

Tech Note Truck

14" & 15.5" Twin Plate Cast Iron Type

Installation Guidelines

Ref: TNTR

Issue date: 16 Dec 2004

Issue number: 2

1. (14" & 15.5") Check condition of the flywheel. Grind to resurface or replace flywheel. Surface **MUST BE** machined or premature clutch failure can occur. Flywheel depth must be **2.938" (74.62mm)** for **14" (350mm)** twin plate clutch. The **15.5" (394mm)** twin plate uses a flat flywheel.

REMEMBER: Machining past 0.060" (1.5mm) from the original crank to clutch plate friction surface will move the pressure plate away from the transmission and the release yoke in the bell housing. As a result, it may not align correctly with the release bearing housing. IF IN DOUBT REPLACE FLYWHEEL.

2. (14" & 15.5") Inspect and measure with a dial-indicator, the surface of the engine flywheel housing and clutch bell housing for alignment, also check flywheel run out. (Max run out to be less than 0.010" or 0.25mm) **CAUTION:** If misalignment is greater than limits recommended, this will cause poor clutch release, rapid wear on the transmission pilot shaft and, destruction of the clutch disc. Excessive flywheel run out may cause severe vibration in the vehicle drive line.

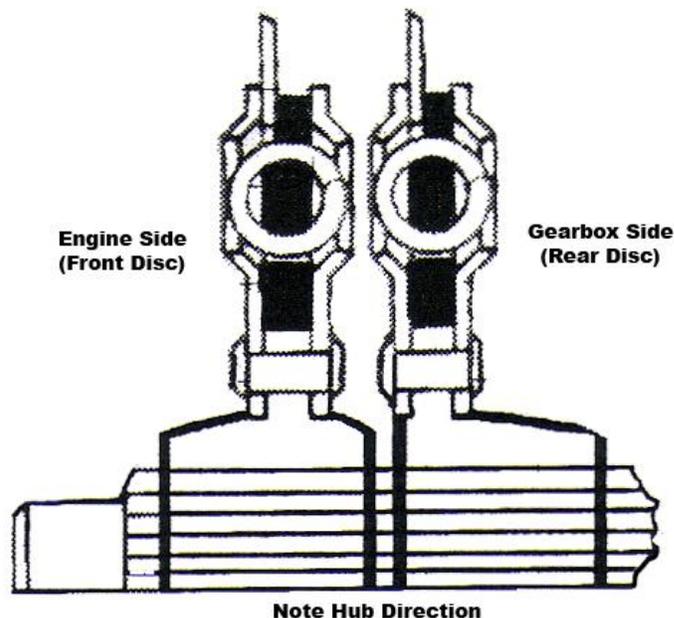
3. (14" & 15.5") A new pilot bearing should be used. Before installing the pilot bearing into flywheel, check on the input shaft for correct fit.

4. (14" Only) The drive pins in flywheel should be replaced.

NOTE: two set screws secure each drive pin in place, not one. Remove the first set screw then loosen second. Check to ensure drive pin heads are square with the flywheel friction surface. (If drive pins are not replaced, assume that they have turned with the constant pounding of the centre plate) All drive pin heads should be checked as a precaution.

5. (14" Only) After the drive pins are installed and correctly aligned, position the intermediate pressure plate onto the drive pins and check with feeler gauge. Clearance should be between **0.006" to 0.010" (0.15 to 0.25mm)** and measured from the same side of each drive pin. The intermediate pressure plate should slide freely on the drive pins.

6. (14" & 15.5") install the front disc, centre plate and rear disc as marked.



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7. (14" & 15.5") Insert an alignment tool through both clutch discs making sure it enters the pilot bearing. (*Note: If an old pilot shaft with a worn spline is used to align the clutch discs, the transmission pilot shaft may damage the clutch spline hubs during installation of the transmission.*)

8. (14" & 15.5") Position the cover assembly over the alignment tool and guide towards the flywheel mounting surface making sure that the cover fits into the flywheel. Install bolts and tighten to specified torque and sequence specified by the manufacturer. Bolts should be grade 5 or better.

As the bolts are progressively tightened, the Y-shaped plastic spacer, or in some kits the wooden spacer blocks fitted between the cover and the bearing head assembly, should fall out. If they do not fall out, it is possible the internal clutch adjustment may be incorrect, or in the case of a 14" clutch, it is possible the flywheel depth may be incorrect.

UNDER NO CIRCUMSTANCES SHOULD THE PLASTIC SPACER OR WOODEN BLOCKS BE LEVERED OUT OR HAMMERED OUT

If the spacer or wooden blocks are forcibly removed, it is possible the bearing head can become jammed against the cover, not allowing the installer to proceed further without difficulty.

We suggest the following steps be taken. The clutch at this stage should be bolted firmly to the flywheel with the plastic spacer or wooden blocks in place. Loosen the clutch to flywheel bolts evenly by two full turns, **NOT MORE**. Then turn the adjusting ring clockwise until it stops and cannot be turned further without putting excess pressure on the adjuster bolt.

Note: care should be taken not to apply excess pressure to the adjuster bolt; they are designed to be turned without excessive force. They may break if excessive force is used. Re-tighten the clutch to flywheel bolts.

The gap between the bearing housing and the clutch cover will increase when this action is completed. If little or no increase is achieved, repeat procedure until plastic or wooden blocks can be removed easily and the necessary half inch (12.7mm) gap between the bearing housing and the cover is achieved.

Depending on how far out the internal adjustment is, this action may need to be repeated several times to achieve the half inch (12.7mm) gap. In the case of a 14" clutch, if this procedure does not increase the gap between the bearing housing and the clutch cover, it could be possible that the flywheel depth is incorrect. The flywheel depth should be 2.938 inches (74.62mm)

PLEASE NOTE: The half inch (12.7mm) gap is required when the release yoke is due to be fitted.

9. (14" & 15.5") Examine the transmission pilot shaft for wear or damage and replace if needed. (Worn splines & or worn pilot bearing surface can result in poor release & or the centre of the discs to break)

10. (14" & 15.5") Clean bell-housing & inspect the release bearing yoke and both cross shaft bushes in the bell housing; replace if worn. (*Note: For correct clutch release, the bearing housing must "squeeze" the clutch brake during disengagement. Worn parts in the bell-housing may prevent full movement of the release bearing causing poor release*)

11. (14" & 15.5") If the clutch brake is to be used, lightly grease both sides of the brake & place on the transmission pilot shaft.

12. (14" & 15.5") Rotate the release bearing housing on cover assembly until the flat section is on top. (*Note: Some bell-housing cross shafts are below the centre line and the flat section on the release bearing should be in the down position.*) If possible, note this position before the transmission is removed.

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13. (14" & 15.5") Using extreme caution, guide the transmission shaft through cover assembly and discs, rotating the bell-housing cross shaft so that the release yoke fingers clear the pads on the release bearing assembly.

WARNING: Transmission must not be allowed to hang or be forced into place as this can bend the discs and prevent clutch from releasing.

14. (14" & 15.5") Install the bell-housing bolts and tighten progressively to the vehicle manufacturer's recommended torque

15. (14" & 15.5") The release bearing has been pre-packed with grease at the factory. We recommend this grease to be replaced by a high temperature grease and grease should be packed until it can be seen coming out from the gearbox side of the bearing housing. *(This excess grease extends the life of the clutch brake & release bearing centre bronze bush)*

Do NOT over-grease as the excess grease will find its way to the clutch facings.

16. (14" & 15.5") Install the clutch linkage and follow "clutch adjusting procedure" in the vehicle manufacturer's Repair Manual

MAINTENANCE TIPS

1. Lubricate clutch release bearing at each scheduled chassis lubrication interval, using only high temperature grease.

Do NOT over-grease as the excess grease will find its way to the clutch facings resulting in shudder or slipping.

2. Adjust the clutch before the pedal clearance has disappeared. Failure to do this will result in slippage and adjustment may not help.

3. If the clutch has an hydraulic release mechanism, make sure slave and master cylinders are functioning properly.

4. Check linkages for wear and repair as required.

5. These are only general guidelines and the installer should always refer to vehicle manufacturer's Maintenance Manual.

CLUTCH ADJUSTMENT PROCEDURE

IMPORTANT NOTE: these clutches are adjusted at the factory to original equipment specifications, and should require very little internal adjustment to achieve correct release and engagement. The clutch must not be adjusted to accommodate thin or worn flywheels, or worn linkages, yoke and/or cross shaft bushings, or to accommodate other drive train deficiencies. Adjustment for such purpose will cause the clutch to malfunction and/or to fail prematurely. This may also void any warranty coverage by the product manufacturer.

THIS PROCEDURE COVERS BOTH 14" AND 15 1/2" CAST IRON TYPE CLUTCH

STEP #1

After clutch installation, check clearance between the yoke tips and wears pads on the bearing housing for 1/8" (3.17mm) clearance. This determines pedal free play. (See Figure 1)

Adjust the clutch linkage to increase or decrease the yoke-to-bearing clearance. **NEVER USE THE INTERNAL CLUTCH ADJUSTMENT FOR THIS PURPOSE.**

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STEP #2

Check for correct clutch brake squeeze gap of 1/2" to 9/16" (12.7 to 14.3mm). If the gap is not within this tolerance, the clutch needs adjusting.

If the clutch does need adjusting, remove the lock strap and set the clearance between the release bearing housing and the clutch brake at 1/2" to 9/16" (12.7 to 14.3mm). **THIS DIMENSION IS CRITICAL.**

Use the internal adjustment on the clutch to move the bearing. Turn adjuster clockwise to move bearing towards transmission (to decrease clearance) or counter clockwise to move the bearing towards the power plant (to increase clearance).

Check by putting tension on the linkage to check if bearing is stretched and no movement towards the engine is noticed. Measure brake squeeze gap with 1/2" - 9/16" (12.7 to 14.3mm) gauge (See Figure 2). Once the adjustment is set, reinstall lock strap.

REMINDER: The release bearing housing must move a minimum of 1/2" (12.7mm) or clutch will not release.

STEP #3

If internal clutch adjustment was made re-check the 1/8" (3.17mm) clearance between the yoke tips and wear pads on bearing housing shown in Step #1 above. If necessary, realign linkage to obtain correct clearance. (See Figure 1)

CLUTCH ADJUSTMENT PROCEDURE

STEP #4

Re-check the clutch brake squeeze by inserting 0' 010" (0.25mm) feeler gauge between bearing and clutch brake, then depress the pedal to end of its stroke. The feeler gauge must be tightly clamped between the bearing and the clutch brake. (See Figure 3) This will confirm contact of the bearing to the clutch brake.

The clutch brake will be squeezed if the total pedal stroke slightly exceeds the *distance required to move the yoke/fork 5/8" to 11/16" (15.9 to 17.5mm). * (Distance = the combined total of the 1/8"(3.17mm) clearance between yoke tips and wear pads and the 1/2" - 9/16"(12.7 to 14.3mm) brake squeeze gap)

IN THE EVENT THE BRAKE IS NOT BEING SQUEEZED, DO NOT CHANGE THE 1/2" - 9/16"(12.7 to 14.3mm) GAP FOR THE CLUTCH BRAKE, OR THE 1/8"(3.17mm) CLEARANCE FOR THE BEARING HOUSING, CONSULT THE VEHICLE MANUFACTURER'S REPAIR MANUAL.

In analyzing the reasons for the brake not being squeezed, other items to check for are:

- A. Worn linkage components or yoke and cross shaft bushings. If necessary, replace these components.
- B. Improper linkage assembly. Verify that linkage is assembled in the correct hole locations.
- C. Pedal stroke. To adjust, raise or lower the upper and lower pedal stops.

NOTE: MAXIMUM BRAKE SQUEEZE (IN CAB OF TRUCK) SHOULD NOT EXCEED 1" (25.4mm) FROM THE END OF PEDAL STROKE. IF IT DOES, IT CAN BE ADJUSTED BY:

- A. Changing pedal stops in cab to reduce total pedal stroke.
- B. Increasing 1/8" (3.17mm) yoke-to-bearing setting to lower squeeze. (This will increase free-pedal travel).

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STEP #5

Once the external parts are in tune with the clutch, record the measured amount of free-pedal movement in the vehicle log for future reference. (See Figure 4) This is the normal (standard) pedal travel for this vehicle. If clutch needs to be adjusted in the future, it should be adjusted back to this standard.

Example: If pedal travel standard is 2" (50.8mm), the clutch may need adjustment when wear has reduced it to about 1" (25.4mm) of travel.

CLUTCH ADJUSTMENT PROCEDURE

FIG.1

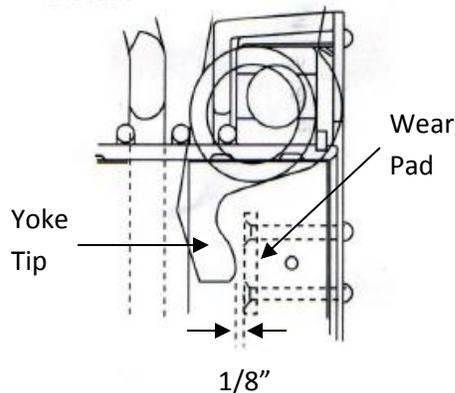


FIG.2

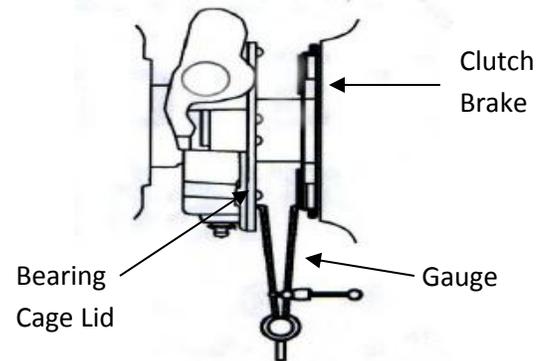


FIG.3

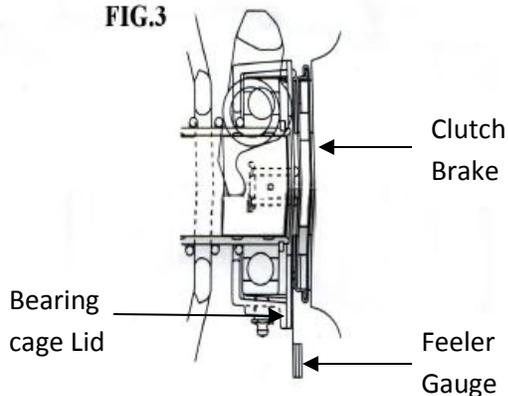
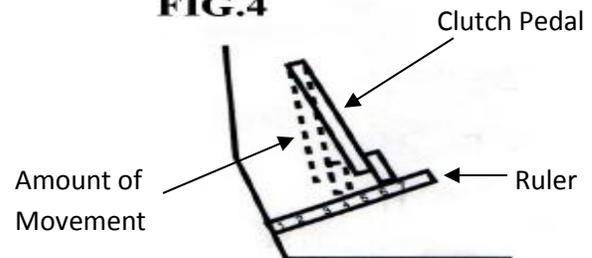


FIG.4



ADJUST INTERNALLY

Clockwise - moves the bearing toward the transmission (decrease the gap between the clutch brake and the bearing lid).

Counterclockwise - moves the bearing toward the power plant (increases the gap between the clutch brake and the bearing lid)