Henrytools
Industrial Tools at Work

MODELS
45 RAE
45 RACE
45 RAZE
45 RASKE

General Safety and Maintenance Manual

45 RAE SERIES EXTENDED LENGTH RIGHT ANGLE GRINDERS

Model Number	Exhaust Direction	Throttle Type	Speed	Power Output	Case Material	Weight		Length	Diameter	Air Consumption	Spindle Thread
						Aluminum					
45RAE	Side	(L) Lever or (K) Safety Lever	12000 to 14000 R.P.M (13500rpm is standard)	0.9 H.P. (675 W)	Alumi-num	2.75lbs. 1.2kg		11.18 Inch 284mm	1 ¾" 4.4cm	25 CFM (11.8 L/S)	3/8-24 x 0.98 Inch
45RAZE											5/8-11 x 0.98 Inch
45RACE											1/4 Inch Built-In Collet

THE HENRY TOOL CO., MANUFACTURED BY HENRY TOOLS
498 SO. BELVOIR BLVD., SOUTH EUCLID, OH 44121 U.S.A.
PH: (216) 291-1011 OR (800) 826-5257 • FAX: (216) 291-5949 OR (800) 303-2800
EMAIL: DAVIIDH@MSN.COM • WEBSITE: WWW.HENRYTOOLS.COM

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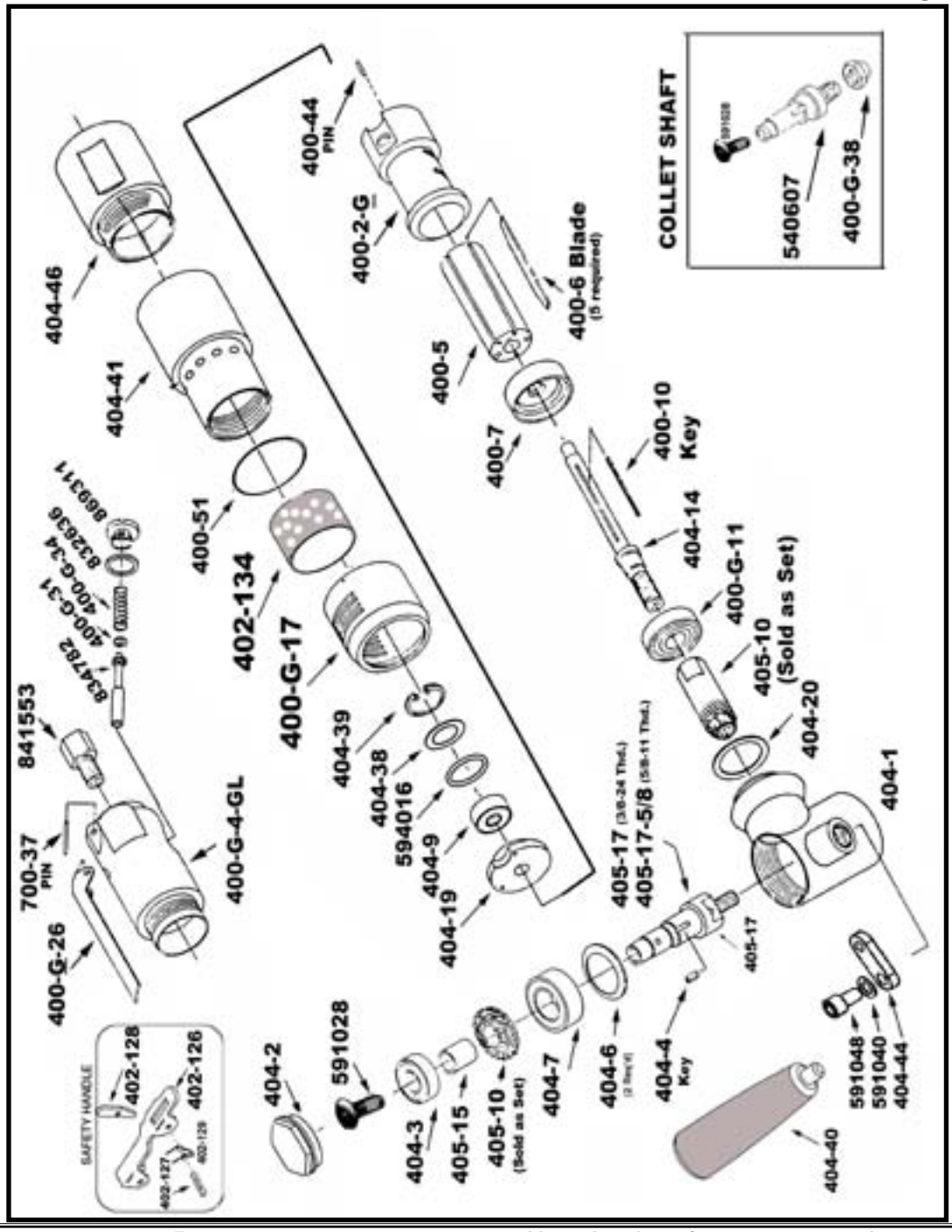

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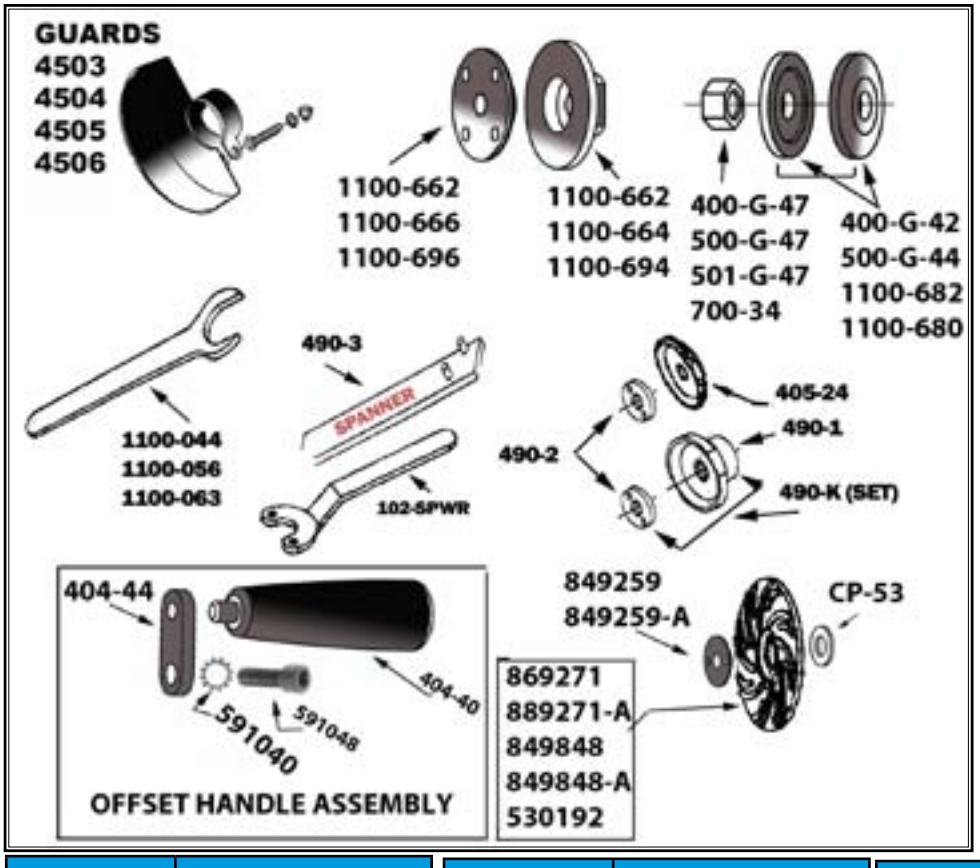
ACCESSORIES



PART NO.	DESCRIPTION
400-G-11	FRONT BEARING
400-G-17	Alum Side Exhaust Sleeve
400-G-17-S	Steel Side Exhaust Sleeve
400-G-4-GL	Aluminum Backhead
400-G-4-GLS	Steel Backhead
400-G-26	THROTTLE LEVER
400-G-34	SPRING
400-G-38	COLLET NUT
400-G-42	3/8-24 FLANGE (2"-3" WHEELS)

PART NO.	DESCRIPTION
400-G-47	3/8-24 JAM NUT
400-2G	CYLINDER WITH PIN INSTALLED
400-5	ROTOR
400-6	ROTOR BLADE (5 are required)
400-7	FRONT ENDPLATE
400-10	KEY
400-44	ROLL PIN
400-51	0-RING
402-126	SAFETY LEVER

PART NO.	DESCRIPTION
402-127	SAFETY LEVER PIN
402-128	LOCKOUT LEVER
402-129	SAFETY LEVER SPRING
402-134	MUFFLER
404-1	ANGLE HEAD

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PART NO.	DESCRIPTION
404-2	BEARING CAP
404-3	UPPER OUTPUT SPINDLE BEARING
404-4	KEY
404-6	WAVY WASHERS(2 required)
404-7	LOWER SPINDLE BEARING
404-9	REAR MOTOR BEARING
404-14	SPINDLE
404-19	REAR ENDPLATE
404-20	MOTOR SPACER
404-38	BEARING COVER
404-39	SNAP RING
404-40	DEAD HANDLE
404-41	MOTOR CASE ALUMINUM
404-44	DEAD HANDLE OFFSET
404-46	EXTENSION COUPLING
405-5-625	5/8-11 X .980 OUTPUT SPINDLE
405-10	GEAR SET
405-15	GEAR SPACER SLEEVE
405-17	3/8-24 X .980 OUTPUT SPINDLE
540607	COLLET OUTPUT SPINDLE
405-17-5/8"	5/8-11 X .980 OUTPUT SPINDLE
500-G-44	3/8 ID FLANGE (for 4"-5" WHEELS)
700-34	5/8-11 JAM NUT
700-37	THROTTLE LEVER PIN
1100-680	5/8 I.D. FLANGE
1100-682	"(6"" OR SMALLER WHEELS) 3/8 I.D. FLANGE"
591028	SCREW
591040	STAR WASHER
591048	BRACKET BOLT
591106	SET SCREW (SPECIFY SPEED)
592016	SNAP RING
594016	0-RING
832636	GASKET
834782	THROTTLE VAVLE WITH O-RING
841553	3/8 NPT TO 1/4 NPT BUSHING
844302	0-RING

PART NO.	DESCRIPTION
869311	THROTTLE VALVE CAP
834782	THROTTLE VALVE-INCLUDES 844302
4503	3" TYPE 27 GUARD
4504	4" TYPE 27 GUARD
4505	5" TYPE 27 GUARD
4506	6" TYPE 27 GUARD
490-3	PIN SPANNER
102-SPWR	WRENCH FOR SANDING PAD NUT
1100-044	7/16" WRENCH
1100-050	1/2" WRENCH

PART NO.	DESCRIPTION
1100-056	9/16" WRENCH
1100-063	5/8" WRENCH
1100-068	11/16" WRENCH
1100-075	3/4" WRENCH
1100-094	15/16" WRENCH
300-16	1/8" COLLET ADAPTER
400-78	3/8-24 TO 5/8-11 ADAPTER
405-24	BACKING PLATE FOR 490-KR
490-K	3/8-24 X .980 TYPE 27 ADAPTER ASSY.
490-KR	3/8-24 X .580 TYPE 27 ADAPTER ASSY.
490-1	BACKING PLATE FOR 490-K
490-2	NUT FOR 490-K & 490-KR
1100-660	3/8-24 TO 5/8 I.D. TYPE 27 ADAPTER ASSY.
1100-661	3/8-24 TO 5/8 I.D. BACKING PLATE
1100-662	3/8-24 TO 5/8 I.D. ADAPTER NUT
1100-664	3/8-24 TO 7/8 I.D. BACKING PLATE
1100-666	3/8-24 TO 7/8 I.D. ADAPTER NUT
1100-668	3/8-24 TO 7/8 I.D. TYPE 27 ADAPTER ASSY.
1100-692	5/8-11 TO 7/8 I.D. TYPE 27 ADAPTER ASSY.
1100-694	5/8-11 TO 7/8 I.D. BACKING PLATE
1100-696	5/8-11 TO 7/8 I.D. ADAPTER NUT
849259	5/8-11 SANDING PAD NUT
849259-A	3/8-24 SANDING PAD NUT

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PART NO.	DESCRIPTION
889271	5/8-11 4" SANDING PAD (MAX 12000 RPM)
889271-A	3/8-24 4" SANDING PAD (MAX 12000 RPM)
849848	5/8-11 5" SANDING PAD (MAX 10000 RPM)
849848-A	3/8-24 5" SANDING PAD (MAX 10000 RPM)
849913	5/8-11 7" SANDING PAD (MAX 8500 RPM)
849914	5/8-11 9" SANDING PAD (MAX 6500 RPM)
REPAIR KITS	
510076	REPAIR KIT WITH GEARS
510078	REPAIR KIT WITHOUT GEARS
402-26	COMPLETE SAFTETY LEVER ASSEMBLY

GRINDER SAFETY

ALWAYS COMPLY WITH:

1. General Industry Safety & Health Regulations, Part 1910, OSHA 2206, available from: Sup't of Documents; Government Printing Office; Washington DC 20402
2. Safety Code for Portable Air Tools, ANSI B186.1 available from: American National Standards Institute, Inc.; 1430 Broadway; New York, NY 10018
3. State and Local regulations.
4. Portions of the above codes and regulations are listed below for quick reference.

THESE EXCERPTS ARE NOT INTENDED TO BE ALL INCLUSIVE - STUDY AND COMPLY WITH ALL REGULATIONS!

1. Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.
2. After mounting a wheel or other abrasive accessory, the Grinder shall be run in a protected enclosure, at gradually increasing speed, for at least 60 seconds. When starting work with a cold wheel, apply it gradually to the workpiece until it becomes warm. Do not continue to use a grinder if:
   - The speed rating of the accessory is less than the speed of the grinder
   - If tool vibrates repair immediately.
   - You sense changes in tool speed or an unusual increase in noise that would indicate tool is running at excessive speed.
   - You notice excessive end play in spindle
   - You hear any unusual sound from grinder

RETURN THE TOOL TO THE TOOL CRIB FOR SERVICE IMMEDIATELY.

3. Make certain no one is in front of or in line with the wheel or other abrasive accessory. Be aware that it may fail at this time if it is defective, improperly mounted or the wrong size and speed. Stop immediately if considerable vibration or other defects are detected. Shut off the air supply and determine the cause.
4. **OPERATOR PROTECTIVE EQUIPMENT** - Wear goggles or face shield at all times tool is in operation. Other protective clothing shall be worn, if necessary. SEE REGULATIONS.
5. Keep hands, loose clothing and long hair away from rotating end of tool.
6. Anticipate and be alert for sudden changes in motion during start up and operation of any power tool.
7. Keep body stance balanced and firm. Do not overreach when operating this tool. High reaction torques can occur at or below the recommended air pressure.
8. Tool accessories may continue to rotate briefly after throttle is released.
9. Air powered tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.
10. This tool is not designed for working in explosive atmospheres. Do not use this tool on materials whose dust or fumes can cause a potentially explosive environment.
11. This tool is not insulated against electric shock.
12. Product Safety information - When Placing the Tool in Service

- **NEVER MODIFY ANY PART OF THIS TOOL!!!! Always** install, operate, inspect and maintain this product in accordance with all applicable standards and regulations (local, state, country, federal, etc.).
- Always use clean, dry air at 90 psig (6.2 bar/620 kPa) maximum air pressure at the inlet. Higher pressure may result in hazardous situations including excessive speed, rupture, or incorrect output torque or force.
- Be sure all hoses and fittings are the correct size and are tightly secured.
- Install a properly sized Safety Air Fuse upstream of hose and use an anti-whip.
- Always turn off the air supply, bleed the air pressure and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool or any accessory.
- Ensure that the grinding wheel or other abrasive accessory is correctly mounted and tightened before use.
- Always replace a damaged, bent or severely worn wheel guard. Do not use a wheel guard that has been subjected to wheel failure.
- • Guard opening must face away from the operator. Bottom of wheel must not project beyond guard.

• DO NOT MODIFY THE TOOL, SAFETY DEVICES, OR ACCESSORIES.

• Use accessories recommended by Henry tools.

• Do not use this tool if the actual free speed exceeds the rated rpm. Check the free speed of the Grinder before mounting a wheel, after all tool repairs, before each job and after every 8 hours of use. Check speed with a calibrated tachometer, without the abrasive product installed.

• Do not use any wheel or other abrasive accessory whose maximum operating speed, as defined by its manufacturer, is less than the rated speed of the Grinder.

• Inspect all grinding wheels for chips or cracks prior to mounting. Do not use a wheel that is chipped, cracked or otherwise damaged.

• Inspect arbor, threads & clamping devices for damage & wear prior to mounting wheel or other abrasive accessory.

• Do not use a grinding wheel that has been exposed to freezing temperatures, extreme temperature changes, high humidity, solvents, water or other liquids.

• Make certain grinding wheel or other abrasive accessory properly fits the spindle. The wheel should not fit too snugly or too loosely. Plain hole wheels should have about .007" (0.17 mm) maximum diametral clearance. Do not use reducing bushings to adapt a wheel to any arbor unless such bushings are supplied by and recommended by the wheel manufacturer.

• Always use the wheel flanges furnished by the manufacturer and appropriate for the wheel size and type.

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SAFETY (continued)

Never use a makeshift flange or plain washer. Flanges should be in good condition and free of nicks, burrs and sharp edges.
• Ensure that the thread type and size of the threaded abrasive product exactly matches the thread type and size of the spindle.
• Prevent the spindle end from touching the bottom of the hole of cups, cones or plugs with threaded holes, intended to be mounted on machine spindles, by comparing dimensions and other relevant data for them.
• Do not use an unguarded grinder unless used for internal work and only operated when the work offers protection.

DISASSEMBLY

PLEASE NOTE: The brass spacers that were installed by the factory are necessary for this tool to operate efficiently. When disassembling this tool examine how spacers are arranged. They must be installed exactly the same way. Failure to do this will cause improper gear spacing, which causes pre-mature tool failure.

1. Disconnect air & remove all wheels and accessories.
2. Remove dead handle (404-40). Secure anglehead vertically in vise on dead handle boss. Never squeeze anglehead(404-1) in vise. This will distort bearings and ruin gear alignment.
3. Unscrew backhead (400-G-4). Unscrew case (400-G-1).
4. Remove deflector (400-G-17).
5. Pull motor from right angle head. Be careful to note location of shims.
6. Remove snap ring (404-39),wafer(404-38),O-ring(594016), and snap ring (592016).(Some of these parts may or maynot be present).
7. Install brass or aluminum jaws in vise. Grasp the O.D. of cylinder(400-2-G) and end plate (404-19). Using a 3/16" punch, lightly tap spindle out of rear bearing (404-9).
8. Remove cylinder, blades(400-6). 8. With rotor (400-5) still in spindle (404-14), grasp the rotor in vise snugly and remove pinion gear(405-10).
9. Remove rotor(400-5) Remove key and front thrust plate(400-7).
9. Press bearing (400-G-11) off of spindle.
10. Secure angle head in vise and unscrew cap (404-2).
11. Remove from vise and tap on spindle with a plastic hammer The spindle assembly and spring washers (404-6) will slide out.
12. Clamp flats of spindle(405-17) in vise.
13. Using a 9/64" T-Handle hex wrench unscrew (591028) screw. Using a plastic hammer tap on O.D. of bearing cap, until it is free of bearing(404-3). NOTE POSITION OF SHIMS.
14. Press bearing (404-3) off spindle. Support bearing (404-7) and press spindle through with 1/4" punch. This will remove spacer (405-15), gear(405-10) and bearing. Remove key (404-4).

ASSEMBLY

1. Support front bearing(400-G-11) on drill block. Press spindle (404-14) through bearing until it bottoms on shoulder.
2. Slide front thrust(400-7)over the spindle and onto front bearing.
3. Place key(400-10) into keyway in spindle. Slide rotor down over shaft.
4. Grasp rotor in vise snugly and replace pinion gear(405-10) and wrench firmly.
5. Support bearing and pinion gear in downward position. Place five blades(400-6) in slots. Slip cylinder(400-2-G) over rotor. Install rear thrust(404-19) locating cylinder pin in small hole of rear thrust plate (404-19).
6. Place bearing (404-9) in rear thrust and tap into place with a suitable bearing driver. Using pliers place snap ring(404-39) in end plate groove.
7. Support bearing(404-7) on inner race. Press spindle (405-17) through bearing until it bottoms on shoulder. Install key (404-4) and line up with keyway of ring gear(405-10). Support gear on inner diameter and press spindle through. Slide spacer(405-15) on spindle.
8. Support threaded end of spindle and press on bearing(404-3). Tighten screw (591028) into end of spindle. Press spindle assembly into cap(404-2). Grease gear.
9. Install spring washers(404-6) (ROUNDED SIDE DOWN) into angle head(404-1).
10. Install spindle assembly into angle head housing, secure in vise and tighten cap (404-2).
11. Re-Locate angle head in vise-so that the motor can be installed vertically.
12. Replace shim(404-20) exactly as it was originally installed.
13. Jiggle greased pinion assembly into angle head while turning spindle(405-17)-so that gears mesh. Tap lightly on rear of motor to insure that is fully seated.
14. Install exhaust deflector (400-G-17-S). Place O-ring(400-51) on motor case(400-G-1), then slide screw onto angle-head(404-1). The deflector (400-G-17) should be snug, but can be turned. Place a few drops of oil into motor inlet. Replace backhead assembly (400-G-4).
15. (OPTIONAL STEP): To check throttle valve, unscrew plug(869311) and lift out spring and valve. Replace O-ring if worn.
16. Replace guard on tool.
17. CHECK RPM WITH TACHOMETER.TOOL MUST RUN AT OR BELOW SPEED THAT IS STAMPED ON TOOL.