

Commercial / Industrial Limited

Hougen Manufacturing, Incorporated warrants its Portable Magnetic Drills, Electro-Hydraulic Hole Punchers, and Tornado II Paint Shaker for a period of one (1) year and other products for ninety (90) days from date of purchase against defects due to faulty material or workmanship and will repair or replace (at its option) without charge any items returned. This warranty is void if the item has been damaged by accident or unreasonable use, neglect, improper service, or other causes not arising out of defects in material or workmanship. No other expressed warranty is given or authorized. Hougen Manufacturing, Inc. disclaims any implied warranty of MERCHANTABILITY or FITNESS for any period beyond the expressed warranty and shall not be liable for incidental or consequential damages. Some states do not allow exclusions of incidental or consequential damages or limitation on how long an implied warranty lasts and, if the law of such a state governs your purchase, the above exclusion and limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To obtain warranty service, return the item(s), transportation prepaid, to your nearest Factory Authorized Warranty Repair Center or to Hougen Manufacturing, Inc., 3001 Hougen Drive, Swartz Creek, Michigan 48473.

Hougen Drills (Hougen Cutters) are warranted against manufacturing defects only. Subject to Hougen Manufacturing inspection.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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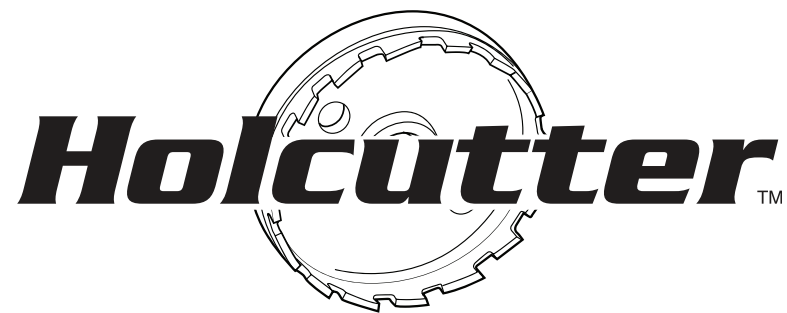
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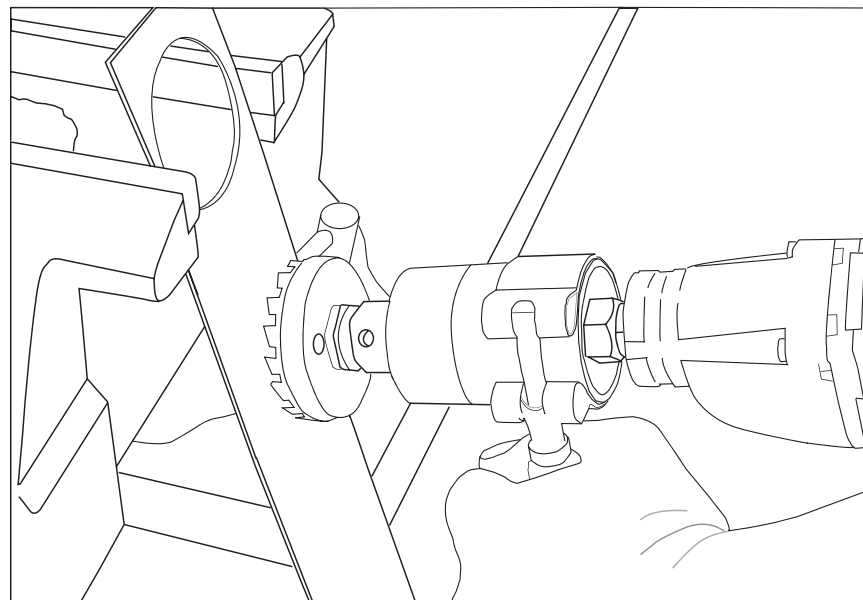


OMSR0404

Printed and Made in U.S.A.



SPEED REDUCER



For reducing RPMs while maintaining torque when using Holcutters

Speed Reducer

Welcome to Hougen

Congratulations on your purchase of the Holcutter™ Speed Reducer. Your Speed Reducer is designed to reduce RPMs while maintaining torque when using large diameter Holcutters™. The Speed reducer can be connected directly to a drill in place of the chuck or held in the drill's chuck. The 4:1 gear ratio allows a drill turning at 1000RPM to reduce the cutter output to 250 RPM. This allows for a more correct cutting RPM for the large diameter Holcutters. Through constant innovation and development, Hougen is committed to provide you with hole-producing tools and products to help you be more productive.

Before attempting to operate your new Speed Reducer, please read all instructions first. These include the Operator's Manual and Warning Label on the unit itself. With proper use, care, and maintenance, your model will provide you with years of effective holemaking performance. Once again, thank you for selecting our product and welcome to Hougen.

SAFETY FIRST

The Speed Reducer is capable of producing high torque:

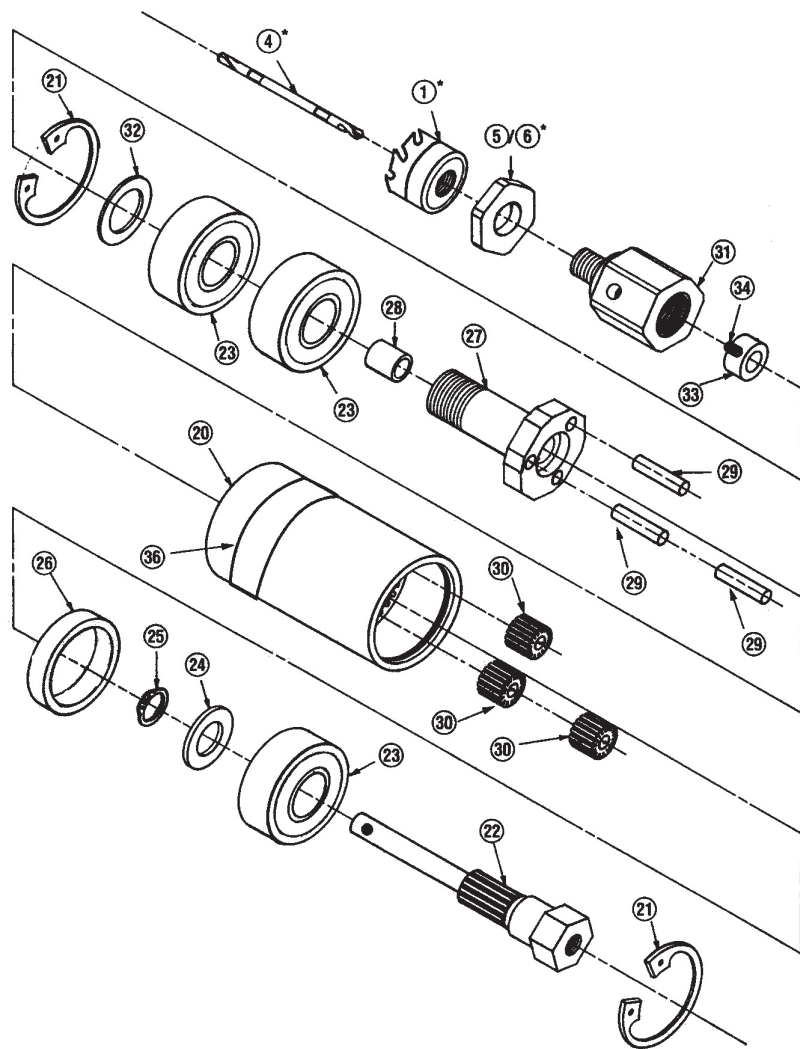
- Always keep a firm grip on both handles when drilling.
- Do not overreach or overextend while drilling; it is best to keep the tool close to your body.
- Work from a stable stance.
- Pay attention to your work.
- Always wear safety glasses and gloves.
- Do not use the Speed Reducer without the Clamp Handle.
- Always use Slick-Stik™ lubricant when cutting.

Parts List

Item	Part No.	Description	Qty Req.
1	Varies*	Holcutter™	1
4	04942	Pilot	1
5	04812	Hex Washer	1
20	04987	Ring Gear (54T)	1
21	04988	Retaining Ring	2
22	04989	Input Shaft (18T)	1
23	04990	Bearing	3
24	04991	Retaining Washer	1
25	04992	Retaining Ring	1
26	04993	Input Bearing Spacer	1
27	04994	Planet Carrier	1
28	04995	Bushing	1
29	04996	Planet Pin 1/4"	3
30	04997	Planet Gear (18T)	3
31	04998	Output Adapter	1
32	04999	Washer (M20)	1
33	05002	Collar	1
34	05048	Set Screw	1
36	04937	Label	1

*Sold Separately

Exploded View



PARTS REQUIRED TO OPERATE

These parts are required to operate your Speed Reducer. They are sold separately.

14008 Speed Reducer
04938 Clamp Handle
04939 3/16" Pilot
04812 Hex Washer

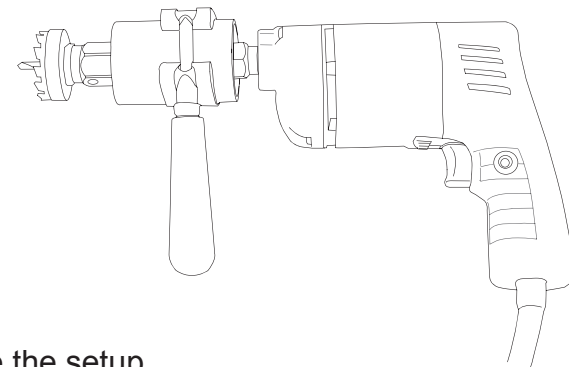
Optional Parts:

04942 Thread Adapter (1/2-20-UNF to a 3/8-24-UNF thread)
04943 Triple-flatted Shank Adapter for 1/2" drill chucks

INSTALLATION METHOD #1

Recommended Method. This method is used for drill motors with a fixed circular boss. With this method the drill chuck is removed and the speed reducer is threaded directly onto the drill chuck spindle. ***You must maintain a firm grip on both the drill and Speed Reducer Clamp Handle.***

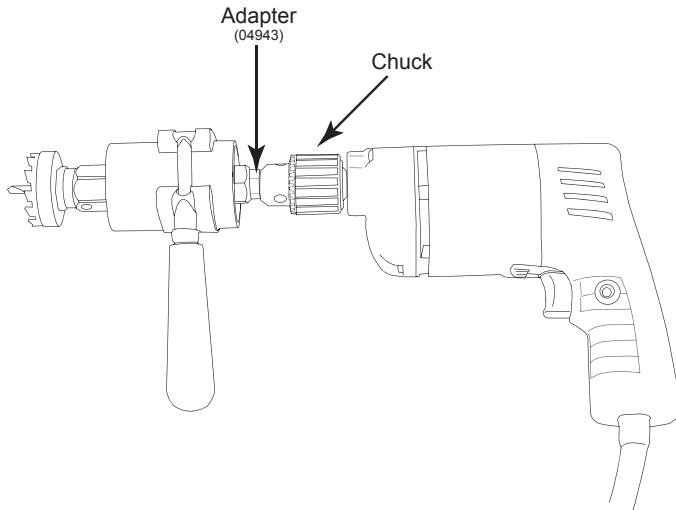
1. Remove the chuck from the drill motor leaving washer on drill motor shaft.
2. Thread the Speed Reducer onto the drill chuck spindle. Tighten by hand. Speed Reducer has a 1/2-20-UNF female thread.
3. Slide the clamp handle over the speed reducer and down to the end closest the drill motor. Rotate clamp handle to the desired position and tighten clamp by twisting handle.
4. Install pilot drill, hex washer, and cutter to complete the setup.



INSTALLATION METHOD #2

This method allows the Speed Reducer to be installed in a 1/2" chuck. This also allows the Speed Reducer to be quickly removed and the drill be used with other holmaking tools. The disadvantage is the Speed Reducer and drill is heavier and longer. ***You must maintain a firm grip on both the drill and Speed Reducer Clamp Handle.***

1. Screw the Triple-flatted Shank Adapter (04943) into the input shaft of the speed reducer.
2. Tighten the other end of the Shank Adapter into the chuck of the drill motor.
3. Slide the clamp handle over the speed reducer and down to the end closest the drill motor. Rotate clamp handle to the desired position and tighten clamp by twisting handle.
4. Install pilot drill, hex washer, and cutter to complete the setup.



MAINTENANCE

The Speed Reducer is designed to be relatively maintenance-free and is thoroughly lubricated at the factory: however, periodic lubrication will increase tool life. There are four important points of lubrication:

1. Pilot Drill
2. Planetary Gearing
3. Planet Gear Shaft
4. Input Shaft Bushing

2, 3, 4 are internal parts and require partial disassembly.

Pilot Drill Lubrication

Each time the pilot drill is removed, a thin coating of grease should be applied between the flats before being reinserted. This grease provides lubrication for the piloting hole in the output adapter which guides the pilot drill. After installation, wipe away all the excess grease from around the hole to prevent machining chips from sticking to this area.