

FOREWORD

This supplement has been prepared to provide information covering general service repairs for the chassis and body of the TOYOTA LAND CRUISER (Hardtop, Canvas Top and Station Wagon) which underwent changes in August, 1992.

Applicable models:

Hardtop & Canvas Top	RJ70, 73, 77 series
	LJ70, 72, 73, 77, 79 series
	FZJ70, 73, 75 series
	PZJ70, 73, 75 series
	HZJ70, 73, 75 series
Station Wagon	FZJ80 series
	HZJ80 series
	HDJ80 series

For the service specifications and repair procedures of the above model other than those listed in this supplement, refer to the following manuals.

Manual Name	Pub. No.
• Land Cruiser (Hardtop and Canvas Top) Chassis and Body Repair Manual	RM183E
• Land Cruiser (Station Wagon) Chassis and Body Repair Manual	RM184E
• Land Cruiser (4-Door Hardtop) Chassis and Body Repair Manual Supplement	RM192E
• Land Cruiser (Hardtop/Canvas Top/Station Wagon) Chassis and Body Repair Manual Supplement	RM290E
• 21R, 22R Engine Repair Manual	RM053E
• 22R-E Engine Repair Manual Supplement	RM138E
• 2L, 3L Engine Repair Manual	RM123E
• 2L-T, 3L Engine Repair Manual Supplement	RM169E
• 1FZ-F, 1FZ-FE Engine Repair Manual	RM321E
• 1PZ, 1HZ, 1HD-T Engine Repair Manual	RM172E
• A441L, A440F, A442F Automatic Transmission Repair Manual	RM188E
• A442F Automatic Transmission Repair Manual	RM314E
• Land Cruiser Hardtop/Canvas Top Electrical Wiring Diagram	EWD168F
• Land Cruiser Station Wagon Electrical Wiring Diagram	EWD169F

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All information in this manual is based on the latest product information at the time of publication. However, specifications and procedures are subject to change without notice.

TOYOTA MOTOR CORPORATION

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HOW TO USE THIS MANUAL

IN002-09

INDEX

An INDEX is provided on the first page of each section to guide you to the item to be repaired. To assist you in finding your way through the manual, the Section Title and major heading are given at the top of every page.

GENERAL DESCRIPTION

At the beginning of each section, a General Description is given that pertains to all repair operations contained in that section.

Read these precautions before starting any repair task.

TROUBLESHOOTING

TROUBLESHOOTING tables are included for each system to help you diagnose the problem and find the cause.

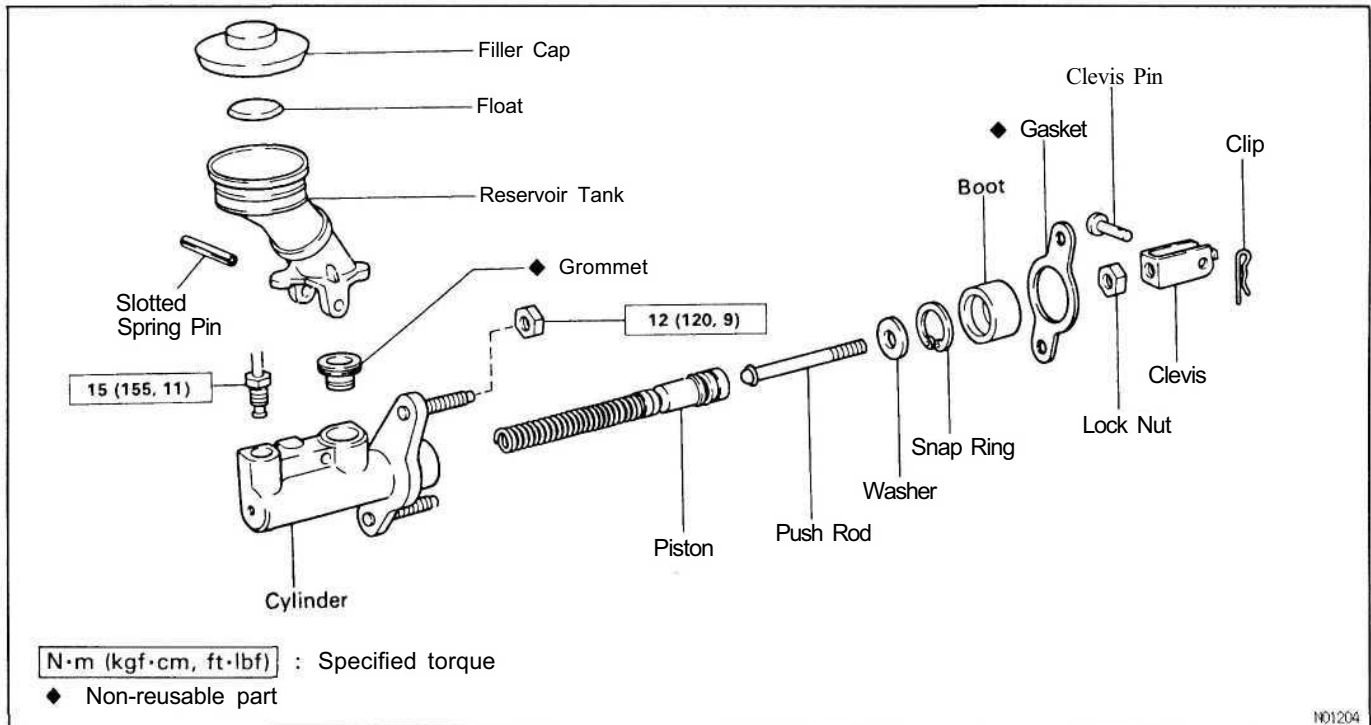
PREPARATION

Preparation lists the SST (Special Service Tools), recommended tools, equipment, lubricant and SSM (Special Service Materials) which should be prepared before beginning the operation and explains the purpose of each one.

REPAIR PROCEDURES

Most repair operations begin with an overview illustration. It identifies the components and shows how the parts fit together.

Example:



The procedures are presented in a step—by—step format:

- The illustration shows what to do and where to do it.
- The task heading tells what to do.
- The detailed text tells how to perform the task and gives other information such as specifications and warnings.

Example:

Task heading : what to do

21. CHECK PISTON STROKE OF OVERDRIVE BRAKE

(a) Place SST and a dial indicator onto the overdrive brake piston as shown in the illustration.

SST 09350-30020 (09350-06120)

Set part No. *Component part No.*

Detailed text: how to do task

(b) Measure the stroke applying and releasing the compressed air (392 — 785 kPa, 4 — 8 kgf/cm² or 57 — 114 psi) as shown in the illustration.

Piston stroke: 1.40 — 1.70 mm (0.0551 — 0.0669 in.)

Specification

V00031

This format provides the experienced technician with a FAST TRACK to the information needed. The upper case task heading can be read at a glance when necessary, and the text below it provides detailed information. Important specifications and warnings always stand out in bold type.

REFERENCES

References have been kept to a minimum. However, when they are required you are given the page to refer to.

SPECIFICATIONS

Specifications are presented in bold type throughout the text where needed. You never have to leave the procedure to look up your specifications. They are also found at the end of each section, for quick reference.

CAUTIONS, NOTICES, HINTS:

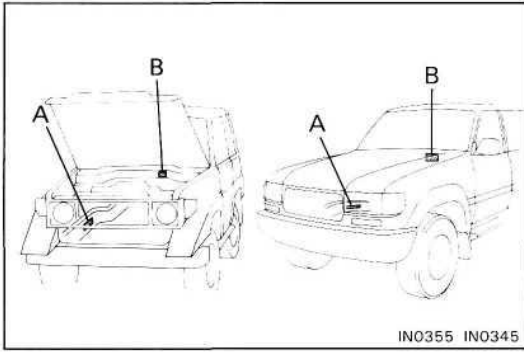
- CAUTIONS are presented in bold type, and indicate there is a possibility of injury to you or other people.
- NOTICES are also presented in bold type, and indicate the possibility of damage to the components being repaired.
- HINTS are separated from the text but do not appear in bold. They provide additional information to help you perform the repair efficiently.

SI UNIT

The UNITS given in this manual are primarily expressed according to the SI UNIT(International System of Unit), and alternately expressed in the metric system and in the English System.

Example:

Torque: 30 Nm (310 kgf·cm, 22 ftlbf)



IN0355 IN0345

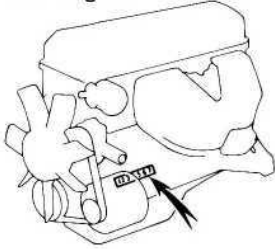
IDENTIFICATION INFORMATION

VEHICLE IDENTIFICATION NUMBER

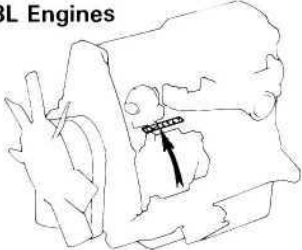
The vehicle identification number is stamped on the outer surface of the front right side frame. This number is also stamped on the manufacturer's name plate.

- A: Vehicle Identification Number
- B: Manufacturer's Name Plate

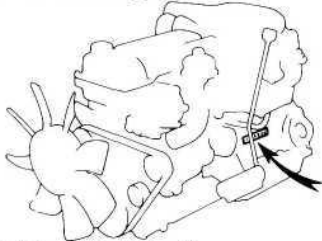
22R & 22R-E Engines



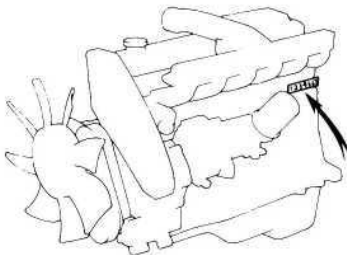
2L-T & 3L Engines



1FZ-F & 1FZ-FE Engines



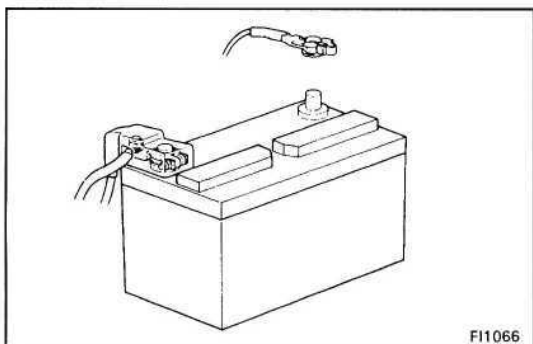
1PZ, 1HZ & 1HD-T Engines



IN0007
IN0209
PO3780
IN0294

ENGINE SERIAL NUMBER

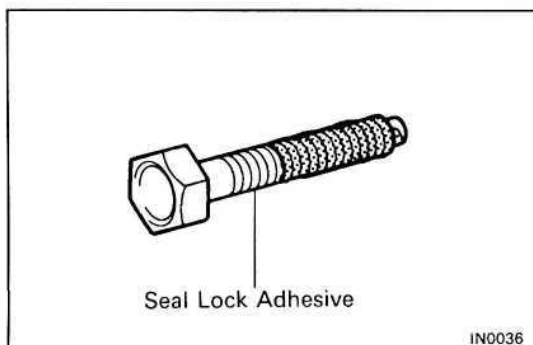
The engine serial number is stamped on the right side of the cylinder block.



GENERAL REPAIR INSTRUCTIONS

IN005-09

1. Use fender, seat and floor covers to keep the vehicle clean and prevent damage.
2. During disassembly, keep parts in the appropriate order to facilitate reassembly.
3. Observe the following:
 - (a) Before performing electrical work, disconnect the negative cable from the battery terminal.
 - (b) If it is necessary to disconnect the battery for inspection or repair, always disconnect the cable from the negative (—) terminal which is grounded to the vehicle body.
 - (c) To prevent damage to the battery terminal post, loosen the terminal nut and raise the cable straight up without twisting or prying it.
 - (d) Clean the battery terminal posts and cable terminals with a clean shop rag. Do not scrape them with a file or other abrasive objects.
 - (e) Install the cable terminal to the battery post with the nut loose, and tighten the nut after installation. Do not use a hammer to tap the terminal onto the post.
 - (f) Be sure the cover for the positive (+) terminal is properly in place.
4. Check hose and wiring connectors to make sure that they are secure and correct.
5. Non—reusable parts
 - (a) Always replace cotter pins, gaskets, O—rings and oil seals etc. with new ones.
 - (b) Non—reusable parts are indicated in the component illustrations by the "•" symbol.

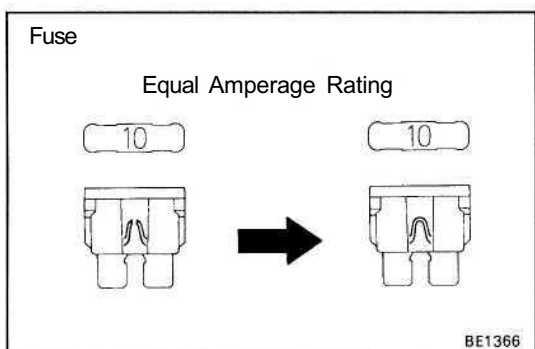


6. Precoated parts

Precoated parts are bolts and nuts, etc. that are coated with a seal lock adhesive at the factory.

 - (a) If a precoated part is retightened, loosened or caused to move in any way, it must be recoated with the specified adhesive.

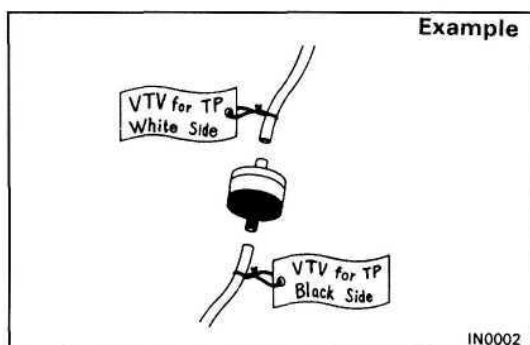
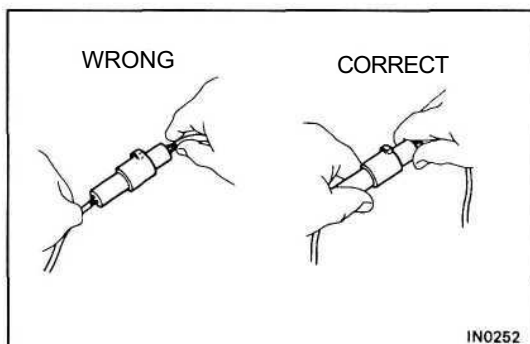
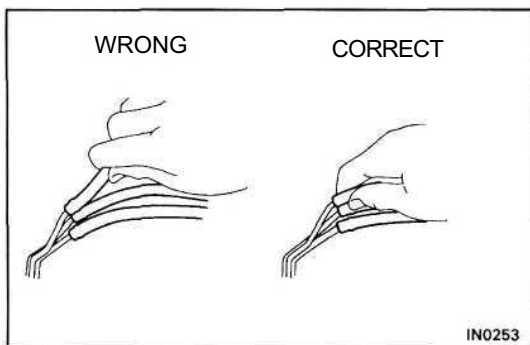
- (b) When reusing precoated parts, clean off the old adhesive and dry with compressed air. Then apply the specified seal lock adhesive to the bolt, nut or threads.
- (c) Precoated parts are indicated in the component illustrations by the "k" symbol.
- 7. When necessary, use a sealer on gaskets to prevent leaks.
- 8. Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.
- 9. Use of special service tools (SST) and special service materials (SSM) may be required, depending on the nature of the repair. Be sure to use SST and SSM where specified and follow the proper work procedure. A list of SST and SSM can be found in the preparation part at the front of each section in this manual.



- 10. When replacing fuses, be sure the new fuse has the correct amperage rating. DO NOT exceed the rating or use one with a lower rating.

Illustration	Symbol	Part Name	Abbreviation
<p>BE5594</p>	<p>IN0365</p>	FUSE	FUSE
<p>BE5595</p>	<p>IN0366</p>	MEDIUM CURRENT FUSE	M-FUSE
<p>BE5596</p>	<p>IN0367</p>	HIGH CURRENT FUSE	H-FUSE
<p>BE5597</p>	<p>IN0367</p>	FUSIBLE LINK	FL
<p>BE5598</p>	<p>IN0368</p>	CIRCUIT BREAKER	CB

11. Care must be taken when jacking up and supporting the vehicle. Be sure to lift and support the vehicle at the proper locations (See pages IN—16 to 18).
 - (a) If the vehicle is to be jacked up only at the front or rear end, be sure to block the wheels at the opposite end in order to ensure safety.
 - (b) After the vehicle is jacked up, be sure to support it on stands. It is extremely dangerous to do any work on a vehicle raised on a jack alone, even for a small job that can be finished quickly.
12. Observe the following precautions to avoid damage to the parts:
 - (a) Do not open the cover or case of the ECU unless absolutely necessary. (If the IC terminals are touched, the IC may be destroyed by static electricity.)



- (b) To disconnect vacuum hoses, pull on the end, not the middle of the hose.
 - (c) To pull apart electrical connectors, pull on the connector itself, not the wires.
 - (d) Be careful not to drop electrical components, such as sensors or relays. If they are dropped on a hard floor, they should be replaced and not reused.
 - (e) When steam cleaning an engine, protect the distributor, air filter, and VCV from water.
 - (f) Never use an impact wrench to remove or install temperature switches or temperature sensors.
 - (g) When checking continuity at the wire connector, insert the tester probe carefully to prevent terminals from bending.
 - (h) When using a vacuum gauge, never force the hose onto a connector that is too large. Use a step—down adapter instead. Once the hose has been stretched, it may leak.
13. Tag hoses before disconnecting them:
 - (a) When disconnecting vacuum hoses, use tags to identify how they should be reconnected.
 - (b) After completing a job, double check that the vacuum hoses are properly connected. A label under the hood shows the proper layout.

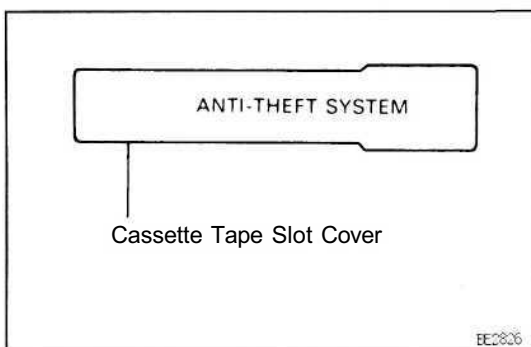
PRECAUTION

mooc-01

FOR VEHICLES EQUIPPED WITH A CATALYTIC CONVERTER

CAUTION: If large amounts of unburned gasoline flow into the converter, it may overheat and create a fire hazard. To prevent this, observe the following precautions and explain them to your customer.

1. **Use only unleaded gasoline.**
2. **Avoid prolonged idling.**
Avoid running the engine at idle speed for more than 20 minutes.
3. **Avoid spark jump test.**
 - (a) Perform spark jump test only when absolutely necessary. Perform this test as rapidly as possible.
 - (b) While testing, never race the engine.
4. **Avoid prolonged engine compression measurement.**
Engine compression tests must be done as rapidly as possible.
5. **Do not run engine when fuel tank is nearly empty.**
This may cause the engine to misfire and create an extra load on the converter.
6. **Avoid coasting with ignition turned off and prolonged braking.**
7. **Do not dispose of used catalyst along with parts contaminated with gasoline or oil.**



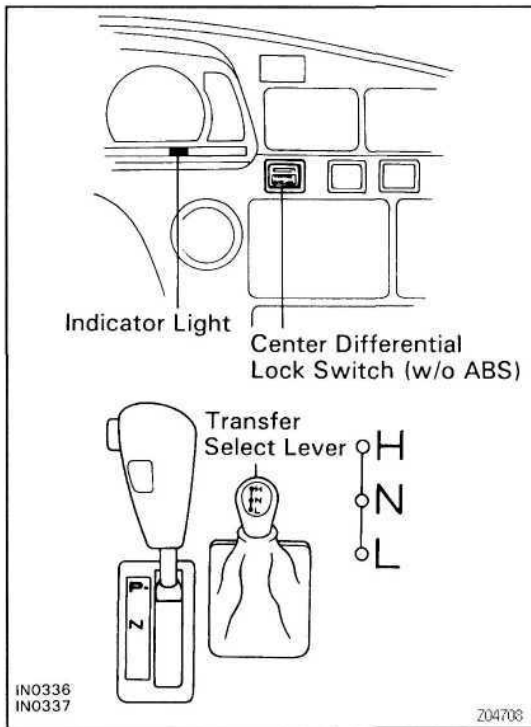
FOR VEHICLES WITH AN AUDIO SYSTEM WITH BUILT-IN ANTI-THEFT SYSTEM

1N00C-01

Audio System displaying the sign "ANTI — THEFT SYSTEM" shown on the left has a built-in anti-theft system which makes the audio system soundless if stolen.

If the power source for the audio system is cut even once, the anti—theft system operates so that even if the power source is reconnected, the audio system will not produce any sound unless the ID number selected by the customer is input again. Accordingly, when performing repairs on vehicles equipped with this system, before disconnecting the battery terminals or removing the audio system the customer should be asked for the ID number so that the technician can input the ID number afterwards, or else a request made to the customer to input the ID number. For the method to input the ID number or cancel the anti—theft system, refer to the Owner's Manual.

WHEN SERVICING FULL-TIME 4WD VEHICLES



The full—time 4WD Land Cruiser Station Wagon is equipped with the mechanical lock type center differential system. When carrying out any kind of servicing or testing on a full—time 4WD in which the front or rear wheels are made to rotate (braking test, speedometer test, on—vehicle wheel balancing, etc.), or when towing the vehicle, be sure to observe the precautions given below. If incorrect preparations or test procedures are used, the test cannot be successfully carried out, and may be dangerous as well. Therefore, before beginning any such servicing or test, be sure to check the following items:

- (1) Center differential lock type
- (2) (w/o ABS)
Center differential mode position (FREE or LOCK)
- (3) Whether wheels should be touching ground or jacked up
- (4) Transmission gear position
- (5) Transfer gear position (H or L)
- (6) Maximum testing vehicle speed
- (7) Maximum testing time

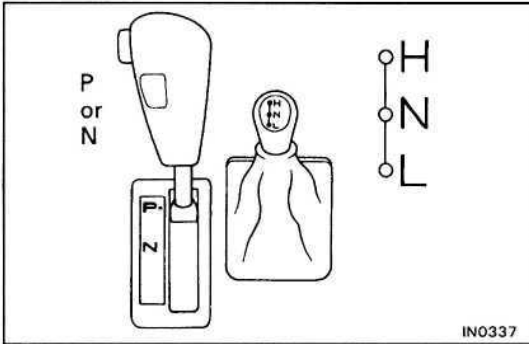
Also be sure to observe the following cautions:

- (1) Never accelerate or decelerate the vehicle suddenly.
- (2) Observe the other cautions given for each individual test.

Before Beginning Test

During tests with a brake tester or chassis dynamometer, such as braking force tests or speedometer tests, if only the front or rear wheels are to be rotated, it is necessary to set the position of the center differential to the FREE position or to the LOCK position depending on the type of test being performed.

- (1) (w/o ABS)
Select the position of the center differential by pushing the center differential lock switch with the transfer select lever to "H" position.
- (2) After selecting the position, confirm the operation of indicator light.



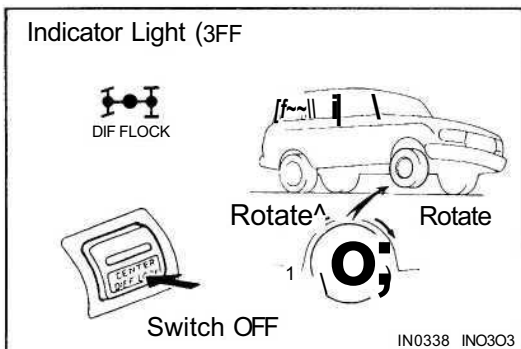
HINT:

- (w/o ABS)
Move the vehicle backward or forward slightly if the indicator light does not operate correctly when the center differential lock switch is turned ON or OFF.
- When the transfer select lever is put in "L" position, the center differential is put in LOCK condition regardless of the position of the center differential lock switch.
- Transfer H ↔ L Gear Shifting Procedure:
When shifting, always put the shift lever of the automatic transmission in P or N range. In other ranges, the gears of the transfer clash, and switching cannot occur.

(w/o ABS)

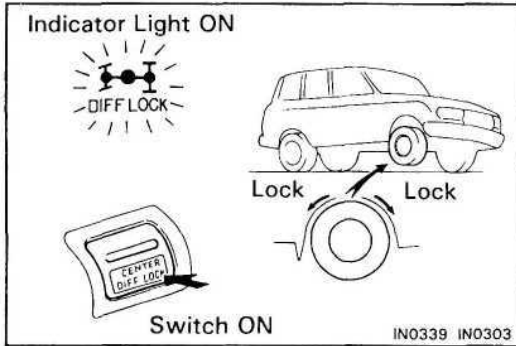
CAUTIONS WHEN CENTER DIFFERENTIAL CONTROL SWITCH IS TURNED ON

- Operate the switch only when all four wheels are stopped or when driving with the wheels in a straight line.
- Never operate the switch under the following conditions.
 - (1) When any tire is slipping.
 - (2) When any tire is spinning freely.
 - (3) When swerving or cornering.



FREE Position

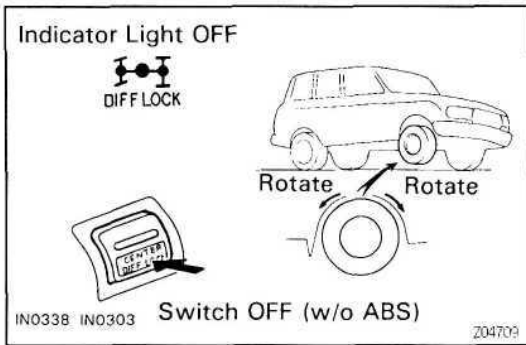
Center Differential Lock		Transfer Select Lever	Wheel
Control Switch	Indicator Light		
OFF	OFF	H	A lifted wheel can be rotated even if only one wheel is lifted up, as long as transmission is in N range.



LOCK Position

Center Differential Lock		Transfer Select Lever	Wheel
Control Switch	Indicator Light		
ON	ON	H	A lifted wheel cannot be rotated if only one wheel is lifted up, even if transmission is in N range.
OFF	ON	L	

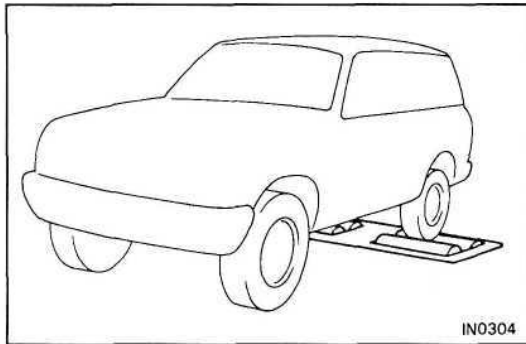
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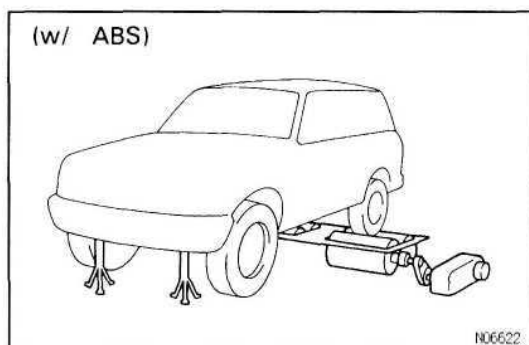
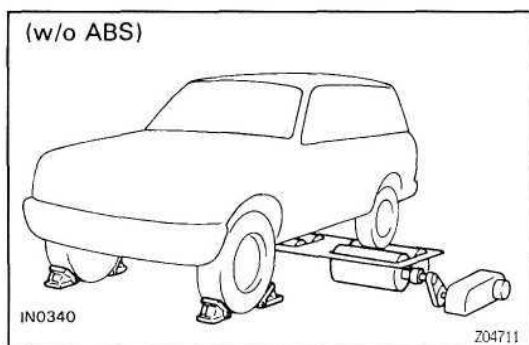
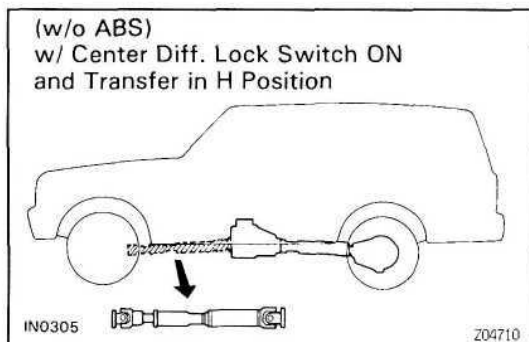


Braking Force Test (Vehicle Speed: Below 0.5 km/h or 0.3 mph)

When performing low — speed type brake tester measurements, observe the following instructions.

- (1) Put the center differential in FREE position.
 - Shift the transfer select lever to H position.
 - (w/o ABS)
 Turn the center differential lock switch to OFF and check that the center differential lock indicator light goes off.
- (2) Shift the transmission shift lever to N range.
- (3) Idle the engine, operate the brake booster and perform the test.





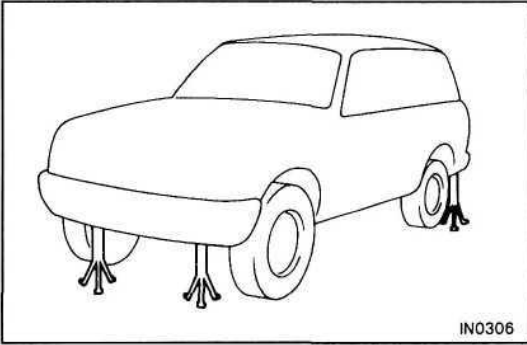
Speedometer Test or Other Tests (Using Speedometer Tester or Chassis Dynamometer)

- (1) (w/o ABS)
Remove the front propeller shaft, put the center differential in LOCK position, then put the rear wheels on the tester roller and perform the test.

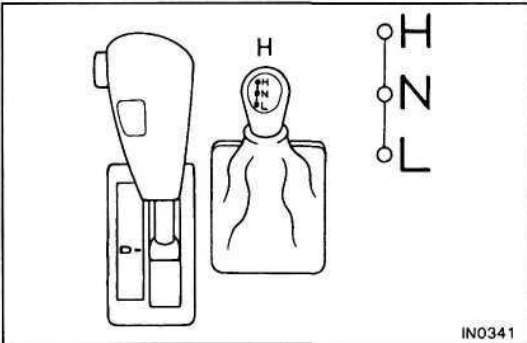
- (2) (w/ABS)
Shift the transfer select lever to H position, jack up the front wheels, then put the rear wheels on the tester roller and perform the test.
- (3) When performing tests, observe the following precautions.
 - (w/o ABS)
Check that the center differential is securely in LOCK condition.
 - Confirm that the vehicle is securely immobilised.
 - Never operate the brakes suddenly, suddenly drive the wheels, or suddenly decelerate.

On—Vehicle Wheel Balancing

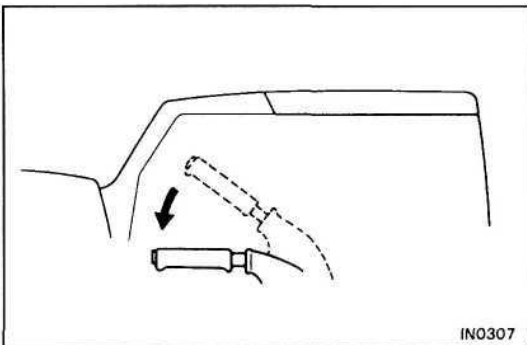
When doing on—vehicle wheel balancing on a full-time 4WD vehicle, to prevent the wheels from rotating at different speeds or in different directions from each other (which could lead to damage to the center differential or transfer gears), always be sure to observe the following precautions:



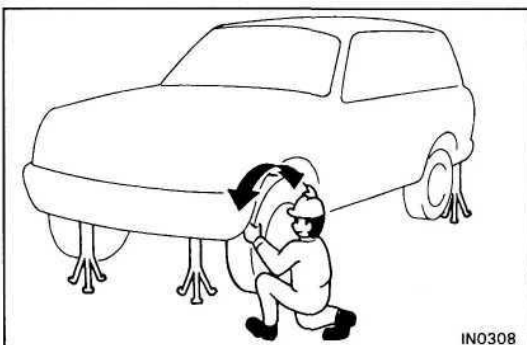
- (1) All four wheels should be jacked up, clearing the ground completely.



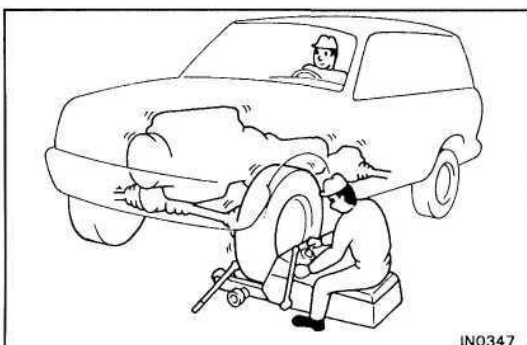
- (2) (w/o ABS)
The center differential should be in the LOCK position with the transfer gear in H position.
- (3) (w/ABS)
Shift the transfer select lever to H position.



- (4) The parking brake lever should be fully released.



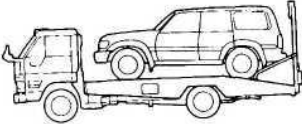
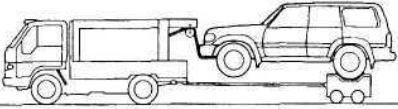
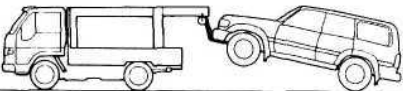
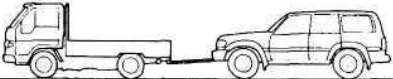
- (5) None of the brakes should be allowed to drag.



- (6) The wheels should be driven with both the engine and the wheel balancer.
HINT: When doing this, be careful of the other wheels, which will rotate at the same time.
- (7) Avoid sudden acceleration, deceleration and braking.
- (8) Carry out the wheel balancing with the transmission in "D" or "3" range.

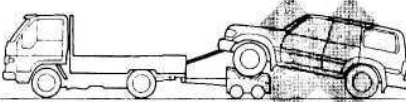
WHEN TOWING FULL-TIME 4WD VEHICLES

1. Use one of the methods shown below to tow the vehicle.
2. When there is trouble with the chassis and drive train, use method ① (flat bed truck) or method ② (sling type tow truck with dollies)
3. Recommended Methods: No. ①, ② or ③
Emergency Method: No. ④

Condition Towing Method	Parking Brake	Transmission Shift Lever Position	Transfer Shift Lever Position	(w/o ABS) Center Differential Lock Switch	Center Differential
① Flat Bed Truck  <small>IN0309</small>	Applied	"P" Range	"H" Position	OFF	FREE (Normal) Driving
② Sling-Type Tow Truck with Dollies  <small>IN0310</small>					
③ Sling-Type Tow Truck (Front wheels must be able to rotate freely)  <small>IN0311</small>	Released	"N" Range	"N" Position	OFF	↑
④ Towing with Rope  <small>IN0312</small>	Released	"N" Range	"N" Position	OFF	↑
HINT: Do not tow the vehicle at a speed faster than 45 km/h (30 mph) or a distance greater than 80 km (50 miles).					

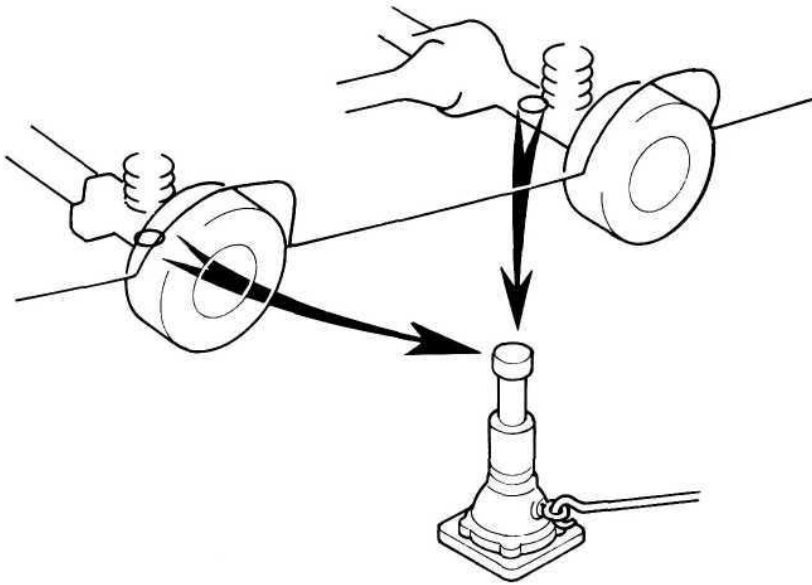
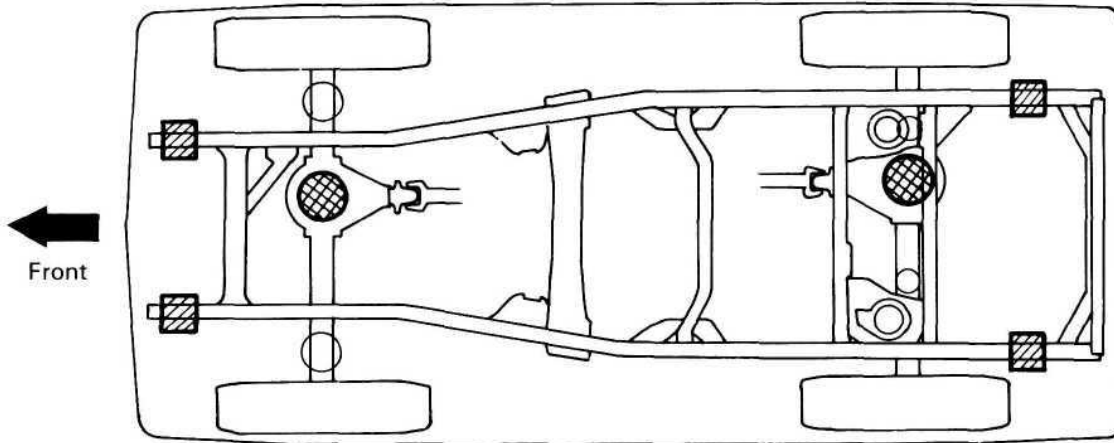
HINT: Do not use any towing methods other than those shown above.

For example, the towing method shown below is dangerous, so do not use it.

NO  <small>IN0313</small>	During towing with this towing method, there is a danger of the drive train heating up and causing breakdown, or of the front wheels flying off the dolly.
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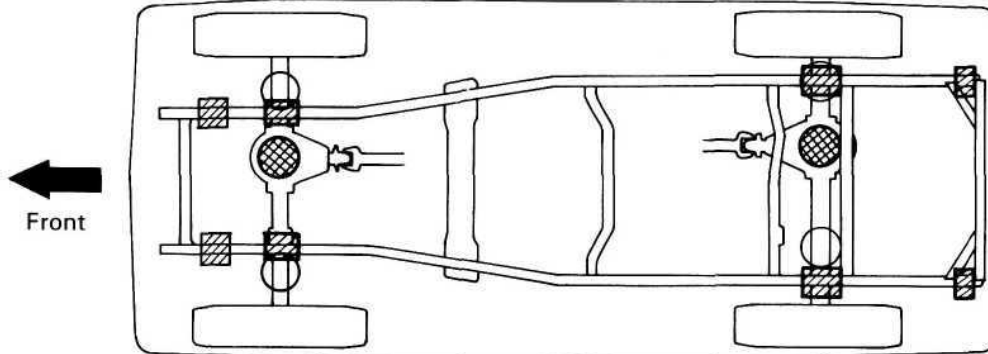
VEHICLE LIFT AND SUPPORT LOCATIONS (Hardtop & Canvas Top)

Coil Spring Type (LJ and RJ series)

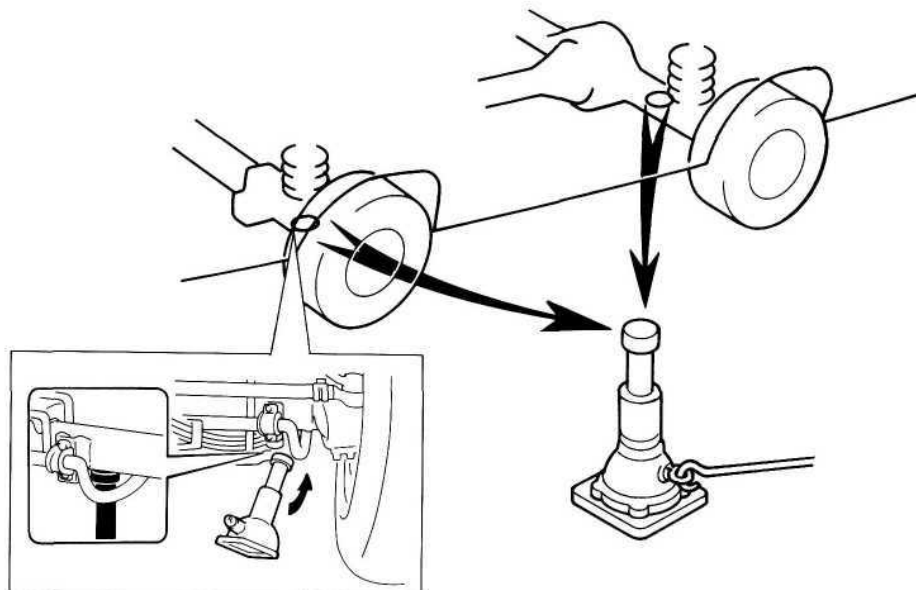
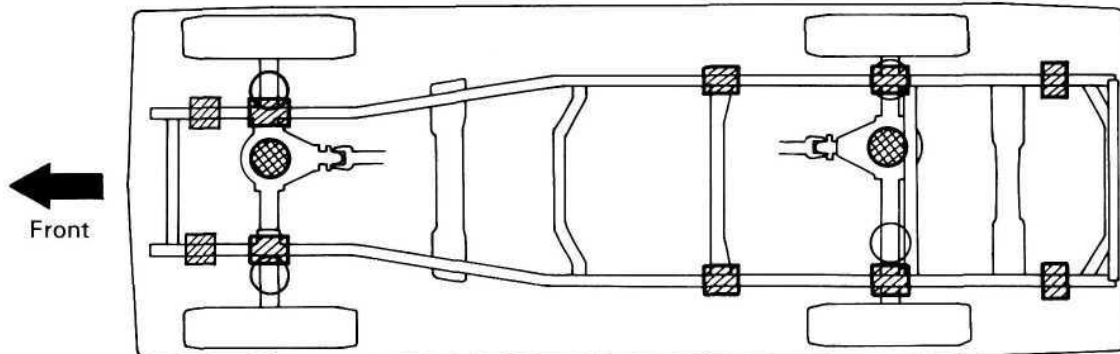





- JACK POSITION** ————— ● (cross-hatch circle)
- Front Under the front differential
- Rear Under the rear differential
- SUPPORT POSITION**
- Safety stand ▨ (hatched rectangle)
- SCREW TYPE JACK POSITION** ○ (empty circle)

**Leaf Spring Type (PZJ, HZJ and FZJ series)
70 series (short) and 73 series (middle)**

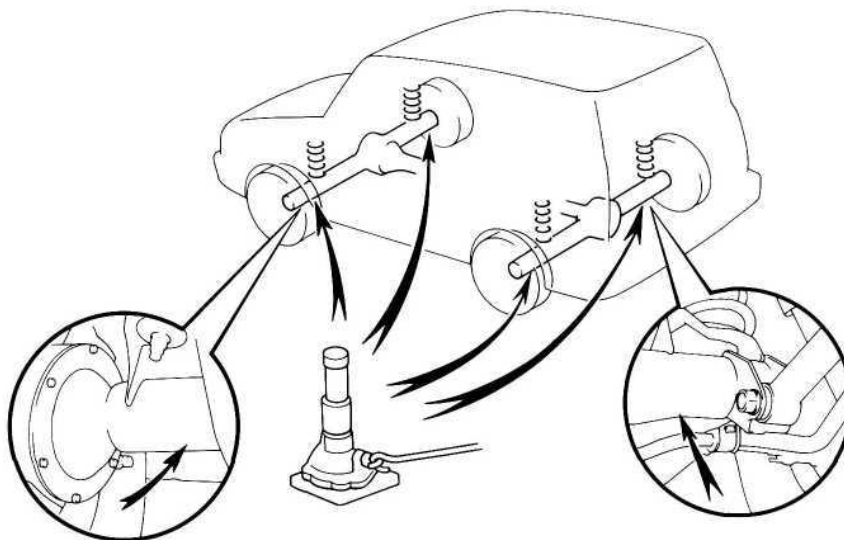
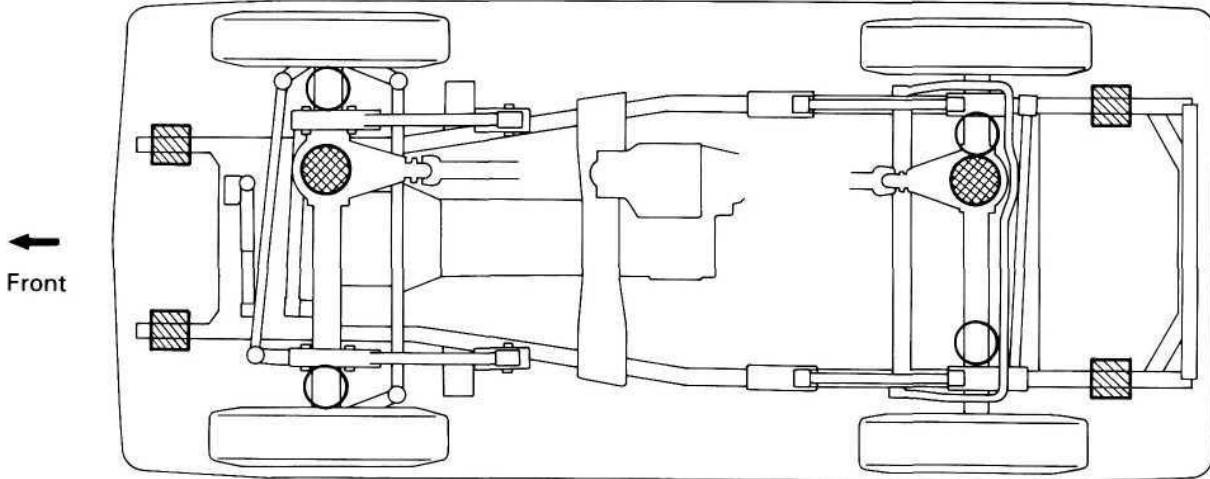


75 series (long)



- JACK POSITION** 
- Front Under the front differential
- Rear Under the rear differential
- SUPPORT POSITION**
- Safety stand 
- SCREW TYPE JACK POSITION** 

VEHICLE LIFT AND SUPPORT LOCATIONS (Station Wagon)



- JACK POSITION** ———— ● (hatched circle)
- Front Under the front differential
- Rear Under the rear differential
- SCREW TYPE JACK POSITION** ———— ○ (empty circle)
- SUPPORT POSITION**
- Safety stand ▨ (hatched square)








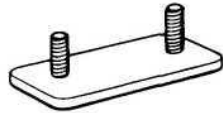


ABBREVIATIONS USED IN THIS MANUAL

ABS	Anti-Lock Brake System
A/C	Air Conditioner
A/T	Automatic Transmission
CB	Circuit Breaker
CCS	Cruise Control System
CD	Compact Disc
ECU	Electronic Control Unit
EFI	Electronic Fuel Injection
ELR	Emergency Locking Retractor
Ex.	Except
FIPG	Formed on Place Gasket
FL	Fusible Link
IG	Ignition
LED	Light Emitting Diode
LH	Left-Hand
LHD	Left-Hand Drive
LSD	Limited Slip Differential
M/T	Manual Transmission
MP	Multipurpose
PTO	Power Take-Off
RH	Right-Hand
RHD	Right-Hand Drive
SSM	Special Service Materials
SST	Special Service Tools
STD	Standard
SW	Switch
VSV	Vacuum Switching Valve
w/	With
w/o	Without
2WD	Two Wheel Drive Vehicles (4 x 2)
4WD	Four Wheel Drive Vehicles (4 x 4)

STANDARD BOLT TORQUE SPECIFICATIONS

IN008-01

HOW TO DETERMINE BOLT STRENGTH

	Mark	Class		Mark	Class
Hexagon head bolt	 <p>Bolt head No. 4</p>	4— 4T 5— 5T 6— 6T 7— 7T 8— 8T 9— 9T 10— 10T 11— 11T	Stud bolt	 <p>No mark</p>	4T
	 <p>No mark</p>	4T			
Hexagon flange bolt w/ washer hexagon bolt	 <p>No mark</p>	4T	Welded bolt	 <p>Grooved</p>	6T
Hexagon head bolt	 <p>Two protruding lines</p>	5T			
Hexagon flange bolt w/ washer hexagon bolt	 <p>Two protruding lines</p>	6T		4T	
Hexagon head bolt	 <p>Three protruding lines</p>	7T			
Hexagon head bolt	 <p>Four protruding lines</p>	8T			

SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N·m	kgf·cm	ft·lbf	N·m	kgf·cm	ft·lbf
4T	6	1	5	55	48 in.·lbf	6	60	52 in.·lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	—	—	—
5T	6	1	6.5	65	56 in.·lbf	7.5	75	65 in.·lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	—	—	—
6T	6	1	8	80	69 in.·lbf	9	90	78 in.·lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	—	—	—
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	—	—	—
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130