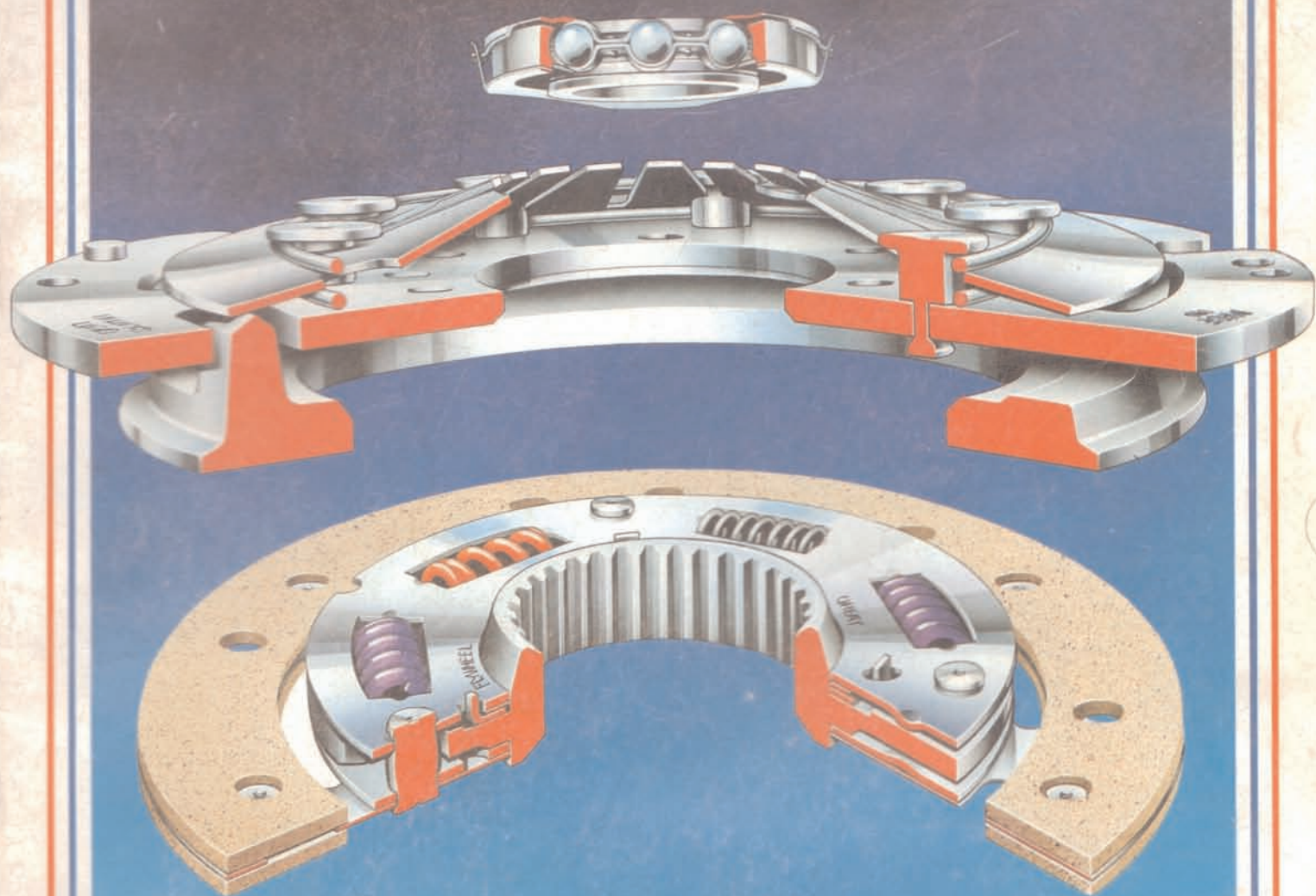




**THE *QH* GUIDE
TO CLUTCH PROBLEM DIAGNOSIS**



100% all new. Every single part of Quinton Hazell's vast range of clutch components is manufactured from 100% all new materials. At our specialist factory stringent quality control is applied at every stage of manufacture, from the receipt of raw materials to the despatch of the finished clutch.

This is your guarantee that there will be no compromise in the performance or reliability of QH clutches.

DIAPHRAGM SPRING MANUFACTURE



BURST CHAMBER



Investing in the future. Recent investment of over £3million in production technology and test equipment has made the Quinton Hazell clutch factory at Redditch one of the most advanced in Europe. We even manufacture our own diaphragm springs and computer test each one to ensure they meet stringent quality standards. And our case hardening furnaces add extra toughness to the wear sensitive surfaces in the cover and driven plate.

SPLINE BROACHING



QUALITY CONTROL

Computerised production control. The latest technology has been integrated into all areas from design and development through computerised production control systems to an advanced clutch testing laboratory.

Endurance testing. All aspects of clutch performance are analysed by accelerated wear/fatigue simulation, enabling QH to recreate the effects of many thousands of road miles.



ENDURANCE TESTING



The tests used include:-

- High speed stress reversals of diaphragm springs and driven plate components.
- Extended, rapid actuation of cover assemblies.
- Centrifugal burst testing of covers and plates at speeds far in excess of maximum engine r.p.m.

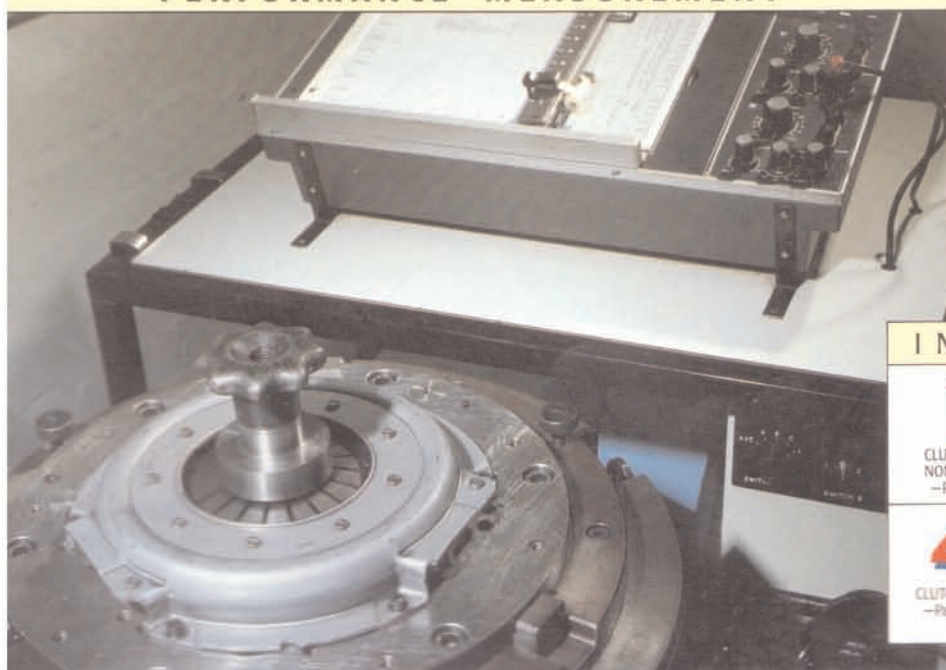
Helping solve the problems.

QH Technology can go further in helping you to diagnose the problems of clutch returns and identify the causes of failure.

The aim of this guide is to help you identify common causes of clutch failure associated with incorrect fitting and misuse and to recommend corrective action.

HOW TO USE THIS GUIDE. Problems are categorised by major symptoms e.g. clutch drag, clutch noise, etc. These are, in many cases, identified by number with the mode of failure illustrated. Under each section the reason, cause and action is detailed clearly. At the end of the guide is a 'fault finding at a glance' section which you may find useful as a starting point and an index to all the problems.

PERFORMANCE MEASUREMENT



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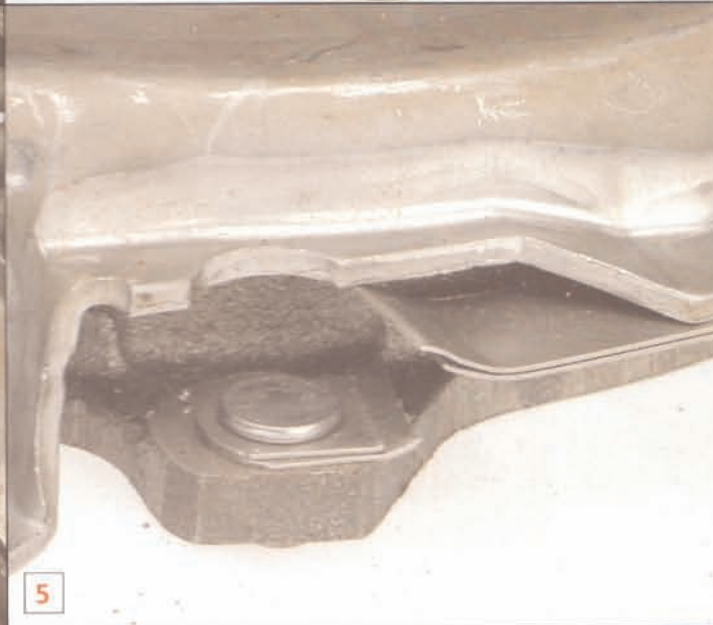
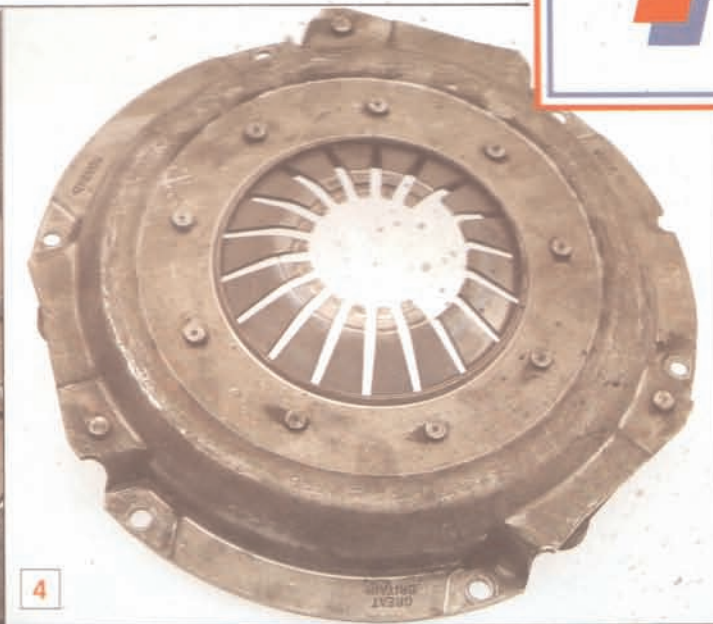
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CLUTCH DRAG/NON RELEASE.

REASON	PHOTO	CAUSE	ACTION REQUIRED
Driven plate sticking on splines	1	Splines rusty due to lack of lubrication	Clean and lightly grease
	2	Burr on splines caused by mis-alignment when fitting gearbox to engine	Remove burrs and ensure driven plate moves freely on shaft
Driven plate hub distorted	3	Worn splines on input shaft Gearbox allowed to hang unsupported during assembly	Renew input shaft Renew driven plate
Worn Diaphragm Spring Fingers	4	Release bearing seized Misalignment of Release Bearing	Renew release bearing and clutch Check alignment, renew bearing and clutch
Distorted or broken drive straps on clutch cover	5	Tow starting in too low a gear Excessive wear in transmission or driveline Incorrect part fitting for application due to direction of engine	Renew clutch
Driven plate too thick		Incorrect part number fitted	Check application in catalogue
Insufficient clearance on clutch cover		Incorrect part number fitted	Check application in catalogue
Excessive axial runout of driven plate		Driven plate damaged prior to fitting	Check runout, maximum tolerance allowed 0.5mm. If greater renew driven plate.
Seized or tight spigot bearing		Lack of lubrication or damaged when fitting	Renew spigot bearing
Insufficient travel of clutch release mechanism		Incorrect adjustment of clutch free play Air or fluid leak in hydraulic system Self adjusting cable not adjusting (or reset) correctly Worn release linkage Release arm distorted or bent Reduced pedal travel caused by extra floor mats/sound insulation placed under the pedal Clutch pedal travel overstroked	Check adjustment Check fluid level. Check for leaks and bleed system Check operation and renew if necessary Renew worn parts Renew release arm Remove obstruction Check pedal travel and adjust pedal stop
Broken Diaphragm Spring		Incorrect fitting procedure	Renew clutch cover

CLUTCH DRAG/NON RELEASE.

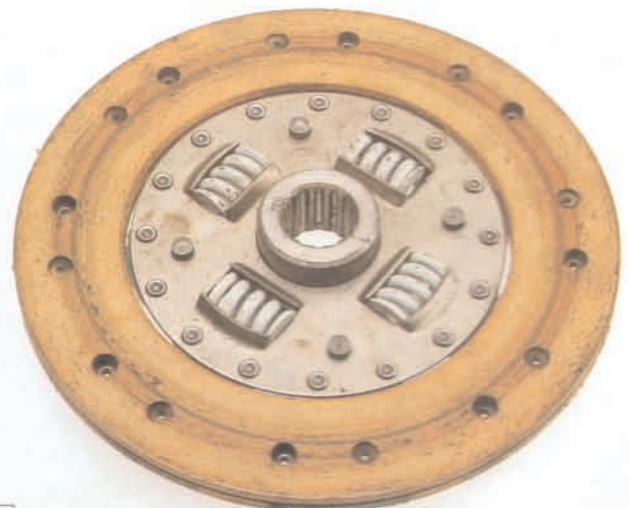
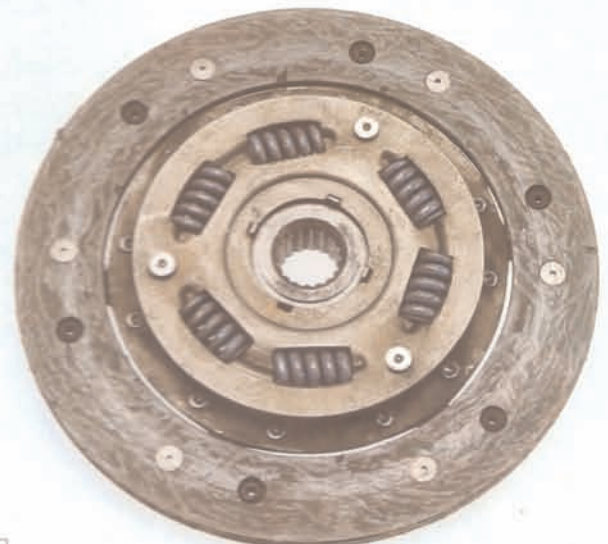
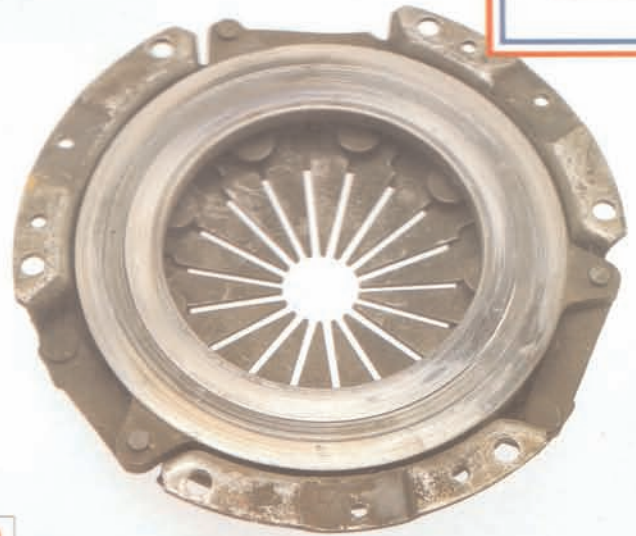
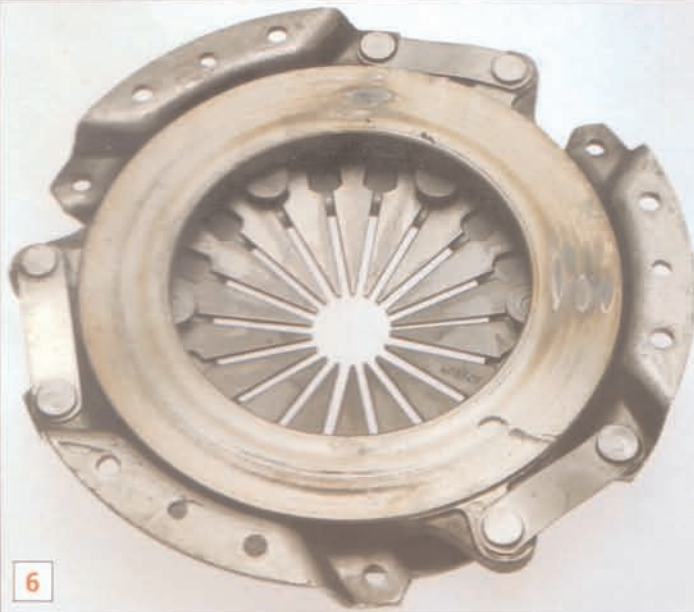
1



REASON	PHOTO	CAUSE	ACTION REQUIRED
Driven plate facing worn out	6	- Normal wear life of clutch - Driver misuse, letting foot rest on clutch pedal whilst in motion - Driver misuse, prolonged use of clutch pedal between gear changes - Sticking clutch release mechanism	Renew clutch
	7		Renew clutch
	8		Renew clutch
	9		Check release arm and pedal action
	10	- Clamp load of clutch cover reduced due to worn or weak spring. Clutch cover not changed during previous clutch renewal - Flywheel refaced on wearing surface only	Check for sticking master or slave cylinder (Hydraulic system)
	11	Clutch fitted to worn or grooved flywheel	Check for sticking clutch cable (Cable system)
		Insufficient free play in clutch release mechanism	Renew clutch
			Machine clutch cover mounting surface on flywheel by same amount
			Reface or renew flywheel
			renew clutch
			Adjust free play to correct setting

CLUTCH SLIP.

2



CLUTCH SLIP.

REASON	PHOTO	CAUSE	ACTION REQUIRED
Oil contamination on driven plate facing	12	Oil leak from engine rear main oil seal, or gearbox front oil seal	Cure oil leak, clean off flywheel and cover plate surfaces, and renew driven plate
	13	Hub spline or spigot bearing over greased during assembly	Clean off flywheel and cover plate surfaces, and renew driven plate
		Driven plate facings handled with oily hands during assembly	Clean off flywheel and cover plate surfaces, and renew driven plate
Uneven wear of driven plate	14	Flywheel surface worn and uneven	Reface or renew flywheel. Renew clutch
Broken driven plate linings	15	Incorrect driving practice (Low gear engaged at speed) Damaged on fitting	Renew driven plate

CLUTCH SLIP.

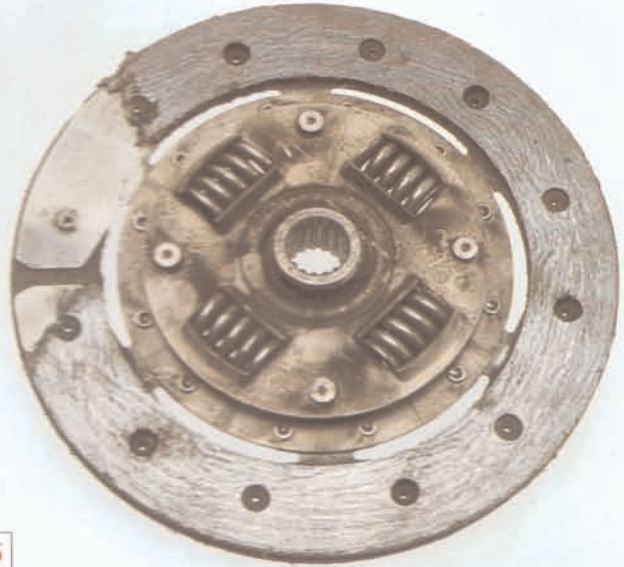
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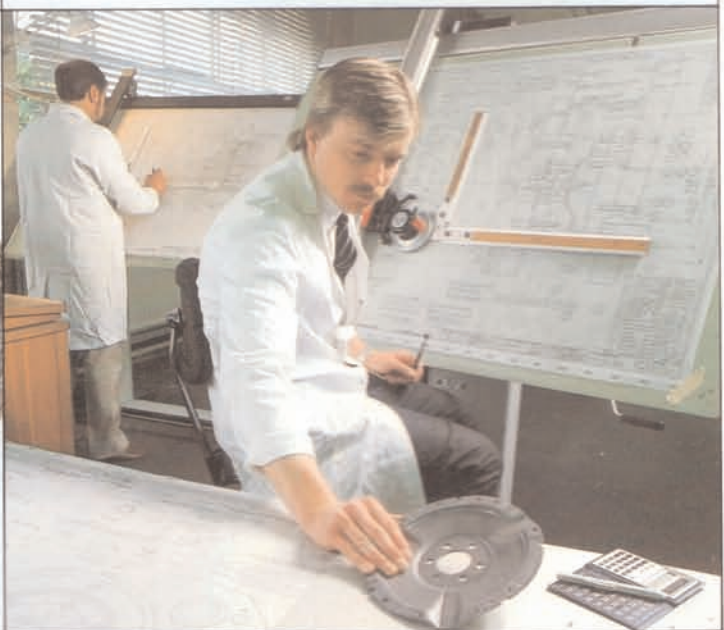
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14



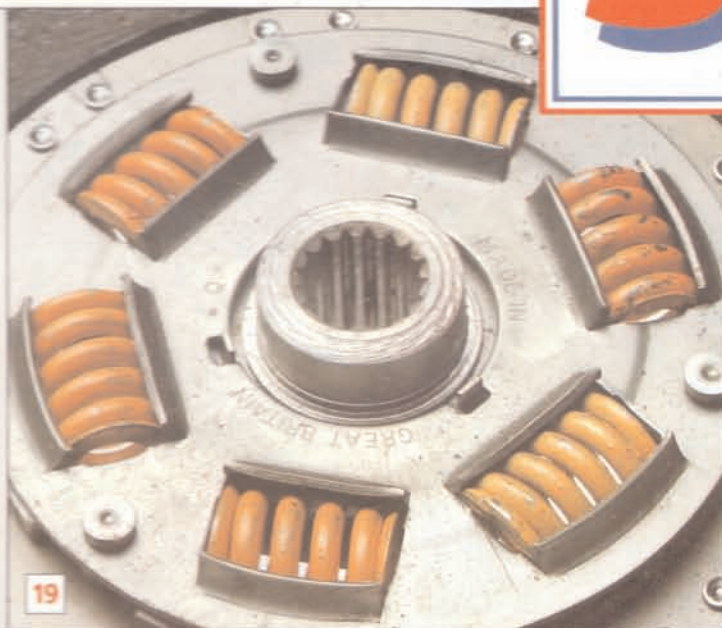
REASON	PHOTO	CAUSE	ACTION REQUIRED
Release bearing noisy	16 17	Faulty bearing Overheated due to incorrect free play adjustment Release bearing pre-load insufficient Misalignment of gearbox to engine	Renew bearing and re-adjust free play Renew bearing and re-adjust free play Adjust release mechanism to correct specification Ensure correct location of dowels if fitted
Broken torsion spring	18	Incorrect application Poor driving practice causing undue shock load in transmission	Fit correct clutch Renew driven plate
Driven plate fouling flywheel	19 20	Driven plate fitting wrong way around fouling flywheel Flywheel recess depth insufficient due to machining flywheel outside manufacturer's tolerances	Fit driven plate correctly Fit new flywheel
Worn Driven Plate splines	21	Misalignment of gearbox to engine	Renew driven plate, check input shaft splines for wear. Ensure correct alignment of gearbox.
Clutch release mechanism worn		Worn out or lack of lubrication	Renew worn parts
Spigot bearing noisy		Worn or missing bearing Worn spigot shaft Lack of lubrication	Fit new spigot bearing Fit new spigot shaft Lubricate bearing
Primary gear noise (Mini, Allegro etc)		Bush worn in primary gear sleeve Excessive end float of primary gear	Renew worn parts Reset end float to correct specification

CLUTCH NOISE.

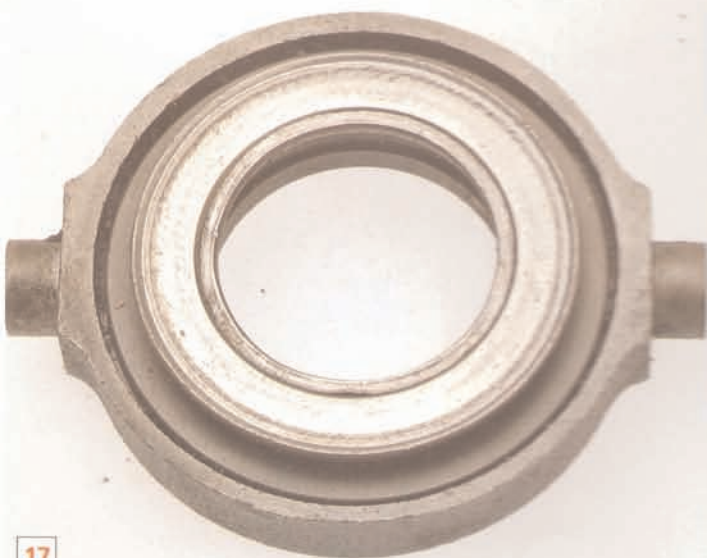
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16



19



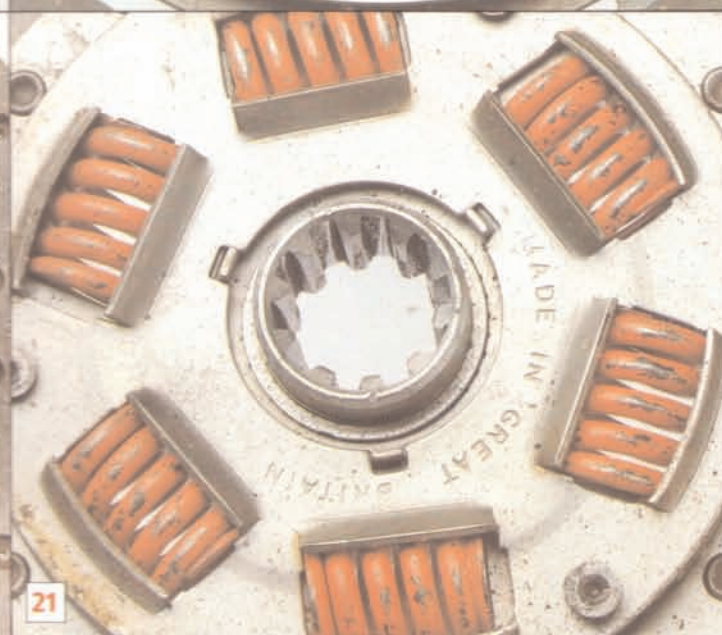
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20

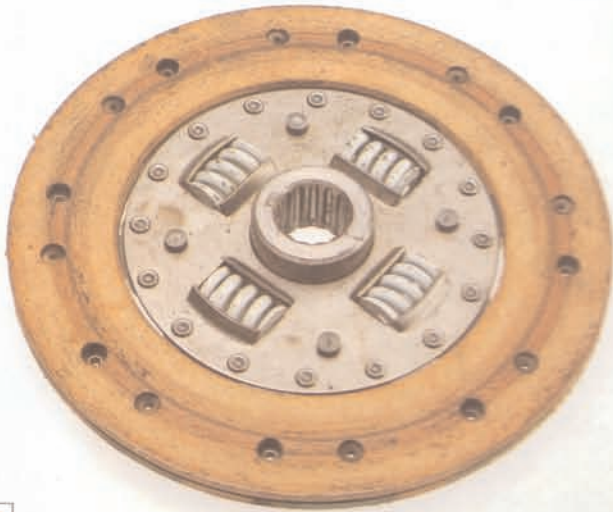


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21

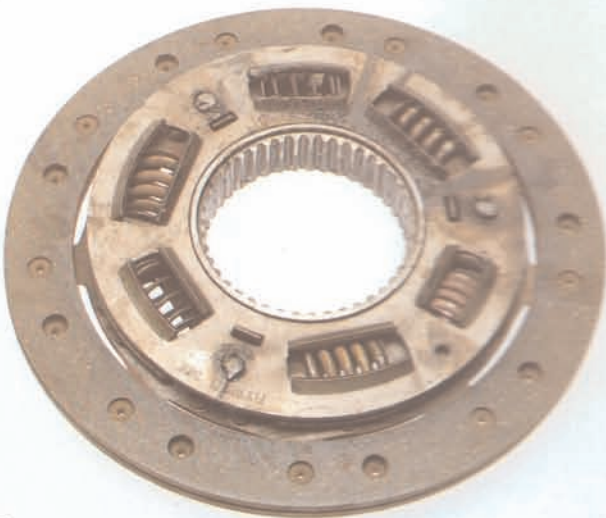
REASON	PHOTO	CAUSE	ACTION REQUIRED
Damaged driven plate facing	11	Worn or grooved flywheel	Reface or renew flywheel
Oil contamination on driven plate facing	12	Oil leak from engine rear main oil seal, or gearbox front oil seal	Cure oil leak, clean off flywheel and cover plate surfaces and renew driven plate
	13	Hub spline or spigot bearing over greased on fitting	Clean off flywheel and cover plate surfaces, and renew driven plate
Engine or gearbox mountings worn		Worn out or broken mountings Incorrectly adjusted engine stabiliser	Renew mountings Check adjustment
Incorrect facing material		Incorrect part fitted	Check application and fit correct part
Engine misfire		Engine out of tune	Rectify misfire
Stiff carburettor linkage		Siezed or worn linkage and bushes	Free off or renew worn parts



11



12



13

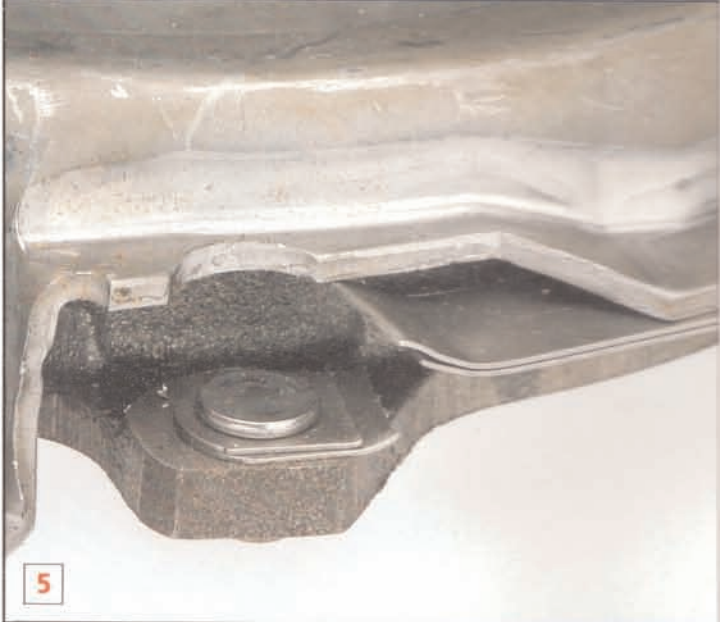
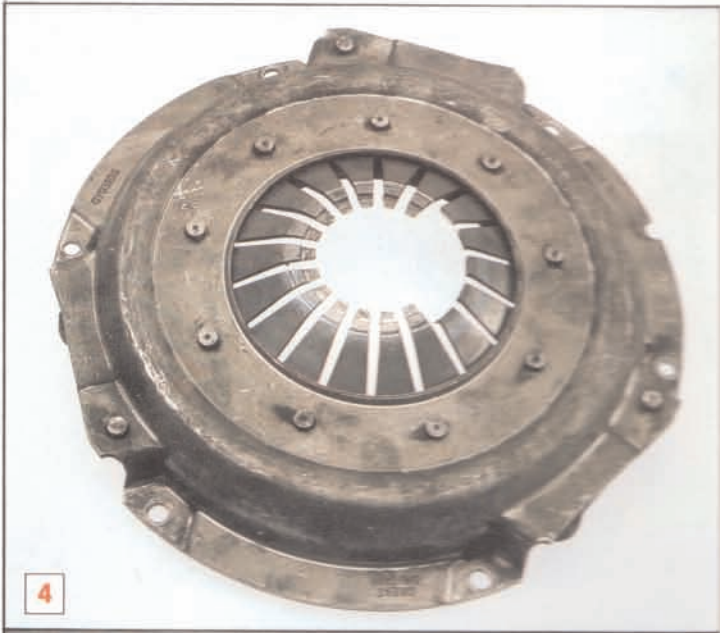


CLUTCH JUDDER.

REASON	PHOTO	CAUSE	ACTION REQUIRED
Misalignment of release bearing	4,22	Linkage, bearing incorrectly fitted	<i>Renew worn parts</i>
Distorted or broken drive straps on clutch cover	5	- Tow starting in too low a gear - Excessive wear in transmission or driveline - Incorrect part fitted for application due to direction of engine	
Spigot bearing worn		Worn or missing bearing Worn spigot shaft Lack of lubrication	<i>Fit new spigot bearing</i> <i>Fit new spigot shaft and bearing</i> <i>Lubrication bearing</i>
Clutch cover not parallel with flywheel		Assembly incorrectly bolted to flywheel	<i>Renew clutch.</i> <i>Ensure correct fitting</i>
Primary gear wear (Austin Rover front wheel drive)		Bush worn in primary gear Excessive end float of primary gear	<i>Renew worn parts</i> <i>Reset end float to correct specification</i>

CLUTCH JUDDER.

4

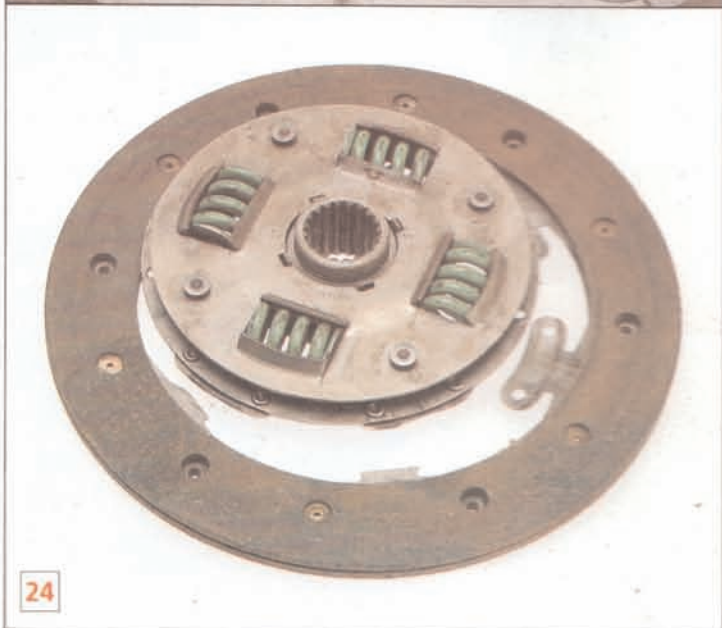
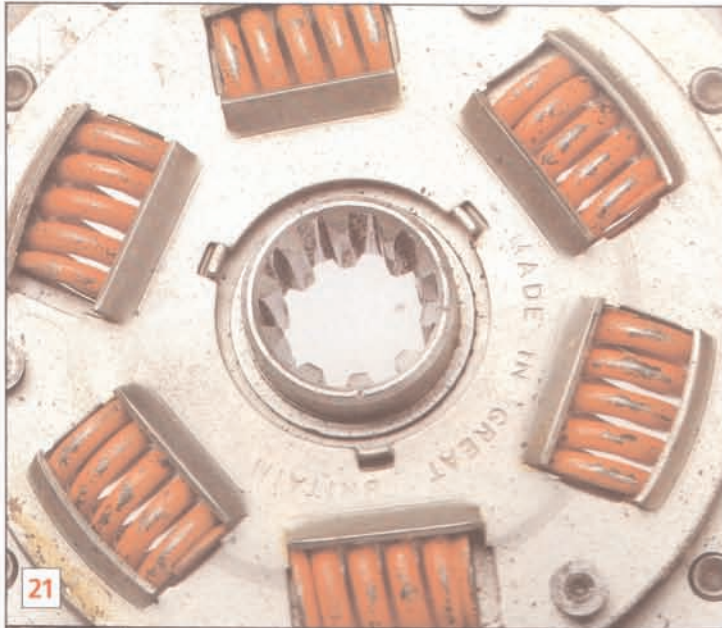


CLUTCH DOES NOT DRIVE.

REASON	PHOTO	CAUSE	ACTION REQUIRED
Splines of driven plate or spigot shaft worn	21	Misalignment of gearbox to engine	<i>Renew clutch/spigot shaft. Ensure correct alignment</i>
	21	Loose bell housing bolts	
Driven plate splines stripped (Mini, Allegro etc)	23	Damaged/badly worn bush on primary gear sleeve has allowed 'fretting' to wear away splines	<i>Renew primary gear sleeve and driven plate</i>
Driven plate hub centre broken	24	Damaged when fitting gearbox to engine due to hanging gearbox, without support, on spigot shaft	<i>Renew driven plate, ensure correct assembly procedure</i>

CLUTCH DOES NOT DRIVE.

5



FAULT FINDING AT A GLANCE



1
RUST ON DRIVEN PLATE
See page 4.



2
BURRED SPLINES
See page 4.



3
DISTORTED DRIVEN PLATE
See page 4.



7
WORN DRIVEN PLATE FACING
See page 6.



8
WEAR ON PRESSURE PLATE
See page 6.



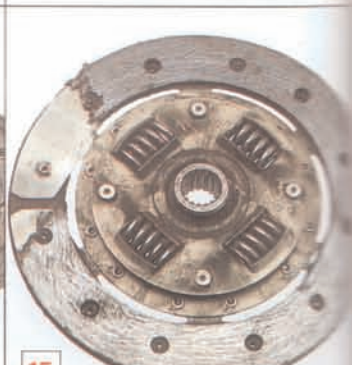
9
UNEVEN WEAR ON PRESSURE PLATE
See page 6.



13
OIL CONTAMINATION
See pages 8 and 12.



14
UNEVEN WEAR ON DRIVEN PLATE
See page 8.



15
BROKEN LININGS
See page 8.



19
DAMAGED DRIVEN PLATE HUB
See page 10.



20
TORSION SPRINGS FOULING FLYWHEEL
See page 10.



21
WORN SPLINES
See pages 10 and 16.



4 WORN DIAPHRAGM SPRING FINGERS
See page 4.



5 BROKEN DRIVE STRAPS
See pages 4 and 14.



6 BURN MARKS ON PRESSURE PLATE
See page 6.



10 BURNT DRIVEN PLATE FACING
See page 6.



11 UNEVEN WEAR ON DRIVEN PLATE FACING
See pages 6 and 12.



12 OIL CONTAMINATION
See pages 8 and 12.



16 EXCESSIVE WEAR ON BEARING FACE
See page 10.



17 HIGHLY POLISHED BEARING FACE
See page 10.



18 BROKEN TORSION SPRINGS
See page 10.



2 BROKEN CLIP ON RELEASE BEARING
See page 14.



23 STRIPPED SPLINES
See page 16.



24 BROKEN DRIVEN PLATE CENTRE
See page 16.

These are the tell-tale signs you see on typical clutches returned for your attention. To help you diagnose the causes and recommend the appropriate action simply refer to the 'action required' section on the page given under each picture.

**TEQHNOLOGY
WORKING HARDER
FOR YOU.**



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