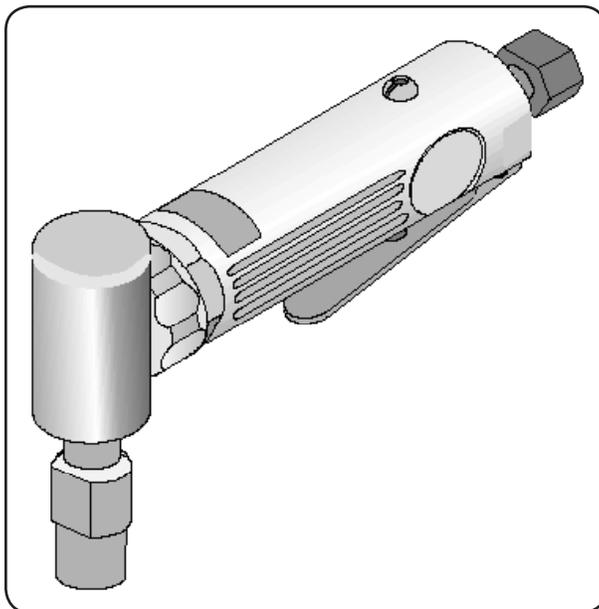


CENTRAL PNEUMATIC®

ANGLE DIE GRINDER

Model 93088

SET UP AND OPERATING INSTRUCTIONS



Diagrams within this manual may not be drawn proportionally.

Due to continuing improvements, actual product may differ slightly from the product described herein.

Distributed exclusively by Harbor Freight Tools®.

3491 Mission Oaks Blvd., Camarillo, CA 93011

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**Read this material before using this product.
Failure to do so can result in serious injury.
SAVE THIS MANUAL.**

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For technical questions or replacement parts, please call 1-800-444-3353.

Cover Revised 07i

SPECIFICATIONS

Air Requirements	3 CFM
Collet	1/4"
Maximum RPM	20,000
Working Air Pressure	90 PSI

SAVE THIS MANUAL

You will need the manual for the safety warnings and cautions, assembly instructions, operating procedures, maintenance procedures, trouble shooting, parts list, and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep both this manual and your invoice in a safe, dry place for future reference.

SAFETY WARNING & CAUTIONS

WARNING: When using pneumatic equipment, basic safety precautions should always be followed to reduce the risk of personal injury and hazards due to over pressurization.

READ ALL INSTRUCTIONS BEFORE USING THIS TOOL!

1. **KEEP WORK AREA CLEAN.** Cluttered areas invite injuries.
2. **OBSERVE WORK AREA CONDITIONS.** Do not use tools in damp, wet, or poorly lit locations. Don't expose to rain. Keep work area well lit. Do not use electrically powered air compressors in the presence of flammable gases or liquids.
3. **KEEP CHILDREN AWAY.** Children must never be allowed in the work area. Do not let them handle machines, tools, or hoses.
4. **STORE IDLE EQUIPMENT.** When not in use, tools must be locked up in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **DO NOT FORCE THE TOOL.** It will do the job better and more safely at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool's capacities.
6. **USE THE RIGHT TOOL FOR THE JOB.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. Do not use a tool for a purpose for which it was not intended.
7. **DRESS PROPERLY.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Nonskid footwear is recommended. Wear restrictive hair covering to contain long hair.
8. **USE EYE AND EAR PROTECTION.** Always wear ANSI approved chemical splash goggles when working with chemicals. Always wear ANSI approved impact safety goggles at other times. Wear a full face shield if you are producing metal filings or wood chips. Wear an ANSI approved dust mask or respirator when working around metal, wood, and chemical dusts and mists.

9. **DO NOT ABUSE THE POWER CORD.** Do not yank compressor's cord to disconnect it from the receptacle. Do not carry tools by the cord.
10. **DO NOT OVERREACH.** Keep proper footing and balance at all times. Do not reach over or across running machines.
11. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect compressor's cord periodically and, if damaged, have them repaired by an authorized technician. Inspect all hoses for leaks prior to use. The handles must be kept clean, dry, and free from oil and grease at all times.
12. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make it a habit to check that keys and adjusting wrenches are removed from the tool or machine work surface before plugging it in.
13. **AVOID UNINTENTIONAL STARTING.** Do not carry any tool with your finger on the trigger, whether it is connected to the compressor or not.
14. **STAY ALERT.** Watch what you are doing; use common sense. Do not operate any tool when you are tired.
15. **CHECK DAMAGED PARTS.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn on and off properly.
16. **REPLACEMENT PARTS AND ACCESSORIES.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
17. **DO NOT OPERATE TOOL IF UNDER THE INFLUENCE OF ALCOHOL OR DRUGS.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.
18. **DRAIN COMPRESSOR EVERY DAY.** Do not allow moisture to build up inside the compressor. Do not allow compressor to sit pressurized for longer than one hour.
19. **MAKE SURE ALL EQUIPMENT IS RATED TO THE APPROPRIATE CAPACITY.** Make sure that regulator is set at least 10 PSI lower than the lowest rated piece of equipment you are using.

- 20. WARNING:** Some dust created by power sanding, sawing, grinding, drilling, and other construction activities, contains chemicals known [to the State of California] to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
- Lead from lead-based paints
 - Crystalline silica from bricks and cement or other masonry products
 - Arsenic and chromium from chemically treated lumber
- Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles. (California Health & Safety Code § 25249.5, *et seq.*)

UNPACKING

When unpacking your Angle Die Grinder, check the items against the list below. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual.

Item	Description	Qty
N/A	Die Grinder Assembly	1
N/A	Wrench	2
31	Collet	1
32	Collet Nut	1

Grinding Attachment Installation

1. Select the Grinding Attachment appropriate for your needs.
2. Select the COLLET (31) that has the same diameter as the Grinding Attachment. The diameter will be either 1/4" or 1/8".

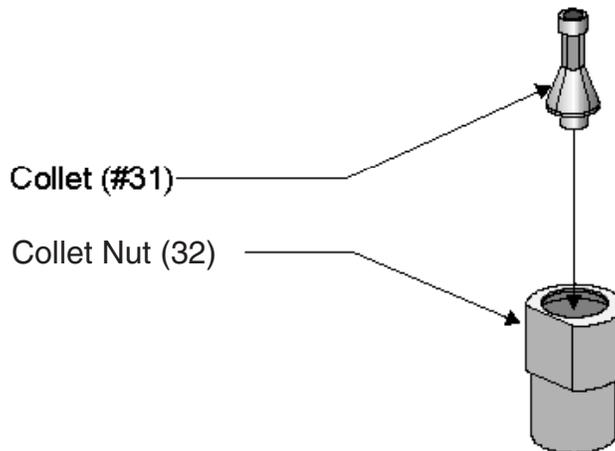


Figure 1 — Inserting the Collet

3. Insert the COLLET into the COLLET NUT (32) as shown in Figure 1.
4. Thread the COLLET NUT onto the CHUCK CASING (29) a few turns.

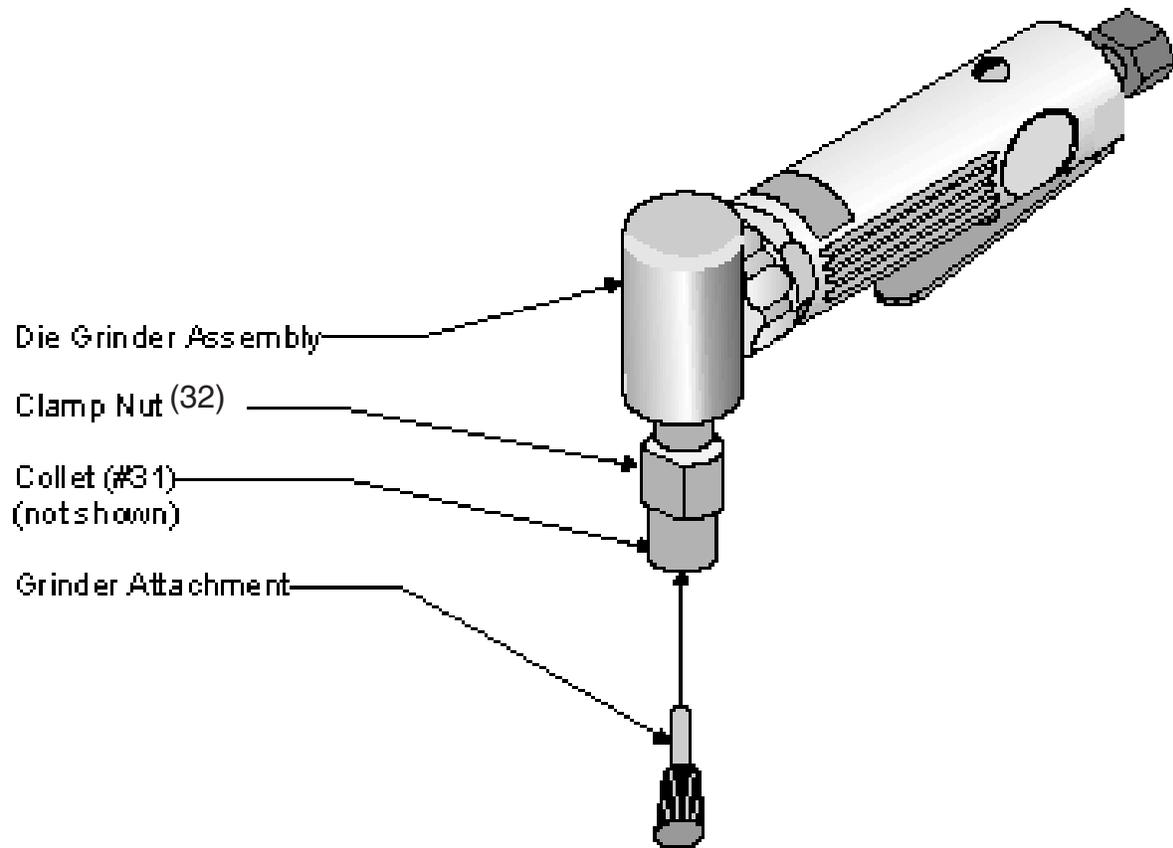


Figure 2 — Grinding Attachment

5. Insert the Shaft of the Grinding Attachment through the flared end of the COLLET as shown in Figure 2.

ASSEMBLY

To complete assembly, you will need to purchase approved grinding attachments from Harbor Freight Tools.

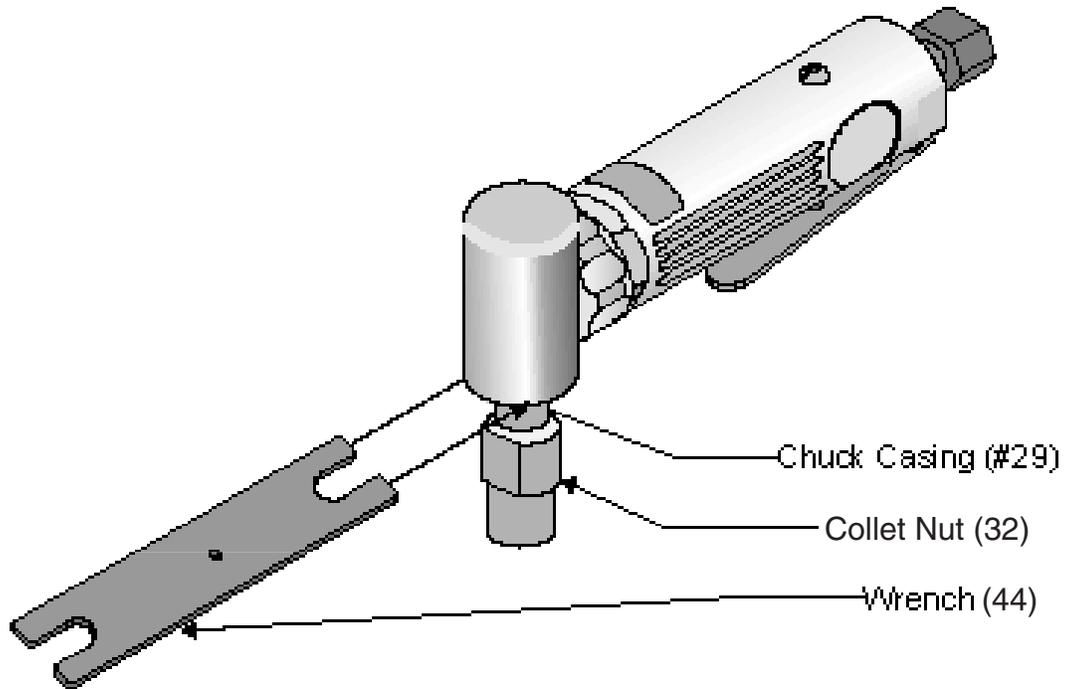


Figure 3 — Wrench Placement

6. Place the small end of WRENCH (44) on the flats of the CHUCK CASING as shown in Figure 3.

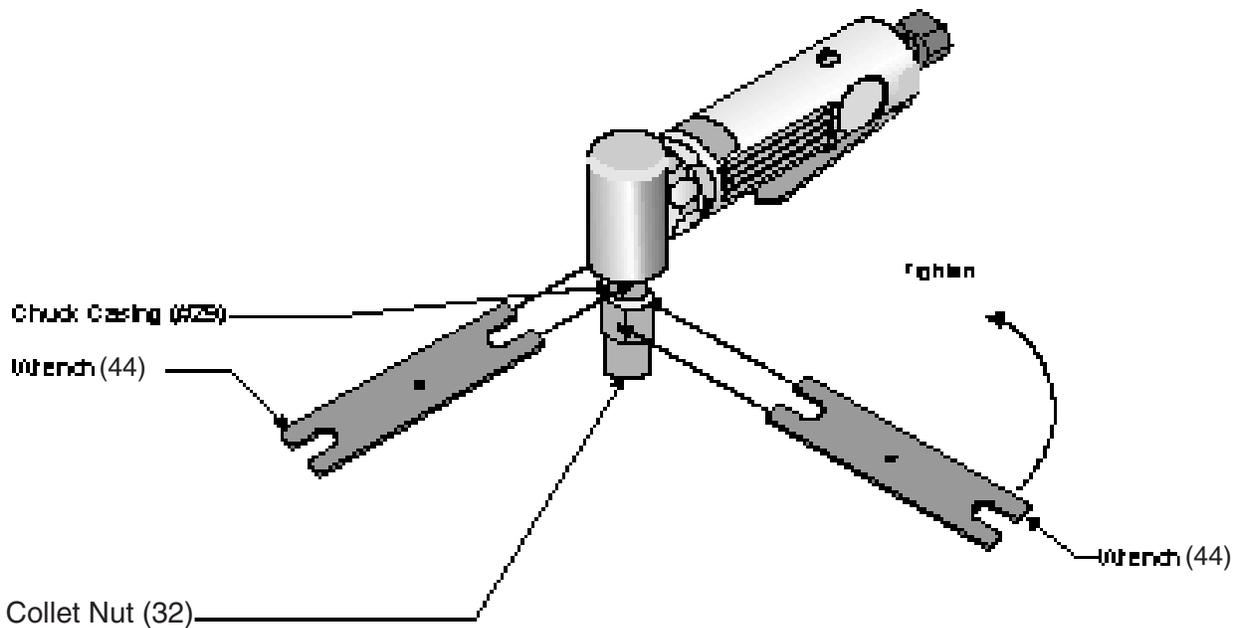


Figure 4 — Tightening the Collet Nut

7. Place the large end of WRENCH (44) on the flats of the COLLET NUT and tighten as shown in Figure 4.

Air Connection

1. You will need a Union fitting (sold separately) before you can connect your Die Grinder to an air compressor.
2. Attach the Union fitting to the HOSE ADAPTER (1) and tighten.
3. Attach an Air Coupler (sold separately) to the Union fitting if desired. This is a useful accessory as it allows quick-coupling action when using a variety of tools with the same air compressor.
4. Your Die Grinder is ready for use.

OPERATION

Setup

Frequent, but not excessive, lubrication is required for best performance. Oil added through the airline connection will lubricate internal parts. An automatic airline oiler is recommended but oil may be added manually before every operation or after about 1 hour of continuous use. Only a few drops of oil at a time are necessary. Too much oil will collect inside the tool and be blown out during the exhaust cycle. **ONLY USE PNEUMATIC TOOL OIL.** Do not use detergent oil or additives as these lubricants will cause accelerated wear to the seals in the tool.

Dirt and water in the air supply are major causes of pneumatic tool wear. Use a filter/oiler for better performance and longer life. The filter must have adequate flow capacity for the specific application. Consult the manufacturer's instructions for proper maintenance of your filter.

The connector on the tool must not hold pressure when the air supply is disconnected. If the wrong fitting is used, the tool can remain charged with air after being disconnected and still be able to drive a fastener. See Figure 5 for the recommended accessories and connection order.

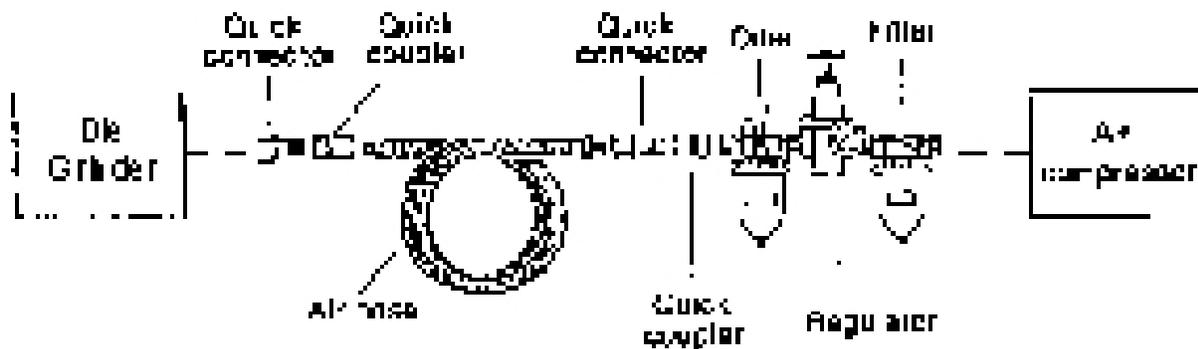


Figure 5 — Airline Oiler Assembly

Use

1. Set the compressor's pressure regulator to 90 PSI. Do not set the compressor's outlet regulator over 90 PSI.
2. Connect the Die Grinder to the air compressor's hose. If leaking is detected, disconnect the air hose and repair before use.
3. Place the material you will be grinding into a vise or otherwise clamp the object so that it will not move around when you use the Die Grinder. Make sure you still have unobstructed access to the area you will be grinding.
4. Grip the Die Grinder firmly with your hand. To begin grinding, press the LEVER (4). Press the LEVER before you touch the Grinding Attachment to the surface.
5. Your Die Grinder's speed is variable. To vary the speed of the Die Grinder, vary the pressure on the LEVER.
6. Allow the Grinding Attachment to do the work. Do not use excessive force to press the Die Grinder and Grinding Attachment into the surface you are grinding. If you put pressure on the Die Grinder and it stalls, immediately release the LEVER and pull the Die Grinder off of the surface.

WARNING!

Wear protective gloves, goggles, and a dust mask when operating this tool.

MAINTENANCE

Your Die Grinder is best operated with an Airline Oiler. If you are using the Die Grinder without an Airline Oiler, follow the steps below for maintenance.

1. Disconnect the Die Grinder from the air hose.
2. Apply a few drops of **PNEUMATIC TOOL OIL** through the HOSE ADAPTER (1) before each use, or every hour if used continuously.
3. Apply a few drops of oil to the LEVER (4) as shown in Figure 6. Work the LEVER a few times to lubricate.

CAUTION
Do not use detergent oil or additives as these lubricants will cause accelerated wear to the seals in the tool.

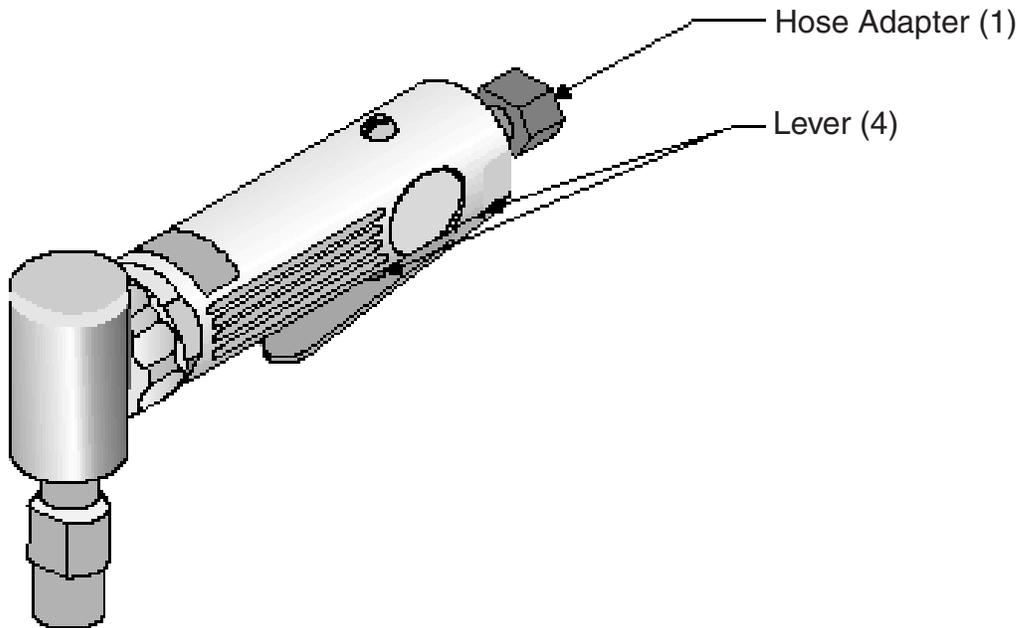


Figure 6 — Lubrication Points

PARTS LIST

Item	Description	Q'ty
1	Hose Adapter	1
2	O-Ring	1
3	Spring	1
4	Lever	1
5	Valve Pin	1
6	Housing	1
7	Pin	1
8	Sealing Gasket	1
9	Ball Bearing	1
10	Rear Plate	1
11	Steel Ball	1
12	Rotor	1
13	Rotor Blade	4
14	Cylinder	1
15	Bearing Spacer	1
23	Front Plate	1
24	Ball Bearing	1
25	Bevel Gear	1
26	Cap Lock	1

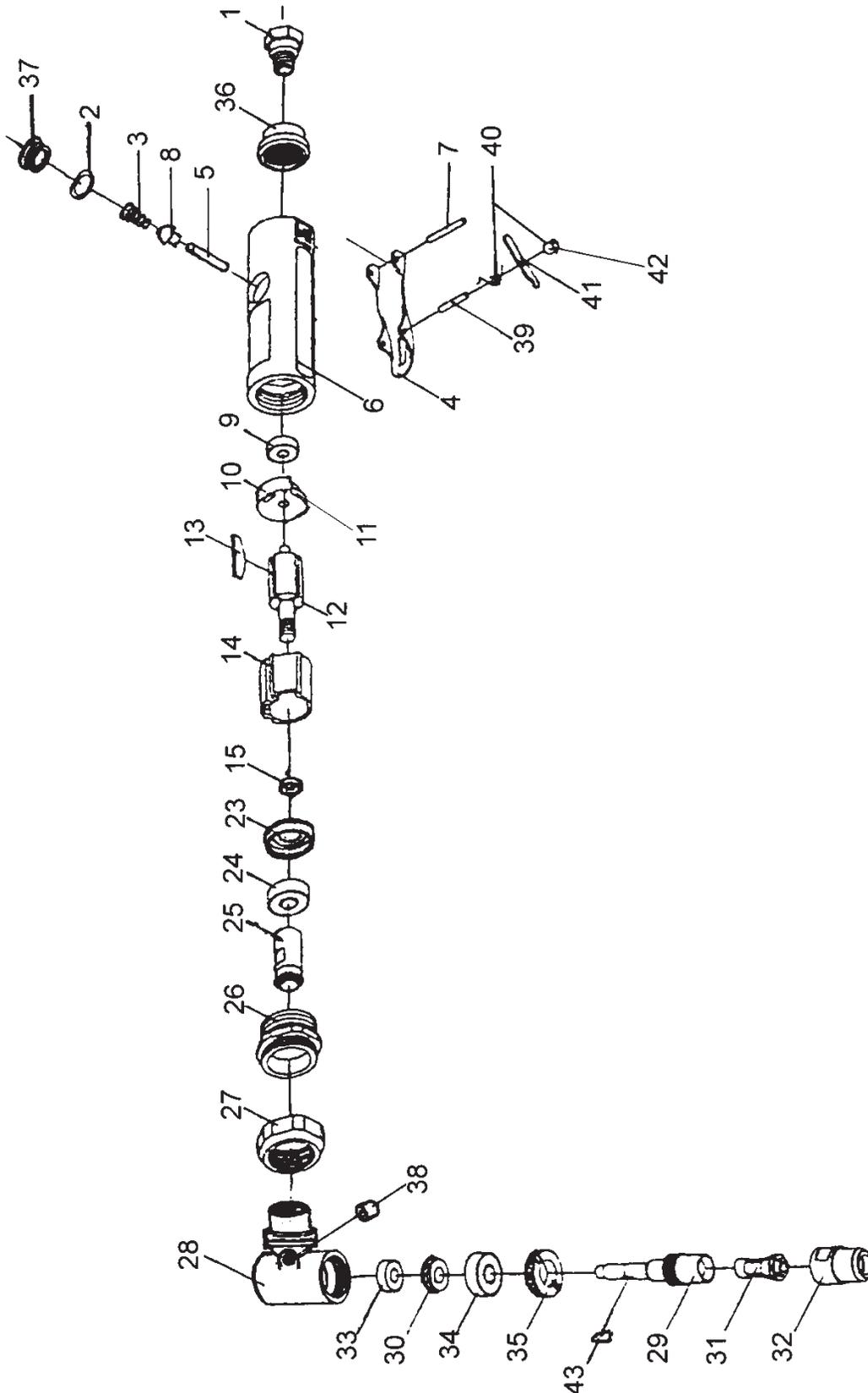
Item	Description	Q'ty
27	Cap	1
28	Angle Housing	1
29	Spindle	1
30	Gear	1
31	Collet	1
32	Collet Nut	1
33	Ball Bearing	1
34	Ball Bearing	1
35	Collet Nut	1
36	Exhaust Sleeve	1
37	Valve Screw	1
38	Lubricator	1
39	Pin	1
40	Spring	1
41	Safety Lock	1
42	Bush	1
43	Semi-Circular Key	1
44	Wrench	2

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

ASSEMBLY DIAGRAM



LIMITED 90 DAY WARRANTY

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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