



Service Manual

Hyundai Sonata

تجمع السوناتا العراقي

Sixth generation YF (2011–2014)

IRAQI SONATA GROUP

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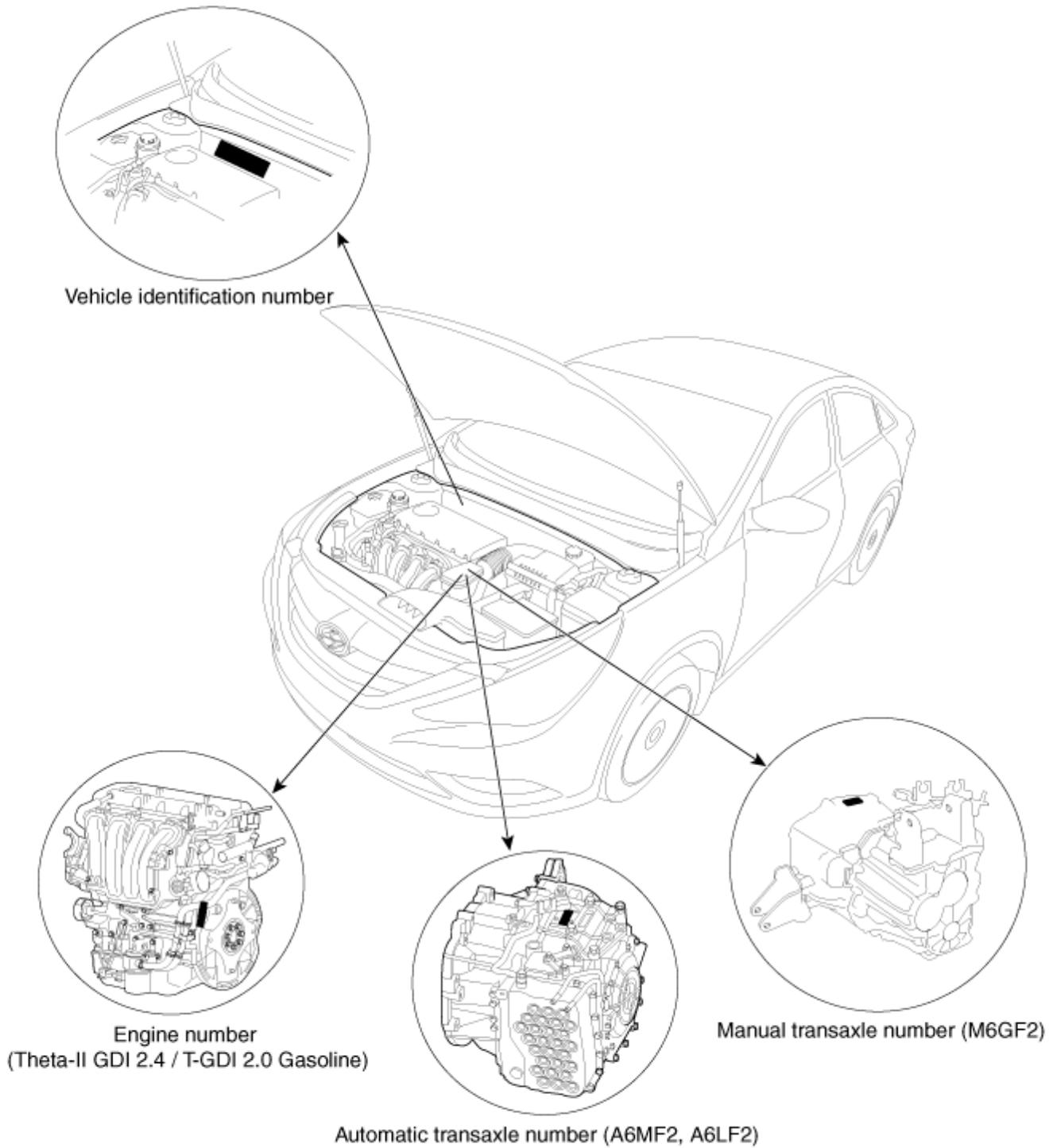
IRAQ BASRA



General Information

- Identification Number Locations
- Identification Number Description
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- Lift And Support Points
- Towing
- Tightening Torque Table Of Standard Parts
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- Electrical System

Identification Number



Identification Number

Vehicle Identification Number

5NP E C 4 A C 1 A H 000001

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

World Manufacturer Identifier (WMI)

- A. 5NP : Passenger vehicle
- 1. B. 5NM : MPV (Multipurpose Passenger Vehicle) / SUV (Sports Utility Vehicle) / RV (Recreational Vehicle)

Vehicle line

- 2. A. E : SONATA

Model & Series

- A. A : Low grade (L)
- B. B : Middle-Low grade (GL)
- C. C : Middle grade (GLS, JSL, TAX)
- D. D : Middle-High grade (HGS)
- 3. E. E : High grade (TOP)

Body/Cabin type, Gross Vehicle Weight Rating
5NP

- 1 : Limousine
- 2 : Sedan - 2 door
- 3 : Sedan - 3 door
- 4 : Sedan - 4 door
- 5 : Sedan - 5 door
- 6 : Coupe
- 7 : Convertible
- 8 : Wagon
- 9 : Commercial Van
- 0 : Pick-Up

5NM

- 1 : Wagon 4×2 Class-A
- 2 : Wagon 4×2 Class-B
- 3 : Wagon 4×2 Class-C
- 4 : Wagon 4×2 Class-D
- 5 : Wagon 4×2 Class-E
- 6 : Wagon 4×2 Class-F
- 7 : Wagon 4×2 Class-G
- A : Wagon 4×4 Class-A
- 4. - B : Wagon 4×4 Class-B



- C : Wagon 4x4 Class-C
- D : Wagon 4x4 Class-D
- E : Wagon 4x4 Class-E
- F : Wagon 4x4 Class-F
- G : Wagon 4x4 Class-G

Restraint system, Brake system
5NP, 5NM

| Code | Seat belt | Front air bag | | Knee air bag | | Side air bag | | | Curtain air bag | | |
|------|-----------|---------------|-------------|--------------|-------------|--------------|---------|---------|-----------------|---------|---------|
| | | Driver's | Passenger's | Driver's | Passenger's | 1st row | 2nd row | 3rd row | 1st row | 2nd row | 3rd row |
| A | ○ | ○ | ○ | × | × | ○ | × | × | ○ | ○ | × |
| B | ○ | ○ | ○ | × | × | × | × | × | × | × | × |
| C | ○ | ○ | ○ | × | × | ○ | × | × | ○ | ○ | ○ |
| D | ○ | ○ | ○ | × | × | ○ | ○ | × | ○ | ○ | × |
| E | ○ | ○ | × | × | × | × | × | × | × | × | × |
| F | ○ | ○ | ○ | × | × | ○ | × | × | × | × | × |
| N | ○ | × | × | × | × | × | × | × | × | × | × |

5.

Engine type

A. B : Gasoline engine 2.0(Theta-II T-GDI)

6. B. C : Gasoline engine 2.4(Theta-II GDI)

Check digit or Driver's side & Transmission

7. A. Check digit : 0 ~ 9, x

Model year

8. A. A : 2010, B : 2011, C : 2012, D : 2013 ...

9. Plant of production

Vehicle production sequence number

10. A. 000001 ~ 999999

Paint Code

| Code | Color |
|------|----------------|
| AA | Black diamond |
| WHC | White crystal |
| Y5 | Sleek silver |
| FHM | Hyper metallic |
| YDG | Dark gray |
| RER | Remington red |
| SES | Espresso |
| UEB | Blue black |
| NW | Noble white |

Engine Number

| | | | | | | |
|---|---|---|---|---|---|--------|
| G | 4 | K | J | 9 | U | 000001 |
| | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- Engine fuel
- G : Gasoline
- Engine range
- 4 : 4 cycle 4 cylinder
- Engine development order and capacity
- K : Theta engine (Gasoline)
- Engine Capacity
- H : 1998cc (T-GDI)
 - J : 2359cc (GDI)
- Production year
- 9 : 2009, A : 2010, B : 2011, C : 2012...
- Plant of production
- A : Asan (Korea)
 - B : Beijing (China)
 - H : Hwasung (Korea)
 - K : Montgomery (U.S.A)
 - M : Chennai (India)
 - P : Poseung (Korea)
 - S : Sohari (Korea)
 - T : Izmit (Turkey)
 - U : Ulsan (Korea)
 - W : Shandong (China)
 - Z : Zilina (Slovakia)
- 1 : Yancheng (China)
- Engine production sequence number
- 000001 ~ 999999

Transaxle Number Manual

| | | | | |
|---|---|---|---|--------|
| S | 9 | J | B | 000001 |
| | | | | |
| 1 | 2 | 3 | 4 | 5 |

- Model
- S : M6GF2
- Production year
- 9 : 2009, A : 2010, B : 2011, C : 2012...
- Plant of production
- J : Hwaseong (Korea)
- Final gear ratio
- B : 4.333 / 3.250
- Transaxle production sequence number
- 000001 ~ 999999



Automatic

| | | | | | |
|----|---|---|---|---|--------|
| FA | 9 | N | C | □ | 000001 |
| 1 | 2 | 3 | 4 | 5 | 6 |

Model

- BA : A6LF2 (Theta-II 2.0 T-GDI)

1. - FA : A6MF2 (Theta-II 2.4 GDI)

Production year

2. - 9 : 2009, A : 2010, B : 2011, C : 2012...

Gear ratio

- A : 2.885 (Theta-II 2.0 T-GDI)

3. - N : 2.885 (Theta-II 2.4 GDI)

Detailed classification

- A : Theta-II 2.0 T-GDI

- C : Theta-II 2.4 GDI

4. - E : Theta-II 2.4 GDI (H-Frame)

5. Spare

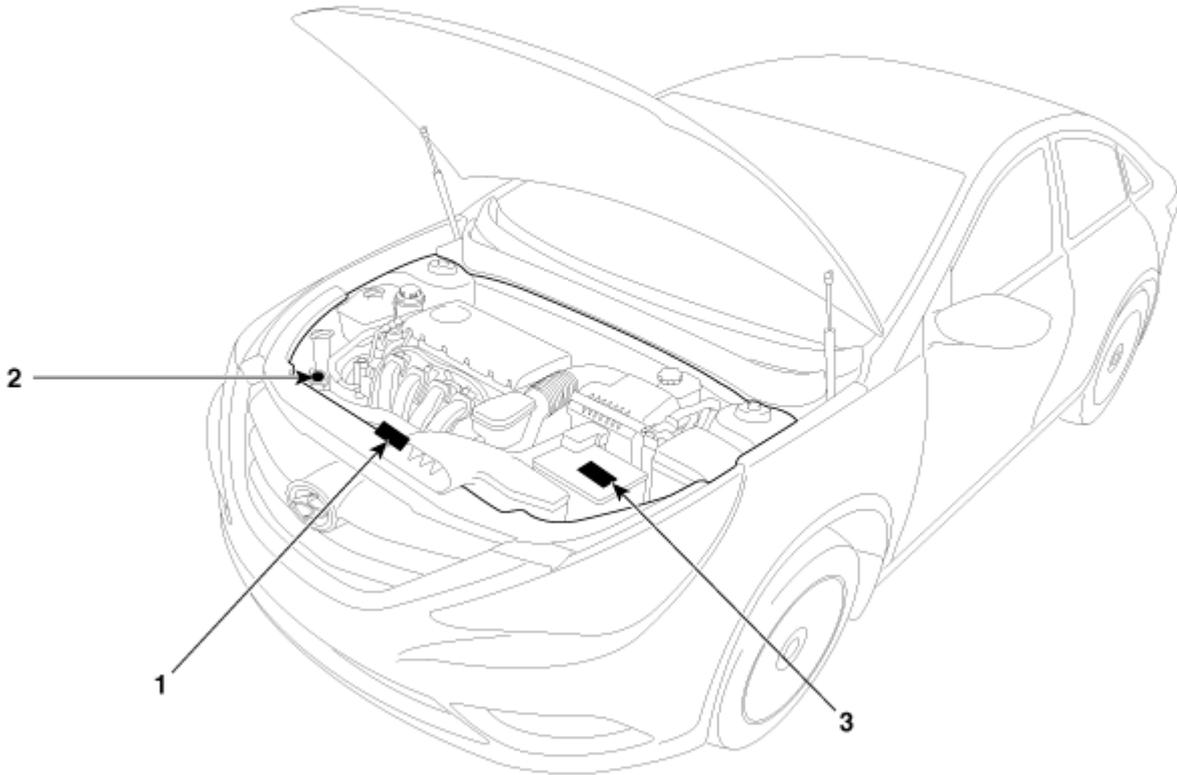
Transaxle production sequence number

6. - 000001 ~ 999999





Warning / Caution Label Locations



1. Fan caution
2. Radiator cap caution

3. Battery caution

Battery Caution Label Description



[A]



[B]



[C]



[D]



[E]



[F]



[G]

Warning / Caution Label (Cont'd)

A.
Keep lighted cigarettes and all other flames or sparks away from the battery.

B.
Wear eye protection when charging or working near a battery. Always provide ventilation when working in an enclosed space.

- When lifting a plastic-cased battery, excessive pressure on acid to leak resulting in personal injury. Lift with a battery carrier or with your hands on opposite corners.
- Never attempt to change the battery when the battery cables are connected.

- The electrical ignition system works with high voltage.
- Never touch these components with the engine running or the ignition switched on.

C.
Keep batteries out of the reach of children because batteries contain highly corrosive SULFURIC ACID. Do not allow battery acid to contact your skin, eyes, clothing or paint finish.

D.
If any electrolyte gets into your eyes, flush your eyes with clean water for at least 15 minutes and get immediate medical attention. If possible, continue to apply water with a sponge or cloth until medical attention is received. If electrolyte gets on your skin, thoroughly wash the contacted area. If you feel a pain or a burning sensation, get medical attention immediately.

E.
Always read the following instructions carefully when handling a battery.

F.
Hydrogen, which is a highly combustible gas, is always presents in battery cells and may explode if ignited.

G.
An improperly disposed battery can be harmful to the environment and human health.
Always confirm local regulations for battery disposal.

Handling And Storage The Battery

| | |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Battery Itself | <ul style="list-style-type: none"> Batteries should be stored in cool, dry (27 degrees Celsius) places and out of direct sunlight. <p>MF batteries are tightly sealed to prevent acid leakage. However, tilting the battery to an angle of 45 degrees can cause acid to leak through the vents on the sides. Therefore, batteries should always be stored in their upright positions. Prevent placing any aqueous or solid (i.e. conductors) bodies on top of the battery.</p> <ul style="list-style-type: none"> It is extremely dangerous to use tools, such as hammers, on the battery terminals when connecting cables to the mounted battery. |
| Battery on Vehicle | <ul style="list-style-type: none"> When storing the vehicle for long periods of time, make sure to remove the memory fuse at junction box to prevent natural discharging. <p>Also, run the engine for battery charging within 1 month if the memory fuse wasn't removed from the start of vehicle storing.</p> <ul style="list-style-type: none"> If the memory fuse was removed, run the engine for battery charging within 3 months from the start of vehicle storing. |

NOTE

After reconnecting or recharging a discharged battery, the ESC OFF indicator may illuminate. In this case, turn the handle half way to the left and right whilst the ignition switch is in the ON position. Then, restart the engine after the ignition is OFF. The ESC OFF indicator may turn OFF. If the ESC OFF indicator does not turn OFF, have the system checked refering to DTC. (Refer to the BR group.)

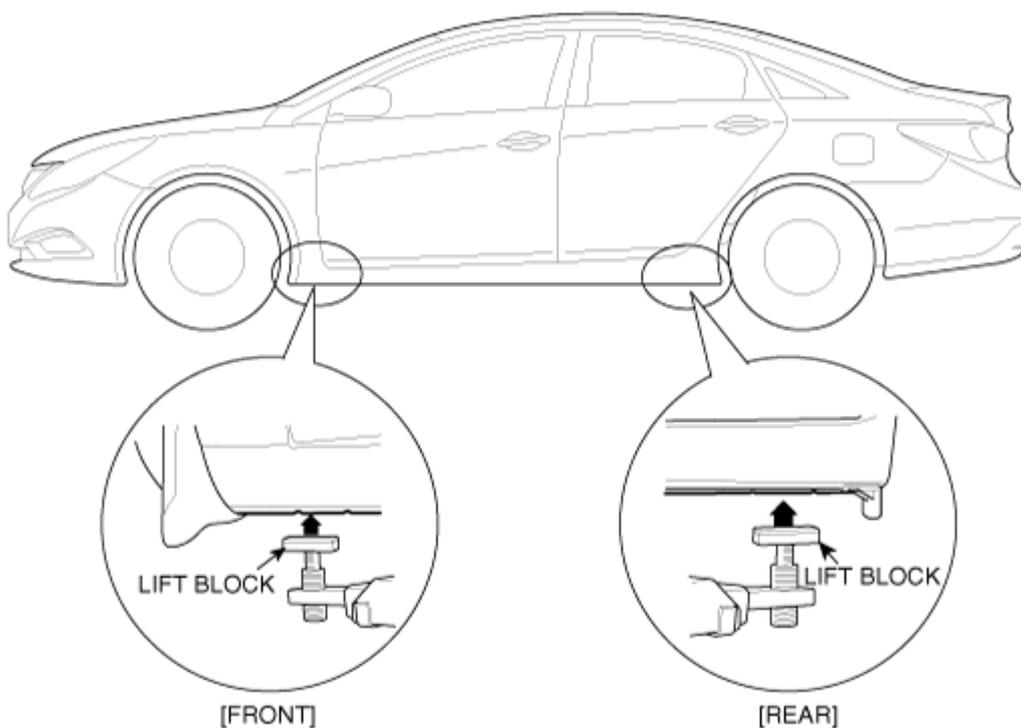
Lift And Support Points

WARNING

When heavy rear components such as suspension, fuel tank, spare tire, tailgate and trunk lid are to be removed, place additional weight in the luggage area before hoisting. When substantial weight is removed from the rear of the vehicle, the center of gravity may change and can cause the vehicle to tip forward on the hoist.

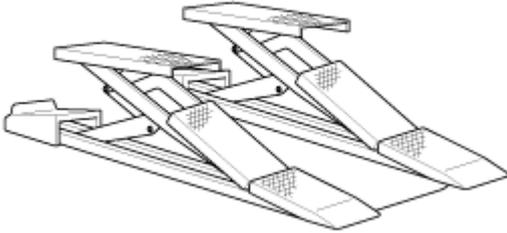
NOTE

- Since each tire/wheel assembly weights approximately 30lbs (14kg), placing the front wheels in the luggage area can assist with the weight distribution.
 - Use the same support points to support the vehicle on safety stands.
1. Place the lift blocks under the support points as shown in the illustration.
 2. Raise the hoist a few inches (centimeters) and rock the vehicle to be sure it is firmly supported.
 3. Raise the hoist to full height to inspect the lift points for secure support.



WARNING

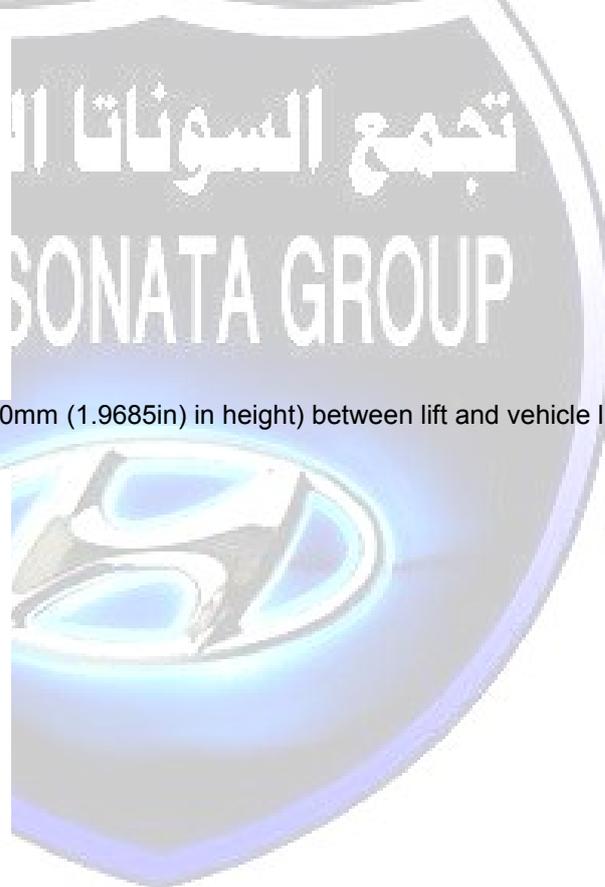
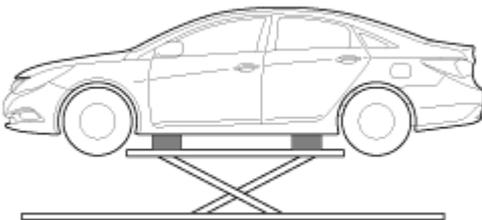
Using scissors lift



Using a scissors lift may cause damage of the side out seal molding panel because the lift point is located higher than side out seal molding panel.



Place wooden or rubber blocks (more than 50mm (1.9685in) in height) between lift and vehicle lift point to prevent damage of the side out seal molding panel.



Towing

If the vehicle needs to be towed, call a professional towing service. Never tow vehicle with just a rope or chain. It is very dangerous.

Emergency Towing

There are three popular methods of towing a vehicle :

- The operator loads the vehicle on the back of truck. This is best way of transporting the vehicle.
The tow truck uses two pivoting arms that go under the tires of the driving axle and lift them off the ground. The other two wheels remain on the ground.
- The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or suspension, and the cables lift that end of the vehicle off the ground. The vehicle's suspension and body can be seriously damaged if this method of towing is attempted.

If the vehicle cannot be transported by flat-bed, should be towed with the wheels of the driving axle off the ground and do the following :

Manual Transaxle

- Release the parking brake.
- Shift the Transaxle to neutral

Automatic Transaxle

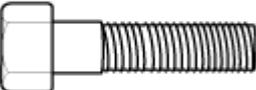
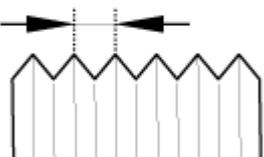
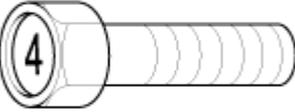
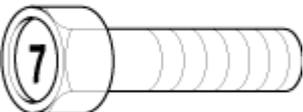
- Release the parking brake.
- Start the engine.
- Shift to [D] position, then [N] position.
- Turn off the engine.

CAUTION

- The vehicle equipped with full-time 4WD should be only transported on a flat-bed.
Improper towing preparation will damage the transaxle. Follow the above procedure exactly. If you cannot shift the transaxle or start the engine(automatic transaxle), your vehicle must be transported on a flatbed.
- It is the best to tow vehicle no farther than 30km (19miles), and keep the speed below 50km/h (30mph). (For the full-time 4WD vehicle, limit the towing to 1.5km (1mile) and 15km/h (10mph).)
- Trying to lift or tow your vehicle by the bumpers will cause serious damage. The bumpers are not designed to support the vehicle's weight.



Tightening Torque Table Of Standard Parts

| Bolt nominal diameter (mm) | Pitch (mm) | Torque Nm (kg.cm, lb.ft) | |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| | | Head Mark 4 | Head Mark 7 |
|  |  |  |  |
| M5 | 0.8 | 3 ~ 4 (30 ~ 40, 2.2 ~ 2.9) | 5 ~ 6 (50 ~ 60, 3.6 ~ 4.3) |
| M6 | 1.0 | 5 ~ 6 (50 ~ 50, 3.6 ~ 4.3) | 9 ~ 11 (90 ~ 110, 6.5 ~ 8.0) |
| M8 | 1.25 | 12 ~ 15 (120 ~ 150, 9 ~ 11) | 20 ~ 25 (200 ~ 250, 14.5 ~ 18.0) |
| M10 | 1.25 | 25 ~ 30 (250 ~ 300, 18 ~ 22) | 30 ~ 50 (300 ~ 500, 22 ~ 36) |
| M12 | 1.25 | 35 ~ 45 (350 ~ 450, 25 ~ 33) | 60 ~ 80 (600 ~ 800, 43 ~ 58) |
| M14 | 1.5 | 75 ~ 85 (750 ~ 850, 54 ~ 61) | 120 ~ 140 (1,200 ~ 1,400, 85 ~ 100) |
| M16 | 1.5 | 110 ~ 130 (1,100 ~ 1,300, 80 ~ 94) | 180 ~ 210 (1,800 ~ 2,100, 130 ~ 150) |
| M18 | 1.5 | 160 ~ 180 (1,600 ~ 1,800, 116 ~ 130) | 260 ~ 300 (2,600 ~ 3,000, 190 ~ 215) |
| M20 | 1.5 | 220 ~ 250 (2,200 ~ 2,500, 160 ~ 180) | 360 ~ 420 (3,600 ~ 4,200, 260 ~ 300) |
| M22 | 1.5 | 290 ~ 330 (2,900 ~ 3,300, 210 ~ 240) | 480 ~ 550 (4,800 ~ 5,500, 350 ~ 400) |
| M24 | 1.5 | 360 ~ 420 (3,600 ~ 4,200, 260 ~ 300) | 610 ~ 700 (6,100 ~ 7,000, 440 ~ 505) |

NOTE

1. The torques shown in the table are standard values under the following conditions.

- Nuts and bolts are made of galvanized steel bar.

- Galvanized plain steel washers are inserted.
 - All nuts, bolts and plain washers are dry.
2. The torques shown in the table are not applicable.
- When spring washers, toothed washers and the like are inserted.
 - If plastic parts are fastened.
 - If self-tapping screws or self-locking nuts are used.
 - If threads and surfaces are coated with oil.
3. Reduce the torque values to the indicated percentage of the standard value under the following conditions.
- If spring washers are used : 85%
 - If threads and bearing surfaces are stained with oil : 85%





General Service Information

Protection Of The Vehicle

Always be sure to cover fenders, seats, and floor areas before starting work.

CAUTION

The support rod must be inserted into the hole near the edge of the hood whenever you inspect the engine compartment to prevent the hood from falling and causing possible injury.

Make sure that the support rod has been released prior to closing the hood. Always check to be sure the hood is firmly latched before driving the vehicle.

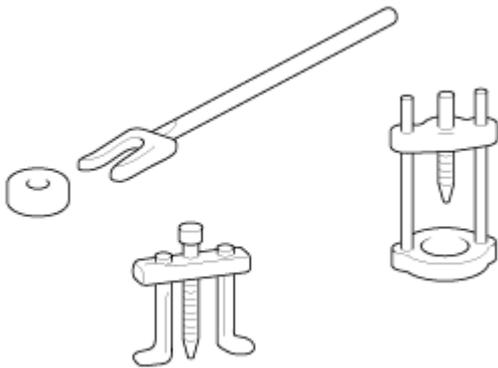


Preparation Of Tools And Measuring Equipment

Be sure that all necessary tools and measuring equipment are available starting work.

Special Tools

Use special tools when they are required.



Removal Of Parts

First find the cause of the problem and then determine whether removal or disassembly before starting the job.



Disassembly

If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be disassembled in a way that will not affect their performance or external appearance.

Inspection of parts

Each part, when removed, should be carefully on suspected for malfunction, deformation, damage, and other

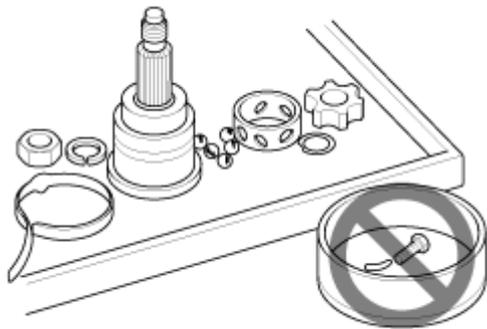
1. problems.



Arrangement of parts

All disassembled parts should be carefully arranged for effective reassembly.

Be sure to separate and correctly identify the parts to be replaced from those that will be used again.



2.

Cleaning parts for reuse

All parts to be used again should be carefully and thoroughly cleaned by an appropriate method.



3.

Parts

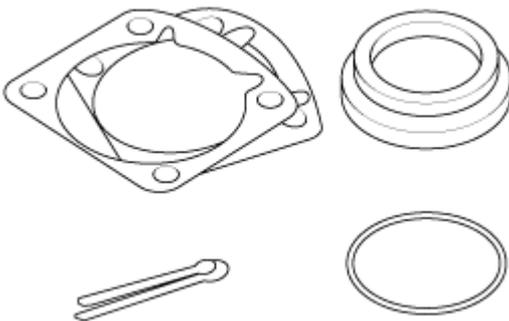
When replacing parts, use HYUNDAI genuine parts.



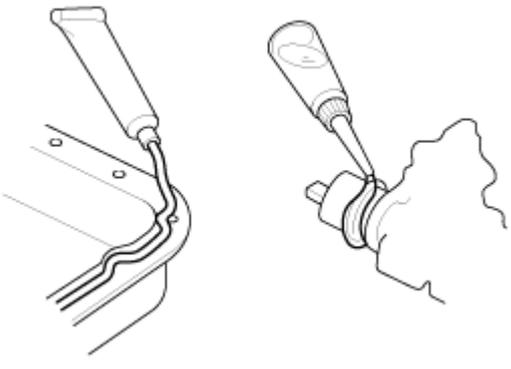
Replacement Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts. If removed, the following parts should always be replaced with new ones.

1. Oil seals
2. Gaskets
3. O-rings
4. Lock washers
5. Cotter pins (split pins)

Plastic nuts



6. Depending on their location.
7. Sealant should be applied to gaskets.
8. Oil should be applied to the moving components of parts.
9. Specified oil or grease should be applied to the prescribed locations (oil seals, etc) before assembly.



Adjustment Use gauges and testers to adjust correctly the parts to standard values correctly.

