

F2 MANUAL TRANSMISSION/MANUAL TRANSAXLE

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1 OUTLINE

1-1 DESCRIPTION

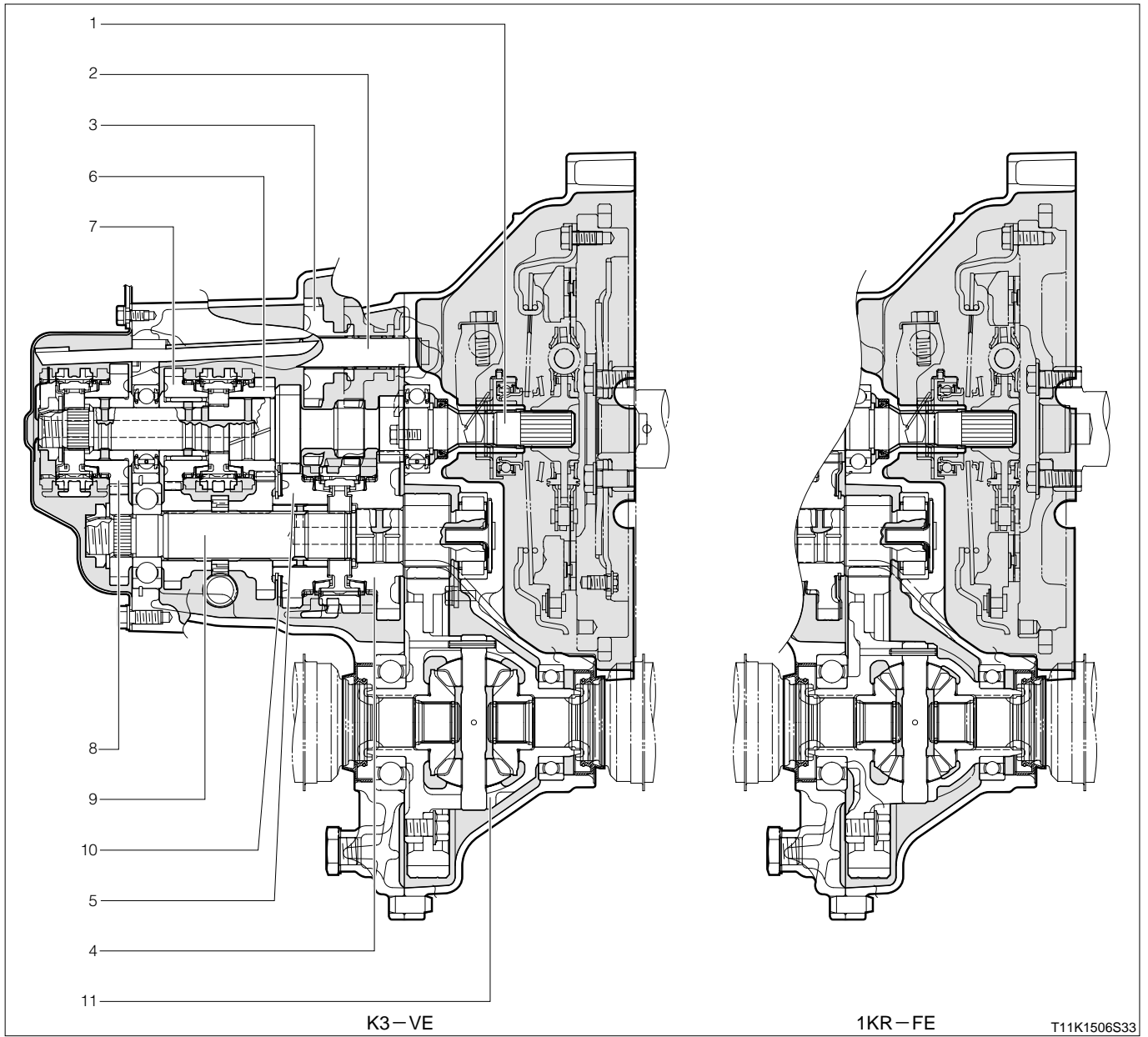
Vehicles with Type 1KR-FE engine are equipped with Type M5H-B3 manual transaxle, whereas vehicles with Type K3-VE engine are provided with Type M5H-C1 manual transaxle.

1-2 SPECIFICATION

Specifications table of manual transaxle

Driving method		2WD	←
Engine type		1KR-FE	K3-VE
Transaxle type		M5H-B3	M5H-C1
Transaxle identification code (label)		951	952
Gear ratio	1st	3.182	←
	2nd	1.842	←
	3rd	1.25	←
	4th	0.917	0.865
	5th	0.75	←
	Reverse	3.143	←
Final reduction gear ratio		4.500	4.267
Lubrication fluid	Nomenclature	Transmission gear oil SAE75W-85 or 75W-90 (API classification GL-3 or GL-4)	←
	Capacity	2.25ℓ	←

1-3 SECTIONAL VIEW



1	Input shaft	7	4th gear
2	Reverse idler gear shaft	8	5th gear
3	Reverse idler gear	9	Output shaft
4	1st gear	10	Sub-gear
5	2nd gear	11	Differential
6	3rd gear		

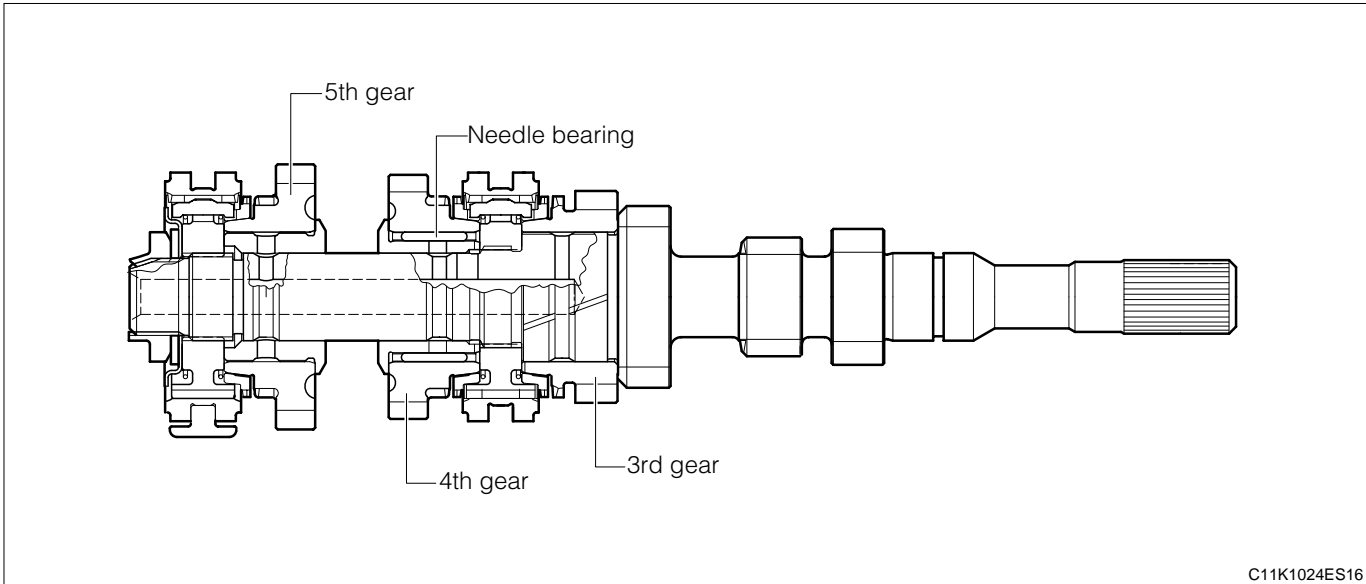
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2 CONSTRUCTION AND OPERATION

2-1 POWER TRAIN MECHANISM

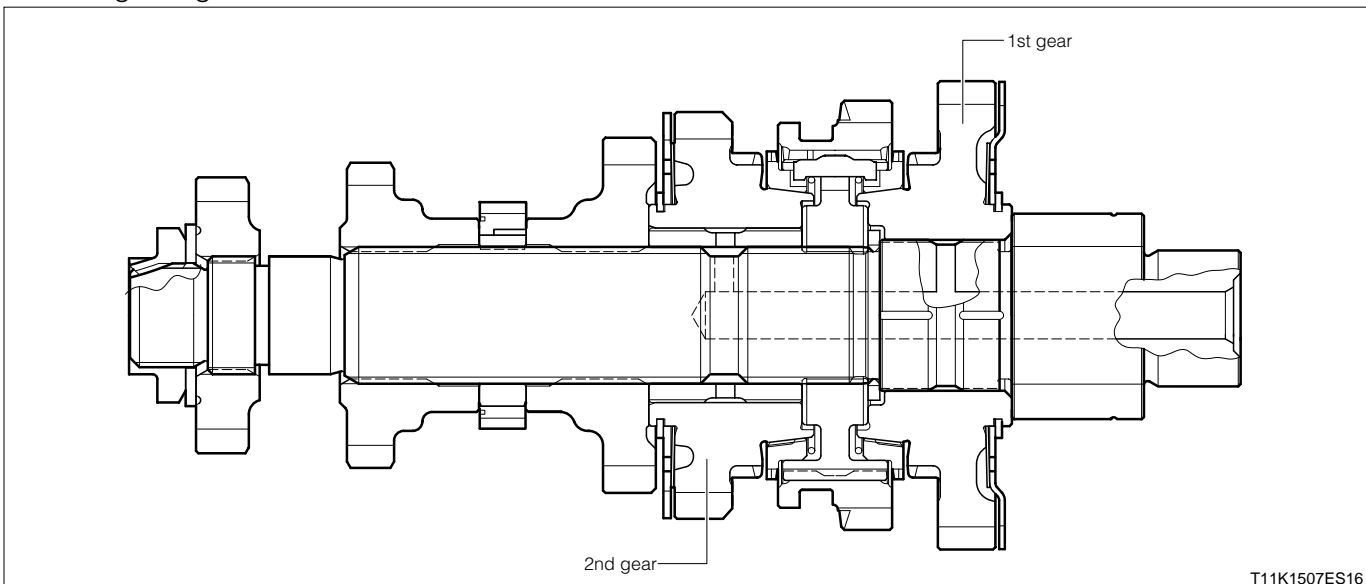
2-1-1 INPUT SHAFT

- 1.The input shaft transmits the power inputted from the clutch disc to the output shaft. The input shaft is incorporated in a case by means of the radial ball bearing.
- 2.The 3rd gear, 4th gear and 5th gear are incorporated on the input shaft. The bearing for the 4th gear employs needle bearings.



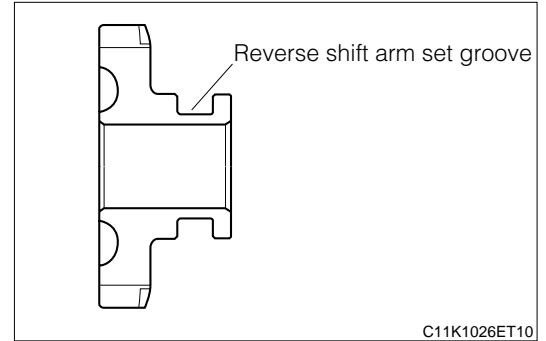
2-1-2 OUTPUT SHAFT

- 1.The output shaft transmits the power inputted from the input shaft to the differential. The output shaft is also incorporated in a case as the input shaft is so incorporated.
- 2.The 1st gear and 2nd gears are incorporated on the output shaft.
- 3.A sub gear is provided for the 1st gear of the transaxle for the K3-VE engine and each of the 1st gear and 2nd gear of the transaxle for the 1KR-FE engine in order to prevent generation of rattling noise during idling.



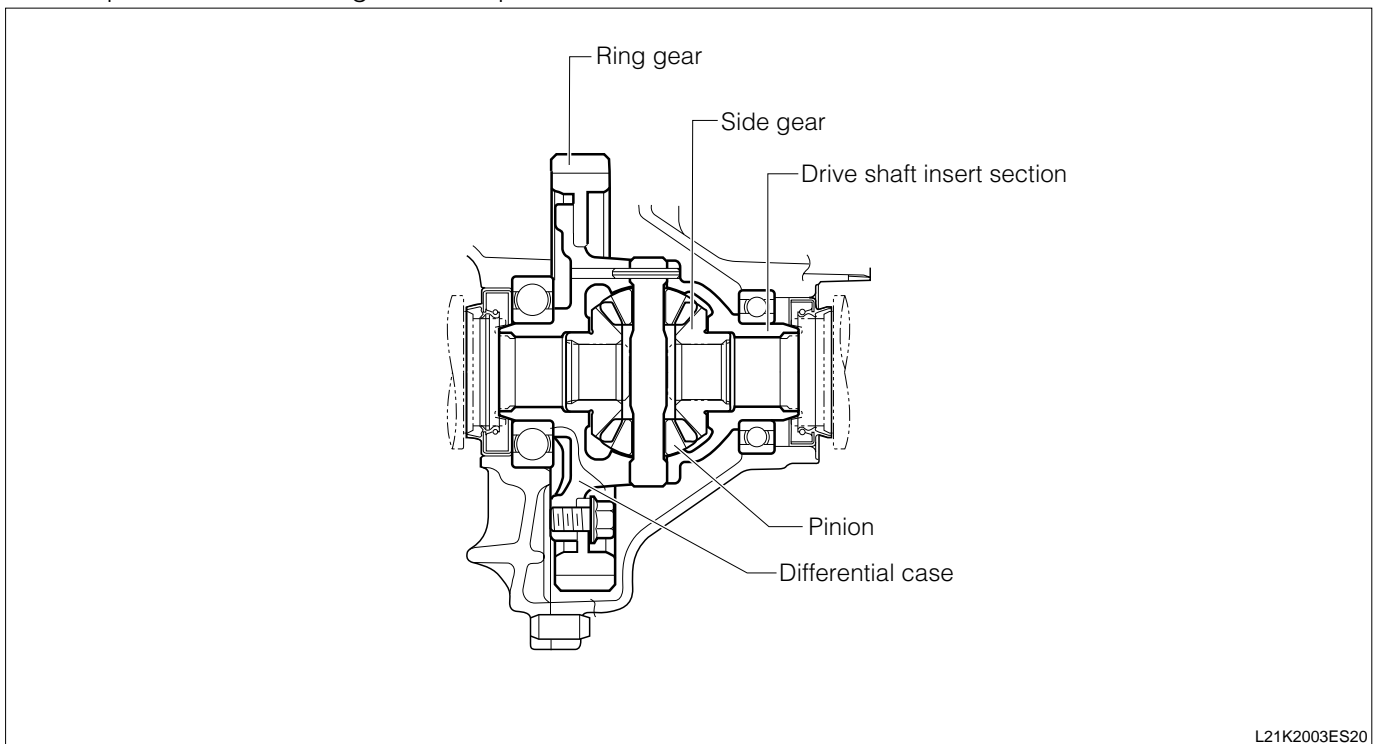
2-1-3 REVERSE IDLER GEAR

- 1.The reverse idler gear is installed to the reverse idler gear shaft through a bush.
- 2.The reverse idler gear has a groove for setting the reverse shift arm. By means of the arm operation, engagement with the reverse gear of the input shaft and output shaft takes place.



2-1-4 DIFFERENTIAL

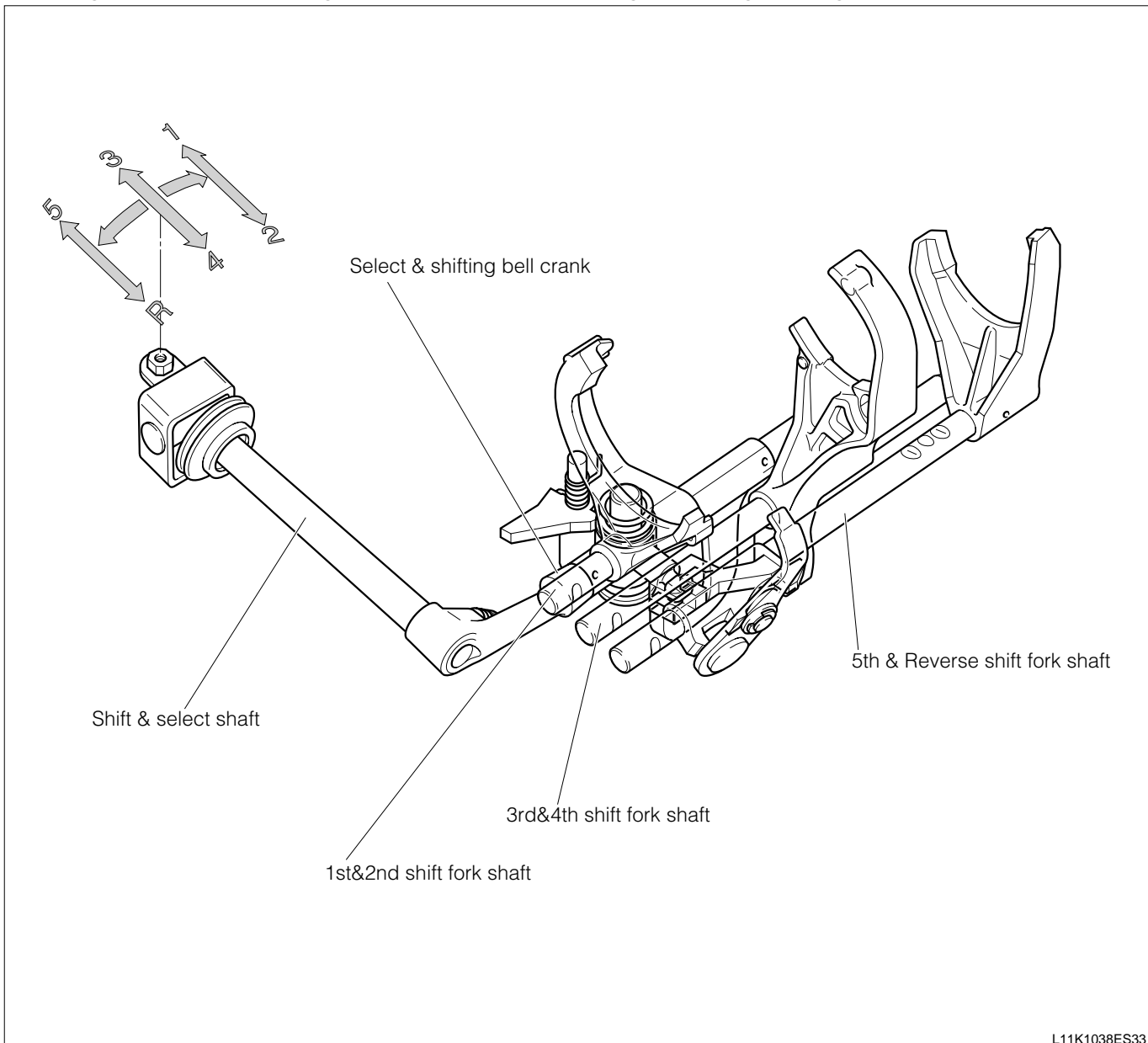
- 1.The differential case transmits power from the output shaft to the drive shaft. The differential case is composed of two side gears, two pinions, a differential case, etc.



2-2 SHIFT AND SELECT MECHANISM

2-2-1 DESCRIPTION

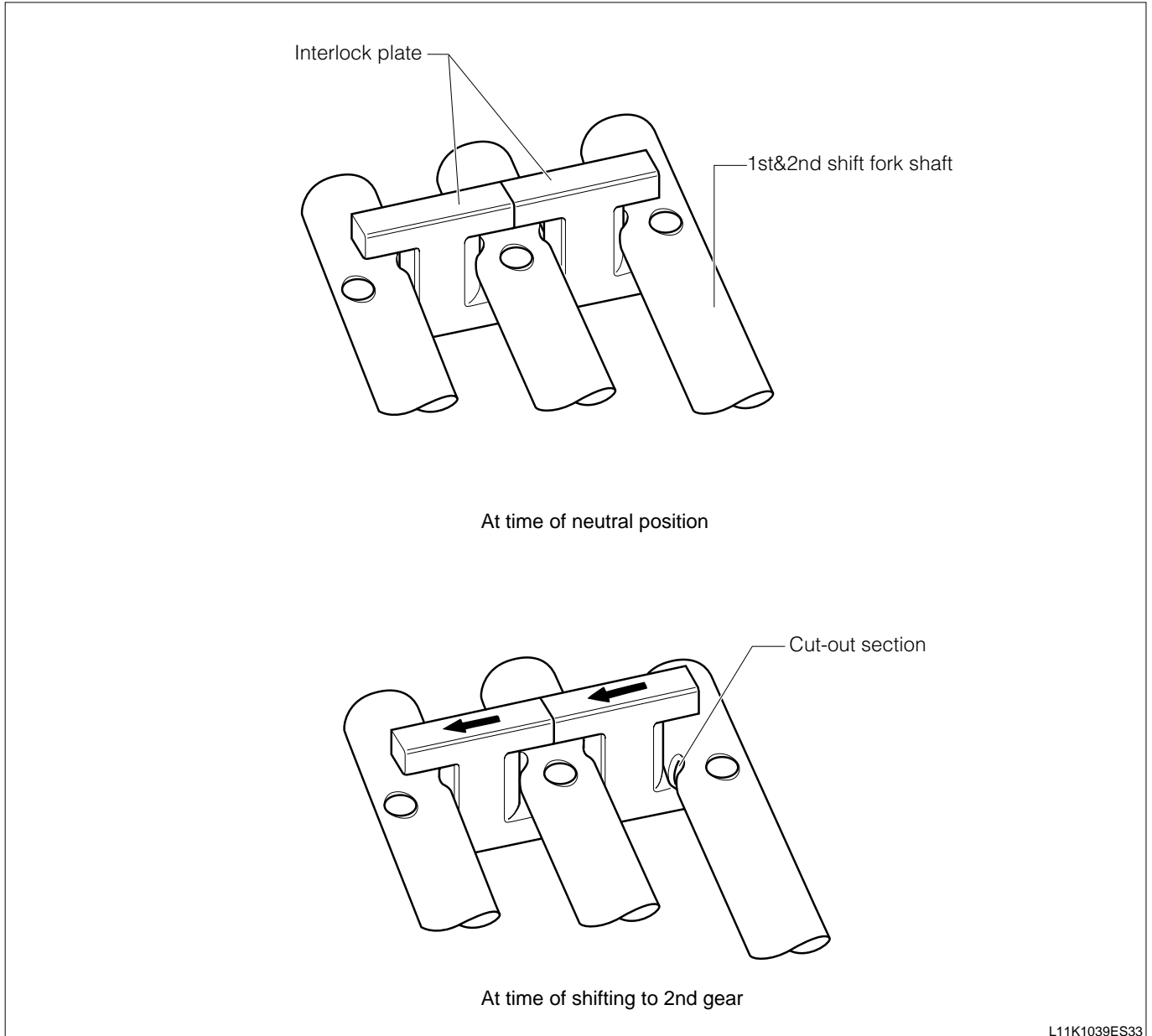
- 1.The shift & select mechanism adopts the remote control floor shift method that uses three shift fork shafts.
- 2.The shift & select shaft is connected with the shift & select shaft rod of the control mechanism.
- 3.When the select operation is performed, the shift & select rod turns in a right-and-left direction. This movement is transmitted through the shift & select shaft into the select & shifting bell crank. As a result, the select & shifting bell crank moves in an up-and-down direction. Meanwhile, when the shift operation is performed, the shift & select rod moves in a fore-and-aft direction. Then, the select & shifting bell crank turns, and the corresponding shift fork shaft slides in a fore-and-aft direction. Hence, the sleeve moves.
- 4.Furthermore, the shift & select mechanism is provided with a double-engagement preventing mechanism that prevents shifting into two or more gears at the same time. Moreover, the shift & select mechanism is provided with a reverse mis-shift preventing mechanism that prevents gear shifting from being made from the 5th gear directly to the reverse gear during running.



2-2-2 DOUBLE-ENGAGEMENT PREVENTING MECHANISM

(1) Construction and operation

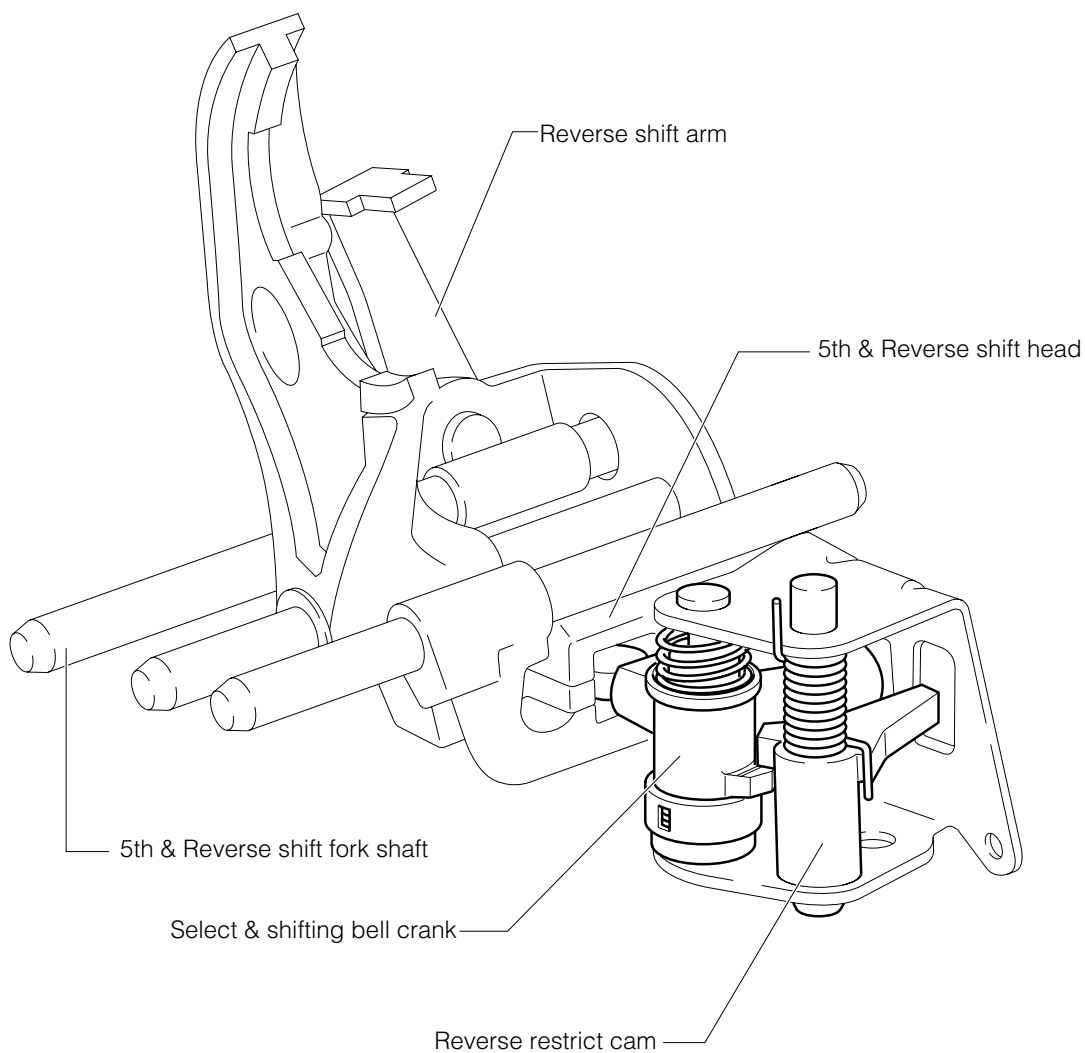
1. The double-engagement preventing mechanism is composed of two interlock plates.
2. When the 1st & 2nd shift fork shaft slides from the neutral condition to the axial direction, the interlock plate that was in the cutout section of the 1st & 2nd shift fork shaft is pushed out. Then, the cutout section of the 3rd & 4th shift fork shaft is pushed. Furthermore, as a result of this operation, another interlock plate pushes the cutout section of the 5th & reverse shift fork shaft at the same time. Consequently, the 3rd & 4th and 5th & reverse shift fork shafts are locked, thus preventing double-engagement.



2-2-3 REVERSE MISS-SHIFT PREVENTING MECHANISM

(1) Construction

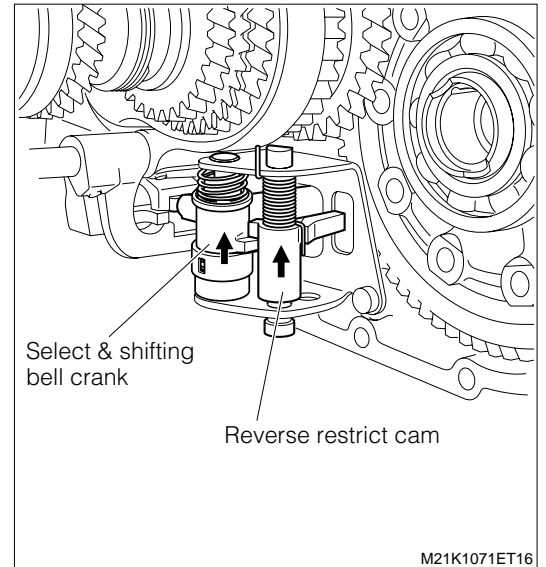
The reverse mis-shift preventing mechanism is composed of a select & shifting bell crank, a reverse restrict cam, a 5th & reverse shift fork shaft, and a 5th & reverse shift head.



(2) Operation

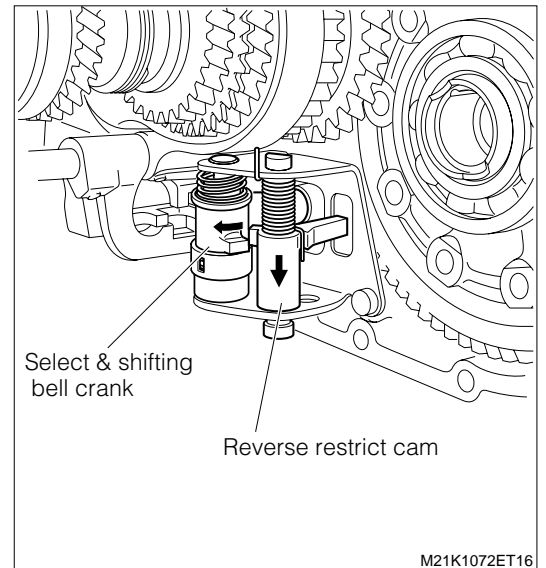
① When selecting 5th gear

When selection is made in the 5th or reverse direction, the select & shifting bell crank pushes the reverse restrict cam upward.



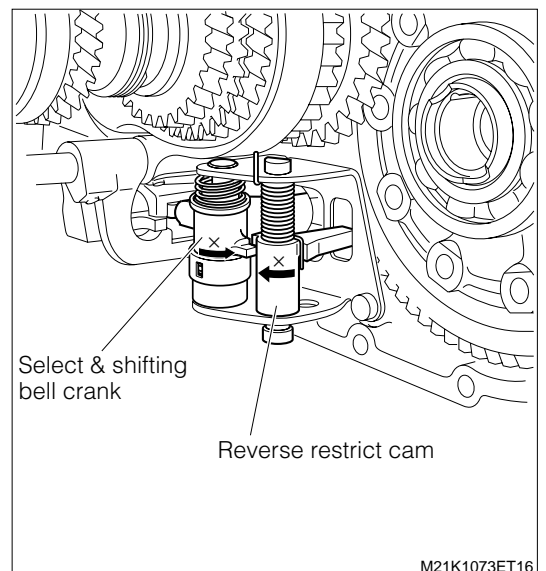
② When shifting to 5th gear

When shifting is made to 5th gear, the select & shifting bell crank is disengaged from the reverse restrict cam. As a result, the reverse restrict cam is returned by the spring.



③ At time of shifting from 5th gear to reverse gear

When an attempt is made to perform shifting from the 5th gear directly to the reverse gear, the select & shifting bell crank contacts with the reverse restrict cam. The reverse restrict cam can turn only until its lever section comes in contact with the hole end of the select & shifting bell crank support. Therefore, the bell crank also is unable to turn any further. Consequently, mis-shifting from the 5th gear directly to the reverse gear can be prevented.

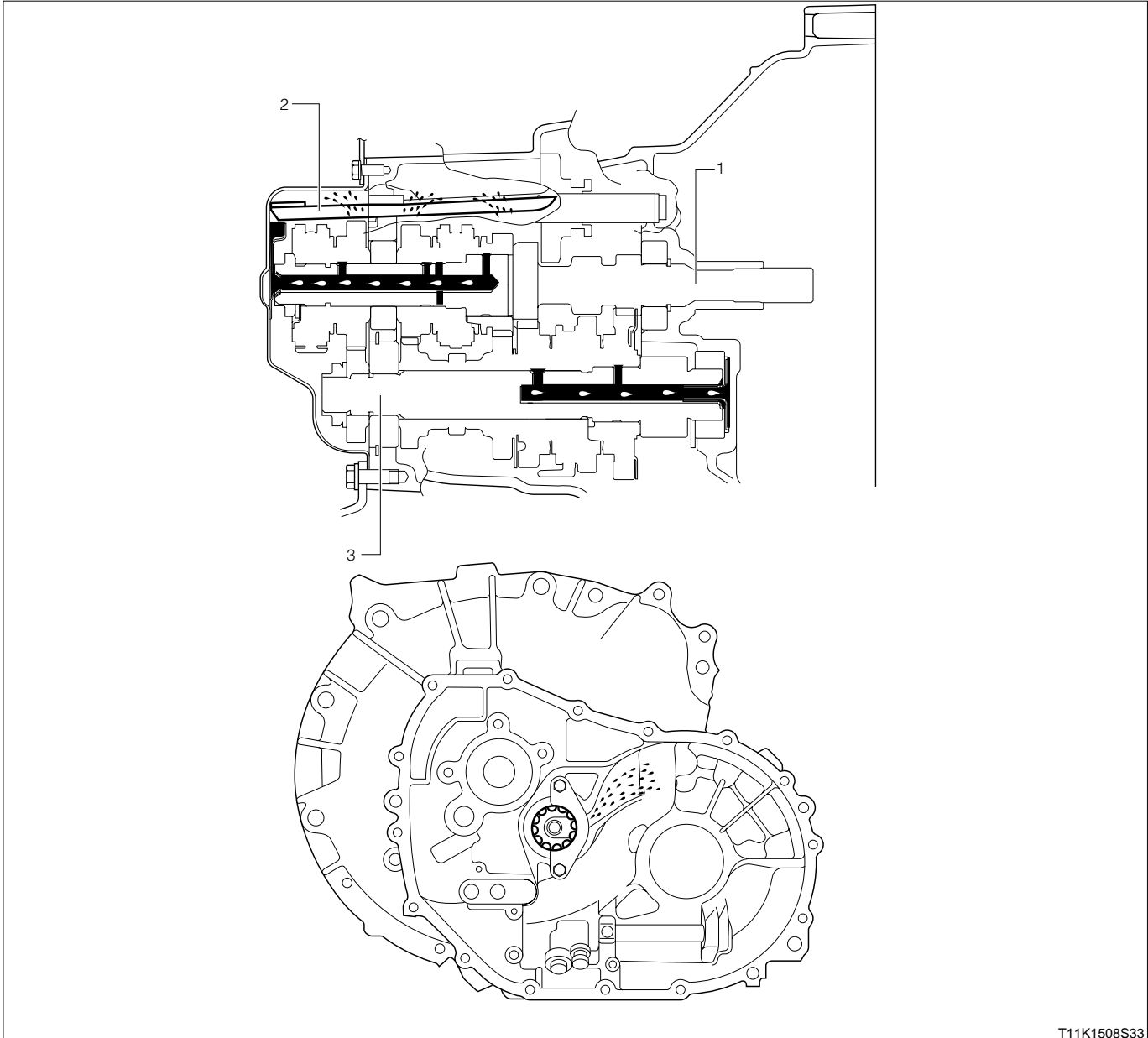


2-3 LUBRICATION MECHANISM

2-3-1 DESCRIPTION

The oil lubrication uses the shaft center lubricating method that features excellent lubricating efficiency. The oil brought up by the ring gear goes through the center of the output shaft, and lubricates the 1st gear, 2nd gear and synchronizer ring.

Furthermore, the oil brought up by the gear on the output shaft goes through the oil guide pipe and the center of the input shaft. Then, the oil lubricates the 3rd gear, 4th gear, 5th gear and synchronizer ring.

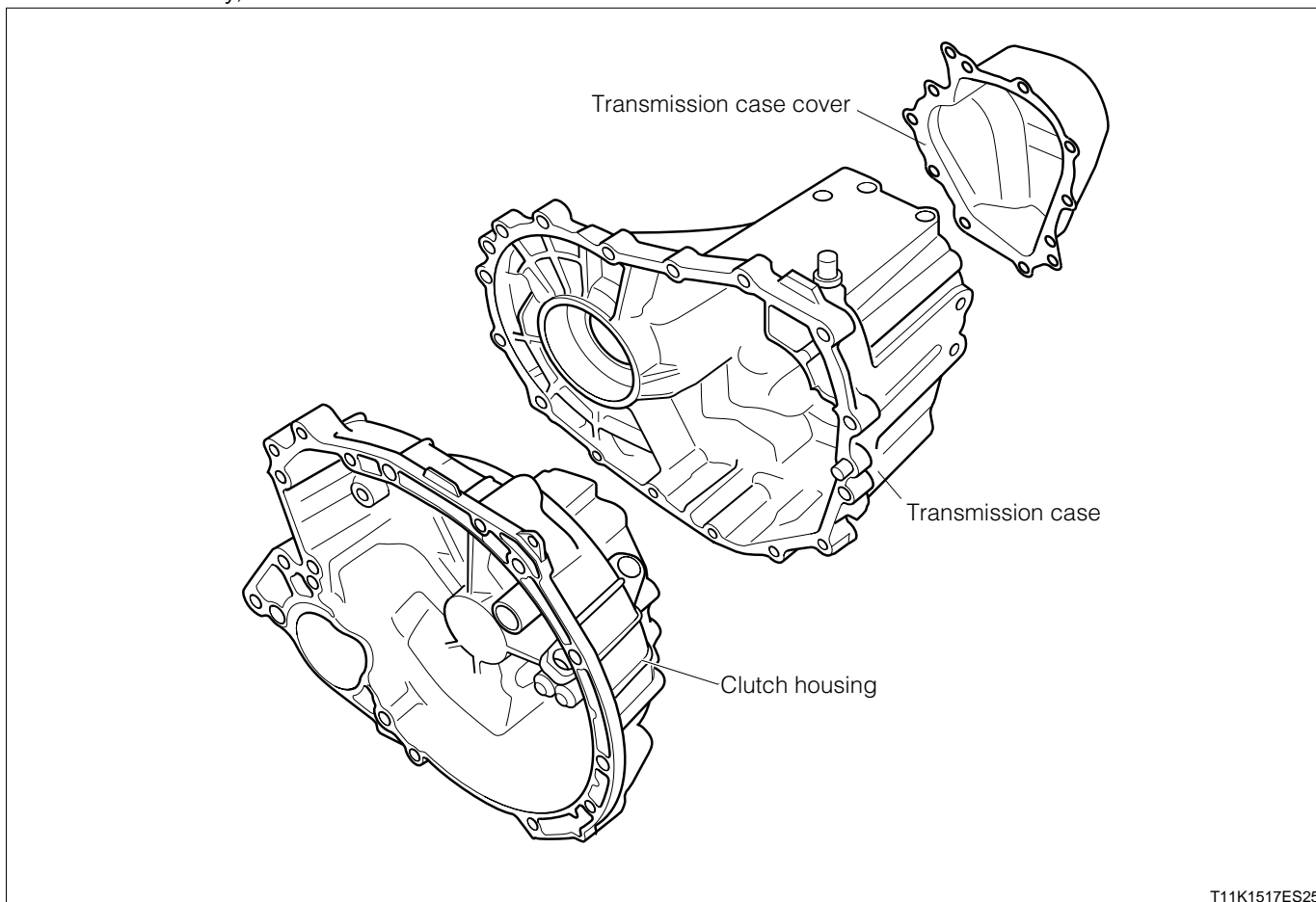


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1	Input shaft	3	Output shaft
2	Oil guide pipe		

2-4 CASE AND COVER

- 1.The transaxle transmission case can be separated crosswise, and is composed of three portions: a clutch housing, a transmission case, and a transmission case cover.
- 2.To achieve a lightweight and compact design, the clutch housing and transmission case are made of aluminum alloy, whereas the transmission case cover is made of sheet metal.

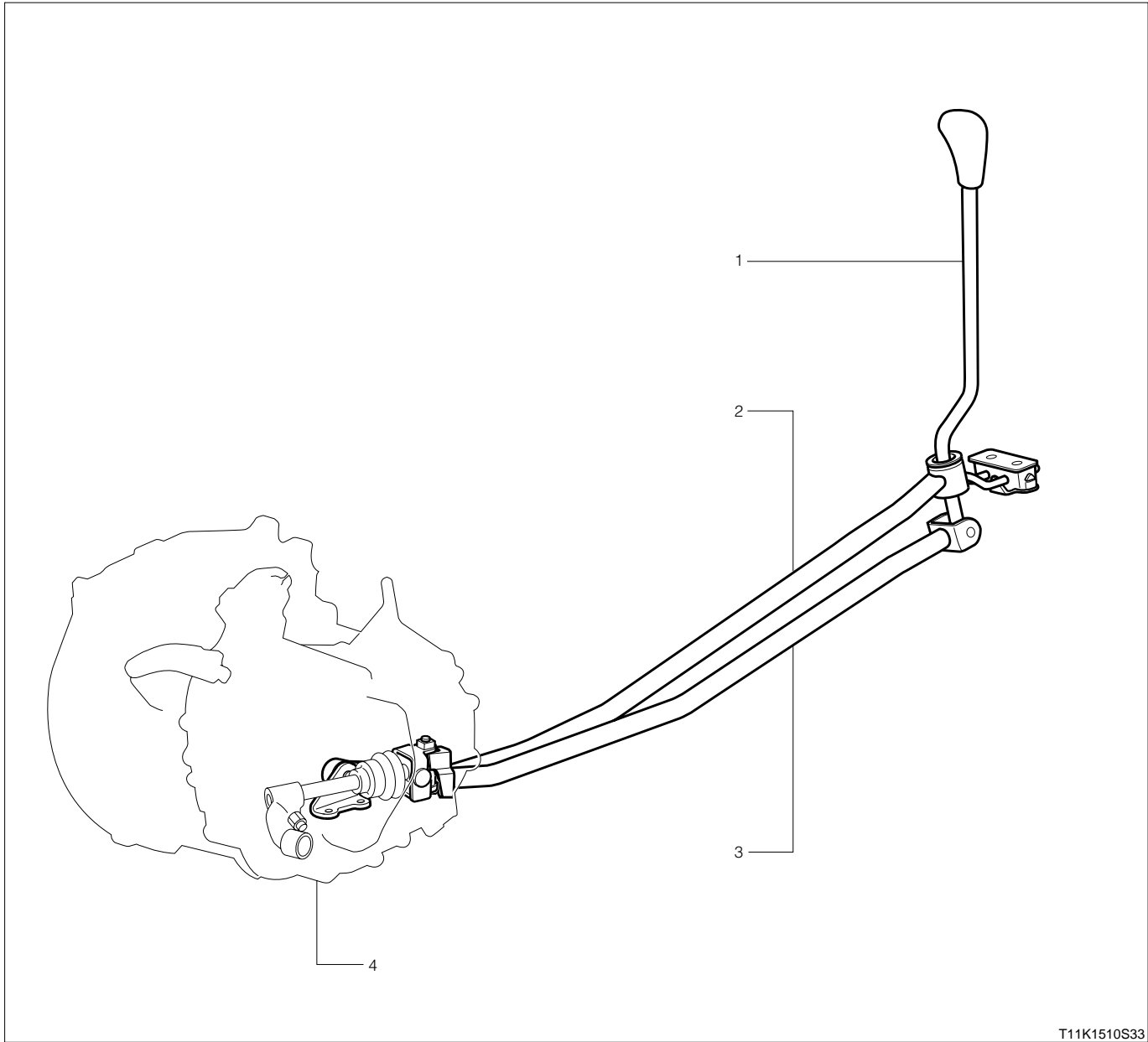


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2-5 CONTROL MECHANISM

2-5-1 DESCRIPTION

The control mechanism has employed a two-division type by means of the shift & select rod and the extension rod.



1	Shift lever	3	Shift & select rod
2	Extension rod	4	Transaxle