

TECHNICAL NOTES

Technical Note 1

Rover Group Austin Allegro, Metro, Mini, 1100, 1300

CK9242.....Clutch Judder:

One possible cause of clutch judder on these vehicles is the misalignment of the clutch cover during fitment. Ensure that the correct alignment tool (Part No 18G 1247) is used.

Driven Plate Hub Wear:

Severe hub spline wear could be due to failure of the crankshaft primary gear bushes and not to any fault of the driven plate hub. Any instance where spline wear has occurred must be fully investigated by removal of the primary gear to inspect the bushes and to replace if necessary.

Technical Note 2

Rover Group Austin Allegro

Difficult Gear Engagement:

When the inability to select gears from rest is experienced due to the clutch not freeing completely, check that there is no restriction to clutch pedal travel, that no air has been allowed to enter the hydraulic system and that oil has not contaminated the driven plate.

Technical Note 3

Rover Group Austin Maestro, Montego Volkswagen Golf, Jetta, Scirocco

CK9017/CK9019/CK9020/CK9066:

When fitting the auxiliary release plate and retaining ring to the cover assembly ensure that the ends of the retainer ring are located correctly into the holes provided in the release plate. Release plates and clips are now available for both equal distance raised finger diaphragms (Part No MC 001) and unequal raised diaphragm finger (Part No MC 010) cover assemblies:

Care must be taken when fitting the cover assembly to the vehicle to ensure that the location slots are correctly aligned with the flywheel dowels, as cases have been noted whereby the cover has been bolted up on top of the dowel pins causing severe distortion of the cover assembly mounting flange. The correct holes can be identified by the adjacent small punched indents in the cover, to assist in re-fitting the cover to the flywheel we recommend that both are marked with paint prior to installation.

Technical Note 4

Rover Group Austin Maestro, Montego Volkswagen Golf, Jetta, Scirocco

CK9017/CK9020/CK9066:

Certain designs of these driven plates are manufactured with springs that are fitted loose in the assembly, this is part of the original manufacturers design and will not detract from the performance of these units in service.

Technical Note 5

Rover Group Austin Metro 1.0, 1.3 3/81-2/82

Clutch judder and release bearing noise:

When these conditions are experienced one possible cause has been found to be wear between the release bearing push-rod and the cover thrust plate, this allows contact between the release bearing outer race and the cover thrust plate.

We recommend that a new release bearing complete with push rod and outer sleeve are fitted when replacing the clutch units.

It is important to ensure that correct clearance between the cover thrust plate and the end of the outer sleeve is a minimum of 1.50mm

TECHNICAL NOTES

Technical Note 6

Rover Group Austin/MG Metro 3/82-90, Austin Mini

CK9035:

1) Refitting units to flywheel:

These units are supplied without the flywheel which is removed when replacing the clutch. It is important to check the flywheel before re-use to ensure that the friction face is not cracked, scored or damaged and that the ring gear is in servicable condition. When re-assembling the clutch units to the flywheel use the following procedure as a guide.

- 1) Position the drive plate onto the flywheel, ensure that the hub faces into the flywheel.
- 2) Position cover assembly onto flywheel, ensure correct alignment of dowels and bolt holes, hand tighten retaining bolts.
- 3) Turn complete assembly over and position drive plate by hand so that the gap between the plate and flywheel is 3 mm all round.
- 4) Fit complete assembly to crankshaft, fit key plate and lightly tighten flywheel retaining bolt.
- 5) Tighten clutch/flywheel bolts diagonally to 25-30Nm torque, ensure the correct location of dowels.
- 6) Finally tighten flywheel retaining bolt to 152Nm torque and lock tabs into hub slots.

Ensure that the location faces on the crankshaft and clutch hub are clean and free of any damage.

Ensure that the external fulcrum ring located on top of the cover is not removed.

2) Refitting the crankshaft adaptor hub. (Adaptor hub now available as a separate unit; Part No MC 009).

The above part numbers may be supplied using a cover assembly without a crankshaft adaptor hub. When fitting the clutch it will be necessary to remove the adaptor from the old unit and refit to the new unit, taking care that alignment is achieved.

As there are various types of bolt available it is important to use the 6 bolts provided with the new assembly:

It should be noted when fitting the hub to the clutch assembly there is only one position that allows the correct alignment to take place.

The hub should be turned through the 6 possible mounting positions until exact alignment is achieved and then bolted up using the correct mounting bolts.

Technical Note 7

Rover Group Austin/Rover Metro, Mini

CK9035:

The plate supplied for the above references may be of the double fin plate solid construction type and can be used to replace the conventional spring type drive plate.

Technical Note 9

Austin Healey Sprite Mk IV Rover Group MG Midget Mk III

CK9289:

Limited availability of the original cover assembly has resulted in the introduction of an alternative design unit which does not require a diaphragm top plate. This cover assembly can only be used with a special matched bearing and will only be supplied in a three in one clutch kit. It is important to note that this assembly cannot be fitted with the conventional release bearing.

Technical Note 10

Rover Group Morris Minor 1.0

CK9253:

Inability To Select Gears:

To ensure that the above problem is eliminated correct clearance when installing components is achieved by correct setting of the clutch pedal free travel. For vehicles fitted with 1098cc engines clearance must be 35-38mm measured at the clutch pedal pad.

For vehicles fitted with 948cc engines the clearance should be 19mm. Set the pedal free travel by adjustment of the clutch operation rod located alongside the gearbox.

Technical Note 11

Honda Ballade, Civic, Integra, Jazz Rover Group Rover 213

CK9038:

It is important that the replacement driven plate is of the low centre hub design which matches the original unit fitted to these vehicles.

Our driven plate has a low hub which allows sufficient clearance between the drive plate and the underside of the cover assembly diaphragm.

Contact between the two surfaces is caused by fitment of the older design of plate which has a longer centre spline and raised body.

TECHNICAL NOTES

Technical Note 15

Bedford/Opel/Vauxhall FWD Models

Clutch Replacement:

Replacement of the clutch on these vehicles can be carried out without the removal of the engine or gearbox. The clutch can be removed and refitted through the narrow inspection hatch on the side of the bellhousing, as the cover assembly is too wide to pass through the hatch in its relaxed position it must be compressed to facilitate removal. It is necessary to hold the cover in this compressed condition by the use of three fitting clips (Part No. MC 002). These clips have a slot on one side to fit around the rivet head on the cover assembly pressure plate and can be fitted to the unit before removal by depressing the clutch pedal to compress the cover. When refitting the new assembly it is essential that the cover assembly is compressed with a properly designed clamp, and that the clips are not forced over the rivet head as this may damage the drive straps or pressure plate.

Technical Note 17

Citroen BX, C15, LNA, Visa

Peugeot 104, 205

Renault 14

Talbot Samba

CK9007:

It is recommended by the vehicle manufacturers that the bellhousing gasket and oil seal are replaced on the above models whenever the bellhousing is removed. As removal is required during the clutch replacement the gasket and oil seal should always be replaced.

Technical Note 18

Citroen BX, Visa

Peugeot 205, 305, 309, 405

Talbot Alpine, Horizon, Solara

CK9013/CK9053/CK9054/CK9055:

As components are available from different manufacturers it is important that the L.U.K. type driven plate is not fitted with the Borg & Beck type cover assembly. We recommend on this application that the cover assembly and driven plate are of the same manufacture as clearance problems may occur if units are interchanged.

Technical Note 19

All Ford models fitted with Automatic Adjust Cables

Clutch Slip, Premature Clutch Failure And Wear:

Many cases of the above complaint have been caused by the incorrect operation of the automatic adjusting mechanism on the clutch release cable and are not due in any way to faults with either the cover assembly or the driven plate. It is important to ensure that the self adjusting mechanism is operating correctly and has not developed a 'load condition' that could hold the clutch partially released causing clutch slip. Cables should be re-adjusted at the adjust ratchet located at the pedal end of the cable reset as instructed by the workshop manual. Vehicle should be road tested to ensure correct operation is achieved.

Noise From The Auto-Adjust Mechanism:

Clicking noises during clutch engagement can be caused by a sticking or incorrectly fitted clutch cable. Check the following.....

With the engine at idle, depress the clutch pedal and slowly engage the clutch, if the clicking occurs the pawl of the auto-adjust has jumped across a tooth of the quadrant in order to adjust the cable length. If the pawl is not engaging in the quadrant the pedal will slip. Ensure that clutch pedal travel is not restricted by soundproofing or carpets. If necessary renew the clutch cable/adjusting quadrant Check the two main nuts on the cable securing mechanism, tighten or replace if necessary.

Dismantle and check the pedal mechanism for wear, replace worn parts as necessary.

Technical Note 20

Ford Escort, Fiesta, Orion

CK9034/CK9076:

AP Borg & Beck Sachs and L-U-K units are available for these applications. It is important that they are installed only as a matched set of cover assembly and driven plate as supplied in the kit. If units are interchanged there is a possibility that clutch slip or clearance problems may occur.

Driven Plate Damage:

The driven plates listed above are prone to abnormal wear to the damper springs resulting in damage to the torsion damper where fitted.

The cause of this damage is when the vehicle is driven using too low engine revs for the speed of the vehicle and is not due to the construction of the component:

TECHNICAL NOTES

Technical Note 22

Austin Healey Sprite Reliant Rialto, Robin Rover Group MG Midget

CK9250:

Borg & Beck and Laycock units are available for these applications. It is important that they are installed only as a matched set of cover assembly and driven plate as supplied in the kit. If units are interchanged there is a possibility of the cover assembly fouling the driven plate hub.

Technical Note 23

Saab 99

CK9272/CK9301:

Clutch Drag:

This condition is often caused by failure to re-adjust the position of the release bearing after fitting a new clutch assembly. This is controlled by a friction device between the release bearing and the slave cylinder body, when fitting new units ensure that the release bearing is fully forward and the friction device is re-positioned.

Clutch Replacement:

D-S-T type cover assemblies may now be supplied to service the above vehicles, during removal and installation the diaphragm spring must be held in a compressed condition and this can be achieved by depressing the clutch and inserting a wire ring between the diaphragm spring and the cover assembly lip. A service tool is available from the vehicle agent or a suitable tool may be constructed from 4mm dia wire.

Technical Note 24

Skoda Models

Release Bearing Fitment:

Many clutch actuation problems on later Skoda vehicles fitted with the pressed steel clutch release arm have been caused by incorrect fitting of the release bearing retaining spring. To ensure correct fitment the following procedure should be used.

- 1) With the arm removed from the vehicle push the retaining spring on to the top of the arm. Ensure that the two short arms of the spring are behind the release arm.
- 2) Place the bearing in position in the location slot and push the retaining spring along the release arm until the top loop engages in the retaining groove on the release bearing.
- 3) Check and ensure that the short arms of the retaining spring are both located in the idents formed in the release arm by the pivots for the release bearing.

Clutch Release Adjustment, Skoda models 190mm Clutch:

Correct release mechanism adjustment is imperative on these models as many cases of contact between the clutch release arm and the cover assembly have been caused by incorrect procedures on adjustment. The following must be followed in order to achieve the correct settings...

Clutch slave cylinder push rod clearance.....4 to 5mm (Min due to wear = 2mm). This should ensure that.....

Clutch pedal travel = 30-45mm; Master cylinder push rod clearance = 0.5mm; Clutch free play = 4 to 5mm:

Adjustment on the slave cylinder adjuster mechanism will give push rod clearance, adjustment of the pedal will give pedal travel and master cylinder push rod clearance.

Technical Note 27

Volkswagen Derby, Golf, Jetta, Polo, Scirocco

CK9006:

Correct release bearing travel is of utmost importance when replacing clutch units on the above models. Maximum release bearing travel should not be greater than 4.5mm, this must be checked when final adjustments are made. Overadjustment will result in the release bearing carrier arms coming into contact with the cover assembly diaphragm.

Technical Note 28

Volkswagen Derby, Golf, Jetta, Scirocco 1.6, 1.8

Clutch Noise:

Grinding noises after clutch replacement have been caused in some cases by contact between the cover-plate of the clutch housing and the revolving cover assembly. This thin metal plate covers the lower part of the clutch housing between the gearbox and sump of the engine, as this plate is constructed of thin material it is possible that damage or distortion can be caused during clutch replacement. Ensure that this cover plate is undamaged and correctly fitted when replacing clutch components and when investigating clutch noise.

TECHNICAL NOTES

Technical Note 29

Citroen BX

Lack Of Sufficient Adjustment/Non Clearance:

After investigation the cause of the above condition has been found in many cases to be movement of the actual pedal/cable mounting arrangement during clutch operation. If this condition is experienced ensure that the mounting plate spot welds are intact and that there is no movement where the outer clutch cable connects to the vehicle mounting plate/pedal box.

Technical Note 30

Suzuki SJ410

Insufficient Clutch Clearance:

Several cases have been reported of the above complaint, after investigation a split in the clutch release arm and distorted or bent release arms have been identified as the causes. This allows the bearing to move back when under pressure. It is recommended during clutch replacement to inspect the clutch release arm and replace if required.

Technical Note 31

Daf/Volvo Semi Automatic Clutch

When fitting these units the cover assembly must be assembled to the flywheel using spacers between the cover pressing mounting face and the flywheel. These are available in three standard thicknesses from the vehicle main agents. The method of adjustment is to space the cover assembly away from the flywheel until the vehicle propshaft can be turned by hand. There should be a slight resistance felt against the turning of the shaft, if too tight non clearance will result, if too loose clutch slip will be experienced.

Technical Note 32

Opel Monza, Omega, Senator 3.0 Vauxhall Carlton, Senator 3.0

Models fitted dual mass flywheel:

A modified dual mass flywheel was introduced on the models listed above from Engine No's 25NE52484 & 30NE107486. The later flywheel can be identified by ventilation slots along the circumference, the earlier flywheel has a solid outer diameter.

The cover assembly fits all later models from the above engine no's, but requires spacers to fit to the early type flywheel. When installing this cover onto the old flywheel 3 spacers (GM Part No 90342048) must be used to space the assembly away from the flywheel. It is recommended that the later type dual mass flywheel is used to replace the earlier type if excessive heat discoloration is evident on any of the clutch components.

Technical Note 33

Ford Transit (MY)

Poor clutch pedal travel and/or difficult gear engagement:

If the above conditions are experienced ensure that the correct clutch cable is fitted, the correct cable (Ford Part No 7343294) can be identified by a green marker which can be seen from under the bonnet, where the cable enters the bell housing. The revised cable was introduced in production from October 94.

Technical Note 34

Rover Group Austin Maestro, Metro, Mini, Montego Rover Group Rover 200/400 Series

Clutch self adjusting mechanisms:

The above vehicles all use a similar design of clutch cable auto-adjusting mechanism. A common cause of clutch slip or premature wear to the driven plate can be due to a non functioning auto adjust mechanism.

When clutch replacement or clutch cable replacement has taken place the self adjusting mechanism must be reset and checked for satisfactory operation. Check that the clutch cable outer is seated fully into the vehicle bulkhead location. When the clutch pedal is at the top of the stroke, the inner cable end fitting at the pedal end should press forward against the inner section of the end of the outer cable.

This releases the auto-adjust mechanism which then allows the outer cable to be moved in and out to set the correct pre-load adjustment of the cable to the release bearing. Ensure that the pedal has some upward movement before striking the pedal return stop. Clutch faults caused by incorrectly reset or faulty self adjust mechanisms are not covered by the warranty policy and guarantee.

TECHNICAL NOTES

Technical Note 35

Rover Group Austin Maestro, Montego 1.6 (SA Engine)

Failure to start the engine after clutch replacement:

CK9017:

When it is found impossible to start the vehicles engine after clutch replacement damage may have occurred to the ignition reluctor ring teeth on the front face of the cover assembly. If the teeth are distorted or misaligned irreparable damage can be caused to the crankshaft rotation pick-up sensor when contact is made as the engine rotates. Additional care must be taken when handling and fitting the clutch cover and precautions should be taken to prevent damage or distortion of the reluctor ring.

NOTE: Do not use the reluctor ring to rotate or lock the engine.

Technical Note 36

Ford Granada, Sierra

Release Bearing /Clutch noise:

Cases of suspected release bearing noise audible from inside the vehicle have been caused by the omission of the sound absorption damper which should be re-fitted at the end of the clutch cable behind the clutch release arm.

Broken clutch pedal quadrant tension springs giving insufficient clutch cable tension can cause a rattle or squeal from the release bearing, due to no pre-load being applied to the release bearing which runs in constant contact with the diaphragm fingers of the cover assembly.

The noise disappears when a light pressure is applied to the clutch pedal.

In both the above cases the clutch release bearing may not be at fault, any reported clutch noise should be checked against the two areas listed above before removing the clutch assembly.

Clutch Grabbing:

Clutch engagement problems on the above models can in most cases be traced to torn rubber couplings on the propshaft. The 4 rubber couplings should be inspected thoroughly for damage and replaced using new retaining bolts if necessary.

Sierra 1.6 & 2.0 Clutch Judder:

If clutch judder is still experienced after clutch replacement this has in many cases been caused by an excessively worn input/first motion shaft spigot bearing and not the new clutch units installed. This causes misalignment of the clutch driven plate without adequate lateral support, resulting in judder upon take up of drive.

It is advised that the spigot bearing is replaced with all clutch replacement procedures.

Technical Note 37

Citroen Visa

Clutch Drag/Non Clearance; Inability to Select Gears:

Instances of clutch drag on the vehicles listed can be due to insufficient clutch pedal stroke caused by a distorted pedal assembly contacting the vehicle floor before the clutch is disengaged. If this condition is experienced investigate fully the clutch pedal operation to ensure that contact is not made. Reducing the cable free play to zero in an attempt to rectify the above fault can cause excessive pre-load of the release bearing, resulting in premature failure of the clutch.

Technical Note 38

Citroen BX

Peugeot 205, 309, 405

Rover Group Rover Metro, 100, 200, 400

Clutch Drag/Non Clearance; Inability to Select Gears:

The above models can experience severe wear in the clutch actuation system which leads to the release bearing chewing into the fingers of the cover assembly diaphragm spring, this is caused by incorrect load being placed upon the release bearing. When clutch units are removed and show signs of this condition before re-fitting the replacement components check the following areas...

- 1) Ensure that the clutch cable is moving freely in its sleeve.
- 2) Ensure that the release bearing is not sticking on the input shaft guide, if the guide is distorted or damaged this must be replaced with a new component from the relevant vehicle dealer.
- 3) Check that the pedal box has not come adrift from the vehicle bulkhead, (see Technical Note 29).
- 4) Check that all linkages are not worn or damaged and that they are moving freely, grease or replace as necessary.
On Citroen BX models check the linkage between the clutch fork and cable pivot.

TECHNICAL NOTES

Technical Note 39

Reliant Robin

Clutch Drag/Non Clearance; Inability to Select Gears:

The above condition can be caused by loose engine backplate retaining bolts allowing the gearbox to move away from the engine when the clutch is operated, this reduces the effective travel of the release mechanism. Ensure that the retaining bolts are correctly tightened to the settings recommended by the manufacturer.

Technical Note 40

Volkswagen Golf, Scirocco

Clutch Drag/Non Clearance; Inability to Select Gears:

On early models of VW Golf a clutch drag condition has been caused by insufficient clutch cable release travel, this can be due to excessive flexing of the vehicle bulkhead where the clutch cable is located. In certain cases the bulkhead cracks extensively around the cable location, it may be necessary to repair or fit a reinforced panel to the bulkhead to alleviate this condition.

Clutch Slip 1.5 - 1.8 Models:

VW Golf 1.5 to 1.8 engines are fitted with two additional oil seals as well as the main crankshaft oil seal. The first seal is located between the first motion shaft and the gearbox, the second seal is located inside the hollow first motion shaft in order to seal the clutch push rod against the cover. Instances of clutch slip can be caused by oil seepage from between the push rod and the first motion shaft. In order to dismantle the inner oil seal the bronze bush requires replacing, installation of the new seal is carried out using a 14mm diameter rod.

Inner oil seal = VW Part No 020-311-108A; Bronze Bush = VW Part No 020-311-107C:

Technical Note 41

Opel Kadett

Vauxhall Astra, Belmont, Cavalier

Gearbox Identification, Models Fitted F13/F16 Gearbox:

In order to identify the difference between F13 and F16 gearboxes use the following two methods.

- 1) The gearbox reference (F13/F16) is stamped on the top of the bell housing, this can be viewed from the front of the vehicle in an upside down position behind/below the distributor housing.
- 2) Earlier models may not be marked as in section 1, but can be identified by the gearbox level/filler plug on F13 gearboxes which is positioned on the left hand side, and on F16 gearboxes positioned on the right hand side.

Technical Note 42

Renault Espace

Clutch Drag/Non Clearance; Inability to Select Gears:

Technical investigations on Espace models with the above problems have found that the clutch pedal is prone to both flexing and cracking. This results in reduced stroke length when operating the clutch, leading to the non-clearance problems. A strengthened and modified clutch pedal is available (Renault Part No 60 25 002 645), or the existing pedal can be strengthened by welding a support bar across the right angled section of the pedal at the upper end, this is equal to the Renault modification.

If non clearance problems are experienced on the above models ensure that the clutch pedal is checked thoroughly for flexing or cracking.

Technical Note 43

Ford Escort, Fiesta, Orion

Release Bearing Modification:

In order to overcome bearing rattle some models may have a modified sleeve fitted over the original guide tube, in these cases the original release bearing will not fit over the sleeve. These models require a modified release bearing with a larger bore and a modified sleeve which can be used on vehicles if persistent bearing rattle is experienced by placing the modified sleeve over the existing guide tube and using the larger bearing.

Gearbox Idle Rattle- 1.8 Diesel Models:

Certain 1.8 Diesel models suffer with rattling noises from the gearbox when the vehicle is ticking over and the clutch is engaged, this disappears when the clutch is depressed and rotation ceases. This is not a gearbox or release bearing problem and does not affect the operation of the clutch or transmission. It should be noted that this is not caused by loose springs in the driven plate, the fault is due to the overall makeup of certain designs of early drive plates which do not dampen out this rattle on idle.

All driven plates and kits supplied for these models contain the later modified versions of plate which overcomes this problem.

Non-Clearance and Judder Problems - 1.4 & 1.4i 1990 -> Models:

The cause of the above complaint has been found to be wear in the plastic bushes situated in the gearbox bellhousing that hold the release fork in place. Wear in these two bushes allow the release fork to move from side to side instead of pivoting in the correct way resulting in loss of stroke length and incorrect release bearing to diaphragm contact. The two bushes should be checked for wear whenever the clutch is replaced.

TECHNICAL NOTES

Technical Note 44

Rover Group Rover Metro, 114, 214, 414

CK9085 - Clutch Slip, Judder, Release Bearing Failure:

The above mentioned vehicles are prone to wear of the gearbox input shaft bearing. This allows the input shaft to move in operation. Initial indications of this defect are a whining noise from the transmission in early stages followed by either or all of the following symptoms of clutch slip, judder or failure of the clutch release bearing.

When wear occurs to the input shaft bearing the shaft will rapidly wear the oil seal allowing contamination of the clutch. As wear to the bearing and seal progresses this will allow the input shaft to move from side to side (in an elliptical motion) resulting in the driven plate contacting the cover assembly pressing. This can also result in the release bearing moving on the release fork and in some cases become misplaced causing the release bearing to shatter.

Signs to look for on the clutch parts:

- 1) Oil on the driven plate friction linings.
- 2) Tapered/worn edge of the driven plate friction lining on the cover assembly side, with scoring evident to the cover pressing around the outer edge of the pressure plate.
- 3) Abnormal release bearing to diaphragm spring marks, looks like the bearing has been chattering against the diaphragm spring, leaving shiny offset marks.
- 4) Release bearing moving off centre to the release fork, this can also split the bearing inner guide tube.

If any of the above defects are found on removal of the clutch, the gearbox input shaft and seal should be carefully inspected for signs of wear before commencing replacement.

Technical Note 45

Audi A4

Engine Code & Number Identification:

On the above vehicle the engine code letters are located in the spare wheel recess and also in the case of 4-cylinder engines above the oil filter on the left side of the engine block. In the case of the 6-cylinder engines on the right inner side of the engine block between the cylinder head and the hydraulic pump. There is also a sticker with the engine code letters and the engine number located on the toothed belt cover.

Technical Note 46

BMW 535i (E39), 540i (E39), 735i (E38), 740i (E38)

Self Adjusting Clutch (SAC):

The vehicles listed above are all equipped with a self adjusting clutch (SAC) which has a locking device. When fitting it is essential to follow these instructions:

- 1) Align pressure plate - driven plate using a centering tool.
- 2) Locate the clutch on to the alignment pins in the flywheel/dual mass flywheel and screw down.
- 3) After checking the screw fitting, carefully turn the locking device in a clockwise direction. The diaphragm spring may spring out slightly when turned.

NOTE: Only remove the locking device with the clutch pressure plate screwed down.

Technical Note 47

Citroen Relay (Jumper) (Fitted ME5T Gearbox)

Gear Lever Adjustment:

The above vehicles use Bowden cables for gear selection, which are attached at the gearbox end by brackets and at the gear lever end by 2 clips. Only the shift adjustment cable is adjustable. The adjustment is achieved by using the sleeve at the gear lever end of the cable, which adjusts the centre of the gear lever knob relative to the centre of the steering wheel, this should be approximately 304mm.

The ball joints should be lubricated with a suitable high melting point sliding grease.

Technical Note 48

Opel/Vauxhall Frontera

Adjusting Clutch Pedal Height:

Adjustment of the clutch pedal height is achieved by adjusting the actuating rod of the clutch master cylinder, and should be set as follows:

- LHD vehicles 202mm +/- 5mm
- RHD vehicles 211mm +/- 5mm

With fitted carpets, a pedal travel of 162mm must be provided. The pedal stop screw must also be adjusted to play of 0.5mm - 1.0mm.

TECHNICAL NOTES

Technical Note 49

Honda Civic, Civic CRX 84-87

Clutch Cable:

On the above vehicles an extremely hard clutch pedal may be indicative of accelerator pedal bracket trouble. These models feature an additional welded bracket located on the accelerator pedal bracket. This bracket includes a guide tube through which the clutch cable is routed. This guide tube is necessary for proper alignment of the clutch cable. In some cases this bracket breaks off which leaves the clutch cable unsupported, allowing the cable to bind. This bracket is located under the dash and is hard to see and is often overlooked. A visual inspection to verify that the accelerator pedal bracket is intact and providing support to the clutch cable should be part of every clutch change.

Technical Note 50

Opel Astra, Calibra, Corsa, Kadett, Omega, Senator, Vectra

Vauxhall Astra, Belmont, Calibra, Carlton, Cavalier, Corsa, Nova, Omega, Senator, Vectra

Clutch Pedal Adjustment (Cable Operated):

Insufficient freedom of movement of the clutch is leading to difficulties in changing gear, which is often causing the clutch cover assembly to be replaced without due reason. The dimensions listed in the Vauxhall/Opel documentation for the clutch pedal adjustment are indicated from different reference points:

Corsa/Nova, Kadett E/Astra/Belmont - From the hub of the steering wheel to the clutch pedal.

Vectra/Cavalier, Calibra, Omega/Carlton, Senator B - From the front edge of the drivers seat to the clutch pedal.

This may lead to confusion and incorrect measurements. The points of the pedal travel adjustment which apply for all the above vehicles are only from the steering wheel hub to the clutch pedal.

Corsa/Nova	124mm + 7mm
Kadett E (LHD)	140mm + 7mm
Kadett E (RHD)	132mm + 7mm
Astra/Belmont	132mm + 7mm
Vectra/Calibra (LHD)	129mm + 7mm
Vectra/Calibra (RHD)	134mm + 7mm
Cavalier	134mm + 7mm
Omega/Carlton, Senator B	142mm + 7mm

The required measurement can be achieved by adjustment of the clutch cable.

Technical Note 51

Opel/Vauxhall Astra 2.0

Pedal Vibration at 2000-2800rpm:

On the above vehicle the large axial play in the crankshaft (max 0.05-0.52mm) allows vibrations to be transmitted from the release arm to the clutch cable. The centre main bearing is arranged as a thrust bearing, and a repair kit is available.

A remedy can be achieved by the following steps:

- 1) Minimise the play between the release bearing and the driven plate hub. This can be done by carefully closing up the span of the release fork where it contacts the release bearing.
- 2) After removing the right hand plastic cover of the clutch housing the securing bolts of the clutch pressure plate can easily be slackened. Operate the clutch pedal several times. Then with the clutch pedal held down, tighten the securing bolts to the correct torque settings in diagonally opposed stages.
- 3) Measure the engine, ie compare the axial play to the specified values according to the manufacturers recommendations.

Technical Note 52

Opel Omega (Petrol)

Vauxhall Carlton (Petrol)

Noise When Disengaging The Clutch:

Noise can occur on the above models when disengaging the clutch in the 3000rpm range. Vauxhall/Opel have remedied this problem by using a modified release lever from september 1987 (Chassis No J1031269 ->). By fitting a counterweight available from GM (Part No 90216221) noise on even older models can be eliminated. When fitting the counterweight to the clutch cable ensure that there is free access for the exhaust pipe.

TECHNICAL NOTES

Technical Note 53

Opel Rekord Vauxhall Carlton

Judder:

Incorrect operation of the clutch release bearing can be responsible for clutch judder. Score marks or marks as a result of seizure on the guide tube prevent the bearing from sliding smoothly and can cause this problem. During every clutch replacement the guide tube must be checked for score marks, in particular the upper side of the sleeve which is not visible when installed. In general we recommend that the guide tube is replaced at the same time as the clutch. The guide tube is available from GM:

- Opel No 668546 - 1.8 models
- Opel No 668534 - All other models

Noise:

Loud noises from the area of the clutch are not generally traced to the clutch release bearing. Extensive investigations have shown that other components are usually at fault or contribute to the noise generated. Possible faults:

- 1) Worn diaphragm spring fingers as a result of a seized or sticking clutch release bearing.
- 2) A worn guide tube.
- 3) Insufficient pre-load on the clutch release bearing due to worn or incorrect adjustment causing vibration noises through the diaphragm spring fingers (pre-load should be 90-100N).
- 4) Uneven wear of the pivot pins on the release fork can cause loud whirring noises. If this is found to be the case, the fork must be replaced. If the space between the pivot pins is excessive the release bearing will not be located correctly and can generate noise. The specified maximum distance between the pins on this release fork is 11.7mm.

Technical Note 54

Ford Mondeo 97->

Modified Gearchange:

To improve the ease of changing gear on the above model, the gearchange mechanism has been modified. The MTX75 gearbox has been fitted with a cable operated gearchange the same as the one fitted to the Galaxy. The gearchange shaft is no longer required, nor the gearchange shaft stabiliser. The selector cable (marked black) and the gearchange cable (marked white) must be renewed as a pair. To remove the cables both sides of the thrust block at the gearstick, and also at the gearbox must be undone anticlockwise.

Technical Note 55

Ford Fiesta, Mondeo 96->

Special Tool:

When dismantling the engine, gearbox, clutch etc on the above vehicles it is necessary to remove the front subframe. When refitting the subframe it is vital to ensure that it is accurately aligned with the vehicle chassis, so as to guarantee correct tracking of the front wheels.

Misalignment of the subframe relative to the chassis will cause displacement of the front axle geometry and thus increased tyre wear.

The subframe can be quickly aligned on reassembly using the bolt set available from Ford (Part No 15-097).

Technical Note 56

Ford Fiesta 1.25, 1.4 (Zetec Engines)

Central Actuating System:

The above vehicle is fitted with a hydraulic actuating system with a central slave cylinder. The central actuating system is fully hydraulic and basically consists of the following components:

- 1) Reservoir - The hydraulic fluid used is brake fluid. The brake fluid reservoir acts for both brake and clutch. The brake and clutch systems are separate inside the reservoir, as a result of which in the event of a leak in the clutch system, the brake system will remain fully operational without restrictions. Both clutch and brake systems can be bled independently of one another. The reservoir can be located in the engine compartment.
- 2) Master Cylinder - The master cylinder builds up the system pressure required to actuate the clutch. When the clutch pedal is pressed, the piston rod moves the piston of the master cylinder forwards. This causes the fluid in the master cylinder to be displaced and transferred through the system. The master cylinder is bolted to the pedal block.
- 3) Slave Unit - The slave unit is a combination component which consists of the slave cylinder and the clutch release bearing. Located in the slave cylinder is a piston which is connected to the clutch release bearing by means of a snap connection. If the clutch pedal is pressed, the piston moves forward causing the clutch release bearing to be axially displaced, and together with the bearing inner ring presses onto the diaphragm spring fingers. When the clutch pedal is released the diaphragm spring pushes the piston back into its original position. The slave unit is located in the clutch housing.

TECHNICAL NOTES

Technical Note 57

Ford Escort, Fiesta, Orion

Noise From Release System, Lack Of Release Bearing Clearance:

The clutch release arm crossshaft on the above vehicles is supported by two bushes located in the gearbox housing. The plastic bush on the top of the gearbox casing is prone to rapid wear. Worn bushes can result in noise and judder on the take up of drive.

Wear in these bushes can also result in non clearance as the shaft is allowed to move inside the bush.

The plastic bush can be renewed without removing the gearbox. The bushes should be renewed on every clutch replacement to ensure correct clutch operation. Two types of bush are fitted our Part No's MC012 (O/D 23mm) & MC013 (O/D 19mm).

Technical Note 58

Ford Granada, Sierra (Fitted MT75 Gearbox)

Gear Lever Vibration:

On the above vehicles gear lever vibration can be eliminated by the fitment of a modified plastic sleeve located on the reverse gear operating rod. The new plastic sleeve is available from Ford (Part No 6746588). Fitment details are as follows:

- 1) Remove the gear lever knob.
- 2) Remove the gear lever rubber boot sufficiently to expose the retaining pin on the reverse gear operating sleeve.
- 3) Push the operating sleeve against spring pressure and remove the retaining pin from the operating sleeve.
- 4) Remove the sleeve from the rod assembly.
- 5) Fit the new plastic sleeve between the rod assembly and the reverse gear sleeve.
- 6) Re-assemble the gear lever.

Technical Note 59

Fiat Uno (Fitted C514 Gearbox)

Gear Shifting Problems:

A new type of gearbox (C514) has been fitted to these vehicles, which also requires a special transfer linkage for gear selection and shifting.

The gear selection cable is adjustable. In the event of problems with gear changing, a check should be made on whether the gear lever is standing precisely vertical when in neutral. If this is not the case, the length of the cable must be altered accordingly.

Technical Note 60

Mercedes Sprinter (Fitted Dual Mass Flywheel)

Clutch Driven Plate Failure:

The above vehicle when fitted with a dual mass flywheel is prone to breaking the centre out of the clutch driven plate.

Unlike most common clutches, the driven plate in the above kits are of a rigid design containing no damper springs. The damper mechanism is incorporated inside the flywheel, and it is the damper mechanism inside the dual mass flywheel that is subject to wear, that will eventually cause the driven plate centre to fracture, if the flywheel when worn is not replaced.

Symptoms to look for are - vibration through the clutch or gearbox, clutch judder or noise from the clutch bellhousing and gearbox area.

When replacing the clutch careful inspection should be carried out on the removed driven plate for signs of cracking around the fin segments and undue wear to the hub splines, this is the early stages of failure due to flywheel wear.

The flywheel should also be examined by taking hold of the front face and checking for side to side movement. If the front face of the flywheel can be rotated more than 10mm (from stop to stop) in relation to the back containing the ring gear, then the flywheel is likely to be unserviceable and in need of replacement.

Technical Note 61

BMW 3 Series (E36)

Refitting The Gearbox:

It is possible when you refit the gearbox on the above model to dislodge the starter motor. If this does happen you will need to refit the starter motor which can be an arduous, time consuming job because of it's location under the inlet manifold. This can be avoided by thoroughly cleaning and lightly lubricating the starter motor locating dowel found at the top of the gearbox bell housing.

Technical Note 62

Renault Clio

Clutch Cable Fitment:

To prevent premature failure of the clutch cable on the above vehicle it is important that the cable is located correctly and in the right sequence. The cable should be fitted through the upper transmission mounting, between the gearbox and nearside chassis. This will not distort the cable when in use. Installation of the cable can be made easier if the small pedal end is fed from the gearbox through the transmission mounting and subframe eyes toward the back of the vehicle. The cable can then be connected to the pedal and then the release lever.

TECHNICAL NOTES

Technical Note 63

Opel/Vauxhall Frontera 2.3 Turbo Diesel

Driven Plate Fitment:

The above vehicle is fitted with a dual mass flywheel. The driven plate has no markings to identify which way round it should be fitted. The long snout should face the flywheel.

Technical Note 64

Land Rover Defender, Discovery

Bleeding The Hydraulic Clutch System:

The hydraulic clutch system on the above vehicles can be particularly difficult to bleed due to the angled location of the slave cylinder position on the gearbox. This can trap pockets of air and also makes back bleeding very difficult. An easier method of bleeding the system is to jack up the vehicle at the front end and secure with axle stands, this may help release the trapped air. Air bubbles can also attach themselves to the spring inside the slave cylinder, so in order to dislodge any bubbles during pressure bleeding lightly tap the body of the slave cylinder.

Technical Note 65

Nissan Primera

Heavy Clutch Pedal:

A very heavy pedal, one which feels notchy and is just clearing on the above vehicle is a sign that the guide tube is worn. This can be caused due to a lack of lubrication in the annular groove. Replace the guide tube and lubricate the bearing.

Technical Note 66

Renault Clio 1.4, 1.9 Diesel

Clutch Fitment:

It is recommended by Renault to remove the engine and gearbox in order to replace the clutch assembly on the above models. However, by moving the gearbox into the nearside wheel arch it is possible to avoid removing the engine. First remove the reverse light switch and the speedometer drive from the gearbox in order to prevent fouling or damage whilst moving the gearbox. Lower and support the subframe on the nearside and disconnect the offside driveshaft from the gearbox. Remove the nearside wheel arch liner, the driveshaft and the stabilizer bar and disconnect the brake caliper. Then manoeuvre the gearbox into the wheel arch area. This will allow just enough room to replace the clutch and check the release mechanism.

Technical Note 67

Land Rover Range Rover

Gearbox Alignment:

On the above vehicle it is essential to ensure that the locating dowels are present, and correctly fitted before refitting the gearbox. The dowels should be fitted to the gearbox (not the engine) as the gearbox location holes are blind, to prevent the dowels sliding out of location during gearbox installation. These dowels accurately locate the gearbox to the engine in order to minimise the amount of misalignment between the flywheel and gearbox input shaft/release bearing guide tube. Angular misalignment can also occur due to a bent engine back plate, cracked bell housing, worn gearbox bearings, burrs, debris trapped between the mating faces of the engine and gearbox or any other reason that causes the gearbox to be out of square with the engine. Misalignment causes side loading of the clutch driven plate and will eventually lead to premature wear of the spring fingers, failure of the driven plate or release bearing. In some instances it may even lead to the driven plate centre hub being torn away at the segments and an immediate loss of drive.

Technical Note 68

Renault 21 (Fitted Pull Type Clutch)

Refitting The Gearbox:

The gearbox on the above vehicle can be awkward to refit after replacing the clutch assembly. This is because a second person is required to hold the release lever in position whilst location is made onto the release bearing. To make the job easier put an elastic band around the end of the of the release lever on the outside of the gearbox, pulling the release lever in towards the centre of the gearbox. Attach the other end of the band to a convenient place on the outer gearbox casing. Turn the release bearing on the cover assembly to align with the release fork, then as you refit the gearbox, the release fork should locate itself on the bearing. Secure the gearbox with 2 bell housing bolts and ensure the release fork is located correctly. Remove the elastic band and complete the gearbox installation.