

DOROTHY FIXX - ADVICE TO THE VEHICULARLY DISTRAUGHT

ADJUSTING FOUR CYLINDER CLUTCH ASSEMBLIES - ONE METHOD



Over the years I have been asked to drive a number of Tractions in order to assess the feel and drivability of the cars. While some of them have been delightful, others have been spoiled by various deficiencies.

One major deficiency that can spoil an otherwise brilliant motor-car is the quality of the clutch engagement. A clutch that engages smoothly and progressively over the length of its travel is important to prevent shock loadings being transmitted through the gearbox. Depressing a smooth clutch can even be acting as a shock absorber when rounding a low speed corner in second gear, or traversing pot-holed surfaces at low speeds.

A shuddering or rapidly engaging clutch can be cured. The workshop manual refers to two fixtures: 1701-T and simplified fixture MR 3457/11. Both these fixtures provide adjustment conditions in the loaded position as if the clutch pedal were depressed and the clutch disengaged. Obviously, if you have the expertise or connections to make MR 3457/11 or can find a 1701-T, then by all means use it. These are the ideal methods by which to perform the adjustments. However, it is not a perfect world; I don't have these fixtures and hence I have arrived at the following method, which over the years has worked well for me.

Before we begin, a few precautions. Now is a good time to change the flywheel spigot bearing and the clutch thrust bearing. NSK 7207BW-407 is an acceptable alternative to the original thrust bearing but its use requires modification to the tin dust shield and cover that retains the bearing in the thrust block. Clean the flywheel and pressure plate very carefully and examine the working surfaces for scores or roughness. The instructions to rectify the flywheel are on page 45, Op 116 par 3/4 of the workshop manual. Examine the pressure plate springs toggles and fingers for damage


and wear. You may choose to dismantle the pressure plate to test or replace the springs if they can be obtained. They can be tested for load/length specifications by a reputable clutch specialist if desired. A quick test is to"

- examine for evenness in height by standing on a surface plate or sheet of glass

- place two springs at a time end to end in the vice and partly compress them [very tricky]. Compare the lengths and weak springs become obvious by their shorter length.

Examine the wear on the contact face of the clutch fingers. It should appear rounded but will probably have a flat worn onto it. Choose the best you can. If you choose to dismantle, rectify and reassemble, then be sure to clean and roughen the friction surfaces with emery paper on both flywheel and pressure plate, in order to deglaze the working faces.

Now, proceed as follows:-

- 1 Fit the flywheel to the engine, mounting the new spigot bearing, lightly greased [HTB grease], the closing plate and nuts torqued to 18 ft lbs. Turn back locking flanges and the closing plate against flywheel nuts. NOTE: The six nuts are tightened on a "Star of David" pattern, to prevent distortion.
- 2 Place the pressure plate and friction plate onto the flywheel using an old primary shaft as a mandrel to align the friction plate with the spigot bearing. Fit spring washers under heads of the set screws and tighten to 14.5 ft lbs [ pattern again]. Incidentally the new thickness of a friction plate is 11mm. Be sure there is sufficient lining material on the plate you intend using. If you are having yours relined, select friction material as close to the original as you can. Soft linings can produce a

vicious clutch.

- 3 Ensure that the peening of the toggle nuts is removed with a hacksaw blade and that they can be turned smoothly on the toggle bolt. A little WD-40 or similar can help; but DO NOT contaminate the friction linings.
- 4 Fit the thrust race into the bell housing and fit the thrust race return spring. Undo the cross shaft return stop screw and lock nut in order that the thrust race can go FULLY IN on its side. Lightly oil the slide surface.

Condition 1: 11 BL, 11B and early Slough cars with cable clutch. Screw in cross shaft return stop screws until it just touches the shaft's return stop lever. Now screw in a further two turns and tighten lock nut. [This screw will need to be set again later and then reset at the end of the operation.]

Condition 2: L15 and B15 rod operated clutches. To prevent fouling of the clutch lever on the radiator cross member a distance of 155mm must exist between the rear face of the bell housing and the centre line of the clevis pin hole in the lever. Set the stop screw to give this condition.

- 5 Mount the bell housing [gearbox removed for lightness] using only the 12mm headed screws either side of the housing. The camshaft dog, flat sided set screws and large bolts are not necessary as the housing will be removed later. Turn the flywheel so one finger is visible through the front of the bell housing.
- 6 Now, release the lock nut on the stop screw while holding the stop screw stationary with a screwdriver. Tighten the stop screw one full turn and retighten lock nut. This corresponds to the point of contact between the clutch fingers and

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the thrust race, and when returned to the previous position the stop screw then serves to give 1mm running clearance from the fingers to the thrust race. NOTE: Do not worry if the fingers do not contact the thrust race at this point. It is probable that they won't.

- 7 Reference finger adjustment. Using a screwdriver and a 14mm spanner turn the toggle nut so that the finger comes into contact with the thrust race. Access is gained through the bell housing frontal aperture. Test the degree of contact by pushing on clutch withdrawal lever...aim for soft contact. DO NOT be tempted to take a short cut at this point and adjust the other fingers this way! it will NOT be ACCURATE. The first toggle is adjusted in this way merely as a reference for accurate measurement to adjust the other fingers.
- 8 Remove the bell housing and reset stop screw of the cross shaft by screwing OUT one full turn. Tighten lock nut. The thrust race running clearance has now been set.
- 9 At this stage you will need access to a good quality vernier calliper with a depth gauge facility and a 30cm steel rule to use as a straight edge. Placing the straight edge across the pressure plate housing EDGE ON so that it passes over the contact surface of the reference finger [previously set], measure with the depth gauge vernier the distance from the TOP EDGE of the steel rule to the clutch finger contact point. This point is rounded so make sure the depth gauge pointer is on the very top part of the finger's contact surface. You will find you will be able to hold the vernier and straight edge together and rock the pointer across the finger to "feel" the point at which the gauge is most accurate. The vernier at this point MUST BE perpendicular to the pressure plate housing. When satisfied with the



reading LOCK UP the thumb screws on the vernier to PRESERVE this measurement.

- 10 The aim is now to bring both of the other clutch fingers to the same height setting as the reference finger. Adjust each in turn, paying particular attention to accuracy. Rock the vernier to get a good feel for the measurement, as before, and compare the feel to the reference finger often [aim for a "light" touch]. Once you are satisfied with the three settings bounce the face of an engineers hammer against each finger contact point and re-check the measurements of all three fingers. Re-adjust if there is a change. You may have to reset the vernier to the reference finger if it has also changed.

- 11 Once the settings are stable, punch an amount of metal from the toggle locknut into the toggle slot to fix the adjustment.

- 12 Replace the bell housing, remembering the camshaft drive dog and tighten all set screws. Fit the flywheel closing shield and large bolts. Tighten well. Check that 1mm running clearance does exist between clutch fingers and thrust race. If not, re-adjust clutch shaft stop screws.

If you have been very particular you should now have a very smooth and progressive clutch.

Ms FIXX WOULD LIKE TO TAKE THIS OPPORTUNITY TO THANK CCOCA MEMBER GERRY PROPSTING FOR THE TECHNICAL ADVICE AND EXPERTISE IN PREPARING AND WRITING THIS ARTICLE.