

GENERAL INFORMATION

00

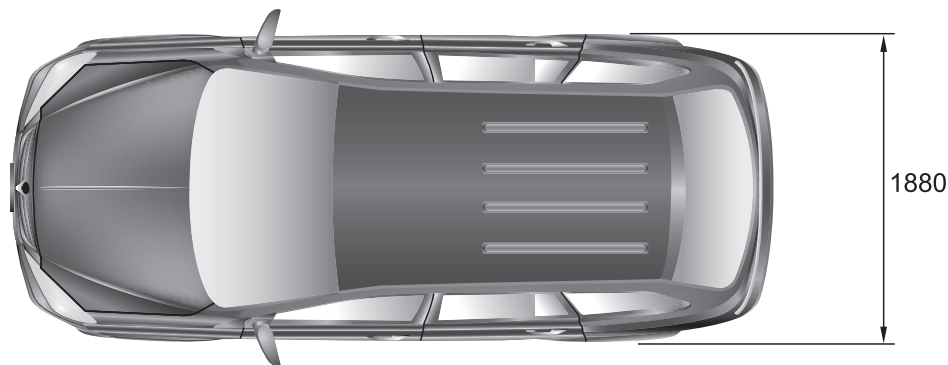
■ TABLE OF CONTENTS ■

DIMENSIONS	3
SPECIFICATIONS	4
VEHICLE IDENTIFICATION	6
MAINTENANCE SCHEDULE	9
RECOMMENDED FLUIDS AND LUBRICANTS	11

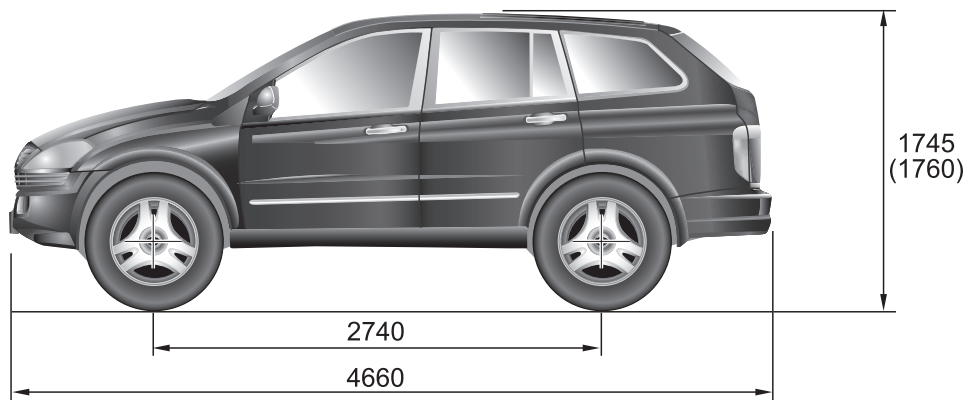
DIMENSIONS

Unit: mm

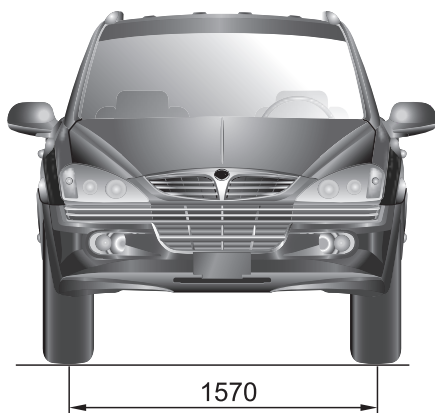
Top View



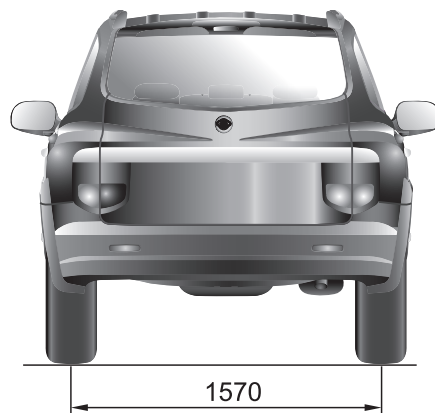
Side View



Front View



Rear View



* () : Optional

CHANGED BY	
EFFECTIVE DATE	
AFFECTED VIN	

SPECIFICATIONS

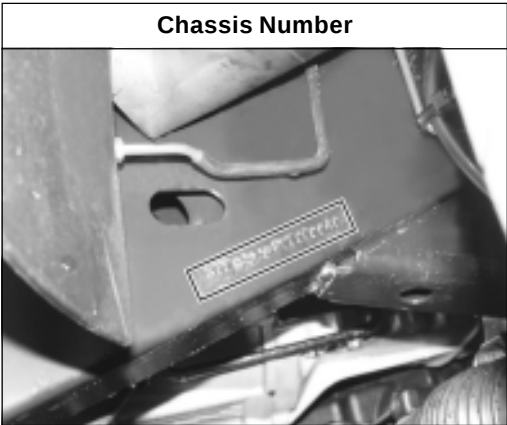
Descriptions			D20DT	D27DT
General	Overall length (mm)		4,660	4,660
	Overall width (mm)		1,880	1,880
	Overall height (mm)		1,740 (1,755: with roof rack)	1,740 (1,755: with roof rack)
	Gross vehicle weight (kg)	A/T	2,530	2,530
		M/T	2,530	2,530
	Curb vehicle weight (kg)	A/T	2WD: 1,920 / 4WD: 2,028	4WD: 2,071
		M/T	2WD: 1,893 / 4WD: 2,001	4WD: 2,030
	Fuel		Diesel	Diesel
	Fuel tank capacity (ℓ)		75	75
Engine	Engine name		D20DT	D27DT
	Numbers of cylinders/Compression ratio		4 / 17.5:1	5 / 18:1
	Total displacement (cc)		1,998	2,696
	Camshaft arrangementMax. power		DOHC	DOHC
	Max. power	A/T	141 ps / 4,000 rpm	165 ps / 4,000 rpm
		M/T	141 ps / 4,000 rpm	165 ps / 4,000 rpm
	Max. torque	A/T	310 Nm / 1,800 ~ 2,750 rpm	340 Nm / 1,800 ~ 3,250 rpm
		M/T	310 Nm / 1,800 ~ 2,750 rpm	340 Nm / 1,800 ~ 3,250 rpm
	Idle speed		750 ± 20 rpm	750 ± 20 rpm
	Cooling system		Water- cooled / forced circulation	Water- cooled / forced circulation
	Coolant capacity (ℓ)		11.5	11.5
	Lubrication type		Gear pump, forced circulation	Gear pump, forced circulation
	Max. oil capacity (ℓ)		8.2	9.2
	Turbocharger and cooling type		Turbocharger, air-cooled	Turbocharger, air-cooled
Manual Transmission	Operating type		Semi- Remote control, floor change type	Semi- Remote control, floor change type
	Gear ratio	1st	4.315	4.315
		2nd	2.475	2.475
		3rd	1.536	1.536
		4th	1.000	1.000
		5th	0.807	0.807
		Reverse	3.919	3.919
Automatic Transmission	Model		Electronic, 5-speed	Electronic, 5-speed
	Operating type		Floor change type	Floor change type

* () Optional

Descriptions			D20DT	D27DT
Automatic Transmission	Gear ratio	1st	3.951	3.595
		2nd	2.423	2.186
		3rd	1.486	1.405
		4th	1.000	1.000
		5th	0.833	0.831
		Reverse 1st	3.147	3.167
		Reverse 2nd	1.930	1.926
Transfer Case	Model		Part-time	Part-time
	Type		Planetary gear type	Planetary gear type
	Gear ratio	High (4H)	1.000 : 1	1.000 : 1
		Low (4L)	2.483 : 1	2.483 : 1
Clutch (M/T)	Operating type		Hydraulic type	Hydraulic type
	Disc type		Dry single diaphragm type	Dry single diaphragm type
Power Steering	Type		Rack and pinion	Rack and pinion
	Steering angle	Inner	36.2°	36.2°
		Outer	32.4°	32.4°
Front Axle	Drive shaft type		Ball joint type	Ball joint type
	Axle housing type		Build-up type	Build-up type
	Gear ratio	M/T	4.27	3.91
		A/T	3.54	3.31
Rear Axle	Drive shaft type	5-Link type	Semi-floating type	Semi-floating type
		Independent type	Independent type	Independent type
	Axle housing type		Build-up type	Build-up type
	Gear ratio	M/T	4.27	3.91
		A/T	3.54	3.31
Brake	Master cylinder type		Tandem type	Tandem type
	Booster type		Vacuum assisted booster type	Vacuum assisted booster type
	Brake type	Front wheels	Disc type	Disc type
		Rear wheels	Drum (disc)	Drum (disc)
	Parking brake		Cable type (internal expansion)	Cable type (internal expansion)
Suspension	Front suspension		Wishbone + coil spring	Wishbone + coil spring
	Rear suspension	Solid axle suspension	5-link + coil spring	5-link + coil spring
Air Conditioner	Refrigerant (capacity)		R-134a (650 ± 30g)	R-134a (650 ± 30g)
Electrical	Battery type / Capacity (V-AH)		MF / 12 - 90	MF / 12 - 90
	Starter capacity (V-kW)		12 - 2.2	12 - 2.2
	Alternator capacity (V-A)		With PTC: 12 - 140 (With FFH: 12 - 115)	With PTC: 12 - 140 (With FFH: 12 - 115)

CHANGED BY	
EFFECTIVE DATE	
AFFECTED VIN	

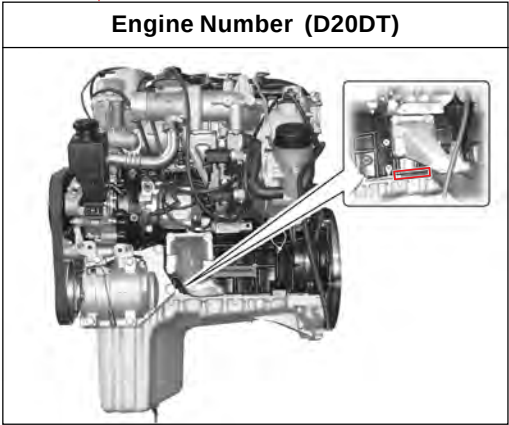
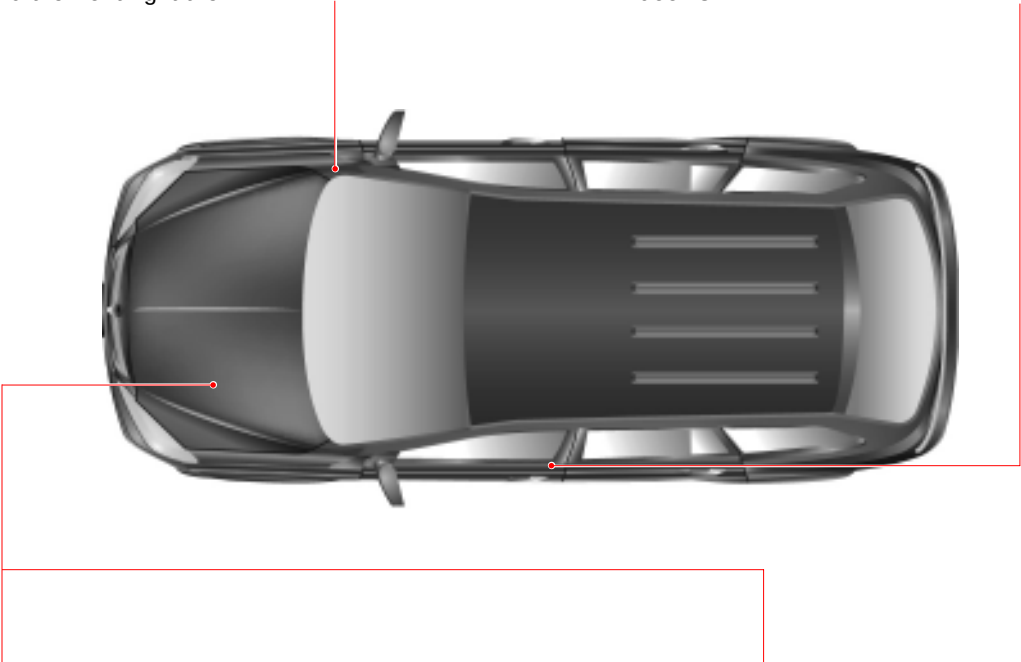
VEHICLE IDENTIFICATION



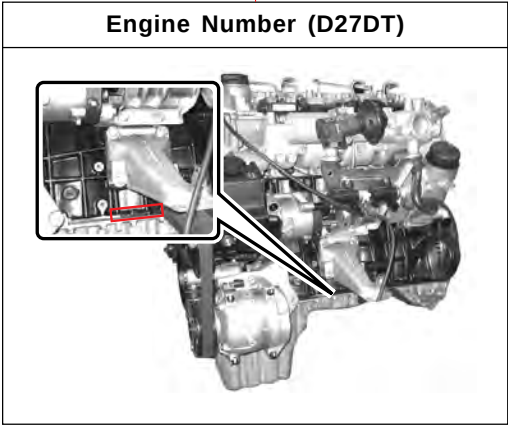
The chassis number is stamped on the frame behind the front right tire.



The certification label is located on the driver's door sill.



The engine number is stamped on the lower area of cylinder block in the intake manifold side.



1. Vehicle Identification Number

Vehicle identification number (VIN) is on the right front axle upper frame.

[KPTS0A1KS5P 122357]

K .. Nation	(K: Korea)
P .. Maker Identification	(P: Ssangyong Motor Company)
T .. Vehicle Type	(T: Passenger car - 4WD)
S .. Line Models	(S: Kyron)
0 .. Body Type	(0: 5-door)
A .. Trim Level	(A: Standard, B: Deluxe, C: Super deluxe)
1 .. Restraint System	(0: No seatbelts, 1: 3-point seatbelts, 2: 2-point seatbelt)
K .. Engine Type	(9: 3199cc, In-line 6 cylinders, Gasoline E32) (K: 1998cc - common rail direct injection (D20DT), F: 2696cc - common rail direct injection (D27DT))
S .. Check Digit	(S: All area except North America)
5 .. Model Year	(3: 2003, 4: 2004, 5: 2005)
P .. Plant Code	(P: Pyungtaek plant)
122357	(Production serial number)



2. Certification Label

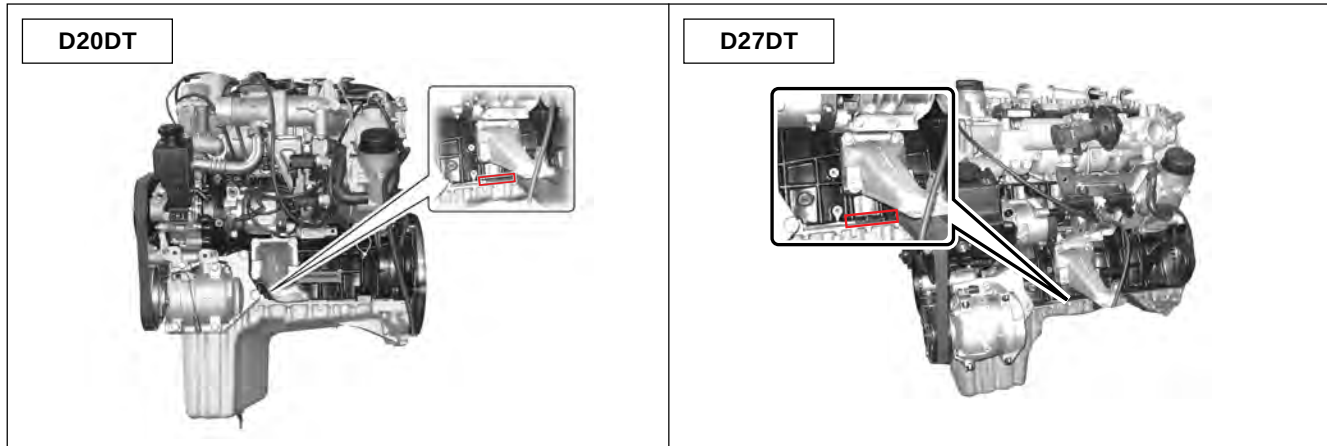
The certification label is affixed on the bottom of driver's side B-pillar.



CHANGED BY	
EFFECTIVE DATE	
AFFECTED VIN	

3. Engine Serial Number

The engine serial number is stamped on the lower area of cylinder block in intake manifold side.

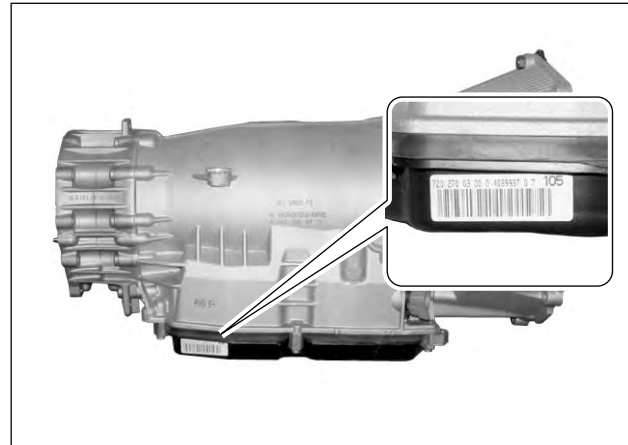


4. Manual Transmission Number

The transmission label is affixed on the upper area of clutch housing.

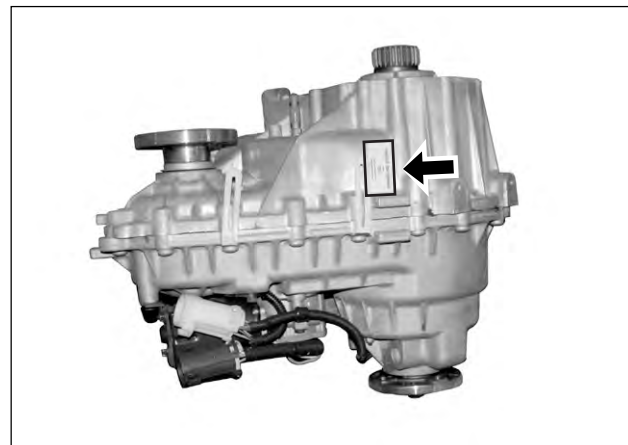
5. Automatic Transmission Number

The transmission label is affixed on the right area of transmission housing.



6. Transfer Case Number

The transfer case label is affixed on the transfer case housing.



MAINTENANCE SCHEDULE

► General

* Use only approved Ssangyong genuine parts.

Descriptions		Daily Check	Weekly Check	Service Interval
Engine Oil and Oil Filter		○	—	Initial change: 5,000 km, change every 10,000 km or 12 months (But, shorten the service interval under severe conditions)
Coolant		○	—	Change every 60,000 km or 3 years. And, inspect and replenish as necessary.
Additional Water Separator: A.W.S.		—	—	Inspect 10,000 km, change every 150,000 km or 5 years
Brake / Clutch Fluid		○	—	Change every 2 years (Inspect frequently)
Brake Pipes and Hoses		—	—	Initial check: 1,000 km, periodic check: every 20,000 km or 1 year, replace as necessary.
Brake Pad, Shoe, and Disc		—	—	Periodic check: every 10,000 km, adjust or replace as necessary.
Air Cleaner Element		—	○	Initial clean: 5,000 km, clean every 10,000 km, replace every 30,000 km (But, shorten the service interval under severe conditions)
Fuel Filter		—	—	Replace every 25,000 km (Draining water from fuel filter: every 10,000 km)
Automatic Transmission Fluid		—	—	Inspect every 10,000 km or 6 months (But change every 60,000 km under severe conditions)
Manual Transmission Fluid		—	—	Inspect 10,000 km, change every 60,000 km (Frequent check of oil leak)
Transfer Case Fluid		—	—	Inspect 10,000 km, change every 60,000 km (Frequent check of oil leak)
Axle Oil	Front	—	—	Inspect frequently, change every 30,000 km
	Rear	—	—	Inspect frequently, change every 30,000 km
Air Conditioner Filter		—	—	Change every 10,000 km (But, shorten the service interval under severe conditions)

Severe Conditions in Engine

1. Frequent stop-and-go traffic, extended idling, short driving distance below 6 km, driving distance below 16 km when the outside temperature remains below freezing
2. Driving in hilly or mountainous terrain, sandy or dusty area
3. High load driving such as trailer towing

Severe Conditions in Automatic Transmission and Axle

1. Towing a trailer or off-road driving
2. Taxi, patrol service or delivery service (extended idling and excessive driving with low speed)

Severe Conditions in Air Conditioner Filter

1. Pollutant area or off-road driving, extended air conditioner or heater operation

Sever Conditions in Air Cleaner Element

1. Pollutant area or off-road driving

CHANGED BY	
EFFECTIVE DATE	
AFFECTED VIN	

► EU ONLY

* Use only approved Ssangyong genuine parts.

Descriptions		Daily Check	Weekly Check	Service Interval
Engine Oil and Oil Filter		○	—	Change every 15,000 km or 12 months (But, shorten the service interval under severe conditions)
Coolant		○	—	Change every 60,000 km or 3 years. And, inspect and replenish as necessary.
Brake / Clutch Fluid		○	—	Change every 2 years (Inspect frequently)
Brake Pipes and Hoses		—	—	Periodic check: every 15,000 km or 1 year, replace as necessary.
Brake Pad, Shoe, and Disc		—	—	Periodic check: every 15,000 km, adjust or replace as necessary.
Air Cleaner Element		—	○	Clean every 15,000 km, replace every 30,000 km (But, shorten the service interval under severe conditions)
Fuel Filter		—	—	Replace every 30,000 km (Draining water from fuel filter: every 10,000 km)
Automatic Transmission Fluid		—	—	Inspect every 15,000 km or 12 months (But change every 60,000 km under severe conditions)
Manual Transmission Fluid		—	—	Inspect 15,000 km, change every 60,000 km (Frequent check of oil leak)
Transfer Case Fluid		—	—	Inspect 15,000 km, change every 60,000 km (Frequent check of oil leak)
Axle Oil	Front	—	—	Inspect frequently, change every 30,000 km
	Rear	—	—	Inspect frequently, change every 30,000 km
Air Conditioner Filter		—	—	Change every 10,000 km (But, shorten the service interval under severe conditions)

Severe Conditions in Engine

1. Frequent stop-and-go traffic, extended idling, short driving distance below 6 km, driving distance below 16 km when the outside temperature remains below freezing
2. Driving in a hilly or mountainous terrain, sandy, or dusty area
3. High load driving such as trailer towing

Severe Conditions in Automatic Transmission and Axle

1. Towing a trailer or off-road driving
2. Taxi, patrol service or delivery service (extended idling and excessive driving with low speed)

Severe Conditions in Air Conditioner Filter

1. Pollutant area or off-road driving, extended air conditioner or heater operation

Sever Conditions in Air Cleaner Element

1. Pollutant area or off-road driving

*** EU Countries**

1. Only countries that belong to EU. (It does not apply to all countries in EU.)

RECOMMENDED FLUIDS AND LUBRICANTS

Descriptions			Capacity		Specifications
			D20DT	D27DT	
Engine Oil			≐ 7.5 ℓ	≐ 8.5 ℓ	Ssangyong genuine engine oil (Approved by MB Sheet 229.1 or 229.3)
Engine Coolant			≐ 11.5 ℓ	≐ 11.5 ℓ	Ssangyong genuine coolant
Automatic Transmission Fluid			≐ 8.0 ℓ	≐ 8.0 ℓ	Shell AFT 3353 or Fuchs AFT 3353
Manual Transmission Fluid			4WD: ≐ 3.6 ℓ 2WD: ≐ 3.4 ℓ	4WD: ≐ 3.6 ℓ	Ssangyong genuine oil (ATF DEXRON II)
Transfer Case Fluid			≐ 1.3 ℓ	≐ 1.3 ℓ	Ssangyong genuine oil (ATF DEXRON III)
Axle Oil	Front	Automatic Transmission	≐ 1.4 ℓ	≐ 1.4 ~ 1.5 ℓ	Ssangyong genuine oil (API GL-5 or SAE 80W/90)
		Manual Transmission	≐ 1.4 ℓ	≐ 1.4 ℓ	
	Rear	Solid Axle Suspension	≐ 1.9 ℓ	≐ 2.2 ℓ	Ssangyong genuine oil (API GL-5 or SAE 80W/90)
Brake/Clutch Fluid			As required	As required	Ssangyong genuine oil (DOT4)
Power Steering Fluid			≐ 1.0 ℓ	≐ 1.0 ℓ	Ssangyong genuine oil (ATF DEXRON III)



NOTICE

- Use only Ssangyong recommended fluids and lubricants.
- Do not mix any different types or brands of oils or fluids. This may cause damages.
- Keep the specified levels when adding or replacing the fluids.

CHANGED BY	
EFFECTIVE DATE	
AFFECTED VIN	

MEMO

Lined area for writing the memo.

AUTOMATIC TRANSMISSION (DC 5-SPEED)

3650 / 3660 / 3110

TABLE OF CONTENTS

GENERAL INFORMATION 2

- 1. Overview 2

AUTOMATIC TRANSMISSION (DC 5-SPEED) 4

- 1. Appearance 4
- 2. Structure and specifications 5
- 3. Power flow 11

FUNCTION AND DESCRIPTION 19

- 1. Selector lever 19
- 2. Torque converter 24
- 3. Planetary gear set 27
- 4. Multiple-disc clutch 28
- 5. Freewheel 29
- 6. Others 30

REMOVAL AND INSTALLATION 33

- 1. Selector lever and link 33
- 2. Front and rear propeller shaft 36
- 3. Transmission assembly 38
- 4. Replacing the o-ring on parking pawl guide sleeve 42
- 5. Disassembly and reassembly
(DC 5-SPEED A/T) 46
- 6. Valve body 65

SPECIAL TOOLS AND EQUIPMENT 68

VALVE BODY 72

HYDRAULIC CIRCUIT 80

- 1. Hydraulic circuit diagram 80
- 2. Hydraulic circuit 85
- 3. Adapter plug 91
- 4. Valve body 93

TCU (Transmission Control Unit) 99

TROUBLE CODE AND DIAGNOSIS ... 104

- 1. Trouble diagnosis with SCAN-100 104
- 2. DTC (Diagnosis Trouble Code) of DC5AT 105
- 3. Removal and installation of TCU 112

GENERAL INFORMATION

1. OVERVIEW

DC 5-speed Automatic Transmission Assembly



T-Tronic DC 5-speed automatic transmission is an electronically controlled 5-speed transmission with a lockup clutch in the torque converter. The ratios for the gears are realized by three planetary gear sets. The 5th gear is designed with a step-up ratio of 0.83 as an overdrive. The selector lever is controlled by electronically and mechanically. The gears are shifted by the corresponding combination of three hydraulically actuated multiple-disc brakes, three hydraulically actuated multiple-disc clutches and two mechanical one-way clutches. **This electronically controlled automatic transmission** adjusts the operating pressure to provide proper shifting in relation to engine power. This function improves shifting quality significantly. And, the driver can select "S" (Standard) mode or "W" (Winter) mode according to the driving conditions.

Instrument Panel



TCU Assembly

