John Deere

MODEL:

40 Series Corn Head

Gear Case

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JD-S-TM1027
# 40 SERIES CORN HEAD GEAR CASE

Technical Manual
TM-1027 (Apr-70)

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INTRODUCTION

This technical manual was planned and written for you - a journeyman mechanic. Keep this manual in the shop where it is readily accessible and refer to it whenever in doubt about correct maintenance procedures.

The safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

DESCRIPTION

On the 40 Series Corn Heads, each row unit is driven by its own gear-type drive. The gear drive is in a fully enclosed gear case and is located on the under side of each row unit.

Fig. 1-Cutaway View of Gear Case

A row unit input shaft, which is driven from the combine feeder house, drives the input drive spur gear located inside the gear case.

This input drive gear drives an idler spur gear, which in turn, drives the main countershaft. The main countershaft has two sets of bevel gears. The inner set, which consists of two bevel gears welded to the driving spur gear, drives the stalk rolls; the outer set drives the gatherer chains.

Each gear case is protected by a heavy-duty jaw-type slip clutch located on the input shaft at the upper end of the gear case.

GENERAL

LUBRICATION

Three pints of lubricant are required to fill the gear case. Use the grease fitting at the rear of the gear case to add lubricant (Fig. 2).

The lubricant required for the corn head gear case is a special multi-purpose extreme-pressure grade “0” (Zero) E.P. grease. The corn head gear case lubricant is available in 14-1/2-ounce tubes (Part No. AN102562) for use in a grease gun. It is also available in 35-pound pails (Part No. AH80490).

IMPORTANT: The Inspection plug (Fig. 3), located on top of the gear case (between the upper gatherer chain sprockets) must be loosened or removed when adding grease with a pressure-type grease gun to prevent blowing seals. Before removing plug, clean around the plug to prevent dirt from entering gear case.

The inspection plug is also used when checking lubricant level in the gear case. Proper level of lubricant is 1-1/2 inches from the top of the inspection hole.
Remove gatherer shields to completely expose row unit. If one of the outer gear cases is to be removed, it will be necessary to remove the outer gatherer sheet.

Remove both gatherer chains from the row unit. Remove the gatherer chain upper sprockets by driving out spring pins.

Remove gatherer sheet upper latches.

Remove both trash knives from under side of row unit (Fig. 7).

Remove stalk rolls from stalk roll shafts by driving out double spring pins and removing two special 12-point-head clamping bolts in each stalk roll (Fig. 7).

Remove the four countersunk-head cap screws located under the upper sprockets (Fig. 6).

Remove four cap screws which fasten row unit frame to gear case and remove row unit frame from corn head (Fig. 8).

Pull out row unit hex drive shaft. To do this, remove the protective shield and row unit drive chain at the outer end of the corn head. Remove three bolts securing bearing carrier to the corn head frame and pull out drive shaft.

NOTE: On 2- or 3-row corn heads, there is only one row unit drive shaft. On 4-, 6-, or 8-row corn heads, the drive shaft is split and only one shaft need be removed to remove gear case. Be certain to remove the correct shaft for the gear case to be serviced.
Remove input shaft cap with bearing and seal.

Remove outer thrust washer from input shaft. Reach past input gear with a punch and hold against inner thrust washer while removing input gear and shaft (Fig. 13). Remove remaining thrust washer.

Drive against expansion plug with special tool JDC-400-7 Handle (from the special tool set) to drive out opposite expansion plug (Fig. 14).

Drive against opposite end of idler shaft with the same tool to remove remaining expansion plug. Drive out idler shaft. Be careful not to damage tolerance ring on shaft.

Remove idler gear out front of gear case.

Use tools as shown in Fig. 15 and drive through gatherer cap opening in gear case against bushing (Fig. 16). Drive out both bushing and seal.

Inspect all parts for wear or damage, especially bushings, bearings, and seals.

If bushings or bearings need replacement, use the following instructions.

**REPLACING BEARINGS AND BUSHINGS**

**NOTE:** The part number is stamped into each special tool.

**Gatherer Drive Shaft**

**Removing Bushing and Seal**

Remove input shaft cap with bearing and seal. Remove outer thrust washer from input shaft. Reach past input gear with a punch and hold against inner thrust washer while removing input gear and shaft (Fig. 13). Remove remaining thrust washer.

Wash all parts thoroughly in a clean solvent. Clean all grease out of gear case.

*Inspection*

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Installing Bushing

Use tools as shown in Fig. 17 to install bushing. Drive bushing from bottom to obtain proper location of bushing in case (Fig. 18). Do not install seal at this time.

Countershaft Removing Bushings

As shown in Fig. 19, assemble two plates on screw and insert through opening in front of gear case. Insert handle through opening in end of gear case and assemble tool inside gear case (Fig. 20).

Drive out bushing, then disassemble tool for removal. If remaining bushing is to be removed, follow the above procedure from the opposite end of the gear case.

Fig. 17-Tool for Installing Gatherer Drive Shaft Bushing

Fig. 18-Installing Bushing

Fig. 19-Assembling Tool in Gear Case for Removal of Bushing

Fig. 20-Tool Assembled in Gear Case
Installing Bushings

Use tools as shown in Fig. 21 to install new bushings (Fig. 22).

Input Shaft (In Gear Case and Input Shaft Cap)

Removing Needle Bearings and Seals

Refer to Fig. 23 and assemble tool as shown. Drive against inner end of bearing to remove both seal and bearing (Fig. 24).

Installing Needle Bearings

Use tools as shown in Fig. 25 and drive bearing from outside of gear case (or outside of input cap) (Fig. 26). Install rounded edge of needle bearing in bore, and drive against flat edge of bearing.

NOTE: Flat edge of bearing has manufacturer’s name and part number stamped into it. No not drive against rounded edge of bearing.
Use multi-purpose extreme-pressure grade "0" (Zero) E.P. grease (refer to Page 2) and lubricate all bushings and bearings prior to assembly of gear case. Also pack seals with this grease prior to their installation.

Assemble idler gear and shaft in gear case. Install tolerance ring on shaft prior to assembly. To facilitate assembly, insert gear through opening in front of gear case; then insert shaft (Fig. 32).

NOTE: Start end of idler shaft without tolerance ring into bore first.
Center idler shaft in bores and install both expansion plugs. Use tools as shown in Figs. 33 and 34 to install plugs.

Insert inner thrust washer behind idler gear (Fig. 35). Then install input shaft with outer thrust washer (Fig. 35).

**IMPORTANT:** Be certain lugs on both thrust washers fit between teeth in input gear.

Install input cap and gaskets and secure with hardware previously removed (Fig. 36). **NOTE:** Input cap can be installed only one way.

Check end play of input shaft. See "Specifications." Input shaft must rotate freely. Add or remove gaskets as necessary to achieve proper end play.

**NOTE:** Always use at least one but no more than six gaskets.

Install seals on each end of input shaft with tool as shown in Fig. 36.

**IMPORTANT:** Use tape over slot in shaft to avoid cutting seal.