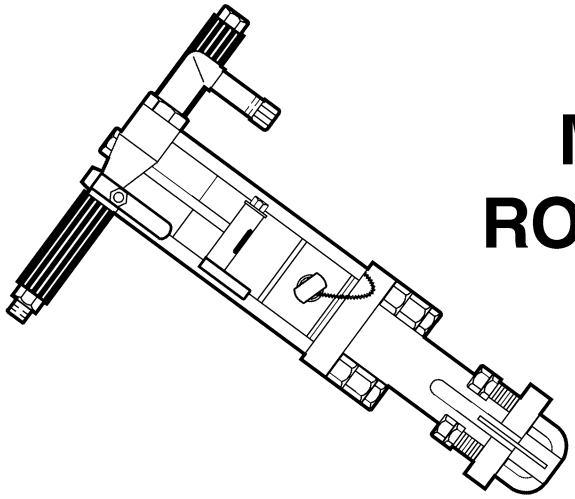
SULLAIR®

Part Number 02250163-394

OPERATING INSTRUCTIONS AND PARTS LIST



MRD–60 ROCK DRILL

GENERAL INFORMATION

OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL

⚠ WARNING

Always turn off and disconnect air supply from tool before replacing steel or removing steel retainer.

• COMPRESSED AIR SUPPLY (CFM [L/S] REQUIRED)
Use an air compressor with sufficient CFM (L/S) (Cubic Feet per Minute [Liters per Second]) delivery to operate the tool(s) at a pressure of 90 to 100 PSI (Pounds per Square Inch) (6.2 to 6-9) bar. RE: Chart for CFM (L/S) requirements.

• AIR PRESSURE (PSI [BAR])
Air pressure should be 90- 100 PSI (6.2 to 6.9 bar) at the tool during operation.
Higher pressure will increase kick back to operator, decrease performance, and may cause damage to tool. Lower pressure will reduce tool performance. It is important to realize that long lead hoses, manifolds and worn hose connections will cause a pressure drop. Use couplings and fittings of maximum I.D. size for the size hose being used. Reducers will restrict the air and result in less pressure at the tool.

• AIR HOSE AND FITTINGS
Inspect air hoses, fittings and gaskets for cuts and abrasions. Check that fittings, both in the tool and on the hose, are secure. Use safety wire or chain to secure the couplings at the tool to prevent hose whipping should the hose become detached while pressurized. Clear hoses of debris and excess water before attaching to tool. For hoses in excess of 1/2”(13mm) inside diameter install a proper flow limiting valve per government Health and Safety Requirements.

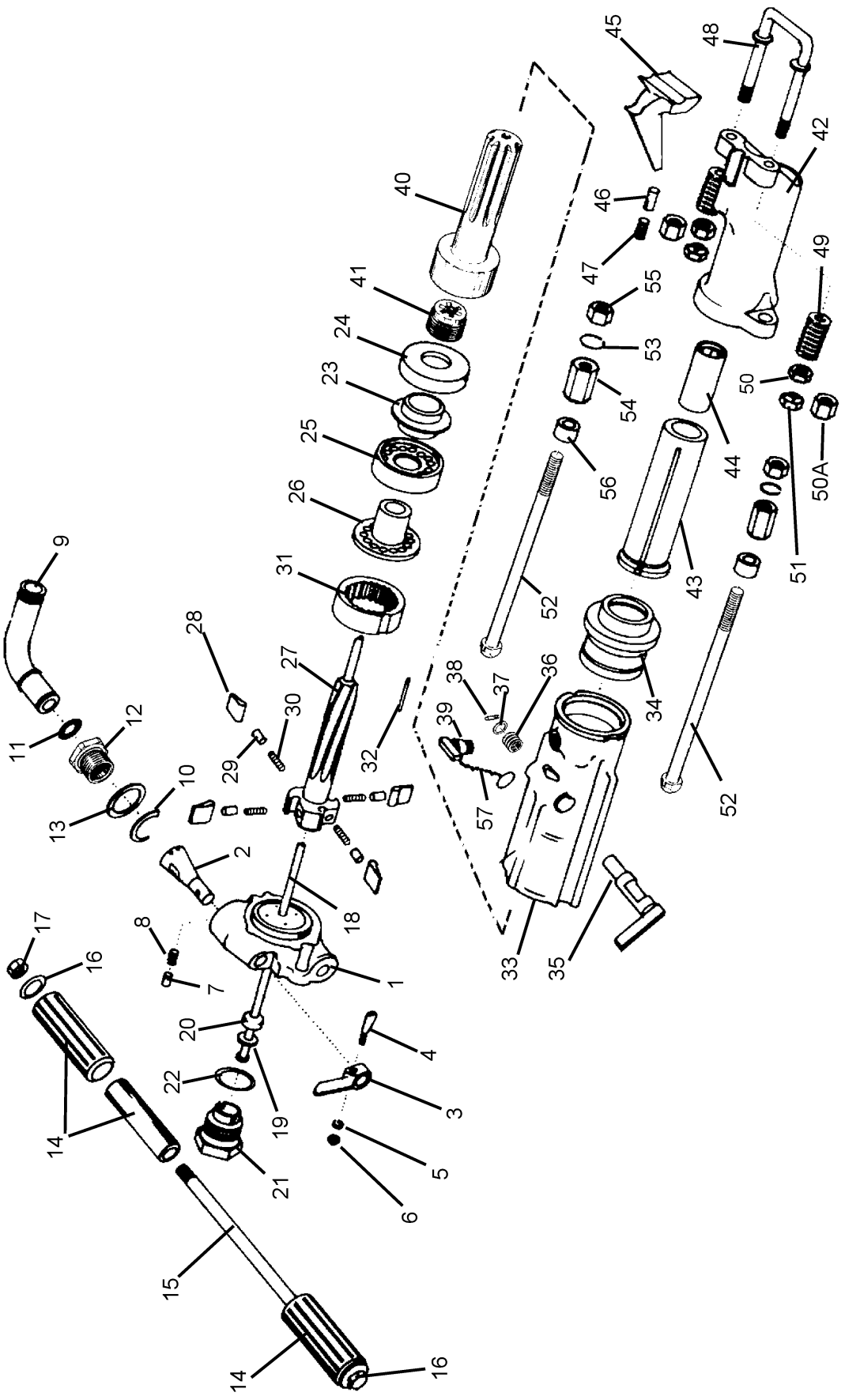
⚠ WARNING

When blowing through a hose or air line, ensure that the open end is held securely. A free end will whip and may cause injury.

• LUBRICATION
Valve and Cylinder Area:
The MRD-60 Rock Drill does not require special in-line lubrication to the valve and cylinder area under normal operating conditions. Oil carry-over from the compressor, combined with moisture in the air, will most often provide sufficient lubrication. However, under unusual conditions (i.e., dry air being supplied from an after-cooled reciprocating compressor; long lengths of hose manifolded before the tool, etc.) a small amount of light weight non-detergent oil may have to be added to the air supply. Also, add a small amount of lightweight non-detergent oil to the air inlet prior to daily start-up.

Rotation System:
The rotation system requires additional lubrication. The internal oil reservoir must be filled with 90 weight Air Tool lube. Oil usage will be determined by job and operation. The oil Reservoir must be checked on a regular basis to assure proper tool lubrication. The use of a line oiler will not effect the MRD-60 Rock Drill provided the oiler is adjusted properly so as not to flood the valve system.

MRD – 60 ROCK DRILL ILLUSTRATION



PARTS LIST

Index No.	Part Number	Qty. Req.	Description
1	250013-508 7601B	1	backhead w/bushing
2	250013-509	1	throttle valve
3	250013-510	1	throttle valve handle
4	250013-511	1	throttle valve handle washer
5	250013-512	1	throttle valve handle bolt
6	250013-513	1	throttle valve handle nut
7	250013-514	1	throttle valve plunger
8	250013-515	1	plunger spring
9	250013-516	1	air connection swivel
10	250013-517	1	air connection retainer
11	250013-518	1	air connecton o-ring
12	250013-519	1	air connection nut
13	250013-520	1	air connection washer
14	250013-521	2	handle grip
15	250013-522	1	handle bolt
16	250013-523	2	handle bolt washer
17	250013-524	1	handle bolt nut
18	250013-525	1	blow tube
19	250013-526	1	blow tube washer
20	250013-527	1	blow tube gasket
21	250013-528	1	blow tube retainer
22	250013-529	1	tube retainer gasket
23	250013-530	1	automatic valve
24	250013-531	1	front valve chest
25	250013-532	1	rear valve chest
26	250013-533	1	valve guide
27	250013-534	1	rifle bar
28	250013-535	4	rotation pawl
29	250013-536	4	pawl plunger
30	250013-537	4	pawl spring
31	250013-538	1	ratchet ring
32	250013-539	1	ratchet ring dowel pin
33	250013-540	1	cylinder
34	25013-541	1	front washer
35	250013-542	1	exhaust controlvalve
36	250013-543	1	exhaust valve spring
37	250013-544	1	exhaust valve washer
38	250013-545	1	exhauste valve pin
39	250013-546	1	oil filter plug
40	250013-547	1	piston
41	250013-548	1	rifle nut
42	250013-551	1	fronthead, 41/4" shank
43	250013-554	1	rotation sleeve, 4 1/4" shank
44	250013-557	1	sleeve bushing 1" x 41/4"
44A	7659	1	sleeve bushing 1/8 x 4 1/4" hex
45	250013-559	1	steel retainer 1" hex
46	250013-560	1	steel retainer plunger
47	250013-561	1	retainer plunger spring
48	250013-562	1	steel retainer yoke
49	250013-563	2	retainer yoke spring
50	~~250013-564~~	~~2~~	not available*
50A	Replaces 50 & 51	2	3/8-11 Locknut w/nylon insert**
51	~~250013-565~~	~~2~~	not available*
52	250013-566	2	side rod bolt
53	250013-567	2	side rod bolt lockwasher
54	250013-568	2	side rod nut, long
55	250013-569	2	side rod nut, short
56	250013-570	1	side rod spacer
57	250013-571		oil plug chain
58	7658		muffler

*Replaced by 50A 3/8-11 Locknut with nylon insert
**Source locknut locally

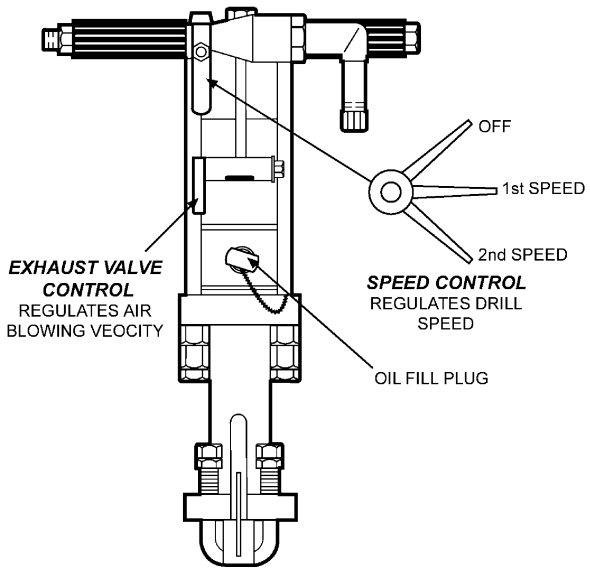
Operating Instructions

Your MRD-60 Rock Drill comes equipped with a Speed Control Valve and Exhaust Valve Control.

Speed Control: This lever has settings of "OFF", "1st Speed", and "2nd Speed". Adjust this lever to control the drill speed of your tool. 1st Speed setting should be used for low speed operations.

Exhaust Valve: This lever can be adjusted to increase or decrease the blowing action of the drill steel.

Oil Fill Plug/Oil Reservoir: See "Lubrication Section". This reservoir lubricates the rotation system of the drill. Oil consumption will depend on tool use. Fill reservoir before each work shift. Check reservoir frequently for proper fill level.



ON-THE-JOB TROUBLE SHOOTING

(M-SERIES ROCK DRILLS)

⚠ WARNING

Never remove retainer or replace tool steel with air supply connected to the air tool.

PROBLEM	PROBABLE CAUSE	REMEDY
Tool Runs Sluggish	Low Air Pressure at Tool	Increase Pressure to 90-100 PSI (6.2 to 6.9 bar)
	Insufficient Air Flow (CFM [bar])	Check Hoses, etc. for Leaks
	Insufficient Lubrication	Add a Small Amount of Rock Drill Oil.
Tool Runs Erratically	OSHA (Velocity Valve) Tripping	Inspect Valve for Proper Sizing
	Foreign Material in Tool Inlet	Remove Foreign Material
	Valve Sticking	Flush Tool with Small Amount of Penetrating Oil
Tool Will Not Run (Air Blows through Exhaust)	Valve Stuck	Flush Tool with Small Amount of Penetrating Oil
Excessive Kick-Back	Air Pressure Too High at Tool	Reduce Pressure to 90-100 PSI (6.2 to 6.9 bar)
	Dull Cutting Edge on Bit	Replace with Sharp Bit
Slow Penetration	Improper Down Pressure	Apply Sufficient Down Pressure
	Cuttings not Being Removed From Hole	Use Blow Air Frequently to Keep Hole Clean
	Clogged Blow Tube or Drill Stem	Clear Blocked Passages
	Steel or Bit Binding in Hole	Keep Drill, Steel and Bit Aligned with Hole
	Dull Bit	Use Sharp Bit
	Insufficient Lubrication	Add a Small Amount of Rock Drill Oil into Hose
Stuck Steel	Cutting Not Being Blown From Hole	Use Blow Air Frequently to Keep Hole Clean
	Excessive Down-Pressure in Soft Ground	Drill at Part Throttle in Soft Ground
	Misalignment of Steel With Hole Causing Binding	Keep Steel and Drill Aligned with Hole

If suggested remedies fail to correct problem, disassembly and inspection must be performed to determine cause.

UNPACKING YOUR NEW SULLAIR ROCK DRILL

1. Visually inspect tool for any signs of damage during shipment.
2. Compare the Serial Number that is stamped on the tool (located on cylinder beneath speed control valve) to the packing list or invoice.
3. Assemble and tighten air tool handle

BEFORE START-UP AND BEFORE EACH USE

⚠ WARNING

Never remove retainer or replace tool steel with air supply connected to the air tool.

1. Check all bolts, nuts and fittings for tightness (side rod nuts should be torqued to 90 ft-lb and checked on a regular basis).
2. Install a 3/4" NPT internal thread hose coupling (not supplied with tool) to air inlet connection.
3. Check that the line oiler is filled with a good rock drill oil. (if required)
4. Install drill rod (steel).
   - Select drill rod with correct size hex and shank length for tool chuck.
   - Check shank for wear. The end should be flat (square). A worn shank or an uneven end may result in damage to the tool or bit breakage.
   - Check that the blow hole in steel is clear.
   - Check cutting edge of bit for sharpness (use only sharp, properly dressed bits) and that blow hole is clear.
   - Insert shank into tool and close retainer securely. (if required)
5. Connect Air Hose
   - Use only air hose with a rated capacity equal to a minimum of 150% of the power source (air compressor) and with couplings secured by approved clamps.
   - Clear hose(s) to remove any dirt and accumulation of excess water and oil.

⚠ WARNING

When blowing through a hose or air line, ensure that the open end is held securely. A free end will whip and may cause injury.

   - Check rubber gaskets or washers in hose couplings for wear or cracks.
   - Join couplings together tightly and secure with approved safety clips.

STARTING AND OPERATING THE TOOL

1. **DO NOT** run the tool without a steel securely installed and the latch retainer locked in the closed position.
2. **DO NOT** run the tool without the cutting edge (point) firmly against the work surface.
3. Always apply sufficient down pressure to keep the tool from bouncing. The proper amount of down pressure will vary depending on the material being worked, the type of cutting edge, and the weight of the tool. This can only learned through experience. DO NOT allow the tool to bounce on the steel as this may damage the tool and steel.

RUNNING THE TOOL FOR EFFICIENT OPERATION / PRODUCTION

1. When starting (collaring) the hole, hold the drill firmly against the work and use a steel short enough so the drill can be handled comfortably. Depress the throttle lever gradually and drill at a slow speed until the hole is collared. The drill should be kept at right angles to the work until the hole is collared, then repositioned for angle drilling.
2. Always apply sufficient down pressure to keep the tool from bouncing. The proper amount of down pressure will vary depending on the material being drilled and the size and depth of the hole. The correct amount of down pressure, for maximum drilling efficiency, can only be learned through experience, but generally speaking, is usually recognizable by the rhythmic sound of the exhaust and the free rotation of the drill steel. Insufficient pressure will cause the drill to bounce, which may result in damage to the tool and may crack carbide bit inserts while too much pressure will slow down the drill and may result in stuck steel.
3. Keep the drill, the steel, and the hole aligned. Misalignment will reduce drilling speed, cause unnecessary wear in the tool, and may result in steel breakage.
4. Keep the hole clean. Use the blow only function of the drill frequently to remove cuttings.
5. Use half throttle in broken or hetergeneous material.
6. Raise bit from bottom of hole and blow hole clean before removing bit and steel.

AFTER USE

1. Disconnect air hose. DO NOT allow dirt or water to enter air inlet of tool.
2. Pour a little oil (approximately 1 ounce [28 grams]) into the air inlet and chuck end of the tool. Position tool to allow oil to flow inward.
3. Store in safe dry place.

   By following these steps, you will insure your Sullair Tool gives the type of service for which is was designed. Should you have any questions concerning this information, or if you would like additional information, please contact your Sullair Distributor.

CFM (L/S) AND PSI (BAR) REQUIREMENTS

Model MRD-60 Rock Drill 95 CFM (44 L/S) at 100 PSIG (6.9 bar)

CFM (L/S) x NUMBER OF TOOLS RATIO

For operation of several tools with one compressor use the following table (except for tools which require constant demand).

Number of Tools	1	2	3	4	5	6	7	8
Factor	1	1.8	2.7	3.4	4.1	4.8	5.4	6.0

Example: To operate threeModelMPB-90A Paving Breakers, air for each is 62 CFM(29L/S): Multiplier is 2.7 x 62 CFM (29 L/S) = 167.4 CFM (79 L/S). Consequently a 185 Portable would easily handle the three breakers.

READ SAFETY TIPS PRIOR TO OPERATING THE TOOL
TO AVOID POSSIBLE INJURY

SAFETY

- Work gloves or vibration dampening gloves are recommended when operating pneumatic tools.
- Keep spectators at a safe distance from the work area.
- Wear proper clothing. Loose fitting clothes or jewelry can become caught in moving parts or on operating tools.
- Wear eye and face protection when operating tools.
- Wear safety shoes with steel toes when operating tools. Never rest a tool on your foot for any reason.
- Wear safety hats when operating tools or when working in immediate area.
- Wear ear protection when operating tools or when working in immediate area.
- Thoroughly inspect tool conditions before operating to:
- Check all bolts for proper tightness.
- Inspect retainer for wear which could cause the tool or steel to be propelled from the tool.
- Inspect air hose fittings for cracks, worn threads or loose couplings that could permit detachment during operation.
- Inspect tools and/or steels for proper sharpness and conditions (dull edge, nicks, cracks).
- Secure air hose to tool with a safety wire or chain to prevent whipping if it becomes detached from the tool.
- When using hose with internal dimension of 1/2" (13mm) or greater diameter install a proper flow limiting "OSHA valve" or "velocity fuse".
- **DO NOT** lay an idle tool in dust or dirt unless all ports are covered with clean material.
- Disconnect tools from the air supply when not in use to prevent accidental actuation.

⚠ WARNING

Never remove retainer or replace tool steel with air supply connected to the air tool.

- Operate the tool from a position that permits proper footing and balance.
- **DO NOT** operate the tool without a steel or tool securely installed in the retainer.
- **DO NOT** operate the tool without the steel or tool against the work surface.
- Operate the tool with firm and steady pressure. DO NOT force the tool.
- Limit air pressure at the tool not to exceed the tool's rated operating pressure.
- Inspect air hoses for cuts and abrasions prior to use.
- Never point a tool or an air hose at a person or indulge in horseplay with air tools and hose.
- Blow out all air lines and hoses prior to use.

⚠ WARNING

When blowing through a hose or air line, ensure that the open end is held securely. A free end will whip and may cause injury.

- Keep hands off throttle until ready to start. Always keep both hands on the handle while operating.
- Follow OSHA standards and/or any applicable Federal, State, or Local codes, standards, and regulations where they apply.

⚠ WARNING

Repetitive motions, uncomfortable positions and vibrations can cause injury to hands, fingers and wrists. Stop using any pneumatic tool if discomfort, tingling feeling or pain occurs. Consult a doctor before resuming use.

SULLAIR®

SULLAIR CORPORATION
3700 East Michigan Boulevard
Michigan City, IN 46360—-9990
Phone: 1-.800.SULLAIR Indiana: 219.879.5451
FAX: 219.874.1835

Manufactured in Japan

Printed in U.S.A.
Specifications subject to change without notice.
Part No. 02250163-394
E 07 EP R1