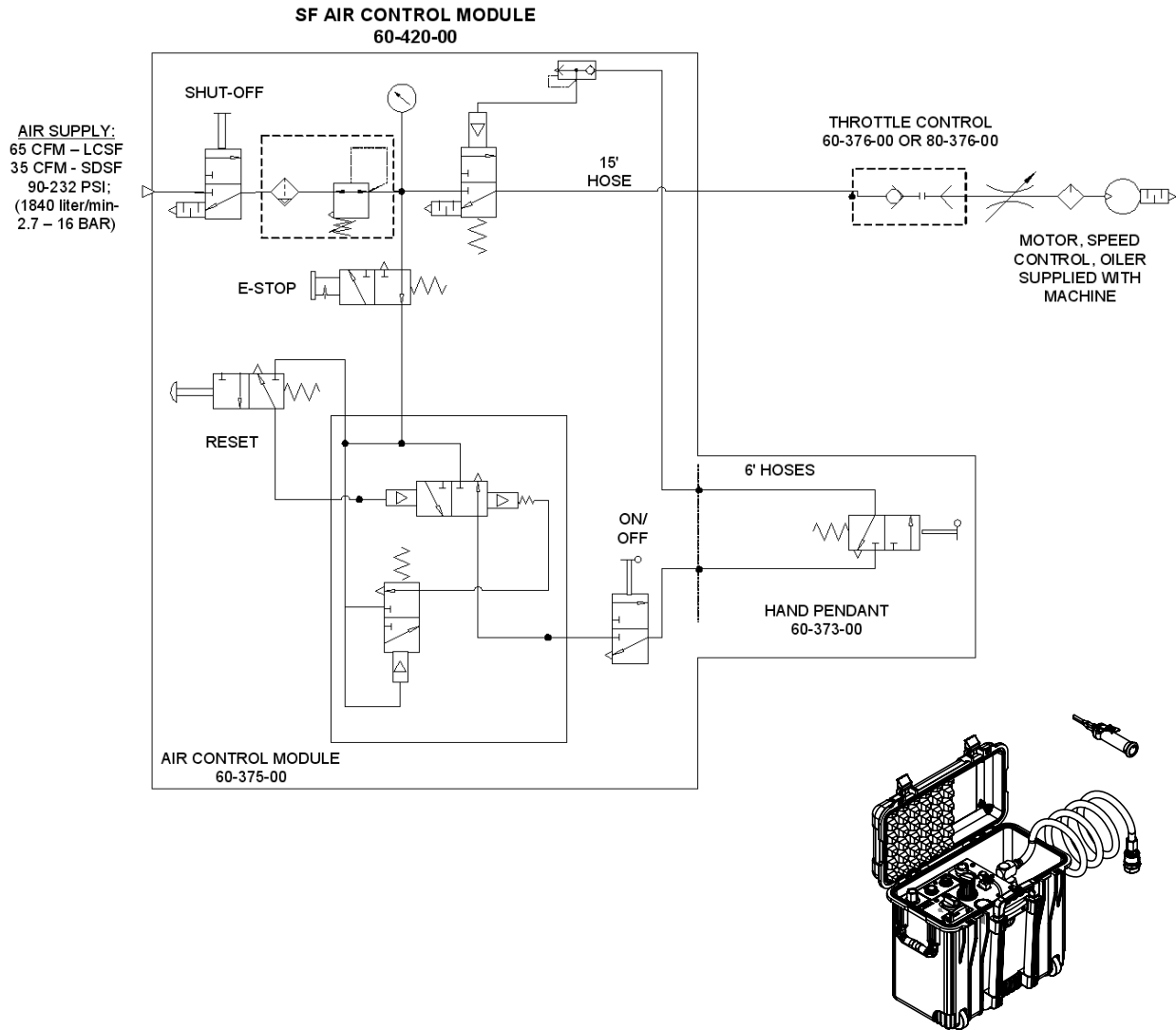
Air Control Module Subassembly (60-375-00)

Page 2 of 2

VIEWS SHOWN WITHOUT ITEMS CALLED OUT ON SHEET-1



Air Control Module Schematic (60-420-00)



Chapter 9

Accessories and Spare Parts

ACCESSORIES

Table 1: Accessories

Name	Part Number
Pneumatic drive	80-4004-00
Electric drive	80-4005-00
Front drive pinion housing	80-4003-xx
Axial feed tool slide set	80-5102-xx
Radial feed tool slide set	80-5101-xx
Radial socket weld slide	80-4100-xx
Counterbore attachment	80-4107-00
FME tool slide	80-4106-xx
Outside bevel tool cover ass'y	80-4108-00
Aluminum collet sets	80-5201-xx
Clamp feet set	80-5001-00
Bench mount	80-4201-xx
7/16" Hex-through torque wrench	90-800-84
LCSF air treatment module	05-082-00
Air treatment module hose	80-4202-00

The part numbers listed are common to all SDSF machines. Refer to the drawings in Chapter 8 to determine which accessories are used with your SDSF model.

In This Chapter

ACCESSORIES

TOOLING

OIL

PIPE COLLET SETS

SPARE PARTS

Table 2: Tooling

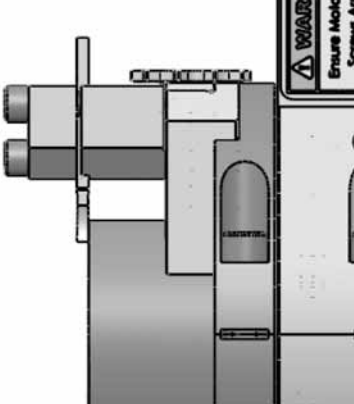

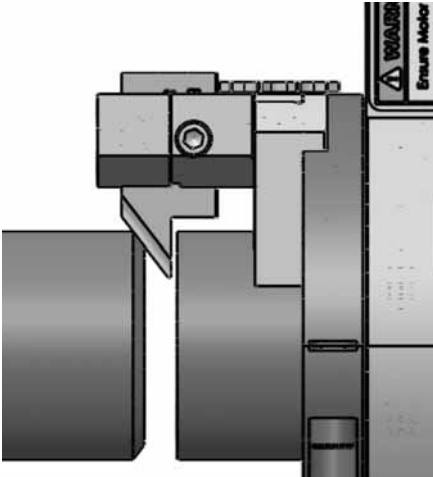
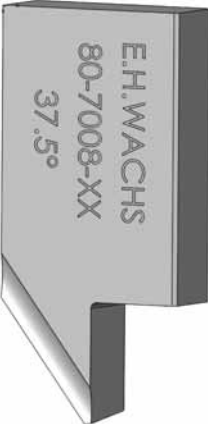
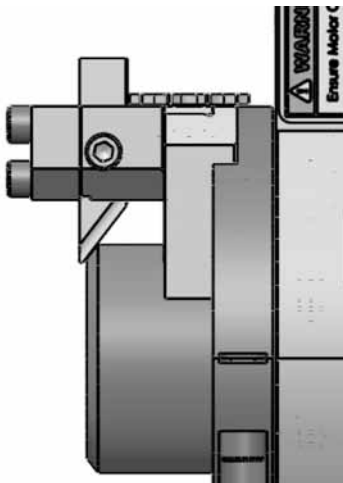

	Photo	Description	Part Number
		Parting tool, low clearance	80-7001-01
		Parting tool, standard	80-7001-02
		Parting tool, extended Reach	80-7001-03
		Outside bevel, 37.5°, low clearance	80-7008-01
		Outside bevel, 37.5°, standard	80-7008-02
		Outside bevel, 37.5°, extended reach	80-7008-03
		Beveling tool, 37.5°, low clearance	52-710-01
		Beveling tool, 37.5°, standard	52-710-02
		Beveling tool, 37.5°, extended reach	52-710-03

Table 2: Tooling

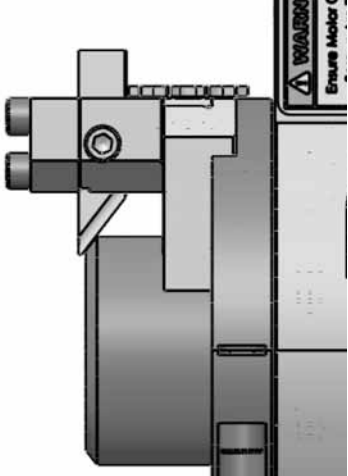
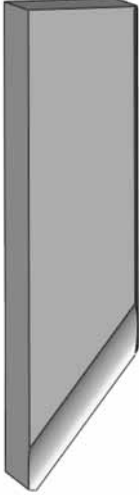
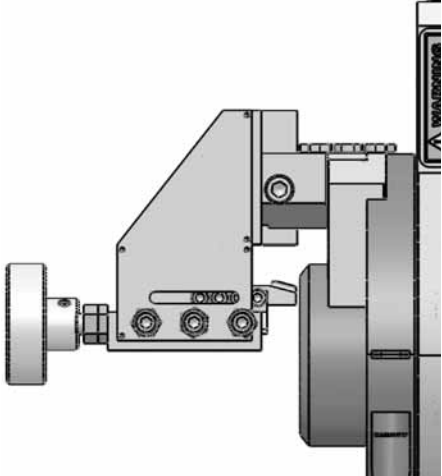
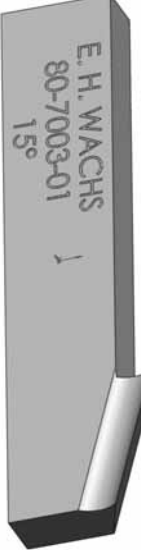
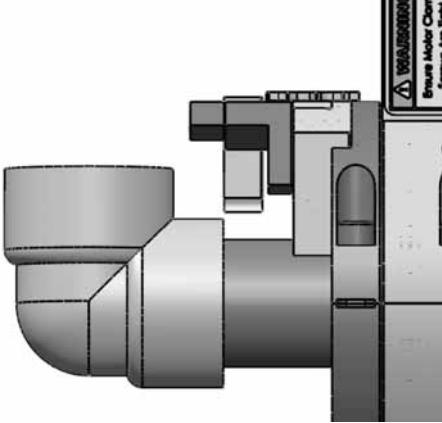

	Photo	Description	Part Number
		Beveling tool, 30°, extended reach	52-705-01
		Beveling tool, 45°, extended reach	52-705-03
		Counterbore tool	80-7003-01
		Radial socket weld removal tool, low clearance	80-7006-01
		Radial socket weld removal tool, standard	80-7006-02
		Radial socket weld removal tool, extended reach	80-7006-03

Table 2: Tooling

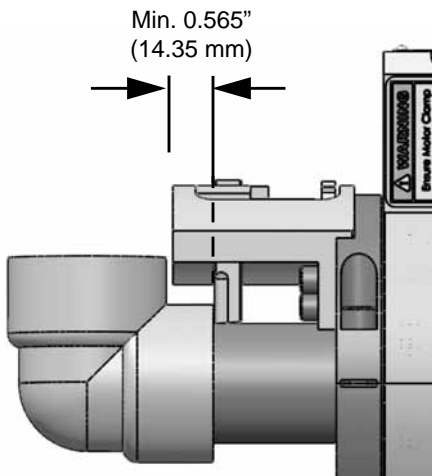

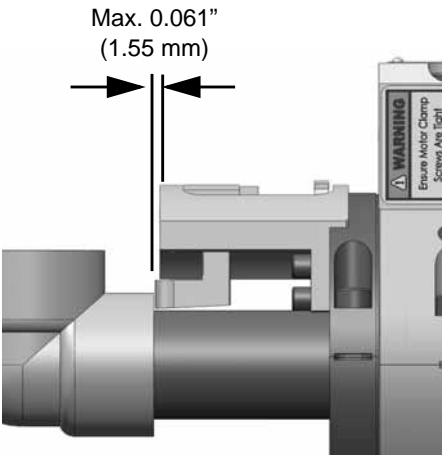
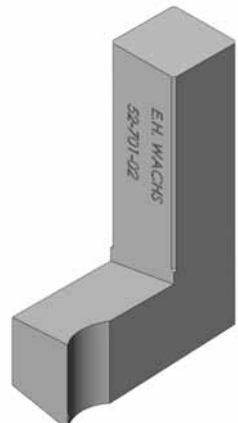
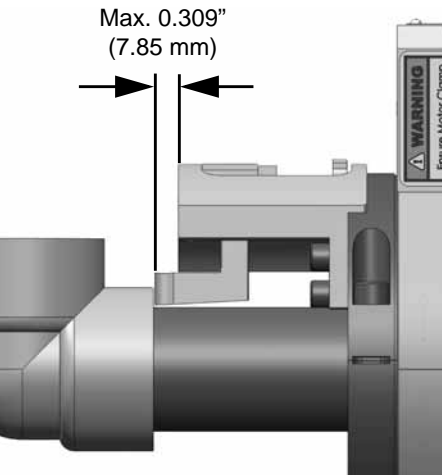
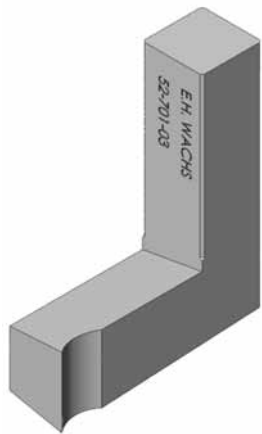
	Photo	Description	Part Number
 <p>Min. 0.565" (14.35 mm)</p>		Axial socket weld removal, low clearance	52-701-01
		Axial socket weld removal, standard	80-7007-02
		Axial socket weld removal, extended reach	80-7007-03
		Standard axial carbide tool	52-702-01
 <p>Max. 0.061" (1.55 mm)</p>		Offset axial HSS tool	52-701-02
		Offset axial carbide tool	52-702-02
 <p>Max. 0.309" (7.85 mm)</p>		Extended Off-set axial HSS tool	52-701-03

Table 3: Oil

Description	Part Number
Way oil —Half Pint	60-1184-00

Table 4: Pipe Collet Sets

Machine Size	Collet Set	Includes
1"	80-5201-10	1" SD x 1/2" pipe collet 1" SD x 3/4" pipe collet 1" SD x 1" pipe collet 1" collet nut Adjustable spanner wrench (90-800-78)
1-1/2"	80-5201-15	1-1/2" SD x 1" pipe collet 1-1/2" SD x 1-1/4" pipe collet 1-1/2" SD x 1-1/2" pipe collet 1-1/2" collet nut Adjustable spanner wrench (90-800-78)
2"	80-5201-20	2" SD x 1-1/4" pipe collet 2" SD x 1-1/2" pipe collet 2" SD x 2" pipe collet 2" collet nut Adjustable spanner wrench (90-800-78)
2-1/2"	80-5201-25	2-1/2" SD x 1-1/2" pipe collet 2-1/2" SD x 2" pipe collet 2-1/2" SD x 2-1/2" pipe collet 2-1/2" collet nut Adjustable spanner wrench (90-800-78)
3"	80-5201-30	3" SD x 2" pipe collet 3" SD x 2-1/2" pipe collet 3" SD x 3" pipe collet 3" collet nut Adjustable spanner wrench (90-800-79)
3-1/2"	80-5201-35	3-1/2" SD x 2-1/2" pipe collet 3-1/2" SD x 3" pipe collet 3-1/2" SD x 3-1/2" pipe collet 3-1/2" collet nut Adjustable spanner wrench (90-800-79)
4"	80-5201-40	4" SD x 3" pipe collet 4" SD x 3-1/2" pipe collet 4" SD x 4" pipe collet 4" collet nut Adjustable spanner wrench (90-800-79)

Table 4: Pipe Collet Sets

Machine Size	Collet Set	Includes
5"	80-5201-50	5" SD x 4" pipe collet 5" SD x 5" pipe collet 5" collet nut Adjustable spanner wrench (90-800-80)
6"	80-5201-60	6" SD x 5" pipe collet 6" SD x 6" pipe collet 6" collet nut Adjustable spanner wrench (90-800-80)

SPARE PARTS

No spare parts are recommended with initial purchase of the SDSF. Order replacement parts as needed.

When ordering spare parts, refer to the parts lists in Chapter 8. Please provide the part description and part number for all parts you are ordering. Refer to Chapter 10 for ordering information.

Chapter 10

Ordering Information

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To place an order, request service, or get more detailed information on any E.H. Wachs products, call us at one of the following numbers:

U.S. 800-323-8185
International: 847-537-8800

You can also visit our Web site at:

www.ehwachs.com

ORDERING REPLACEMENT PARTS

When ordering parts, refer to the parts lists in Chapter 8. Please provide the part description and part number for all parts you are ordering.

REPAIR INFORMATION

Please call us for an authorization number before returning any equipment for repair or factory service. We will advise you of shipping and handling. When you send the equipment, please include the following information:

- Your name/company name
- Your address
- Your phone number
- A description of the problem or the work to be done

In This Chapter

ORDERING REPLACEMENT PARTS

REPAIR INFORMATION

WARRANTY INFORMATION

RETURN GOODS ADDRESS

Before we perform any repair, we will estimate the work and inform you of the cost and the time to complete it.

WARRANTY INFORMATION

Enclosed with the manual is a warranty card. Please fill out the registration card and return to E.H. Wachs. Retain the owner's registration record and warranty card for your information.

RETURN GOODS ADDRESS

Return equipment for repair to the following address.

E.H. Wachs
600 Knightsbridge Parkway
Lincolnshire, Illinois 60069 USA



600 Knightsbridge Parkway • Lincolnshire, IL 60069
847-537-8800 • www.ehwachs.com