

MANUAL TRANSMISSION AND CLUTCH MYT SERIES

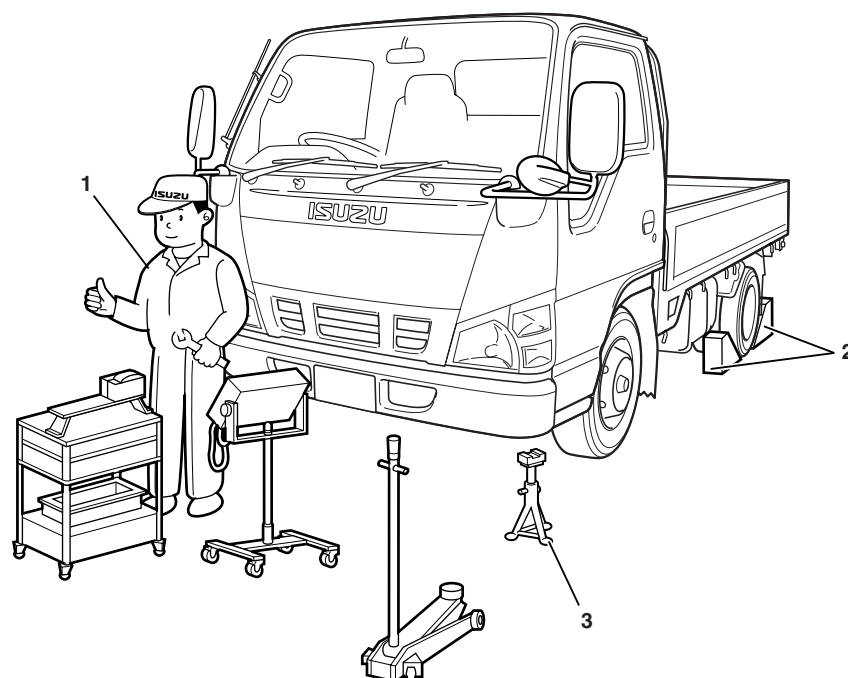
SECTION 0A GENERAL INFORMATION

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GENERAL REPAIR INSTRUCTIONS

General Precautions



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Preparation

- Prepare all the necessary tools, gauges and special tools before performing service operations.
- Prepare beforehand alternative parts which must be replaced or cannot be reused.

Work Clothes

- Make sure to wear a clean service uniform, cap and safety shoes (1).

Damage Prevention

- Make sure to use a cover on the vehicle body.
- Disconnect the ground cable from the battery before carrying out service operations.

Safety First

- Make sure to set chocks (2) before raising the vehicle using a jack set.
- After completing jacking-up the vehicle, make sure to set a safety stand (3) at the specified point to support the vehicle.
- Make sure to apply safety lock after raising the vehicle using a lift.
- If service operations are to be carried out by two persons or more, make sure to confirm safety of each other before performing service operations.

Precautions During Operations

- Keep the disassembled parts in good order to prevent them from confusing with unusable parts.
- When performing installation and assembly, clean or wash the relevant parts.
- Also, remove grease from the parts on which liquid packing etc. are applied.

Check After Operations

- When service operation is completed, make a final check that the service has been done properly and problem has been corrected.
- Check that there is no leakage of fuel, oil or coolant.

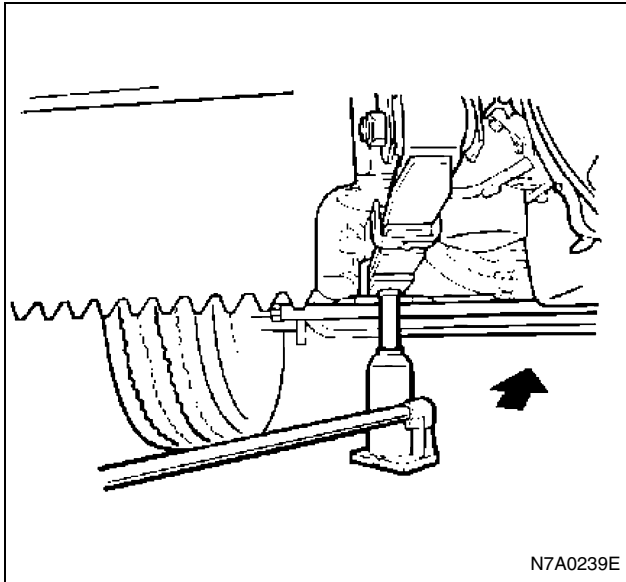
LIFTING POINTS

Lifting Points for Originally Equipped Jack

- The arrow indicates the front side of the vehicle.

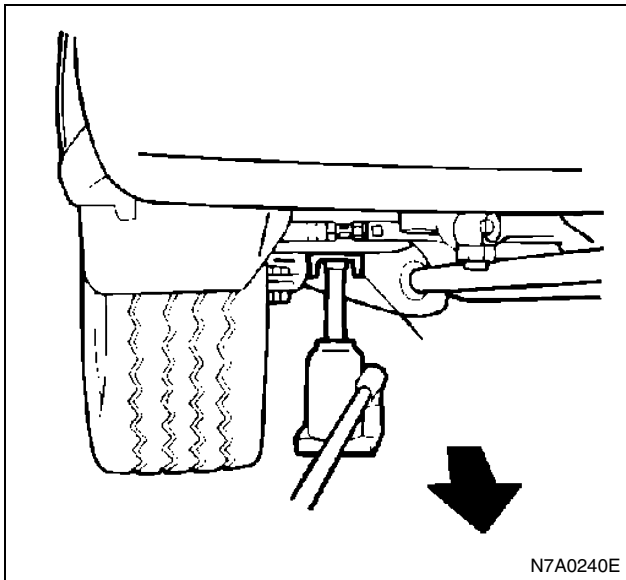
Front wheels of front wheel leaf spring type suspension vehicle (NHR, NKR, NPR, NQR)

- Set the jack at the leaf spring.



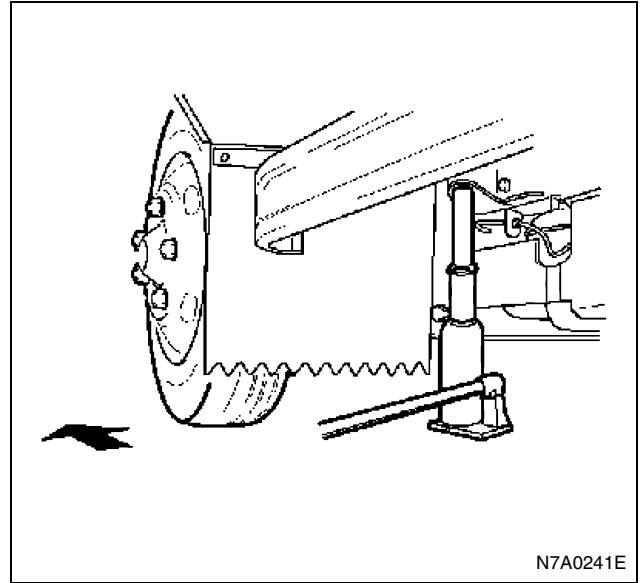
Front wheels of front wheel wishbone type suspension vehicle (NHR, NKR)

- Set the jack at the jack-up bracket on the front side of the lower link.



Front wheels of front wheel wishbone type suspension vehicle (NHR, NKR, NPR)

Set the jack at the lower side of the jack-up bracket.

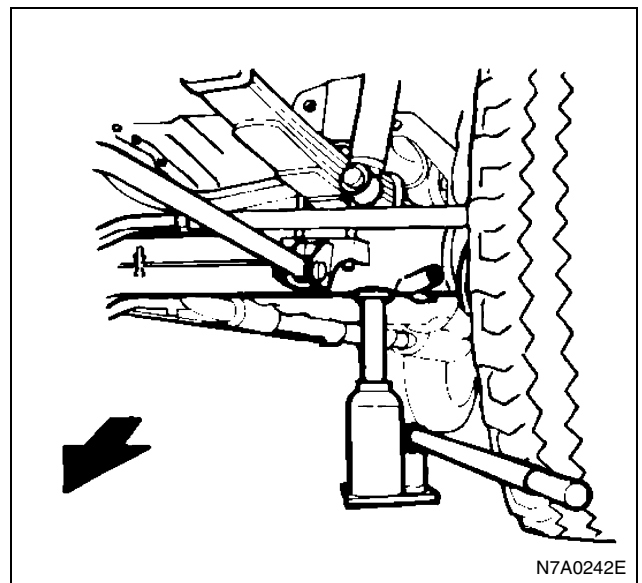


Caution:

Jack-up points for the vehicles of independent front suspension differ according to vehicle types. Make sure to check the jack-up bracket before jacking up the vehicle.

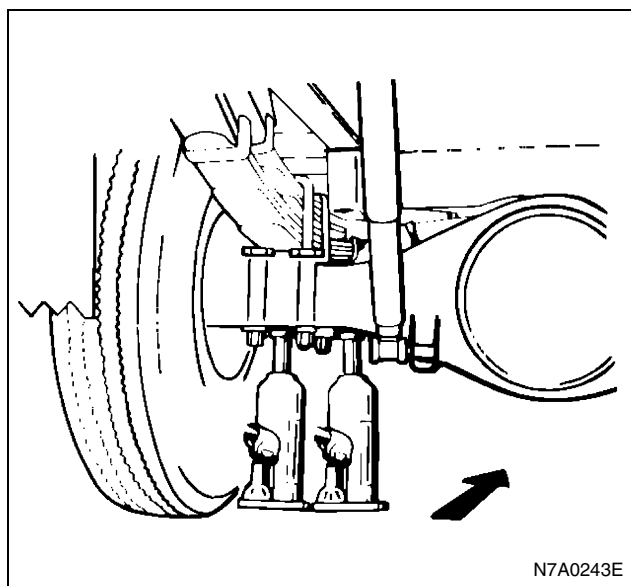
Front wheels (NPS)

- Set the jack at the lower side of the axle.



Rear wheels

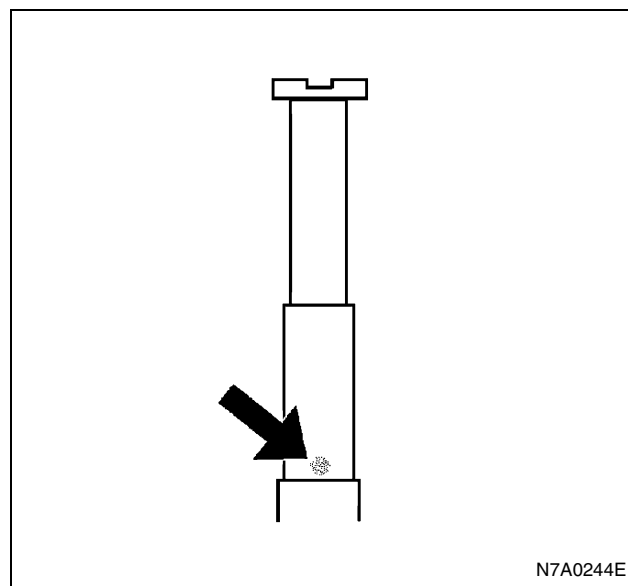
- Set the jack at the lower side of the leaf spring or axle case.



Caution:

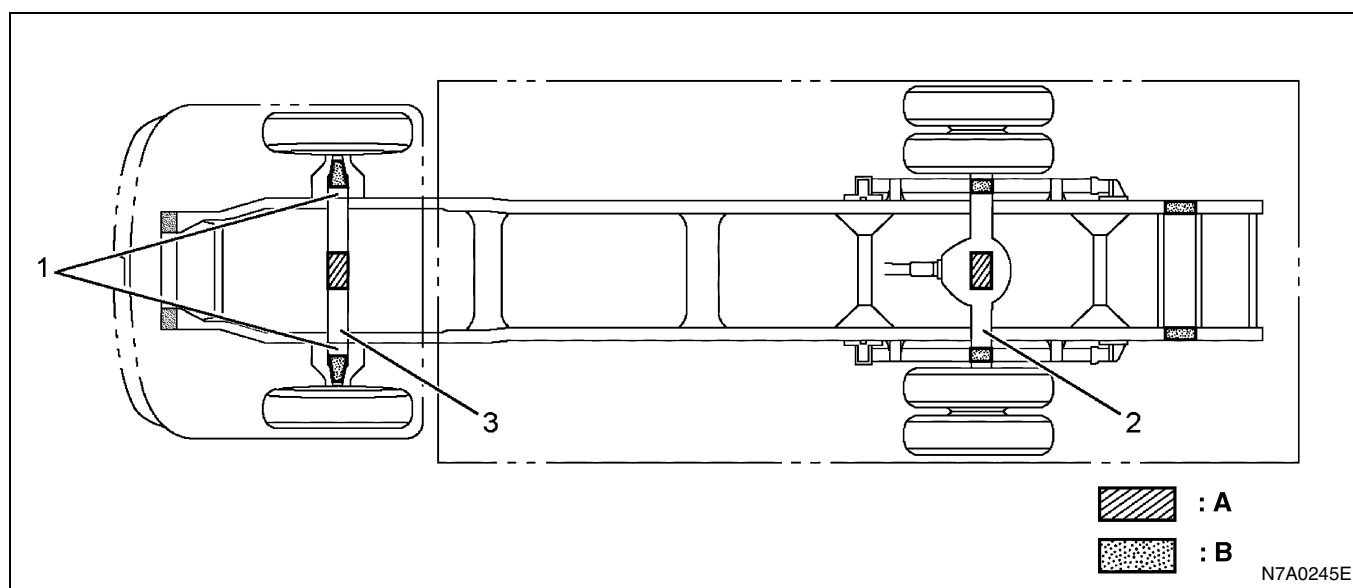
If a yellow mark appears when lifting the vehicle using the originally equipped jack, stop lifting. Continuing lifting may damage the jack.

Front wheel wishbone type (NHR, NKR, NPR)



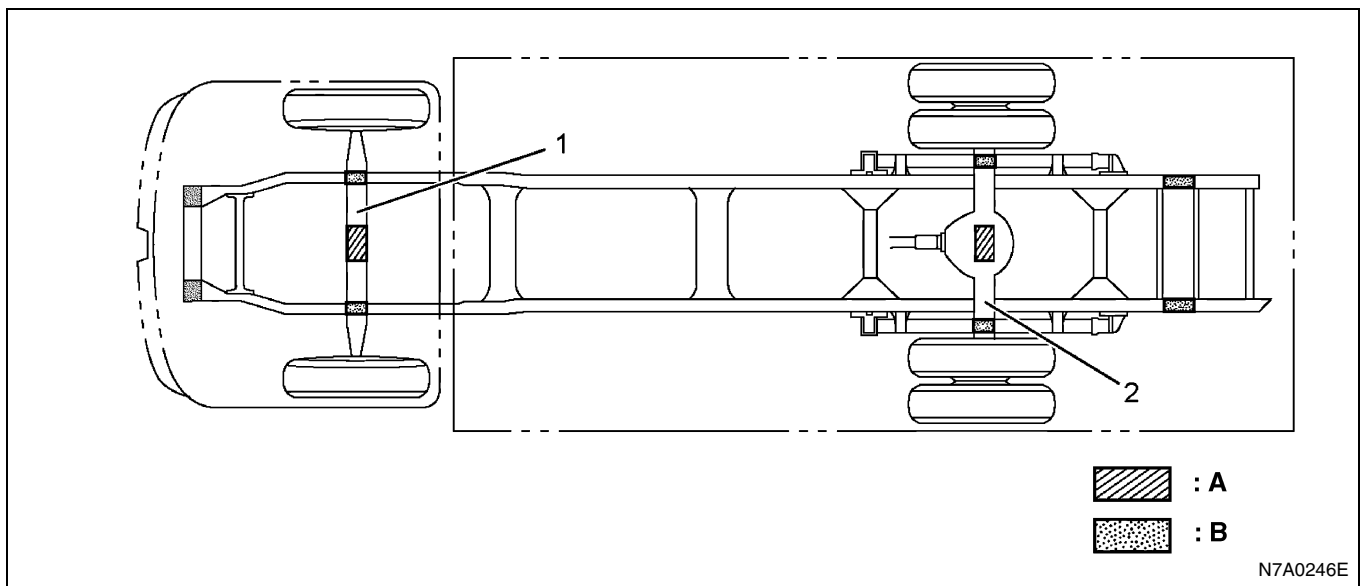
Floor Jack Lifting Points and Chassis Stand Position

- Make sure to set the floor jack and the chassis stand properly at the specified positions.



Legend

- | | |
|--|---------------------------------|
| A: Floor jack point | 2. Rear axle |
| B: Chassis stand lifting position | 3. Front suspension crossmember |
| 1. Lower link (except NPR independent suspension vehicles) | |

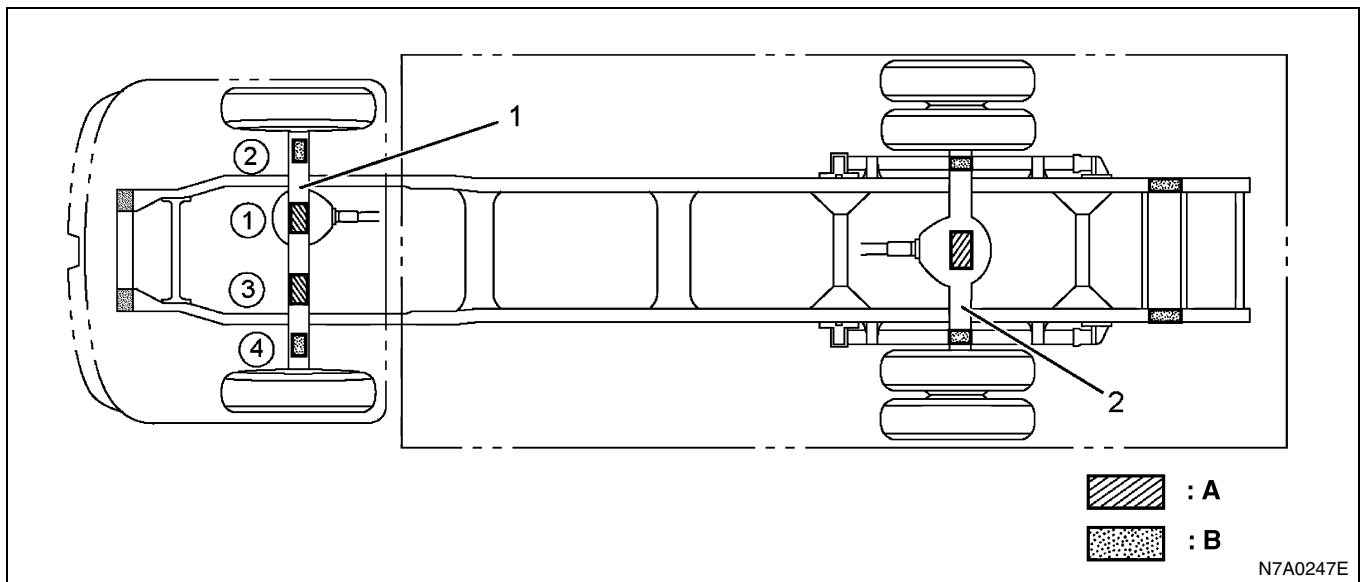
Front wheel leaf spring type (NHR, NKR, NPR, NQR)**Legend**

- A: Floor jack point
B: Chassis stand lifting position

1. Front axle
2. Rear axle

Front wheel leaf spring type (NPS)

- Follow the numbers in circle when jacking up the front wheel side.

**Legend**

- A: Floor jack point
B: Chassis stand lifting position

1. Front axle
2. Rear axle

CAB TILTING

Notes for Tilting of the Cab

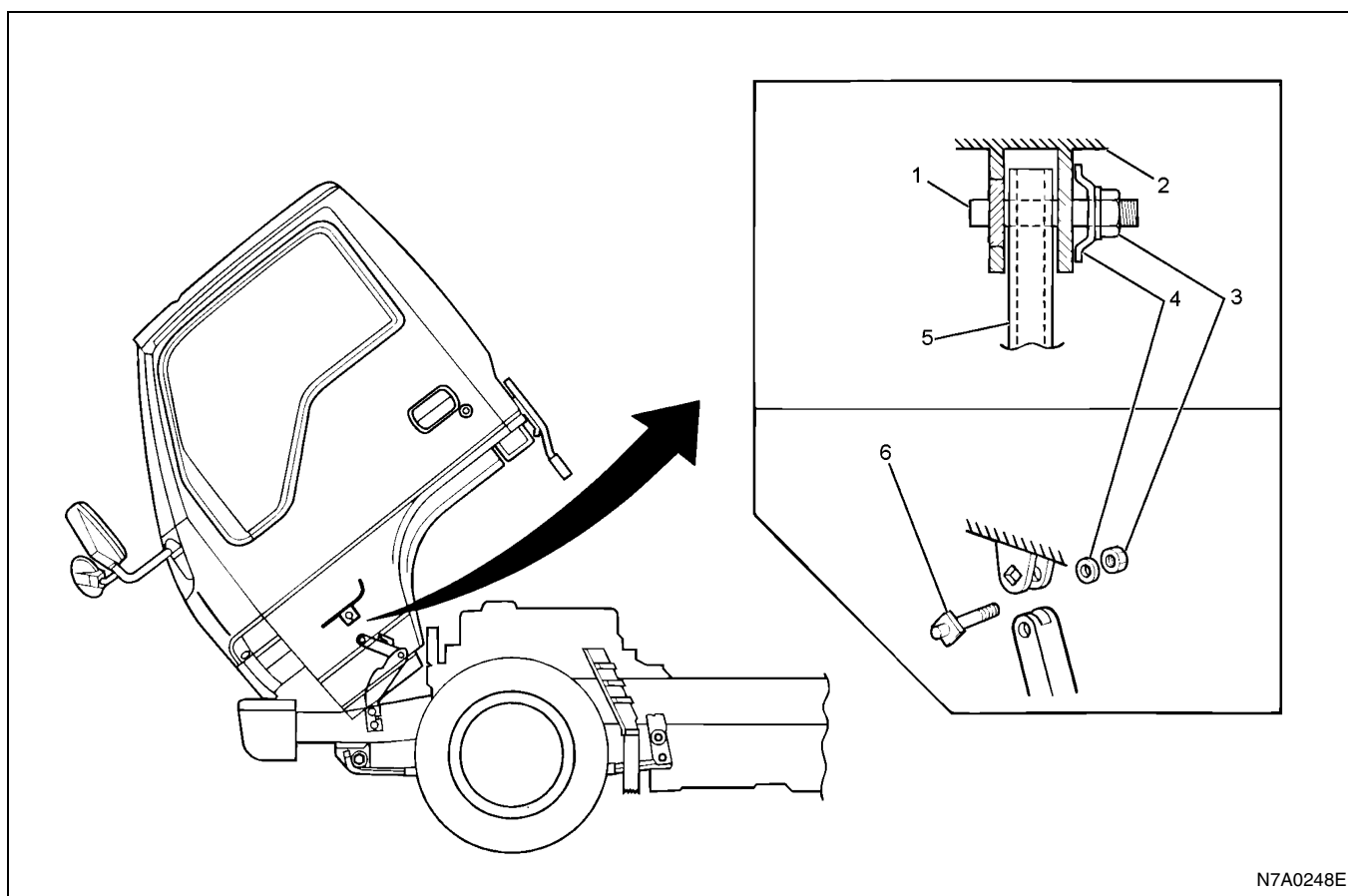
Make sure to observe the precautions below when removing the cab tilt stay assembly to tilt the cab in order to carry out service operations.

- When lifting the cab by tilting, use shop cloth to prevent damage to the cab.
- When tilting, the maximum tilt angle of the cab is 50 degrees. If the cab is tilted at an angle of more than 50 degrees, the torsion bar supporting the cab may be damaged.

- When tilting the cab, pay special attention not to let the cab come into contact with peripheral parts.
- The nut securing the cab tilt stay assembly is tightened with its thread deformed. Do not reuse the nut because the specified fixing torque is not obtained when reused.
- Strictly observe the specified fixing torques when tightening the nut.

Tighten:

Nut to 22 ± 5 N·m (2.2 ± 0.5 kg·m / 16 ± 3.7 lb·ft)



Legend

- | | |
|----------------------|----------------------|
| 1. Cab tilt stay pin | 4. Washer |
| 2. Cab side bracket | 5. Cab tilt stay |
| 3. Nut | 6. Cab tilt stay pin |

NOTES FOR WORKING ON ELECTRIC EQUIPMENT

Battery Cable

Disconnecting The Battery Cable

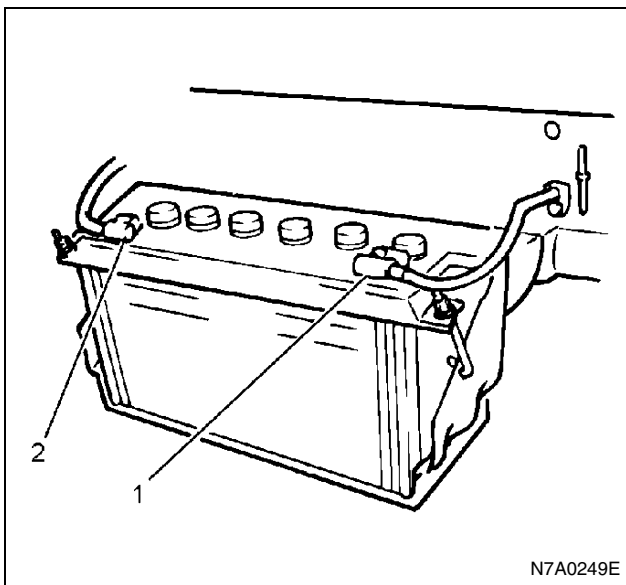
1. Turn all the switches to "OFF" positions.
2. Disconnect the battery ground cable (1).
3. Disconnect the battery positive cable (2).
4. Disconnect the battery cable (3) (Only 24V model).

Caution:

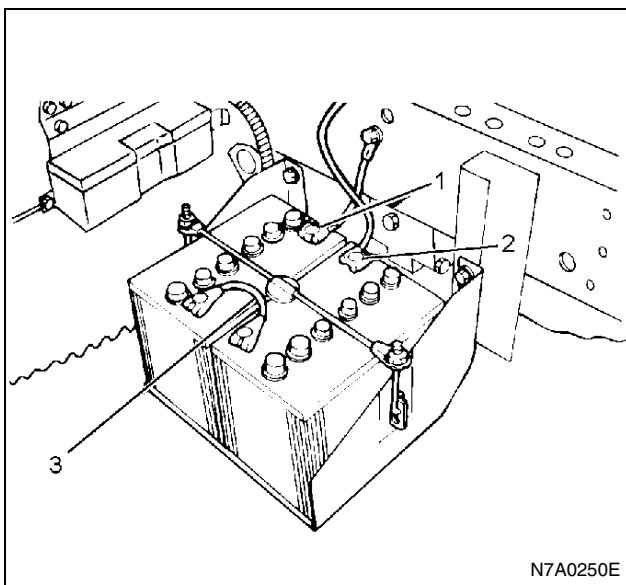
It is important that the battery ground cable should be disconnected first.

Disconnecting the battery positive cable first may result in a short circuit.

- For 12V model



- For 24V model



Connecting The Battery Cable

Connect in the reverse order of removal.

Caution:

Clean the battery terminal and apply a light coat of grease to prevent terminal corrosion.

Connector Handling

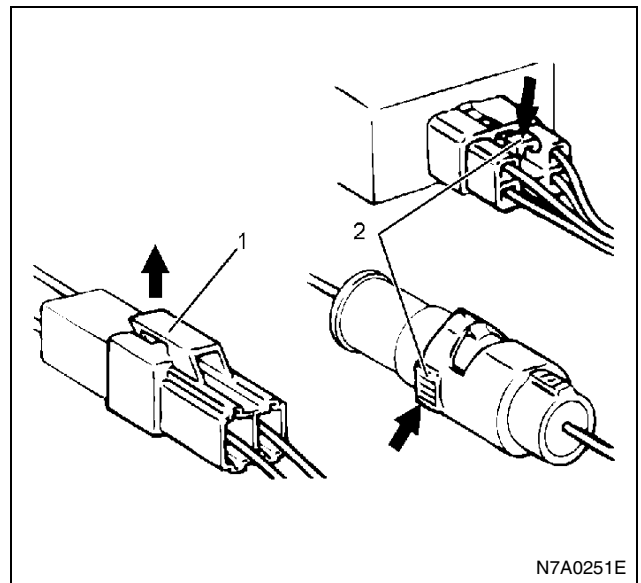
Disconnecting The Connectors

Most of the connectors have a tang lock to hold the connectors together.

Some tang locks are released by pulling them up (1).

Other tang locks are released by pressing them forward (2).

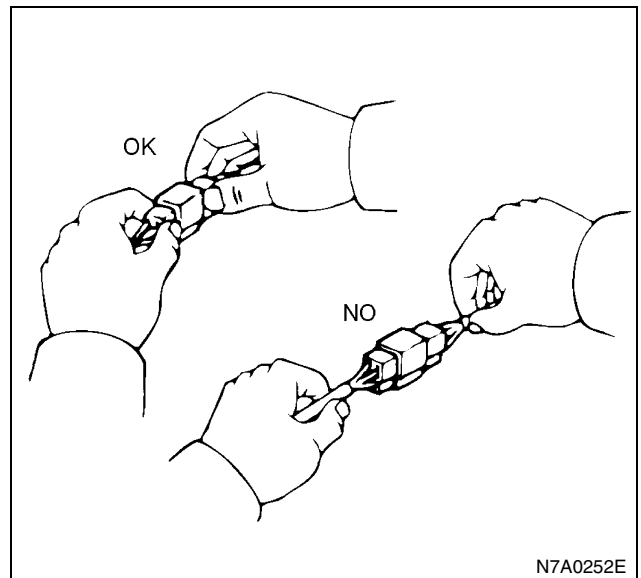
Determine which type of tang lock is adopted on the connector when disconnecting.



Firmly grasp both sides (male and female) of the connector.

Release the tang lock and carefully pull the two halves of the connector apart.

Never pull on the harness to separate the connectors. This will result in wire breakage.

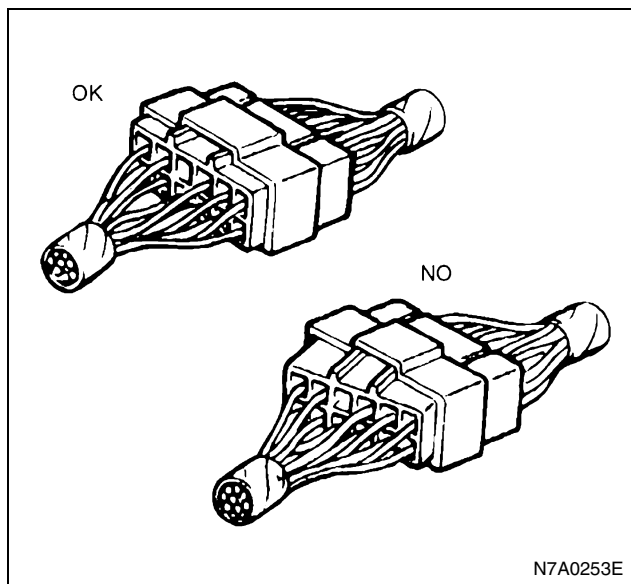


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Connecting The Connector

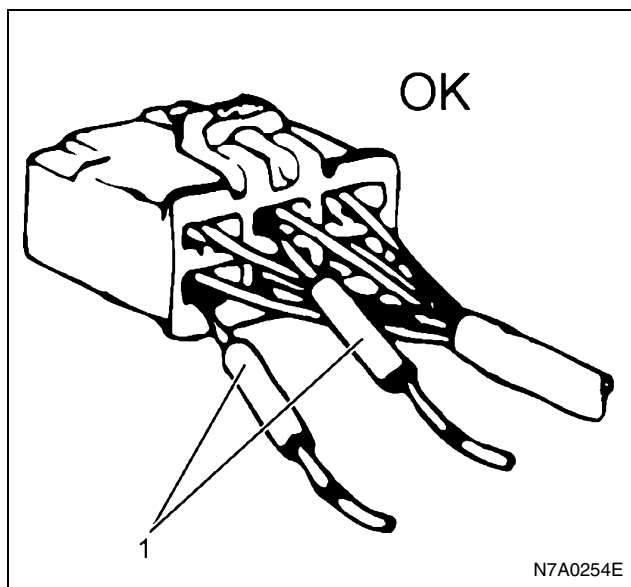
Firmly grasp both sides (male and female) of the connector.

Firmly but carefully push the two sides of the connector together until a distinct click is heard.

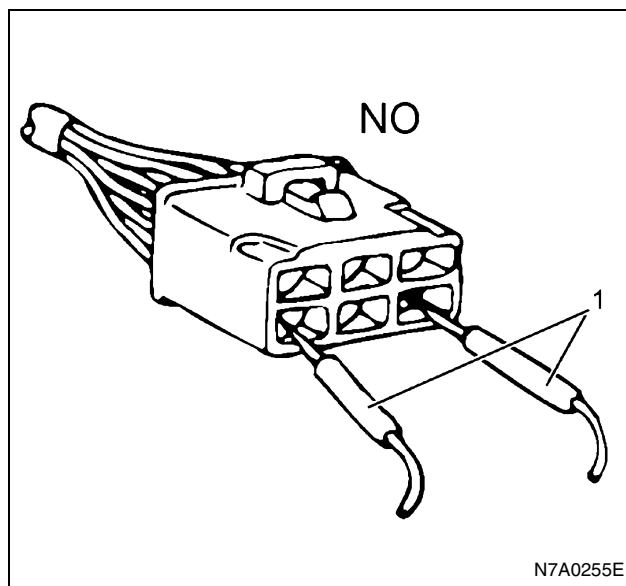


Connector Inspection

Use a circuit tester to check the connector for continuity. Insert the test probes (1) from the connector harness side.

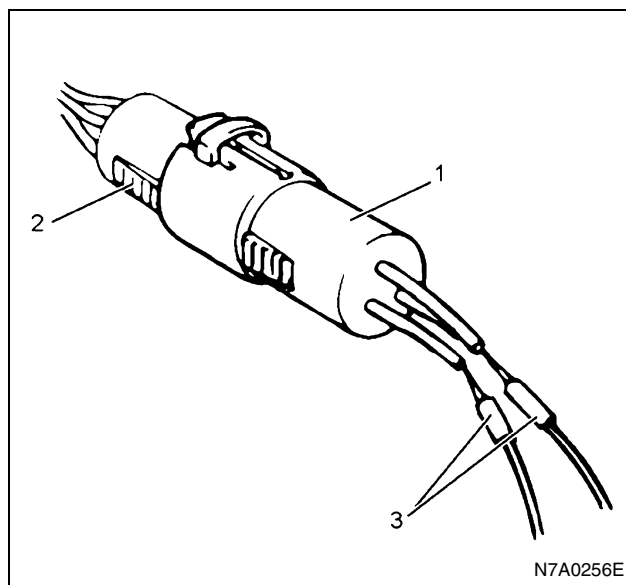


Never insert the circuit tester test probes (1) into the connector open end to test the continuity. Broken connector terminals will result.



Waterproof Connector Inspection

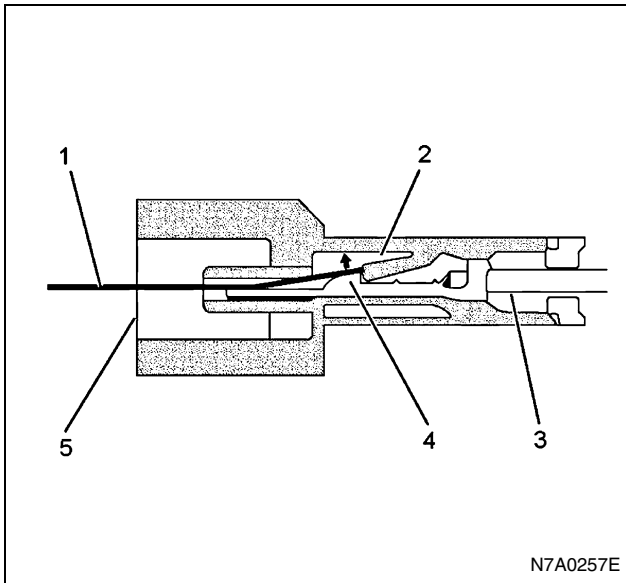
It is not possible to insert the test probes into the connector wire side of a waterproof connector. Use a previously made connector (1) with its wires cut to carry out the test. Connect the test connector (2) to the connector to be tested. Connect the test probes (3) to the cut wires to check the connector continuity.



Connector Pin Removal

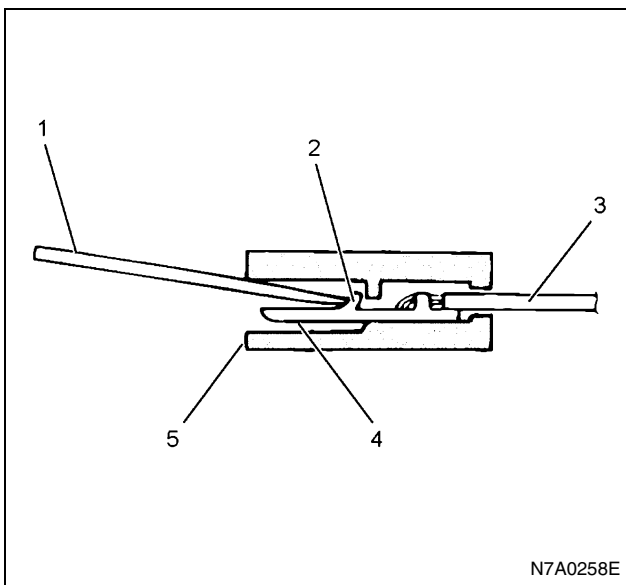
Connector Housing Tang Lock Type

1. Insert a thin flat-tip screwdriver or equivalent (1) into the connector housing open end (5).
2. Push the tang lock (2) up (in the direction of the arrow in the figure). Pull the wire (3) with pin (4) free from the wire side of the connector.



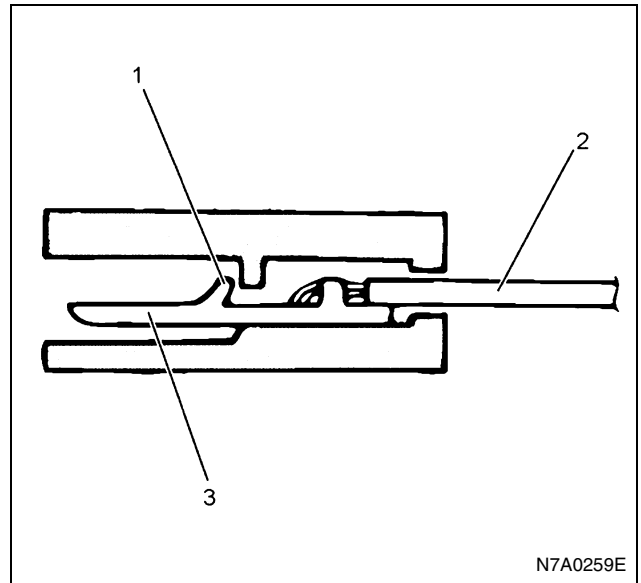
Pin Tang Lock Type

1. Insert a thin flat-tip screwdriver or equivalent (1) into the connector housing open end (5).
2. Push the tang lock (2) flat (toward the wire side of the connector). Pull the wire (3) with pin (4) free from the wire side of the connector.



Connector Pin Insertion

1. Check that the tang lock (1) is fully up.
2. Insert the pin (3) from the connector wire (2) side. Push the pin in until the tang lock closes firmly.
3. Gently pull on the wires to make sure that the connector pin is firmly set in place.

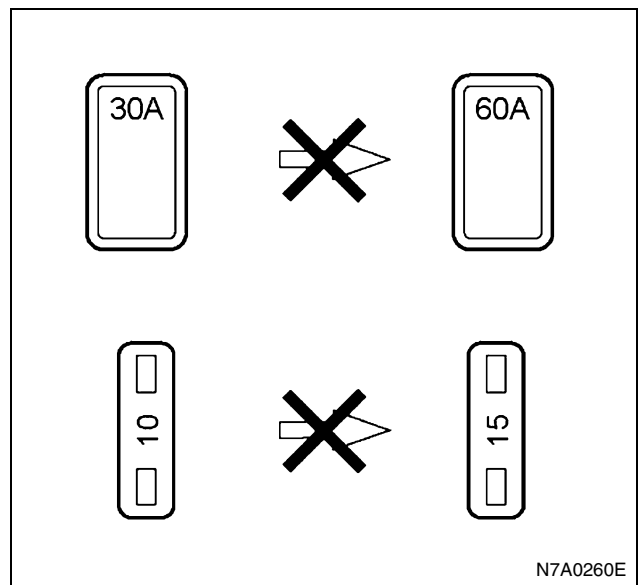


Fuse Replacement

WARNING:

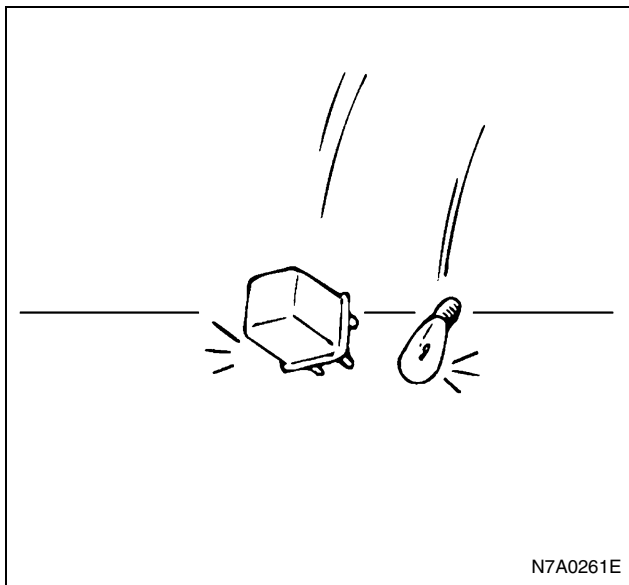
WHEN A FUSE IS BLOWN OUT, REPLACE IT WITH A NEW ONE OF THE SAME CAPACITY AFTER FINDING THE CAUSE.

IF A FUSE OF TOO LARGE CAPACITY IS USED, IT RESULTS TO BE MEANINGLESS WHEN AN OVER CURRENT FLOWS. THEREFORE, A WIRE MAY BE BURNED RESULTING IN A FIRE.



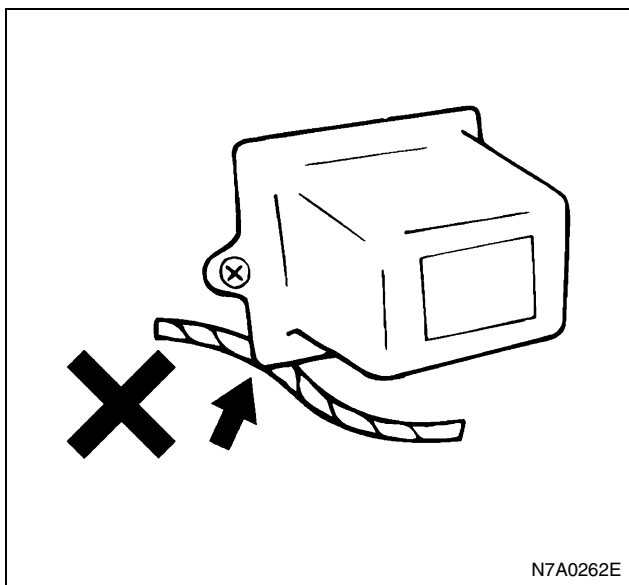
Electric Equipment Handling

Be careful when handling electrical parts. They should not be dropped or thrown, because short circuit or other damage may result.

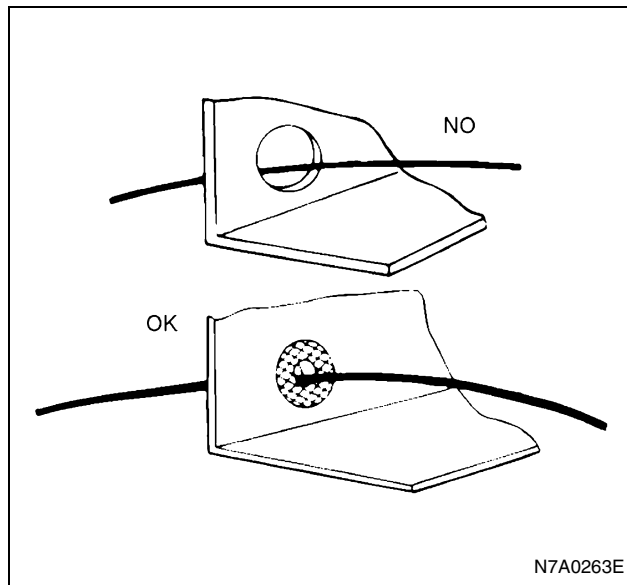


Cable Harness

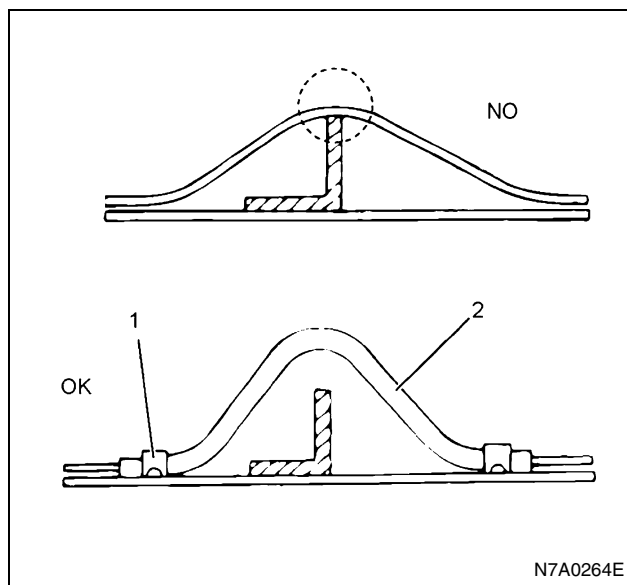
1. When installing the parts, be careful not to pinch or wedge the wiring harness.



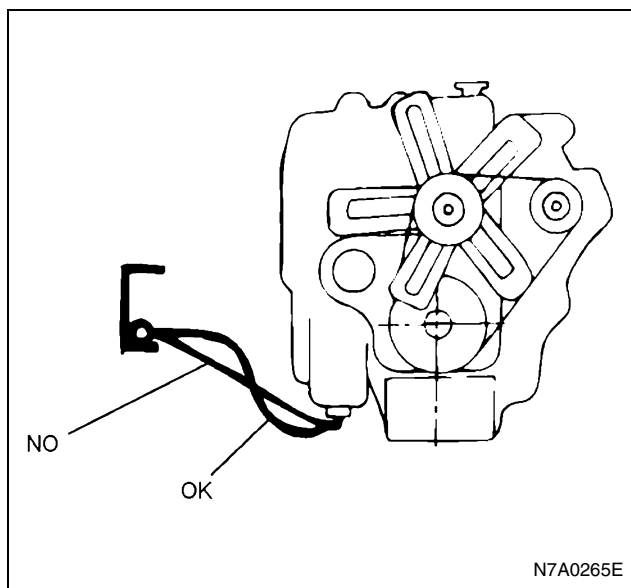
2. All electrical connections must be kept clean and tight.
3. Use a grommet or guard tube to protect the wiring harness from contacting a sharp edge or surface.



4. Position the wiring harness with an enough clearance from the other parts, and guard the wiring harness with a vinyl tube (2) and clips (1) to avoid direct contact.



5. The wiring harness between engine and chassis should be long enough to prevent chafing or damage due to various vibrations.



VEHICLES WITH SRS AIRBAG SYSTEM

Notes for Handling SRS Airbag System

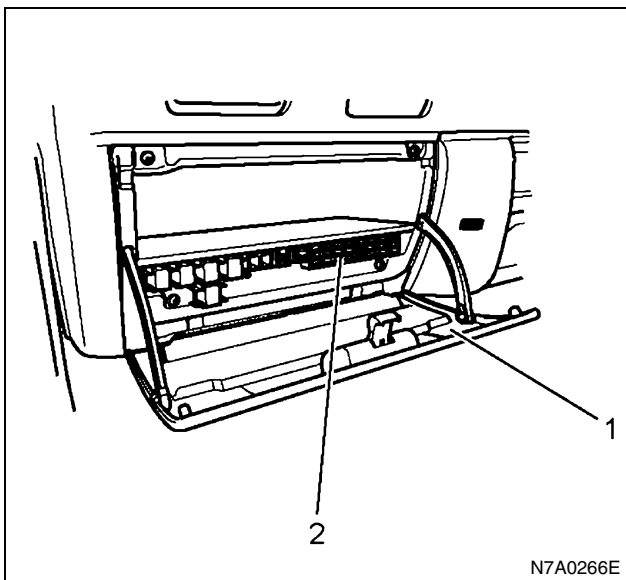
All the information necessary to securely and properly carry out service operations for SRS airbag system is provided in the section "Seat Belt, SRS Airbag." In this section, notes related to the SRS airbag system are provided, which are to be observed when carrying out service operations for items other than SRS airbag system. When doing an inspection work, make sure to set the ignition switch to "LOCK".

Be careful not to impact the SRS airbag system and its peripheral parts to prevent the deployment of the airbag. Also, before carrying out service operations for SRS parts, SRS harnesses and other service operations as shown below, make sure to temporarily deactivate the SRS airbag system. Not observing the following procedure may result in an injury because of sudden deployment of the airbag, or damage to the SRS airbag system.

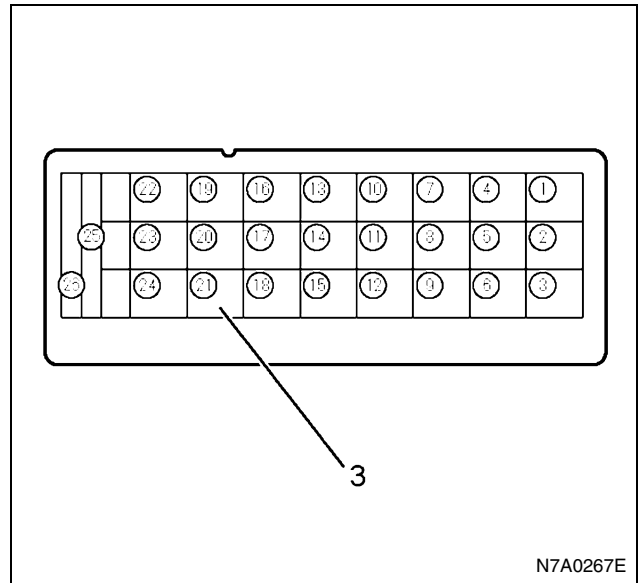
1. Repairs around the steering wheel
2. Repairs around the instrument panel, glove box and fuse box.
3. Repairs around the dashboard and center console.
4. Installation of car stereo etc.
5. Sheet metal coating on the right side of the cab

Deactivation of SRS Airbag System

- Turn the ignition key to "LOCK", and release the key.
- Remove the SRS fuse (3) from the fuse box (2) located in the lower part of the glove box (1), or disconnect the ground cable from the battery. And leave all these parts untouched for about 15 seconds or more.
- In 15 seconds or more after removing the fuse and the ground cable of the battery, remove the two yellow connectors located in the lower part of the steering column.



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Reactivation of SRS Airbag System

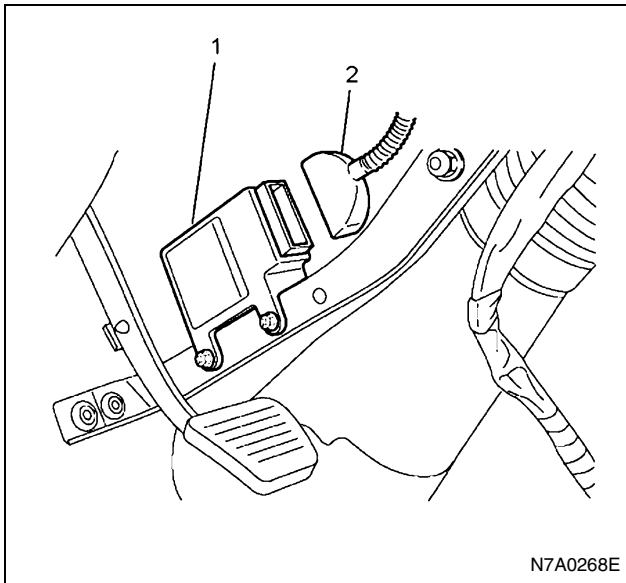
- Carry out the operation in the reverse order of deactivation.
- Turn the ignition switch to "ON."
- Check that the AIRBAG warning lamp turns off after blinking seven times. (If the warning lamp is not activated correctly, refer to "SRS Control System.")

Caution:

- Do not expose the airbag assembly to the temperature of 93°C (199°F) or more. Accidental airbag deployment may result.
- If the airbag assembly and controller are dropped from a height of about one meter or more, do not use the airbag assembly.
- Check the part number before installing the airbag assembly. If a not applicable item is installed, malfunction may result.
- When disposing of the airbag assembly, make sure to deploy the airbag. If the airbag is discarded without being deployed, secondary accident may result.

Handling of Airbag Controller Connector

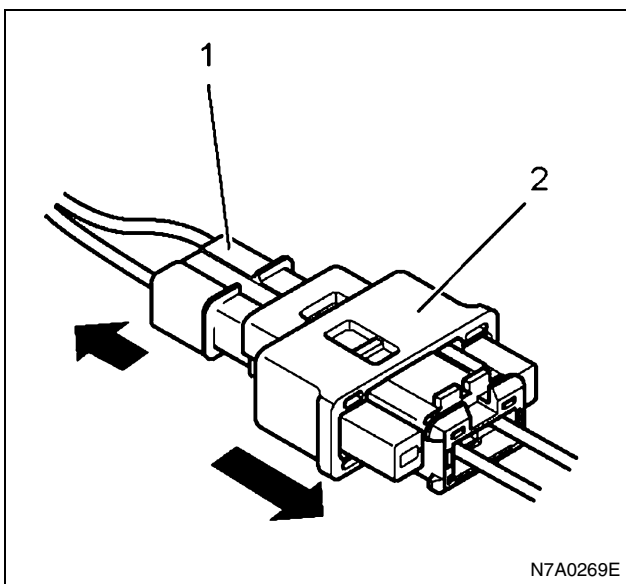
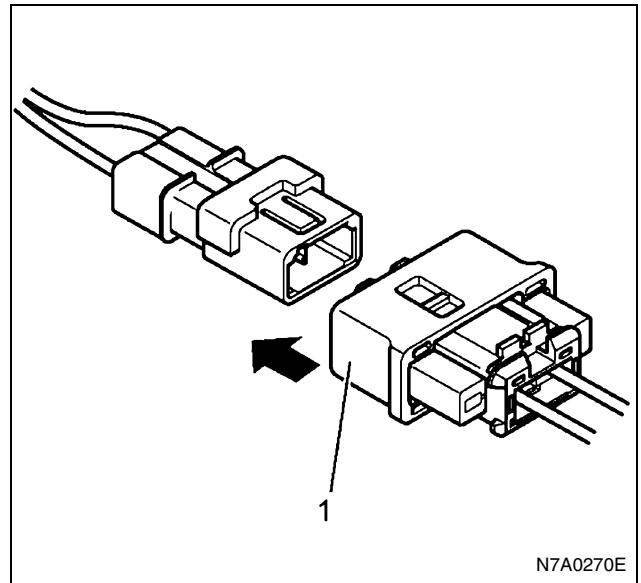
- Removal of connector (2)
Remove the connector from controller (1) by pressing the arrow mark on the connector.



- Connection of connector
Push connector (2) inside, and check that the connector is installed securely.

Handling of Inflator Connector

- Removal of connector
Remove connector (1) on the pin side (male side) by pulling cover insulator (2) in the direction indicated by an arrow.



- Connecting of connector
Hold socket insulator (1) and push it inside until a click is heard.

NOTES FOR ELECTRONIC CONTROL SYSTEM INSPECTION AND SERVICE

Scan Tool (External Diagnosis Device)

Use the specified scan tool in order to carry out fast and correct inspection of parts.

Make sure to refer to detailed description in the repair manual because the type and connection of a scan tool to be used differ according to vehicles and devices.

Circuit Tester

When using a circuit tester, observe the procedure indicated in the repair manual. If the procedure is not observed, other relevant parts may be damaged. If a specific type of circuit tester is specified, do not use any circuit tester of other type. If a circuit tester, which is not of the specified type, is used, other relevant parts may be damaged, and measurement may not be done correctly.

Caution:

If any circuit tester, which is not of the specified type, is used, the SRS and other electronic control system may malfunction.

Failure due to Static Electricity Discharge

When static electricity is discharged, relevant parts are charged with high voltage, and may be damaged. Observe the following items and take a proper action.

- Repair staff may be charged with static electricity through work place and clothes. Touch any normal grounding before inspecting and replacing relevant parts.
- Do not directly touch the connector pins of relevant parts. Do not rub them with other parts or cover.
- Connect the replacement parts to the normal grounding without unwrapping them. And then, take them out without letting them come into contact with the connector pins.

Additional Electric Equipment

If the vehicle is equipped with additional electric parts including lights, audio and radio devices, the electronic control system may be adversely affected by electric noises including radio wave emitted by those devices, depending on the installing condition. Turn off the additional electric parts beforehand, or carry out removal inspection and service.

Notes for Welding

Take the following actions before carrying out welding operation to protect the relevant parts.

- Remove the battery cable.
- Remove harnesses from all the control units.
- Turn all the switches to "OFF".
- Install the grounding of the welding machine in a place as close to the welding point as possible.

Repetition of Trouble

If the same trouble is generated repeatedly or momentarily, or the trouble does not repeat whereas the trouble display is indicated, check whether the trouble repeats by taking following actions.

- Shake by hand the relevant parts, including control units, sensors, relays and harnesses.
The trouble may repeat in case of connection failure.
- Heat the relevant parts using a dryer, or cool these parts using a refrigerant. The trouble may repeat if it is caused by temperature change.

Caution:

Do not heat the parts excessively to the level that cannot be touched.

- Sprinkle the vehicle with water. The trouble may repeat if it is caused by humidity change.

Caution:

Do not sprinkle water directly on the electric parts.

RECOMMENDED LIQUID GASKET AND LOCTITE

Liquid Gasket

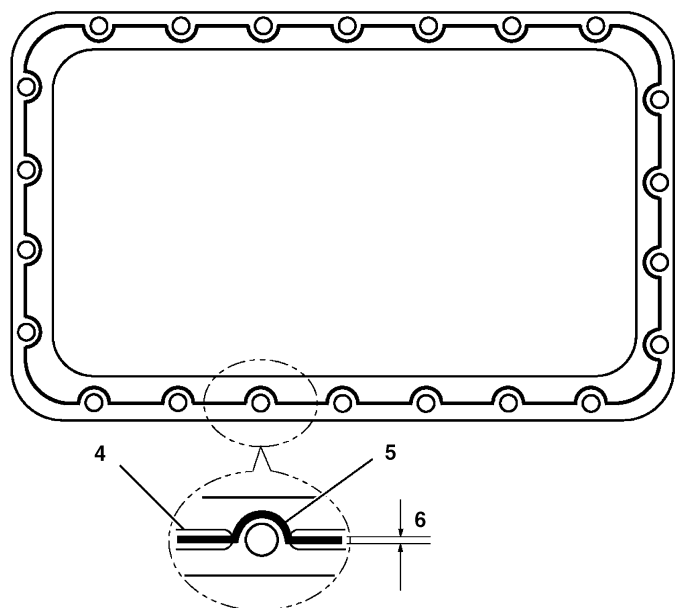
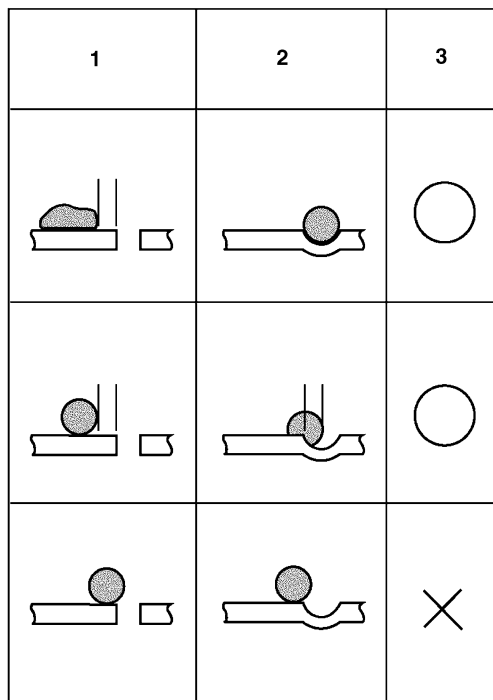
TYPE	PRODUCT NAME	MANUFACTURER	APPLICATION PARTS (EXAMPLE)
Silicon Base (Room Temperature Vulcanizer)	ThreeBond 1207B ThreeBond 1207C ThreeBond 1215 ThreeBond 1216	ThreeBond ThreeBond ThreeBond ThreeBond	Engine Oil Seal Retainer Engine Oil Pan Timing Gear Case Cylinder Head Cover Fuel Pump Water Pump Rear Axle etc.
Water Base	ThreeBond 1141	ThreeBond	
Solvent	ThreeBond 1104 BelcoBond 4 BelcoBond 401 BelcoBond 402	ThreeBond ISUZU ISUZU ISUZU	
Anaerobic	LOCTITE 515 LOCTITE 518 FMD127	LOCTITE LOCTITE LOCTITE	Engine Oil Seal Retainer Water Pump Transaxle etc.

- It is very important that the liquid gasket listed above or their exact equivalent be used on the vehicle.
- LOCTITE 515, LOCTITE 518 and FMD127 harden upon contact with a metal surface. Do not apply LOCTITE 515, LOCTITE 518 or FMD127 between two metal surfaces having a clearance of greater than 0.25 mm (0.001 in). Poor adhesion will result.

- Use a proper amount of the liquid gasket. Observe the precautions for each product.

Application Procedure

- Completely remove lubricant and moisture from the connecting surfaces. The surfaces must be perfectly dry.
- Apply specified bead width 2 — 3 mm (0.08 — 0.12 in) of liquid gasket to one of the connecting surfaces. And the bead should be continuous.



Legend

- | | |
|---------------|--|
| 1. BOLT HOLE | 4. Depression |
| 2. DEPRESSION | 5. Apply liquid gasket to the bolt hole interior. |
| 3. JUDGEMENT | 6. Specified bead width: 2 — 3 mm (0.08 — 0.12 in) |
-

Notice:

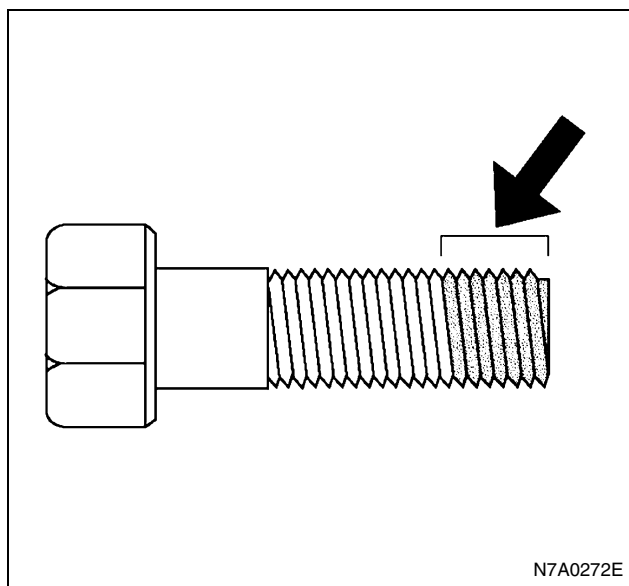
When the application procedures are specified in this workshop manual, follow them.

Recommended Loctite (Thread Locking Agent)

TYPE	COLOR
LOCTITE242	Blue
LOCTITE262	Red
LOCTITE271	Red

Application Steps

1. Completely wipe all lubricant and moisture from the bolts and bolt holes, and the female thread connecting surfaces. The surfaces must be perfectly dry.
2. Apply LOCTITE to the 1/3 tip of the bolt's threaded area.



3. Tighten the bolts to the specified torque.

Important:

After tightening, be sure to keep the bolts free from vibration and torque for at least an hour until LOCTITE hardens.

TERMS AND ABBREVIATIONS

Term Definition

TERM	DESCRIPTION
DIMENSION	The standard dimension values to be observed when manufacturing.
STANDARD	The standard values to be observed when carrying out service operations, including inspection, adjustment, assembly and installation.
LIMIT	The maximum or minimum values, which must not be exceeded when service operations are carried out. If this value is exceeded, replacement or repair is required.
WARNING:	If not observed, danger of death or serious injury will result.
CAUTION:	If not observed, danger of injury or accident will result.
IMPORTANT:	If not observed, normal performance of relevant parts and system is not guaranteed, and failure of the vehicle may result.
NOTE:	Matters, which should be specially mentioned.

Abbreviations Charts

ABBREVIATION	DESCRIPTION
2L	2L Shoe Brake
2WD, 4×2	Two Wheel Drive
4WD, 4×4	Four Wheel Drive
A/C	Air Conditioning
A/F	Air Fuel Ratio
A/T, AT	Automatic Transmission
ABDC	After Bottom Dead Center
ABS	Antilock Brake System
AC	Alternating Current
ACC	Accessory
ACG	Alternating Current Generator
ACL	Air Cleaner
ACT	Actuator
ANT	Antenna
AP	Accelerator Position
API	American Petroleum Institute
ASM (Assy)	Assembly
ASR	Anti-slip Regulator
ASSIT	Assistant / Assist
ATDC	After Top Dead Center
ATF	Automatic Transmission Fluid
B/K	Brake
B+	Battery Positive Voltage
BAL	Balance
BAT, BATT	Battery
BBDC	Before Bottom Dead Center

ABBREVIATION	DESCRIPTION
BJ	Birfield Joint
BKT, BRKT	Bracket
BRG, Brg	Bearing
BTDC	Before Top Dead Center
C/B	Circuit Braker
C/U	Control Unit
CAM	Camshaft
CAN	Control Unit Communication Type
CFS	Clutch Free System
CKP	Crankshaft Position
CMP	Camshaft Position
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CONN	Connector
CPU	Central Processing Unit
CSD	Cold Starting Device
D2L	D2L Shoe Brake
DC	Direct Current
DD	Direct Drive
DFI	Diesel Fuel Injection
DI	Direct Injection
DLC	Data Link Connector
DMM	Digital Multi-meter
DOJ	Double Offset Joint
DPF	Diesel Particulate Filter

0A-18 GENERAL INFORMATION

ABBREVIATION	DESCRIPTION
DTC	Diagnostic Trouble Code
DVM	Digital Voltage Meter
E/B	Exhaust Brake
ECM	Engine Control Module
ECT	Engine Coolant Temperature
ECU	Engine Control Unit
EDU	Engine Driver Unit
EEPROM	Electrically Erasable and Programmable Read Only Memory
EGR	Exhaust Gas Recirculation
EHCUC	Electronic Hydraulic Control Unit
EMI	Electromagnetic Interference
ESD	Electrostatic Discharge
EVAP	Evaporation
EVRV	Electric Vacuum Regulating Valve
Exh, EXH	Exhaust
F/B	Feedback
F/C	Fuel Cut
F/L, FL	Fusible Link
FCS	Fuel Cut System
FICD	Fast Idle Control Device
FIO	Fast Idle Open
FLW	Fusible Link Wire
FRZ	Freezer
FT	Fuel Temperature
Ft, FRT	Front
FWD	Front Wheel Drive
GEN	Generator
GND	Ground
GVW	Gross Vehicle Weight
GVM	Gross Vehicle Mass
H/L	Head Lamp
HAB	Hydraulic Assist Brake
HC	Hydrocarbons
HD	Heavy Duty
HID	High Intensity Discharge Head-lamp
HO 2 S	Heated Oxygen Sensor
HAS	Hill Start Aid
HT	Hypoid Tandem
HUD	Head-Up Display

ABBREVIATION	DESCRIPTION
HVAC	Heater Ventilation Air Conditioner
I/PUMP, I/P	Injection Pump
IAC	Idle Air Control
IAT	Intake Air Temperature
IC	Integrated Circuit
ID Plate	Identification Plate
IGN / IG	Ignition
IN	Intake
INJ	Injection
ISC	Idle Speed Control
ISM	Intake Step Motor
ISO	International Standardization Organization
ISP	Intake Shutter Position
ITP	Intake Throttle Position
J/B	Junction Block
J/C	Joint Connector
JIS	Japan Industrial Standards
L/H, LH	Left-Hand
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LEV	Low Emission Vehicle
LPG	Liquefied Petroleum Gas
LSD	Limited Slip Differential
LSPV	Load Sensing Proportioning Valve
LT	LT Shoe Brake
LWB	Long Wheel Base
M/T, MT	Manual Transmission
M/V	Electromagnetic Valve
MAP	Manifold Absolute Pressure
Max	Maximum
MIL	Malfunction Indicator Lamp
Min	Minimum
MPU	Micro Processing Unit
NC	Normally Closed
NE	Engine RPM
NO	Normally Open
Nox	Nitrogen Oxides
O/D	Over Drive
O2S	O2 Sensor

ABBREVIATION	DESCRIPTION
OBD	Onboard Diagnosis
ODM	Output Driver Module
OEM	Original Equipment Manufacturing
OHC	Overhead Camshaft
OHV	Overhead Valve
OPT	Option
OT	Oil Temperature
P	Poles
P/L, PL	Pilot Lamp
P/S	Power Steering
PCM	Power Train Control Module
PCV	Positive Crankcase Ventilation
P-I	Proportion / Integration
PID	Control Type
PM	Particulate Matter
POS	Position
PTO	Power Take Off
PWM	Pulse Width Modulation
Q	Quantity (Fuel Injection Quantity)
QDM	Quad Driver Module
QOS	Quick On Start Module
QWS	Quick Warming Up System
R/H, RH	Right-Hand
R/L	Relay
RAM	Random Access Memory
REF	Reference
RET	Retarder
REV	Reverse
ROM	Read Only Memory
RP	Rail Pressure
Rr, RR	Rear
RWD	Rear Wheel Drive Vehicle
S/M	Step Motor
SAE	Society of Automotive Engineers
SBF	Slow Blow Fuse
SCV	Suction Control Valve
SIG	Signal
SLD	Shield
SPV	Spill Control Valve
SRS	Supplemental Restraint System

ABBREVIATION	DESCRIPTION
ST	Starter / Start
STD	Standard
STRG	Steering
SW	Switch
SWB	Short Wheel Base
T/F	Transfer
TCC	Torque Converter Clutch
TCM	Transmission Control Module
TCV	Timing Control Valve
TDC	Top Dead Center
TEMP	Temperature
TFT	Transmission Fluid Temperature
TP	Throttle Position
TWV	Two Way Valve
V/P	Vacuum Pump
VB	Battery Voltage
Vcc	Collector Voltage
VCI	Vehicle Communication Interface
VIM	Vehicle Interface Module
VIN	Vehicle Identification Number
VOL, Vol.	Volume
VSS	Vehicle Speed Sensor
VSV	Vacuum Switching Valve
W/B, WB	Wheel Base
W/H	Wire / Harness
W/L	Warning Lamp
WOT	Wide Open Throttle

Introduction of SI (International System of Unit)

The SI was founded with an aim to standardize various unit systems, e.g. the metric system, pound system etc., and to get rid of complicated conversion of units using calculators.

Introduction of the SI in Japan is standardized in JIS-Z-8203.

In this manual, all the units are indicated based on the International System of Units, along with conventional units in ().

- SI is the abbreviation of “Le Systeme Internationale d’Unites.”

STANDARD BOLTS TIGHTENING

Isuzu Standard Fixing Torque Specifications

The torque values given in the following table should be applied where a particular torque is not specified.

N·m (kg·m/lb·ft)				
Strength Class	4.8 4T		7T	
Bolt Identification	Hexagon Head Bolt	Flange Bolt	Hexagon Head Bolt	Flange Bolt
M6 × 1	3.9 — 7.8 (0.4 — 0.8/2.9 — 5.8)	4.6 — 8.5 (0.5 — 0.9/3.4 — 6.3)	4.9 — 9.8 (0.5 — 1.0/3.6 — 7.2)	5.7 — 10.6 (0.6 — 1.1/4.2 — 7.8)
M8 × 1.25	7.8 — 17.7 (0.8 — 1.8/5.8 — 13.1)	10.5 — 19.6 (1.1 — 2.0/7.7 — 14.5)	11.8 — 22.6 (1.2 — 2.3/8.7 — 16.7)	13.5 — 25.0 (1.4 — 2.5/10 — 18.4)
M10 × 1.25	20.6 — 34.3 (2.1 — 3.5/15.2 — 25.3)	23.1 — 38.5 (2.4 — 3.9/17 — 28.4)	27.5 — 46.1 (2.8 — 4.7/20.3 — 34)	31.0 — 51.7 (3.2 — 5.3/22.9 — 38.1)
*M10 × 1.5	19.6 — 33.3 (2.0 — 3.4/14.5 — 24.6)	22.3 — 37.2 (2.3 — 3.8/16.4 — 27.4)	27.5 — 45.1 (2.8 — 4.6/20.3 — 33.3)	30.3 — 50.4 (3.1 — 5.1/22.3 — 37.2)
M12 × 1.25	49.0 — 73.5 (5.0 — 7.5/36.1 — 54.2)	54.9 — 82.3 (5.6 — 8.4/40.5 — 60.7)	60.8 — 91.2 (6.2 — 9.3/44.8 — 67.3)	68.1 — 102.1 (6.9 — 10.4/50.2 — 75.3)
*M12 × 1.75	45.1 — 68.6 (4.6 — 7.0/33.3 — 50.6)	51.0 — 76.5 (5.2 — 7.8/37.6 — 56.4)	56.9 — 84.3 (5.8 — 8.6/42 — 62.2)	62.7 — 94.0 (6.4 — 9.6/46.2 — 69.3)
M14 × 1.5	76.5 — 114.7 (7.8 — 11.7/56.4 — 84.6)	83.0 — 124.5 (8.5 — 12.7/61.2 — 91.8)	93.2 — 139.3 (9.5 — 14.2/68.7 — 102.7)	100.8 — 151.1 (10.3 — 15.4/74.3 — 111.4)
*M14 × 2	71.6 — 106.9 (7.3 — 10.9/52.8 — 78.8)	77.2 — 115.8 (7.9 — 11.8/56.9 — 85.4)	88.3 — 131.4 (9.0 — 13.4/65.5 — 96.9)	94.9 — 142.3 (9.7 — 14.5/70 — 105)
M16 × 1.5	104.0 — 157.0 (10.6 — 16.0/76.7 — 115.8)	115.6 — 173.3 (11.8 — 17.7/85.3 — 127.8)	135.3 — 204.0 (13.8 — 20.8/99.8 — 150.5)	150.1 — 225.2 (15.3 — 23.0/110.7 — 166.1)
*M16 × 2	100.0 — 149.1 (10.2 — 15.2/73.8 — 110)	109.4 — 164.2 (11.2 — 16.7/80.7 — 121.1)	129.4 — 194.2 (13.2 — 19.8/95.4 — 143.2)	142.5 — 213.8 (14.5 — 21.8/105.1 — 157.7)
M18 × 1.5	151.0 — 225.6 (15.4 — 23.0/111.4 — 166.4)	—	195.2 — 293.2 (19.9 — 29.9/144 — 216.3)	—
*M18 × 2.5	151.0 — 225.6 (15.4 — 23.0/111.4 — 166.4)	—	196.1 — 294.2 (20.0 — 30.0/144.6 — 217)	—
M20 × 1.5	206.0 — 310.0 (21.0 — 31.6/151.9 — 228.6)	—	269.7 — 405.0 (27.5 — 41.3/198.9 — 298.7)	—
*M20 × 2.5	190.2 — 286.4 (19.4 — 29.2/140.3 — 211.2)	—	249.1 — 374.6 (25.4 — 38.2/183.7 — 276.3)	—

N·m (kg·m/lb·ft)				
Strength Class	4.8 4T		7T	
Bolt Identification	Hexagon Head Bolt	Flange Bolt	Hexagon Head Bolt	Flange Bolt
M22 × 1.5	251.1 — 413.8 (25.6 — 42.2/185.2 — 305.2)	—	362.8 — 544.3 (37.0 — 55.5/267.6 — 401.5)	—
*M22 × 2.5	217.7 — 327.5 (22.2 — 33.4/160.6 — 241.6)	—	338.3 — 507.0 (34.5 — 51.7/249.5 — 373.9)	—
M24 × 2	358.9 — 539.4 (36.6 — 55.0/264.7 — 397.8)	—	430.0 — 711.0 (43.9 — 72.5/317.2 — 524.4)	—
*M24 × 3	338.3 — 507.0 (34.5 — 51.7/249.5 — 373.7)	—	406.0 — 608.0 (41.4 — 62.0/299.5 — 448.4)	—

The asterisk * indicates that the bolts are used for female-threaded parts that are made of soft materials such as casting, etc.

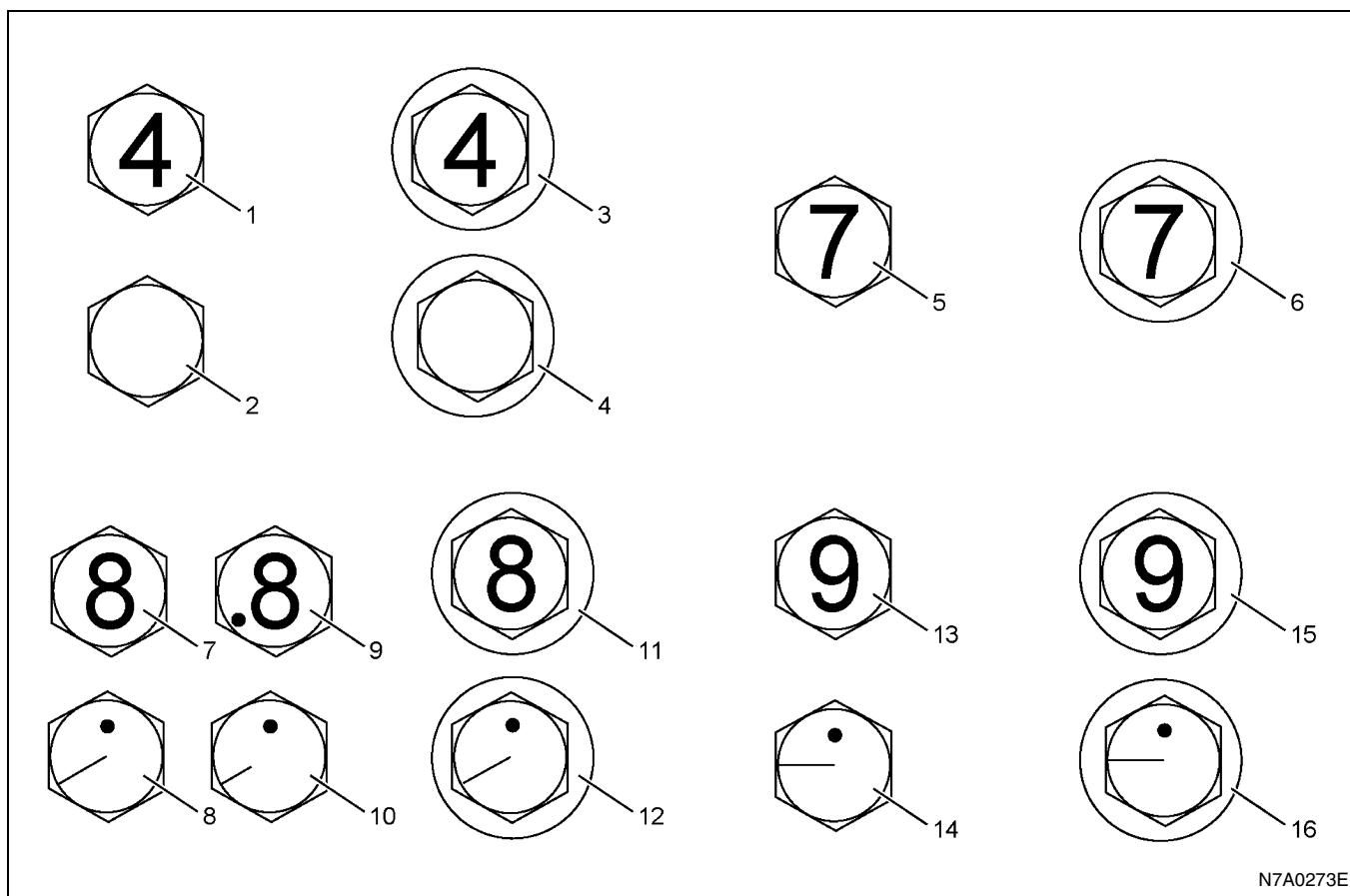
N·m (kg·m/lb·ft)				
Strength Class	8.8		9.8 9T	
Bolt Identification	Hexagon Head Bolt	Flange Bolt	Hexagon Head Bolt	Flange Bolt
M6 × 1	5.6 — 11.2 (0.6 — 1.1/4.1 — 8.3)	6.6 — 12.2 (0.6 — 1.2/4.9 — 9)	—	—
M8 × 1.25	13.4 — 25.7 (1.4 — 2.6/9.9 — 19)	15.3 — 28.4 (1.6 — 2.9/11.3 — 20.9)	16.7 — 30.4 (1.7 — 3.1/12.3 — 22.4)	18.1 — 33.6 (1.9 — 3.4/13.3 — 24.8)
M10 × 1.25	31.3 — 52.5 (3.2 — 5.4/23.1 — 38.7)	35.4 — 58.9 (3.6 — 6.1/26.1 — 43.4)	37.3 — 62.8 (3.8 — 6.4/27.5 — 46.3)	42.3 — 70.5 (4.3 — 7.2/31.2 — 52)
*M10 × 1.5	31.3 — 51.4 (3.2 — 5.2/23.1 — 37.9)	34.5 — 57.5 (3.5 — 5.8/34.5 — 42.4)	36.3 — 59.8 (3.7 — 6.1/26.8 — 44.1)	40.1 — 66.9 (4.1 — 6.8/29.6 — 49.3)
M12 × 1.25	69.3 — 104.0 (7.1 — 10.6/51.1 — 76.7)	77.7 — 116.5 (7.9 — 11.9/57.3 — 85.9)	75.5 — 113.8 (7.7 — 11.6/55.7 — 83.9)	85.0 — 127.5 (8.7 — 13.0/62.7 — 94)
*M12 × 1.75	64.8 — 96.1 (6.6 — 9.8/47.8 — 70.9)	71.4 — 107.2 (7.3 — 10.9/52.7 — 79.1)	71.6 — 106.9 (7.3 — 10.9/52.8 — 78.8)	79.5 — 119.2 (8.1 — 12.2/58.6 — 87.9)
M14 × 1.5	106.2 — 158.8 (10.8 — 16.2/78.3 — 117.1)	114.9 — 172.3 (11.7 — 17.6/84.7 — 127.1)	113.8 — 170.6 (11.6 — 17.4/83.9 — 125.8)	123.4 — 185.1 (12.6 — 18.9/91 — 136.5)
*M14 × 2	100.6 — 149.8 (10.3 — 15.3/74.2 — 110.5)	108.2 — 162.2 (11.1 — 16.6/79.8 — 119.6)	106.9 — 160.0 (10.9 — 16.3/78.8 — 118)	115.5 — 173.3 (11.8 — 17.7/85.2 — 127.8)
M16 × 1.5	154.3 — 232.5 (15.7 — 23.7/113.8 — 171.5)	171.1 — 256.7 (17.4 — 26.2/126.2 — 189.3)	160.0 — 240.3 (16.3 — 24.5/118 — 177.2)	176.9 — 265.3 (18.0 — 27.1/130.5 — 195.7)

0A-22 GENERAL INFORMATION

N·m (kg·m/lb·ft)				
Strength Class	8.8		9.8 9T	
Bolt Identification	Hexagon Head Bolt	Flange Bolt	Hexagon Head Bolt	Flange Bolt
*M16 × 2	147.6 — 221.4 (15.0 — 22.6/108.9 — 163.3)	162.5 — 243.8 (16.6 — 24.9/119.9 — 179.8)	153.0 — 229.5 (15.6 — 23.4/112.8 — 169.3)	168.5 — 252.7 (17.2 — 25.8/124.3 — 186.4)
M18 × 1.5	222.5 — 334.3 (22.7 — 34.1/164.1 — 246.6)	—	229.5 — 345.2 (23.4 — 35.2/169.3 — 254.6)	—
*M18 × 2.5	223.6 — 335.4 (22.8 — 34.2/164.9 — 247.4)	—	230.5 — 346.2 (23.6 — 35.3/170 — 255.3)	—
M20 × 1.5	307.4 — 461.7 (31.4 — 47.1/226.7 — 340.5)	—	316.8 — 475.6 (32.3 — 48.5/233.7 — 350.8)	—
*M20 × 2.5	284.0 — 472.1 (29.0 — 43.5/209.5 — 348.2)	—	293.2 — 440.3 (29.2 — 44.9/216.3 — 324.7)	—
M22 × 1.5	413.6 — 620.5 (42.2 — 63.3/305.1 — 457.7)	—	424.6 — 636.5 (43.3 — 64.9/313.2 — 469.5)	—
*M22 × 2.5	385.7 — 578.0 (39.3 — 58.9/284.5 — 426.3)	—	394.2 — 592.3 (40.0 — 60.4/290.7 — 436.9)	—
M24 × 2	490.8 — 810.5 (50.0 — 82.7/362 — 597.8)	—	554.1 — 830.6 (56.5 — 84.7/408.7 — 612.6)	—
*M24 × 3	462.8 — 693.1 (47.2 — 70.7/341.3 — 511.2)	—	520.7 — 781.6 (53.1 — 79.7/384 — 576.5)	—

The asterisk * indicates that the bolts are used for female-threaded parts that are made of soft materials such as casting, etc.

Isuzu Standard Bolt Head Marks



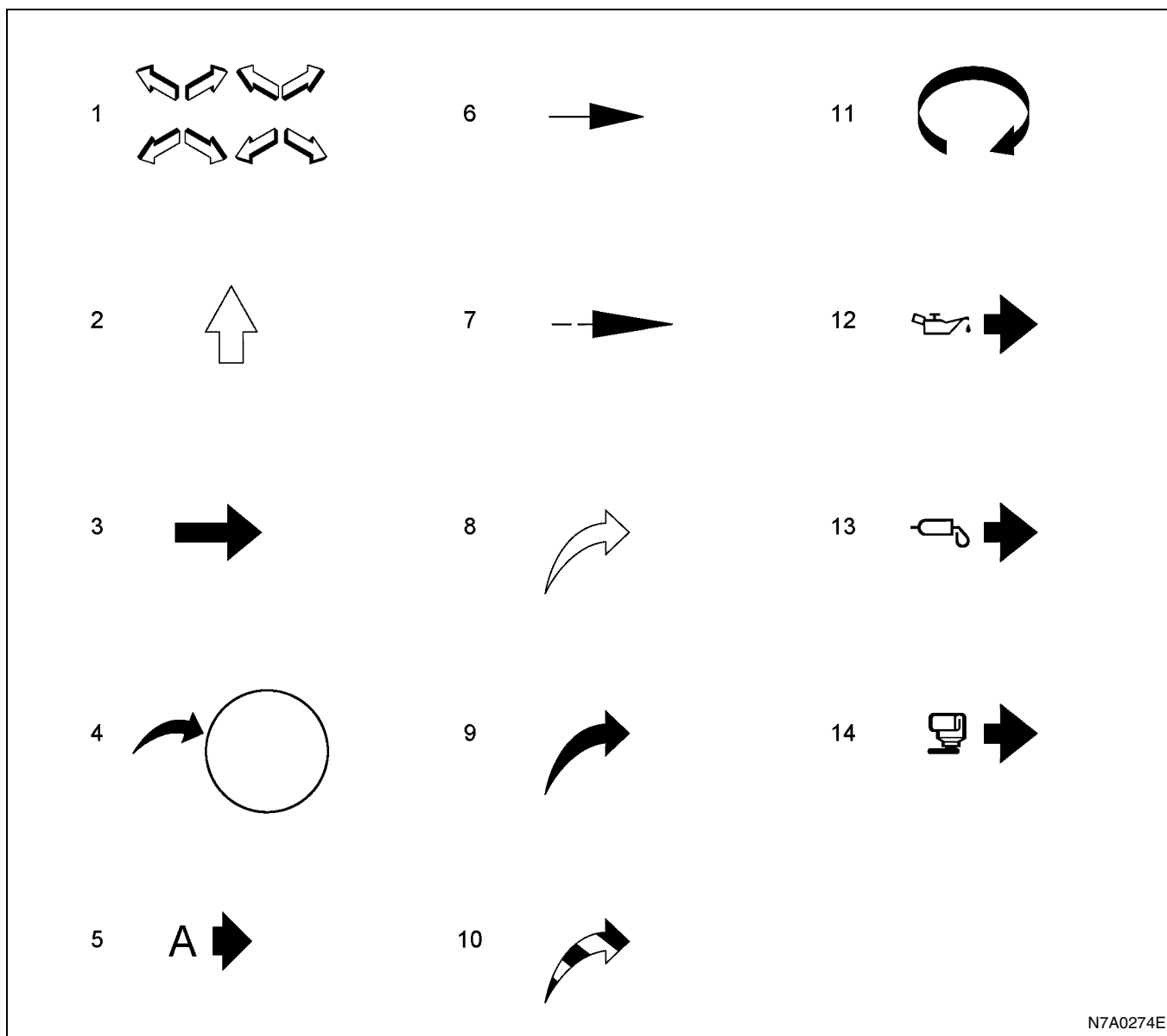
N7A0273E

Legend

- | | |
|------------------------------------|---|
| 1. Hexagon Head Bolt (4.8, 4T) | 9. Hexagon Bolt (Non Heat-Treated 8.8) |
| 2. Hexagon Head Bolt (4.8, 4T) | 10. Hexagon Bolt (Non Heat-Treated 8.8) |
| 3. Flange Bolt (4.8, 4T) | 11. Flange Bolt (8.8) |
| 4. Flange Bolt (4.8, 4T) | 12. Flange Bolt (8.8) |
| 5. Hexagon Head Bolt (7T) | 13. Hexagon Bolt (9.8, 9T) |
| 6. Flange Bolt (7T) | 14. Hexagon Bolt (9.8, 9T) |
| 7. Hexagon Bolt (Heat-Treated 8.8) | 15. Flange Bolt (9.8, 9T) |
| 8. Hexagon Bolt (Heat-Treated 8.8) | 16. Flange Bolt (9.8, 9T) |

ARROWS USED IN FIGURES

Arrows Descriptions



N7A0274E

Legend

- | | |
|---|--|
| 1. Front side of the vehicle | 9. Gas or warm air flow |
| 2. Upper side | 10. Mixture of air and gas, or mixture of cool air and warm air flow |
| 3. Servicing part, or servicing direction | 11. Rotation direction |
| 4. Detail of a part | 12. Fuel supply |
| 5. Detail from the point of view A | 13. Lubrication supply |
| 6. Arrow meaning dimension | 14. Application of liquid gasket |
| 7. Arrow meaning a cross section | |
| 8. External air or cool air flow (Used to indicate an air flow) | |