

*Factory Authorized*

# SERVICE TOOLS



**FOR BETTER SERVICE**

**FOR GREATER PROFITS**

**HARRY FERGUSON, INC., DEARBORN, MICH.**

# MAKE BIGGER PROFITS

*The Quicker, Easier Way with*

## FERGUSON SERVICE TOOLS

### HOW FERGUSON SERVICE TOOLS *Save You Money*

- 1. PRACTICAL DESIGN.** Twenty years of shop experience have gone into the design of every tool.
- 2. SAFE OPERATION.** Designed with the safety factor in mind, they reduce accidents.
- 3. LESS LABOR.** Proper design permits ease of operation, and reduction in time on each job.
- 4. SAVE PARTS.** Bearings and gears are replaced and removed without damage.
- 5. FEWER FAILURES.** Bearings are properly removed and replaced, which means longer life and better service from equipment.
- 6. PORTABLE.** These tools may be operated in the field as easily as in the shop.
- 7. ALL-PURPOSE USE.** Designed for use on many different makes and models of tractors.
- 8. LONG USEFULNESS.** These tools will give years of uninterrupted service. It will not be necessary to buy a new set each year.



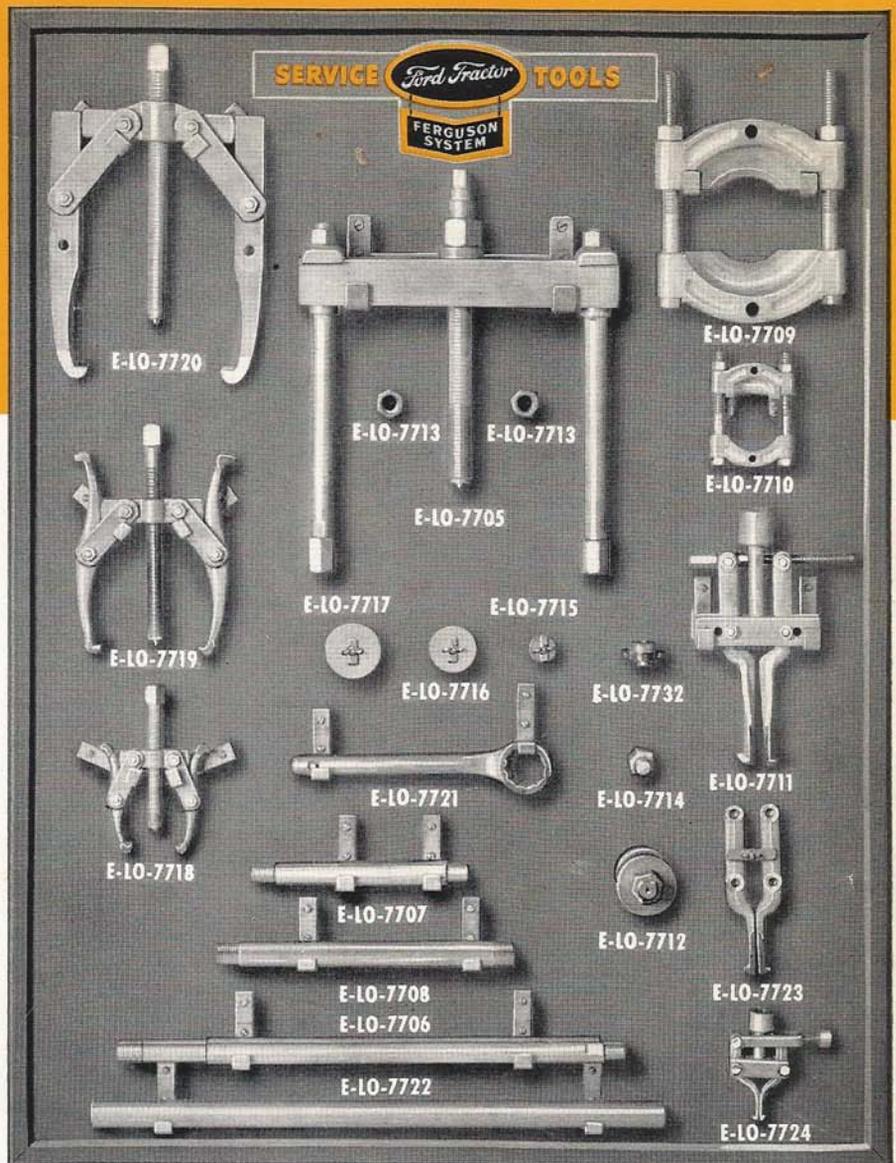
Makeshift methods and inadequate tools are costly. They ruin expensive parts, consume valuable time and destroy good will. It costs much less over a period of time and you make bigger profits when you use high-quality, precision-built pullers rather than the old-fashioned, ruinous, "hammer-and-hope" method.

The tools illustrated in this service bulletin are selected for their efficiency and universal application. The smallest number of tools possible, consistent with good practice, is included in this set in order to keep the initial cost at a minimum.

By actual test these tools have been found to do a majority of the pulling jobs encountered in a Ford-Ferguson service shop. Not only will they operate successfully on Ford-Ferguson Tractors, but they can be also used with equal facility on other makes and models of tractors and implements.

## ESSENTIAL SERVICE SET

For proper service it is essential that each dealer have a complete set. When sets are purchased, it is recommended that the dealer obtain the service board also. This board provides a convenient and attractive place to keep the tools, and reduces the chances for loss of any part of the set. The entire set can be located conveniently on a wall, since a space only 37¼" x 49¼" is required.



### TOOLS

	Number
Push-Puller with 9½" Legs . . . . .	E-LO-7705
16½" Legs . . . . .	E-LO-7706
4½" Legs . . . . .	E-LO-7707
Special Legs for Replacing Drive Pinion Gear Assembly (pair) . . . . .	E-LO-7708
Bearing Pulling Attachment . . . . .	E-LO-7709
Bearing Pulling Attachment . . . . .	E-LO-7710
Bearing Cup Pulling Attachment . . . . .	E-LO-7711
Drive Pinion Bearing Attachment . . . . .	E-LO-7712
⅝" Female x ¾" Female Leg Connectors (pr.) . . . . .	E-LO-7713
⅝"-11 Thread Male Plug Adaptor . . . . .	E-LO-7714
1⅛" x 7⁄8" Step Plate . . . . .	E-LO-7715
2" x 1⅝" Step Plate . . . . .	E-LO-7716
2⅜" x 1⅞" Step Plate . . . . .	E-LO-7717
1⅞" x 1" Step Plate . . . . .	E-LO-7732
Grip-O-Matic Puller . . . . .	E-LO-7718

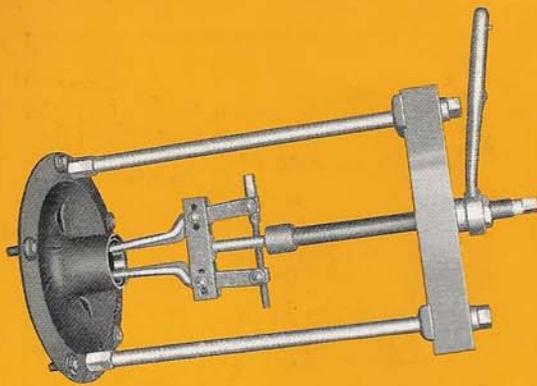
### TOOLS

	Number
Grip-O-Matic Puller . . . . .	E-LO-7719
Grip-O-Matic Puller . . . . .	E-LO-7720
1½" Heavy-Duty Box Wrench . . . . .	E-LO-7721
Tubular Handle for MA-28 Box Wrench . . . . .	E-LO-7722
Special Jaws for 943 Bearing Cup Pulling Attachment . . . . .	E-LO-7723
Pilot Bearing Puller . . . . .	E-LO-7724
Display Board . . . . .	E-LO-7740
Tool Display Decal . . . . .	E-LO-7741

### \*SPECIAL TOOLS

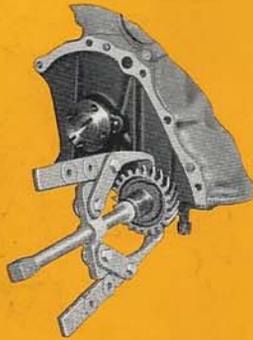
Valve Assembly Remover . . . . .	E-LO-7727
✓ Valve Guide Keeper Remover . . . . .	E-LO-7728
Steering Wheel Puller . . . . .	E-LO-7729
✓ Ring Groove Cleaner . . . . .	E-LO-7730
Ring Compressor . . . . .	E-LO-7731

\*Included but not illustrated on Display Board.



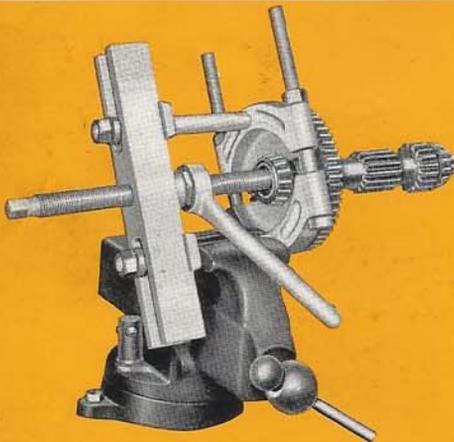
### **PULLING FRONT WHEEL INNER AND OUTER BEARING CUPS**

This illustration shows Push-Puller No. E-LO-7705 with No. E-LO-7706 16½" Legs used with the Bearing Cup Pulling Attachment No. E-LO-7711 removing the Front Wheel Inner Bearing Cup No. B-1202. The same equipment and procedure are used for removing the Front Wheel Outer Bearing Cup No. B-1217. This setup and pulling procedure is typical of practically all Bearing Cup removal jobs.



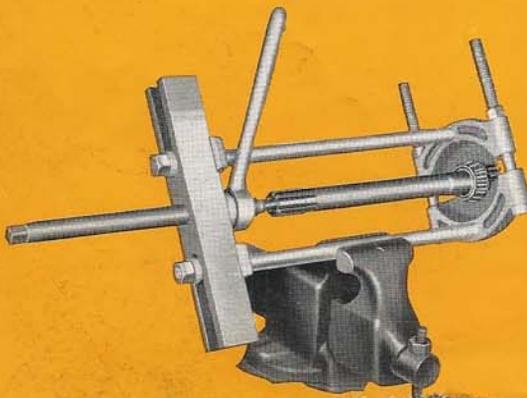
### **REMOVING CRANKSHAFT GEAR**

The Crankshaft Gear No. 48-6306 is removed with the Grip-O-Matic Puller No. E-LO-7719 used in connection with a Step Plate No. E-LO-7732 placed over the end of the crankshaft. Most medium-size gears can be removed with this Puller and the use of Step Plates.



### **REMOVING TRANSMISSION MAIN AND COUNTERSHAFT BEARINGS**

Another typical operation is shown in the accompanying photograph. In this case the Push-Puller No. E-LO-7705 with Legs No. E-LO-7707, 4½" used with the Bearing Pulling Attachment No. E-LO-7709 is shown removing the Transmission Main and Countershaft Bearings No. 9N-7066.



### **REMOVING TRANSMISSION BEARING**

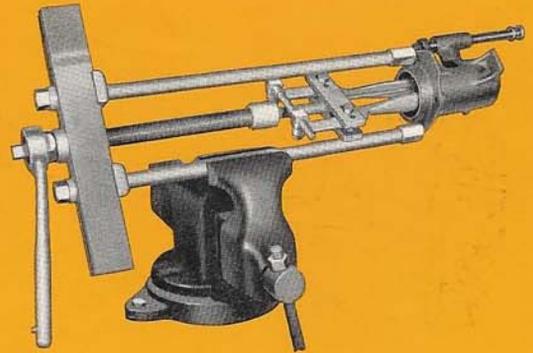
In this photograph, the Push-Puller No. E-LO-7705 used with the 16½" Legs and the Pulling Attachment No. E-LO-7709 are shown removing the Transmission Bearing No. 9N-7066.

In every case, the knife edges of the Pulling Attachment No. E-LO-7709 should be applied to the inner race of the bearing in order to prevent damage to the bearing when pressure is applied.

### PULLING TRANSMISSION SHAFT AND COUNTERSHAFT BEARING CUPS

This illustration shows the Push-Puller No. E-LO-7705 with 9½" Legs in use with the Bearing Cup Pulling Attachment No. E-LO-7711 and Special Jaws No. E-LO-7723 removing the Transmission Main and Countershaft Bearing Cup No. 9N-7067.

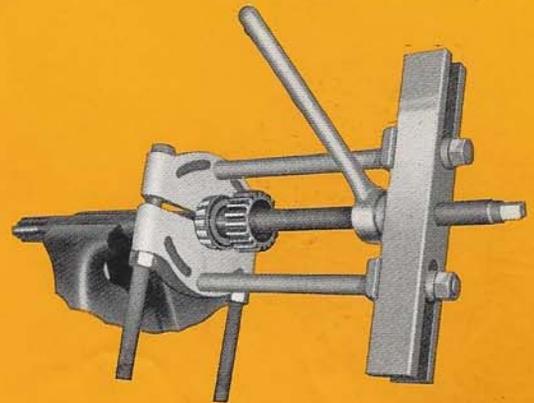
This same combination may also be used to pull the remaining Transmission Main and Countershaft Bearing Cups. In some cases Special Jaws No. E-LO-7723 for the Bearing Cup Pulling Attachment may be necessary.



### REPLACING TRANSMISSION BEARING

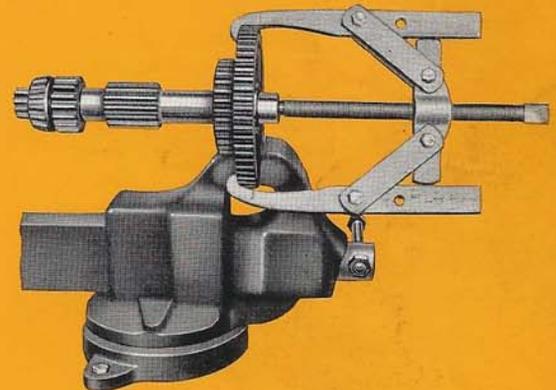
In this photograph the Push-Puller No. E-LO-7705 with 9½" Legs used with the Pulling Attachment No. E-LO-7709 is shown replacing the Transmission Bearing No. 9N-7066.

To avoid damage to bearings while they are being replaced, it is essential that care be used in these operations.



### REMOVING TRANSMISSION COUNTERSHAFT GEAR

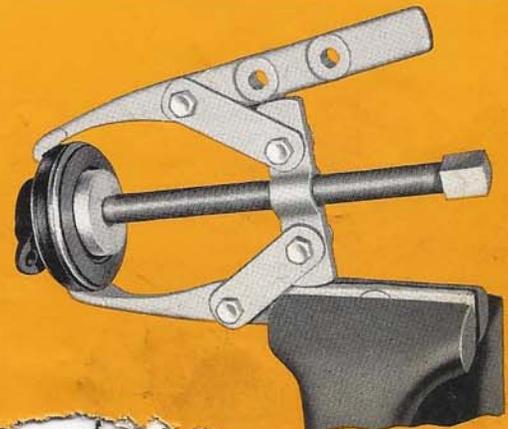
A pushing operation accomplishes the removal of the Transmission Countershaft Gear No. 9N-7113-A as shown. The Gear is held in a vise, the Grip-O-Matic Puller No. E-LO-7720 is applied as illustrated and the shaft is then pushed out of the Gear Hub.

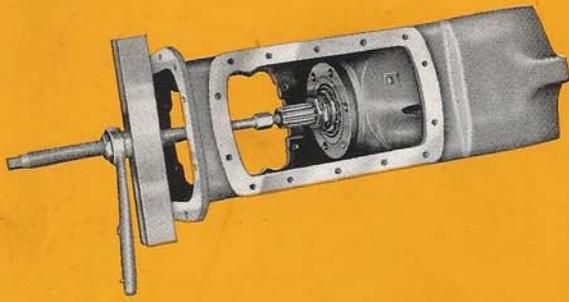


### REMOVING CLUTCH RELEASE BEARING ASSEMBLY

The versatility of Grip-O-Matic Pullers is clearly demonstrated in the accompanying photograph. In this case, the Grip-O-Matic Puller No. E-LO-7719 is used with a Step Plate No. E-LO-7716 to remove the Clutch Release Bearing Assembly No. 78-7580 from the Clutch Release No. 7561.

Replacing the Clutch Release Bearing Assembly is accomplished with the same setup.

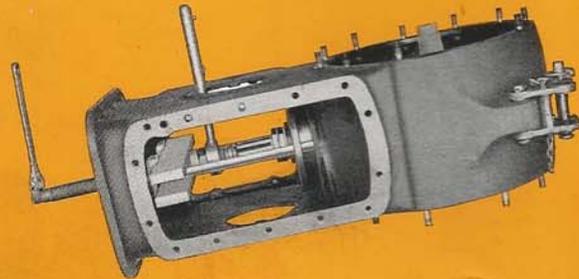




### REMOVING PINION GEAR ASSEMBLY

A typical application of the Push-Puller No. E-LO-7705 is shown in this photograph pulling the Pinion Gear Assembly No. 79-4609.

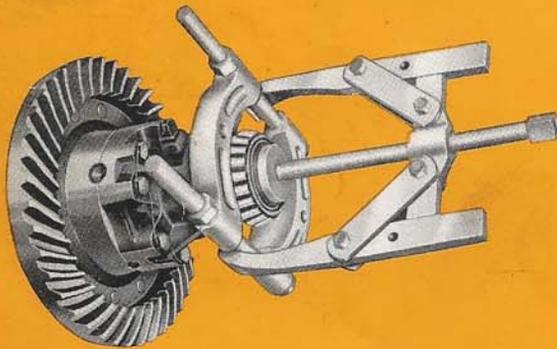
The Cross Block and Pulling Screw is applied as shown. A  $\frac{5}{8}$ "-11 Thread Adaptor No. E-LO-7714 is threaded into the end of the Pinion Shaft and attached to the Push-Puller Screw No. E-LO-7705 by means of the Reducing Adaptor (furnished on Bearing Cup Pulling Attachment No. E-LO-7711) and force is then applied as illustrated.



### REPLACING PINION GEAR ASSEMBLY

A special pair of Legs No. E-LO-7708 is used with the Push-Puller No. E-LO-7705 to replace the Pinion Assembly as shown.

The Pinion Gear Assembly is placed in position and the Legs screwed into place as shown. These Legs also act as a guide to center and align the Assembly. A wrench is placed on the forcing nut of the Push-Puller as illustrated and force is applied by turning the Forcing Screw. A Step Plate No. E-LO-7732 should be used between the end of the Shaft and the end of the Forcing Screw to avoid damage to the Shaft.



### REMOVING AXLE SHAFT INNER BEARING

The Grip-O-Matic Puller No. E-LO-7720 is shown in this instance in use with the Bearing Pulling Attachment No. E-LO-7709 flat side up, removing the Axle Shaft Inner Bearing No. BB-4221-B. It will be noted that a Step Plate No. E-LO-7717 is used over the Hollow Shaft to provide a base against which the Puller Screw may bear.

The bearing on the opposite side of this assembly can be removed in the same manner as well as the Pinion Bearing No. BB-4621-B.



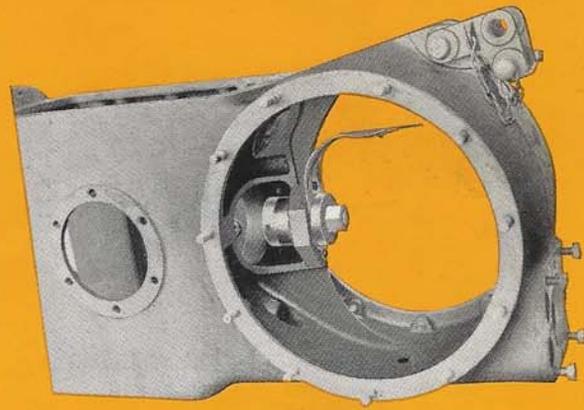
### REMOVING DRIVE PINION ROLLER BEARING

A combination of Push-Puller No. E-LO-7705 in part, with the Attachment No. E-LO-7712, is pictured removing the Drive Pinion Roller Bearing No. 81B-4625-A.

The Forcing Screw of the Push-Puller No. E-LO-7705 is extended by use of the Adaptor (furnished on Bearing Cup Pulling Attachment No. E-LO-7711). A Threaded Adaptor No. E-LO-7713 is used to join this combination to one of the Legs No. E-LO-7707 ( $4\frac{1}{2}$ " ) which in turn is threaded into the Attachment No. E-LO-7712 to provide sufficient reach. To remove the bearing, a collar is placed against it as shown and force is applied in the usual way.

## REPLACING DRIVE PINION ROLLER BEARING

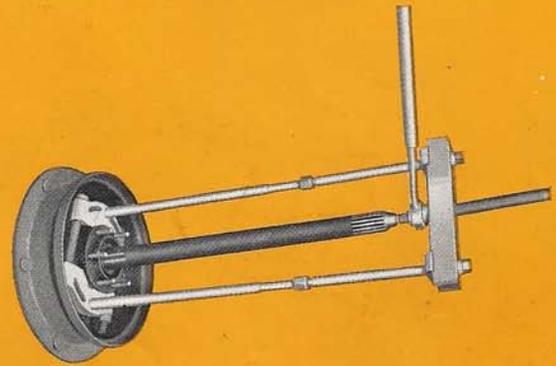
The Special Attachment No. E-LO-7712 is required to replace the Drive Pinion Roller Bearing No. 81B-4625-A as shown in the accompanying photograph. By using the tool as illustrated and turning the Forcing Nut, the bearing is pulled into place quickly and easily.



## REMOVING REAR AXLE BEARING

The accompanying photograph shows the Push-Puller No. E-LO-7705 with  $9\frac{1}{2}$ " plus  $16\frac{1}{2}$ " Legs coupled by means of two Threaded Adaptors No. E-LO-7713 used in conjunction with the Pulling Attachment No. E-LO-7709 to remove the Rear Axle Bearing No. 9N-4221. The Attachment No. E-LO-7709 must be disassembled and reassembled behind the bearing as shown. Before this operation can be accomplished the Lock Ring must be cut.

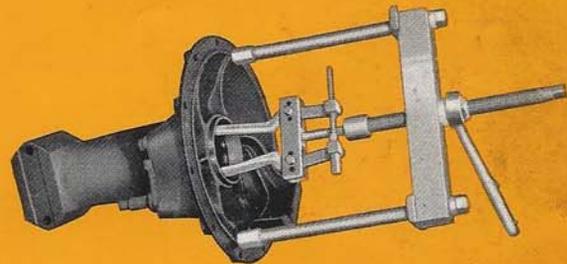
The  $1\frac{1}{2}$ " Box Wrench No. E-LO-7721 used with the Tubular Handle No. E-LO-7722 supplies the necessary power on the Push-Puller Forcing Nut.



## REMOVING REAR AXLE INNER CUP

The accompanying photograph shows the Push-Puller No. E-LO-7705 with  $9\frac{1}{2}$ " Legs in use with the Bearing Cup Pulling Attachment No. E-LO-7711 and Special Jaws No. E-LO-7723 removing the Inner Cup No. BB-4222 from the Rear Axle Housing.

This is an application that is typical on all makes and models of tractors. Since the Attachment No. E-LO-7711 has a range from  $1\frac{1}{2}$ " to 6" ID, it will handle practically all inside pulling jobs on all tractors.



## REMOVING PULLEY GEAR BEARING

In this picture the Grip-O-Matic Puller No. E-LO-7718 is shown in use with the Bearing Pulling Attachment No. E-LO-7710 removing the Pulley Gear Bearing No. 9N-743. A Step Plate No. E-LO-7715 is used over the end of the Hollow Shaft. The Pilot Bearing on the opposite end of this assembly can be removed in the same manner.

