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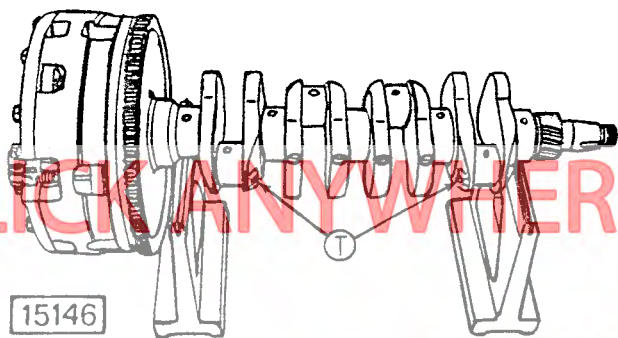


FIG. A.III/2—CHECKING OF STATIC BALANCE OF CRANKSHAFT PROVIDED WITH FLYWHEEL T. Plugs

able difference of 0.010 in 0.025 mm on both directions (b, Fig. A.III/1);

Cup shaped plugs (Item T, Fig. A.III/2) seal properly (test with oil at 213 PSI [15 kg/cm<sup>2</sup>]). Should the test show defective or unreliable sealing tightness, replace the plugs and repeat the test with new plugs installed. If necessary, grind all crankshaft journals to one of the undersizes specified in "Fits and Tolerances" table. Make sure, after grinding, to machine proper radii and fillets on journals and to chamfer the lubrication holes.

#### FRONT END SEAL INSTALLATION

Fluid tightness at front end of crankshaft is ensured by a reinforced rubber seal with coil spring which is force fitted in the timing gear case cover. The fundamental feature of this seal is the spiral rifling of the sealing lip in the direction opposite to that of rotation of the hub. This will throw back inside any amount of fluid which the hub would eventually tend to convey outside.

In case of oil leakage, excluding the running-in period during which parts may require adjustment of their final position of assembly, remove the pulley hub (A, Fig. A.III/4) and check:

1. The working surface of the seal for wear, breakage of the rifling coil or of the sealing lip.
2. The sealing surface in contact with the crankshaft for roughness or out-of-round exceeding 0.012 in. (0.3 mm.).

The seal cover must be removed first if the seal is to be replaced. Take good note of the following points to avoid assembly trouble.

1. Wipe off all traces of oil and dry the seal seat in the cover thoroughly.
2. Fit the seal in its seat without using lubricants and apply a uniform pressure over the entire seal ring by means of a seal installer so that the seal will bottom in its seat.

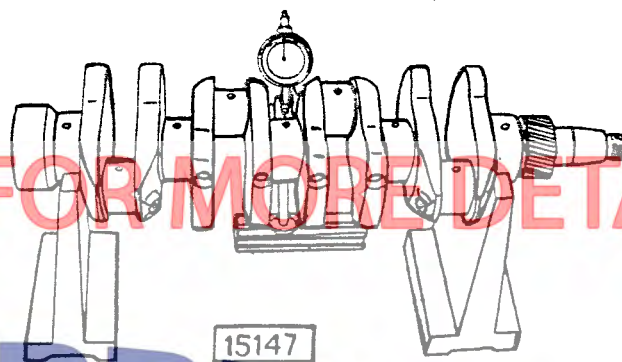


FIG. A.III/3—CHECKING CRANKSHAFT JOURNALS ALIGNMENT WITH DIAL GAUGE

3. Lubricate the seal lip with a film of grease or thick oil to avoid dry contact with the crankshaft surface at the start, then secure the cover and its gasket to the crankcase.

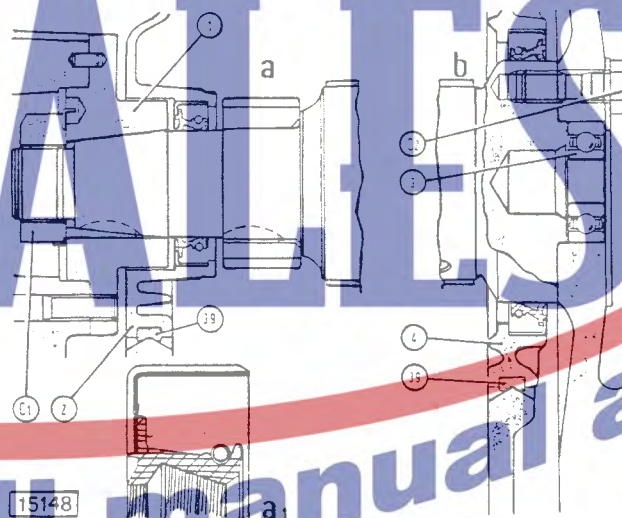


FIG. A.III/4—CROSS-SECTION THROUGH THE FRONT (a) AND REAR (b) CRANKSHAFT SEAL RINGS.

C<sub>1</sub> Crankshaft nut; C<sub>2</sub> Flywheel fixing screw; 1. Flange; 2. Timing gear case cover; 3. Bearing; 4. Rear cover; 39. Oil sump gasket.

#### REAR END SEAL INSTALLATION

Fluid tightness at rear end of crankshaft is ensured by a rubber seal with coil spring (see B, Fig. A.III/4).

This seal is fitted in a metallic cage which can be removed and installed in the engine crankcase; the lower side of this cage has a semicircular rubber strip gasket (Item 39, Fig. A.III/4) which ensures fluid tightness on the oil sump.

The seal can be considered as reliable up to a crankshaft speed of 3000 ± 10% R.P.M. and up to a service temperature of the oil of 120° + 130°C (248° + 266°F.).

## ENGINE OIL SCHEDULE AND CAPACITIES

|                       |                                        |
|-----------------------|----------------------------------------|
| Level Check .....     | 8-10 hrs.                              |
| Change Interval ..... | Filter and Oil First 60 hrs.           |
|                       | Filter & Oil Every 120 hrs. Thereafter |
| Type of Oil .....     | CD, SAE 15 W-40                        |
| Quantity:             |                                        |
| Without Filter .....  | 6.4 Qts. (6 litres)                    |
| With Filter .....     | 7.4 Qts. (7 litres)                    |

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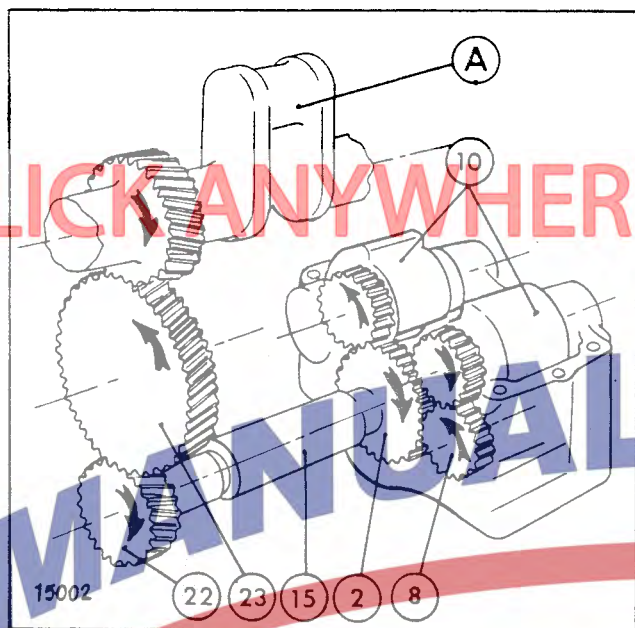


FIG. A.VI/8—DIAGRAM OF THE BALANCING MECHANISM

A. Engine Crankshaft; Control Shaft; 8. Gear; 10. Flyweight; 22. Driving Gear; 23. Intermediate Gear.

#### REMOVAL

If it is necessary to overhaul the balancing mechanism, carry out the removal of the mechanism according to the following procedure.

Removal of the balancing mechanism, without removing the oil sump:

Remove the drain plug (Fig. A.VI/9, no. 2) on the engine oil sump cover and drain the oil. Then remove the oil sump (1) cover with its gasket.

Remove the oil pump strainer (3) by removing the screws (4 and 5) attaching it to the pump and to the balancing mechanism casing.

Loosen bolts (14) attaching balancing mechanism casing to oil sump. Pull dowel pin (32) off sump casing and push balancing mechanism casing towards engine rear in order to detach splined bushing (15) from driving shaft splined end (see Fig. A.VI/7).

Remove balancing mechanism casing from oil sump case.

**Note:** If the oil sump has been removed from the engine and line (30) and bolts (14) and (20) have been removed (see Fig. A.VI/7), remove balancing mechanism casing, assembled with splined bushing (15) and driving pinion (22) with carrier, from oil sump (see Fig. A.VI/10).

The gear (23) (see Fig. A.VI/7), transmitting the motion of the crankshaft to the driving pinion

may be removed after removal of the balancing mechanism. Therefore, proceed as follows:

Detach lubrication line (30) from gear shaft (27).

Remove first main bearing cap of the engine crankshaft to facilitate the following removal operations.

Detach lock ring (29) and washer (28), and by depressing shaft (27) pull gear and its carrier (24) out.



FIG. A.VI/9—BOTTOM VIEW OF THE OIL SUMP, WITH THE COVER (1) REMOVED

1. Oil Sump Cover; 2. Drain Plug; 3. Oil Pump Strainer; 4., 5. Strainer Bolts; 6. Sump Bolts

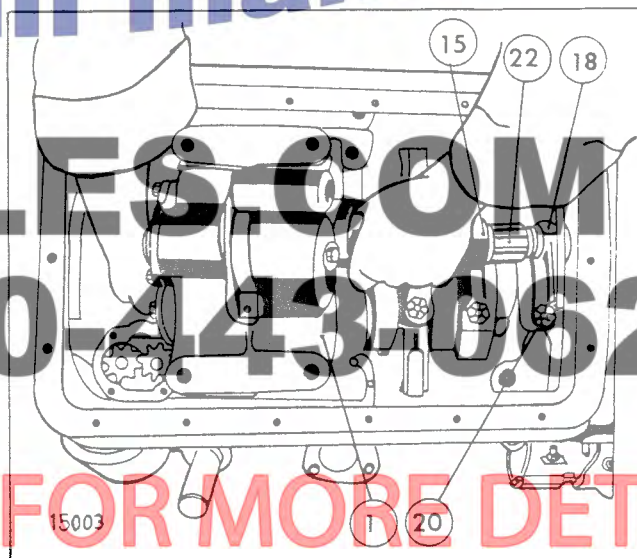


FIG. A.VI/10—REMOVAL OF BALANCING MECHANISM CASING AND SPLINED BUSHING (With Oil Sump Removed from Engine)

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## B.III BEVEL GEAR AND DIFFERENTIAL

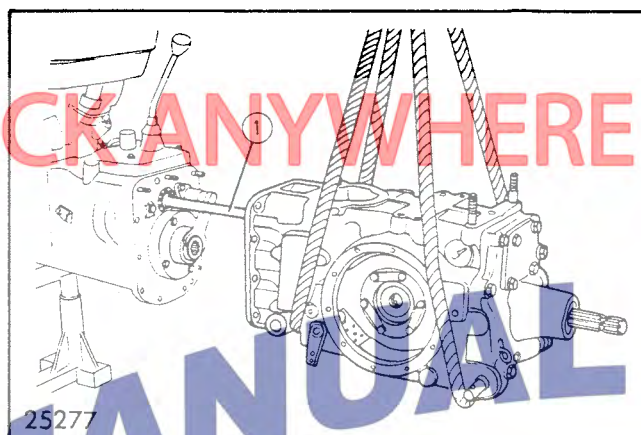


FIG. B.III/1 HOISTING OFF THE REAR BEVEL GEAR UNIT

1. P.T.O. clutch shaft

### DESCRIPTION

The speed reduction unit housed inside the bevel gear housing consists of a helical-tooth bevel gear and pinion with a speed reduction ratio of 1:3.916 (12/47).

Both the bevel gear, which is attached to the differential case, and the pinion revolve inside tapered roller bearings.

The differential, with two gears and two pinions, is equipped with a pedal controlled differential lock.

### REMOVING THE REAR BEVEL GEAR HOUSING

Remove the rear bevel gear housing as follows:

1. Drain the oil from both transmission and bevel gear housings.
2. Remove the final drives according to the instructions of the "Final Drives and Rear Wheels" Section and place a block under the gearbox case.
3. Remove the operator's seat, hydraulic lift and its oil tubing.
4. Set the P.T.O. clutch control lever in "NEUTRAL" then remove the cover with lever.
5. Apply a sling to the rear bevel gear housing and take the weight off with a hoist.
6. Remove the attaching bolts and nuts.

- ⚠** 7. Carefully separate the rear bevel gear and transmission housings paying attention not to bend or buckle the P.T.O. clutch shaft (Item 1, Fig. B.III/1).

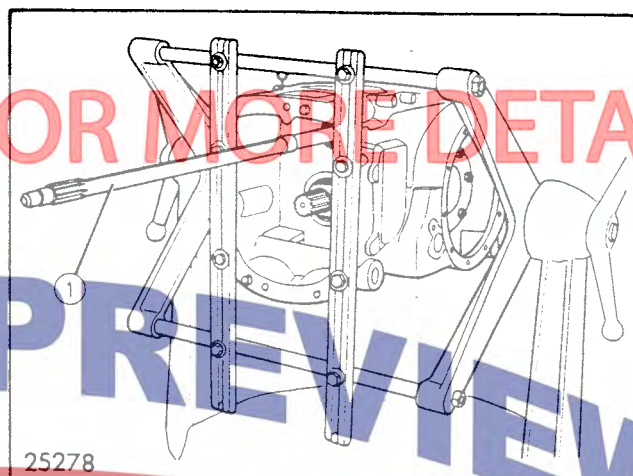


FIG. B.III/2 REAR BEVEL GEAR HOUSING INSTALLED ON TURNOVER STAND

1. P.T.O. clutch shaft



FIG. B.III/3 REMOVING (INSTALLING) THE P.T.O. SLIDING COLLAR (2)

C1. Bracket (3) attaching cap screws; 1. P.T.O. clutch shaft; 3. Bearing (4) retainer; 4. Ball bearing

### DISMANTLING THE BEVEL GEAR AND DIFFERENTIAL

Disassemble the rear bevel gear housing installed on an engine stand (Fig. B.III/2) as follows:

1. Remove the back cover complete with shafts and P.T.O. driving and driven gear train.
2. Withdraw the sliding collar (Item 2, Fig. B.III/3) of the P.T.O. clutch shaft (Item 1) from above.
3. Remove the P.T.O. shaft bearing (Item 4) holder (Item 3).

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# HYDRAULIC LIFT AND POWER STEERING

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