



SUBARU
FORESTER

2005 Model Year
PDF Service Manual

GENERAL INFORMATION SECTION (Pub.No.G8090GE1)

ENGINE SECTION 1 (Pub.No.G8090GE2)

ENGINE SECTION 2 (Pub.No.G8090GE3)

TRANSMISSION SECTION (Pub.No.G8090GE4)

CHASSIS SECTION (Pub.No.G8090GE5)

BODY SECTION (Pub.No.G8090GE6)

WIRING SYSTEM SECTION (Pub.No.G8090GE7)

GENERAL INFORMATION SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.

This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

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FOREWORD

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1. Foreword

A: FOREWORD

These manuals are used when performing maintenance, repair or diagnostic of the Subaru FORESTER.

Applied model: SG***** from 2005MY

The manuals contain the latest information at the time of publication. Changes in specifications, methods, etc. may be made without notice.

HOW TO USE THIS MANUALS

HU

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1. How to Use This Manuals

A: HOW TO USE THIS MANUAL

1. STRUCTURE

Each section consists of SCT that are broken down into SC that are divided into sections for each component. The specification, maintenance and other information for the components are included, and diagnostic information has also been added where necessary.

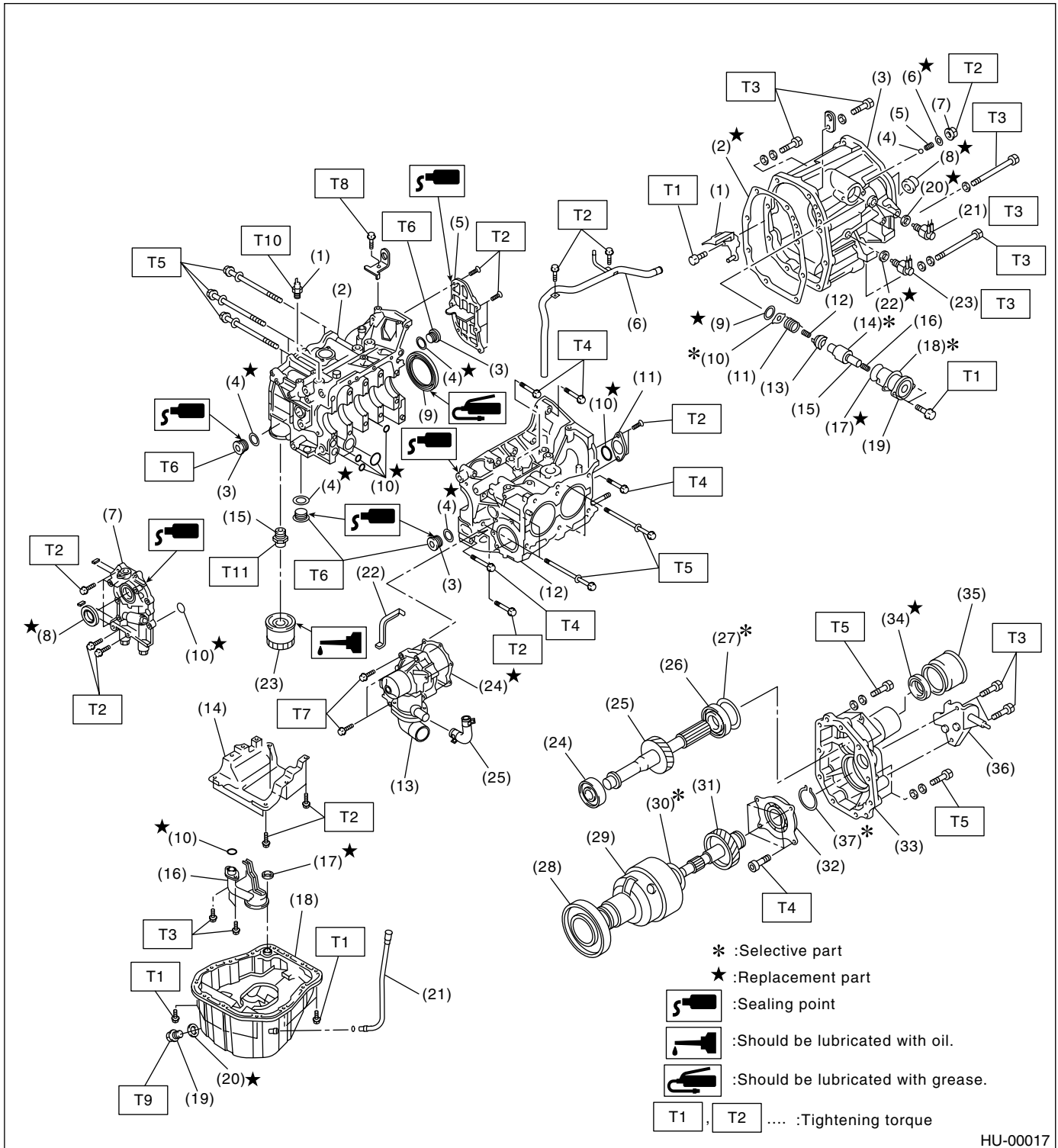
2. INDEX

The first page has an index with tabs.

3. COMPONENTS

Illustrations are listed for each component. The information necessary for repair work (tightening torque, grease up points, etc.) is described on these illustrations. Information is described using symbol. To order the parts, refer to parts catalogue.

Example:



HU-00017

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HOW TO USE THIS MANUALS

4. SPECIFICATION

If necessary, specifications are also included.

5. INSPECTION

Inspections are included to be carried out before and after maintenance.

6. MAINTENANCE

- Maintenance instructions for serviceable parts describes work area and detailed steps with illustration. It also describes the use of special tool, tightening torque, cautions for each procedure.
- If many serviceable parts are included in one service procedure, appropriate reference are provided for each part.

Example:

15. Main Shaft Assembly for Single-Range ← (A)

A: REMOVAL ← (B)

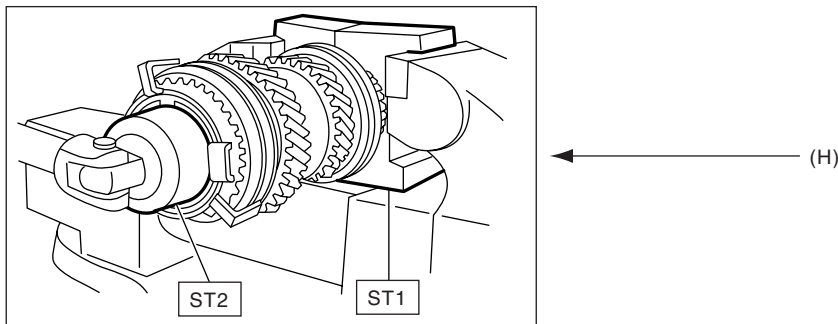
1) Remove the manual transmission assembly from vehicle. <Ref. to MT-33, REMOVAL, Manual Transmission Assembly.> ← (C)

11) Tighten the lock nuts to the specified torque using ST1 and ST2.

NOTE: ← (D)
Secure the lock nuts in two Places after tightening.

ST2 499987003 SOCKET WRENCH
ST1 498937000 TRANSMISSION HOLDER (E) (F)

Tightening torque: ← (G)
118 N·m (12.0 kgf·m, 86.8 ft·lb)



HU-00020

(A) Component
(D) Caution
(G) Tightening torque

(B) Process
(E) Tool number of special tool
(H) Illustration

(C) Reference
(F) Name of special tool

7. DIAGNOSTIC

Tables showing a step-by-step process make it easy to conduct diagnostic.

8. SI UNITS

Measurements in these manuals are according to the SI units. Metric and yard/pound measurements are also included.

Example:

Tightening torque:

44 N·m (4.5 kgf-m, 33 ft-lb)

How to Use This Manuals

HOW TO USE THIS MANUALS

SPECIFICATION

SPC



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Forester

SPECIFICATION

1. Forester

A: DIMENSIONS

Model		2.0 L Non-turbo	2.0 L Turbo	2.5 L Non-turbo	2.5 L Turbo
Overall length	mm (in)	4,450 (175.2)			
Overall width	mm (in)	1,735 (68.3)			
Overall height (at C.W.)	mm (in)	1,590 (62.6)	1,585 (62.4)	1,590 (62.6)	1,585 (62.4)
Compartment	Length	1,795 (70.7)			
	Width	1,455 (57.3)			
	Height	1,245 (49.0), 1,210 (47.6)*			
Wheelbase	mm (in)	2,525 (99.4)			
Tread	Front	1,495 (58.9)			
	Rear	1,485 (58.5)			
Minimum road clearance	mm (in)	190 (7.5)	195 (7.7)	200 (7.9)	KA: 200 (7.9) Except for KA: 19.5 (7.7)

*: With sunroof

B: ENGINE

Model		2.0 L Non-turbo	2.0 L Turbo	2.5 L Non-turbo	2.5 L Turbo
Engine type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine			
Valve arrangement		Overhead camshaft type			
Bore × Stroke	mm (in)	92 × 75 (3.62 × 2.95)		99.5 × 79 (3.92 × 3.11)	
Displacement	cm ³ (cu in)	1,994 (121.67)		2,457 (149.94)	
Compression ratio		10.0±0.2	8.0±0.2	10.0±0.2	8.2±0.2
Firing order		1 — 3 — 2 — 4			
Idle speed at Park or Neutral position	rpm	650±100	700±100	650±100	700±100
Maximum output	kW (PS)/rpm	92 (125)/5,600	130 (177)/5,600	112 (152)/5,600	155 (211)/5,600
Maximum torque	N·m (kgf-m, ft-lb)/rpm	184 (18.8, 41.4)/3,600	245 (25.0, 55.1)/3,200	223 (22.7, 50.1)/3,600	320 (32.6, 71.8)/3,600

C: ELECTRICAL

Model		2.0 L Non-turbo	2.0 L Turbo	2.5 L Non-turbo	2.5 L Turbo	
Ignition timing at idling speed		BTDC/rpm	10°±10°/650	12°±10°/700	MT: 10°±10°/650 AT: 15°±10°/650	17°±10°/700
Spark plug	Type and manufacturer	NGK: PFR5B-11	NGK: PFR6G	NGK: PFR5B-11	NGK: ILFR6B	
Generator		12 V — 90 A				
Battery	Type and capacity (5HR)	MT: 12 V — 48 AH (55D23L) AT: 12 V — 52 AH (65D23L)		12 V — 27 AH (34B19L) 12 V — 48 AH (55D23L)*	12 V — 48 AH (55D23L)	

*: For Australia model

D: TRANSMISSION

Model		2.0 L Non-turbo		2.0 L Turbo		2.5 L Non-turbo		2.5 L Turbo		
Transmission type		5MT	4AT	5MT	4AT	5MT	4AT	5MT	4AT	
Clutch type		DSPD	TCC	DSPD	TCC	DSPD	TCC	DSPD	TCC	
Gear ratio	1st	3.454	2.785	3.454	2.785	3.454	2.785	3.454	2.785	
	2nd	2.062	1.545	1.947	1.545	2.062	1.545	1.947	1.545	
	3rd	1.448	1.000	1.366	1.000	1.448	1.000	1.366	1.000	
	4th	1.088	0.694	0.972	0.694	1.088	0.694	0.972	0.694	
	5th	0.871	—	0.738	—	0.780	—	0.738	—	
	Reverse	3.333	2.272	3.333	2.272	3.333	2.272	3.333	2.272	
	Dual range	1.447	—	—	—	1.196	—	—	—	
Reduction gear (Front)	1st reduction	Type of gear	—	Helical	—	Helical	—	Helical	—	Helical
	Gear ratio	—	1.000	—	1.000	—	1.000	—	1.000	
Final reduction	Type of gear	Hypoid								
	Gear ratio	4.111	4.444	4.444	4.111	4.111	4.444	4.444	4.444	
Reduction gear (Rear)	Transfer reduction	Type of gear	Helical	—	Helical	—	Helical	—	Helical	—
		Gear ratio	1.000	—	1.081*, 1.000	—	1.000	—	1.081*, 1.000	—
	Final reduction	Type of gear	Hypoid							
		Gear ratio	4.111	4.444	4.111*, 4.444	4.111	4.111	4.444	4.111*, 4.444	4.444

5MT: 5 forward speeds with synchromesh and 1-reverse

4AT: Electronically controlled fully-automatic, 4-forward speeds and 1-reverse

DSPD: Dry Single Plate Diaphragm

TCC: Torque Converter Clutch

*: For Europe model

E: STEERING

Type		Rack and Pinion, Integral	
Turns, lock to lock		3.0	
Minimum turning circle	m (ft)	Curb to curb	10.6 (34.8)
		Wall to wall	11.4 (37.4)

Forester

SPECIFICATION

F: SUSPENSION

Front	Macpherson strut type, Independent, Coil spring
Rear	Dual-link type, Independent, Coil spring

G: BRAKE

Model	2.0 L Non-turbo, 2.5 L Non-turbo (LHD model)	2.0 L Turbo, 2.5 L Non-turbo (RHD model), 2.5 L Non-turbo
Service brake system	Dual circuit hydraulic with vacuum suspended power unit	
Front	Ventilated disc brake	
Rear	Drum brake	Disc brake
Parking brake	Mechanical on rear brakes	

H: TIRE

Rim size	15 × 6J	16 × 6 1/2J, 16 × 6 1/2JJ
Tire size	205/70 R15 95H	215/60 R16 95V, P215/60 R16 94H*
Type	Steel belted radial, Tubeless	

*: KA only

I: CAPACITY

Model	2.0 L Non-turbo		2.0 L Turbo		2.5 L Non-turbo		2.5 L Turbo	
	5MT	4AT	5MT	4AT	5MT	4AT	5MT	4AT
Fuel tank ℓ (US gal, Imp gal)	60 (15.9, 13.2)							
Engine oil (When replacing) ℓ (US qt, Imp qt)	Approx. 4.0 (4.2, 3.5)							
Transmission gear oil ℓ (US qt, Imp qt)	4.0 (4.2, 3.5)	—	3.5 (3.7, 3.1), 3.9 (4.1, 3.4) ★1	—	4.0 (4.2, 3.5)	—	3.5 (3.7, 3.1), 3.9 (4.1, 3.4) ★1	—
ATF ℓ (US qt, Imp qt)	—	8.4 (8.9, 7.4)	—	9.3 (9.8, 8.2)	—	9.3 (9.8, 8.2)	—	9.3 (9.8, 8.2)
Front differential gear oil ℓ (US qt, Imp qt)	—	1.2 (1.3, 1.1)	—	1.2 (1.3, 1.1)	—	1.2 (1.3, 1.1)	—	1.2 (1.3, 1.1)
Rear differential gear oil ℓ (US qt, Imp qt)	0.8 (0.8, 0.6)							
Power steering fluid ℓ (US qt, Imp qt)	0.7 (0.7, 0.6)							
Engine coolant ℓ (US qt, Imp qt)	6.6 (7.0, 5.8)	6.5 (6.9, 5.7), 6.9 (7.3, 6.1) ★3	7.4 (7.8, 6.5)	7.3 (7.7, 6.4) ★2	6.9 (7.3, 6.1)	6.8 (7.2, 6.0)	7.4 (7.8, 6.5)	7.3 (7.7, 6.4) ★2

★1: With oil pump

★2: MT model with oil cooler Included

★3: Model with ATF warmer

J: WEIGHT**1. LHD MODEL**

Option code*			EC		K4		KS	
Model			2.0 L Non-turbo				2.5 L Non-turbo	
Grade			2.0 X				2.5 X	
Transmission			5MT	4AT	5MT	4AT	5MT	4AT
Curb weight (C.W.)	Front	kg (lb)	760 (1,675)	775 (1,710)	775 (1,710)	790 (1,740)	780 (1,720)	800 (1,765)
	Rear	kg (lb)	600 (1,325)	600 (1,325)	595 (1,310)	595 (1,310)	620 (1,370)	620 (1,370)
	Total	kg (lb)	1,360 (3,000)	1,375 (3,035)	1,370 (3,020)	1,385 (3,055)	1,400 (3,090)	1,420 (3,135)
Maximum permissible axle weight (M.P.A.W.)	Front	kg (lb)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)
	Rear	kg (lb)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)
Maximum permissible weight (M.P.W.)	Total	kg (lb)	1,880 (4,145)	1,880 (4,145)	1,880 (4,145)	1,880 (4,145)	1,880 (4,145)	1,880 (4,145)
Sport package base			—	—	—	—	—	—
Aluminum wheel			—	—	—	—	—	—
Front fog light			—	—	—	—	○	○
Cruise control			—	—	—	—	○	○
High-grade audio			—	—	—	—	—	—
Sport steering			—	—	○	○	—	—
Leather package base			—	—	—	—	—	—
Leather seat, Leather door trim			—	—	—	—	—	—
Navigation system			—	—	—	—	—	—
Full auto A/C			—	—	○	○	○	○
Manual A/C			—	—	—	—	—	—
Side airbag			—	—	—	—	—	—
Sunroof			—	—	—	—	—	—
Self-leveling function Rr			○	○	—	—	—	—
VDC+VTD			—	—	—	—	—	—
Cold area function A			—	—	—	—	—	—
Cold area function B			—	—	—	—	—	—
Cold area function C			—	—	—	—	—	—
Cold area function D			—	—	—	—	—	—
Heated mirror			○	○	—	—	—	—
Security system			—	—	—	—	—	—

Forester

SPECIFICATION

Option code*		EC		EH		K4		EC	
Model		2.0 L Turbo						2.5 L Turbo	
Grade		2.0 XT						2.5 XT	
Transmission		5MT	4AT	5MT	4AT	5MT	4AT	5MT	
Curb weight (C.W.)	Front	kg (lb)	820 (1,810)	840 (1,850)	825 (1,820)	845 (1,865)	815 (1,795)	835 (1,840)	820 (1,810)
	Rear	kg (lb)	620 (1,370)	620 (1,370)	635 (1,400)	635 (1,400)	630 (1,390)	630 (1,390)	625 (1,375)
	Total	kg (lb)	1,440 (3,180)	1,460 (3,220)	1,460 (3,220)	1,480 (3,265)	1,445 (3,185)	1,465 (3,230)	1,445 (3,185)
Maximum permissible axle weight (M.P.A.W.)	Front	kg (lb)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)
	Rear	kg (lb)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)
Maximum permissible weight (M.P.W.)	Total	kg (lb)	1,950 (4,300)	1,950 (4,300)	1,950 (4,300)	1,950 (4,300)	1,950 (4,300)	1,950 (4,300)	2,000 (4,140)
Sport package base			—	—	—	—	—	—	
Aluminum wheel			○	○	○	○	○	○	
Front fog light			○	○	○	○	○	○	
Cruise control			—	—	○	○	—	○	
High-grade audio			○	○	○	—	—	—	
Sport steering			—	—	—	—	—	—	
Leather package base			○	○	○	○	○	○	
Leather seat, Leather door trim			—	—	○	○	—	—	
Navigation system			—	—	—	—	—	—	
Full auto A/C			○	○	○	○	○	○	
Manual A/C			—	—	—	—	—	—	
Side airbag			○	○	○	○	○	○	
Sunroof			—	—	○	○	○	—	
Self-leveling function Rr			○	○	○	○	—	○	
VDC+VTD			—	—	—	—	—	—	
Cold area function A			—	—	—	—	—	—	
Cold area function B			—	—	○	○	—	○	
Cold area function C			—	—	—	—	—	—	
Cold area function D			—	—	—	—	—	—	
Heated mirror			○	○	○	○	—	○	
Security system			—	—	—	—	—	—	

*: For the option codes, refer to ID section. <Ref. to ID-5, MODEL NUMBER PLATE, Identification.>

2. RHD MODEL

Option code*		EK, ER		EN	EK, ER			
Model		2.0 L Non-turbo			2.0 L Turbo		2.5 L Turbo	
Grade		2.0 X			2.0 XT		2.5 XT	
Transmission		5MT	4AT	5MT	5MT	4AT	5MT	
Curb weight (C.W.)	Front	kg (lb)	780 (1,720)	795 (1,750)	770 (1,698)	820 (1,810)	840 (1,850)	820 (1,810)
	Rear	kg (lb)	600 (1,325)	600 (1,325)	595 (1,312)	635 (1,400)	625 (1,378)	640 (1,410)
	Total	kg (lb)	1,380 (3,045)	1,395 (3,075)	1,365 (3,009)	1,455 (3,210)	1,465 (3,230)	1,460 (3,220)
Maximum permissible axle weight (M.P.A.W.)	Front	kg (lb)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)
	Rear	kg (lb)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)
Maximum permissible weight (M.P.W.)	Total	kg (lb)	1,880 (4,145)	1,880 (4,145)	1,880 (4,145)	1,950 (4,300)	1,950 (4,300)	2,000 (4,410)
Sport package base			—	—	—	—	—	—
Aluminum wheel			—	—	○	○	○	○
Front fog light			—	—	○	○	○	○
Cruise control			—	—	—	○	○	○
High-grade audio			—	—	—	○	○	○
Sport steering			—	—	—	—	—	—
Leather package base			—	—	○	○	○	○
Leather seat, Leather door trim			—	—	—	—	—	—
Navigation system			—	—	—	—	—	—
Full auto A/C			○	○	—	○	○	○
Manual A/C			—	—	○	—	—	—
Side airbag			—	—	—	○	○	○
Sunroof			—	—	—	○	○	○
Self-leveling function Rr			○	○	○	○	○	○
VDC+VTD			—	—	—	—	—	—
Cold area function A			—	—	—	—	—	—
Cold area function B			—	—	—	—	—	—
Cold area function C			—	—	—	○	○	○
Cold area function D			—	—	—	—	—	—
Heated mirror			○	○	—	○	○	○
Security system			—	—	—	○	○	○

*: For the option codes, refer to ID section. <Ref. to ID-5, MODEL NUMBER PLATE, Identification.>

SPECIFICATION

Option code*			KA					
Model			2.5 L Non-turbo				2.5 L Turbo	
Grade			2.5 X		2.5 XS		2.5 XT	
Transmission			5MT	4AT	5MT	4AT	5MT	4AT
Curb weight (C.W.)	Front	kg (lb)	765 (1,685)	785 (1,730)	760 (1,675)	780 (1,720)	810 (1,785)	830 (1,830)
	Rear	kg (lb)	610 (1,345)	610 (1,345)	605 (1,335)	605 (1,335)	615 (1,355)	615 (1,355)
	Total	kg (lb)	1,375 (3,030)	1,395 (3,075)	1,365 (3,010)	1,385 (3,055)	1,425 (3,140)	1,445 (3,185)
Maximum permissible axle weight (M.P.A.W.)	Front	kg (lb)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)	1,010 (2,225)
	Rear	kg (lb)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)	1,035 (2,280)
Maximum permissible weight (M.P.W.)	Total	kg (lb)	1,950 (4,300)	1,950 (4,300)	1,950 (4,300)	1,950 (4,300)	1,950 (4,300)	1,950 (4,300)
Sport package base			—	—	—	—	—	—
Aluminum wheel			—	—	○	○	○	○
Front fog light			—	—	○	○	○	○
Cruise control			○	○	○	○	○	○
High-grade audio			—	—	○	○	○	○
Sport steering			—	—	○	○	○	○
Leather package base			—	—	—	—	○	○
Leather seat, Leather door trim			—	—	—	—	—	—
Navigation system			—	—	—	—	—	—
Full auto A/C			—	—	○	○	○	○
Manual A/C			○	○	—	—	—	—
Side airbag			○	○	○	○	○	○
Sunroof			—	—	—	—	—	—
Self-leveling function Rr			—	—	○	○	○	○
VDC+VTD			—	—	—	—	—	○
Cold area function A			—	—	—	—	—	—
Cold area function B			—	—	—	—	—	—
Cold area function C			—	—	—	—	—	—
Cold area function D			—	—	—	—	—	—
Heated mirror			—	—	—	—	—	—
Security system			—	—	—	—	—	—

*: For the option codes, refer to ID section. <Ref. to ID-5, MODEL NUMBER PLATE, Identification.>