DCT(Dual Clutch Transmission) System

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Service data

Service Data

Dual clutch transmission

Transmission model		D7UF1
Engine model		Gamma 1.6 T-GDI
Clutch Type		Dry dual plate
Gear ratio	1st	3.929
	2nd	2.318
	3rd	2.043
	4th	1.070
	5th	0.822
	6th	0.884
	7th	0.721
	Reverse	5.304

Final gear ratio	1st / 2nd / 4th / 5th	4.294
	3rd / 6th / 7th / Reverse	3.174

Clutch actuator

Item		Specification
Resistance (line to line)	Motor 1	60 mΩ ± 10 %
	Motor 2	64 mΩ ± 10 %
Rated voltage		12 V
Max. current		60 A
Operation condition		-40 to 257°F (-40 to 125°C)

Gear actuator

Item		Specification
Resistance (line to line)	Shift motor 1/2	135.4 mΩ ± 10 %
	Select solenoid 1/2	0.7 mΩ ± 10 %
Max. current	Shift motor 1/2	45 A
	Select solenoid 1/2	20 A
Select solenoid sensor output	Push	4.0 ± 0.15 V
	Pull	1.0 ± 0.15 V
Operation condition		-40 to 257°F (- 40 to 125°C)
Rated voltage		13 V
Sensor supply voltage		8.75 V ± 10 %

Inhibitor Switch

Item	Specification
Power supply	12 V
Output type	Combination of output signals

Input speed sensor 1/2

Item	Specification
Type	Hall effect sensor

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Operation condition	-40 to 302°F (-40 to 150°C)
Output signal	High: 11.8 - 16.8 mA
	Low: 5.9 - 8.4 mA

Tightening torque

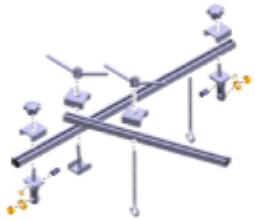
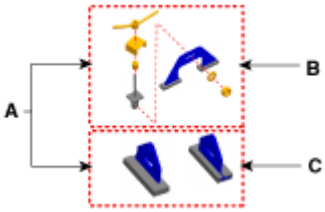
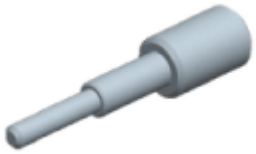
Tightening Torques

Item	N·m	kgf·m	lb·ft
Clutch engagement bearing	9.8 - 11.8	1.0 - 1.2	7.2 - 8.7
Clutch actuator motor mounting bolt	3.9 - 5.9	0.4 - 0.6	2.9 - 4.3
Clutch actuator mounting bolt	19.6 - 26.5	2.0 - 2.7	14.5 - 19.5
Fork-cover-mounting-bolt	3.9 - 5.9	0.4 - 0.6	2.9 - 4.3
Gear actuator mounting bolt	19.6 - 26.5	2.0 - 2.7	14.5 - 19.5
	9.8 - 11.8	1.0 - 1.2	7.2 - 8.7
Input shaft speed sensor mounting bolt	9.8 - 11.8	1.0 - 1.2	7.2 - 8.7
Inhibitor swtich mounting bolt	9.8 - 11.8	1.0 - 1.2	7.2 - 8.7
Manual lever mounting nut	17.4 - 24.5	1.8 - 2.5	13.0 - 18.1
Oil drain plug	58.8 - 78.5	6.0 - 8.0	43.4 - 57.9
Oil filler plug	58.8 - 78.5	6.0 - 8.0	43.4 - 57.9
Shift cable bracket mounting bolt	19.6 - 26.5	2.0 - 2.7	14.5 - 19.5
Shift cable mounting nut	9.8 - 14.7	1.0 - 1.5	7.2 - 10.8
Shift cable retainer mounting nut	9.8 - 14.7	1.0 - 1.5	7.2 - 10.8
Shift lever assembly mounting bolt	8.8 - 13.7	0.9 - 1.4	9.4 - 10.8
Stater motor mounting bolt	49.0 - 63.7	5.0 - 6.5	36.2 - 47.0
Transmission support bracket mounting bolt	98.1 - 117.7	10.0 - 12.0	72.3 - 86.8
Transmission support bracket bolt	58.9 - 78.5	6.0 - 8.0	43.4 - 57.8
Transmission upper mounting bolt (Transmission=>Engine)	42.2 - 53.9	4.3 - 5.5	31.1 - 39.8
Transmission lower mounting bolt (Engine=>Transmission)	42.2 - 48.1	4.3 - 4.9	31.1 - 35.4
	42.2 - 53.9	4.3 - 5.5	31.1 - 39.8
TCM bracket mounting nut	9.8 - 11.8	1.0 - 1.2	7.2 - 8.7

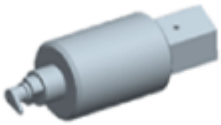
Special service tools

Special Service Tools

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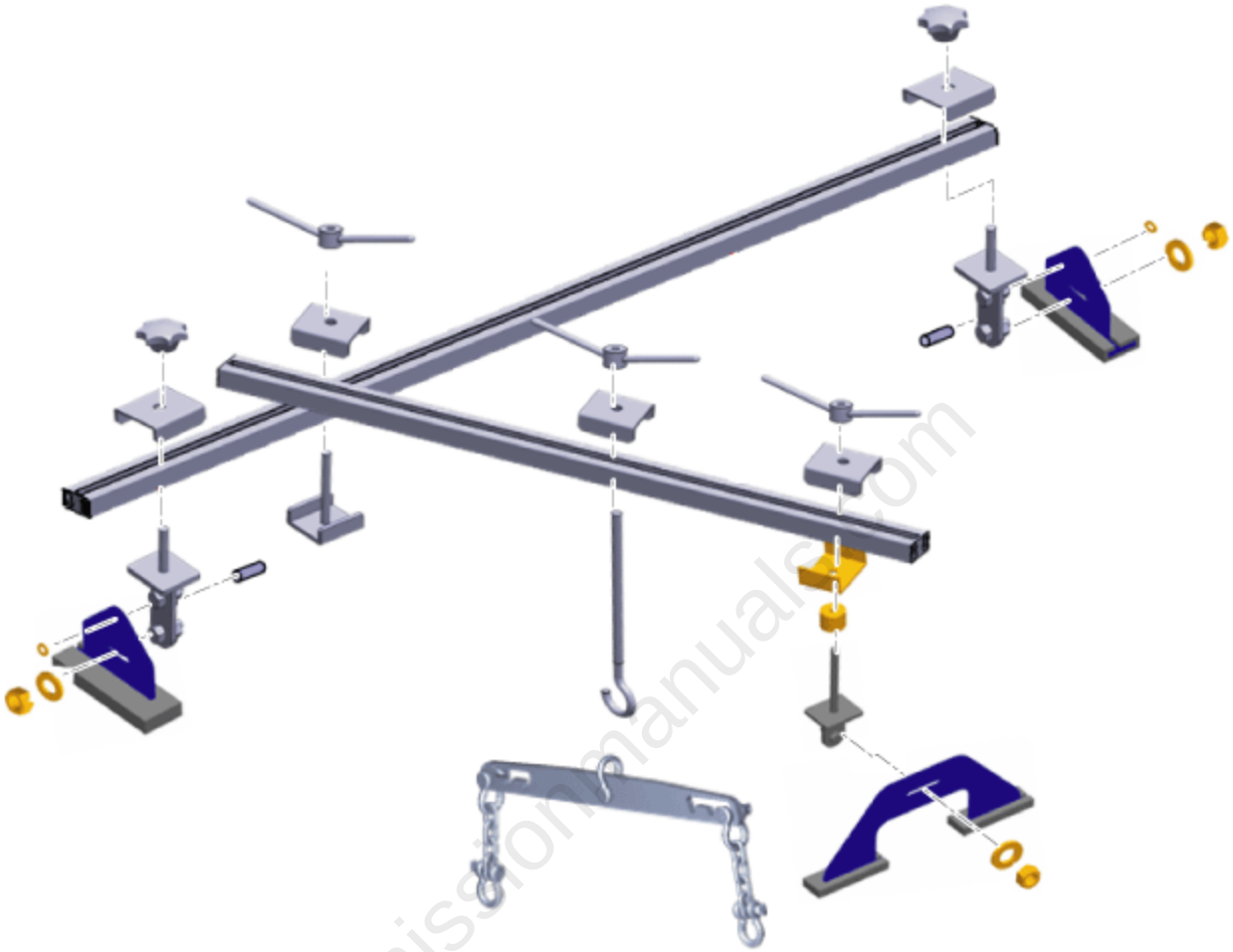
Tool Name / Number	Illustration	Description
Engine support fixture (bar) 09200-3N000		Used for holding engine assembly when removing / installing transmission Used with the supporter (09200-2S000) adapter (09200-4X000) ※Refer to the engine support fixture assembly drawing below.
Engine support fixture (supporter) A: 09200-2S000 B: 09200-2S100 C: 09200-2S200		Used for holding engine assembly when removing / installing transmission Used with the bar (09200-3N000) and adapter (09200-4X000) ※Refer to the engine support fixture assembly drawing below.
Engine support fixture (adapter) 09200-4X000		Used for holding engine assembly when removing / installing transmission Used with the bar (09200-3N000) and supporter (09200-2S000) ※Refer to the engine support fixture assembly drawing below.
Oil seal installer 09430-C1190		Installation of transaxle case oil seal. Used with the handle (09231-H1100)
Handle 09231-H1100		Installation of transaxle case oil seal. Used with the installer (09430-C1190)
Inhibitor switch guide pin 09480-A3800		Used for fixing "N" range when installing inhibitor switch
Dual clutch remover 09430-C1180		Used for removing dual clutch assembly

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Dual clutch installer 09430-2A240		Used for installing dual clutch assembly
Clutch actuator remover 09430-A5100		Used for removing clutch actuator assembly
Clutch actuator adjuster 09430-C1300		Used for adjusting clutch actuator Used with the clutch actuator adjustment jig (09430-C1302)
Clutch actuator adjustment jig 09430-C1302		Used for adjusting clutch actuator Used with the clutch actuator adjuster (09430-C1300)

※ Engine support fixture special tool assembly drawing

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Troubleshooting

Troubleshooting

Trouble symptom	Probable cause	Remedy
Warning lamp "E" is illuminated (Driving is only possible with 1/R gear)	DCT learning not performed	Perform the DCT manual learning procedure.
Driving	Clutch actuator (Clutch motor 1 or	Replace the clutch actuator assembly.

impossible at odd gear	position sensor 1 is faulty)	
	Gear actuator (Shift motor 1, position sensor 1, select solenoid 1 or position sensor 1 is faulty)	Replace the gear actuator assembly.
	Input speed sensor 1 is faulty	Replace the input speed sensor.
	Faulty gears (1, 3, 5, 7)	Replace the gear.
	Faulty clutch 1	Replace the dual clutch assembly.
	Faulty clutch engagement bearing 1	Replace the clutch engagement bearing
Driving impossible at even gear	Clutch actuator (Clutch motor 2 or position sensor 2 is faulty)	Replace the clutch actuator assembly.
	Gear actuator (Shift motor 2, position sensor 2, select solenoid 2 or position sensor 2 is faulty)	Replace the gear actuator assembly.
	Input speed sensor 2 is faulty	Replace the input speed sensor.
	Faulty gears (2, 4, 5, 6 , R)	Replace the gear.
	Faulty clutch 2	Replace the dual clutch assembly.
	Faulty clutch engagement bearing 2	Replace the clutch engagement bearing
Driving impossible	Faulty TCM	Replace the TCM.
	Simultaneous failure of odd & even systems	Replace the dual clutch assembly or gear.
	Simultaneous failure of inhibitor switch & shift lever sensor	Replace the inhibitor switch.
Manual mode disabled	Faulty inhibitor switch	Replace the inhibitor switch.
	Faulty shift lever sensor	Replace the shift lever.
	Faulty manual mode switch	Replace the manual mode switch housing.
Noise	Oil level (Low)	Refill the transmission with oil after inspecting the parts (oil, seal, drain plug, and filler plug).
	Oil (Wrong type)	Replace the oil.
	Synchronizer ring (Worn or damaged)	Replace the synchronizer ring.
	Gear (Worn or damaged)	Replace the gear.
	Bearing (Worn or damaged)	Replace the bearing.
Oil leakage	Oil level (High)	Inspect the oil level.
	Gasket (Damaged)	Replace the gasket.
	Oil seal (Worn or damaged)	Replace the oil seal.
Hard shifting or impossible to	Oil (Wrong type)	Replace the oil.
	Shift fork (Worn)	Replace the shift fork.

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shift	Synchronizer ring (Worn or damaged)	Replace the synchronizer ring.
	Gear (Worn or damaged)	Replace the gear.
	Hub sleeve (Worn or damaged)	Replace the hub sleeve.

- Dual Clutch Transmission Control System
    1. DCT Control Module (TCM)
    2. Clutch Actuator Assembly
    3. Gear Actuator Assembly
    4. Input Speed Sensor 1
    5. Input Speed Sensor 2
    6. Inhibitor Switch
    7. Shift Lever
    8. Shift Cable
- DCT(Dual Clutch Transmission) System
    1. DCT(Dual Clutch Transmission)
    2. Transmission Gear Oil
- Dual Clutch System
    1. Dual Clutch Assembly
    2. Clutch Engagement Fork and Engagement Bearing

Vehicle Speed Sensor

Specifications Specification Item Specification Type Hall sensor Working voltage 6.5 ...

Dual Clutch Transmission Control System

Description and operation Description The Dual Clutch Transmission (DCT) control system measures data required for identifying the state of control target and computes the appropriate ...

Other information:

Kia Forte 2019-2023 (BD) Service Manual: Rear Lower Arm

Repair procedures Removal and Installation 1. Remove the rear wheel and tire (A). Tightening torque : 107.9 - 127.5 N·m (11.0 - 13.0 kgf·m, 79.6 - 94.0 lb·ft) ...

Kia Forte 2019-2023 (BD) Service Manual: Trunk Lid Trim

Components and components location Component Location 1. Trunk lid trim Repair procedures Replacement Put on gloves to prevent hand injuries. ...

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