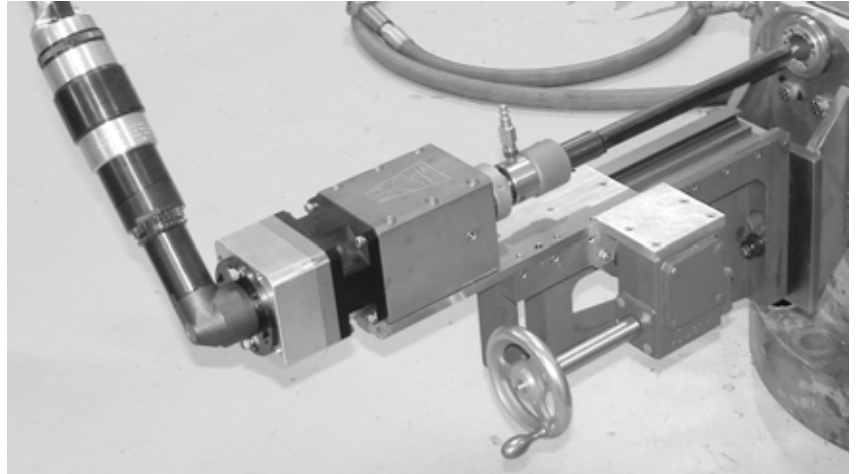




E.H. Wachs Company
600 Knightsbridge Parkway
Lincolnshire, IL 60069
www.wachsco.com

Lock-Down Screw Drilling System

User's Manual



E.H. Wachs Company Part No. 06-020-MAN
Rev. 0-0407, April 2007

Revision History:
Original April 2007

Copyright © 2007 E.H. Wachs Company. All rights reserved.
This manual may not be reproduced in whole or in part
without the written consent of E.H. Wachs Company.

Table of Contents

Chapter 1: About the LDS Drilling System	1
Purpose of This Manual	1
How to Use The Manual	1
Symbols and Warnings	2
Manual Updates and Revision Tracking	2
About the LDS Drilling System	3
Drill	3
Air Chuck	3
Adapter Saddle and Base	4
Tooling and Drilling Accessories	6
 Chapter 2: Safety	 7
Operator Safety	7
Safety Symbols	8
Protective Equipment Requirements	9
Safety Labels	9
Machine Safety	10
 Chapter 3: Set-Up and Operation	 11
Preparing the Screw for Drilling	11
Installing the Saddle and Base Plate	12
Assembling and Mounting the Drill	17
Drilling out the LDS	20
Drilling a Larger I.D.	23
 Chapter 4: Routine Maintenance	 25
Lubrication	25
Tooling Maintenance	25
 Chapter 5: Parts Lists and Ordering Information	 27
Drawings and Parts Lists	28
Tooling Parts List	32
Ordering Information	32
Ordering Replacement Parts	32
Repair Information	32
Warranty Information	33
Return Goods Address	33

Chapter 1

About the LDS Drilling System

PURPOSE OF THIS MANUAL

This manual explains how to operate and maintain the Power-Drill with adapter for lock-down screw (LDS) removal. It includes instructions for set-up, operation, and maintenance. It also contains parts lists and diagrams to help you order replacement parts and perform user-serviceable repairs.

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 the 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.

In This Chapter

PURPOSE OF THIS MANUAL

HOW TO USE THE MANUAL

SYMBOLS AND WARNINGS

MANUAL UPDATES AND REVISION TRACKING

ABOUT THE LDS DRILLING SYSTEM

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



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.



NOTE

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

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

MANUAL UPDATES AND REVISION TRACKING

Occasionally, we will update manuals with improved operation or maintenance procedures, or with corrections if necessary. Revised accessory manuals will be available for customers. When a manual is revised, we will update the revision history on the title page and at the bottom of the pages.

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. Remove the old manual from your binder and replace it with the new one.

ABOUT THE LDS DRILLING SYSTEM

The components for drilling out and removing lock-down screws include a modified E.H. Wachs pneumatic Pow-R-Drill, and an adapter saddle and mounting plate to attach and square the drill to the spool assembly.

Special tooling is also provided for drilling the lock-down screws.

Drill

Components of the Pow-R-Drill are shown in Figure 1-1.

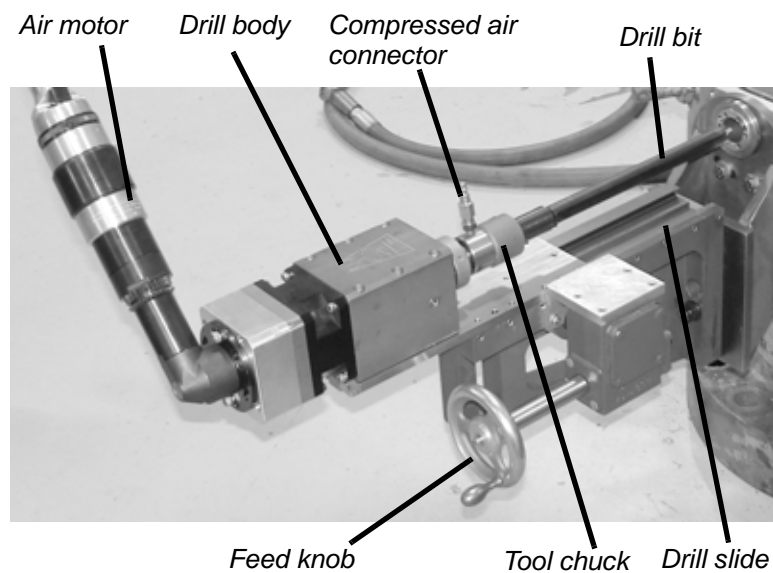


Figure 1-1. The photo illustrates the components of the Pow-R-Drill.

Air Chuck

A special chuck with a compressed air adapter provides air flow through the insert holders to clear chips during cutting. When drilling with one of the insert holders, connect a compressed air source to the chuck.

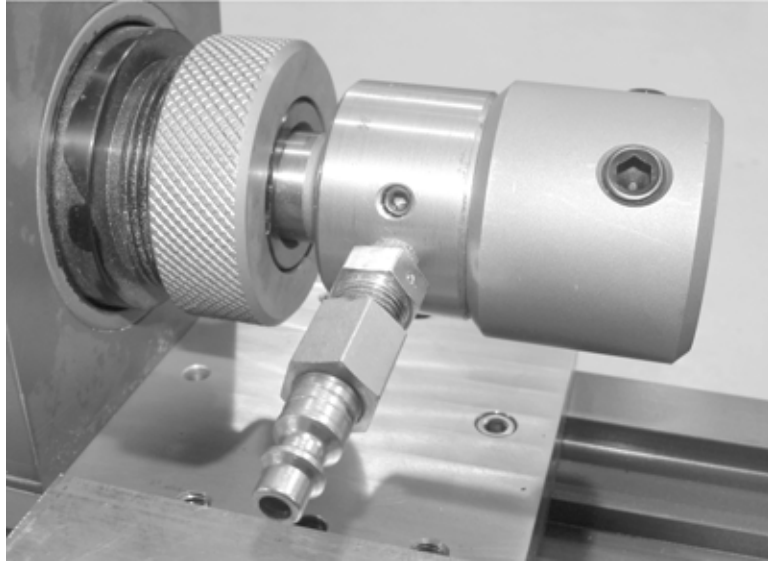


Figure 1-2. The air chuck has a compressed air adapter to provide air flow to the insert holders.

Adapter Saddle and Base

Figure 1-3 shows the adapter saddle that mounts to the spool flange. Figure 1-4 show the base that attaches the Pow-R-Drill to the saddle.

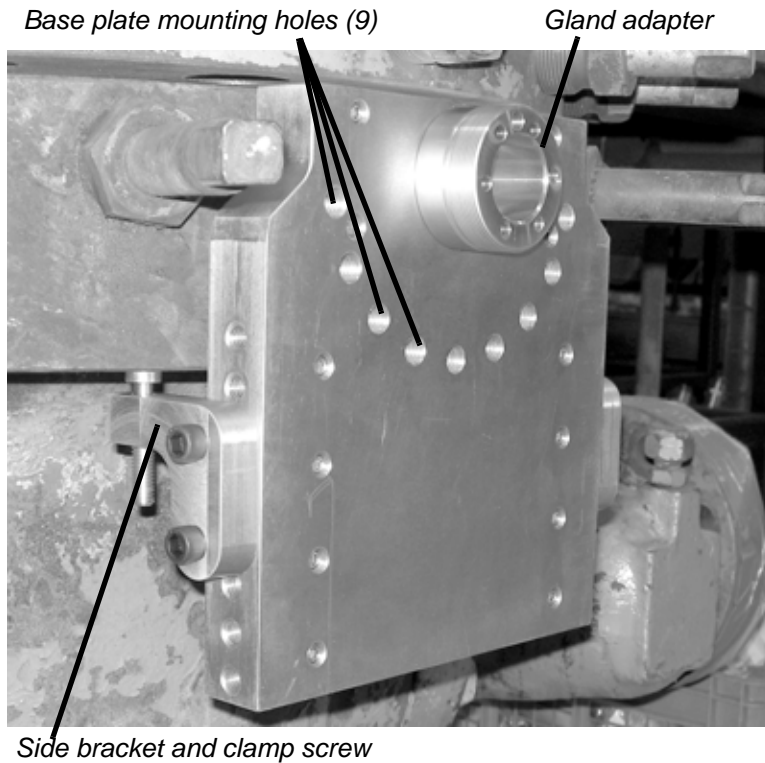


Figure 1-3. The photo illustrates the adapter saddle. The side bracket can be moved to the appropriate position for the spool you are drilling.

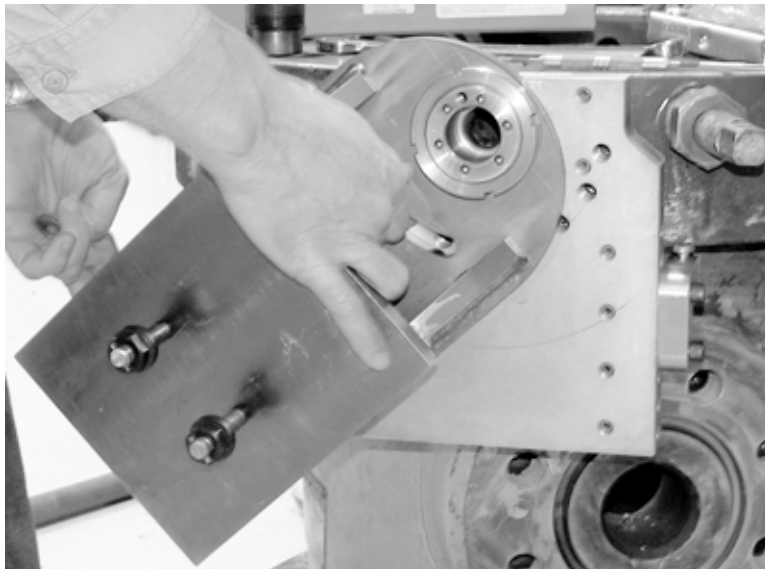


Figure 1-4. The photo illustrates the Pow-R-Drill mounting base plate (shown without drill). It can be swiveled to mount to any two of the mounting holes.

Tooling and Drilling Accessories

The following tooling is provided with the LDS drilling system:

- 3 spade drill holders
- 1/2" cobalt spade drill
- 3/4" cobalt spade drill
- 1" cobalt spade drill
- 1-1/16" cobalt spade drill
- 1-9/32" cobalt spade drill
- 3/4" x 8" HSS spotting drill
- 3/4" x 10" cobalt spotting drill
- 1" x 8" HSS end mill
- 3/4" insert holder
- 1" insert holder
- 1-1/4" insert holder.

The insert holders have air channels through the length of the insert body, with a port in the end of the holder. When you connect a compressed air source to the air chuck, the air flow through the holder clears chips during cutting, preventing the drill from binding.

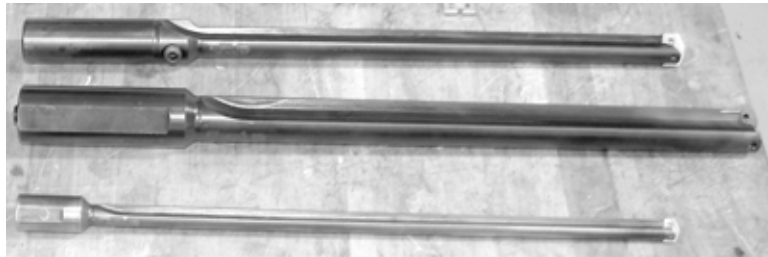


Figure 1-5. The photo shows (from top to bottom) the 3/4" insert holder, the 1" insert holder, and the 3/4" spotting drill.

Drilling accessories include the following components:

- Gland adapter for McEvoy glands
- Gland adapter for FMC glands
- Gland adapter for Vetco Gray glands
- 3/4" gland adapter collar
- 1" gland adapter collar

Chapter 2

Safety

The E.H. Wachs Company 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 the Pow-R-Drill. It contains important safety instructions and recommendations.

OPERATOR SAFETY

Follow these guidelines for safe operation of the equipment.

- **READ THE OPERATING MANUAL.** Make sure you understand all setup and operating instructions before you begin.
- **INSPECT MACHINE AND ACCESSORIES.** 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 PLACARDS AND LABELS.** Make sure all placards, labels, and stickers are clearly legible and in good condition. You can purchase replacement labels from E.H. Wachs Company.
- **KEEP CLEAR OF MOVING PARTS.** Keep hands, arms, and fingers clear of all rotating or moving parts.

In This Chapter

OPERATOR SAFETY

SAFETY LABELS

MACHINE SAFETY



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

Always turn machine off 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.
- **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.

Safety Symbols



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

WARNING

This safety alert 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**.

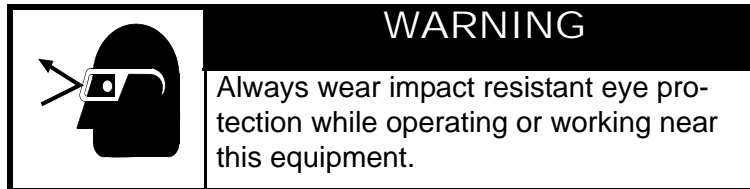
NOTICE

This alert indicates a situation that, if not avoided, **will** result in **damage to the equipment**.

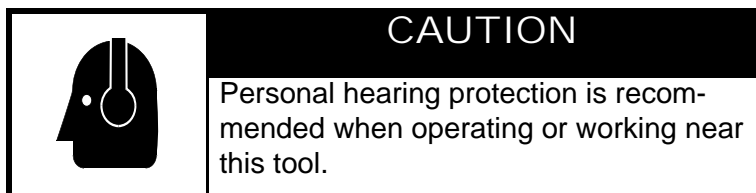
IMPORTANT

This alert indicates a situation that, if not avoided, **may** result in **damage to the equipment**.

Protective Equipment Requirements



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 American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection. Z87.1 is available from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.



Hearing protectors are required in high noise areas, 85 dBA or greater. 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.

SAFETY LABELS

There is no safety labeling on the Pow-R-Drill.

MACHINE SAFETY

To avoid damaging the equipment, follow these usage guidelines.

- Lubricate the machinery according to the recommendations in Chapter 4.
- Before starting the machine, make sure the tooling is inserted and fastened securely.
- Make sure that the saddle and adapter plate are securely fastened.
- Make sure that all pneumatic or hydraulic connections are secure.

Chapter 3

Set-Up and Operation

Follow the procedures in this chapter to set up the mounting adapter and Pow-R-Drill, and to drill out the lock-down screw.

PREPARING THE SCREW FOR DRILLING

1. Remove the gland nut from the lock-down screw you will be drilling.
2. Using a portaband saw, cut the LDS off as close to the flange as possible.

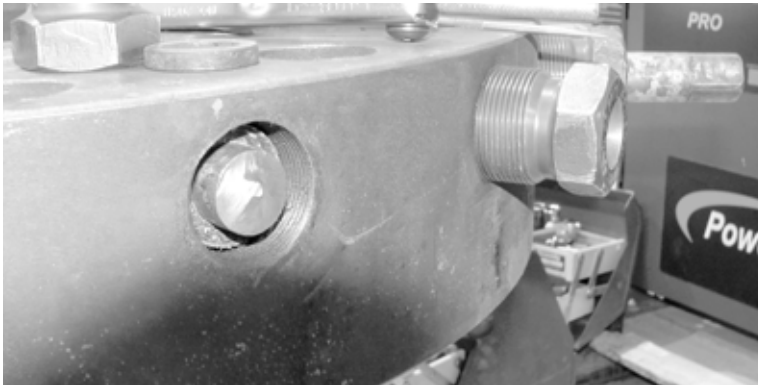


Figure 3-1. Cut off the LDS as close as possible.

3. Using a new gland nut or a tap, clean the gland nut threads in the flange.

In This Chapter

PREPARING THE SCREW FOR DRILLING

INSTALLING THE SADDLE AND BASE PLATE

ASSEMBLING AND MOUNTING THE DRILL

DRILLING OUT THE LDS

NOTE:

There are three gland adapters supplied with the machine. These adapters are designed to fit glands made by McEvoy (part no. 06-020-007), FMC (part no. 06-020-008), and Vetco Gray (part no. 06-020-009). Other sizes can be manufactured on request.



4. Locate the gland adapter that fits the threaded hole and make sure you can screw it in around the LDS. Remove the adapter.



Figure 3-2. Select the gland adapter (left) to match the hole and thread size of the gland nut (right).

INSTALLING THE SADDLE AND BASE PLATE

1. Apply Anti-Seize to the threads on the gland adapter.
2. Put the gland adapter through the saddle hole.

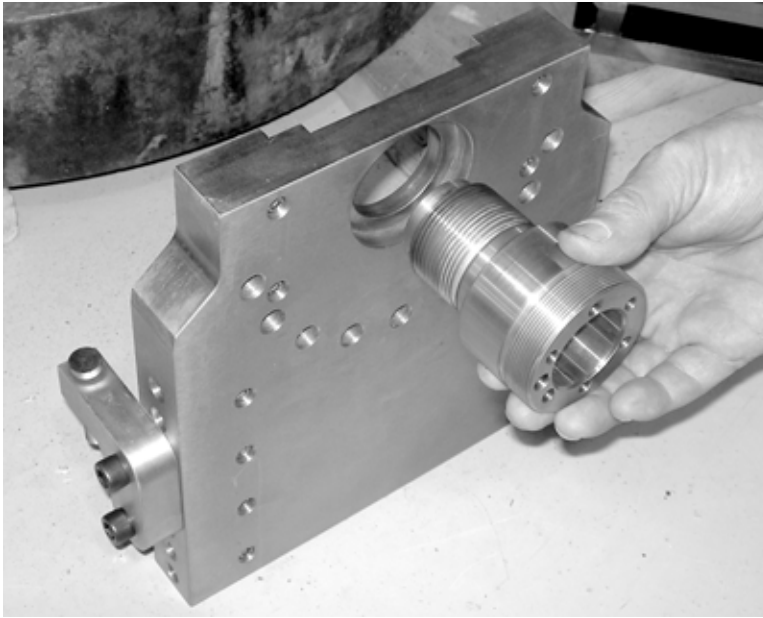


Figure 3-3. Insert the gland adapter through the saddle.

3. Position the saddle against the flange with the gland adapter over the LDS.

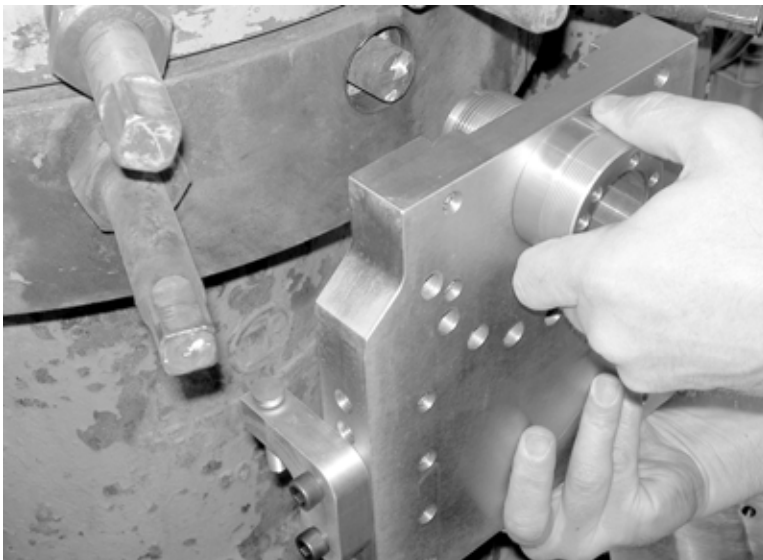


Figure 3-4. Attach the saddle by screwing the gland adapter into the flange.

4. Check that the side legs are at the correct position on the saddle so that the clamp screws can be tightened

against the flange. Remove and reposition the side legs if necessary.

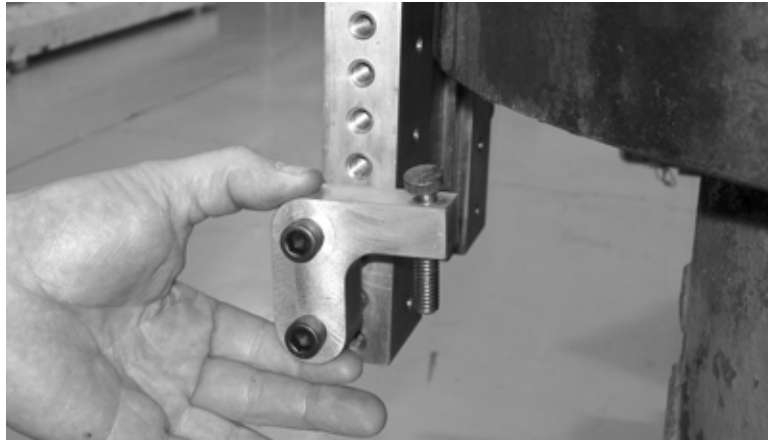


Figure 3-5. Set the side legs to the appropriate height for the saddle's position on the flange. The head of the clamping screw will need to be against the bottom of the flange.

5. Screw the gland adapter into the flange. Make sure the saddle is square with the flange, then tighten the gland adapter with the saddle squared.
6. Screw the clamp screws on the side legs so that the feet contact the flange.

NOTE:

The clamp screws are to keep the saddle from moving. They only need to be finger-tight against the flange.

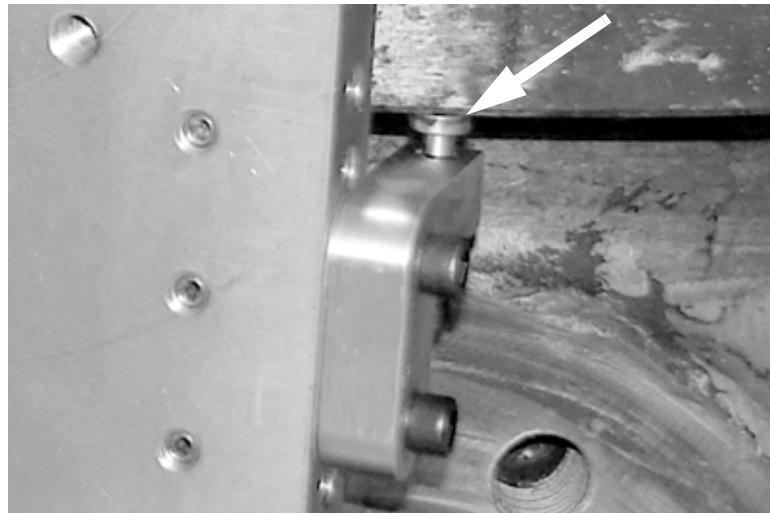


Figure 3-6. Turn the clamping screw by hand to snug the head of it against the flange. Repeat on the other side of the saddle.

7. Position the swivel base plate with the hole over the gland adapter.
8. Screw the locking ring onto the gland adapter to hold the base plate in place.



Figure 3-7. Fasten the base plate to the saddle by screwing the locking ring in place.

9. Swivel the base plate to the desired orientation for the drilling operation.

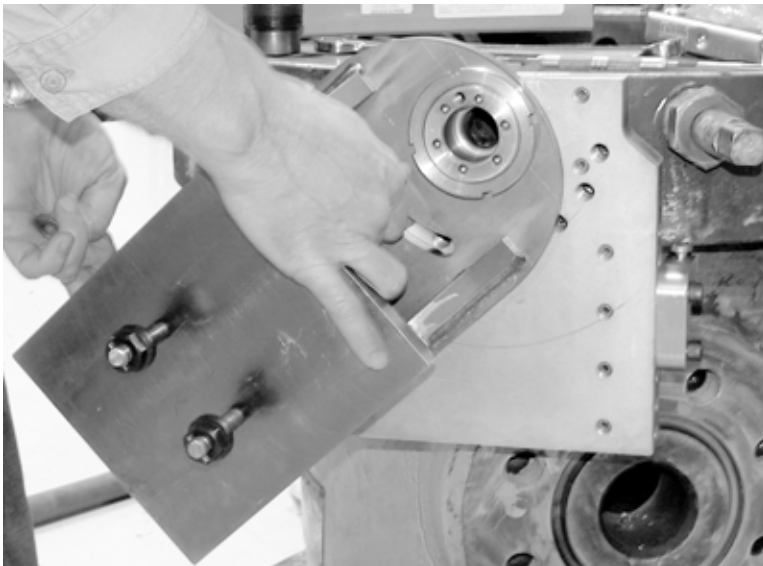


Figure 3-8. Swivel the base plate to the position desired for drilling.

10. Insert the two hex head screws through the slotted channels in the base plate and screw them into the holes in the saddle. Tighten the screws securely.



Figure 3-9. Insert the base mounting bolts into the threaded holes in the saddle.

11. Screw the nuts on the drill mounting bolts out to the ends of the bolts. You do not need to remove the nuts.

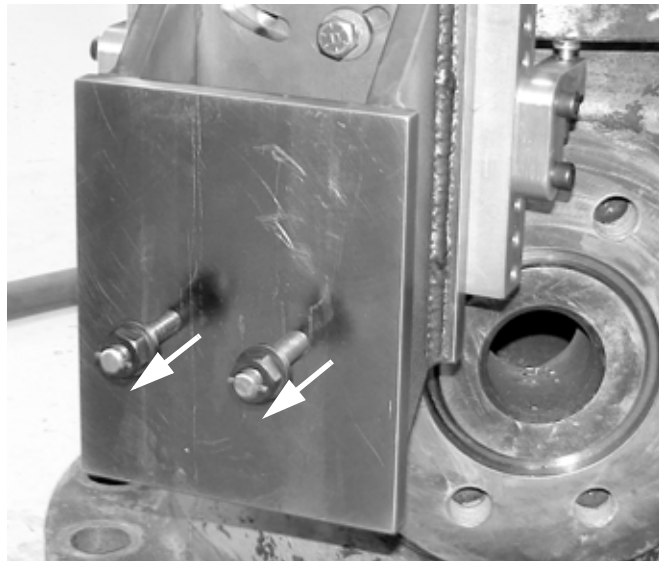


Figure 3-10. Screw the nuts out to the ends of the drill mounting bolts.

ASSEMBLING AND MOUNTING THE DRILL

1. Set the drill body onto the drill slide at the farthest-back position. The two dowel pins on the bottom of the drill body will fit into holes in the slide.

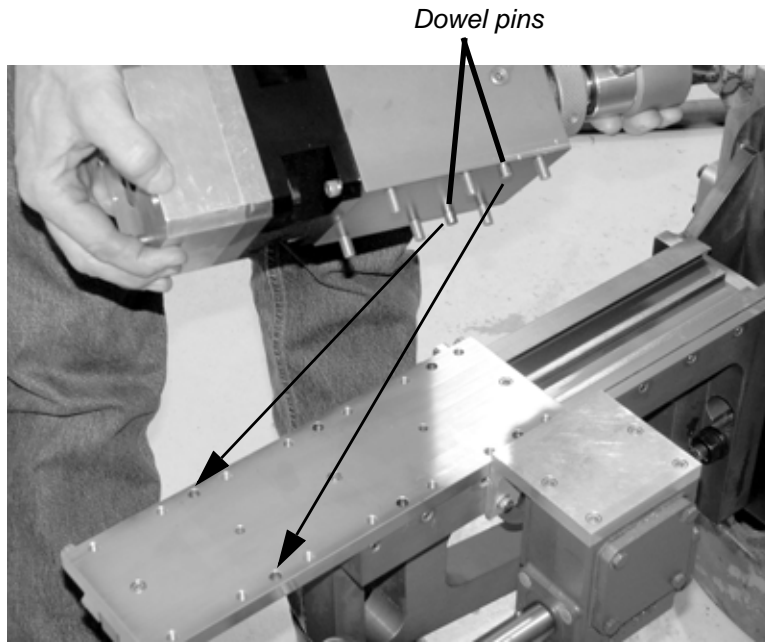


Figure 3-11. Set the drill on the slide with the dowel pins in the last pair of alignment holes.

2. Attach the drill to the slide with the six captivated screws in the drill housing.

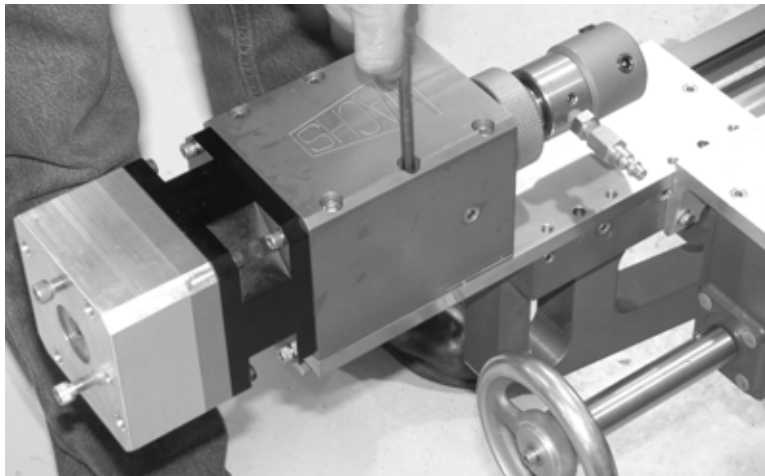


Figure 3-12. Fasten the drill to the slide with the six screws in the drill housing.



Depending on your work environment, you may find it easier to assemble the drill, drill slide, and base plate first, then attach the assembly to the saddle on the flange.

3. Mount the drill and slide assembly onto the base plate by inserting the drill mounting bolts in the base plate through the holes in the end of the slide.

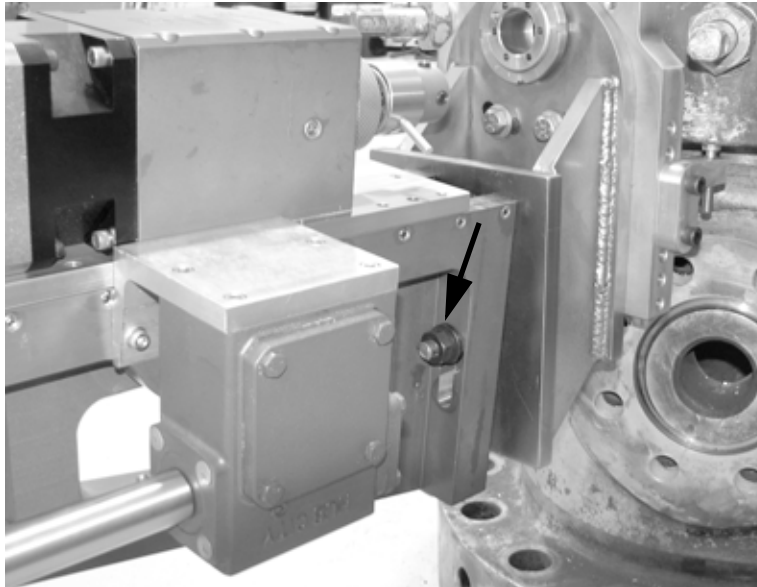


Figure 3-13. Mount the slide by inserting the mounting bolt nuts through the holes in the base of the slide.

4. Tighten the drill mounting nuts until they are just snug. You will need to move the base plate when you are ready to align the drill.
5. Insert the alignment shaft into the chuck on the drill. Feed the drill forward until the alignment shaft is close to the gland adapter.

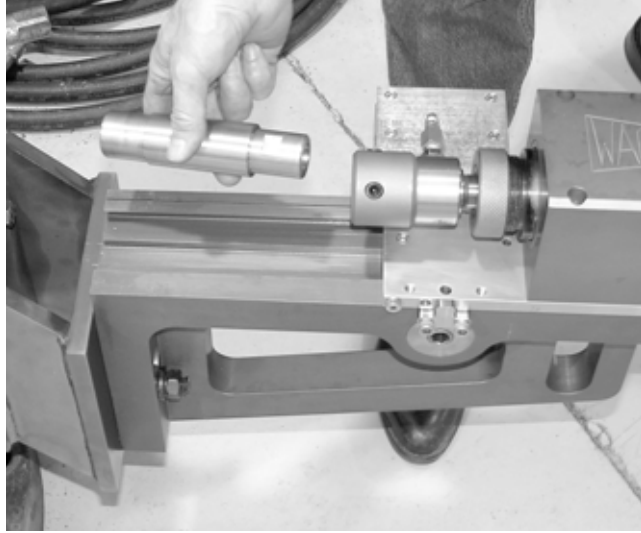


Figure 3-14. Insert the alignment shaft into the chuck and snug the set screw.

6. Loosen the mounting bolt nuts so that you can move the base plate up and down. Manually feed the drill forward while holding the base plate in position so that the alignment shaft fits into the gland adapter.



Figure 3-15. Lift the drill and slide so that the alignment shaft fits into the adapter. Feed the drill forward.

7. With the alignment shaft fed into the gland adapter to center it, tighten the mounting bolt nuts to secure the drill slide in position.
8. Retract the drill feed and remove the alignment shaft.



If you are assembling and aligning the drill before installing it on the flange, you can do this alignment step by using a gland adapter inserted through the hole in the base plate.

9. Install the air motor on the drill and tighten the screws holding the motor flange.

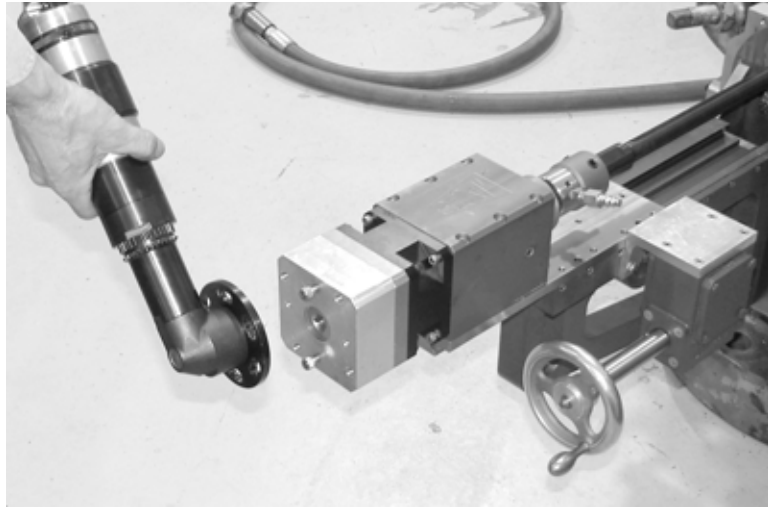


Figure 3-16. Install the air motor by putting the flange over the two screws in the drill housing. Turn the drill to lock the screws in their slots, and tighten the screws securely.

DRILLING OUT THE LDS

1. Insert the end mill into the chuck of the drill.
2. Turn on power to the drill. Turn the feed knob to feed the drill into the LDS. Feed the drill until you have milled the end of the LDS to a flat, square surface.
3. Retract the drill and turn off the motor. Remove the end mill.
4. Install the 3/4" centering bit into the chuck.
5. Insert the 3/4" centering collar into the gland adapter.
6. Turn on the motor. Feed the drill forward to make a centering hole about 1/2 inch deep into the LDS stem.
7. Retract the drill and turn off the motor. Remove the 3/4" centering bit.
8. Remove the 3/4" centering collar from the gland adapter.

9. Install the air chuck body into the drill chuck.

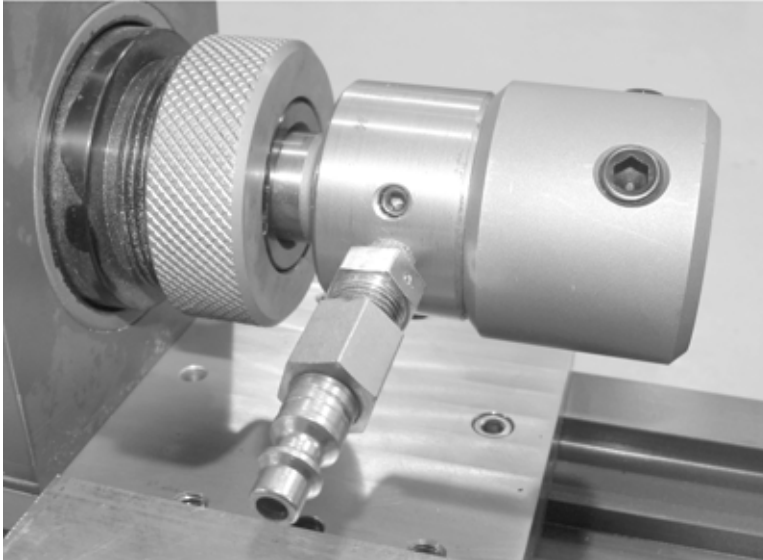


Figure 3-17. Install the air chuck into the drill.

10. Install the 3/4" insert holder, with tool inserts installed, into the air chuck body. Connect the air hose to the air inlet.

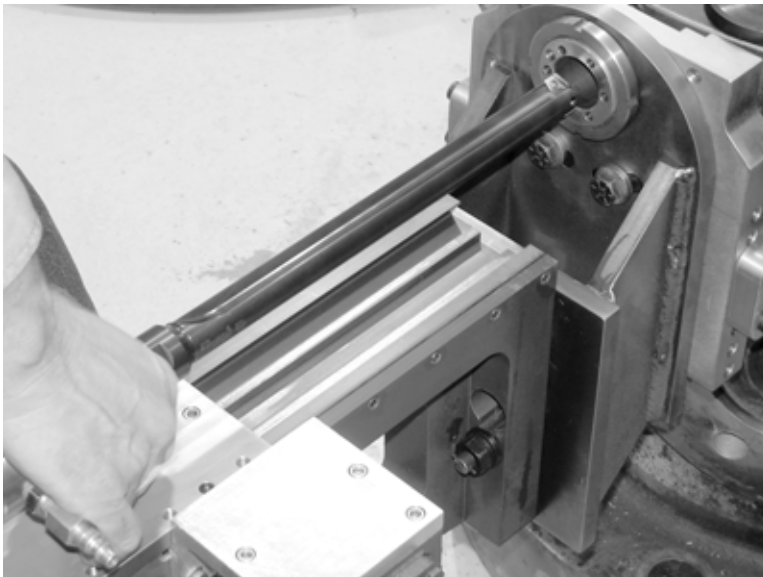


Figure 3-18. Install the 3/4" insert holder into the chuck.

11. Turn on the motor and the air supply to the air chuck. Feed the drill in to drill through the LDS with the 3/4" insert.

12. When you are through the LDS, retract the drill and turn off the motor. Remove the 3/4" insert from the air chuck body.
13. If required for the gland size you are drilling, install the 1" insert holder, with tool inserts installed, into the air chuck body.
14. Install the 1" centering collar into the gland adapter. Insert the lock screw into the adapter to retain the collar.

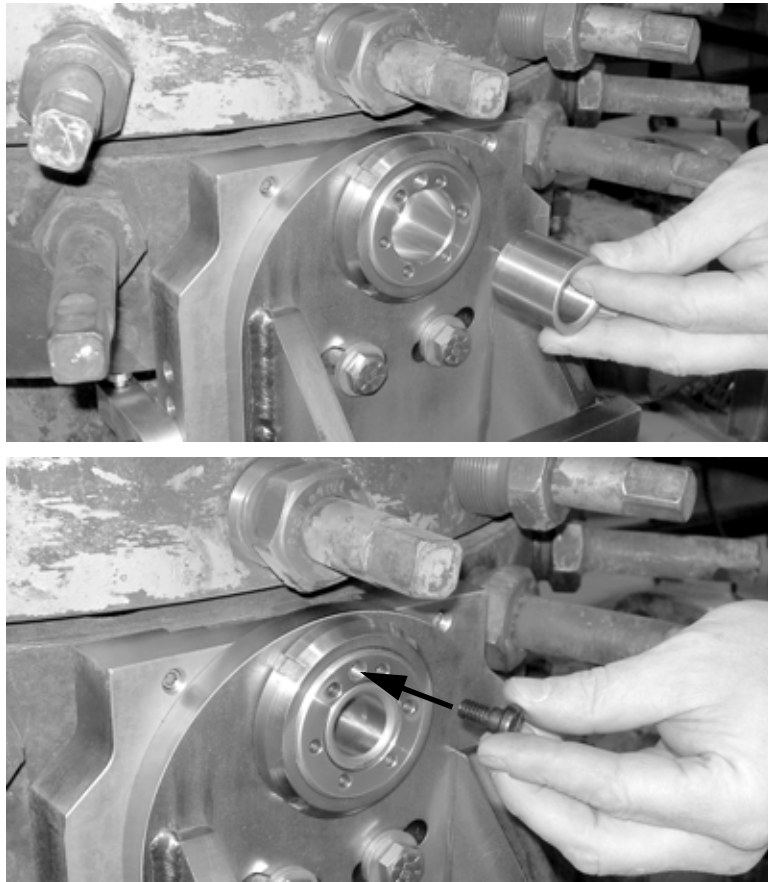


Figure 3-19. Insert the 1" collar into the gland adapter (top), then put in the lock screw to hold the collar in place (bottom).

15. Turn on the motor and the air supply to the air chuck. Feed the drill in to drill with the 1" insert.
16. When you are through the LDS, retract the drill and turn off the motor. Remove the 1" insert from the air chuck body.

Drilling a Larger I.D.

In some cases it may be necessary to cut a final pass larger than the I.D. of the gland nut collar. Use the following procedure to drill this larger I.D.

1. Remove the gland nut collar from the gland adapter.
2. With no tooling installed on the 1" insert holder, put the gland nut collar over the holder.
3. Install the larger inserts for the I.D. you will be drilling.
4. Feed the drill forward through the gland adapter until you can slide the gland nut collar into the adapter.
5. Secure the collar with the lockscrew.
6. Start the drill and air supply, and feed the drill forward to drill out the lock-down screw.
7. Reverse feed the drill just far enough to retract it from the hole.
8. Turn off power to the drill.
9. Remove the gland nut collar and slide it back down the insert holder.
10. Retract the drill completely and remove the drill inserts.
11. Remove the gland nut collar from the insert holder.



Chapter 4

Routine Maintenance

LUBRICATION

Clean and grease the drill slide each time you use the machine.

There is one grease fitting on the drill housing. Apply grease to the fitting each time you use the Pow-R-Drill.

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

TOOLING MAINTENANCE

Check all tooling for sharpness before and after each use. Replace any worn inserts with new one.

You can sharpen the end mills and drill bits.

Chapter 5 has parts and tooling lists for ordering replacements.

In This Chapter

LUBRICATION

TOOLING MAINTENANCE



Chapter 5

Parts Lists and Ordering Information

.....

Refer to the exploded view drawings and the parts lists that accompany them for assembly and parts identification. To order spare or replacement parts, see the ordering instructions at the end of this chapter.

In This Chapter

DRAWINGS AND PARTS LISTS
ORDERING INFORMATION

DRAWINGS AND PARTS LISTS

DRILL BASE AND ADAPTER SUB-ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	06-020-005	WELDMENT, BASE PLATE	1
2	06-020-006	SADDLE	1
3	06-020-007	ADAPTER, MCEVOY GLAND	1
4	06-020-010	LEG	2
5	06-020-602	LOCKSCREW, LS-2 SF DRILL BUSHING	1
6	06-020-603	BUSHING, 1" P DRILL JIG	1
7	06-020-605	BUSHING, 1 1/16" SF DRILL JIG	1
8	06-020-607	CLAMP, MED FOOT SWIVEL SCREW	2
9	06-020-608	CLAMP, SM FOOT SWIVEL SCREW	12
10	06-020-609	LOCKNUT, N-12	1
11	06-020-650	NUT, 1/2-13 FLANGE	2
12	06-020-651	WASHER, 1/2 X-THICK	2
13	06-020-652	STUD, 1/2-13 X 3	2
14	90-070-15	SHCS, 3/8-16 X 1-1/2	4
15	90-091-18	HHCS, 1/2-13 X 1-1/4	2

ADDITIONAL/OPTIONAL SIZES NOT SHOWN

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
3	06-020-008	ADAPTER, FMC GLAND	1
3	06-020-009	ADAPTER, VETCO GRAY GLAND	1
6	06-020-604	BUSHING, 61/64" P DRILL JIG	1
7	06-020-606	BUSHING, 3/4" SF DRILL JIG	1

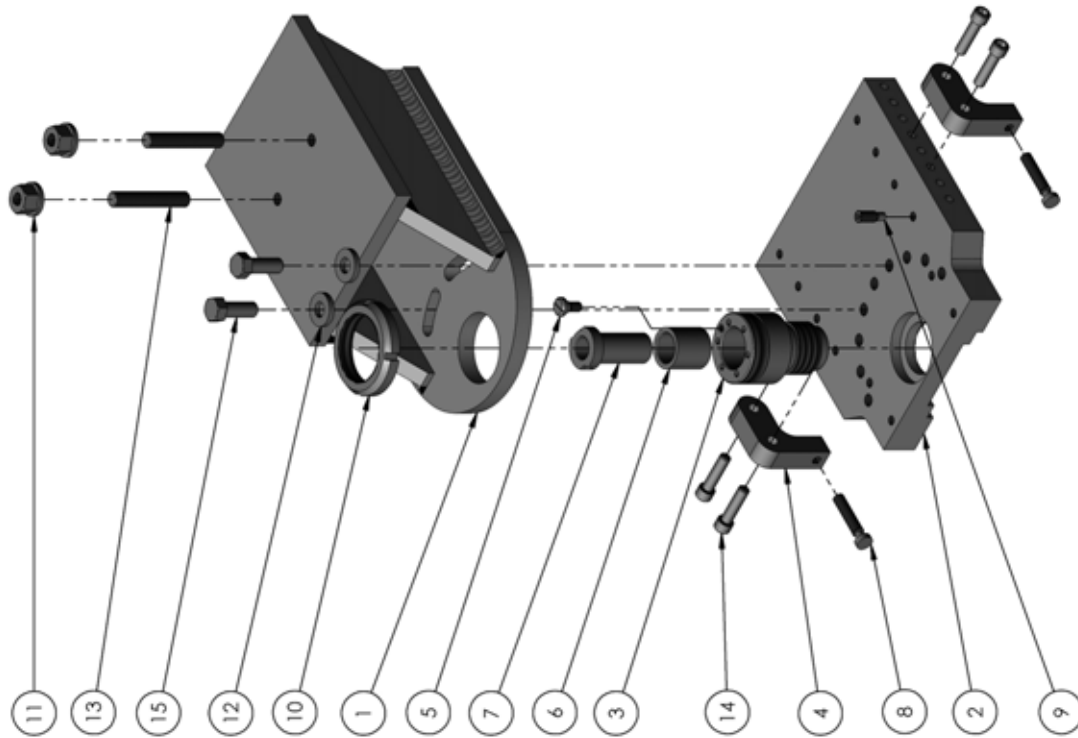


Figure 5-1. Saddle and base plate assembly.

SPINDLE ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	02-087-002	MOUNT, SPINDLE SLIDE	1
2	02-087-003	HOUSING, SPINDLE	1
3	02-087-004	SPINDLE	1
4	02-087-012	RACK, SPINDLE GEAR	1
5	02-087-102	BEARING CONE L102849	2
6	02-087-103	BEARING CUP L102810	2
7	02-087-104	LOCKWASHER, CUTTER FEED TW07	1
8	02-087-105	LOCKNUT, CUTTER FEED N07	1
9	02-087-106	SEAL	1
10	02-087-111	NUT, COLLAR	1
11	02-087-117	ADAPTER, #3 MT SOCKET	1
12	06-020-012	MOD, GEARBOX PINION	1
13	06-020-013	ADAPTER, MOTOR HOUSING	1
14	06-020-014	SHAFT, GEARBOX INPUT ADAPTER	1
15	06-020-601	GEARBOX, CGI 3:1	1
16	06-020-612	BEARING, DRIVE ADAPTER 206PP	1
17	06-020-613	SNAP RING, SHI-75	1
18	06-020-614	SNAP RING, SH-118	1
19	06-020-615	SNAP RING, HO-244	1
20	90-049-16	KEY, #605 WOODRUFF	1
21	90-050-07	SHCS, 1/4-20 X 3/4	3
22	90-056-10	PIN, 1/4 X 1.00 DOWEL	2
23	90-060-10	SHCS, 5/16-18 X 1	2

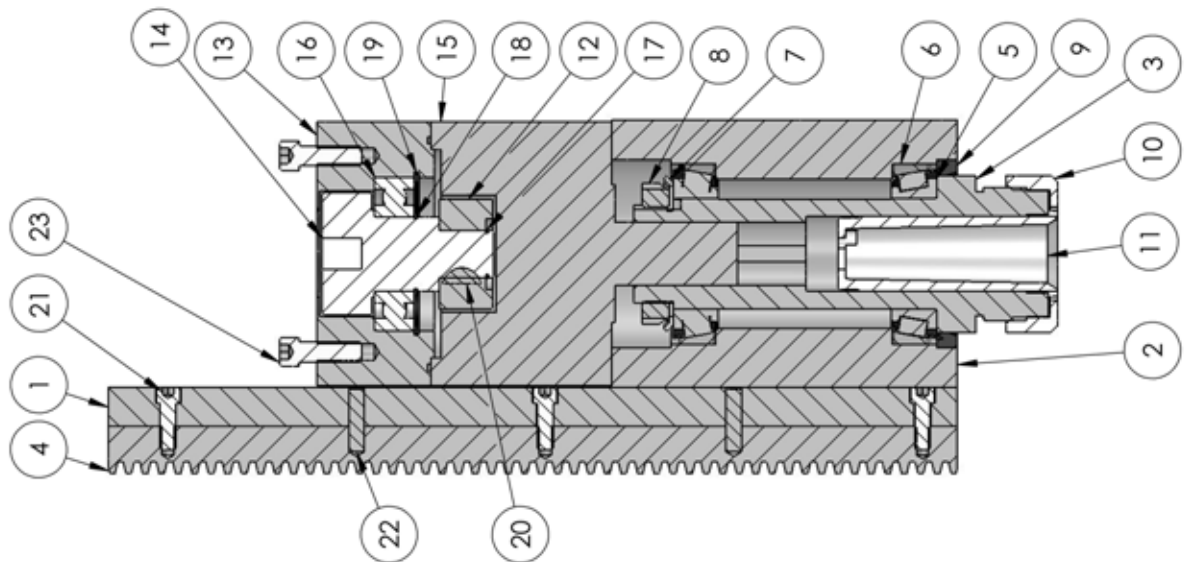


Figure 5-2. Drill spindle assembly.

DRILL ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	02-087-001	BODY, DRILL	1
2	02-087-013	PINION, FEED	1
3	02-087-014	BUSHING, SMALL FEED	1
4	02-087-015	BUSHING, LARGE FEED	1
5	02-087-016	SHAFT, FEED	1
6	02-087-021	STOP, FEED SLIDE	1
7	02-087-025	LOCK, RACK	1
8	02-087-107	LINCH PIN, 3/16	1
9	06-020-018	SHAFT, HEX FEED	1
10	06-020-019	ADAPTER, FEED SHAFT	1
11	06-020-020	SHAFT, FEED GEARBOX INPUT	1
12	06-020-021	HANDWHEEL	1
13	06-020-022	BRACKET, FEED GEARBOX	1
14	60-329-00	MOTOR, REVERSING AIR	1
15	90-027-12	KEY, 1/8 SQ X 1-1/4	1
16	90-047-10	KEY, 3/16 SQ X 1	2
17	90-050-07	SHCS, 1/4-20 X 3/4	7
18	90-054-07	SSS, 1/4-20 X 3/4	3
19	90-055-04	NUT, 1/4-20 JAM	1
20	90-057-55	SHSB, 1/4 X 1/2	1
21	90-060-08	SHCS, 5/16-18 X 7/8	2
22	90-060-25	SHCS, 5/16-18 X 3-1/2	6
23	90-064-57	SSS, 5/16-24 X 3/4	9
24	90-066-07	PIN, 5/16 X 3/4 DOWEL	2
25	90-067-53	SHSB, 5/16 X 3/8	2

Tooling Parts List

06-020-100	SERIES-Z EXT	LENGTH SPADE DRILL HOLDER
06-020-101	1/2" SERIES-Z	SPADE DRILL COBALT
06-020-102	SERIES-1 EXT	LENGTH SPADE DRILL HOLDER
06-020-103	3/4" SERIES-1	SPADE DRILL COBALT
06-020-104	SERIES-2 EXT	LENGTH SPADE DRILL HOLDER
06-020-105	1" SERIES-2	SPADE DRILL COBALT
06-020-106	1-1/16" SERIES-2	SPADE DRILL COBALT
06-020-107	1-9/32" SERIES-2	SPADE DRILL COBALT
06-020-108	3/4" X 8"	SPOTTING DRILL, HSS
06-020-109	3/4" X 10"	SPOTTING DRILL COBALT
06-020-110	1" X 8"	END MILL CENTER CUTTING, HSS
06-020-111	SERIES-Z	TORX SCREWS
06-020-112	SERIES-1	TORX SCREWS
06-020-113	SERIES-2	TORX SCREWS
06-020-114	#3 MT X 1-1/4"	HOLDER W/THRU COOLANT
06-020-115	#3 MT X 3/4"	HOLDER W/THRU COOLANT
06-020-116	#3 MT X 1"	HOLDER

ORDERING INFORMATION

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

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

Ordering Replacement Parts

When ordering parts, refer to the parts lists earlier in this chapter. 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 brief description of the problem or the work to be done.

Before we perform any repair, we will estimate the work and inform you of the cost and the time required 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 Company. 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 Company
600 Knightsbridge Parkway
Lincolnshire, Illinois 60069 USA





E.H. Wachs Company

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