TECHNICAL NOTES

The following information is for reference & guidance only.

ASSORTED MANUFACTURERS

Self-Adjusting Clutches

Some vehicles are 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.

TECHNIK'A supply a range of SAC Replacements (which are conventional kits to use instead of the SAC kit). Due to the demands of some vehicles these are only recommended on models specified in the catalogue. These are fitted and work as normal clutches and do not self-adjust.

Flywheel & Service Kit Compatibility

TECHNIK'Aservice kits are specially designed and manufactured for use with our solid conversion flywheel to ensure optimal clutch performance.
Due to significant physical design improvements, some kits are incompatible to other flywheel brands and are not interchangeable.

Details of these kits are given in the SMF buyer's guide. Note any compatibility warnings before buying a service kit.

AUDI

Various Models Reverse-Mechanism Clutch Kits

Some models in the AUDI range utilise a special type of «reverse clutch» instead of a regular diaphragm clutch. Instead of a release bearing, the clutch mechanism is operated by a rod which pushes a release plate into the back of the cover.

These kits are not supplied with a conventional release bearing. There is a small bearing located at the other side of the gearbox which is not subjected to same wear as regular thrust bearing and therefore seldom needs to be replaced.

Aftermarket suppliers do not normally include these bearings with the kits but you should you need one you can order it as part number NHD4567.

Various Models Engine Code & Number Identification

On many Audi models 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. Most engine codes can now be found remotely via VRM lookup or VIN decoding applications.

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 awkward, 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.

CITROEN

C1 Clutch Size Difference

TECHNIK'A have upgraded the parts in this kit to ensure better performance and longer usage . For this reason you will find that although the original clutch may have measured 180mm our aftermarket version is in fact 190mm. This is a much more durable clutch unit.

This does not affect fitment unless the original plate has worn a recess into the flywheel. If this has happened we recommend machining the flywheel surface to ensure it is flat or replacing the flywheel. An uneven flywheel surface may result in premature wear and/or damage.

Most leading aftermarket suppliers are now using a 190mm clutch unit for this model instead of the 180mm kit.

Relay (Jumper)(Fitted ME5T Gearbox) Gear Lever Adjustment

The Relay/Jumper 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.

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.

FORD

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.

Fiesta 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.

Fiesta Gearbox Idle Rattle on 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 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.

Escort, Fiesta, Orion Noise From Release System / Lack Of Release Bearing Clearance

The clutch release arm cross-shaft 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).

Escort, Fiesta, Orion Non-Clearance and Judder Problems on 1.4 & 1.4i models after 1990

The cause of the above complaint has been found to be wear in the plastic bushes situated in the gearbox bell housing 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.

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.

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.

Fiesta, KA (95-02)

Some early Ford models were fitted with a threaded pipe connection which would screw onto the hydraulic pipe. Later models were fitted with a plug-in fitment for quicker installation.

The original CSC is no longer sold. When encountering a Fiesta or KA with the old screw-fitting you must change the pipe to suit the new CSC.

OE Reference is 1095275 for the Fiesta and 1057768 for the KA (based on UK spec vehicles).

Fiesta, Mondeo (95-02) Special Tool

When dismantling the engine, gearbox, clutch etc. on the above vehicles it is necessary to remove the front sub frame. When refitting the sub frame 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 sub frame relative to the chassis will cause displacement of the front axle geometry and thus increased tyre wear. The sub frame can be quickly aligned on reassembly using the bolt set available from Ford (Part No 15-097).

Mondeo Mk2 (96-00) Modified Gear change

To improve the ease of changing gear on the above model, the gear change mechanism has been modified. The MTX75 gearbox has been fitted with a cable operated gear change the same as the one fitted to the Galaxy. The gear change shaft is no longer required, nor the gear change shaft stabiliser. The selector cable (marked black) and the gear change 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.

PEUGEOT

107 Clutch size

TECHNIK'A have upgraded the parts in this kit to ensure better performance and longer usage . For this reason you will find that although the original clutch may have measured 180mm our aftermarket version is in fact 190mm. This is a much more durable clutch unit.

This does not affect fitment unless the original plate has worn a recess into the flywheel. If this has happened we recommend machining the flywheel surface to ensure it is flat or replacing the flywheel. An uneven flywheel surface may result in premature wear and/or damage.

Most leading aftermarket suppliers are now using a 190mm clutch unit for this model instead of the 180mm kit.

205, 309, 405 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.

RENAULT

Various Models (Also Affects Renault-Built Nissan & Dacia Models)

Due to design changes & multiple gearbox types throughout the Renault, Nissan and Dacia ranges you may be presented with a choice of hydraulic CSCs for a vehicle. The criteria is normally the transmission code found on the gearbox box itself. As this information is not readily available through vehicle registration look-up you may need to keep a reference of the different CSCs and their critical differences using the data below.

Be aware that in certain cases, direct comparison with the old unit may be the only way to ensure you have the correct CSC for the model.

Multiple design slave cylinders installed by vehicle manufacturers
The diameter of the hydraulic connections are the main difference between them.

Nissan Almera II, Micra III, Note, Qashqai, Tida
Dacia Duster, Logan, Logan Express/Pick up/MCV, Sandero
RENAULT Clio II/III/Grandtour, Fluence, Kangoo, Rapid, Laguna II, Mégane II/III, Modus, Scénic Grand Scénic II, Thalia, Twingo

When replacing cylinders, please ensure the diameters of the hydraulic connections on the old and new parts match.
If the wrong hydraulic connection is installed, it will cause leaks and system failure.

Clio Clutch Fitment on 1.4 & 1.9 Diesel engines

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 sub frame 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 calliper. Then manoeuvre the gearbox into the wheel arch area. This will allow just enough room to replace the clutch and check the release mechanism.

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 sub frame eyes toward the back of the vehicle. The cable can then be connected to the pedal and then the release lever.

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.

SEAT

Various Models Reverse-Mechanism Clutch Kits

Some models in the SEAT range utilise a special type of «reverse clutch» instead of a regular diaphragm clutch. Instead of a release bearing, the clutch mechanism is operated by a rod which pushes a release plate into the back of the cover.

These kits are not supplied with a conventional release bearing. There is a small bearing located at the other side of the gearbox which is not subjected to same wear as regular thrust bearing and therefore seldom needs to be replaced.

Aftermarket suppliers do not normally include these bearings with the kits but you should you need one you can order it as part number NHD4567.

SKODA

Various 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 indents formed in the release arm by the pivots for the release bearing.

Various Models Release Mechanism Adjustment

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.

Various Models Reverse-Mechanism Clutch Kits

Some models in the SKODA range utilise a special type of «reverse clutch» instead of a regular diaphragm clutch. Instead of a release bearing, the clutch mechanism is operated by a rod which pushes a release plate into the back of the cover.

These kits are not supplied with a conventional release bearing. There is a small bearing located at the other side of the gearbox which is not subjected to same wear as regular thrust bearing and therefore seldom needs to be replaced.

Aftermarket suppliers do not normally include these bearings with the kits but you should you need one you can order it as part number NHD4567.

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.

TOYOTA

Toyota Aygo Clutch size

TECHNIK'A have upgraded the parts in this kit to ensure better performance and longer usage . For this reason you will find that although the original clutch may have measured 180mm our aftermarket version is in fact 190mm. This is a much more durable clutch unit.

This does not affect fitment unless the original plate has worn a recess into the flywheel. If this has happened we recommend machining the flywheel surface to ensure it is flat or replacing the flywheel. An uneven flywheel surface may result in premature wear and/or damage.

Most leading aftermarket suppliers are now using a 190mm clutch unit for this model instead of the 180mm kit.

VAUXHALL (includes Opel)

Various Models Clutch Pedal Adjustment

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.

Various Models Flywheel Recess-Depth

Many Vauxhall models will have two different clutches listed for them, normally divided by engine or chassis number. This is due to a design change in the OE flywheel. All models after the changeover will have a slightly deeper recessed flywheel (usually 2mm deeper) and therefore the clutch installed must have a pressure plate to match this alteration or the clutch will slip.

By following the engine or chassis number guidelines you should be able to choose the correct clutch but where possible get a measurement of the flywheel depth as even some of the earlier vehicles have been retro-fitted with the newer flywheel.

Earlier 19mm Deep Flywheel

Later 21mm Deep Flywheel

Note: Visible rim machined into OE versions of 21mm deep Flywheel

Various Models Gearbox Identification for F13 or 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.

Various Models Gearbox Identification for F13/17 or F23 Gearbox

On F13/17 gearboxes the gearstick reverse position is away from the driver. On F23 gearboxes the it is towards the driver.

The gearbox type is also stamped on the bell housing. Additionally you may obtain the information from some VIN Decoding sites online.

Various Models TKA840011

Due to O/E modifications in the design of TKA840011, some Opel/Vauxhall models are fitted with a plastic body and elbow bracket in place of a conventional hydraulic pipe. Until the original unit is removed from the vehicle – the cylinder design cannot be identified in advance.

The plastic body design with elbow bracket has a male to male adapter, and the steel body design is fitted with a conventional hydraulic pipe. Due to their physical differences – they are not compatible.

Our TKA840011 slave cylinder is supplied in a complete kit , conventional pipe and plastic location insert included.

This cylinder kit is a suitable physical replacement for either design, and will eliminate any potential fitment delay in identifying and replacing the concentric slave cylinder.

Original Metal Design With Pipe ***Quick-Fit OE Design With Adapter***

The pipe and adapter are available for purchase as part number TKA840011

Astra (98-05) Pedal Vibration at 2000-2800rpm on 2.0 engine

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.

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.

VOLKSWAGEN

Various Models TKA810047 clutch size

TECHNIK'A have upgraded the parts in this kit to ensure better performance and longer usage . For this reason you will find that although the original clutch may have measured 200mm our aftermarket version is in fact 210mm. This is a much more durable clutch unit.

This does not affect fitment unless the original plate has worn a recess into the flywheel. If this has happened we recommend machining the flywheel surface to ensure it is flat or replacing the flywheel. An uneven flywheel surface may result in premature wear and/or damage.

Various Models Reverse-Mechanism Clutch Kits

Some models in the Rover and VW range utilise a special type of «reverse clutch» instead of a regular diaphragm clutch. Instead of a release bearing, the clutch mechanism is operated by a rod which pushes a release plate into the back of the cover.

These kits are not supplied with a conventional release bearing. There is a small bearing located at the other side of the gearbox which is not subjected to same wear as regular thrust bearing and therefore seldom needs to be replaced.

Aftermarket suppliers do not normally include these bearings with the kits but you should you need one you can order it as part number NHD4567.

Golf Clutch Slip on 1.5 - 1.8 engines

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 = Elring 758.876 or VW Part No 020-311-108A; Bronze Bush = VW Part No 020-311-107C:

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 of fit a reinforced panel to the bulkhead to alleviate this condition.

COMPONENTS OF THE CLUTCH SYSTEM & COMMON CAUSES OF CLUTCH FAILURE

Cover Assembly
Damage of the diaphragm fingers by the gearbox input shaft during installation and over stroked diaphragms are common causes of cover assembly malfunction. Ensure when re-fitting the gearbox that this is carried out without damaging any of the clutch components. To avoid To avoid over stroking of the diaphragm, clutch adjustment should be checked and set according to manufacturers specification. Before leaving the production facility all cover assemblies are checked for clamp loading, pressure plate lift and diaphragm run-out utilising computerised test equipment.

Clutch Plate
Clutch driven plates can become distorted during transit or more commonly during installation by 'hanging' of the gearbox on the drive shaft. The risk of distortion can be minimised by the use of an alignment tool and ensuring that the gearbox is installed without hanging on the clutch units. All driven plates are individually inspected before leaving the factory and tested for run-out and overall consistency of effective thickness using specially designed spin test machines. In house computerised evaluation equipment is available to measure (in both the drive and overrun positions) the torsional damping characteristics of the driven plate.

Release Bearing
Although it is not possible to fully check the operation of the release bearing when it is removed, it is false economy to re-use the old bearing as this often results in premature clutch failure. Therefore we recommend that it is always replaced. Fitment of the old component can also give excessive bearing noise and abnormal diaphragm finger/release lever wear. The bearing carrier should slide freely on the bearing quill, apply a recommended high temperature grease sparingly.

Clutch Cables
It is recommended that clutch cables are replaced when clutch components are renewed. Cables often stretch beyond adjust limits resulting in non clearance. Ensure that the correct cable is fitted and adjusted in accordance with the manufacturers specification.

Flywheel
The flywheel is often ignored during clutch replacement but should always be checked before refitting new clutch components. Uneven facing wear on the flywheel side of the drive plate can indicate severe flywheel wear, usually observed as a badly grooved mating surface.
Hot spots and thermal cracks indicate the clutch has been running at high temperatures. Any marking or grooves on the mating surface should be removed or if excessive the flywheel should be replaced. If the flywheel is to be machined the original overall dimensions must be maintained. The cover assembly mounting flange must be machined down by the same amount as the contact surface of the flywheel.
The opportunity should be taken to check the flywheel ring gear.

Spigot Bearing/Bush
The spigot bearing can cause severe damage if worn as it may allow the gearbox to 'float'. This can result in excessive noise and misalignment leading to damage of the clutch components. A worn spigot bearing can also cause unbalance resulting in vibration. It is good practice to replace the spigot bearing/bush during clutch replacement.

Engine/Gearbox Oil Seals
Leaking oil seals are a major cause of clutch failure, allowing contamination of the clutch components. A small amount of contamination will affect the efficient operation of the clutch. Always check for traces of oil and replace any suspect oil seals.

Release Fork/Release Mechanism
A substantial amount of the clutch release stroke can be lost if wear on the release mechanism is not corrected. All parts such as release fork, cross arm, bushes, pivot blocks/pins should be checked and replaced if any wear is located. Always ensure the free operation of the linkage.

Release Bearing Quill
Wear on the side of the quill can affect the release bearing travel causing grab or chatter of the clutch and off centre release bearing contact with the diaphragm. Ensure that the quill is centred and concentric with the gearbox input shaft.

Engine & Gearbox Mountings
Worn or damaged parts can cause vibration and judder often mistaken for clutch malfunction. Components showing any signs of wear or damage should be replaced.

Hydraulic Systems
Inefficient operation of the clutch and non-disengage problems can be caused by old, insufficient or air impregnated hydraulic fluid.
Check operation of hydraulic components such as master and slave cylinders, examine for leaks and replace any substandard parts.
Flush the system and bleed after clutch replacement.

Automatic Adjust Mechanisms
Faulty auto adjust systems can cause excessive clutch slip, diaphragm wear and non engage problems. When these systems become inefficient it may be possible to replace with a manual adjustment. Ensure that cables are de-adjusted when new components are fitted and reset to vehicle manufacturers specifications.

Clutch Adjustment
As there are many differing specifications for adjustment always refer to vehicle manufacturers instructions when setting this. Some vehicles require the release bearing to run in constant light contact with the cover assembly diaphragm, where others demand significant free play. Overall clutch adjustment is critical in obtaining efficient operation of the clutch, incorrect adjustment can lead to clutch slip, overheating, excessive diaphragm wear and release carrier contact with the diaphragm. These faults cause abnormal wear, broken components and premature clutch life.

CLUTCH REPLACEMENT GUIDE

A) ALWAYS REPLACE THE COMPLETE CLUTCH, IE COVER ASSEMBLY, DRIVEN PLATE & RELEASE BEARING.

B) ENSURE THAT THE CORRECT PARTS ARE OBTAINED, CHECK AGAINST THE ORIGINAL UNITS BEFORE FITTING.

C) PLACE THE DRIVEN PLATE INSIDE THE COVER ASSEMBLY PRESSURE PLATE THE CORRECT WAY ROUND TO ENSURE THAT NO FOULING OCCURS BETWEEN THE TWO COMPONENTS.

D) ALWAYS USE A CLUTCH ALIGNMENT TOOL.

E) NEVER ALLOW THE WEIGHT OF THE GEARBOX TO HANG ON THE CLUTCH COMPONENTS.

1) Check the spigot bearing/bush thoroughly for excessive wear and replace if necessary.

2) Examine all components for signs of oil contamination, check and replace if necessary engine and gearbox oil seals.

3) Examine the old clutch plate splines for signs of excessive wear or damage, this may indicate previous gearbox misalignment.

4) Check the flywheel for run-out, scoring or cracking and excessive wear, abnormal and excessive clutch plate wear will occur unless this is corrected. If machining of the flywheel is undertaken ensure that the same amount of material is removed from both friction and mounting surfaces. Flywheels with excessive wear should always be replaced.

5) Ensure that the clutch release mechanism operates freely, examine all release bearing mounting components (clutch release arm, cross shaft, bushes, bearings etc.) for excessive wear or damage. Replace all substandard parts.

6) Ensure that all contact surfaces are in good condition, and that oil or grease is not allowed to contaminate the contact surfaces. Always remove any protective coating that may be applied to the clutch cover pressure plate.

7) Ensure that the driven plate is not damaged prior to fitting, lightly grease the spline and ensure that the driven plate slides freely on the gearbox spline. Take care not to damage the spline on fitting.

8) Ensure that the driven plate is fitted the correct way round.

9) Use an alignment tool to position the driven plate centrally during fitment, do not remove the tool until all the cover assembly bolts have been tightened.

10) When re-fitting the cover assembly to the flywheel the mounting bolts must be tightened diagonally and not in rotation, ensure that the cover is located correctly onto the dowels and that any alignment marks or slots are matched correctly.

11) Before re-fitting the gearbox ensure that all the gearbox dowels are in place and that they are not excessively worn. Ensure that any dowel bolts are replaced in the correct location.

12) When offering the gearbox up to the engine take care not to damage the diaphragm fingers, release levers or release plate with the gearbox input shaft.

13) Ensure correct release bearing/clutch pedal adjustment, ensure correct pre-load with constant running types. Always re-set any self adjusting mechanisms that may be fitted.

14) Check the condition of engine and gearbox mountings, replace if necessary. Ensure there is no excessive backlash in the universal joints or the rear axle.

15) Check the condition of hydraulic systems and replace any substandard parts.

16) Check the condition of the clutch cable and ensure that it has not stretched or frayed at any point, replace any substandard parts.

NOTE: We recommend that the clutch cables are replaced whenever clutch components are renewed.