Repair

DISASSEMBLY

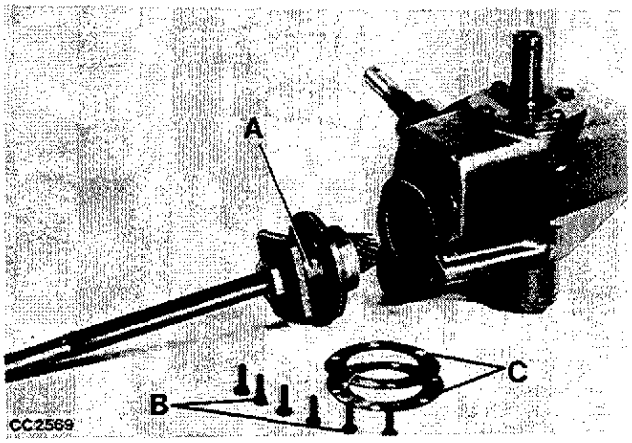


Fig. 3 — Cutterbar Drive Shaft, Exploded View

A Drive shaft attaching hub
B Mounting screws
C Shims

Remove mounting screws B and pull out hub A with shims C. Keep shims available for adjusting backlash of gears.

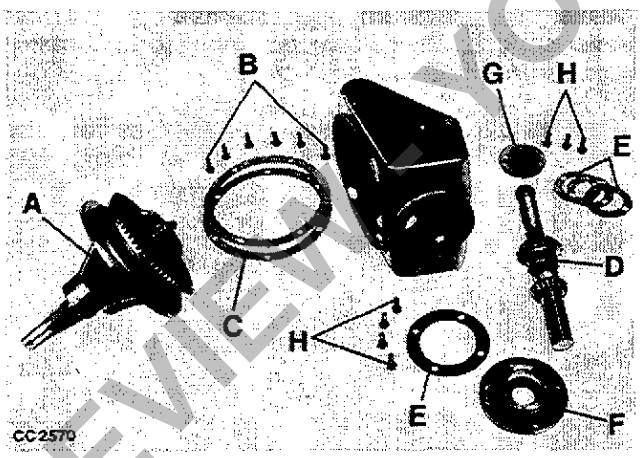


Fig. 4 — Power Train, Exploded View

A Input shaft attaching hub
B Mounting screws
C Shims
D Rotor drive shaft
E Shims
F Rotor drive shaft bearing quill, front
G Rotor drive shaft bearing quill, rear
H Mounting screws

Remove mouting screws B and pull out hub A with shims C. Remove mounting screws H and slide out both bearing quills F and G. Pull out rotor drive shaft D. Keep shims C and E handy for adjusting backlash of gears during installation.

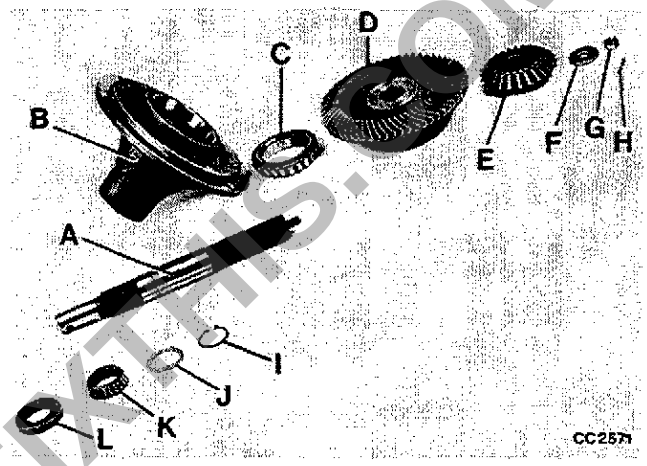


Fig. 5 — Input Shaft and Gear Assembly, Exploded View

A Input shaft
B Attaching hub
C Bearing cone
D Cutterbar drive gear
E Rotor drive shaft gear
F Washer
G Castellated nut
H Cotter pin
I Snap ring
J Back-up washer
K Bearing cone
L Oil seal

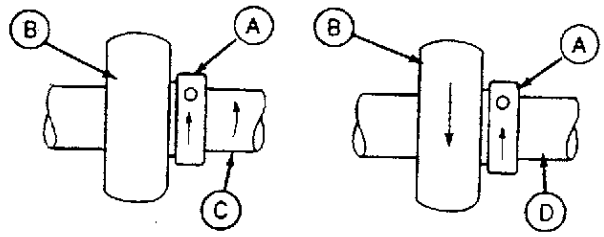
Remove cotter pin H, castellated nut G and washer F. Pull out gears D and E and separate bearing C from gear D.

Pull input shaft A out of hub B and remove snap ring I as well as backup washer J. Apply pressure to bearing K until it comes off.

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LOCKING COLLARS FOR SHAFT BEARINGS



CC 2636

Locking collars A on bearings B must be kept tight at all times.

On rotating shafts C, locking collars A will have to be secured in the direction of shaft rotation.

On stationary shafts D, locking collars A will have to be secured in the opposite direction of bearing B rotation.

A — Locking collar
B — Bearing
C — Rotating shaft
D — Stationary shaft

Periodically check all accessible bolts and nuts for tightness. Whenever bolts are replaced, the new bolts will have to be of equal or superior strength.

	Recommended torques in Nm and ft-lb	
Bolt diameters in mm (for metrical hardware)	Head marking 8.8	Head marking 10.9
6	11 ± 1 Nm (1 mkg; 8 ft-lb)	16 ± 1,5 Nm (2 mkg; 12 ft-lb)
8	27 ± 3 Nm (3 mkg; 20 ft-lb)	38 ± 4 Nm (4 mkg; 28 ft-lb)
10	53 ± 5 Nm (5 mkg; 39 ft-lb)	75 ± 7,5 Nm (7,5 mkg; 55 ft-lb)
12	93 ± 9 Nm (9 mkg; 68 ft-lb)	130 ± 13 Nm (13 mkg; 95 ft-lb)
16	230 ± 23 Nm (23 mkg; 167 ft-lb)	325 ± 33 Nm (33 mkg; 236 ft-lb)
20	450 ± 45 Nm (45 mkg; 327 ft-lb)	635 ± 64 Nm (64 mkg; 462 ft-lb)
24	780 ± 78 Nm (78 mkg; 567 ft-lb)	1100 ± 11,0 Nm (110 mkg; 800 ft-lb)

NOTE: A variation of ± 10 % is permissible for all torques indicated in brackets.

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Group 5
Gear Box

GENERAL

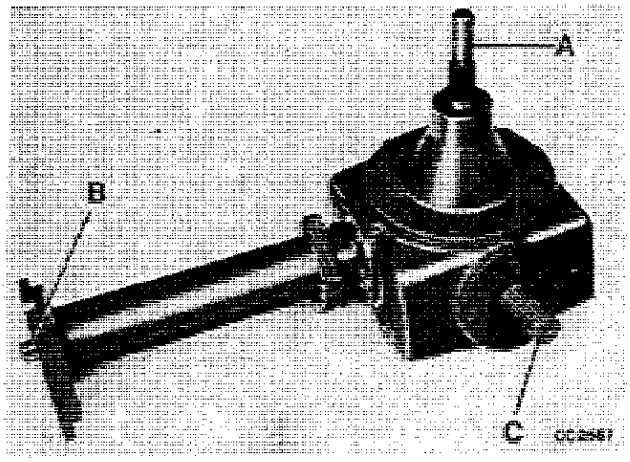


Fig. 1 — Power Train

A Input shaft
B Cutterbar drive shaft
C Rotor drive shaft

Cutterbar and rotor are powered by their respective drive shafts B and C when in mesh with the drive gears located inside the gear box. These gears are submerged in oil for continuous lubrication. A slip clutch (see figure 2) located at the gear box inlet, protects the machine from excessive strain. For proper slip clutch adjustment, springs have to be compressed to a length of 36 mm (1-13/32 in.).

DIAGNOSING MALFUNCTIONS

Some of the possible failures are indicated below. Any additional information you may need in this regard may be depicted from the FOS Manual on Power Trains.

ABNORMAL GEAR BOX NOISE

Low oil level
Loose bearings
Excessive backlash of gears
Seized gears

OVERHEATED GEAR BOX

Low oil level
Seized gears
Defective bearings
Improper bearing preload

OIL LEAKS

Defective oil seal
Oil level too high
Improperly torqued hardware

REMOVAL

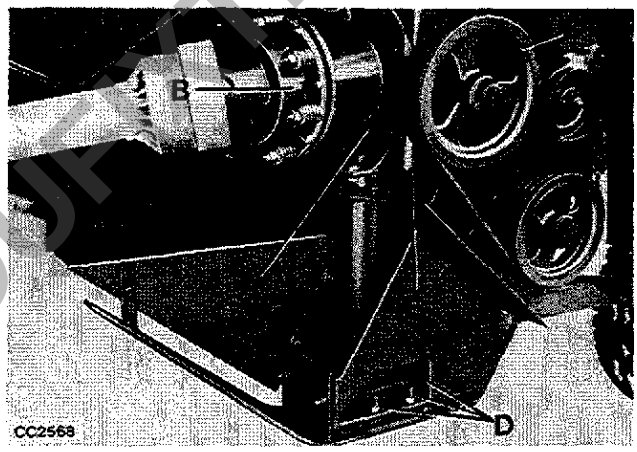


Fig. 2 — Power Train, Installed

A Gear box
B Slip clutch
C Rotor drive pulley
D Cutterbar mounting bolts
E Main frame mounting bolts

Remove gear box assembly and slip clutch B.

Take off drive belt and pulley C.

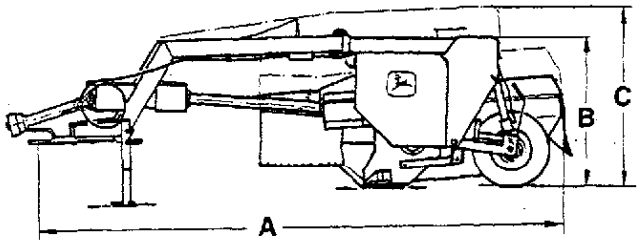
Unscrew power train to cutterbar mounting bolts D.

Unscrew main frame mounting bolts E located at rear of gear box.

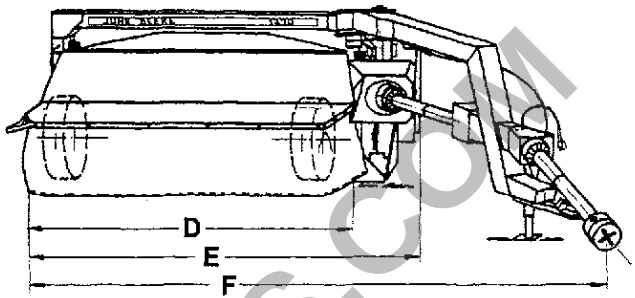
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SPECIFICATIONS



CC 2609



CC 2610

A – Length	4.22 m (166 in.)
B – Working height	1.15 m (45 in.)
C – Transport height	1.55 m (61 in.)
D – Cutting width	2.40 m (94 in.)
E – Transport width	2.88 m (113 in.)
F – Working width	4.00 m (157 in.)
Weight	1200 kg (2640 lb)

CUTTERBAR

Cutting width	2.40 m (94 in.)
Cutting height	50 to 150 mm (2 to 6 in.)
Number of disks	6
Number of knives	12
Disk speed	3060 rpm
Knife circle diameter	486 mm (19.13 in.)
Knife type	reversible and replaceable

CONDITIONER

Rotor width	2.22 m (87 in.)
Number of tines	56
Rotor speed	610 or 850 rpm
Tine circle diameter	594 mm (23.38 in.)
Conditioner adjustment range	16 to 84 mm (0.6 to 3.3 in.)
Windrow width	0.90 to 1.50 m (33 to 59 in.)
Operating speed	6 to 20 km/h (4 to 12 mph)

TRANSMISSION

Recommended tractor size	50 kW (67 hp) or larger
Tractor PTO speed	540 rpm
Powershaft	with 4 universal joints
Slip clutch	single disk type

HARDWARE	metrical
TIRE SIZE	7.00 x 12
TIRE INFLATION PRESSURE	150 kPa (1.5 bar; 22 psi)

(All technical data contained in this manual is subject to change without prior notice or obligations on part of the manufacturer)

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Group 5
Cutterbar

GENERAL

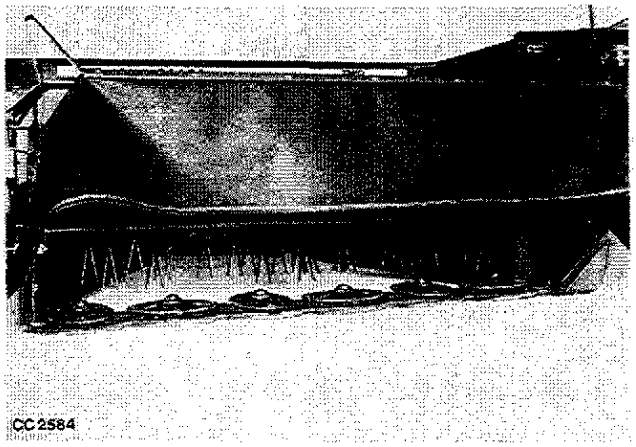


Fig. 1 – Cutterbar

The cutterbar with its six rotary knife disks is driven by a vertical shaft directly connected to the power train gear box. The oval shaped disks are installed in such a manner that the large side of one disk is perpendicular to the large side of the next disk, etc. This arrangement prevents any interference of disks when rotating.

DIAGNOSING MALFUNCTIONS

OVERHEATING OF CUTTERBAR

The volume of oil contained in the cutterbar exceeds the permissible maximum of 2.25 liters. Consult "Lubrication" section.

Improper grade of oil used

Defective or incorrectly mounted bearings

ABNORMAL NOISE IN CUTTERBAR

Oil level too low

Defective gears or bearings

Bent or warped disks

OIL LEAKING

Defective seals

Improperly tightened hardware

REMOVAL

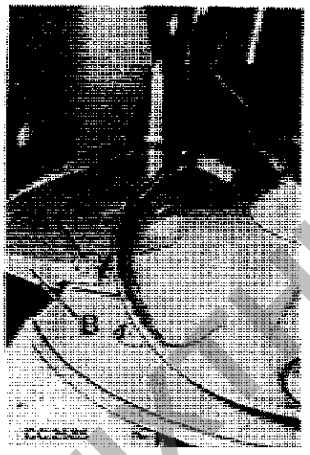


Fig. 2 – Attaching Points, R.H.

A Mounting bolt
B Platform frame



Fig. 3 – Attaching, Points, L.H.

A Mounting bolt
B Platform frame
C Skid-runner

Remove the L.H. skid-runner C.

Drain oil from cutterbar prior to removal.

Unscrew mounting bolts A fastening the cutterbar to the R.H. and L.H. platform frame B.

Raise the platform hydraulically and take off the cutterbar.

CAUTION: Prior to working underneath a raised platform, secure platform against dropping with blocks put under each end.

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INSTALLATION

Reassemble power train components in accordance with exploded views shown below.

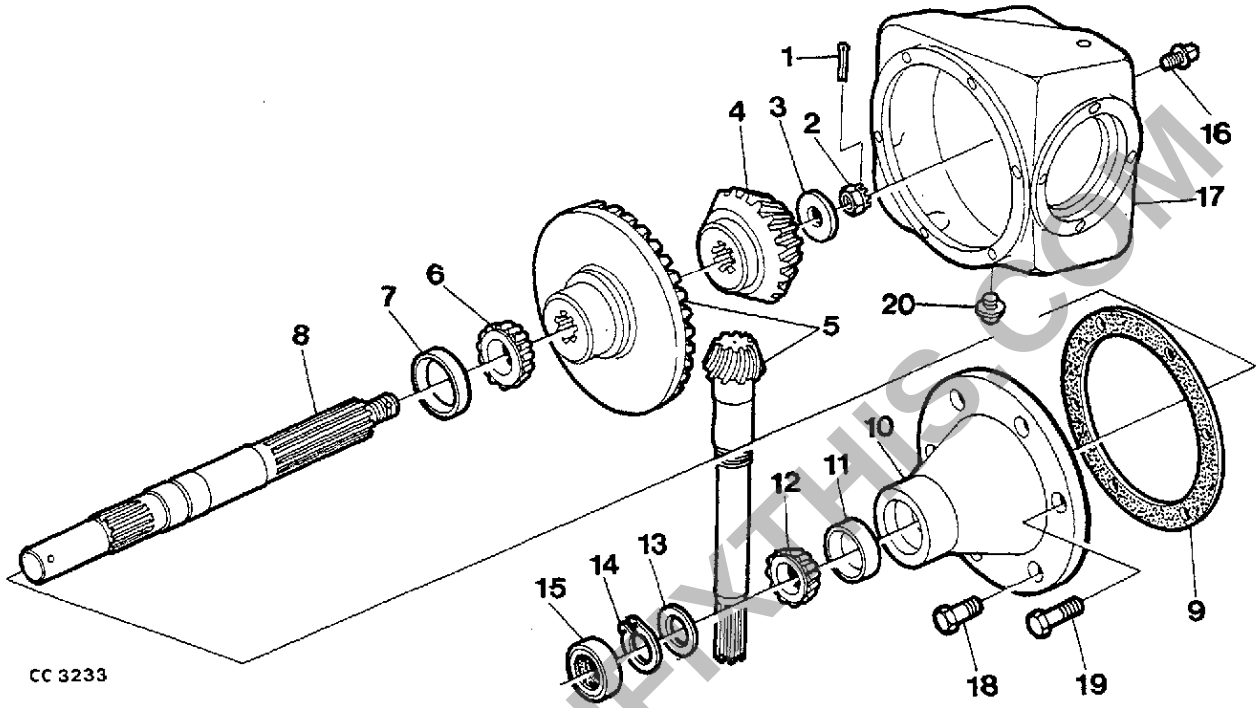


Fig. 9 — Input Shaft Assembly Components

1 Cotter pin
2 Catellated nut
3 Washer
4 Bevel gear (24 teeth)
5 Ring gear (60 teeth)
6 Bearing cone
7 Bearing cup
8 Input shaft
9 0.5 mm (0.020 in.) shim
0.2 mm (0.008 in.) shim
0.13 mm (0.005 in.) shim
10 Attaching hub
11 Bearing cup
12 Bearing cone
13 Back-up washer
14 Snap ring
15 Oil seal
16 Check plug
17 Gear box
18 Cap screw
19 Cap screw
20 Drain plug

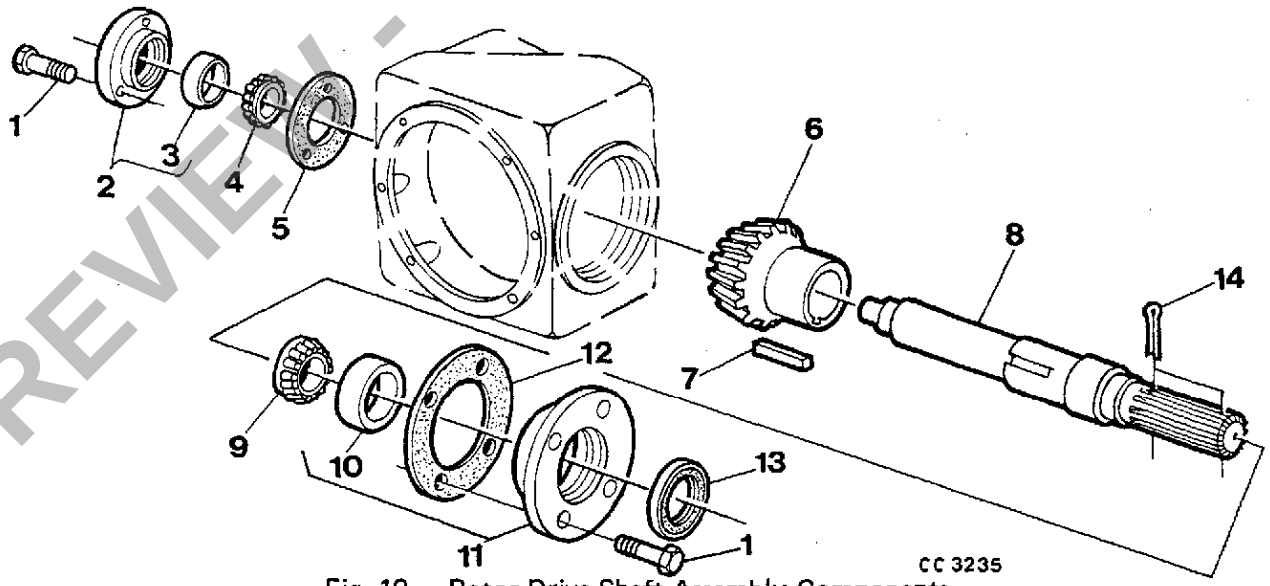


Fig. 10 — Rotor Drive Shaft Assembly Components

1 Cap screw
2 Rear bearing quill
3 Bearing cup
4 Bearing cone
5 0.5 mm (0.020 in.) shim
0.2 mm (0.008 in.) shim
0.13 mm (0.005 in.) shim
6 Bevel gear (18 teeth)
7 Shaft key
8 Rotor drive shaft
9 Bearing cone
10 Bearing cup
11 Front bearing quill assembly
12 0.5 mm (0.020 in.) shim
0.2 mm (0.008 in.) shim
0.13 mm (0.005 in.) shim
13 Seal
14 Cotter pin (to secure pulley)

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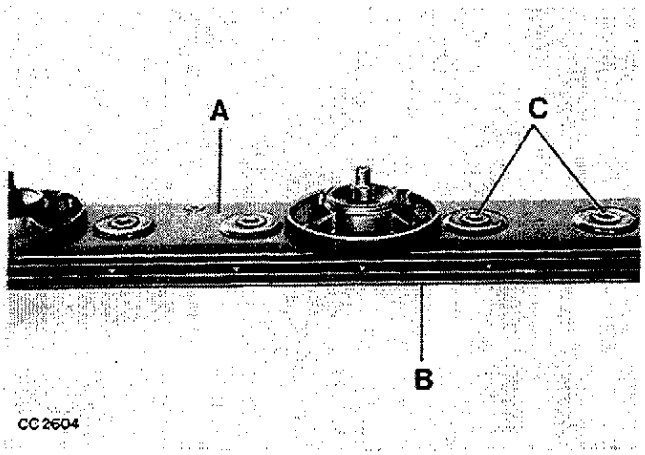


Fig. 22 – Joining Cutterbar Halves

A Upper half
B Lower half
C Tie-down screws

Place both cutterbar halves side by side, turn upper half A over on top of the lower half B and install hexagon socket head screws C.

NOTE: Do not hesitate to replace the tie-down screws if in doubt about the conditions of threads or hexagon socket heads.

IMPORTANT: Insert all tie-down screws loosely before tightening them to their final torque.

The torque specified for these screws is 300 to 350 Nm (30 to 35 mkp; 218 to 255 ft-lb).

Install all remaining exterior hardware along with O-rings, skid plates and disks.

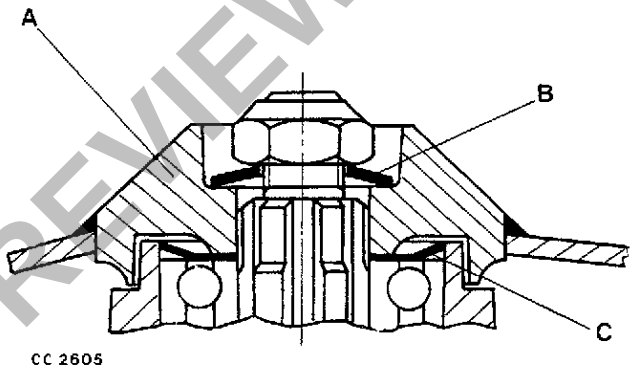


Fig. 23 – Disk Assembly Diagram

A Disk
B Cupped spring washer
C Dust seal (washer)

Put disk A with washers B and C in place as shown on diagram.

Torque the attaching nut to 140 Nm (14 mkp; 102 ft-lb). Do not exceed this torque, since over-tightening would damage the cupped spring washer B.

Replace the attaching nut after its fourth or fifth removal to be sure it will stay on safely.

LUBRICATION

Use only SAE 80 extreme pressure type oil in the cutterbar of your mower-conditioner. This is very essential for optimum performance and longevity.

IMPORTANT: The filling capacity of the cutterbar is 2.25 liters (appr. 2.20 U.S. qts.). Be sure to respect this limit, as overfilling the cutterbar will produce excessive heat, which may cause damage to the cutterbar.

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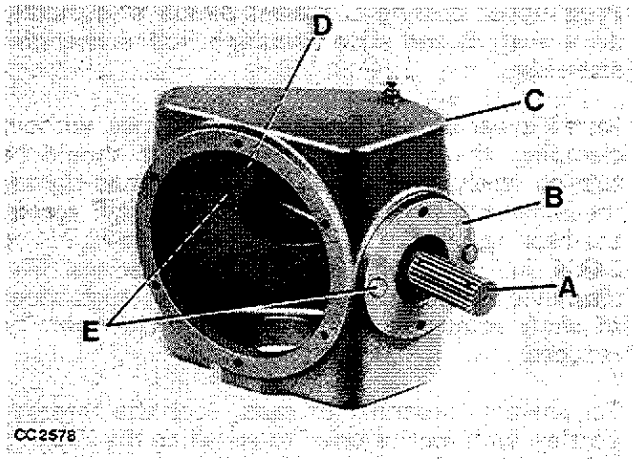


Fig. 15 — Adjusting Preload of Bearings on Rotor Drive Shaft

A Rotor drive shaft
B Front bearing quill
C Gear Box
D Rear bearing quill
E Mounting screws

Install rotor drive shaft A in gear box C, placing as many shims under bearing quills B and D as are necessary to insure free shaft rotation when tightened to a torque of 0.6 to 1.1 Nm (6 to 11 cmkp; 5 to 10 in-lb).

IMPORTANT: Do not install the oil seal when adjusting bearing preload.

NOTE: As long as the required thickness of shims has not been determined, use only two screws to fasten the bearing quills.

Again remove shaft and bearing quills before proceeding to the next step. Keep shims handy in a safe place.

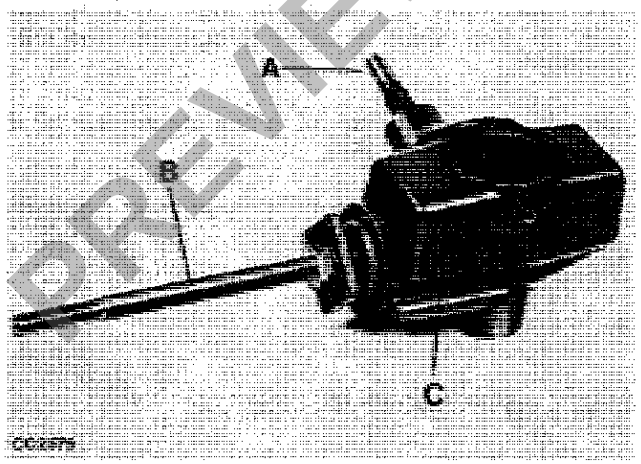


Fig. 16 — Reassembly of Power Train Including Input Shaft and Cutterbar Drive Shaft

A Input shaft
B Cutterbar drive shaft
C Gear box

Insert shafts A and B with their shims in gear box C.

Place as many shims between gear box C and attaching hubs of shafts A and B as required to insure a 0.10 to 0.15 mm (0.004 to 0.006 in.) backlash of gear teeth.

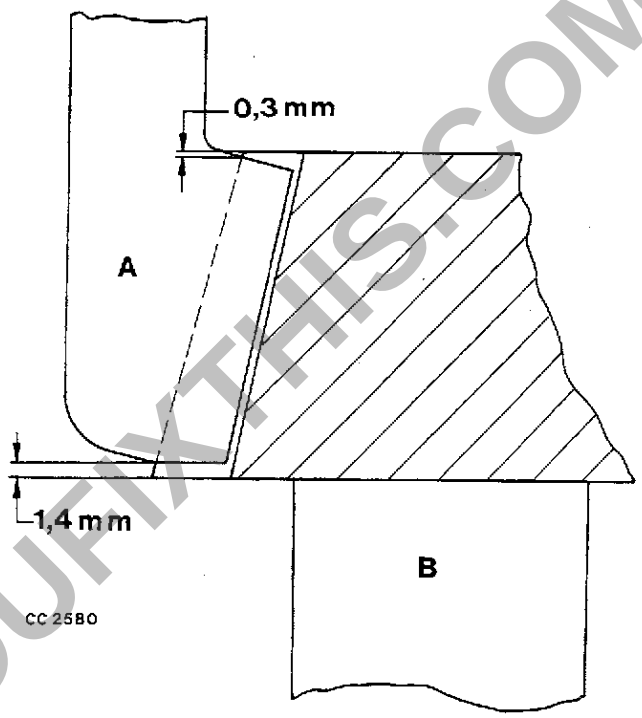


Fig. 17 — Adjusting Backlash

A & B Cutterbar drive shaft spiral bevel gears

Backlash of bevel gears A and B should comply within 0.2 mm (0.008 in.) with setting shown above.

Any deviation from this setting will have to be compensated by relocating one or several shims from below the input shaft attaching hub for example, to the lower end of the cutterbar drive shaft attaching hub, or vice versa.

Once the specified contact ratio is established, coat front face of input shaft attaching hub and sealing surface of gear box with loctite or a similar sealant.

Torque bearing quill mounting screws to 75 Nm (8 mkp; 55 ft-lb).

Remove the complete cutterbar drive shaft once more, saving the shims.

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