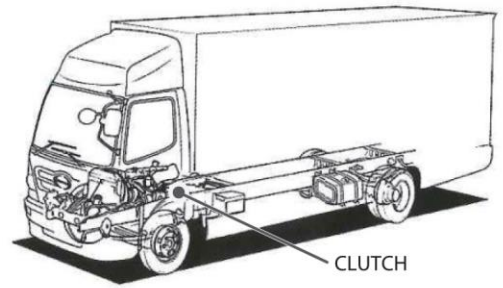


CLUTCH DISC&COVER



Function

The clutch is located between the engine and transmission (T/M), and is responsible for transmitting the force produced by the engine to the transmission during take-off and driving (Fig. 1-1), as well as cutting off the engine's output when stopping the vehicle or changing gears (Fig. 1-2).

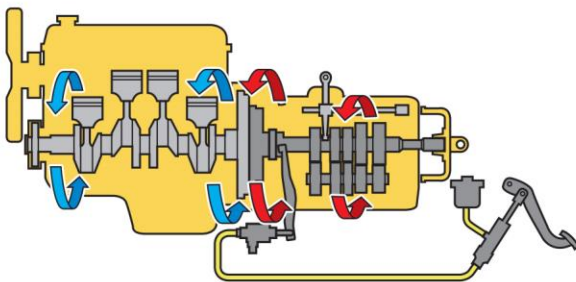


Fig. 1-1 During take-off and driving

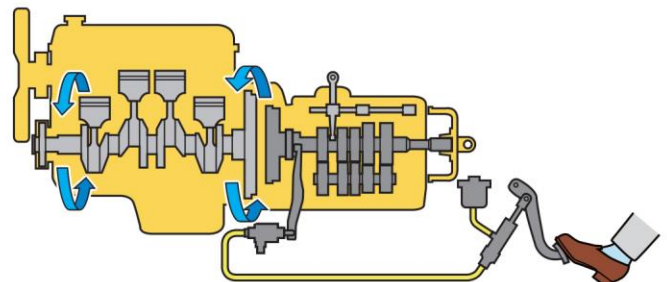


Fig. 1-2 During gear changes and stopping

<Remarks>

Transmissions are either manual or automatic, with the former coupled with dry clutches, and the latter with wet clutches. This document describes dry clutches for manual transmissions.



Manual transmission



Automatic transmission

Differences between genuine and aftermarket parts

1) Hino genuine clutches

- (1) In contrast to aftermarket parts that focus on generic compatibility, Hino genuine clutches have been designed specifically to be compatible with Hino vehicles.
- (2) These clutches offer better performance and quality than those of aftermarket parts that focus on generic compatibility.
- (3) These clutches offer excellent resistance to wear, which results in less frequent replacements and lower costs.

2) Differences between genuine and aftermarket parts

Item	Genuine	Aftermarket parts
1. Life time	Life time is one year or longer	Half (or less than half) of the life time of genuine parts
2. Take off characteristics	Smooth torque transmission results in smooth take off.	Torque transmission is not smooth which results in juddering.

3. Heat resistance (Heating during half clutching)	The clutches have appropriate wear coefficients.	The facing is prone to heating move during half-clutching, which leads to a poorer wear coefficient.
4. Damper performance	Delivers excellent sonic-vibration performance when idling and driving.	Poor sonic-vibration performance leads to noise and vibration.

The performance data of aftermarket parts shown above were obtained from a limited sampling of parts and do not represent the performance of all aftermarket parts.

The importance of periodic inspections and maintenance

1) Usage beyond limit

Using the clutch disc or clutch cover beyond their usage limits can cause your vehicle to become immobile, resulting in extra costs for towing, etc.



2) Phenomena and action

If you notice any of the following, it is time to replace your parts. We recommend early replacement.

	Phenomena	Cause	Actions
Slippage	<ul style="list-style-type: none"> Your vehicle does not accelerate even as the engine revs up. Your vehicle does not have the hill climbing performance that it used to. 	<ul style="list-style-type: none"> Oil on disc surface Disc surface is worn. 	<ul style="list-style-type: none"> Replace clutch disc
		<ul style="list-style-type: none"> Pressure plate is warped. 	<ul style="list-style-type: none"> Replace pressure plate
Jittering	<ul style="list-style-type: none"> Your vehicle's entire body vibrates unpleasantly when use half-clutching during take off. 	<ul style="list-style-type: none"> The disc's contact surface has deteriorated. 	<ul style="list-style-type: none"> Replace clutch disc
		<ul style="list-style-type: none"> Pressure plate is warped. 	<ul style="list-style-type: none"> Replace pressure plate

3) Replacement timing

(1) Other signs that your clutch disc needs replacement

- If the facing rivets are less than 0.3mm depressed from the surface. (See Fig. 3)
- If the flywheel is damaged.

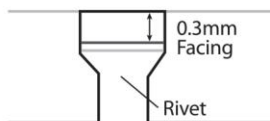


Fig. 3 Facing rivet



(2) Other signs that your clutch cover needs replacement

- If the contact surface of the diaphragm spring's release bearing is unusually worn.
- If the clutch disc's contact surface becomes warped.
- If there is a large scratch on the clutch disc's contact surface.



In most cases, the clutch cover is integrated with the pressure plate. Since the pressure plate is a degradable item, it must be replaced periodically. During a clutch disc replacement, make sure to inspect the clutch cover and recommend to your customer that this be replaced as well.