

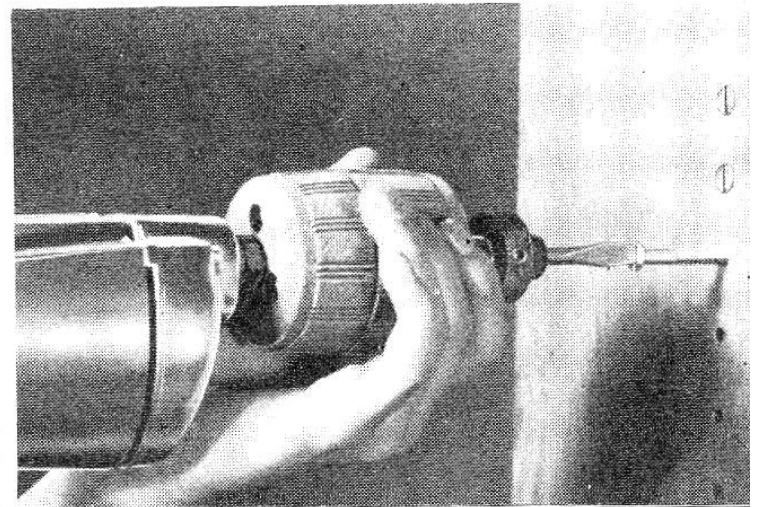
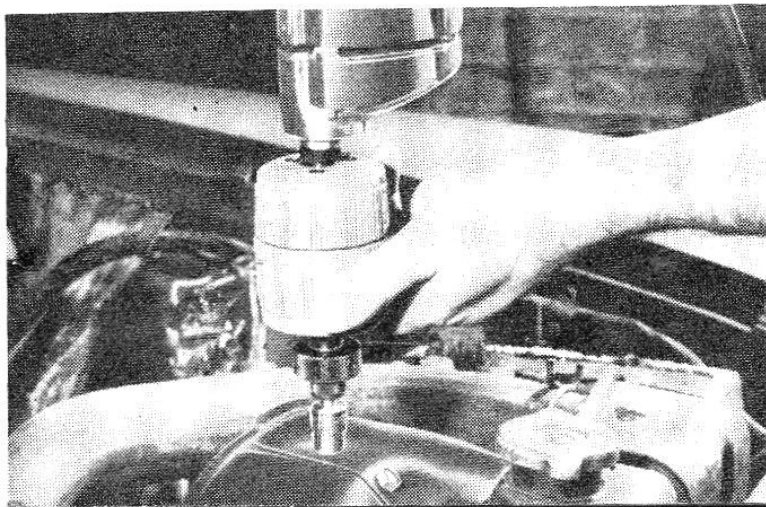
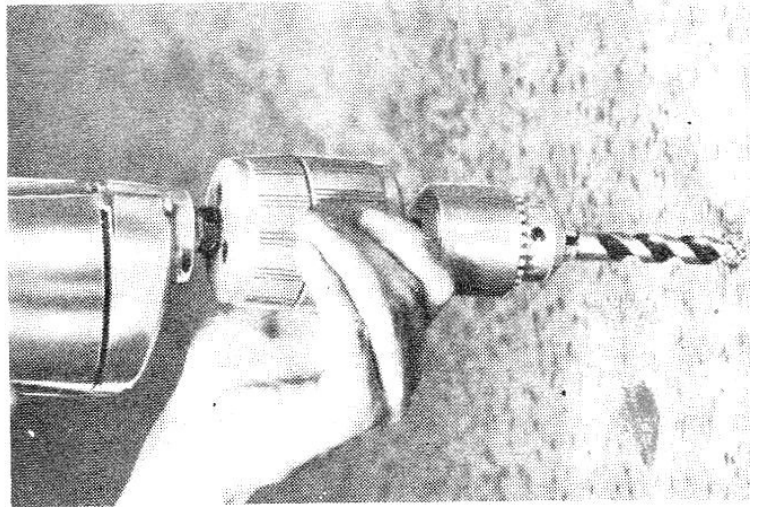
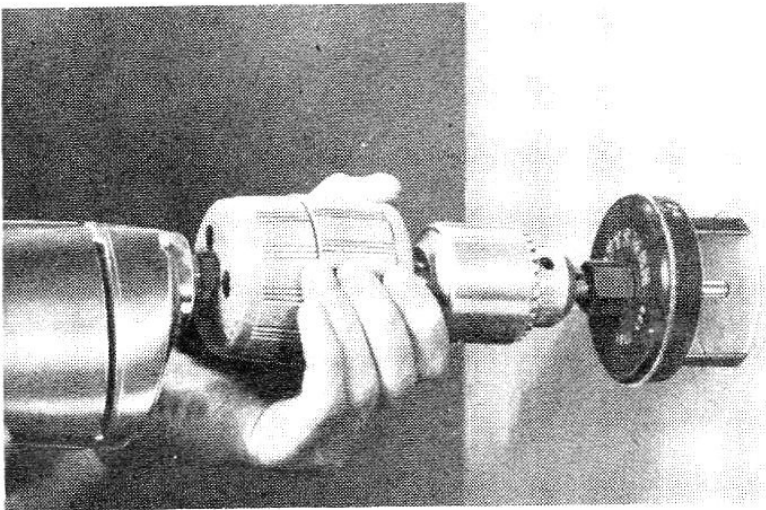
U.S. PAT. NO. 2,780,944

OPERATING INSTRUCTIONS FOR



REG. TRADE MARK

REVERSIBLE  
SCREW DRIVER and  
SPEED REDUCER  
FOR ALL POWER DRILLS



# QUICK INSTRUCTIONS ON HOW TO USE YOUR SPEED REDUCER AS A SCREW DRIVER

- (1) Drill pilot hole and insert screw in it. (Consult chart on back page.)
- (2) Attach Speed Reducer to drill. (See page 2—“The Input Shaft.”)
- (3) Attach proper bit to output shaft. (See page 5.)
- (4) Turn output shaft to innermost position. (See Figure 4—page 5.)
- (5) Hold Speed Reducer by front housing.
- (6) Turn on power and drive screw.

These instructions are intended only as a quick guide to Speed Reducer use as a power screw driver. Read this instruction book carefully for detailed advice on all other Speed Reducer uses.

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# INSTRUCTIONS

The Craftsman Reversible Speed Reducer reduces the high speed of your electric drill, and increases by 6 to 7 times its power to do many of the jobs frequently done by hand.

Not only will this attachment operate your tools in the forward direction, but also in reverse. Jobs which were once difficult are now as easy as drilling a hole.

This tool with its ability to increase the work-doing power of any electric drill; its exclusive feature of being quickly shifted from forward to reverse; and the easy system of fitting on a host of attachments, is truly an item necessary in every shop.

## HOW IT WORKS

The Craftsman Reversible Speed Reducer is a gear reduction unit encased in a two-piece aluminum housing. One end of it attaches to your drill—the other end holds the tools that do the work. Before installing, familiarize yourself with its parts. (See Fig. 1.) First note the two housings. The wider of the two is called the "front housing," the narrow one is the "rear housing," Ahead of the front housing is the "output shaft" equipped with Yankee-type holder that



makes bit changing fast and easy. (This is described in detail later.) At the opposite end from this output shaft is the "input shaft."

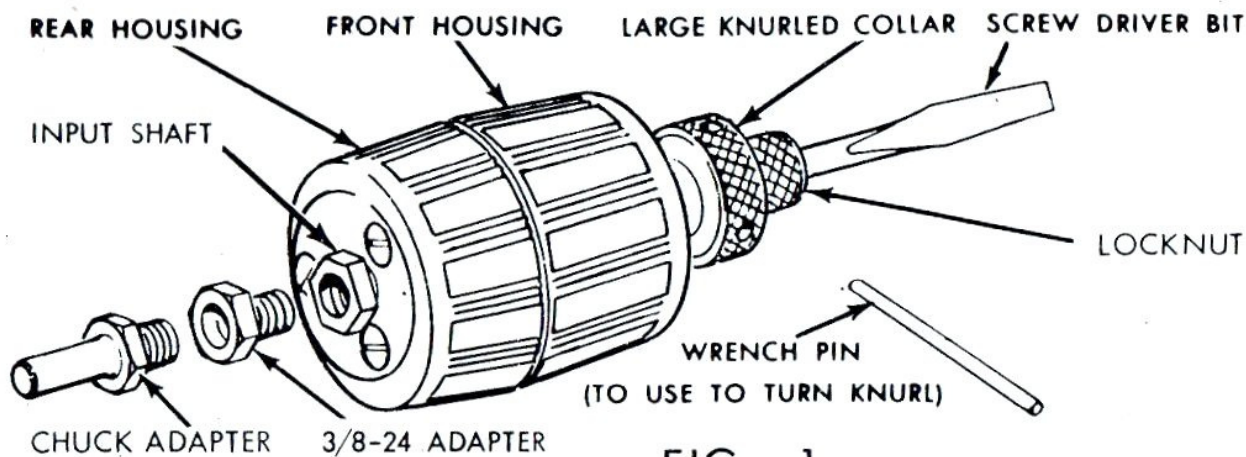


FIG. 1

## INPUT SHAFT

The Speed Reducer comes to you with an exposed hex nut at the input end. The thread of this nut is 1/2" x 20. Remove your drill chuck. If the threaded spindle has a 1/2" x 20 thread, then you may simply attach the Speed Reducer and you are ready to work.

If, however, the spindle has a 3/8" x 24 thread it will be necessary to use the adapter of that size contained in your kit. Thread it first into the Speed Reducer -- then screw the Speed Reducer onto the drill spindle.

For the owner who wishes to use the unit without removing the drill chuck there is a part called the chuck adapter. (See Fig. 1) The threaded end of this chuck adapter fits into the 3/8-24 adapter. When the chuck adapter is in place it can be inserted into your drill chuck in the same way as any drill bit.



Note: If your drill has a female spindle, it will be necessary to use a spindle adapter if you remove the chuck. The drill kit frequently contains the needed spindle adapter. If not, one may be obtained from the drill manufacturer. In the meantime, use your Speed Reducer by attaching it to the drill chuck as described in the preceding paragraph.

## OUTPUT SHAFT

From the front housing, a shaft extends which is called the output shaft. It is to this output shaft that you attach the tools or bits to do your work. Figure 2 shows a view of the output shaft with its tool holding arrangements.

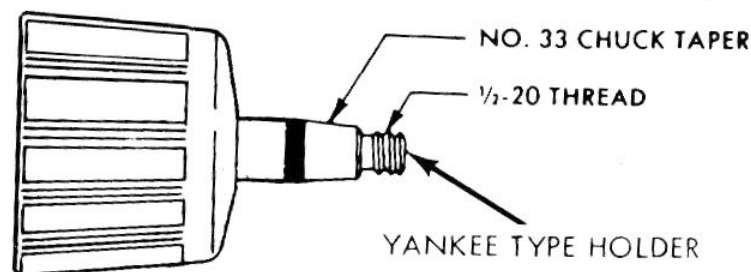


FIG. 2

A knurled aluminum collar is fitted over the number 33 chuck taper section of the output shaft. By grasping and turning this collar you will find that the output shaft is fastened internally by means of a fast acting screw thread.

When fully engaged in the forward driving position, the collar will be about  $5/16$  of an inch from the front housing; when in the reverse position, the collar will be about  $13/16$  of an inch from the housing. (See Fig. 3.)

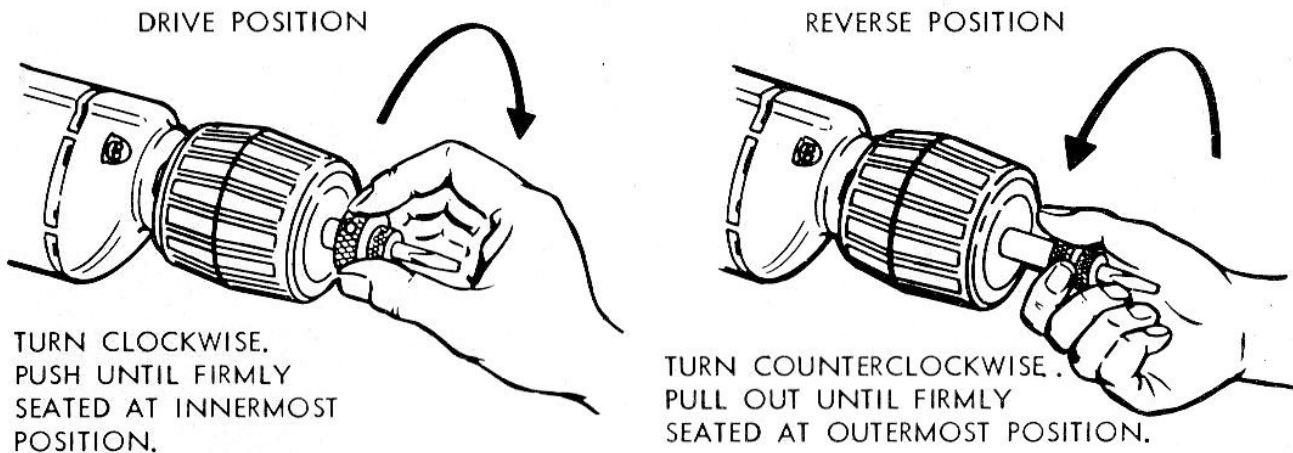


FIG. 3

## HOUSINGS

The two housings differ slightly in length, the longer one, from which the output shaft extends, is called the front housing. The shorter section or one from which the input shaft extends, is called the rear housing. Now if you have fixed in your mind these two things—(1) the two possible positions of the output shaft (innermost or outermost) and (2) the difference between the front and rear housings, you are ready to operate the unit.

## TO DRIVE WOOD SCREWS

Always drill pilot holes for screws. Consult the screw hole size chart on the back of this folder. For screws



of unknown size, the pilot hole is roughly equal to the diameter of the screw at the depth of the threads. The shank hole is equal to or slightly larger than the shank diameter of the screw. Although you will have sufficient power to drive many screws without drilling pilot holes, this practice may result in many broken screws, damaged screws, and damaged or split work.

Attach the Speed Reducer to your power drill.

Fasten the desired screw driver bit in place by inserting it into the output shaft. Simply push in the bit and turn it in your fingers until it is secure. Be sure to select the screw driver bit from the kit that is best suited to the size of screw you plan to drive.

With the output shaft screwed to its innermost position, the bit in place, grasp the front housing lightly. Unit is now ready to use. Turn on power and try it in mid-air a few times to get the "feel."

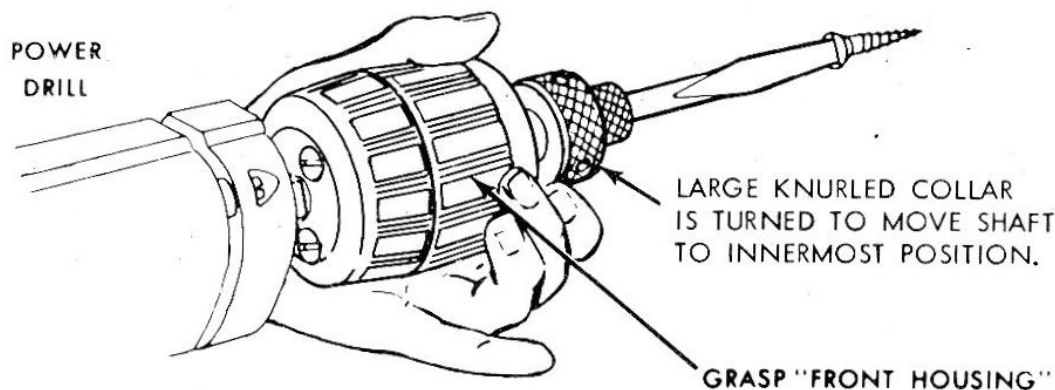


FIG. 4 POSITION FOR DRIVING SCREWS

Then turn off power and insert screw driver in slot of screw. Turn power on and drive screw easily. All you have to do while driving screw is hold the front housing to keep it from turning. Note that you can stop the action in either of two ways: (1) you can turn off power, or (2) you can allow housing to slip through your fingers while power is still on. When you allow the housing to slip through your fingers, you decrease the power applied to your work. You may release your hand from the housing completely thus allowing the housing to turn free and the bit will stop instantly. You are assured of full control and complete safety at all times.

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### STEP-BY-STEP, HOW TO DRIVE SCREWS

- (1) Drill pilot hole and insert screw in it.
- (2) Attach Speed Reducer to drill.
- (3) Attach proper bit to output shaft.
- (4) Turn output shaft to innermost position.
- (5) Hold Speed Reducer by front housing.
- (6) Turn on power and drive screw.

**CAUTION:** Unless the Speed Reducer is properly used, there is some danger of breaking screw driver bits or damaging screw heads. Always remember to:



- (1) Drill proper size pilot hole.
  - (2) Drill proper size shank hole.
  - (3) Center bit securely in the screw head.
  - (4) Keep sufficient pressure on the tool to prevent the bit from slipping out of screw head.
- 

## HOW TO REMOVE SCREWS.

To get ready to remove screws turn the output shaft to outermost position. Seat it "hand tight." Grasp body of the Speed Reducer by its rear housing. (See Fig. 5.)

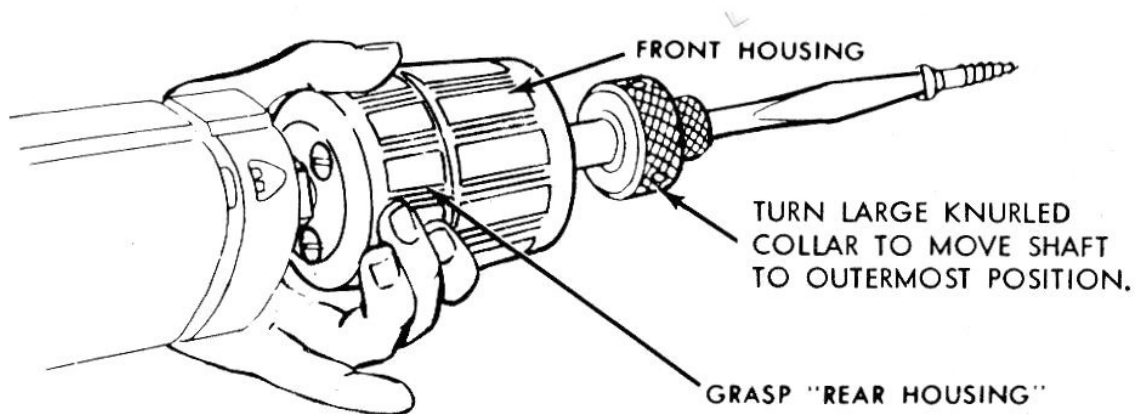


FIG. 5 POSITION FOR REMOVING SCREWS

Turn on power and you will see that the screw driver turns in reverse. Turn power off and seat screw driver in screw slot. Turn on power and remove screw. Continue holding rear housing throughout this operation.

Among the items supplied with this tool is a plated steel pin, about 3/16 inch in diameter and 2-3/4 inches long. This is called a wrench pin. This wrench pin will assist you in turning the output shaft after the Speed Reducer has been used on heavy work. Holes to receive the wrench pin will be found spaced around the outside of the large knurled collar.

**CAUTION:** On occasion a screw may be in so solidly that it will stop the screw driver blade. In this case the housing you are holding will turn. Be prepared to let it slip through your fingers. Stop power and loosen screw by hand as described in the next paragraph.

If the screw is frozen: Your Speed Reducer will magnify the power of your electric drill by 6 times to remove screws that you couldn't budge with any hand screw driver. However, if a screw is frozen, it is best to break loose by using the Speed Reducer as a hand tool. The larger diameter gives you the extra power you need to loosen even the most difficult screws. In extremely tight cases the use of penetrating oil may be necessary.

### YOUR SPEED REDUCER AS A POWER WRENCH.

Bolts, nuts or machine screws may be driven or removed by power. A 1/4" square drive adapter is included in the kit. It fits all attachments in standard 1/4" socket sets.



## USING THE SPEED REDUCER FOR DRILLING.

When used for drilling or other work, some means must be found of holding the cutting tool in place. This is easily done by following these simple steps:

- (1) Remove screw driver bit first; then unscrew the lock nut.

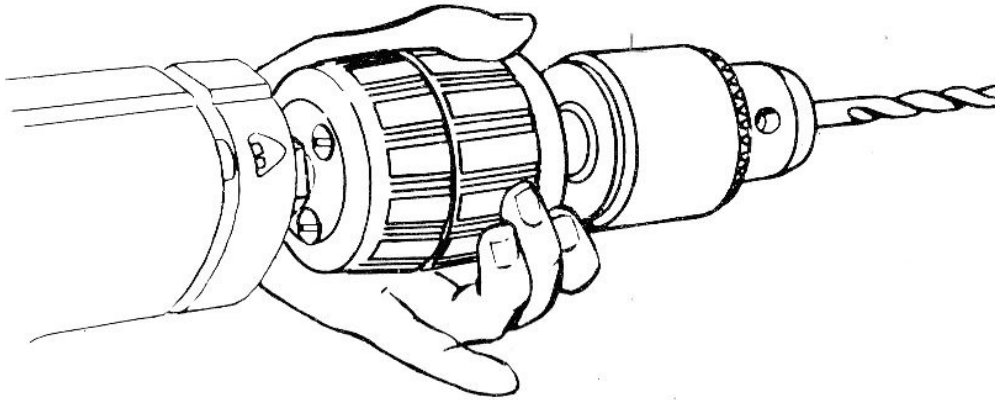


FIG. 6 CHUCK ATTACHED TO OUTPUT SHAFT

- (2) Turn output shaft to its outermost position and remove the knurled collar by tapping lightly on back side with a soft hammer. (Or tap with regular hammer against a block of wood.) When the knurl has been removed the #33 chuck taper is exposed, and any Chuck with a #33 taper can be put in place on the taper.
- (3) A chuck with a 1/2-20 thread may also be used by merely screwing the chuck on in place of the lock nut.

The thread lock chuck of this type will work perfectly for all drilling work but will not be satisfactory for reversing, as it will tend to back itself off the shaft.

## TAPPING WITH YOUR SPEED REDUCER

Power tapping is one more of the many uses to which you may put your Speed Reducer. Attach a 1/2" taper chuck to the Speed Reducer as described in the paragraphs on drilling. Use the chuck to hold your tap. Drive tap into hole to desired depth.

To withdraw the tap grasp the rear housing and turn it in a counter-clockwise or unscrewing direction until output shaft is disengaged from its innermost position.

Hold the rear housing and restart power drill. Pull drill and Speed Reducer away from the work and tap will back out of hole.

## HOW TO CARE FOR YOUR SPEED REDUCER.

The Craftsman Reversible Speed Reducer is a relatively simple tool to take care of. It has been thoroughly lubricated at the factory. This pre-lubrication will last anywhere from 3 or 4 months to a couple of years depending on the amount and kind of use the tool



gets. The usual tip-off that lubrication is needed is when gears start getting noisy. When this occurs, either do the lubrication yourself or return to nearest Sears retail or mail order store following shipping instructions in this folder. Any fairly good mechanic can do his own lubricating job easily by following these steps.

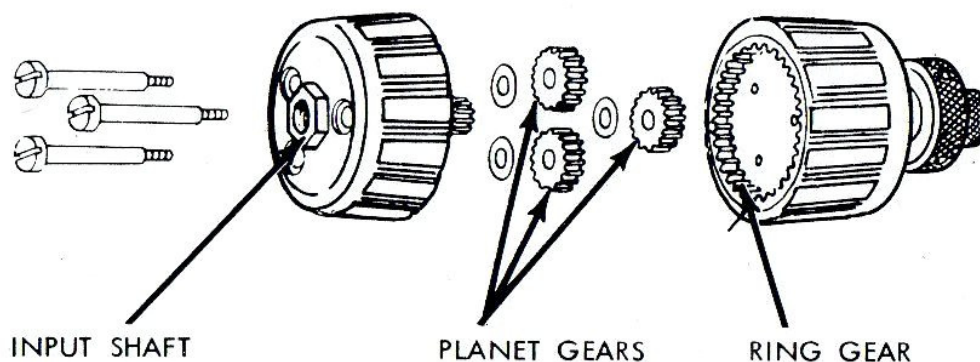


FIG. 7 CRAFTSMAN DISASSEMBLED

- (1) Output shaft must be in the innermost position and left this way until reassembly is complete. Disassemble the tool by removing the three screws from the face of the rear housing.
- (2) Remove the rear housing and expose the gear train. An internal ring gear will be found in the front housing. This gear has been press-fitted in place and need not be removed.
- (3) The input shaft and gear combination have also been press-fitted together and need not be removed.

- (4) The teeth of all gears should be filled with high quality gear and bearing grease.
- (5) Apply a few drops of #10 motor oil to the bronze bushing under the hex nut portion of the input shaft.
- (6) A small quantity of grease should be placed into the center hole of each of the three planet gears.
- (7) Reassemble the unit in this manner: Hold the rear housing in palm of hand with three screws in place. Place washers and planet gears on the screws. Place front housing on top of this assembly and gently turn until three screws engage in internal plate. When screws have been seated the entire assembly should be inverted and screws driven securely.

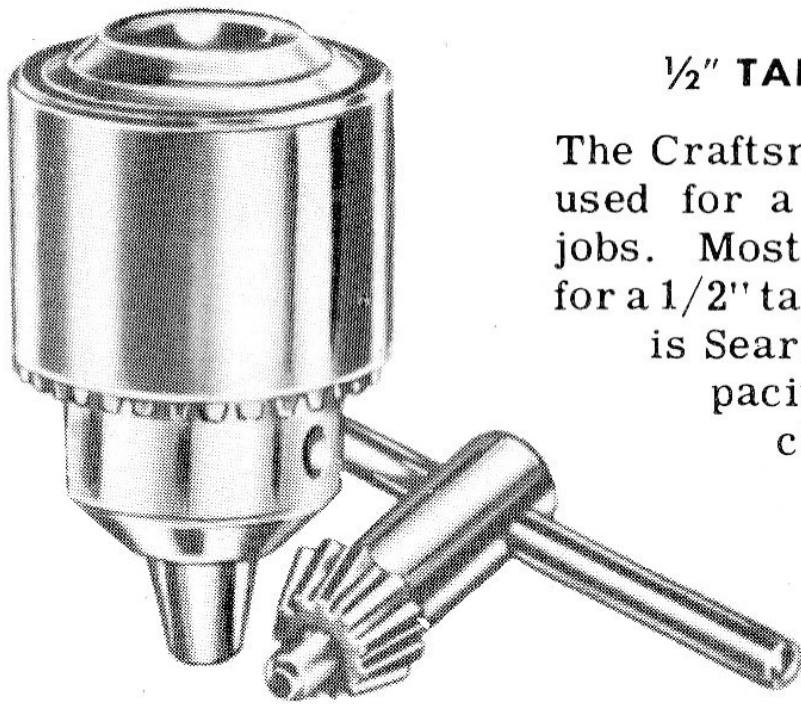
### MORE TIPS ON USING YOUR SPEED REDUCER

Your Craftsman Speed Reducer is a hand tool and like any of your present tools, a certain skill or technique can be developed by the user. The more you use the Speed Reducer the better it will perform for you. Practice with it.

At the outset you will find it easier to use on large screws than on small ones. Practice will be especially important to you in learning to do delicate work with it.

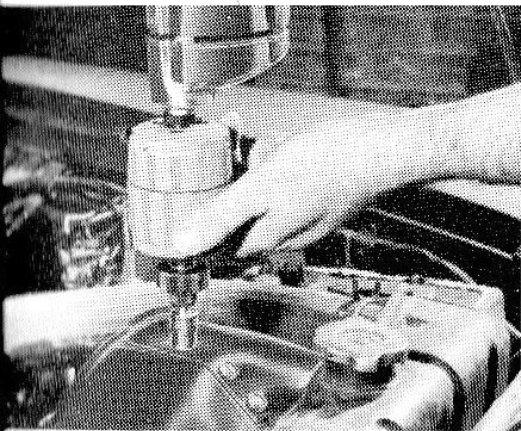


## IMPORTANT "EXTRAS" FOR YOUR CRAFTSMAN SPEED REDUCER



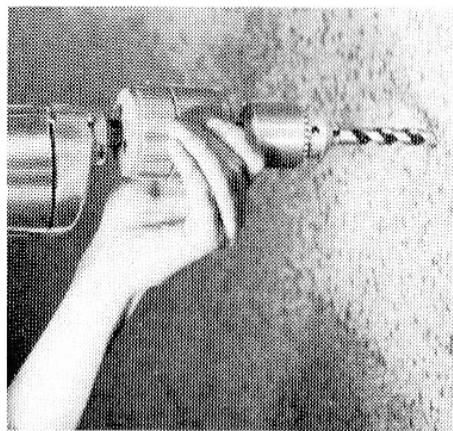
### 1/2" TAPER CHUCK WITH KEY

The Craftsman Speed Reducer can be used for a wide variety of drilling jobs. Most of these applications call for a 1/2" taper chuck. Recommended is Sears Catalog No. 9-2142 - capacity 5/64" to 1/2" - the same chuck that is used on many Craftsman Drill Presses. Available at your nearby Sears or Simpsons - Sears retail or mail order store.



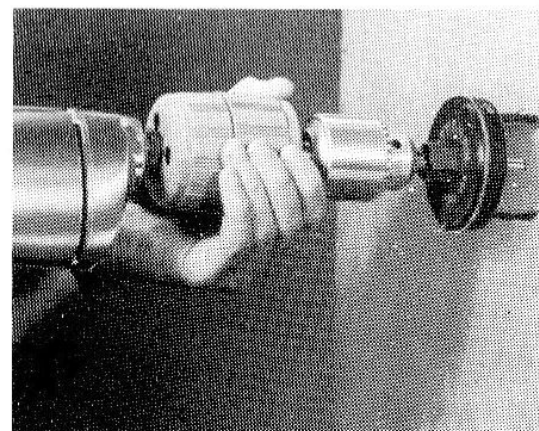
### SOCKET SETS

Your Speed Reducer kit includes a 1/4" square drive adapter for driving socket tools. There is a variety of fine Craftsman Socket Sets available. To get more fun and help from your Speed Reducer equip it for nut running with a Craftsman Socket Set.



### MASONRY BITS

Drilling in masonry, stone, glass, marble etc., requires special Masonry Bits, and the larger diameter bits (over 1/4") operate best at reduced speeds. Choose fine Carbide Tipped Masonry Bits from the complete Craftsman line at your nearby Sears or Simpsons-Sears retail or mail order store.



### HOLE SAWS

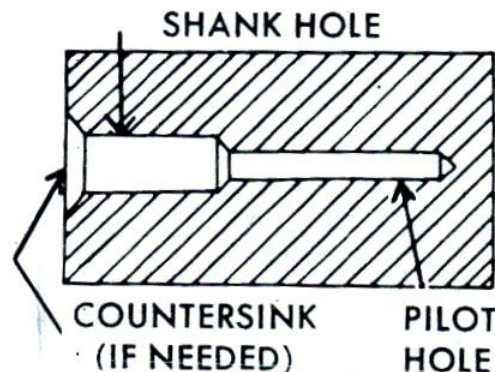
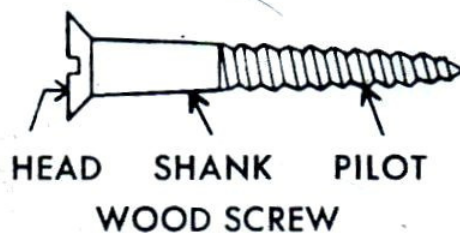
All large diameter drilling is easier when done at reduced speeds. The Craftsman Adjustable Hole Saw for holes in wood from 1 1/8" to 2 1/2" diameter will work perfectly with your Speed Reducer. Use regularly for running pipe and conduit, setting locks, cabinet work and in installation of all kinds.

# SCREW CHART

Drill and Bit Sizes for Shank Clearance  
Pilot and Counterbore Holes

SIZE OF SCREW	BIT OR DRILL SIZES					
	SHANK HOLES		PILOT HOLES			
	Drill number or letter	Drill Size nearest fraction	Hard Wood		Soft Wood	
			Drill number or letter	Drill Size nearest fraction	Drill number or letter	Drill Size nearest fraction
6	27	$\frac{9}{64}$ "	41	$\frac{3}{32}$ "	43	$\frac{5}{64}$ "
7	22	$\frac{5}{32}$ "	36	$\frac{7}{64}$ "	43	$\frac{5}{64}$ "
8	18	$\frac{11}{64}$ "	33	$\frac{7}{64}$ "	36	$\frac{3}{32}$ "
9	14	$\frac{3}{16}$ "	31	$\frac{1}{8}$ "	33	$\frac{7}{64}$ "
10	10	$\frac{3}{16}$ "	30	$\frac{1}{8}$ "	32	$\frac{7}{64}$ "
11	4	$\frac{13}{64}$ "	29	$\frac{9}{64}$ "	30	$\frac{1}{8}$ "
12	2	$\frac{7}{32}$ "	26	$\frac{9}{64}$ "	28	$\frac{9}{64}$ "
14	D	$\frac{1}{4}$ "	18	$\frac{11}{64}$ "	20	$\frac{5}{32}$ "
16	I	$\frac{17}{64}$ "	12	$\frac{3}{16}$ "	14	$\frac{11}{64}$ "
18	N	$\frac{19}{64}$ "	5	$\frac{13}{64}$ "	8	$\frac{3}{16}$ "
20	P	$\frac{21}{64}$ "	A	$\frac{15}{64}$ "	2	$\frac{7}{32}$ "

## DEFINITION OF TERMS



**GUARANTEE:**—This Craftsman Reversible Speed Reducer was thoroughly checked and tested before shipment. Should defects due to faulty material or workmanship develop it will be repaired free of charge if returned to your nearest Sears retail or mail order store or, in Canada, your nearest Simpsons-Sears Mail Order House or Retail Store, within one year from date of purchase. This guarantee is not valid if the Speed Reducer has been misused, abused or tampered with.

SEARS, ROEBUCK AND CO. — U.S.A., SIMPSONS-SEARS LIMITED — CANADA



PARTS LIST FOR  
**CRAFTSMAN**

REG. TRADE MARK

**REVERSIBLE SCREW DRIVER  
AND SPEED REDUCER**

**MODEL NUMBER 665.256560**

The model number of your Reversible Screw Driver will be found on the rear housing of the tool. Always mention this model number when communicating with us regarding the tool or when ordering parts.

**HOW TO ORDER REPAIR PARTS**

All parts listed herein may be ordered through Sears, Roebuck and Co. or Simpsons-Sears Limited. When ordering parts by mail from the mail order house which serves the territory in which you live, selling prices will be furnished on request or parts will be shipped at prevailing prices and you will be billed accordingly.

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION AS SHOWN IN THIS LIST:

1. The PART NUMBER.
2. The PART NAME.
3. The MODEL NUMBER.
4. The NAME of item.

This list is valuable. It will assure your being able to obtain proper parts service at all times. We suggest you keep it with other valuable papers.

**SEARS, ROEBUCK AND CO. — U.S.A.  
SIMPSONS-SEARS LIMITED — CANADA**

**MODEL NUMBER  
665.256560**

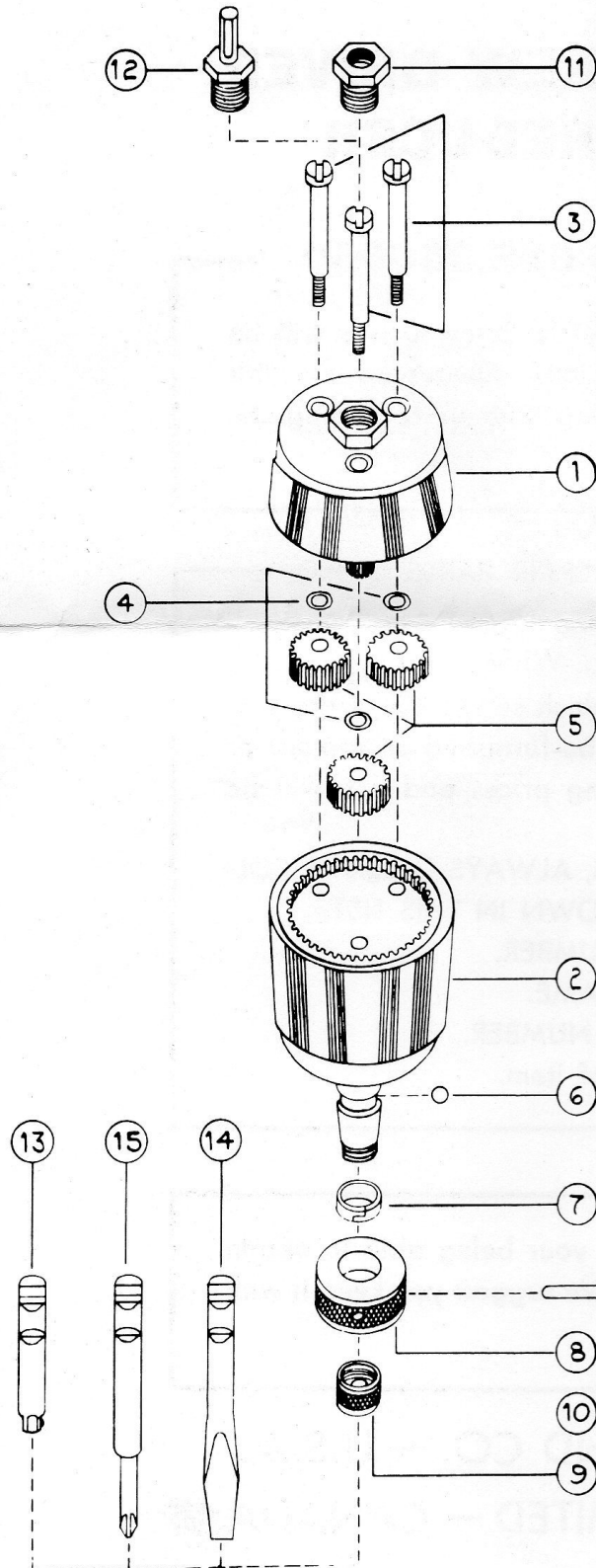
**CRAFTSMAN**

REG. TRADE MARK

**REVERSIBLE SCREW DRIVER  
AND SPEED REDUCER**

ALWAYS MENTION MODEL NUMBER WHEN COMMUNICATING WITH US REGARDING THIS TOOL  
WHEN ORDERING REPAIR PARTS. ALWAYS GIVE THE FOLLOWING INFORMATION:

- |                    |                     |
|--------------------|---------------------|
| 1. THE PART NUMBER | 3. THE MODEL NUMBER |
| 2. THE PART NAME   | 4. THE NAME OF ITEM |



**PARTS LIST**

Key No.	Part No.	Parts List Description
1	4222	Rear Housing Assembly
2	4223	Front Housing Assembly
3	4026	Shoulder Bolt
4	4089	Planet Gear Washer
5	4010	Planet Gear
6	4060	Retaining Ball
7	4059	Snap Ring
8	4216	Locking Collar
9	4008	Lock Nut
10	4029	Wrench Pin
11	4055	3/8-24 Adapter
12	4235	Chuck Adapter
13	4076	1/4 Sq. Socket Adapter
14	4074	Medium Duty Slotted Bit
15	4072	#2 Phillips Bit

# CRAFTSMAN REVERSIBLE SCREW DRIVER AND SPEED REDUCER KIT

No. 9 - 25654

## PARTS LIST

Speed Reducer

Wrench Pin

Chuck Adaptor

1/2-20 To 3/8-24 Adaptor

#1 Phillips Type Bit

#2 Phillips Type Bit

#3 Phillips Type Bit

Medium Duty Slotted Bit

Heavy Duty Slotted Bit

Finder Type Slotted Bit

1/4 Sq. Socket Adaptor

7/32 : 6Pt. 1/4 Sq. Drive Socket

1/4 6Pt. 1/4 Sq. Drive Socket

9/32 6Pt. 1/4 Sq. Drive Socket

5/16 6Pt. 1/4 Sq. Drive Socket

11/32 6Pt. 1/4 Sq. Drive Socket

3/8 6Pt. 1/4 Sq. Drive Socket

7/16 6Pt. 1/4 Sq. Drive Socket

1/4 8Pt. 1/4 Sq. Drive Socket

5/16 8Pt. 1/4 Sq. Drive Socket

Drill Chuck 5/64 To 1/2 Cap. #33 Taper

Chuck Key

Instruction Book

Steel Box

ABOVE PARTS FOR REPLACEMENT ARE  
AVAILABLE FROM SEARS ROEBUCK AND  
CO. - U.S.A. OR SIMPSONS-SEARS  
LIMITED - CANADA