

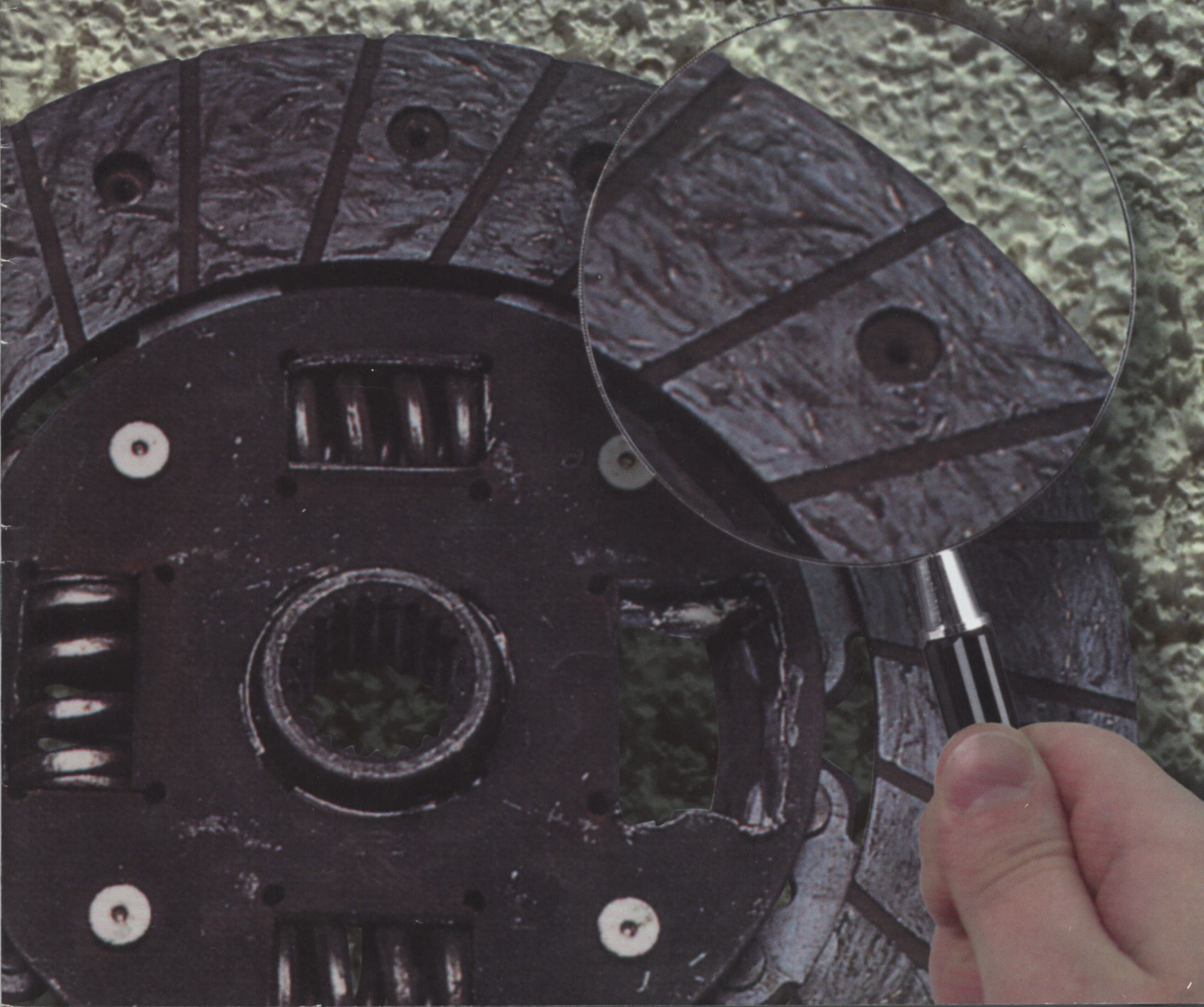
TROUBLESHOOTING GUIDE



EXEDY America Corporation
Aftermarket Division



DAIKIN
CLUTCH



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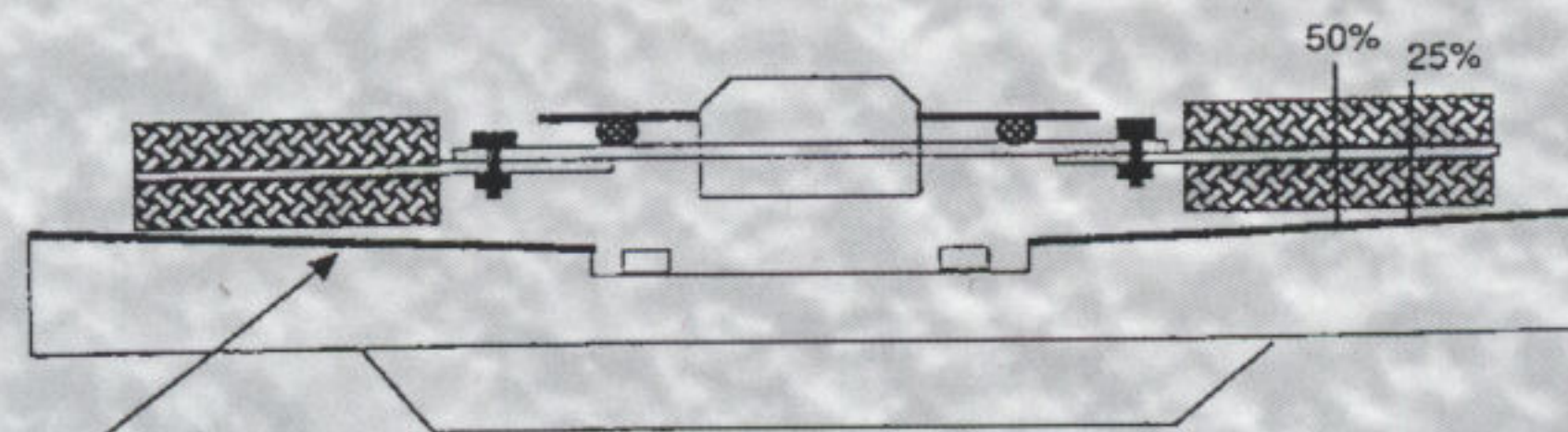


PROBLEM: Clutch shudder/chattering

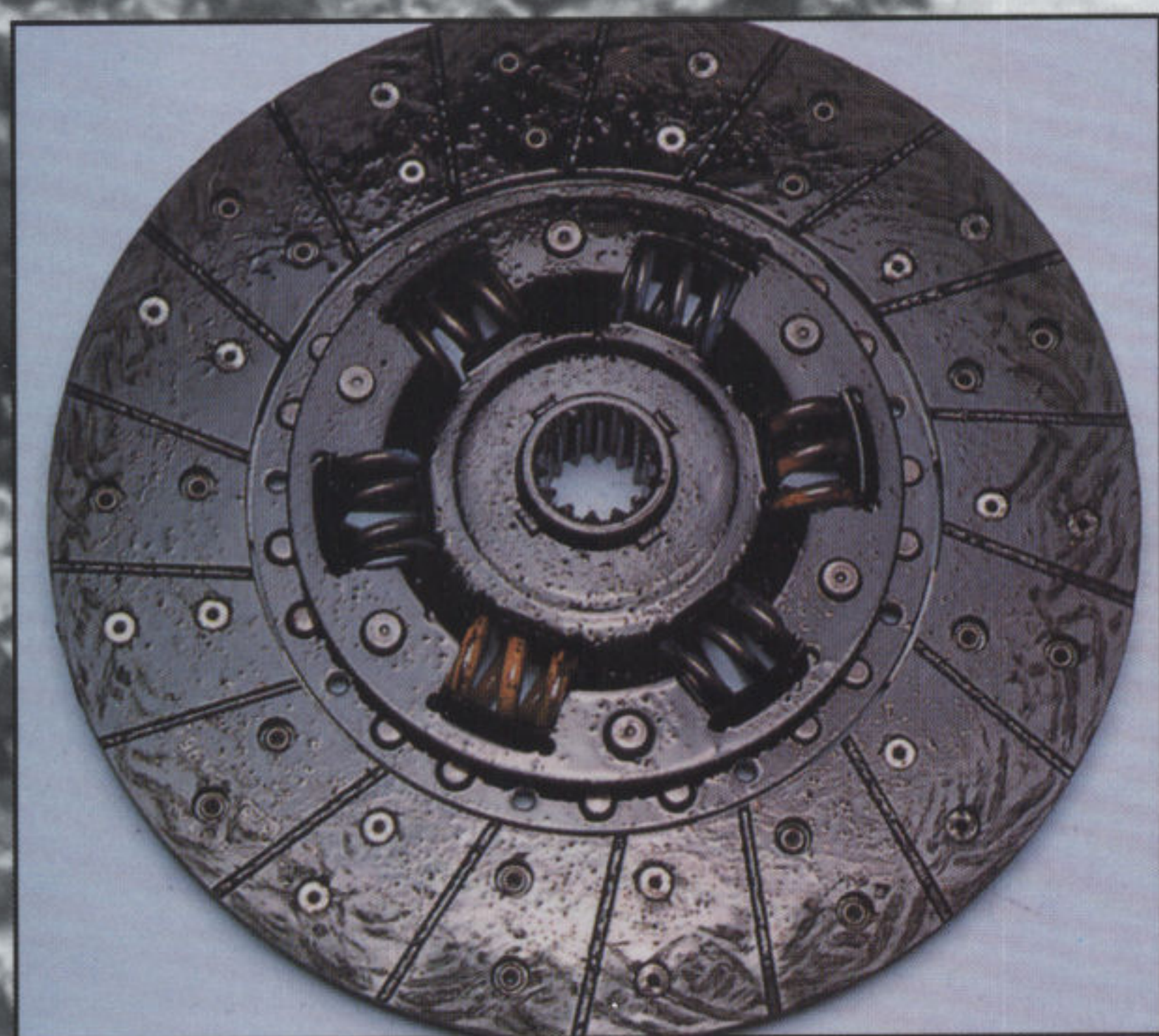
SYMPTOM: 1. Vehicle vibrates/shakes when clutch is being released, at take off.
2. Dishd and warped flywheel.

CAUSE: 1. Flywheel not even.
2. Deep scoring indentations from previous worn clutch.

SOLUTION: Always resurface flywheel before installing new clutch. Refer to figure below.



Belled out surface might look smooth but uneven.

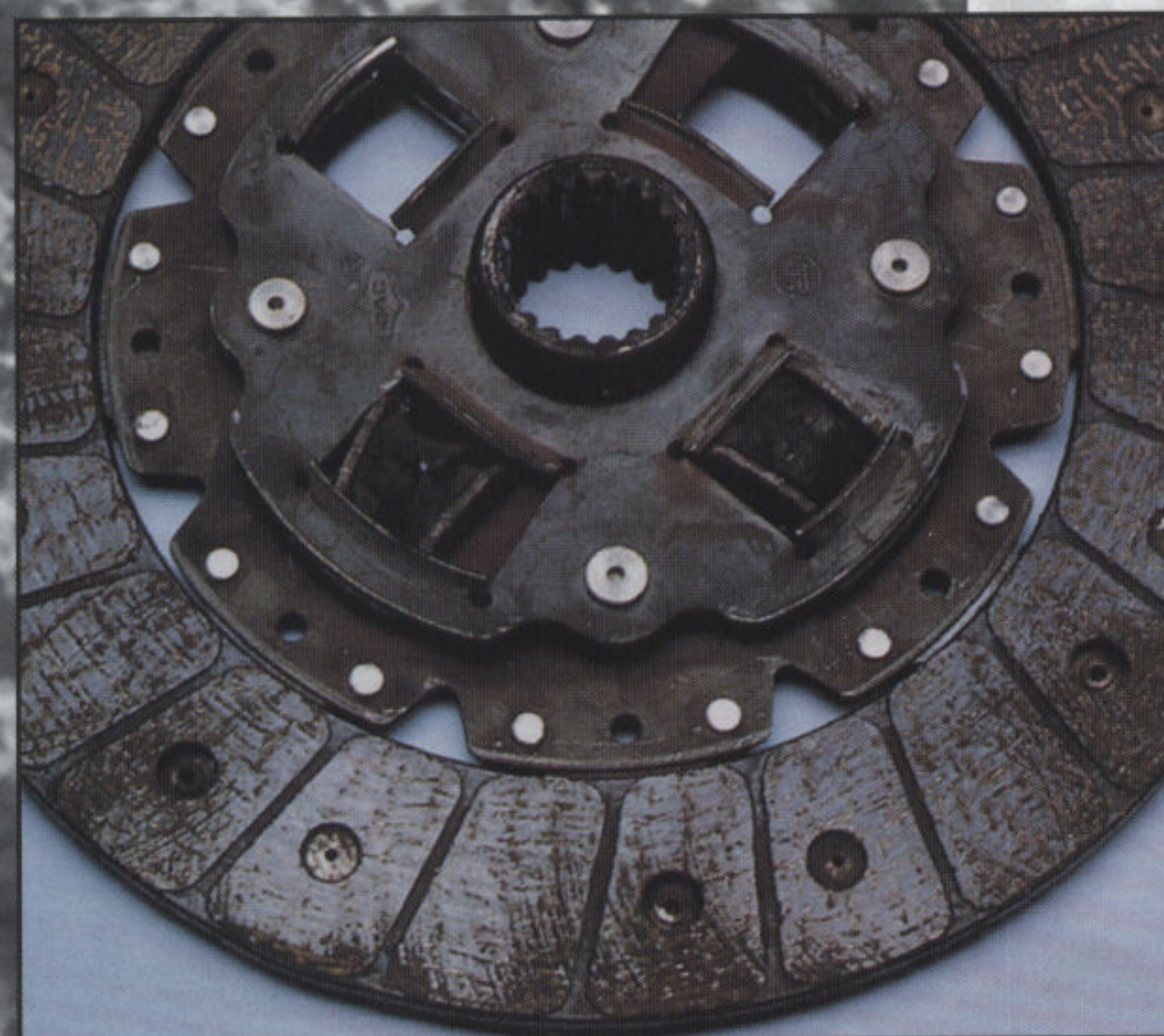


PROBLEM: Slipping clutch/shuddering/chattering clutch.

SYMPTOM: Oily facings.

CAUSE: 1. Faulty main drive oil seal.
2. Faulty rear main bearing oil seal.

SOLUTION: 1. Replace clutch disc.
2. Replace faulty oil seals.



PROBLEM: Noisy, no disengagement (rubber torque stopper type clutch disc).

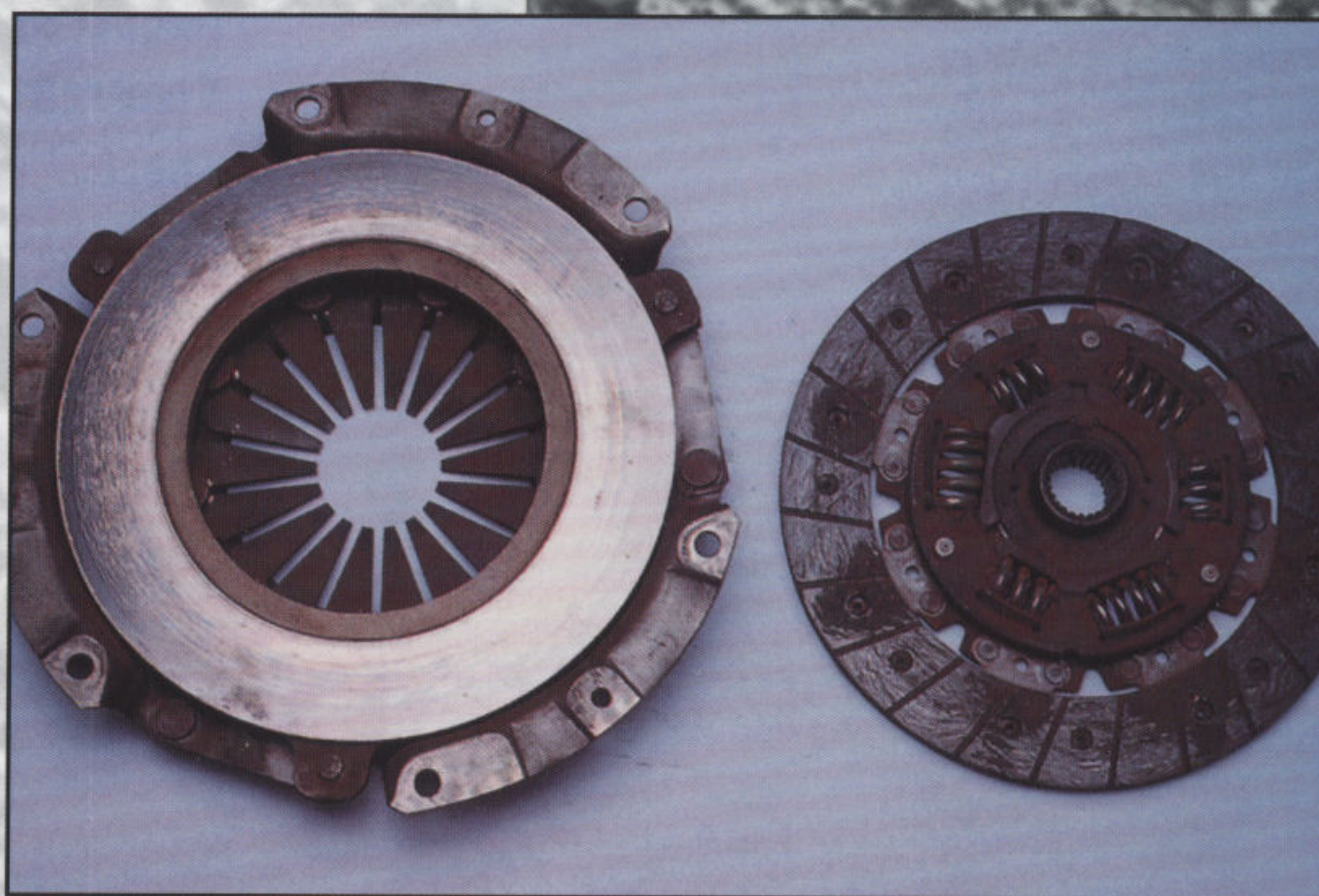
SYMPTOM: Difficult gear engagement/broken rubber dampeners.

CAUSE: 1. Use of inferior clutch disc.
2. Clutch wound past torque capacity.
3. Inferior rubber compound.

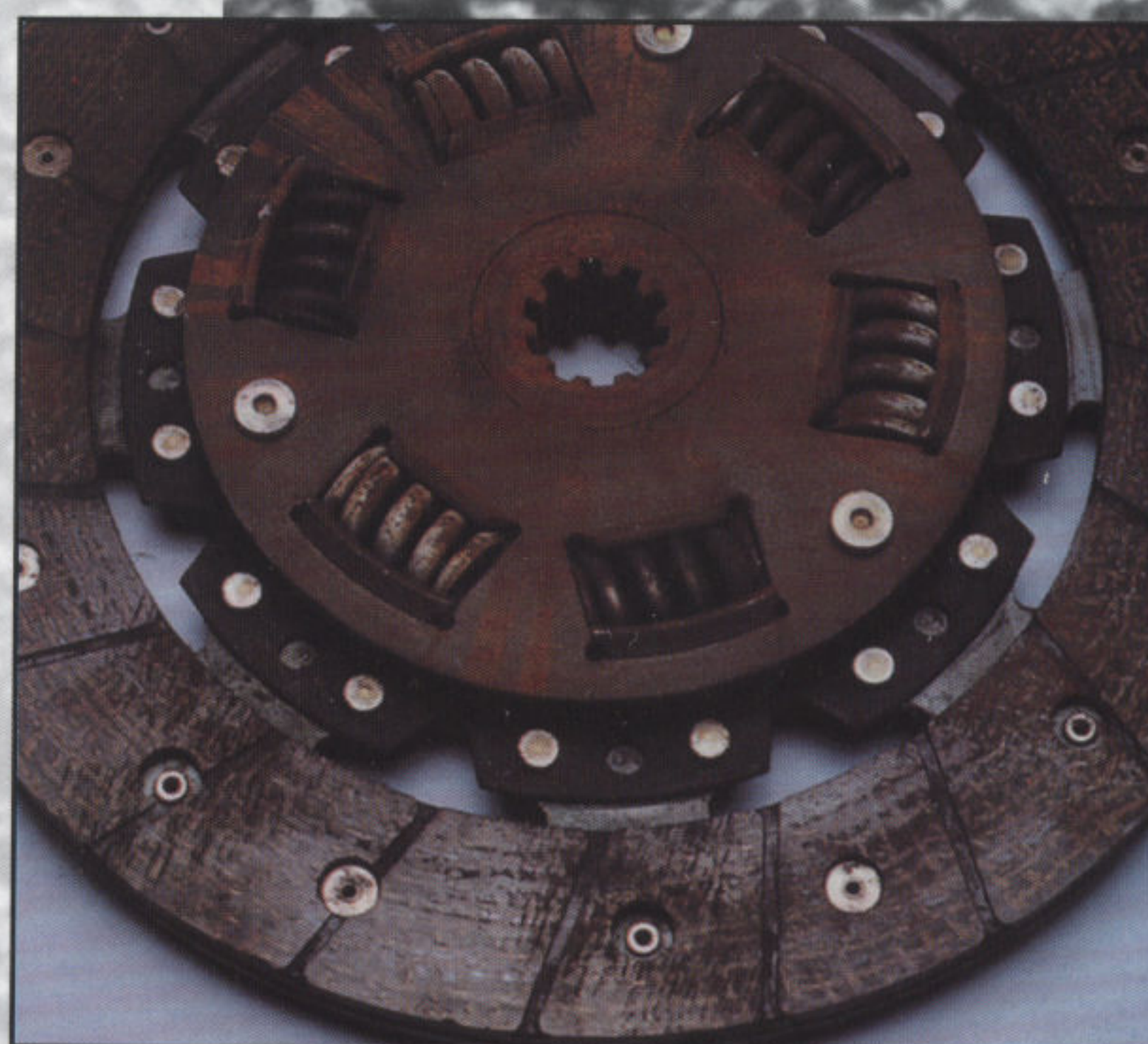
SOLUTION: 1. Fit genuine Daikin clutch.
2. Driver education.

TROUBLESHOOTING
Malfuncions of Clutch Discs

- PROBLEM:** Shuddering/chattering clutch.
- SYMPTOM:** Highly glazed to a mirror finish pressure plate cover assembly casting/red dust on clutch components.
- CAUSE:**
1. Installation error/misalignment (refer to misalignment tips).
 2. Inferior clutch facings.
 3. Diaphragm spring load not to specification.
- SOLUTION:**
1. Replace complete clutch and pilot bearing.
 2. Avoid misalignment on installation.



- PROBLEM:** Clutch shudders/chatters and/or slips.
- SYMPTOM:** Melted grease on clutch disc side plate.
- CAUSE:** On this example, the wrong grade of grease was used, affecting the co-efficiency of the disc material.
- SOLUTION:**
1. Use specified grade of grease of vehicle manufacturer (high melting point grease).
 2. Replace clutch disc with new disc unit.



- PROBLEM:** Clutch shudders/chatters and/or slips.
- SYMPTOM:** Melted grease on clutch disc side plate.
- CAUSE:**
1. Excessive grease on transmission drive.
 2. Melted grease on friction material affected co-efficiency of disc facing.
- SOLUTION:**
1. Lightly grease spline, wiping off excessive grease and ensure there is smooth sliding of clutch disc on main drive.
 2. Replace clutch disc with new disc unit.
 3. Use only high melting point grease.

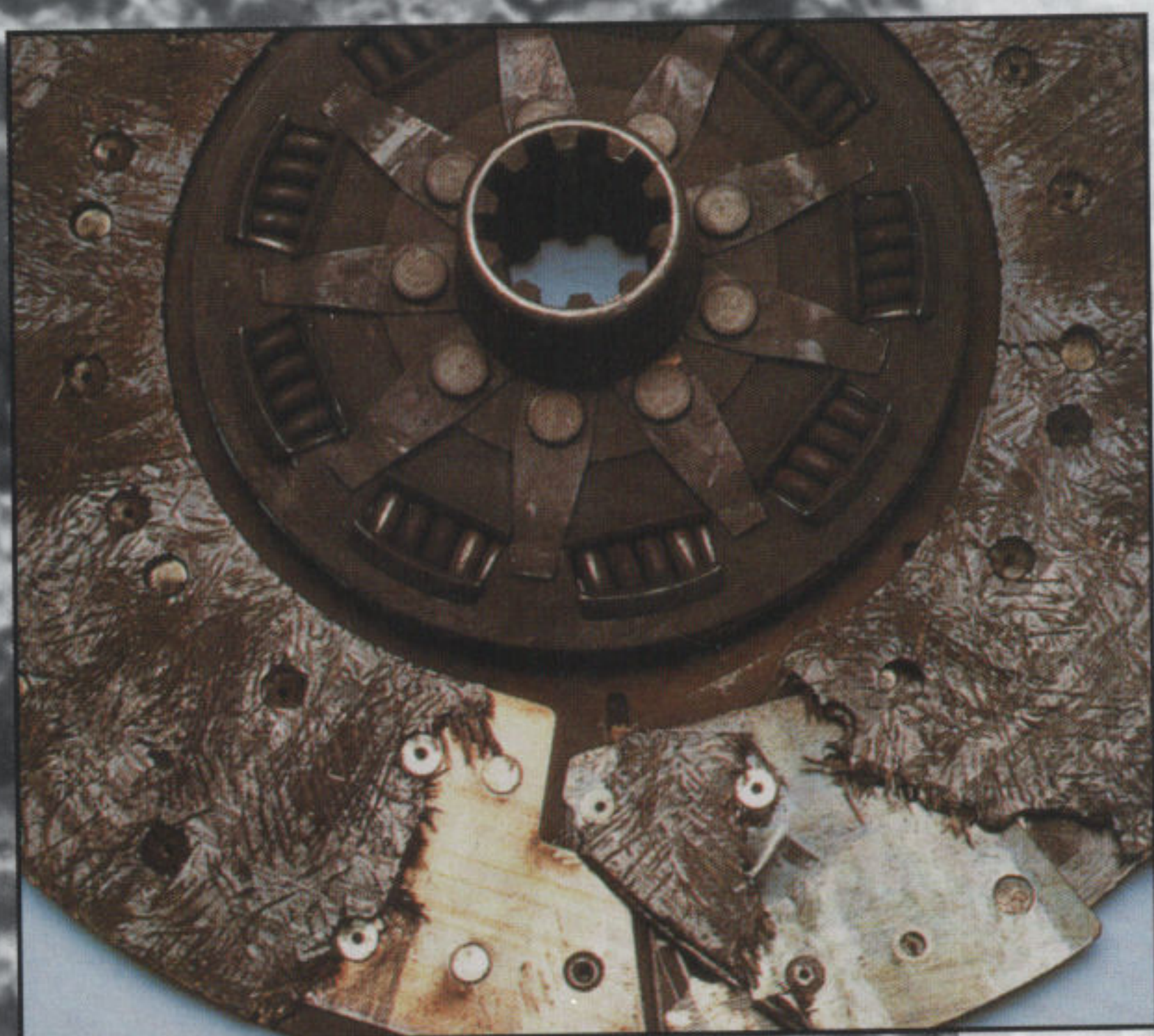


TROUBLESHOOTING

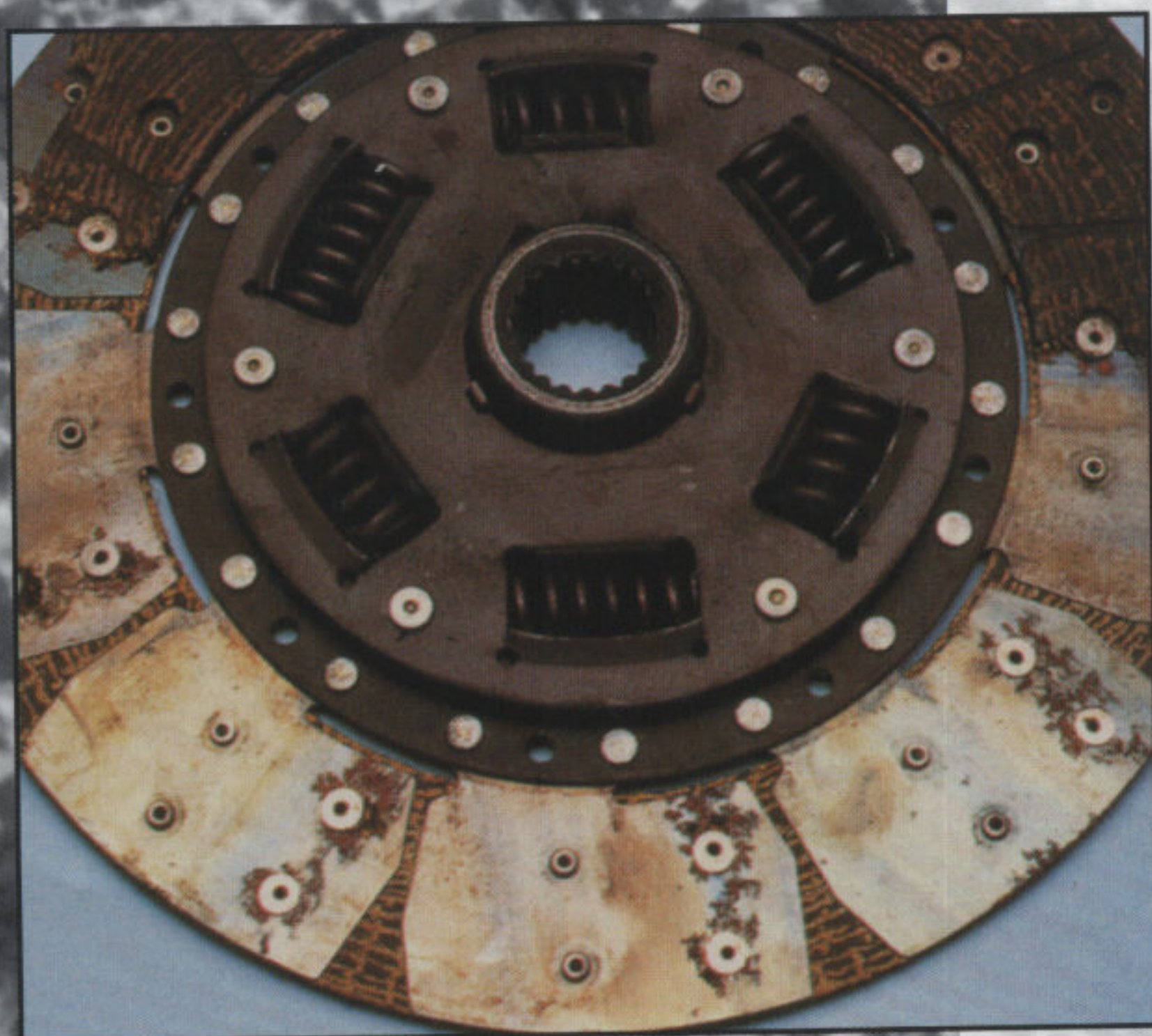
Malfuncions of Clutch Discs



- PROBLEM:** Damaged facing material.
- SYMPTOM:** Damaged clutch facings.
- CAUSE:**
1. Clutch disc has been dropped possibly during installation, or;
 2. Damaged in transit.
- SOLUTION:** Always check before installation that facing is intact.



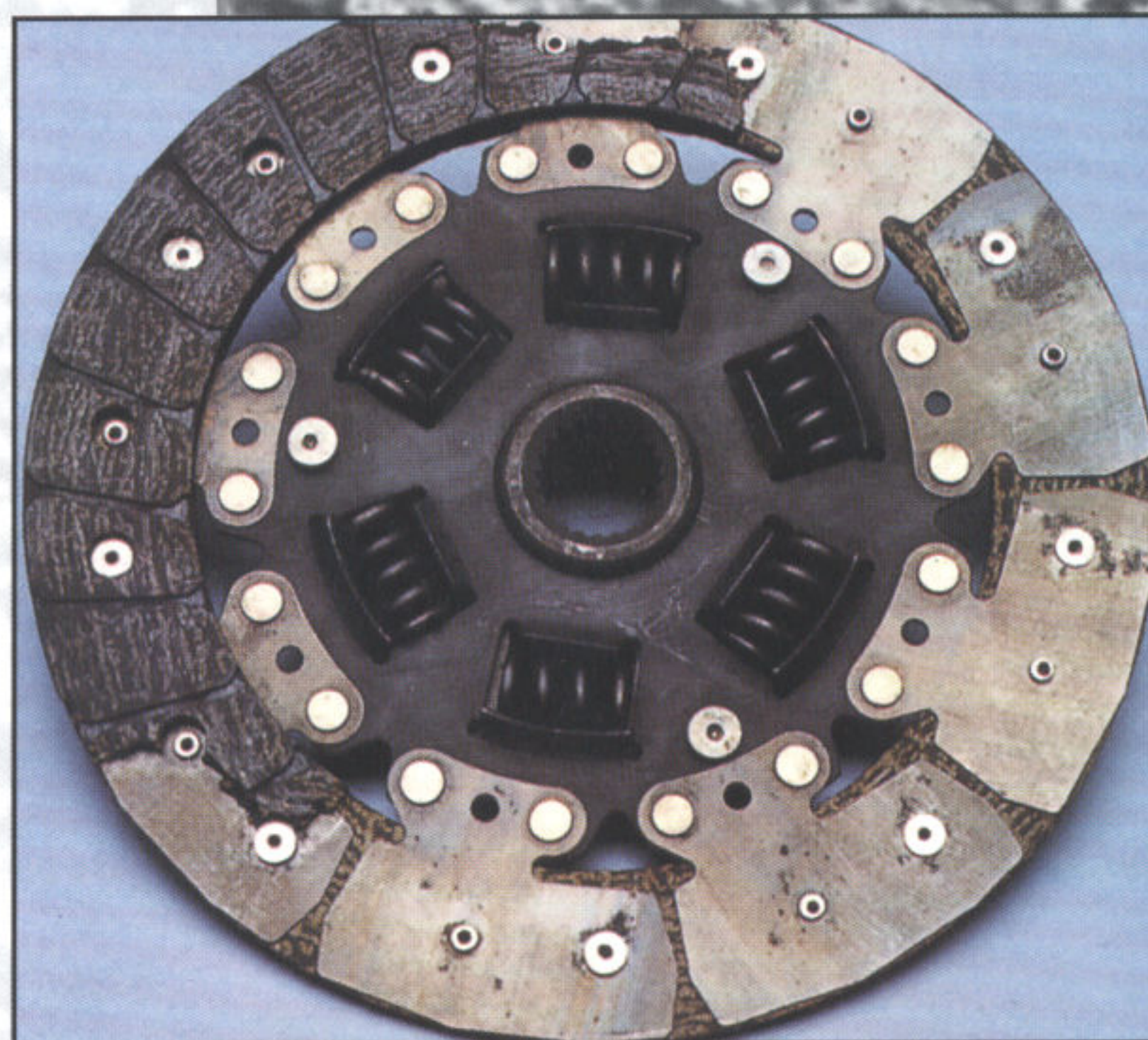
- PROBLEM:** No drive, noisy clutch.
- SYMPTOM:** Power not transmitting to drive train because of broken facings.
- CAUSE:** Parts of the disc friction material are broken from rivet to rivet along with part of the cushioned segment. This is due to down shifting of gear (i.e. the speed of the vehicle at the rear wheels was traveling faster than the engine RPM when gear was down shifted).
- SOLUTION:** Driver education.



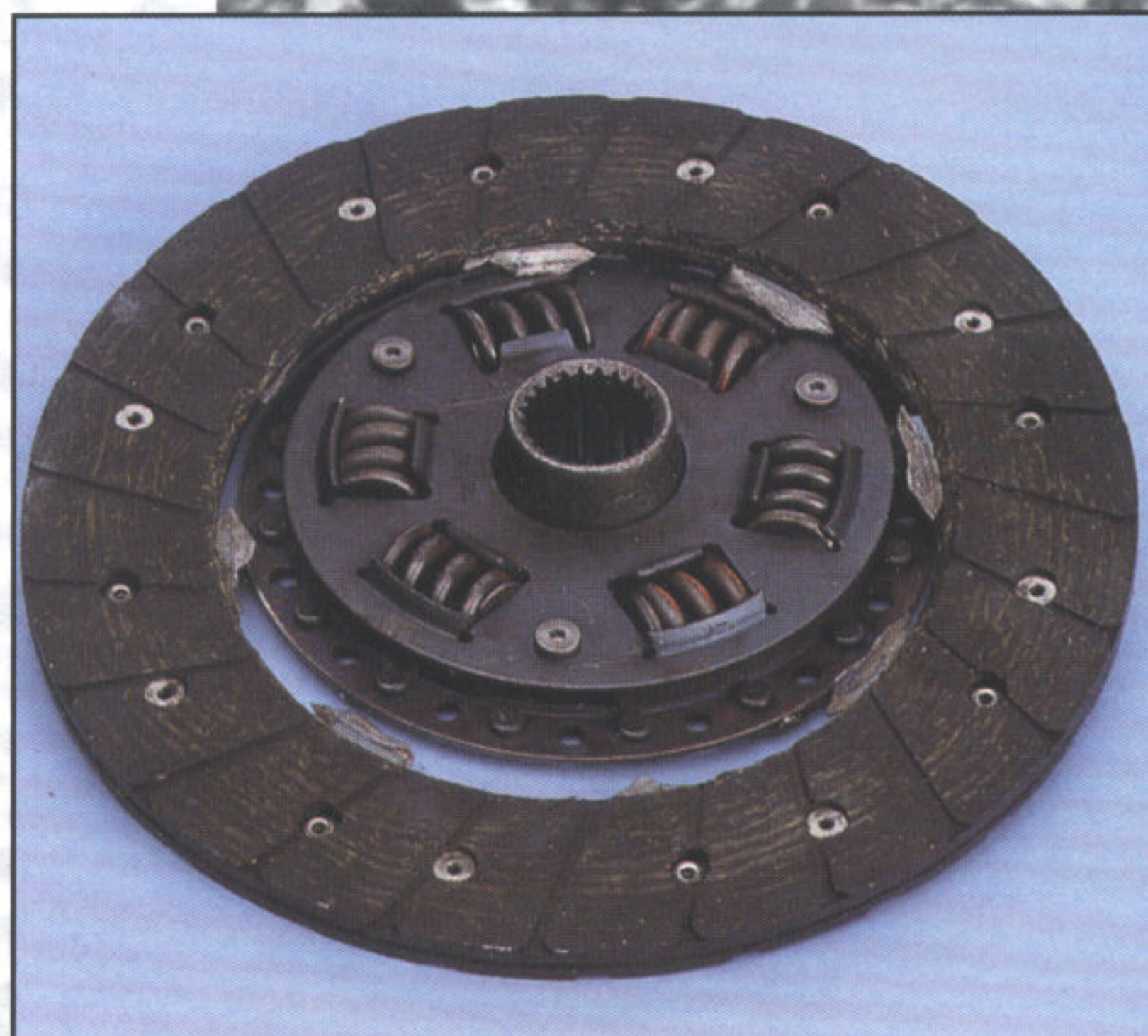
- PROBLEM:** Noisy clutch/slipping clutch.
- SYMPTOM:** Broken facing of clutch disc on clutch cover assembly pressure plate side.
- CAUSE:**
1. Improper driving practice; constantly down shifting gears.
 2. The speed of the vehicle is actually higher than of the shifted to gear.
 3. The gear box and drive train revolutions are turning faster than the speed of the engine at the time: sudden clamp damaged the facings.
- SOLUTION:** Driver education.

TROUBLESHOOTING Malfuncions of Clutch Discs

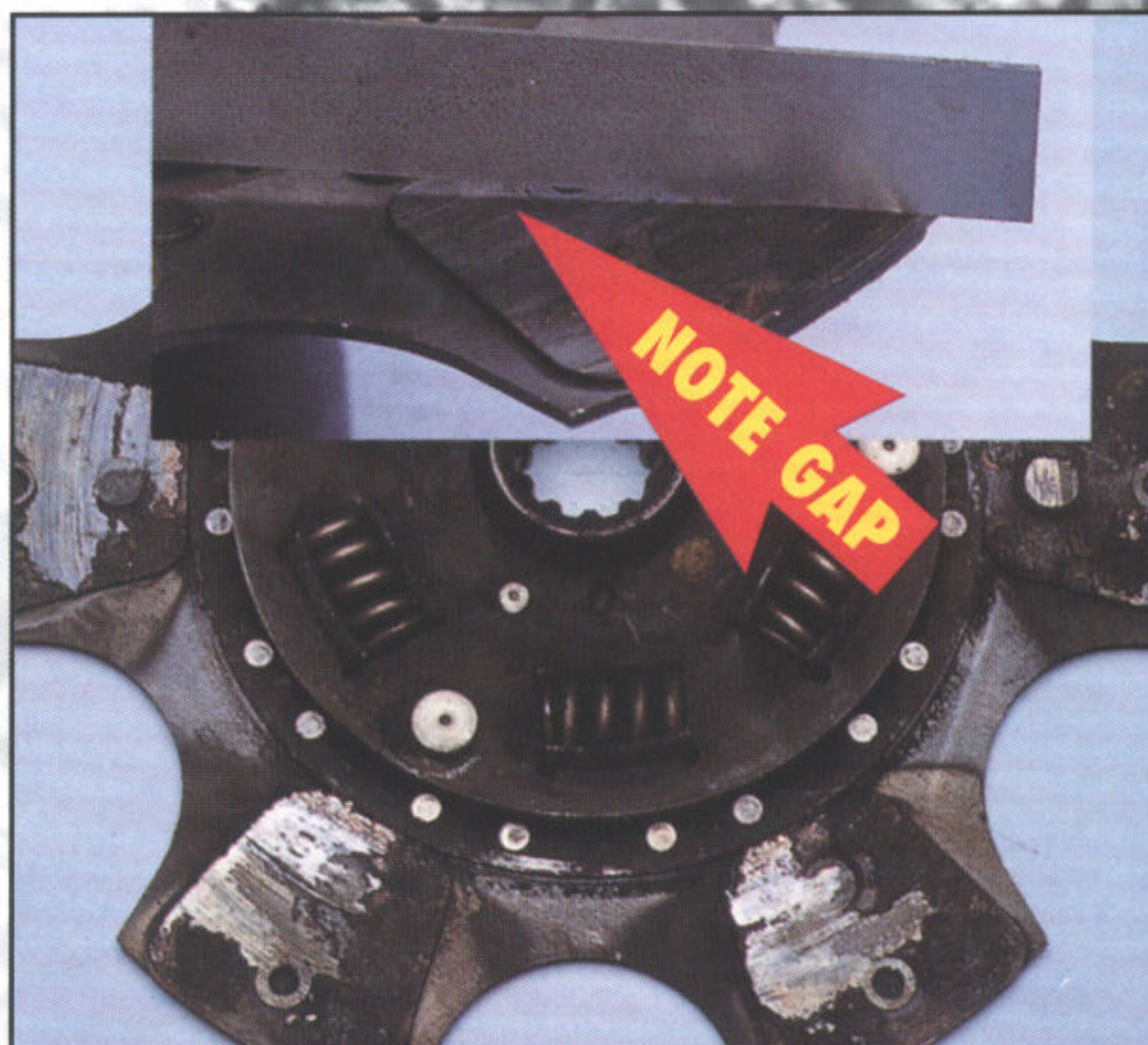
- PROBLEM:** Clutch slips, does not disengage.
- SYMPTOM:** Broken clutch facings flywheel side.
- CAUSE:**
1. Overloading vehicle.
 2. Clutch disc has been replaced but not clutch pressure plate cover assembly.
 3. Lack of applied load (inefficient diaphragm spring pressure or coil spring pressure).
- SOLUTION:**
1. Do not overload vehicle.
 2. Replace with complete clutch kit.



- PROBLEM:** Sudden clutch failure.
- SYMPTOM:** No drive, power not transmitted because of broken segments on clutch disc.
- CAUSE:** Cushion spring steel segments uniformly separated from hub area due to:
1. Faulty or worn pilot bearing or bushing.
 2. Gear box not supported during installation.
 3. Dirt or chips between the mating services of the engine bolt up areas.
 4. Gearbox/transmission lock up (i.e. gear tooth jam).
- SOLUTION:**
1. Check pilot bushing or bearing and replace if necessary. Align gear box and use the assistance of a transmission jack and always clean mating surfaces before installation.
 2. Check gear box for metal fragments then remove and repair as necessary.

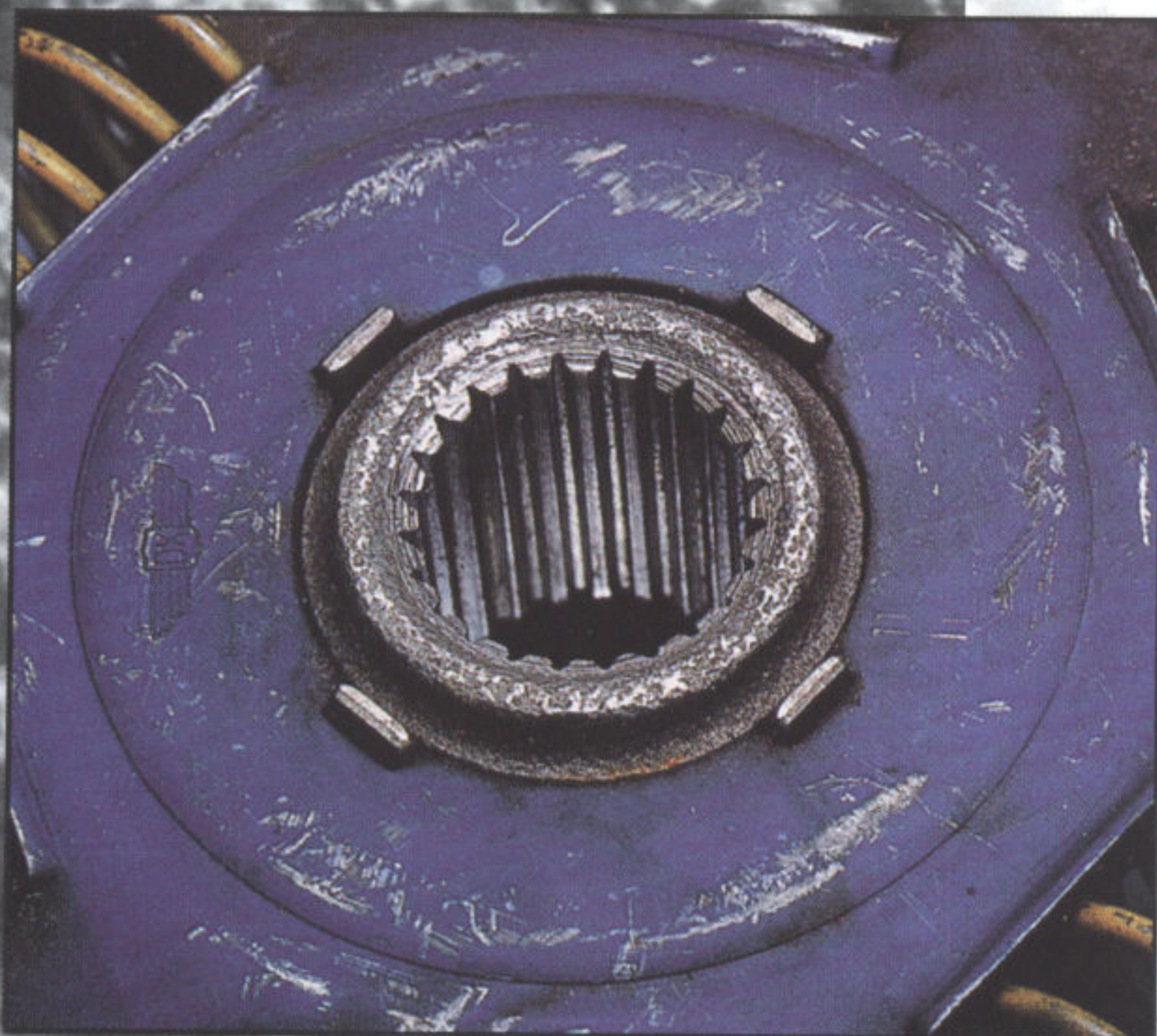
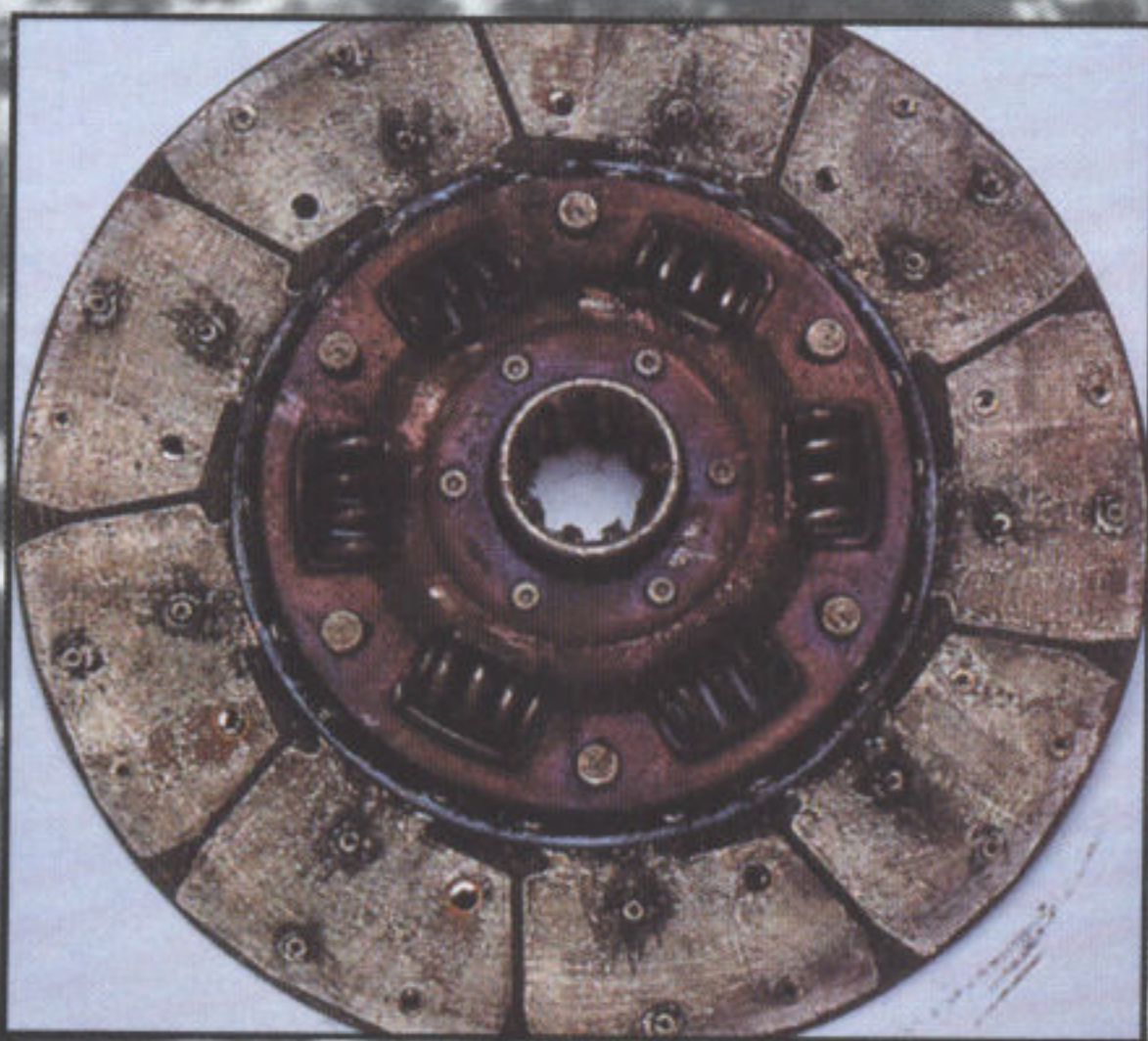


- PROBLEM:** Slipping clutch.
- SYMPTOM:** Premature wear sintered button type clutch disc.
- CAUSE:** Bedding-in procedure not observed for cerametallic buttons.
- SOLUTION:** Driver education; observe bedding-in procedure. Due to the weight of this type of disc, it takes longer for the rotating clutch to slow down while the clutch cover assembly is in a separation position away from the clutch disc. Clutch must be depressed a few seconds longer while shifting gear, specifically when there is no clutch brake attached to the system.



TROUBLESHOOTING

Malfuncions of Clutch Discs



PROBLEM: Clutch slip.

SYMPTOM: Burst clutch disc/no transmitted power.

CAUSE:

1. The clutch was engaged while coasting downhill causing the facings to burst through extreme shock.
2. Gear being shifted down when the vehicle engine is revving lower than the transmission ratios, resulting in excessive RPM at the driveline end. This is beyond the capacity of the burst strength specifications of the friction material.
3. Lack of free travel caused by faulty clutch slave cylinder or air over hydraulic system (common in Japanese truck applications). With a new clutch kit installed, keeping in mind that the diaphragm tips/release lever tips are further down due to the thickness of the new clutch disc. The slave cylinder piston will now be operating further toward the end of the cylinder where it has not worked for some time, depending on adjustment and travel. This area in the cylinder may possibly be corroded, again keeping in mind that brake fluid is a hygroscopic liquid, which is very absorbent of moisture and moisture corrodes and could result in the piston jamming and not returning, therefore causing the release mechanism to activate the clutch in a semi disengaged position.

The above corrosion problem would also apply to the air canister in the air over hydraulic assist system. A partly disengaged clutch generates extreme heat affecting the clamp load of the diaphragm spring/coil spring, ultimately causing the friction material to burst. This is always indicated by the blue and burnt coloring on the pressure plate cover assembly casting and the clutch disc. A strong burnt smell is also noticeable.

4. Driver resting foot on clutch.
5. Lack of free travel and proper adjustment.
6. Wrong differential speed selected to match with chosen gear (trucks with 2 speed differentials).

SOLUTION:

1. Driver education for 1, 2, 4 and 6.
2. Check clutch release mechanism, air system and hydraulics for 3.
3. Adjust clutch to manufacturer's specifications for 5.

PROBLEM: Unable to fit clutch disc on main drive shaft.

SYMPTOM: Different number of spline on main drive to those on clutch disc/diameter of spline incorrect.

CAUSE: Careless fitting practice. The right clutch disc was not checked on main drive spline before installation.

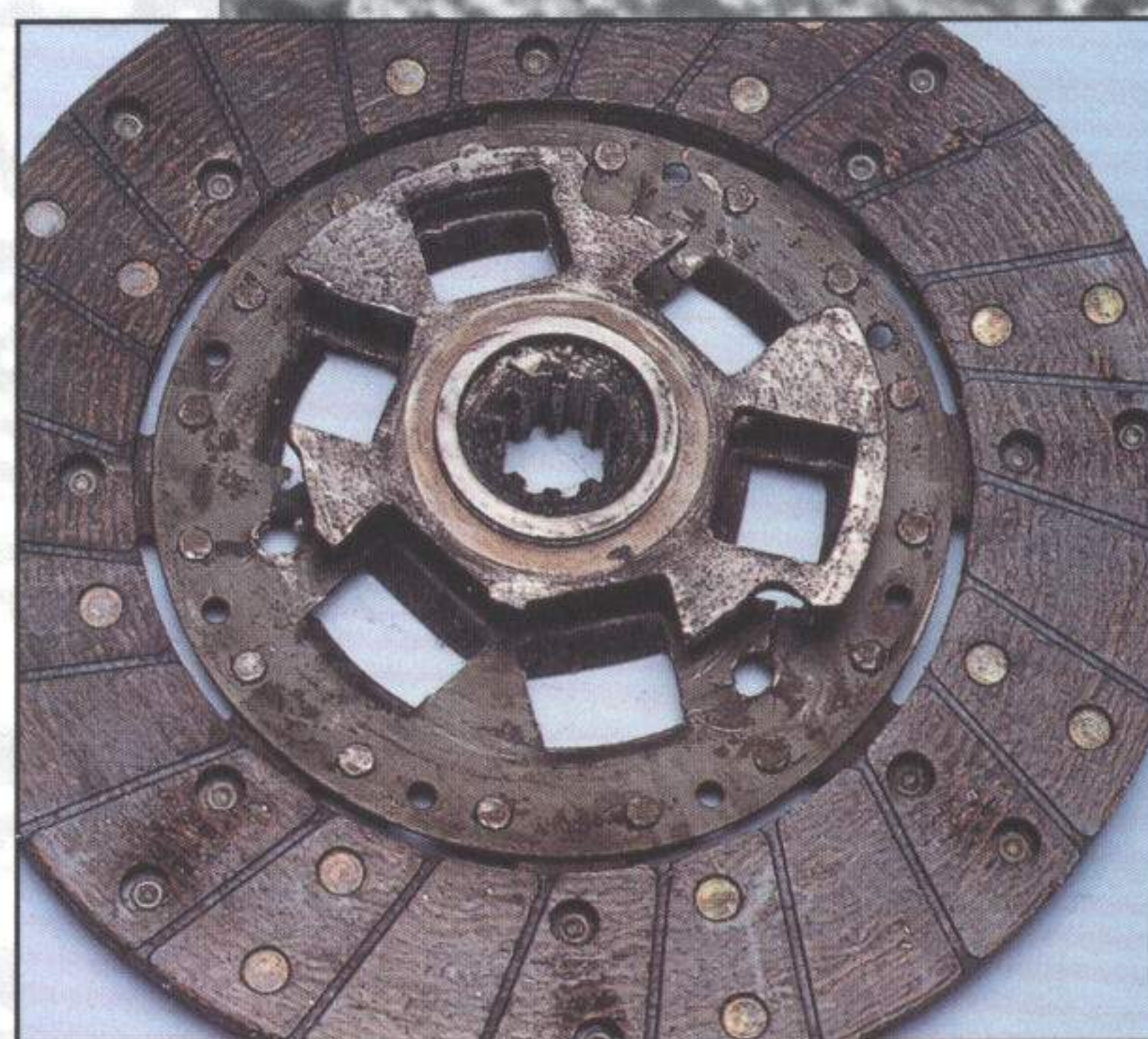
SOLUTION:

1. Always refer to Daikin packaging instructions before installing clutch.
2. Try clutch disc on main drive for smooth sliding before installation.

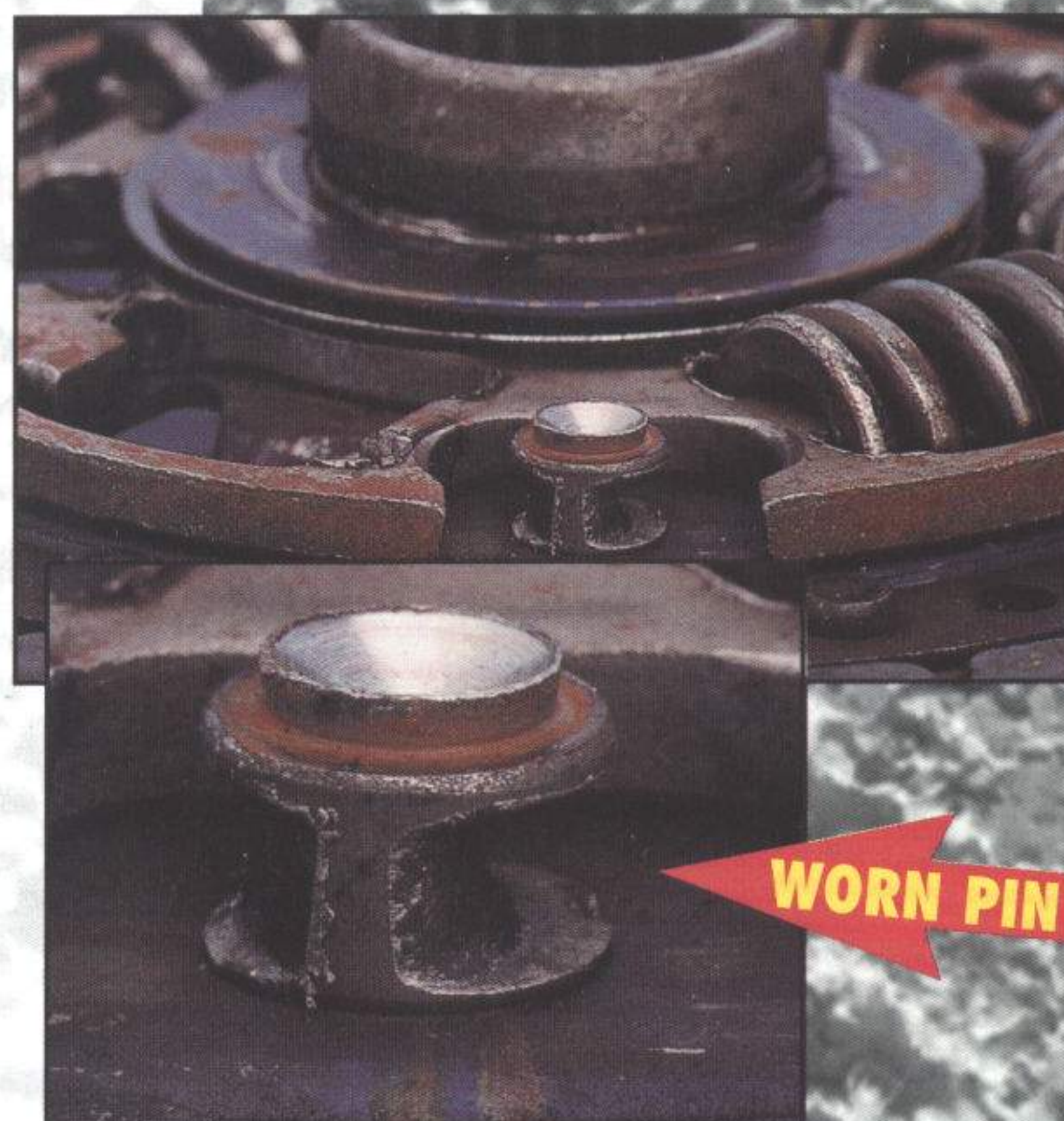
TROUBLESHOOTING

Malfuncions of Clutch Discs

- PROBLEM:** Sudden clutch failure.
- SYMPTOM:** Clutch disc completely ruined.
- CAUSE:** Clutch disc fitted incorrectly (i.e. back to front).
- SOLUTION:** 1. Always check clutch disc on flywheel for interference before installation.



- PROBLEM:** Noisy clutch/unable to engage or disengage gear.
- SYMPTOM:** Torsion dampener stopper springs thrown out of side plate/stop pins worn.
- CAUSE:**
1. Improper driving practice (i.e. "dropping" the clutch while engine is turning at extremely high revolutions).
 2. Down shifting of gears (i.e. 5th gear to 2nd gear by a low speed/high driving gear method).
 3. Wear on the stop pins indicates the clutch plate has been wound past specified torque loading. This has the same affect on the springs.
 4. Misalignment.
- SOLUTION:**
1. Driver education.
 2. Refer to misalignment tips.
 3. Vehicle used for performance driving. It is advisable to use a clutch disc with higher stopper torque capacity. Refer to Daikin Performance and Sports Clutch listings.



- PROBLEM:** Gear box rattle/noisy clutch - diesel applications.
- SYMPTOM:** Damaged torsion springs.
- CAUSE:** When engine torque is higher than clutch torque, this causes springs to deteriorate. This is due to the very different characteristics in the design of this particular clutch disc.
- SOLUTION:** Choose and fit an appropriate Daikin clutch to suit this application (i.e. silent type design or LTD design).



TROUBLESHOOTING Malfuncions of Clutch Discs



PROBLEM: No drive.

SYMPTOM: Noisy and cannot transfer power/splines completely disintegrated.

CAUSE: 1. Clutch disc not tested on spline before installation.
2. Missing pilot bearing or bushing.

SOLUTION: 1. Always check clutch disc for smooth sliding on spline.
2. Check and replace pilot bearing or bushing. (Mini UK and Europe: check primary gear for worn bushing; replace if worn.)

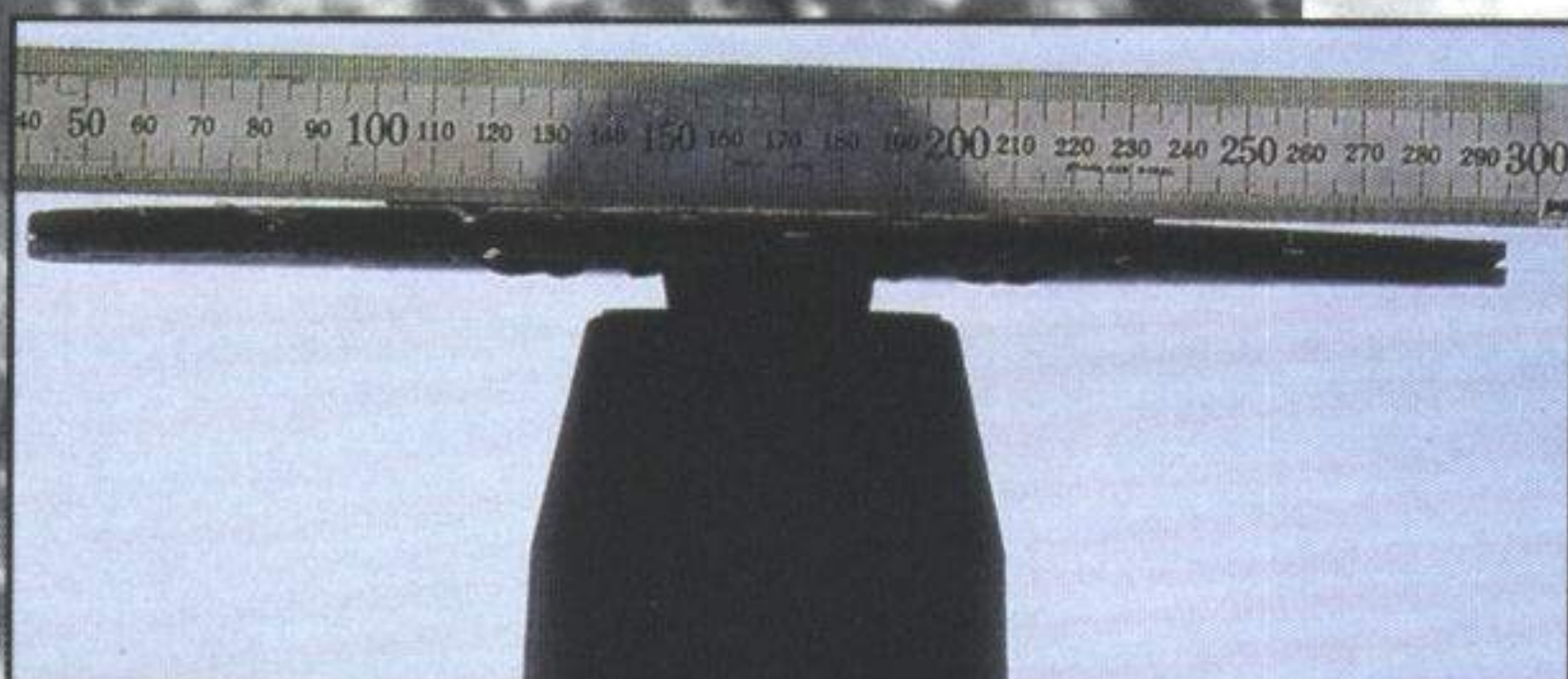


PROBLEM: Difficult to disengage gears.

SYMPTOM: Grinding in all gears/damaged and burred splines.

CAUSE: Defective pilot bearing or bushing. This causes angular wear of the spline teeth, not allowing the clutch disc to slide on the spline teeth. It also causes the clutch disc to possibly stick on to the flywheel or not separate from the clutch cover pressure plate assembly. This results in poor separation, no disengagement.

SOLUTION: Fit new pilot bearing or bushing.



PROBLEM: Difficult gear change.

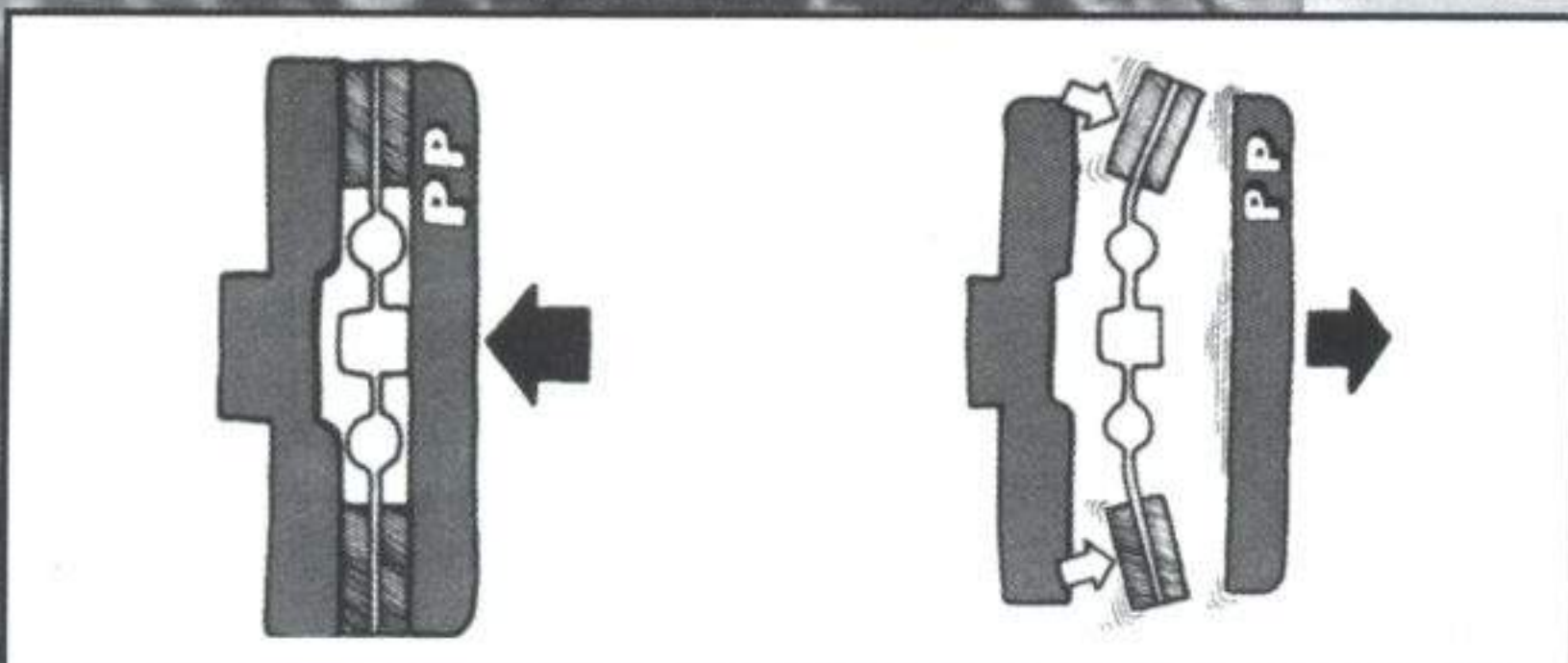
SYMPTOM: 1. Grinding noise in gear box, non release.
2. Warped and bent clutch disc.

CAUSE: 1. Gear box not supported during installation.
2. Not aligning clutch disc and forcing main drive into the spline, therefore bending the clutch disc hub toward the engine, as seen in photo.

NOTE: Not supporting the gear box during installation pulls the clutch disc hub toward the gear box.

3. Driver resting foot on clutch pedal causing clutch slip due to clutch being in a semi disengaged position. This has caused extreme heat which has warped the disc.

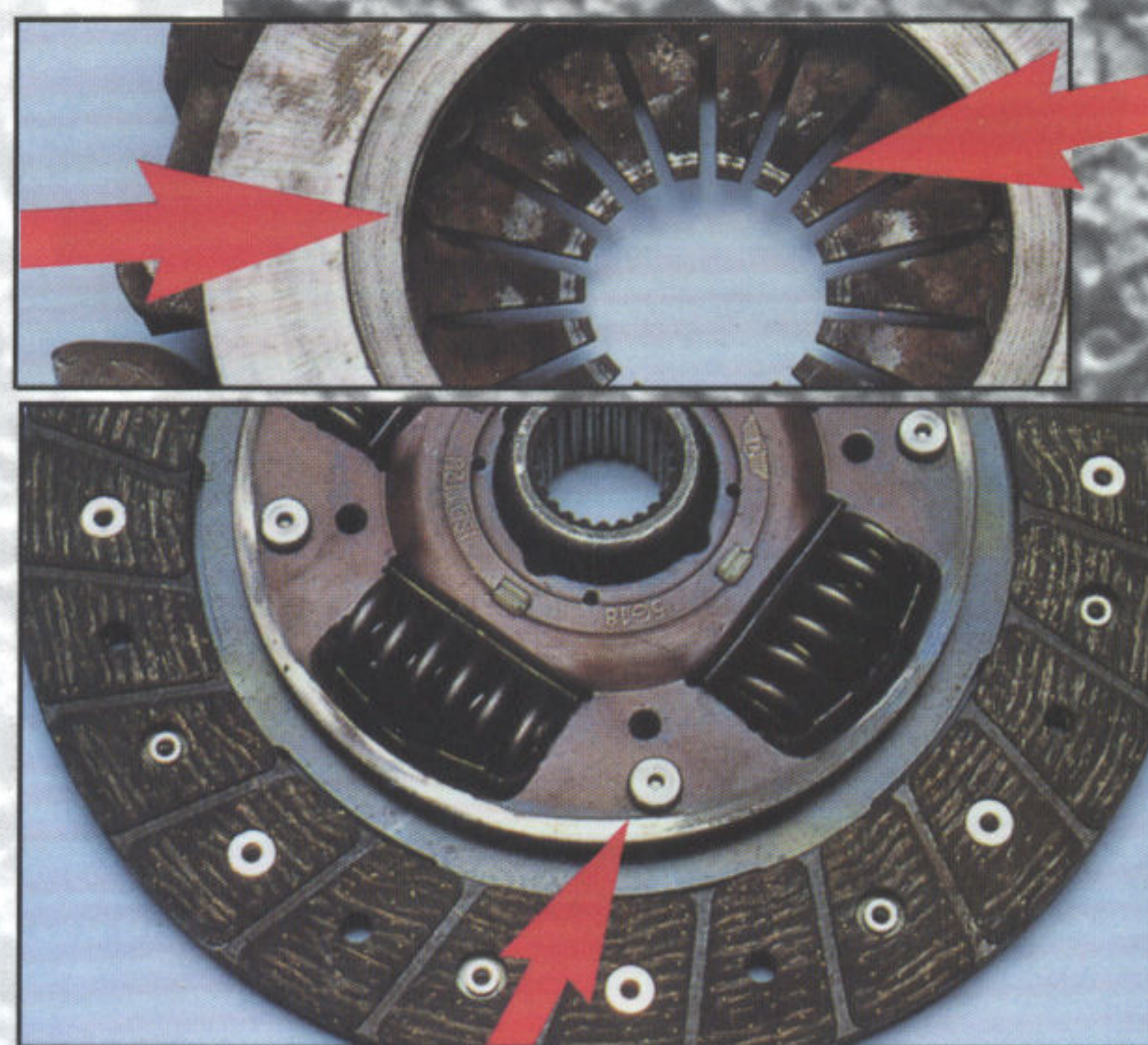
SOLUTION: 1. Do not leave gear box unsupported during clutch installation. Always use a clutch aligning tool.
2. Do not force gear box into clutch disc spline.
3. Driver education/check free travel.



TROUBLESHOOTING

Malfuncions of Clutch Discs

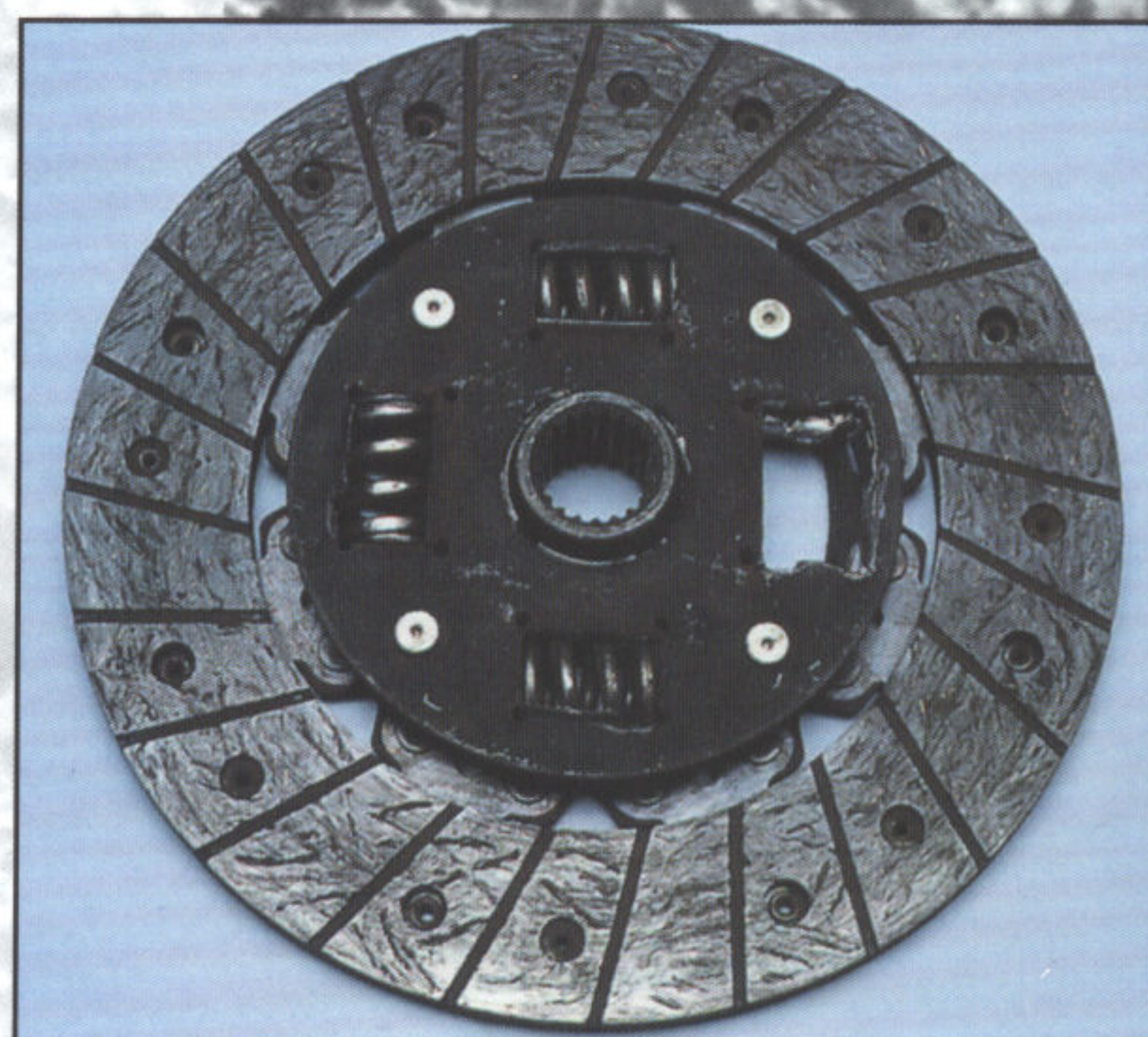
- PROBLEM:** 1. Diaphragm over center when bolting clutch cover pressure plate assembly to flywheel.
2. Clutch disc side plate contacts I.D. of casting.
- SYMPTOM:** No clutch adjustment (diaphragm over center/clutch disc side plate interference.)
- CAUSE:** Careless mechanical fitting practices.
- SOLUTION:** Always mate clutch disc to pressure plate casting and flywheel. Ensure no contacting occurs before installing new clutch.



- PROBLEM:** Clutch inoperative.
- SYMPTOM:** Clutch drag leading to total clutch failure. Signs of red dust on clutch disc as seen in photo.
- CAUSE:** Severe misalignment between the mating surfaces of the bell housing and the rear of motor.
- SOLUTION:** 1. Refer to misalignment tips.
2. Engine and gearbox modifications where mating surfaces are not parallel or the engine and gear box do not mate at an absolute center line are to be rectified.
3. Metal dust cover plates overlapping each other during installation must be avoided.

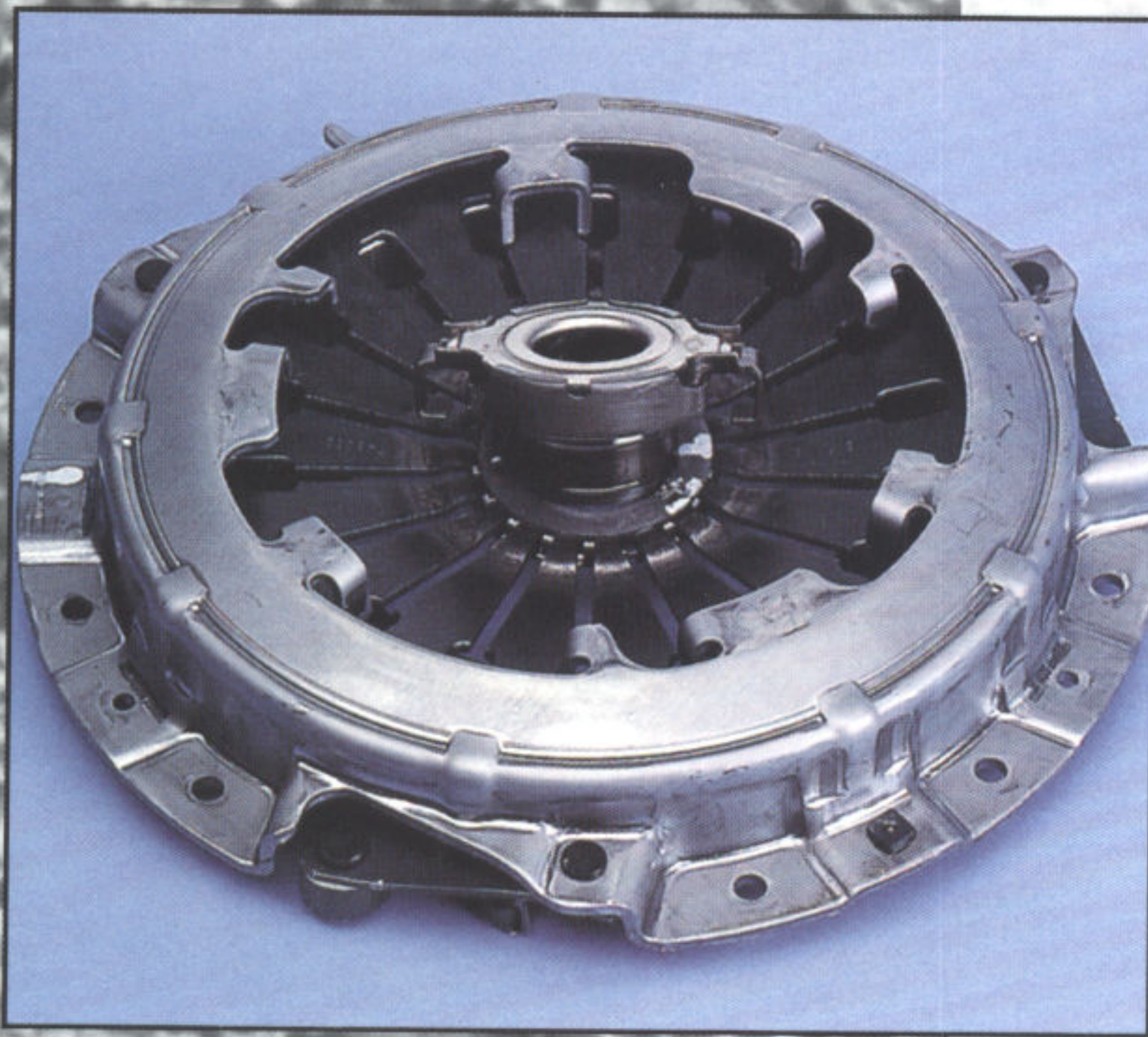


- PROBLEM:** Noisy clutch with vibration.
- SYMPTOM:** Torque stopper springs broken. Difficult gear engagement which may lead to clutch failure.
- CAUSE:** 1. Misalignment between engine crankshaft center and gearbox main drive.
2. If the torsion springs are damaged along with the torque stopper pin, then it is evident that the clutch has been wound past its torque capacity.
- SOLUTION:** 1. Refer to misalignment tips.
2. Refer to Page 9, Item 2.



TROUBLESHOOTING

Malfuncions of Clutch Discs



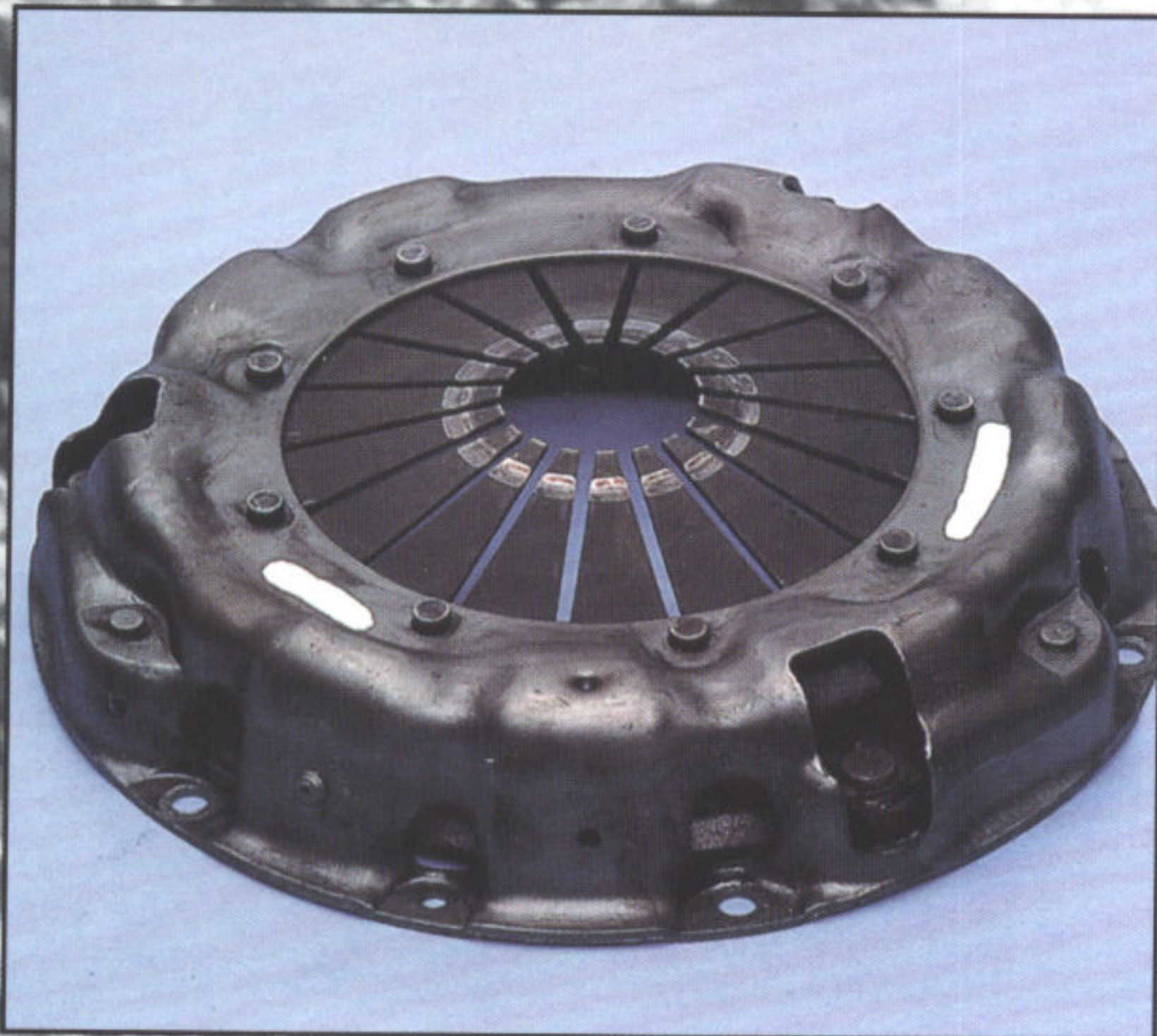
PROBLEM: No pressure on clutch pedal - new pull type clutch just installed.

SYMPTOM: Bearing retainer clip not connected to diaphragm.

CAUSE: Proper installation procedures have not been followed. The snap-in mechanism of the release bearing has not been clipped on firmly.

SOLUTION: When the transmission is installed onto the mating area of the engine, the release bearing is preliminarily set into position where the release fork of the transmission is fitted.

After the transmission is installed, the release lever must be pulled in the direction reverse to the release firmly. The bearing is then snapped in. (Also refer to manufacturer's specifications.)



PROBLEM: Pedal roughness sometimes described as erratic feeling when depressing clutch pedal with engine running, but OK when not running.

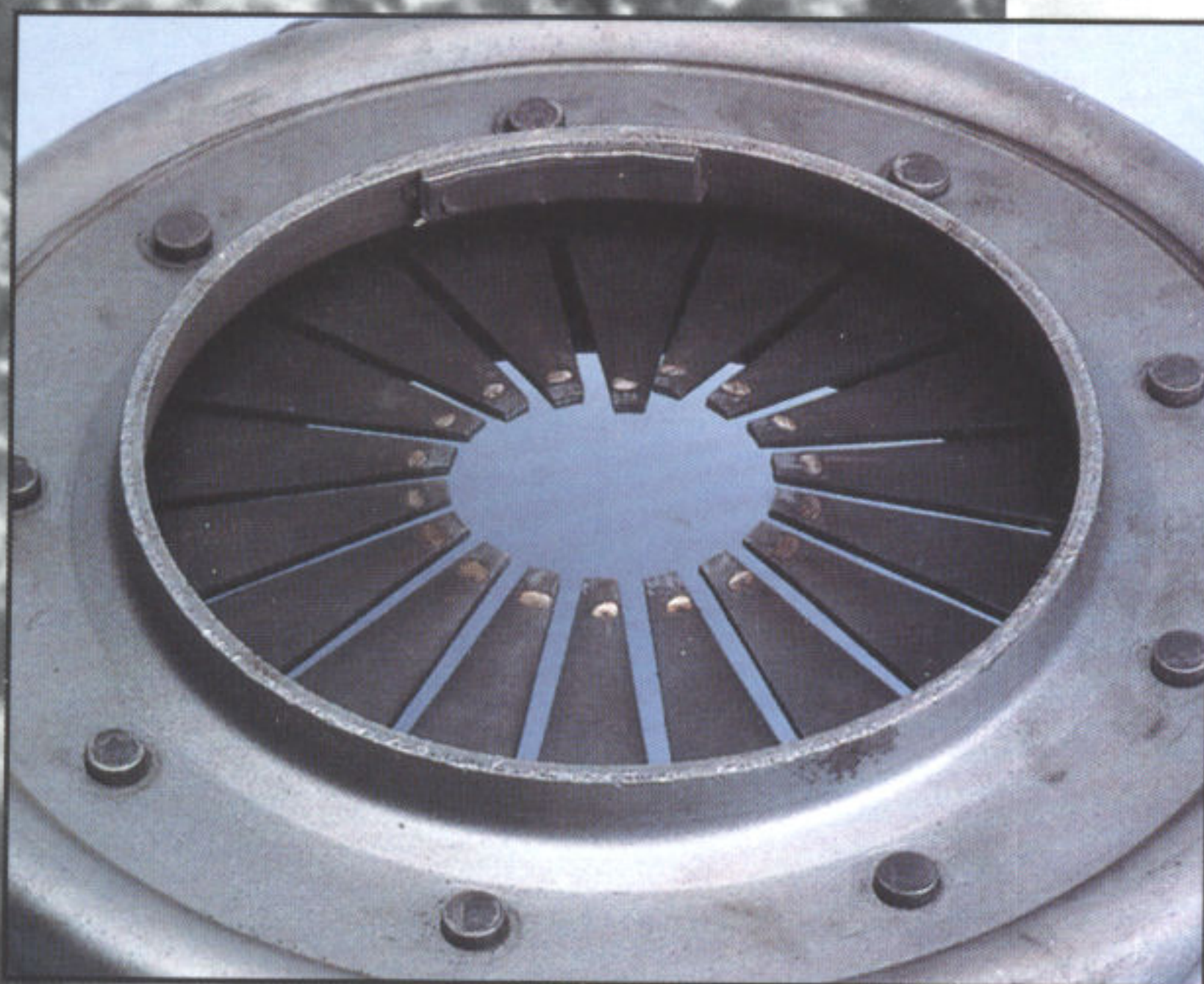
SYMPTOM: Excessively worn diaphragm fingers.

CAUSE:

1. Eccentricity between the axis of rotation of the clutch cover pressure plate assembly and that of the clutch thrust bearing.
2. Inferior clutch thrust bearing (not self-centering type).
3. Worn release bearing sleeve carrier or clutch fork.
4. Lack of free travel.

SOLUTION:

1. Refer to misalignment tips.
2. Fit proper self-centering bearing.
3. Rectify release mechanism and align.
4. Adjust free travel to manufacturer's specifications.



PROBLEM: Clutch drag and pedal vibration.

SYMPTOM: Clutch diaphragm fingers or levers are uneven.

CAUSE:

1. The pressure plate cover assembly was torqued down incorrectly (i.e. not diagonally).
2. The pressure plate cover assembly was torqued down with an air wrench.

SOLUTION:

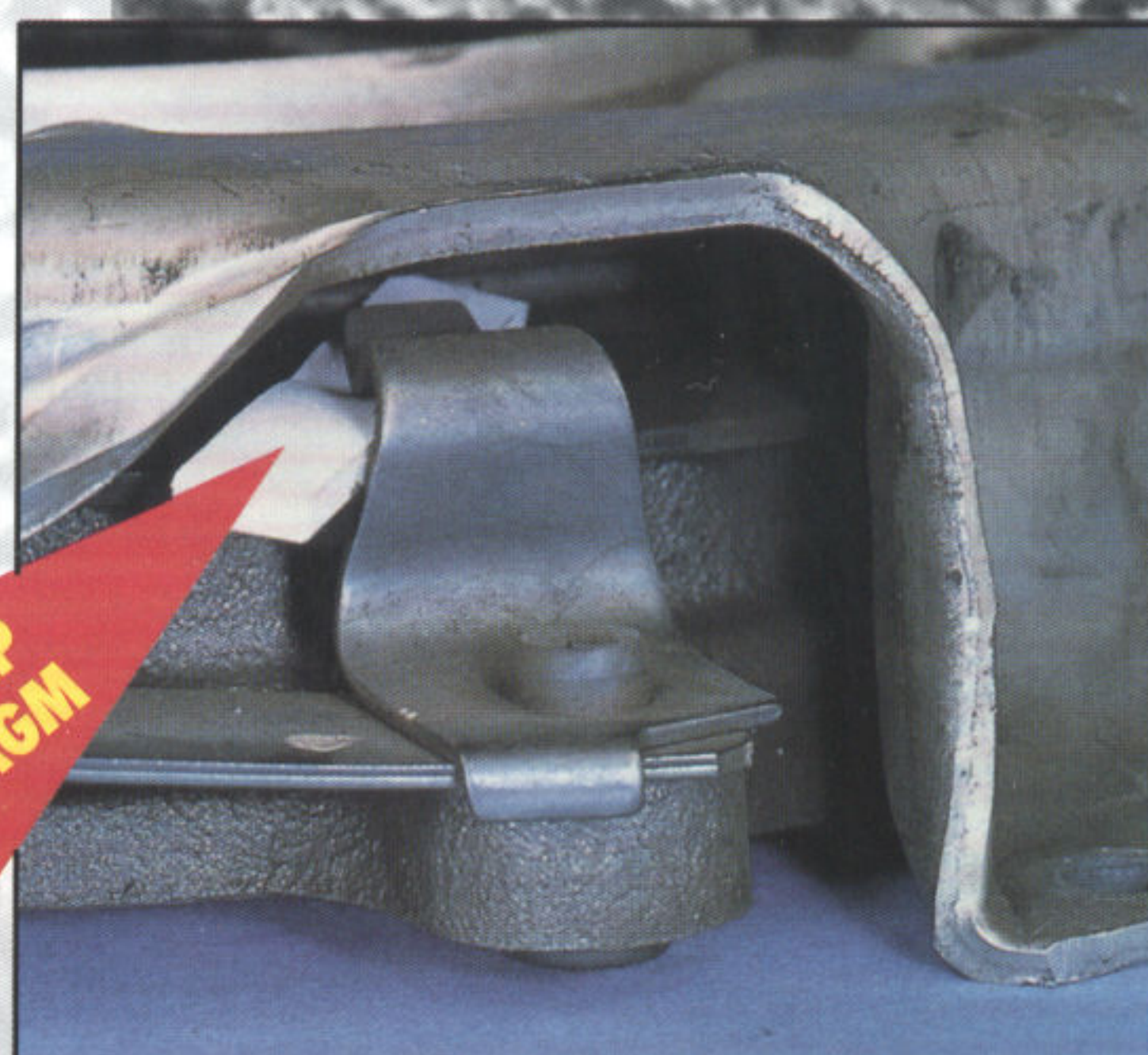
1. Torque bolts uniformly in a diagonal pattern.
2. Never use air tools to torque down a clutch.

TROUBLESHOOTING

Malfunctions of Clutch Pressure Plate Cover Assemblies

- PROBLEM:** After new clutch is installed, unable to select gear.
- SYMPTOM:** No gear selection/difficult engagement. Stretched and damaged retractor clip. (Clip stretched above diaphragm.)
- CAUSE:** Over adjustment of clutch that has caused stretching of retractor clips on clutch cover pressure plate assembly.
- SOLUTION:**
1. Fit new cover assembly.
 2. Adjust clutch to manufacturer's specifications.

FAULTY - WITH GAP ABOVE DIAPHRAGM

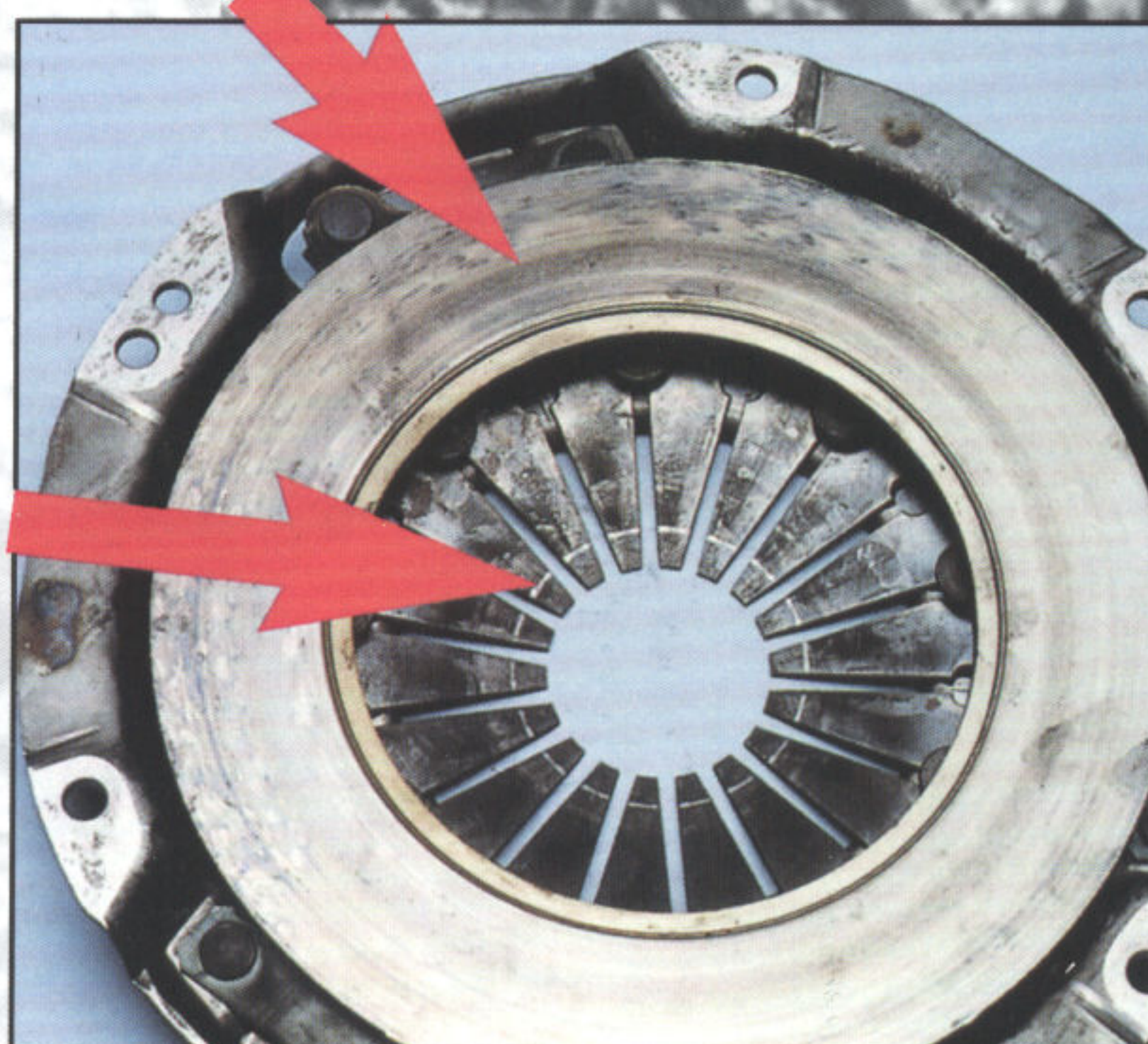


- PROBLEM:** Difficult engagement/disengagement after installation of new clutch.
- SYMPTOM:** Grinding gears/stretched and damaged retractor clip. (Clip under diaphragm.)
- CAUSE:** Clutch cover pressure plate assembly has been dropped during installation/or during transit causing damage to retractor clips.
- SOLUTION:** Always check components before fitting and ensure that the tip of the retractor clip is resting on top of the diaphragm. This can be checked by a feeler gauge. (This is the installer's responsibility.)



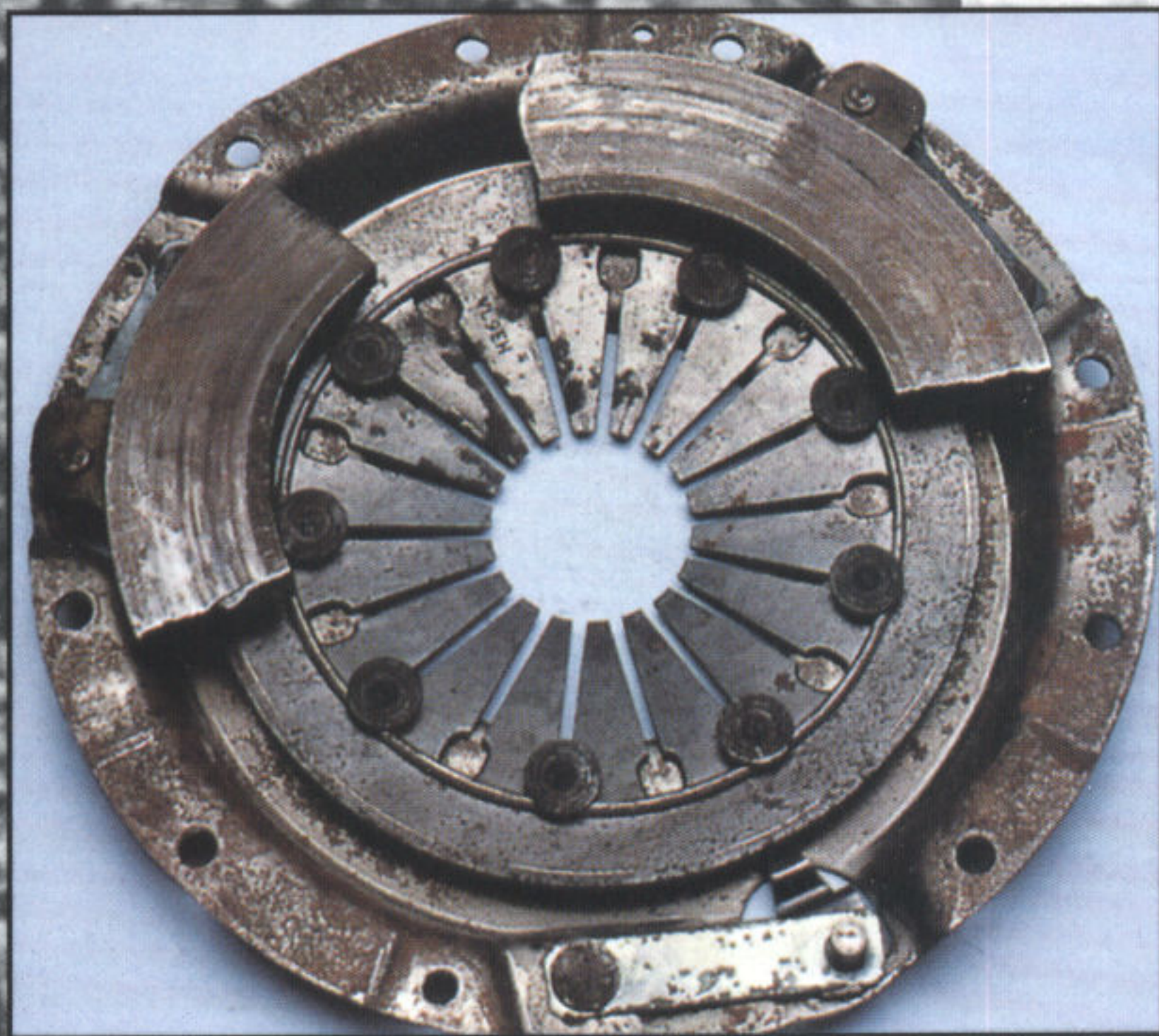
FAULTY UNDER DIAPHRAGM

- PROBLEM:** Difficult to engage/disengage gear.
- SYMPTOM:** Diaphragm contacts clutch disc. Grinding in gear and unable to obtain clutch adjustment.
- CAUSE:**
1. Flywheel depth or step incorrect.
 2. Clutch thrust bearing fallen off bearing retainer end/gear box nose cone slide.
 3. Clutch disc too thick.
 4. Incorrectly adjusted (overthrow of clutch mechanism).
- SOLUTION:**
1. Check flywheel depth or step height.
 2. Check for wear on release bearing slide/gear box nose cone slide.
 3. Check clutch disc thickness.
 4. Refer to clutch adjustment procedure or replace cable.



TROUBLESHOOTING

Malfuctions of Clutch Pressure Plate Cover Assemblies



PROBLEM: No disengagement.

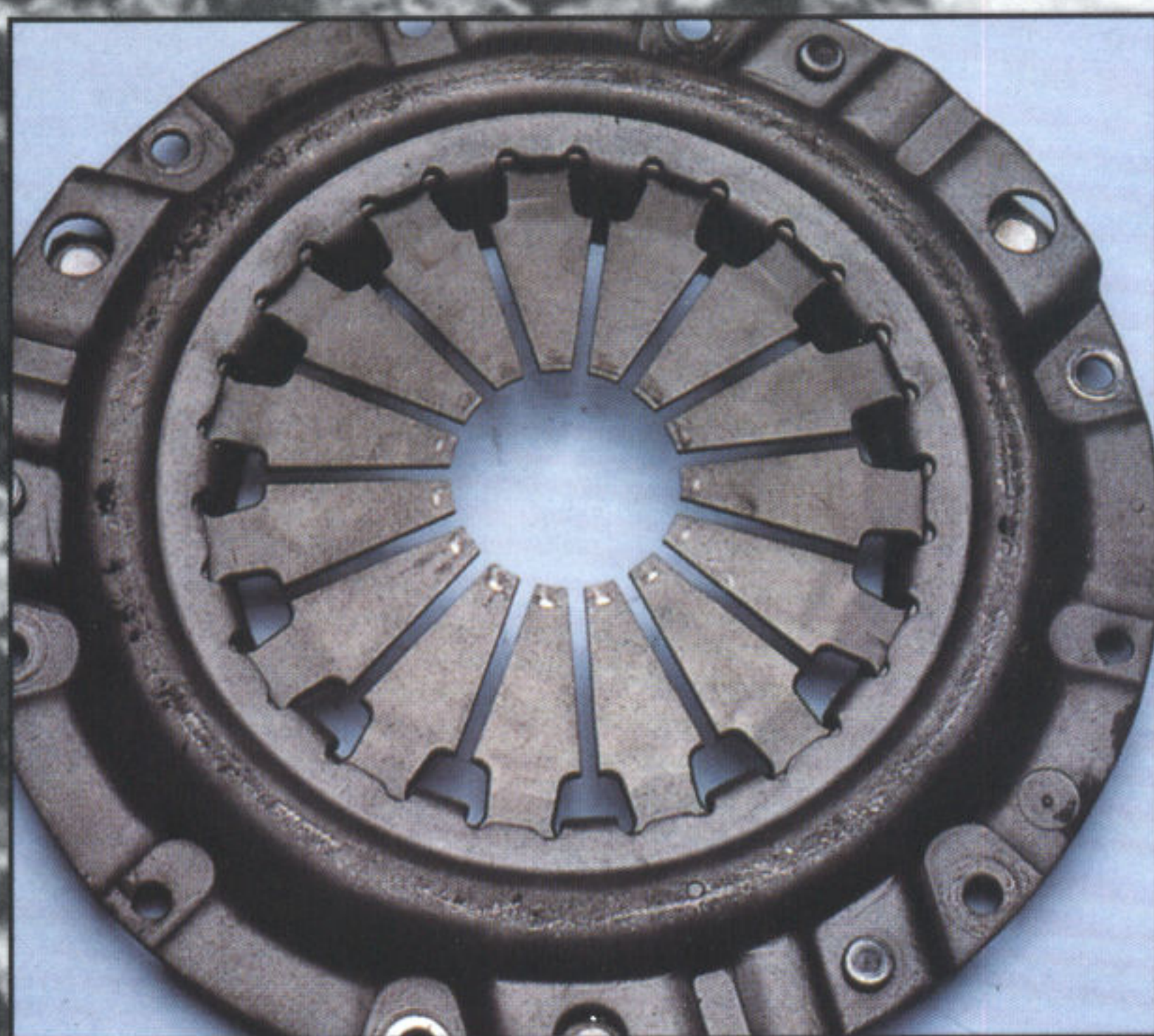
SYMPTOM: Burst pressure plate casting.

CAUSE:

1. Over revving of engine that has exceeded vehicle manufacturer's specifications.
2. Overheating of casting due to constant abuse of clutch. The main spring has weakened through extreme influence of heat.
3. Inferior part manufacture.

SOLUTION:

1. Driver education.
2. Do not use Daikin covers where engine has been modified to excess manufacturer's RPM specifications.
3. Use Daikin specified sports clutch. Refer to Daikin Catalog or Daikin Sports Listings where covers are manufactured with ductile iron castings.



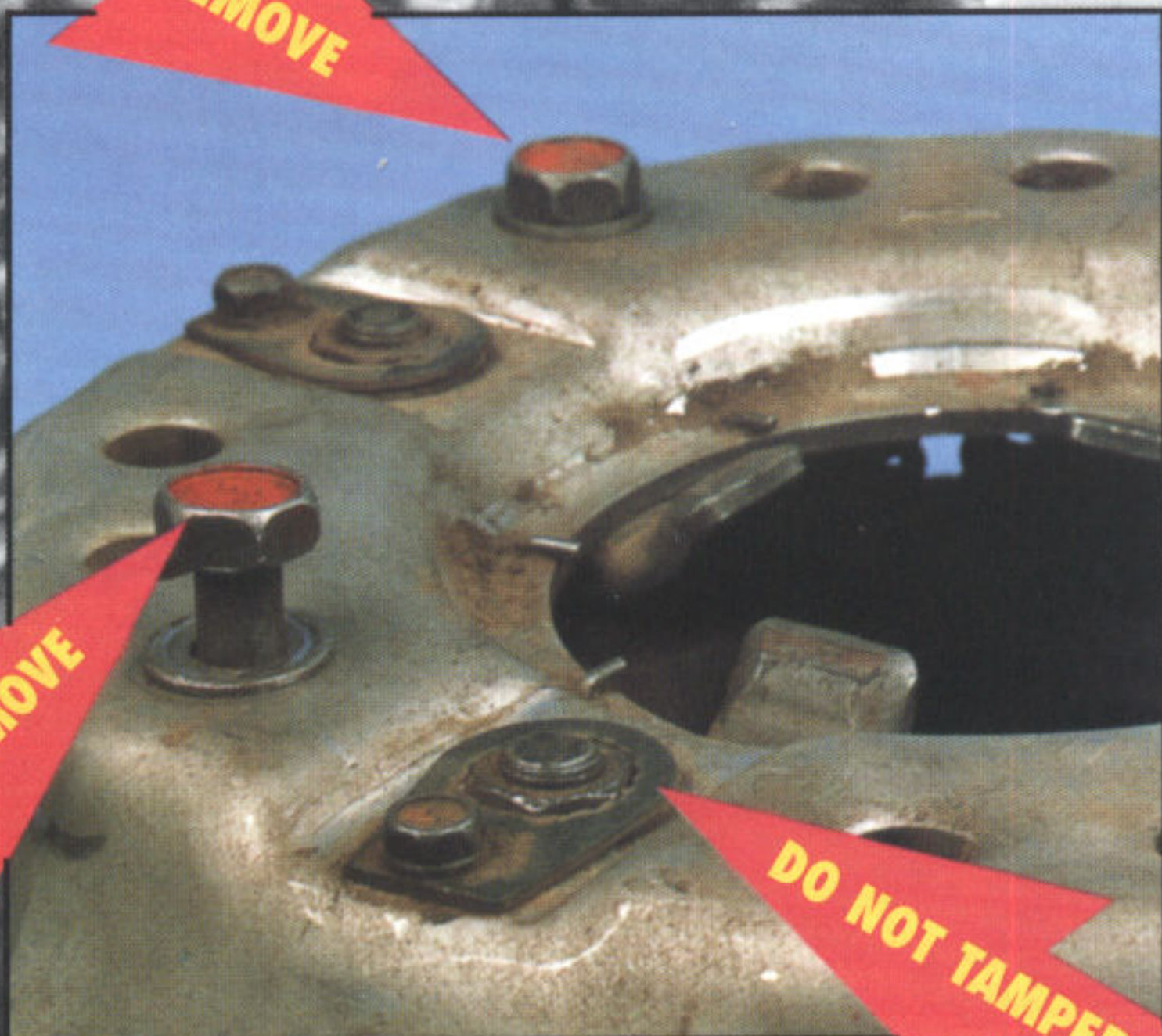
PROBLEM: Slipping clutch.

SYMPTOM: No clamp load on to clutch disc.

CAUSE:

1. Diaphragm spring load below specifications. Due to design of cover type, diaphragm has not been replaced.
2. Inferior remanufacture/spring load not checked.

SOLUTION: Replace with new only Daikin pressure plate cover assembly.



PROBLEM: Clutch slipping just after installing new clutch.

SYMPTOM:

1. Hold down bolts still in pressure plate assembly.
2. Unable to adjust.
3. Will not transmit power.

CAUSE: Clutch cover pressure plate assembly hold down bolts to assist ease of installation not removed.

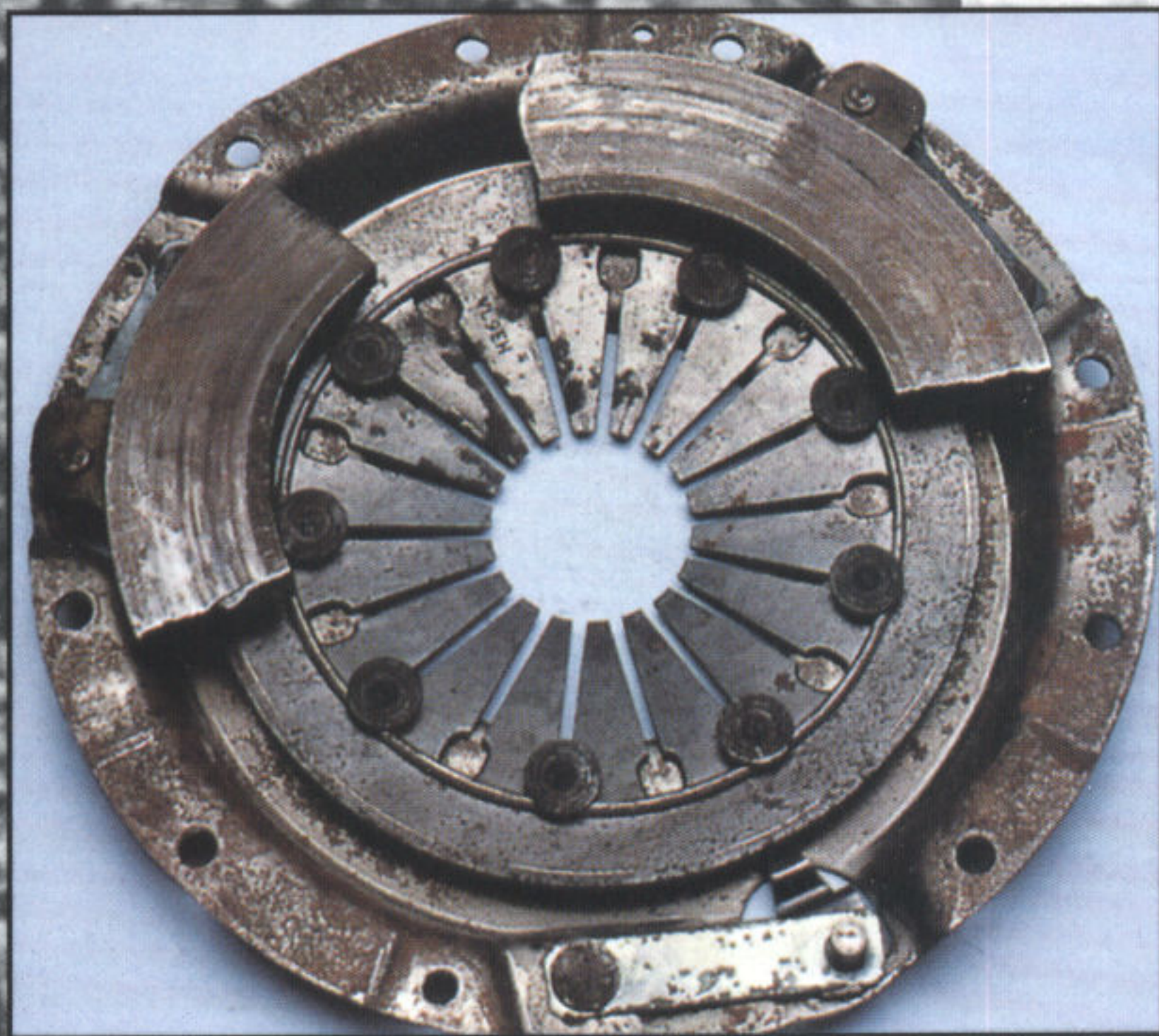
SOLUTION: Remove hold down bolts.

NOTE:

1. Do not remove clutch lever adjustment nuts.
2. (Common in Japanese trucks.)

TROUBLESHOOTING

Malfunctions of Clutch Pressure Plate Cover Assemblies



PROBLEM: No disengagement.

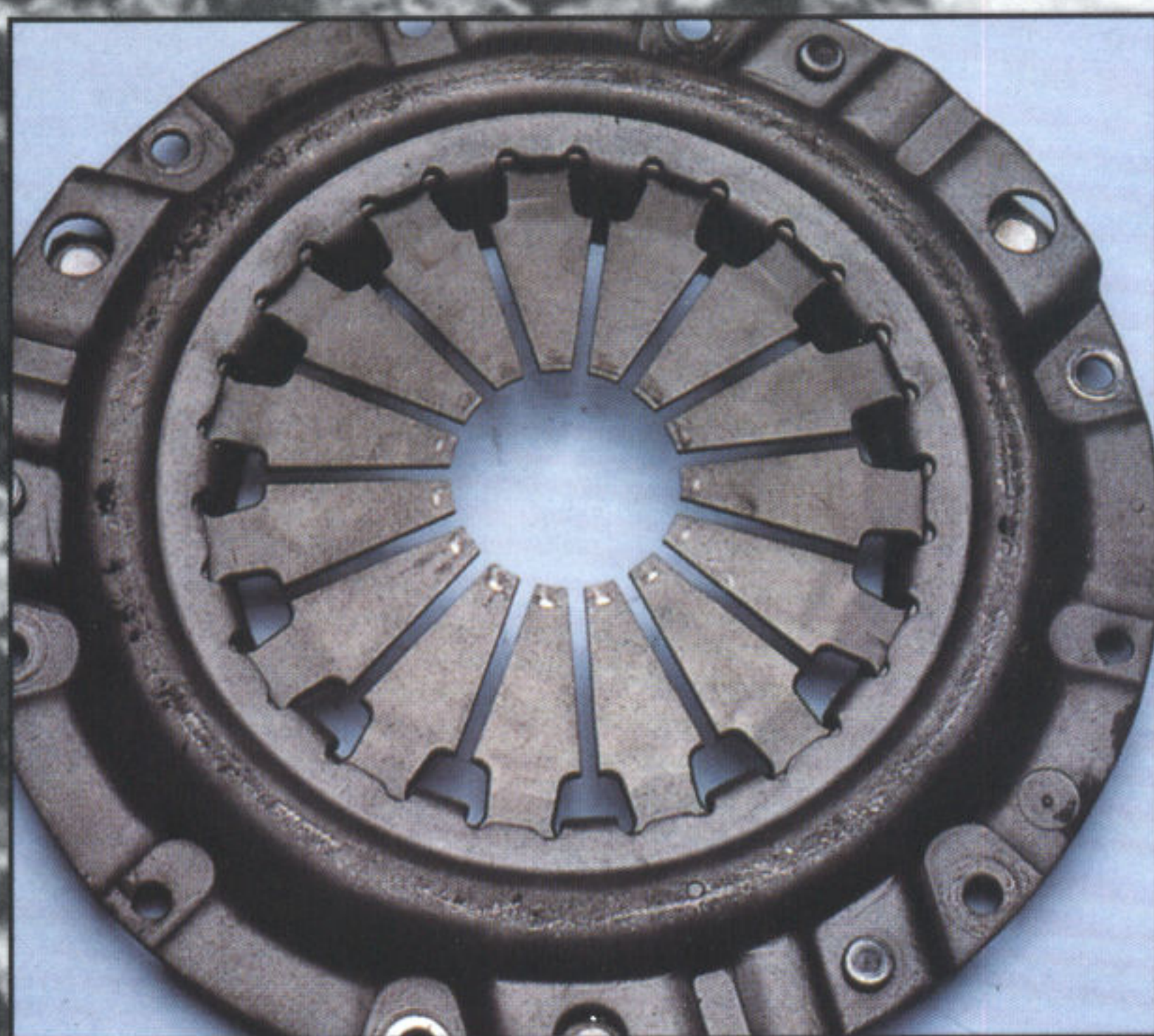
SYMPTOM: Burst pressure plate casting.

CAUSE:

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CAUSE:

1. Diaphragm spring load below specifications. Due to design of cover type, diaphragm has not been replaced.
2. Inferior remanufacture/spring load not checked.

SOLUTION: Replace with new only Daikin pressure plate cover assembly.



REMOVE

REMOVE

DO NOT TAMPER OR REMOVE

PROBLEM: Clutch slipping just after installing new clutch.

SYMPTOM:

1. Hold down bolts still in pressure plate assembly.
2. Unable to adjust.
3. Will not transmit power.

CAUSE: Clutch cover pressure plate assembly hold down bolts to assist ease of installation not removed.

SOLUTION: Remove hold down bolts.

NOTE:

1. Do not remove clutch lever adjustment nuts.
2. (Common in Japanese trucks.)

TROUBLESHOOTING

Malfunctions of Clutch Pressure Plate Cover Assemblies

PROBLEM: Slipping clutch and clutch drag.

SYMPTOM: Worn clutch disc facing fibers and dirt lodged between diaphragm spring and clutch cover housing causing loss of clamp load.

CAUSE: 1. Bell housing not degreased and cleaned. Careless installation of new clutch.

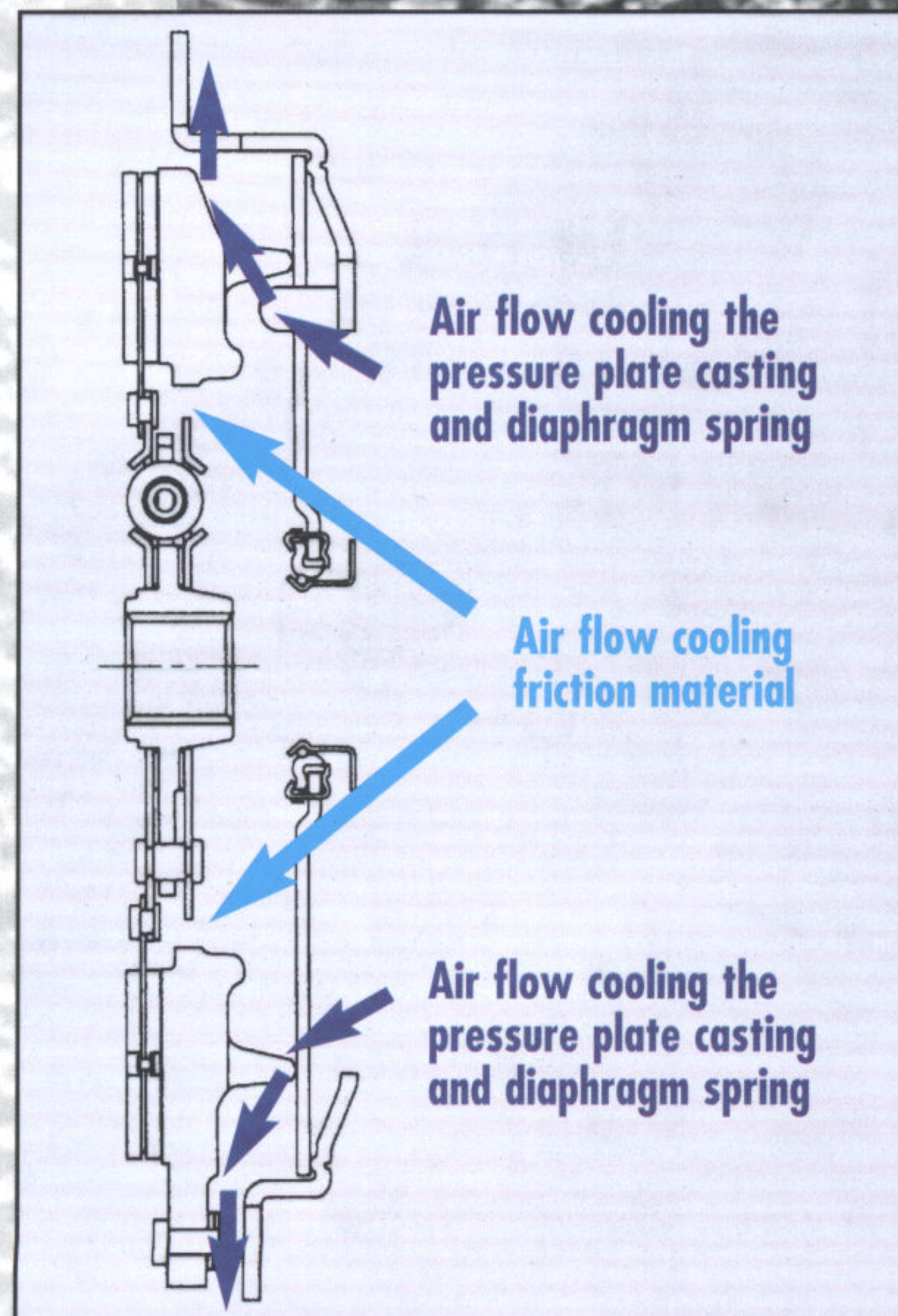
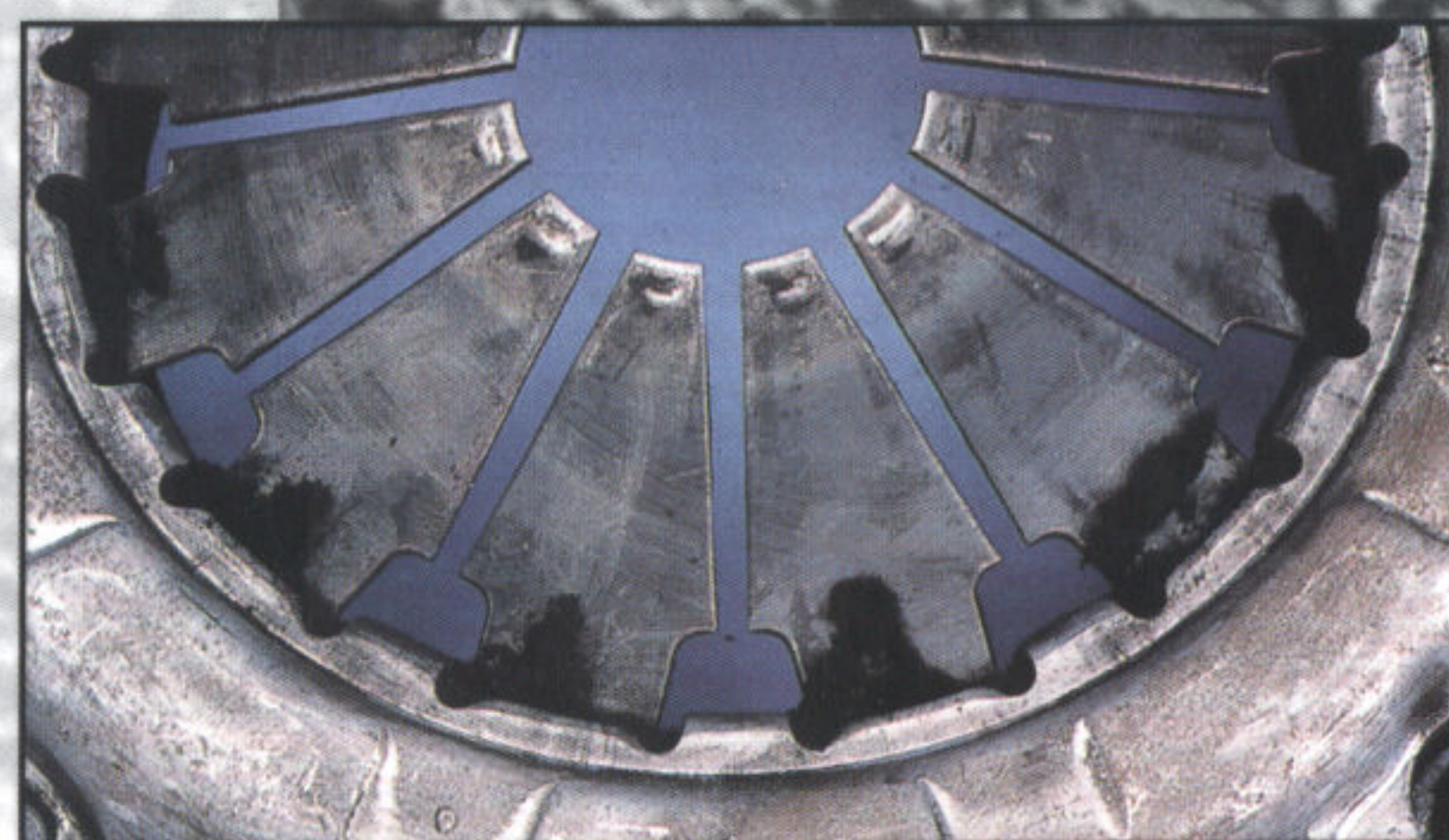
The new clutch disc has not worn but the fibers that have become lodged in the new clutch cover are that of the previously worn clutch. It is a requirement due to ventilation designs that the bell housing area be free from old fibers, dirt and grease when installing new clutch.

2. This problem is common in 4 wheel drive vehicles when an inspection cover or a clutch fork cover boot has not been replaced when installing a new clutch.

SOLUTION: 1. Ensure bell housing is thoroughly degreased and clean of dirt and fibers before installing new clutch.

2. Ensure inspection locations and boots are replaced, tightened and well located.

NOTE: These problems are common on farm vehicles, vehicles traveling on sand and 4X4 recreational vehicles.



PROBLEM: Clutch slipping just after installing new clutch.

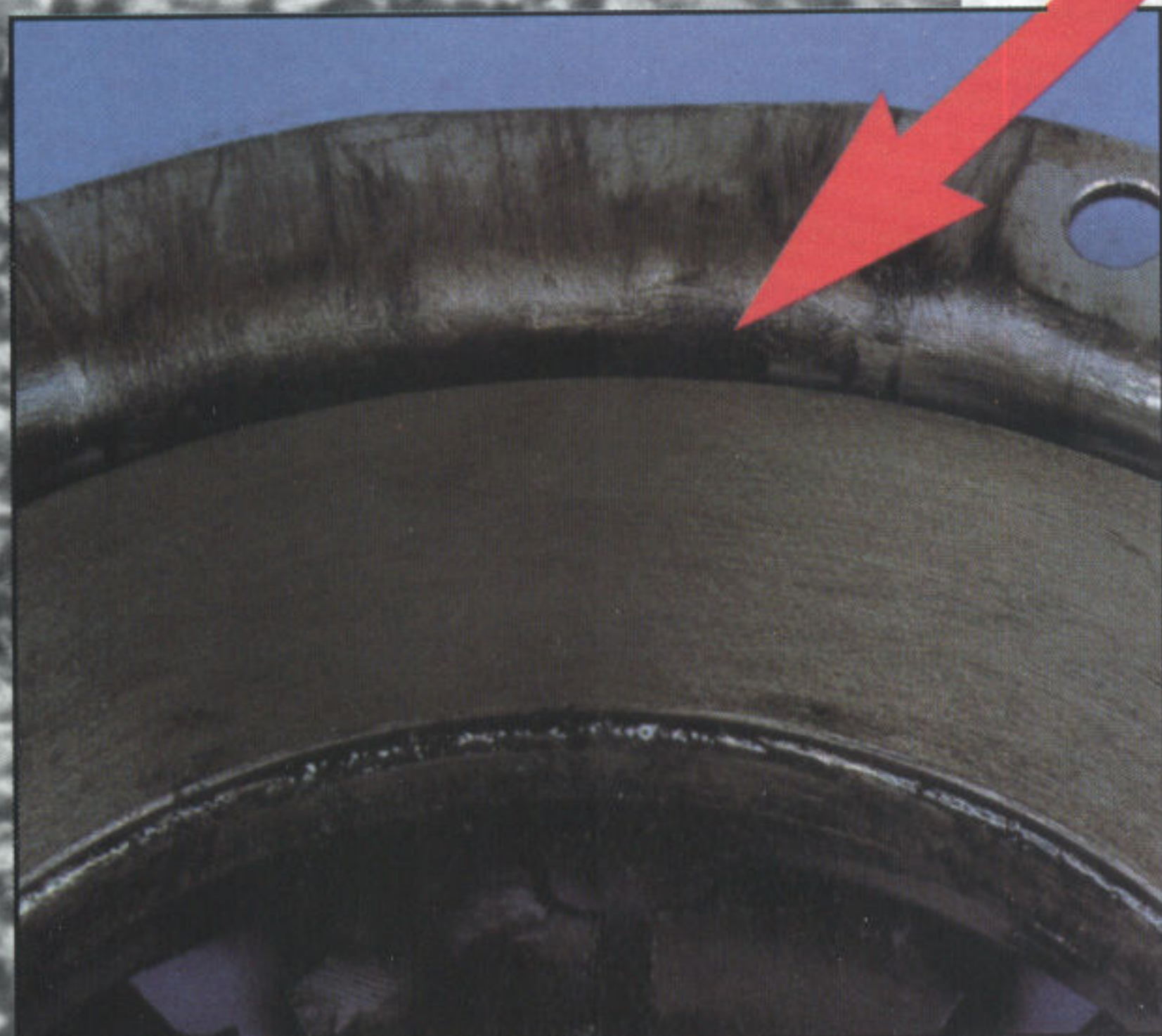
SYMPTOM: 1. Installation assist clips not removed.
2. Slipping clutch/excessive free travel.
3. Unable to adjust.
4. Will not transmit power.

CAUSE: Clutch cover pressure plate assembly hold down clips, to assist ease of installation, have not been removed.

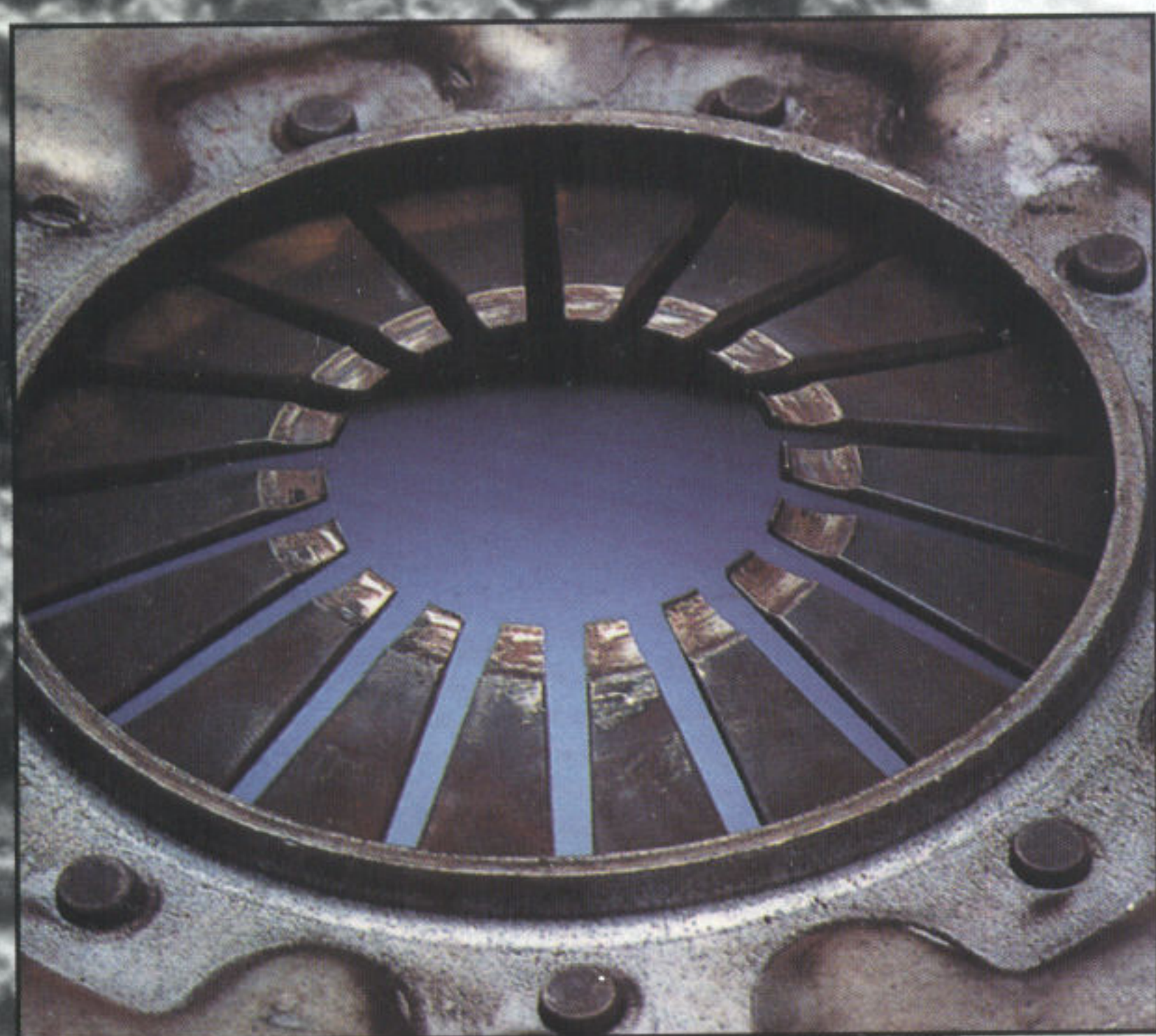
SOLUTION: Remove clips after installation.

TROUBLESHOOTING

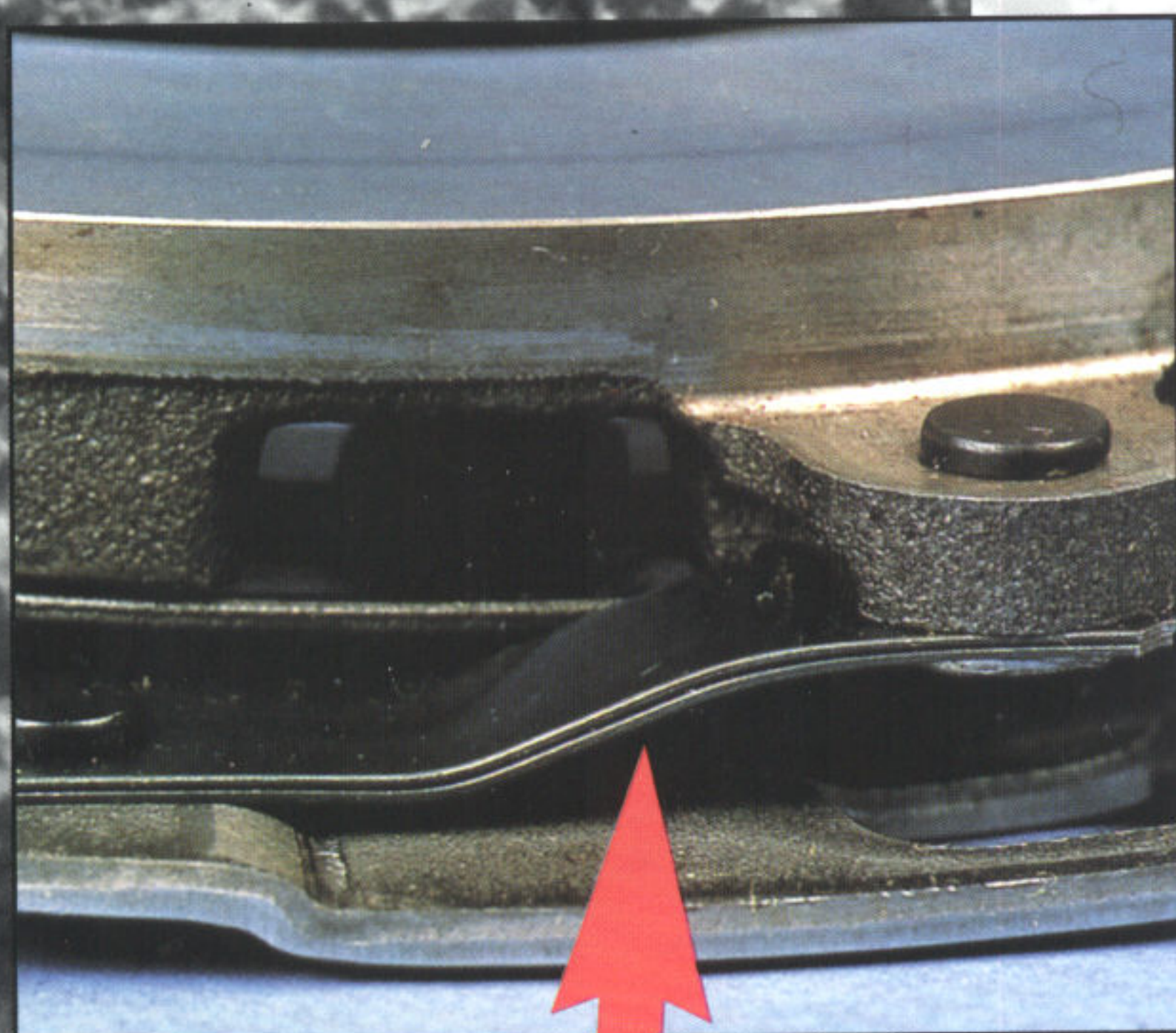
Malfuncions of Clutch Pressure Plate Cover Assemblies



- PROBLEM:** Slipping clutch.
- SYMPTOM:** Engine revving when power applied during acceleration/will not transmit power. Evidence of oil contamination on cover assembly.
- CAUSE:** Clutch cover pressure plate assembly contaminated with oil.
- SOLUTION:**
1. Repair oil leaks.
 2. If re-using a new cover that has been contaminated with oil, degrease the cover assembly and lightly lubricate diaphragm pivot rings before re-installing with light base oil.



- PROBLEM:** Slipping clutch/shudder/chatter.
- SYMPTOM:** Excessive wear on diaphragm tips and a highly glazed pressure plate casting.
- CAUSE:**
1. Lack of free travel/bearing riding on diaphragm.
 2. Driver resting foot on clutch pedal.
 3. Bearing slide worn/bearing stuck on a worn spot and not returning to original position.
 4. Clutch slave cylinder corroded or worn and piston not returning to allow free travel.
 5. Stretched or sticky cable.
- SOLUTION:**
1. Adjust free play in clutch to specification.
 2. Driver education.
 3. Replace bearing slide (gear box main drive nose cone).
 4. Replace clutch slave cylinder and check pressure build up in clutch master cylinder.
 5. Replace cable. (Do not re-oil old cable.)

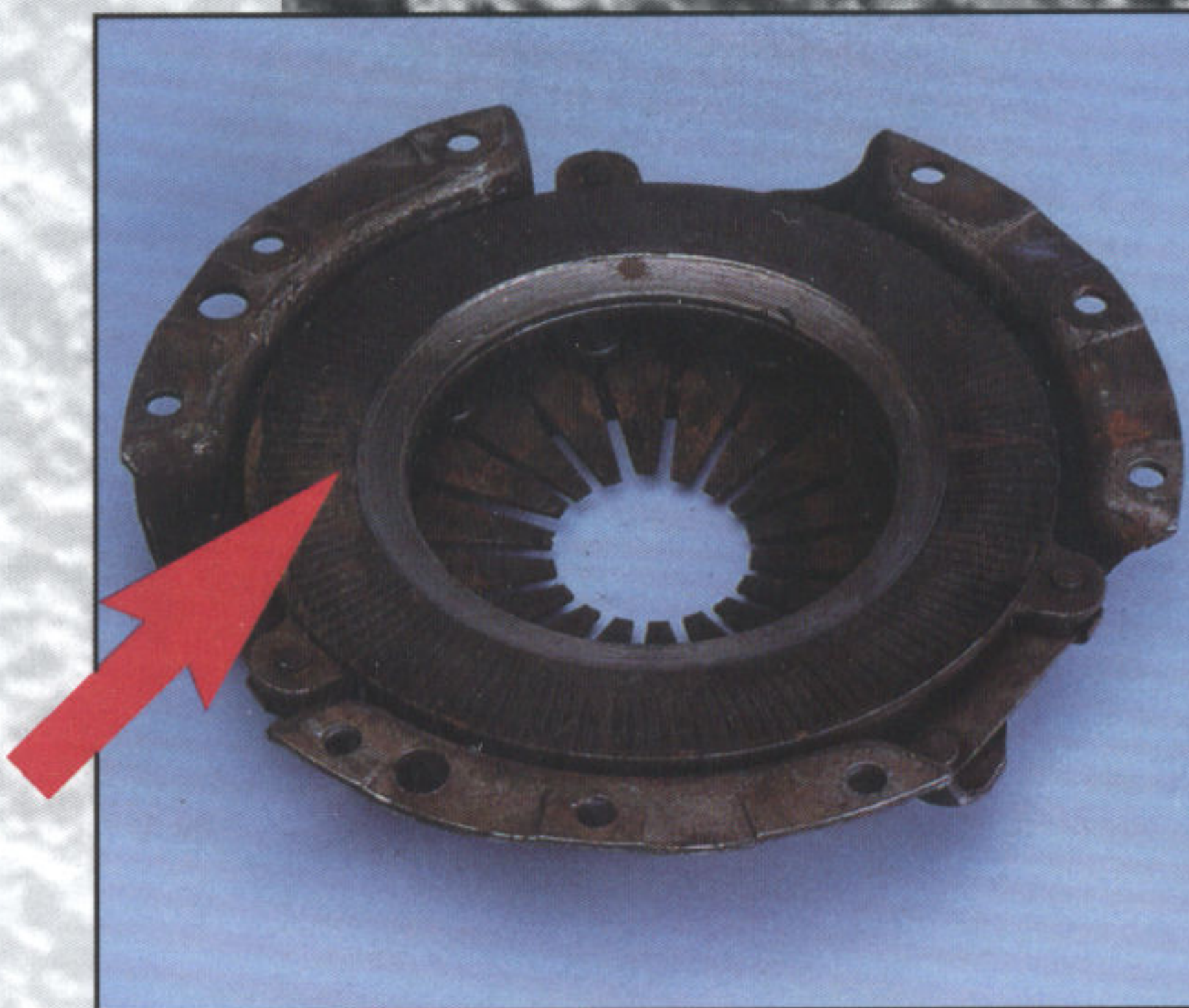


- PROBLEM:** No disengagement.
- SYMPTOM:** Unable to change gear/bent drive straps.
- CAUSE:**
1. Improper driving practice.
 2. Distorted retractor leaf spring caused by extreme reverse thrust load on spring.
 3. Sudden down shifting of gears (i.e. 5th gear to 2nd gear).
 4. Wrong clutch cover assembly used due to engine turning direction.
 5. Constant "dropping" of clutch at extremely high revs when taking off.
- SOLUTION:**
1. Driver education.
 2. Install correct cover assembly for application.
 3. Fit extra straps to suit heavy duty application (optional), or use Daikin Sports clutch.

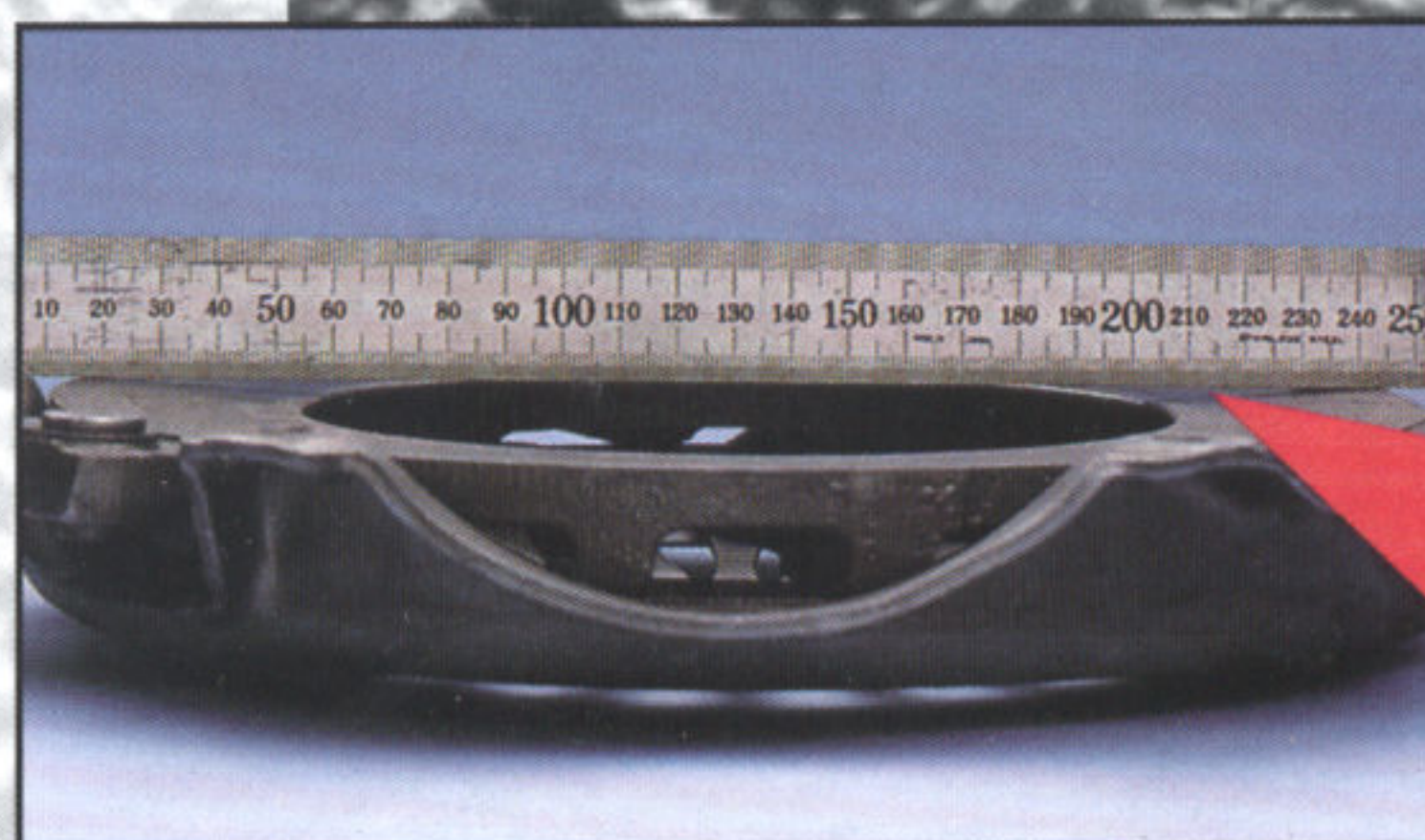
TROUBLESHOOTING

Malfunctions of Clutch Pressure Plate Cover Assemblies

- PROBLEM:** No disengagement.
- SYMPTOM:** Excessively scored clutch cover pressure plate assembly.
- CAUSE:** Contacting of clutch disc side plate hub on casting of pressure plate assembly, due to clutch disc and clutch cover pressure plate assembly being of two different and conflicting brands.
- SOLUTION:** Always use Daikin matching clutch disc and clutch cover pressure plate assembly to ensure Original Equipment quality and compatibility.

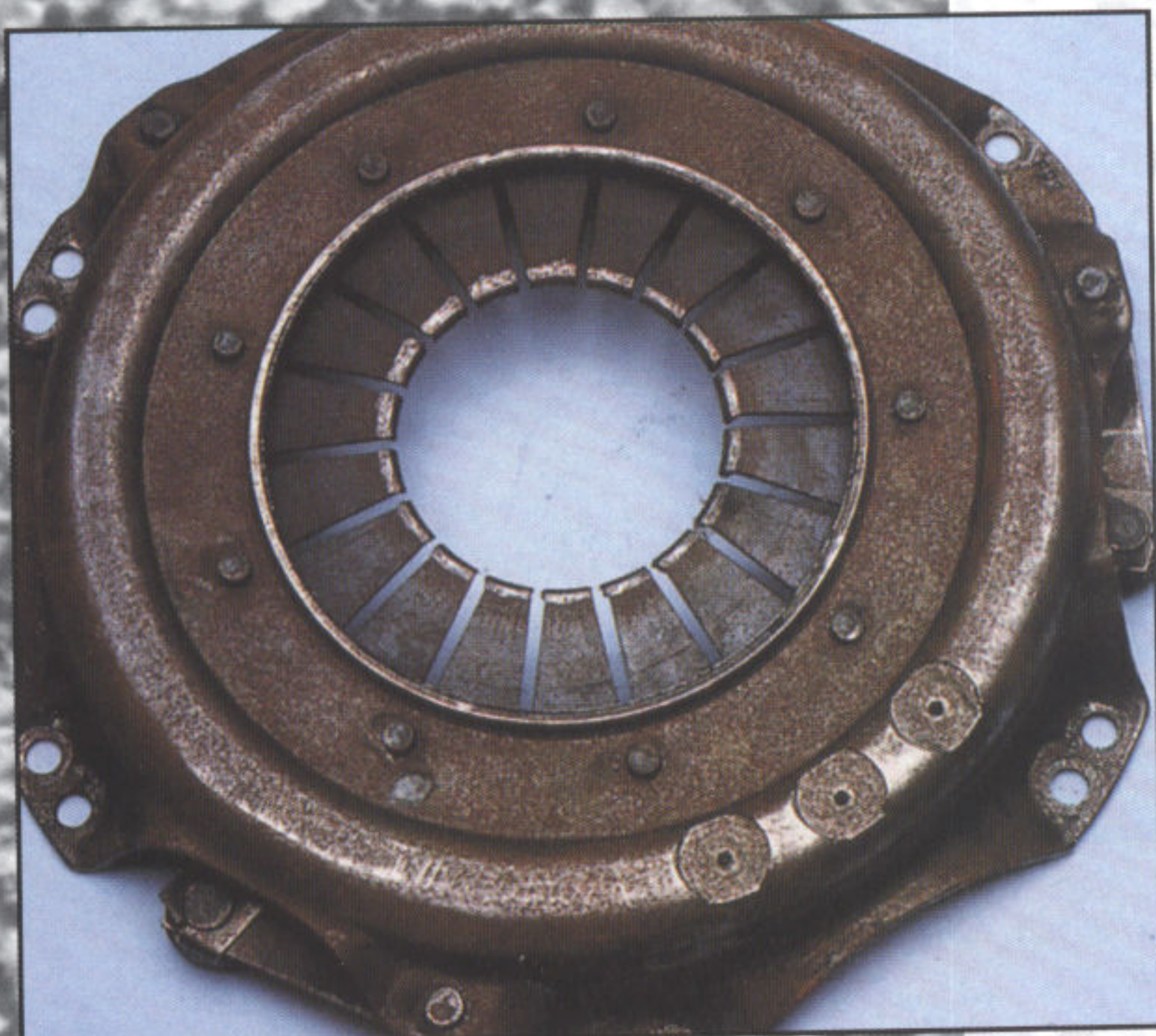


- PROBLEM:** Clutch drag/no disengagement.
- SYMPTOM:** Warped clutch cover pressure plate assembly casting.
- CAUSE:** Only clutch disc was replaced which caused a vacuum not allowing the clutch disc to separate from the clutch cover pressure plate assembly casting, when clutch is in disengaged position.
- SOLUTION:** Always replace clutch disc/clutch cover pressure plate assembly and clutch thrust release bearing when replacing clutch system.



TROUBLESHOOTING

Malfunfunctions of Clutch Pressure Plate Cover Assemblies



PROBLEM: Noisy clutch thrust bearing.

SYMPTOM: High pitched squeal. Excessive worn diaphragm spring.

CAUSE: Clutch thrust bearing fitted incorrectly (i.e. back to front).

SOLUTION: Replace with new bearing fitted correctly (i.e. right way around).



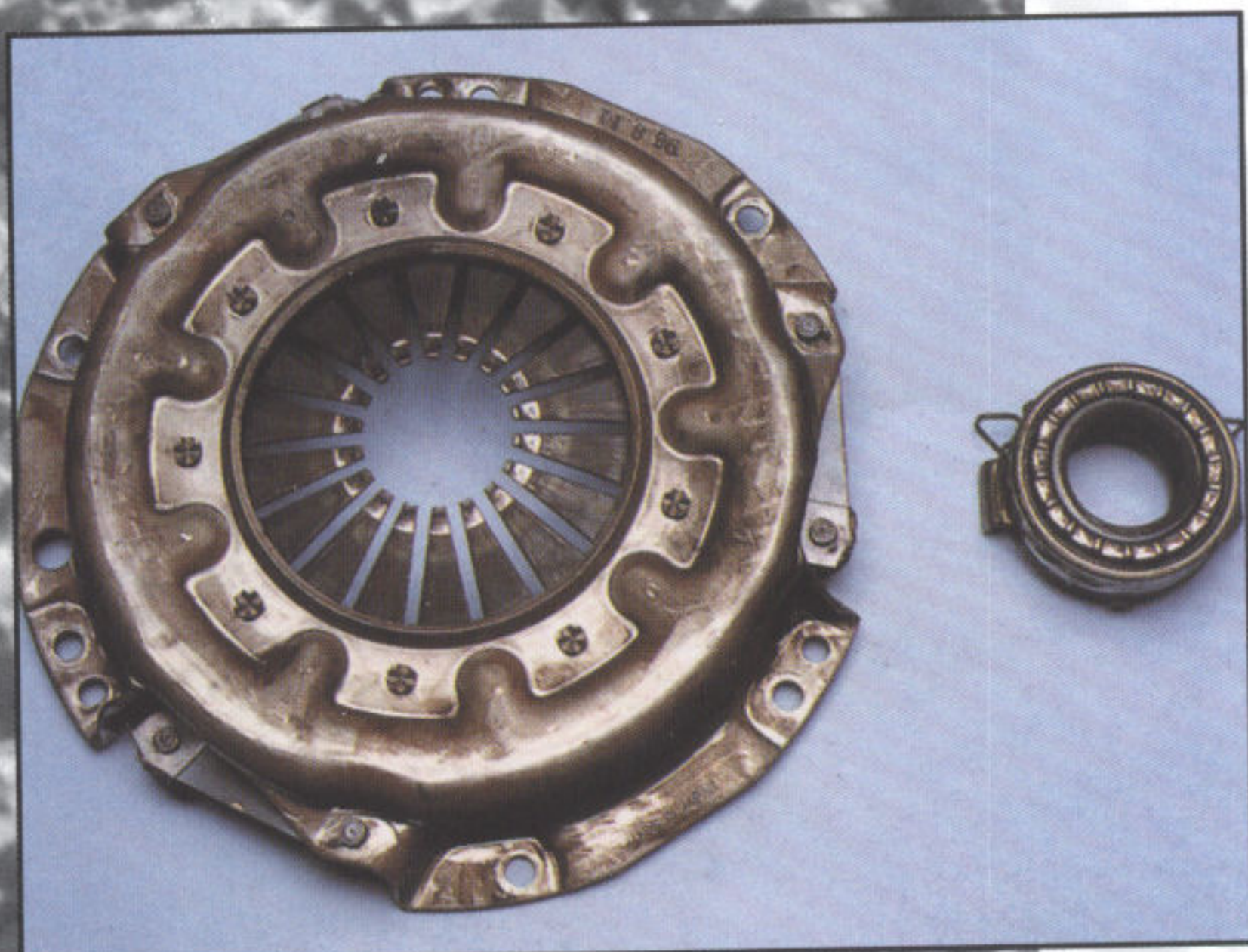
PROBLEM: Noisy clutch thrust bearing in new clutch (installed).

SYMPTOM: High pitched squealing noise. Damaged bearing.

CAUSE: Bearing fitted incorrectly.

SOLUTION: Fit new clutch thrust bearing right way around.

NOTE: Ensure clutch cover pressure plate assembly diaphragm has not been damaged from previous clutch thrust bearing.



PROBLEM: Continuous clutch thrust bearing noise.

SYMPTOM: Damaged clutch thrust bearing. Diaphragm spring excessively worn.

CAUSE: The clutch has not been adjusted correctly since installation or the clutch has never been adjusted during any routine service. The clutch thrust bearing and the diaphragm of the clutch cover pressure plate assembly have worn indentations into each other.

SOLUTION: 1. Fit new clutch kit as it is too late for adjustment of old clutch.
2. Always check free travel at service.

TROUBLESHOOTING

Malfunctions of Clutch Thrust Release Bearings

PROBLEM: Excessive free travel/clutch does not disengage/noisy - Japanese range of trucks.

SYMPTOM: Excessive score marks on clutch thrust bearing.

CAUSE: Incorrectly fitted clutch thrust bearing carrier to clutch release fork causing bearing carrier to spin off the fork tips and bearing carrier saddle. This problem could also be caused if the tension on the release bearing carrier wire clip is not sufficient.

SOLUTION:

1. All care should be taken when replacing bearing carrier on the clutch fork. Also ensure the retaining spring clip has sufficient tension.
2. Always work clutch thrust bearing carrier both forward and backward to ensure that the fork is retained firmly on the carrier saddle.



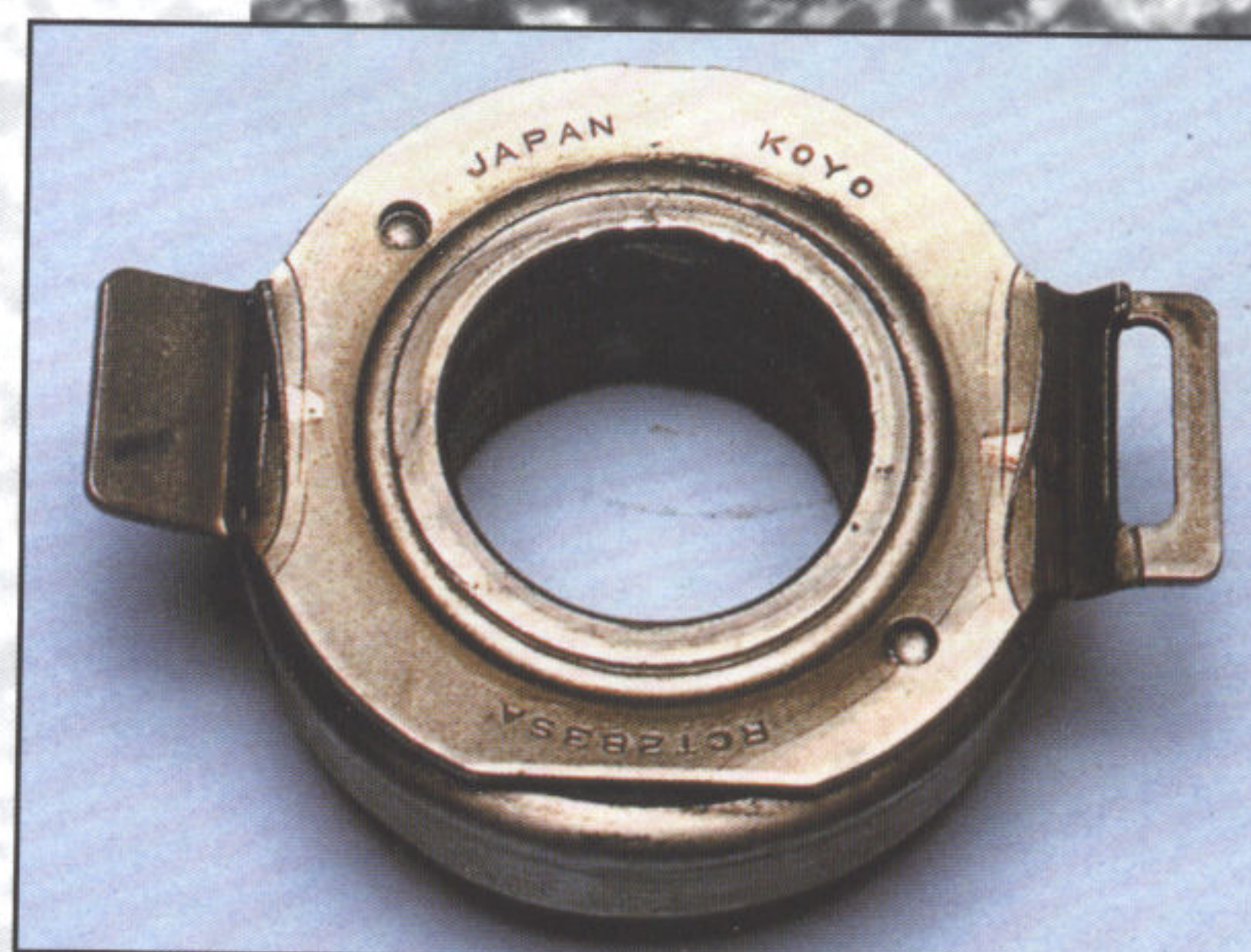
PROBLEM: Noisy rattle and difficult to engage gear.

SYMPTOM: Broken saddle clip.

CAUSE: Careless installation as spring retaining clip not assembled to fork during installation, or tension on wire retaining clip not correct.

SOLUTION:

1. Check tension on wire retaining clip.
2. Always check bearing on clutch release fork after installing bearing on it. Move the fork in both directions to ensure bearing is secure before refitting gear box.



PROBLEM: Pulsating pedal with engine running.

SYMPTOM: Worn clutch thrust bearing carrier.

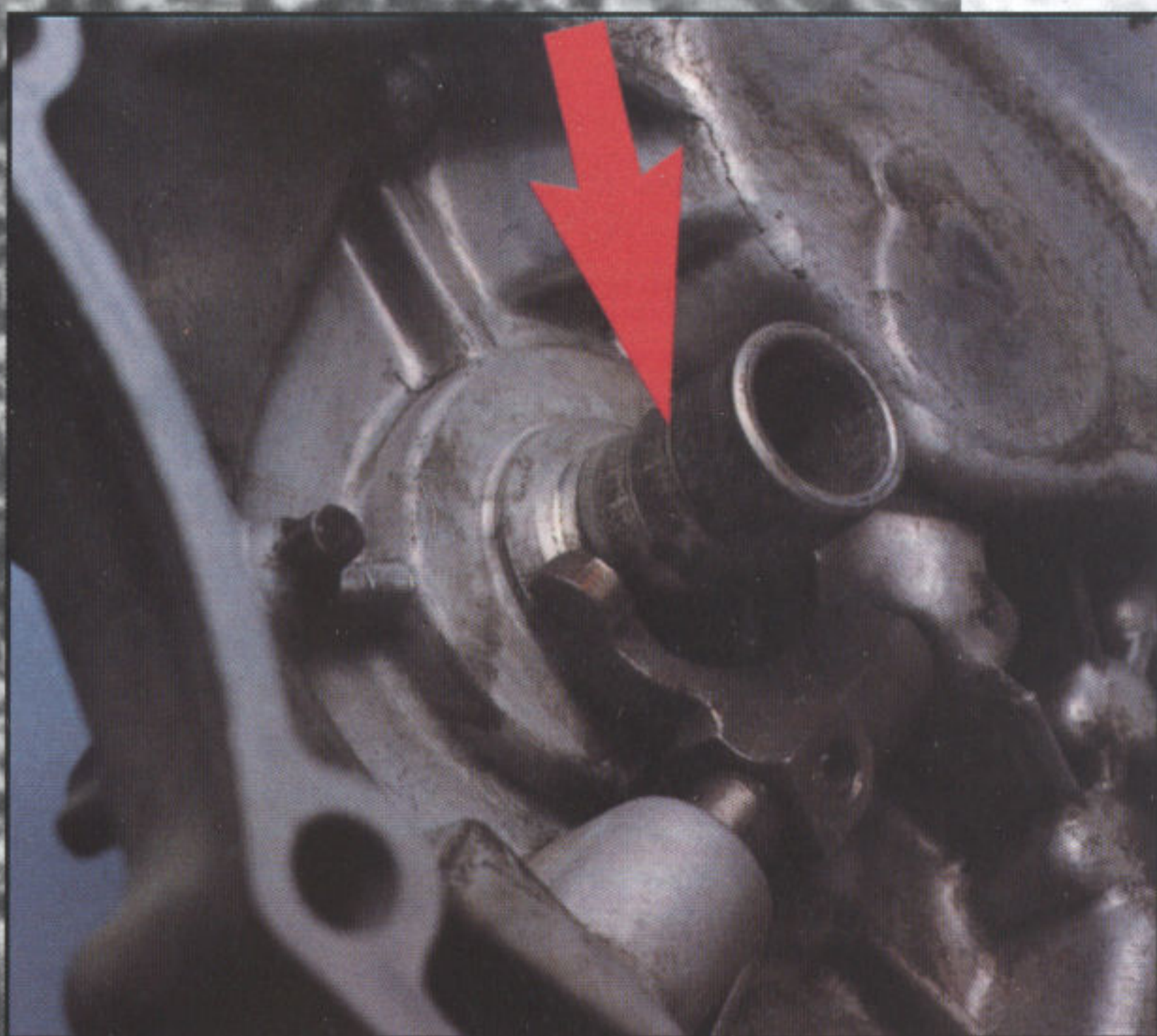
CAUSE: Faulty installation as the clutch thrust bearing carrier is worn on the saddle where the fork pivots. This also reduces the tension on the wear clip retainer. In this case, due to the lack of tension the fork has become dislodged and scored the back of the bearing.

SOLUTION: Always replace worn clutch thrust bearing carriers and worn forks.



TROUBLESHOOTING

Malfunctions of Clutch Thrust Release Bearings



PROBLEM: Notchy clutch pedal when depressing clutch.
SYMPTOM: Worn fixed gear box bearing slide/gear box nose cone slide.
CAUSE: Worn bearing slide/gear box nose cone slide not replaced.
SOLUTION: Renew or re-sleeve gear box bearing slide.



SYMPTOM: Unable to select gear and unable to stop rotation of main drive shaft.
PROBLEM: Clutch brake not operating (large pull type clutch).
CAUSE: 1. Wear on fingers of the clutch release fork mechanism, which include cross shaft bushings.
 2. Excessive wear on bearing housing head fork saddle.
SOLUTION: 1. Replace all worn bushings in relation to release lever mechanism.
 2. Replace bearing head assembly.
 3. Readjust to specification.



PROBLEM: 1. Clutch fork rattle.
 2. Sticky clutch pedal/pedal roughness.
SYMPTOM: Worn bearing slide.
CAUSE: 1. Clutch thrust bearing carrier not traveling smoothly on bearing slide/gear box nose cone slide.
 2. Misalignment.
SOLUTION: 1. Always replace worn bearing slide/nose cone gear box slide when installing new clutch.
 2. Refer to misalignment tips.

TROUBLESHOOTING Clutch Variations and Components

PROBLEM: Clutch fork rattle while idling.

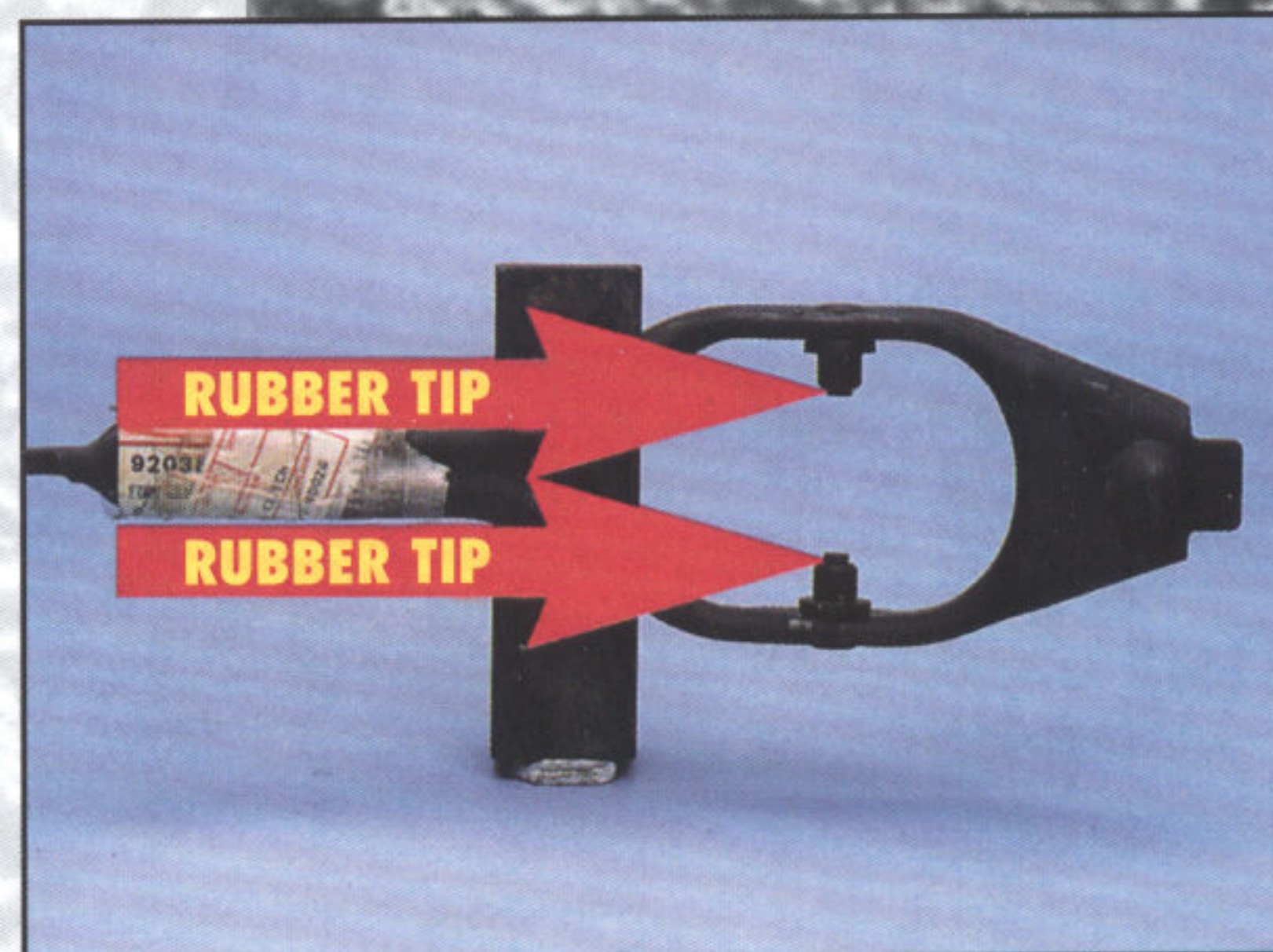
SYMPTOM: Rattle while idling from clutch area mostly after new clutch is installed. Worn absorber rubber tip.

CAUSE:

1. Some clutch thrust bearing carriers are held firmly by an absorber rubber bushing that wears.
2. Clutch thrust bearing carrier saddle worn.

SOLUTION:

1. Rectify by fitting new absorber rubber bushing to prevent the fork dropping against the bell housing window and rattle.
2. Always check for wear on clutch thrust bearing carrier saddle. Replace if necessary.



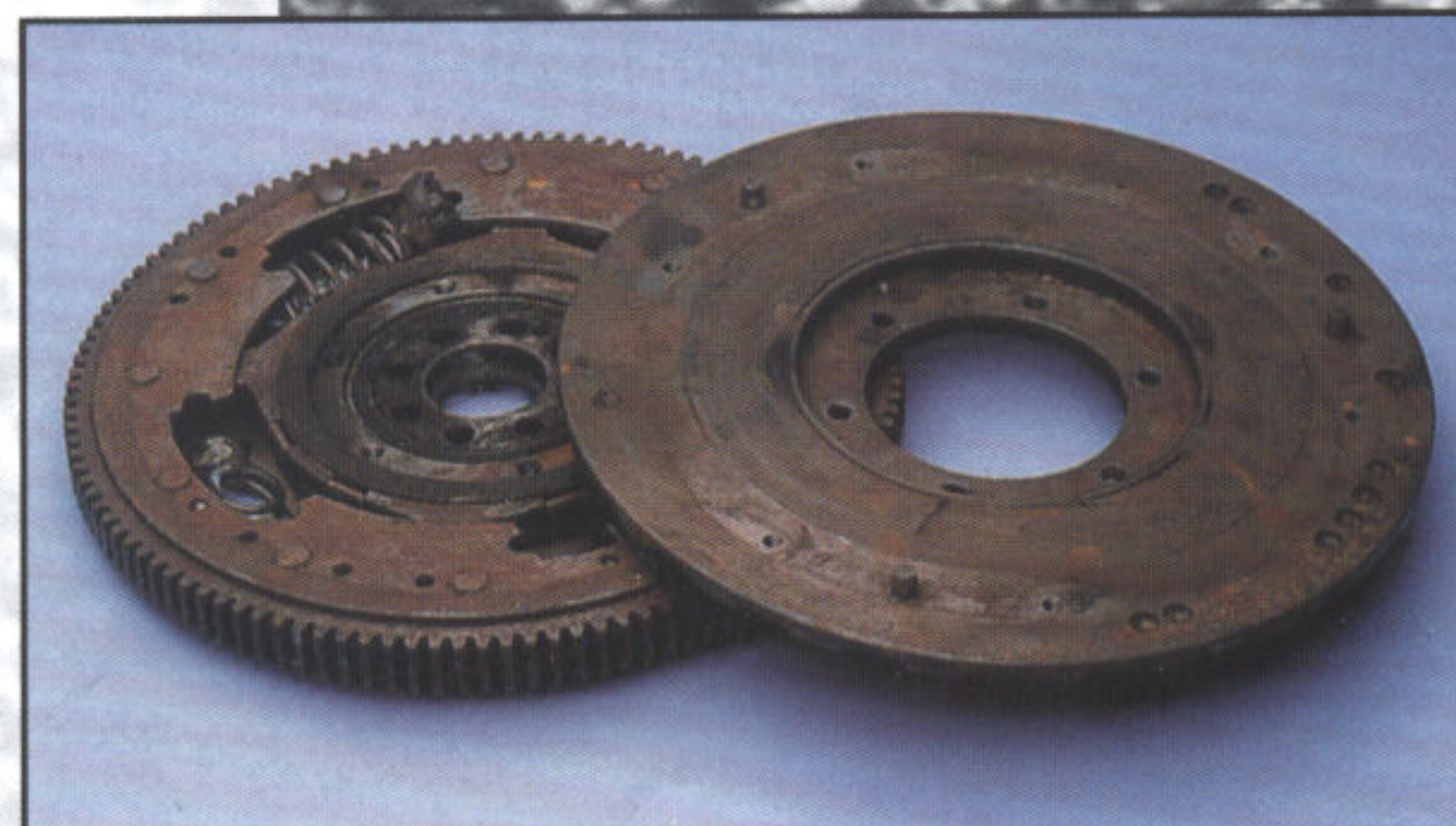
PROBLEM: Slipping clutch for vehicle with dual mass flywheel.

SYMPTOM: Power not transmitted in first gear when taking off/or slipping for a few seconds at take off. Damaged or excessively worn dual mass flywheel.

CAUSE: Worn or broken arc springs in dual mass flywheel.

SOLUTION:

1. Replace dual mass flywheel.
2. Always check dual mass flywheel thoroughly for excessive rotation travel.



DRIVELINE MISALIGNMENT IN GENERAL/TIPS

1. Warped alloy bell housing.
2. Tubular dowel pin guides crushed during fitting of bell housing to mating dowel pin hole and/or missing dowel pins.
3. Worn gear box bearing slide/gear box main drive nose cone bearing slide: causing bearing to come in contact with the diaphragm of cover assembly off center line while actuating clutch.
4. Dirt - chips - wiring harness clips - hydraulic pipe clamp clips - thick grease build up interfering between the mating surface of the gear box bell housing and motor.
5. Worn pilot bushings and pilot bearings along with front gear box main bearings to be checked for wear.
6. Exchange engines and gear boxes have missing dowel pins. Ensure you remove pins from your product when you send your core for remanufacture and refit when installing the new clutch.

OBSERVE THE SURE SIGNS WHEN REMOVING WORN CLUTCH:

1. Red dust.
2. Broken side plates or springs.
3. Damaged torque stopper pins.
4. Clutch disc with broken segments and broken friction material.
5. Broken or worn release bearing slide/gear box nose cone bearing slide.
6. Excessive bearing wear on diaphragm/lever tips.

TROUBLESHOOTING

Clutch Variations and Components

DIAGNOSING BEARING NOISES

1. CLUTCH RELEASE BEARING

A. Depress the clutch pedal approximately 2". The bearing is now in contact with the diaphragm. Should the bearing rumble or squeal then the clutch release bearing is most likely at fault (providing it has been pressed onto the carrier the right way around).

2. PILOT BEARING OR BUSHING

A. With engine running depress the clutch fully.

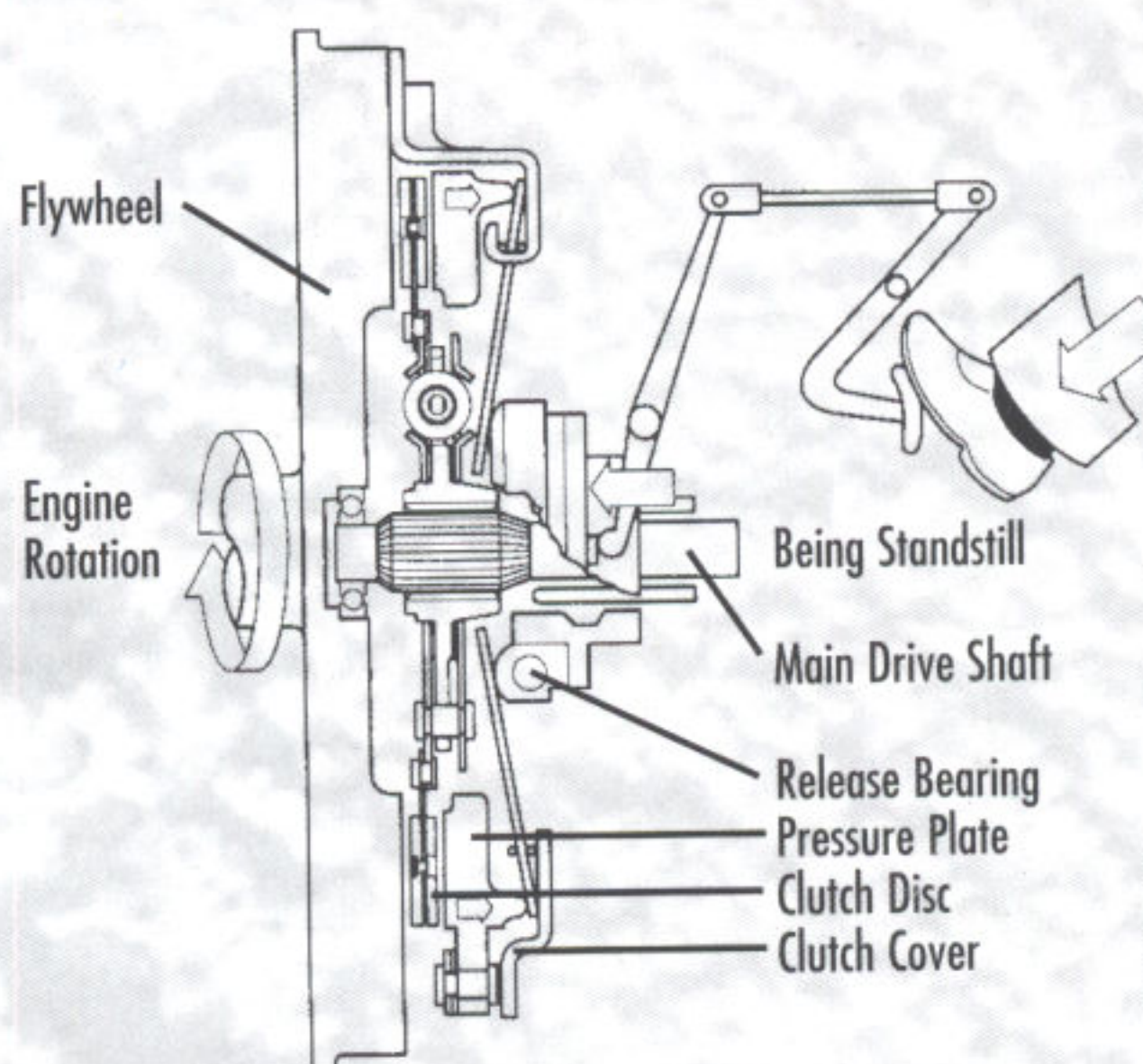
B. Select first gear.

C. Release the clutch. If the squeal is heard at the point of the clutch taking up, then the pilot bearing is faulty. In the event it is a bronze bushing it will indicate lack of lubrication on the I.D. of the bushing. If the bushing has been lubricated on the I.D. there is a greater possibility that the O.D. of the bushing is under sized and worn. The noise is then caused by the bushing spinning in the end of the crank. Pilot bushing noises are more apparent when engine and transmission systems are cold (i.e. in the morning).

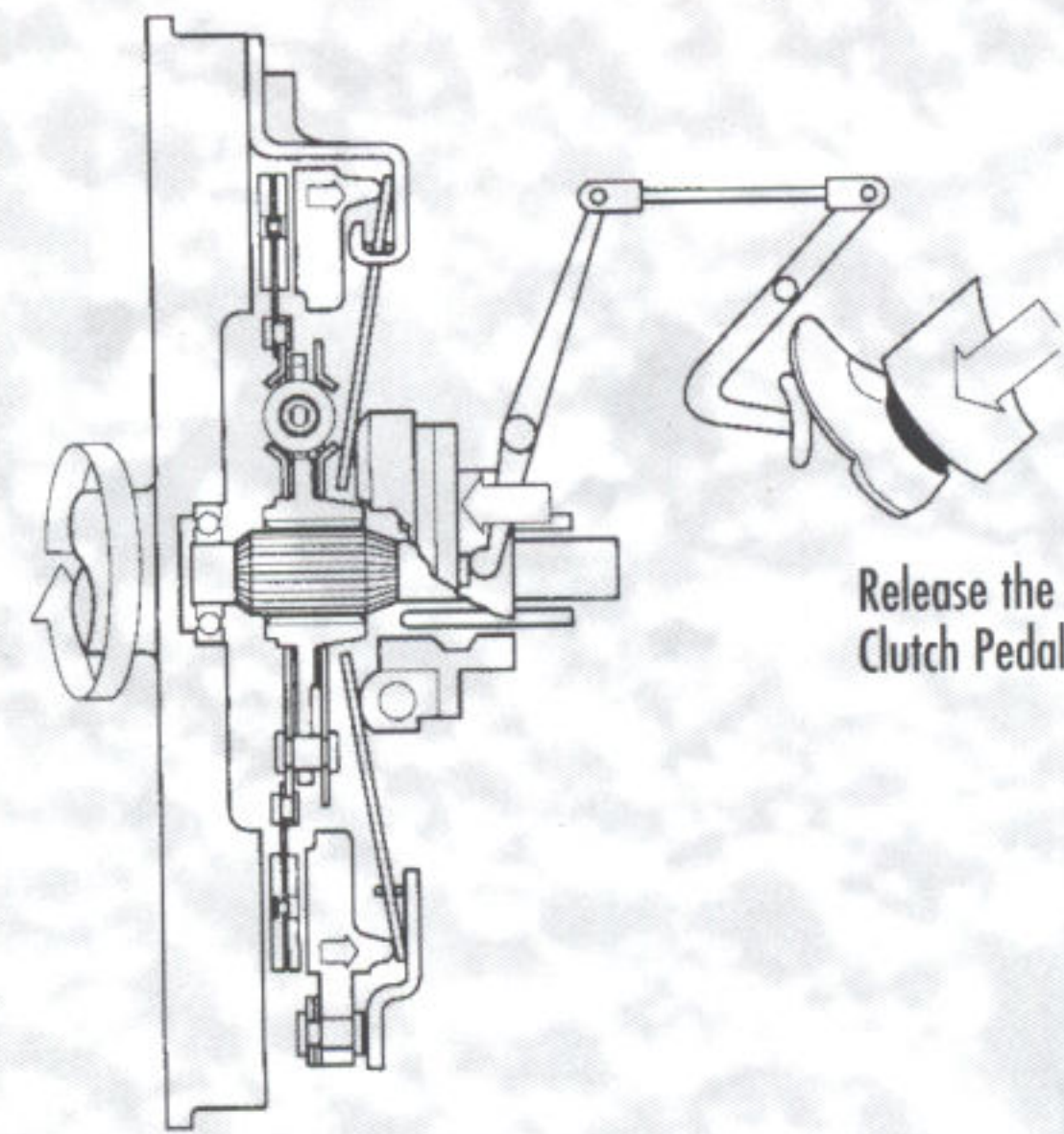
3. FRONT GEAR BOX BEARING

A. Drive the vehicle at approximately 30 kilometres/20 miles per hour in gear. If a noticeable grumble noise is apparent, depress the clutch pedal. This will, in turn, stop the main drive and bearing from spinning. If noise ceases it is probable that the front gear box bearing is faulty (as there is no load on the bearing).

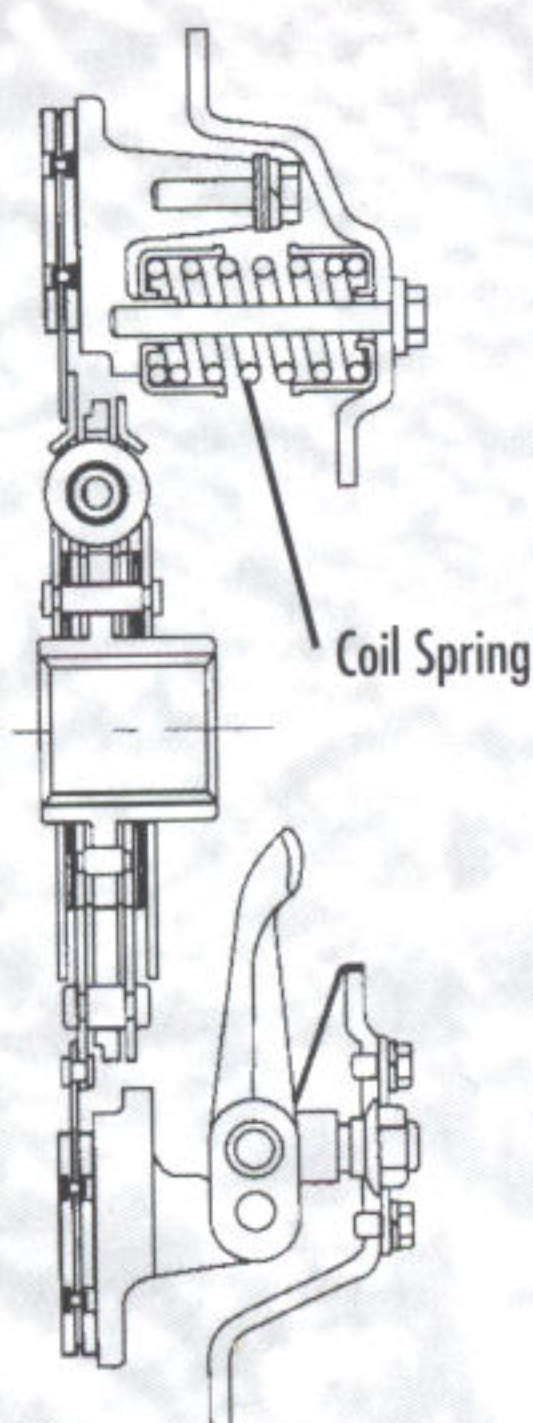
CLUTCH IS DISENGAGED



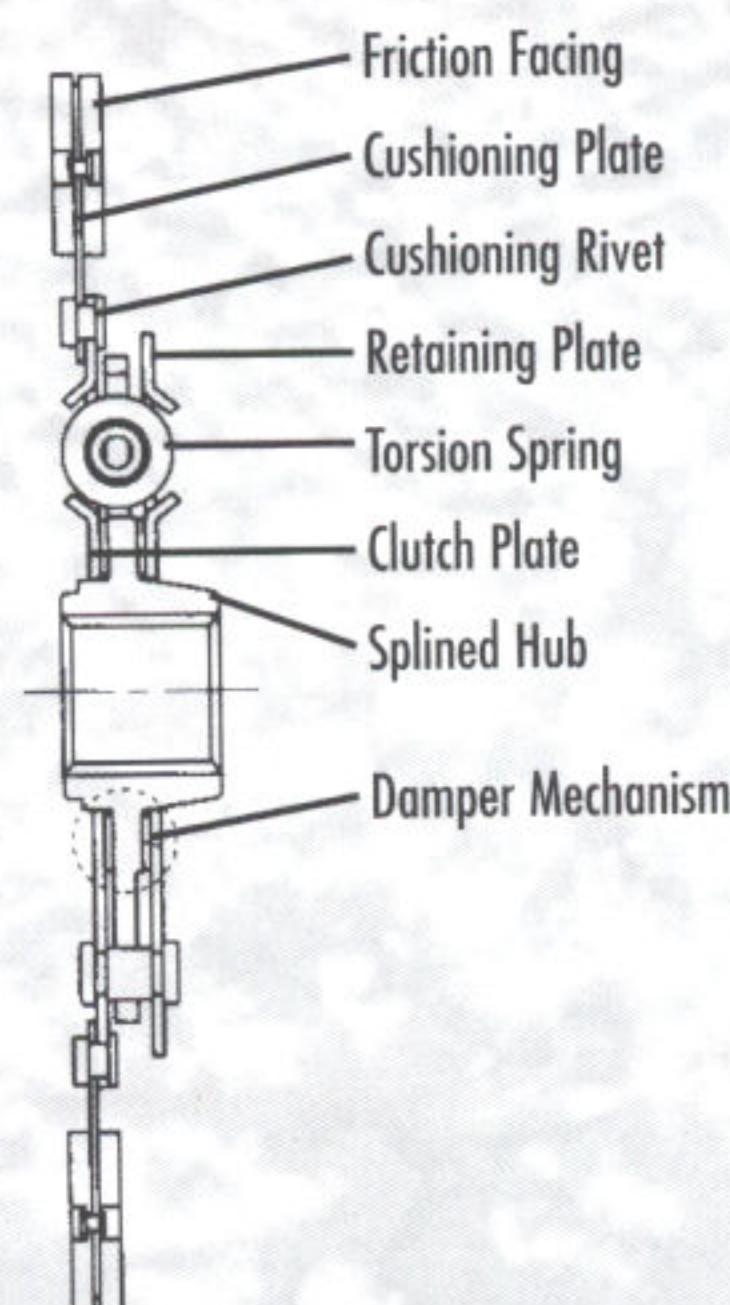
CLUTCH IS ENGAGED



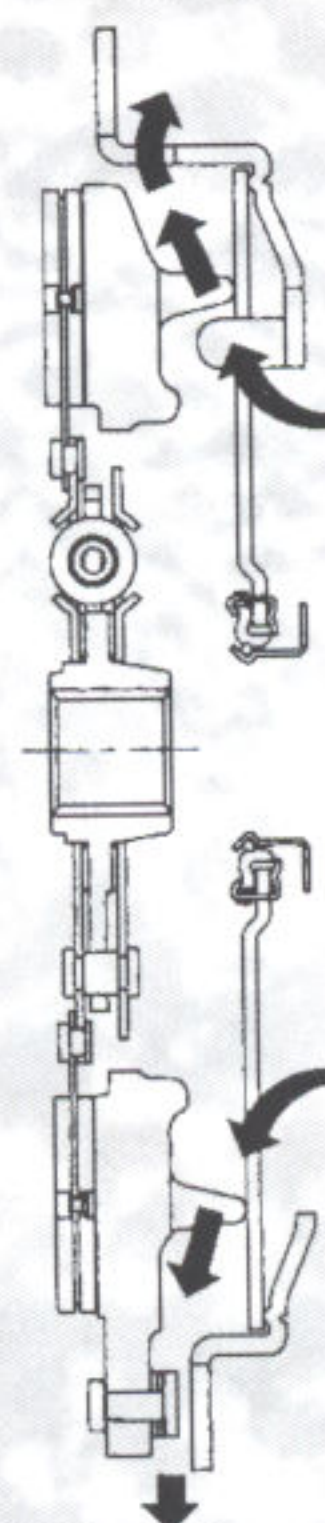
COIL SPRING TYPE CLUTCH COVER ASSEMBLY



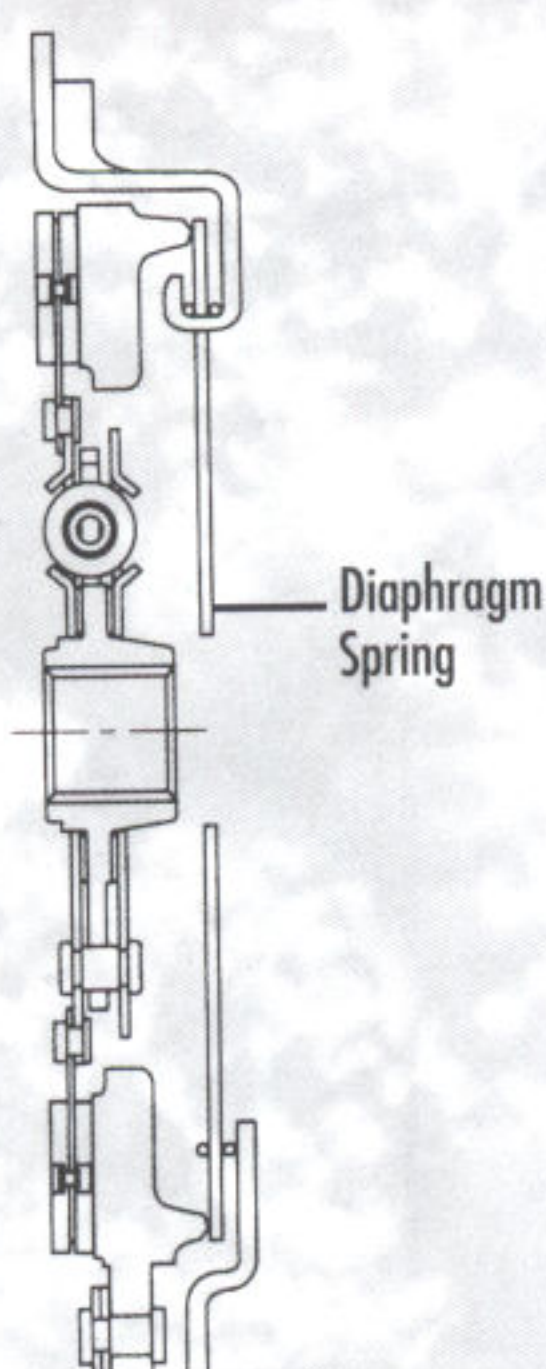
COMPONENT PARTS OF CLUTCH DISC



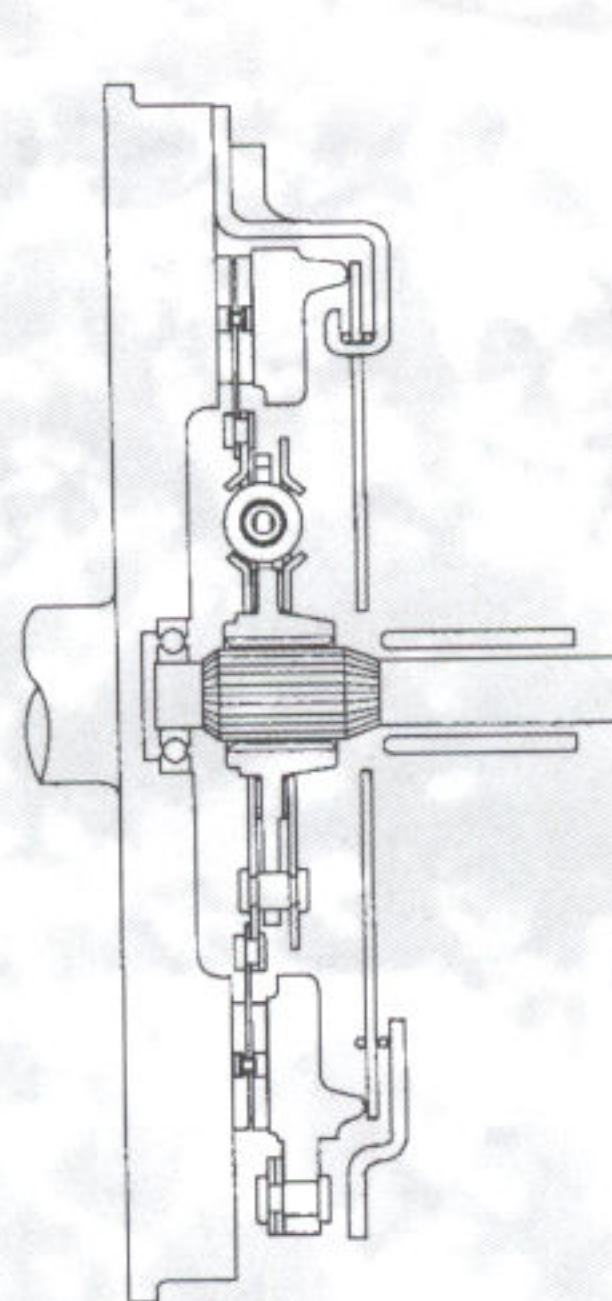
COOLING OF CLUTCHES



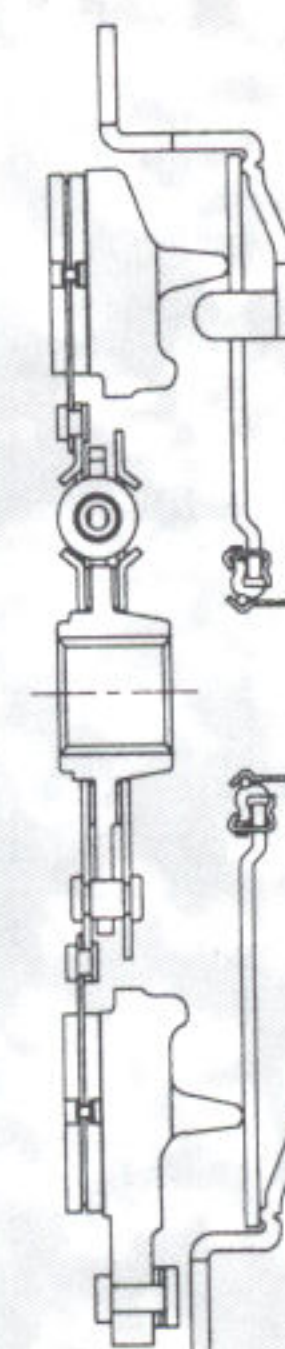
DIAPHRAGM SPRING TYPE CLUTCH COVER ASSEMBLY



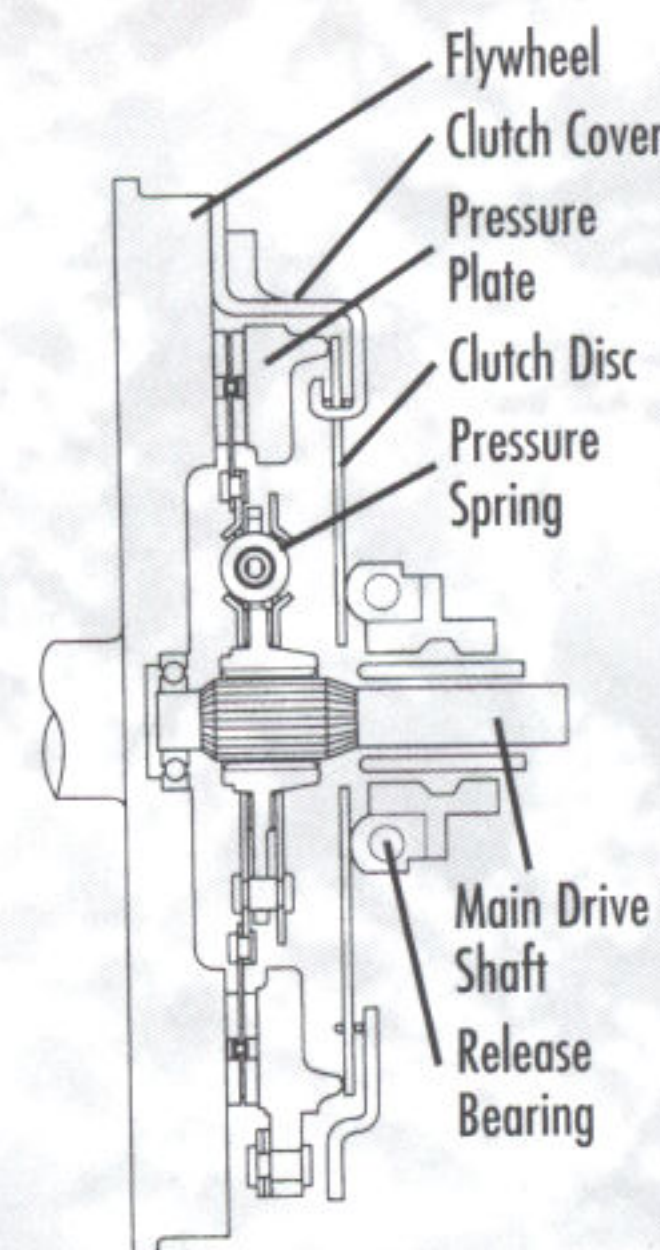
DRY TYPE SINGLE PLATE CLUTCH



PULL TYPE CLUTCH COVER



MAIN COMPONENT PARTS OF CLUTCH FAMILY



TROUBLESHOOTING

Clutch Variations and Components

GOOD FITTING PRACTICES...

INSTALLING YOUR NEW DAIKIN CLUTCH

1. Getting it right the first time. It is vital to diagnose the cause of clutch malfunction before clutch replacement (i.e. check hydraulic system - bearing free travel - clutch cable, oil leaks and check for any signs of red dust when old clutch is being removed). Any or all of these problems must be corrected before installing new clutch.
2. Ensure clutch supplied is correct for the application. If you're unsure, consult your Daikin Clutch catalog or your supplier, as fitting a clutch to the wrong application will void the warranty.
3. Flywheel must be resurfaced or warranty void and check pilot bearing or bushing and replace if necessary.
4. Before fitting, check clutch for any shipping damage. Next, check that clutch disc slides freely on gearbox shaft and then clean shaft splines. Lightly grease the shaft splines with high melting point grease. Always ensure bell housing is degreased and is free of dust and that fibers from the worn clutch are removed.
5. Check the clutch release fork for cracks, check the clutch cable for stretch signs and check the release bearing gear box slide/gear box main drive nose cone bearing slide for any wear. Always lightly grease this part where the bearing slides. This will allow smooth sliding of the bearing carrier. Always work the fork forward and backwards after installing bearing on the bearing slide.
6. Place the clutch cover pressure plate assembly over the clutch disc, after checking that the disc is the right way around and the hub section of the disc does not contact on the casting of the clutch cover assembly or the flywheel. A suitable clutch aligning tool will ensure correct alignment, assist in ease of installation and avoid spline damage. (Burrs on splines are a major cause of difficult gear disengagement.) Ensure pressure plate dowels are aligned to the cover. Tighten bolts in a diagonal pattern and never use air tools to install a clutch cover assembly.
7. Re-fit gear box, taking care not to bend the clutch disc. Never support the gear box by the clutch disc or use any force to align gear box shaft.
8. Check all bell housing dowels are in correct position and tighten bell housing bolts. Ensure there is no dirt or foreign material between the mating surfaces of the engine and the bell housing.
9. Perform any clutch adjustments only to vehicle manufacturer's specifications.
10. Always check the clutch cable if you are unable to obtain disengagement when a new clutch is fitted. Start off your checking process by replacing the cable and checking the hydraulic system.
11. Road test vehicle and never abuse a newly fitted clutch. Allow 1,000 km/600 mi run in and always adjust free travel on your new clutch at 1,000 km/600 mi and 3,000 km/1,800 mi. Thereafter adjust at every 10,000 km/6,200 mi.

WARNING: Do not use Daikin clutches in any situation where engine RPM's may exceed manufacturer's specifications - a pressure plate could explode unexpectedly causing serious injury or death to vehicle occupants and bystanders. Clutch cover and bell housing will not protect against exploding pressure plates. Refer to Application Catalog for correct application.

DAIKIN CLUTCH

Serving the North American Automotive Aftermarket

Daikin Clutch, a subsidiary of Exedy Corporation, is one of the world's leading manufacturers of automotive clutch assemblies. We consistently deliver first-rate quality and service to top automotive manufacturers across the globe who demand only the best when installing their manual transmission packages. In the automotive aftermarket, Daikin products are sold over the counter in over 80 countries.

Exedy, a Japan-based corporation, has manufactured Daikin brand clutch assemblies along with other drive train components for over 75 years. Daikin products have been present in North America since 1968, and Daikin clutch assemblies have been manufactured in the United States since 1988 to serve both original equipment and aftermarket customers in North, Central and South America. Currently, we produce over 70% of our manufactured products at our state of the art facility in Belleville, Michigan. In nearby Canton, Michigan, our 50,000 square foot distribution facility is dedicated to serve all of our domestic and aftermarket customers.

Daikin has a worldwide reputation for supplying the highest quality clutch assemblies for virtually every make of vehicle on the road today. Our tradition for excellence assures that our aftermarket clutch kit and component programs provide the same quality and specifications that our original equipment customers have come to expect. All Daikin products are distinctively packaged to reflect our commitment to quality and service, and are backed by a full warranty to provide unmatched performance to today's professional installer.

Daikin Clutch Corporation.

Over the Counter...Over the World.

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