



SERVICE MANUAL & TECHNICAL BULLETIN

**MODEL 1F4 SERIES
(VEHICLE)**

SERVICE

INTRODUCTION

This service manual has been prepared to provide necessary information concerning the maintenance and repair procedures for the NISSAN FORKLIFT 1F4 series.

Any changes effected in the series after publication of this service manual will be announced in a technical bulletin. It is, therefore, recommended that each relevant technical bulletin be inserted in front of each section and be used together with the service manual as a reference.

If a new model requires different service method or has undergone a major change, revised sections will be issued to replace the applicable sections. Each revised section will include the description of how to service the parts for the former specifications. The publication of a revised section will be announced in the technical bulletin.

This service manual consists of eight sections as shown in the following table, which gives the updated symbols. When a revised service manual is issued, this "INTRODUCTION" sheet should be replaced with a revised one.

Section	Symbol
GENERAL INFORMATION	(GI)
MAINTENANCE	(MA)
ENGINE REMOVAL	(ER)
1-SPEED AUTOMATIC TRANSMISSION	(1AT)
2-SPEED AUTOMATIC TRANSMISSION	(2AT)
DIFFERENTIAL CARRIER	(DF)
DRIVE AXLE	(DA)
STEERING AXLE	(SA)
ROAD WHEEL & TIRE	(RT)
BRAKE SYSTEM	(BR)
STEERING SYSTEM	(ST)
HYDRAULIC SYSTEM	(HD)
LOADING MECHANISM	(LM)
ENGINE CONTROL, FUEL & EXHAUST SYSTEMS	(FE)
VEHICLE CONTROL SYSTEMS	(VC)
BODY & FRAME	(BF)
BODY ELECTRICAL SYSTEM	(BE)

Edition: September 2008

Printing: September 2008 (01)

Publication No.: SM08E-1F4G0

GENERAL INFORMATION

SECTION **GI**

CONTENTS

HOW TO USE THIS MANUAL	GI-2	JACKING AND LIFTING	GI-10
Outline of This Manual	GI-2	Precaution	GI-10
Description	GI-2	Jacking	GI-10
Technical Term Definitions	GI-3	Lifting	GI-12
Manual Illustrations	GI-5	TIGHTENING TORQUE OF STANDARD	
IDENTIFICATION INFORMATION	GI-6	BOLTS	GI-13
Vehicle Model Classification Number	GI-6	Tightening Torque	GI-13
IDENTIFICATION	GI-7	ABBREVIATION LIST	GI-14
Identification Numbers	GI-7		
GENERAL PRECAUTIONS	GI-8		
General Precautions	GI-8		

HOW TO USE THIS MANUAL

Outline of This Manual

Symbol	Section title	Topics
GI	GENERAL INFORMATION	How to use this manual, Identification information, Identification, General precautions, Jacking and lifting, Tightening torque of standard bolts
MA	MAINTENANCE	Lubrication chart, Maintenance schedule, Engine maintenance, Battery, Tires and road wheels, Brake system, Automatic transmission, Differential carrier, Driving and steering axle, Steering system, Loading mechanism, Body electrical
ER	ENGINE REMOVAL	Removal and installation
1AT	1-SPEED AUTOMATIC TRANSMISSION	Service data and specifications, Construction, Hydraulic circuit diagram, Disassembly, Assembly, Inspection, Adjustment, Trouble diagnosis
2AT	2-SPEED AUTOMATIC TRANSMISSION	Service data and specifications, Construction, Hydraulic circuit diagram, Disassembly, Assembly, Inspection, Adjustment, Trouble diagnosis
DF	DIFFERENTIAL CARRIER	Differential carrier
DA	DRIVE AXLE	Construction, Drive tire, Drive axle
SA	STEERING AXLE	General, Construction, Steering tire, Steering axle, Steering axle hub, Kingpin, Kingpin angle sensor, Service data and specifications (SDS)
RT	ROAD WHEEL & TIRE	Specification, Inspection, Installation
BR	BRAKE SYSTEM	Construction, Master cylinder, Foot brake, Wheel cylinder, Parking brake, Troubleshooting, Service data and specifications (SDS), Inching brake
ST	STEERING SYSTEM	Description, Specification, Trouble diagnoses and corrections, Steering wheel, Steering column, PS valve, PS cylinder, Piping
HD	HYDRAULIC SYSTEM	Specifications, Service data, Trouble diagnosis, Service information, Hydraulic piping, Hydraulic pump, Control valve, Lift (mast) cylinder, Tilt cylinder, Replacement of hydraulic fluid
LM	LOADING MECHANISM	Service data and specifications (SDS), Trouble diagnosis, Service information, Fork, Lift chain, Carriage assembly, Mast assembly
FE	ENGINE CONTROL, FUEL & EXHAUST SYSTEMS	Engine control system, Throttle cable (TD42 engine model), Accelerator pedal, Fuel system, Cooling system, Exhaust system, Intake system, Overhead muffler system (Option)
VC	VEHICLE CONTROL SYSTEM	Vehicle control system, Combination meter, Vehicle control module, Unit inspection and adjustment, VCM setting
BF	BODY & FRAME	Service data and specifications (SDS), Removal and installation
BE	BODY ELECTRICAL SYSTEM	Wire harness, Relay box (TB45 engine only), Fuse box, Combination meter, Switches, Lamps, Other parts

Description

This manual contains the information on methods required to perform appropriate maintenance. This main text describes removal, disassembly, inspection, assembly, installation, and adjustment procedures of units. Step-by-step descriptions or service points are provided for these procedures. Illustrations, values, tightening torques and SSTs are also provided as required.

HOW TO USE THIS MANUAL

Technical Term Definitions

SPECIFIC TERMS

⚠ WARNING:

Warns you of instructions that must be followed to prevent severe personal injury and/or fatal accident.

⚠ CAUTION:

Warns you of instructions that must be followed to prevent personal injury and/or damage to some parts of the vehicle.

NOTE:

Provides helpful information to perform a smooth and effective service procedure.

Standard value or specifications:

The allowable range for a given measured value during inspection and adjustment.

Limit value:

The maximum or minimum acceptable measured value during inspection and adjustment.

LOCATING DIRECTIONS

The direction (front, rear, left, right, upper, lower) shown in this manual shows the direction when sitting in the driver seat facing forward.

HOW TO USE THIS MANUAL

Technical Term Definitions (Cont'd)

MEASURING UNITS AND VALUES

Specified torque, pressure, force and other values used in this Manual are primarily expressed as the SI unit (International System of Unit). The values following the SI unit and enclosed in parentheses () are expressed in the metric system and in the yard/pound system.

Example:

Tightening torque:

9 - 12 N•m (0.9 - 1.2 kg-m, 6.5 - 8.7 ft-lb)

SI unit Metric system Yard/pound system

Main unit conversions:

	SI unit	Metric system	Yard/pound system	Conversion factor to SI unit
Torque and moment	N•m	kg-m	–	9.807
		–	ft-lb	1.356
Force	N	kg	–	9.807
		–	lb	4.448
Pressure	kPa	kg/cm ²	–	98.07
		–	psi	6.895
	MPa	kg/cm ²	–	0.0981
		–	psi	0.0069

NOTE:

Converting the unit in metric system or yard/pound system to SI unit is shown below.

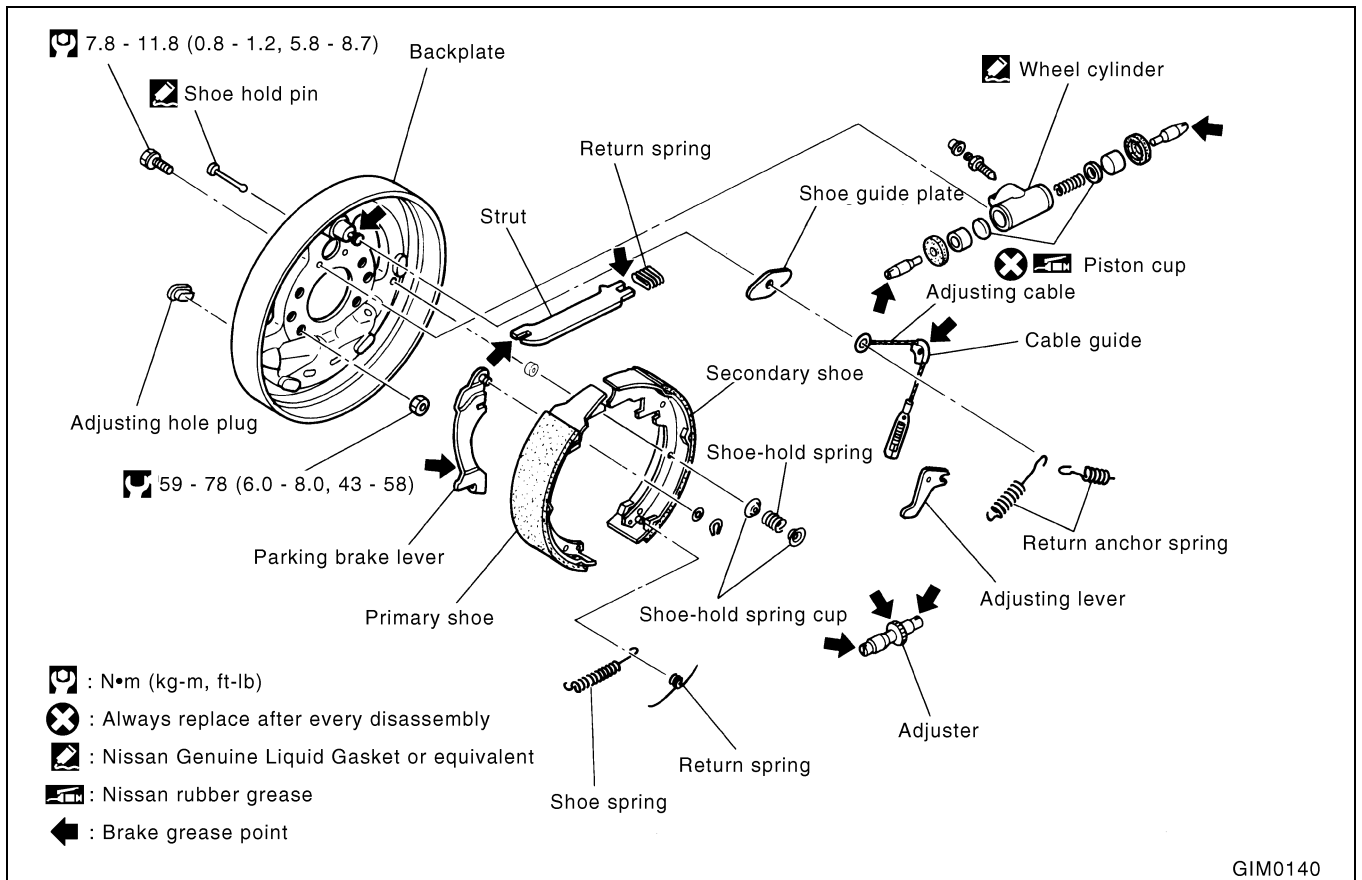
Unit in metric system or yard/pound system x conversion factor = SI unit

HOW TO USE THIS MANUAL

Manual Illustrations

EXPLODED VIEWS

These contain part names, tightening torques, lubrication points and other information necessary to perform removal, disassembly, repair, reassembly and installation procedures. (See example below.)

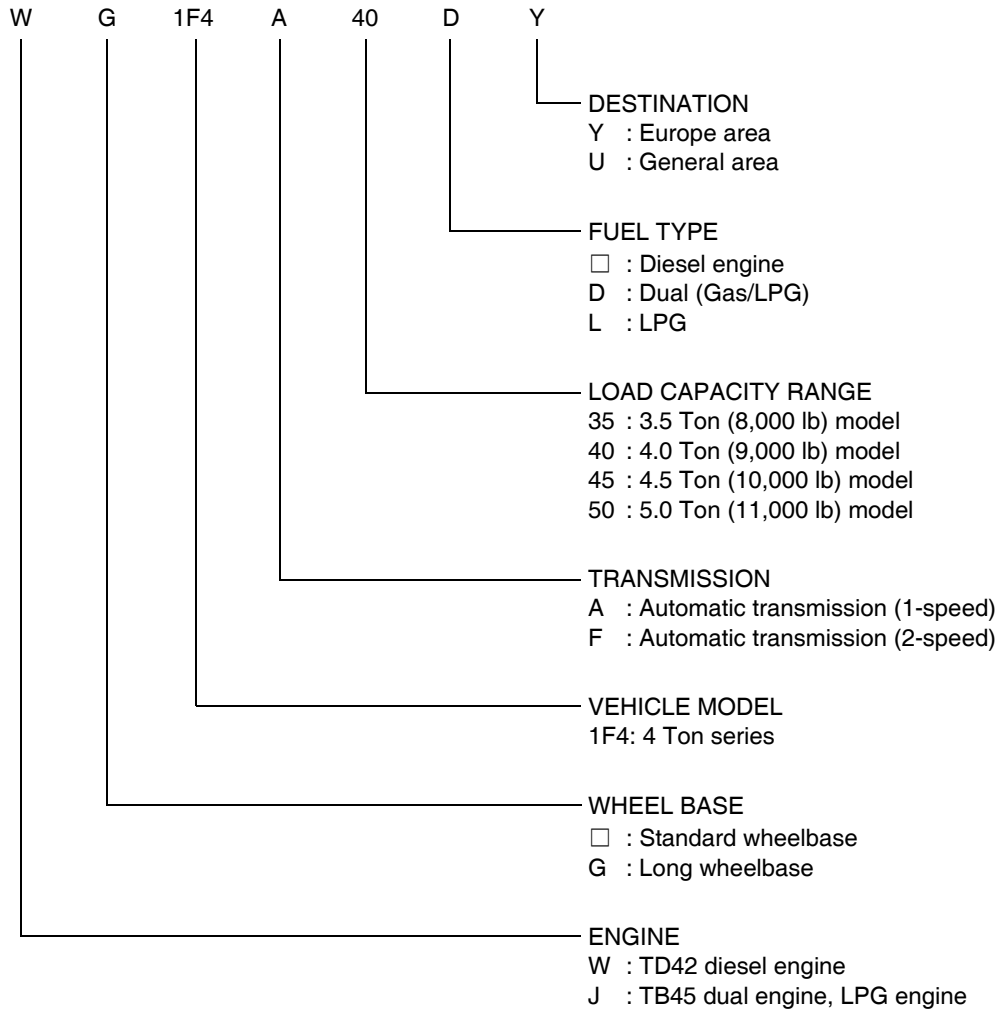


Symbols used in exploded views

Symbol	Meaning	Symbol	Meaning
	Specified tightening torque is required for part installation. When a torque range is given, use the average figure as the standard.		Always replace after every disassembly.
	Should be lubricated with specified grease.	★	Select parts of proper thickness.
	Should be lubricated with oil.	☆	Adjustment is required.
	Should be lubricated with sealing.		

IDENTIFICATION INFORMATION

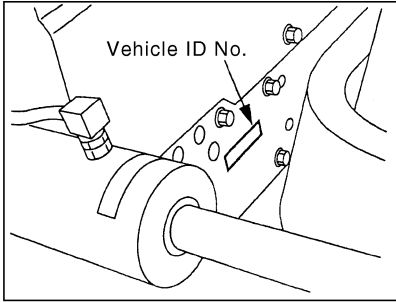
Vehicle Model Classification Number



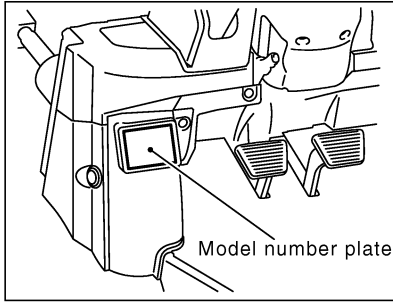
IDENTIFICATION

Identification Numbers

Vehicle ID No

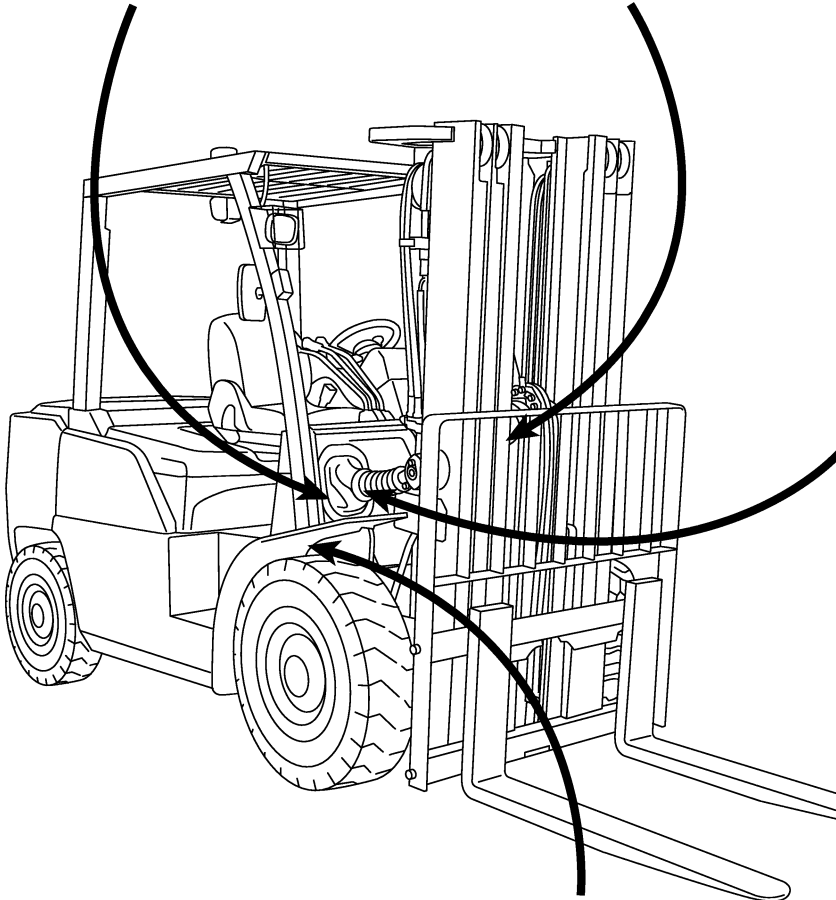


Model number plate

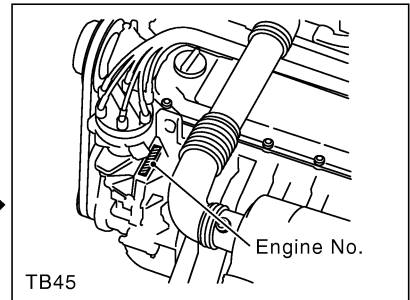


Model number plate

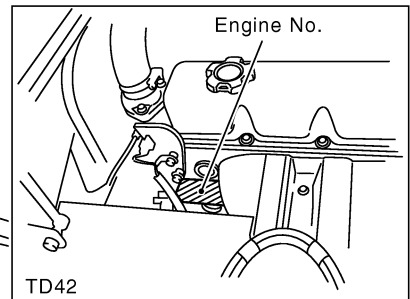
NISSAN	
MODEL VARIATION	VEHICLE NO.
CHASSIS NO.	
MAST	TIRE
ATTACHMENT	
TRUCK WEIGHT	K G
CAPACITY	
	WITH MAST VERTICAL MAX LIFT HEIGHT m m
	RATED CAPACITY K G
WHEEL CENTER	600 800 1000 mm
NISSAN MOTOR CO., LTD	



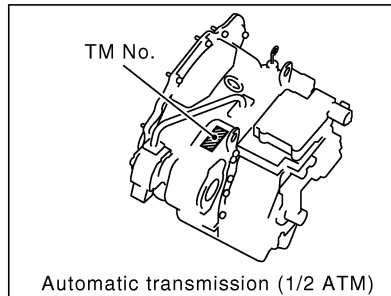
Engine No.



Engine No.



Transmission No.



GIM0150

GENERAL PRECAUTIONS

General Precautions

Please read and thoroughly understand this section as well as the reference "Precautions".

- Lifting and hoisting work should be performed by persons who have completed slinging skills training or hoisting skills training.
- Make sure that the work area is well ventilated and free of flammable materials.
- If work must be performed in an area having poor ventilation, sufficiently ventilate the area ahead of time.
- When handling flammable or hazardous materials, take sufficient steps to prevent the occurrence of a fire or disaster.
- Do not smoke when working.
- When working with hot parts, rotating parts, and sliding parts, be careful not to get burned or injured.
- When working near a running engine, be careful not to touch rotating or sliding parts.
- Each unit is heavy, so watch your footing when working.
- When performing maintenance, set the parking brake and turn the ignition switch OFF.
- Electrical circuits can short, therefore, before disassembling and inspecting, remove rings and other metal items from your body.
- Make an efficient repair by performing the diagnosis after sufficiently understanding the symptoms of the malfunction. Then after the work is completed, make sure that everything is working properly.
- Before performing removal or disassembly work, be thoroughly familiar with the properly assembled condition.
- When necessary, affix matching marks to parts that will not affect performance.
- Before removing wiring, memorize the wire colors and wiring conditions.
- When performing disassembly and inspection work, use the specified tools or tools that are appropriate for the task.
- When performing disassembly and inspection work, use clean tools. When a part has been removed, place it in a clean location.
- Organize removed parts in proper order so that they do not get mixed up.
- Before removing piping and hoses that are under pressure, release the pressure.
- Before removing the engine and counterweight, block the tires. Do not jack up the vehicle.
- Before inspecting or assembling parts that have been disassembled, clean and wash them.
- Use the specified nuts and bolts, and tighten them to the specified torque when assembling.
- After removing oil seals, gaskets, packing, O-rings, lock washers, cotter pins, and self-locking nuts, replace them with new ones as indicated in the relevant provisions (non-reusable parts). When replacing a part, refer to the parts catalog issued by Nissan Motor Co. and use the part that has the same part number (genuine NISSAN part).
- Replace inner and outer races of tapered or needle roller bearings as a set.
- Use the specified lubricant and sealing agent.

GENERAL PRECAUTIONS

General Precautions (Cont'd)

- Do not allow brake fluid to adhere to the body and other painted surfaces. If such fluid gets on a painted surface, quickly wipe it off and wash with water.
- Do not reuse brake fluid that has been removed.
- After repairing the hydraulic or brake system, closely inspect for leakage.
- Do not recklessly release waste oil following an oil change, or treated oil used for parts. Dispose according to the method established by law.
- Before performing maintenance, disconnect the battery ground cable and battery positive (+) cable.
- If, with electronic control specifications, a part is to be welded to a unit later on, disconnect both of the battery cables (+ and -) before welding. (This action prevents current from circling into the ECM.)

PRECAUTIONS RELATED TO ELECTRICAL SYSTEM INSPECTIONS

- Do not pry connectors when inserting or withdrawing them. Such actions can cause poor contact.
- When withdrawing a connector, do not pull on the wire (cable) itself.
- When conducting an inspection with a circuit tester, use the correct range (A, V, Ω) and polarity (+, -).
- When the task is completed, reconfirm that the wiring is connected in its original location.

PRECAUTIONS RELATED TO BATTERY HANDLING

⚠ WARNING:

- **Keep sources of fire away from batteries.**
- **To keep from getting burned, do not allow battery fluid to get on your skin or clothing.**
- **If a large amount of battery fluid spills or leaks out, immediately neutralize it with a neutralizing agent (such as baking soda, calcium hydroxide, or sodium carbonate) and wash it away with a large amount of water.**
- **Do not leave tools or other metal objects on the battery, because contact with a terminal can cause a short, burning anyone nearby, or hydrogen gas emitted from the battery can ignite and explode.**
- **If static electricity is produced, a battery can explode. Therefore, do not wipe or dust off the battery's top surface or terminal areas with a dry cloth or duster, and do not cover with a vinyl cover. Use a damp cloth to clean the battery.**

⚠ CAUTION:

- **Leaking battery fluid can cause corrosion, therefore, securely close the battery fluid cap.**
- **Do not allow a person to inspect a battery if that person does not understand how to properly handle batteries.**

JACKING AND LIFTING

Precaution

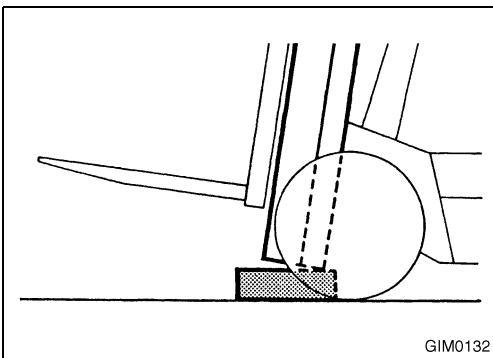
⚠ CAUTION:

- Do not go under forks or a forklift when cargo handling gear or travel gear is being operated during maintenance and inspection work.
- Work on flat, level, hard surfaces.
- Be properly seated in the driver's seat when operating ignition switches and levers.
- Engage the parking brake when working.
- Do not use square timbers that have been piled on each other.
- Use square timbers that have sufficient strength to support the vehicle's weight.
- Do not use square timbers that are cracked or chipped. This can be dangerous, because the vehicle may tip.
- Do not place square timbers of different heights under the left and right sides of the mast or vehicle body. The vehicle will tilt.

Jacking

⚠ CAUTION:

- If the front wheels are lifted off the ground with the mast and left for a long period of time, the mast may gradually tilt back. Therefore, place a square timber under the front of the frame on the left and right sides, leaving no gaps.
- Use square timbers having the following dimensions: a height that barely enables them to be inserted between the ground and mast when tilted back, longitudinal (front-to-back) dimension that is 50 to 100 mm (1.97 to 3.94 in) larger than the longitudinal dimension of the mast rail of the outside mast, and lateral (left-to-right) dimension that is 20 to 40 mm (0.79 to 1.57 in) larger than the outside dimension of the outer mast.
- When jacking a vehicle, stop when the tire is slightly raised from the ground.

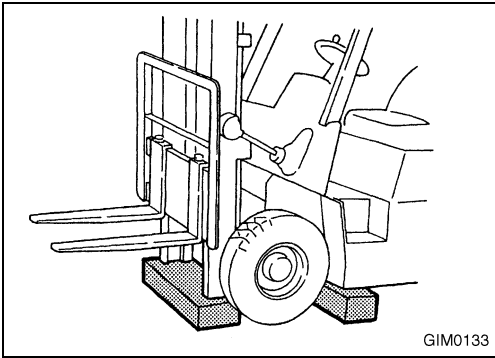


FRONT

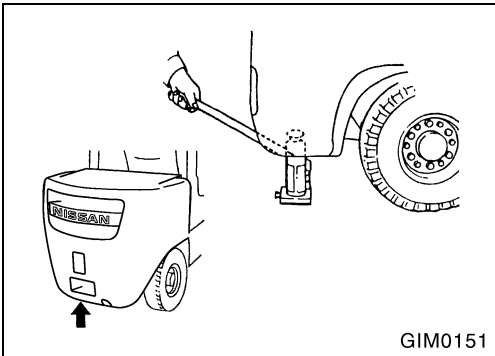
1. Raise the forks 200 to 300 mm (78.7 to 11.81 in) from the ground, and tilt the mast completely back.
2. Place a square timber under the mast.

JACKING AND LIFTING

Jacking (Cont'd)

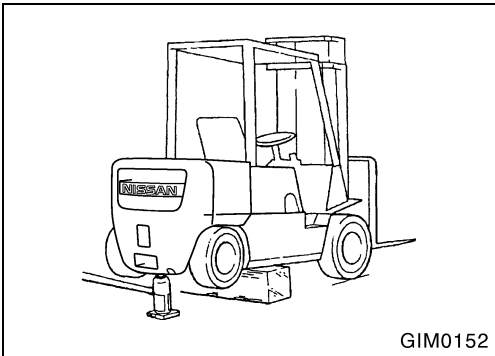


3. Tilt the mast forward until the front wheels lift up.
4. Place a square timber under the left and right frame.
5. Block the rear wheels.



REAR

1. Raise the forks about 100 mm (3.94 in) from the ground, and tilt them slightly back.
2. Block the front wheels.
3. Place a garage jack under the counterweight center, and then jack it up.



4. Jack up until the tires are slightly raised from the ground, place a square timber under the left and right frame, and then slowly lower the jack.

JACKING AND LIFTING

Lifting

⚠ CAUTION:

- Do not hoist a forklift higher than is necessary.
- Nylon slings, wires, and other materials used for hoisting must be damage-free and strong enough to satisfactorily handle the weight of the forklift.
- Place hoisting accessories in designated locations only.
- Square timbers must be strong enough to satisfactorily handle the weight of the vehicle.

FRONT

1. Block the rear wheels.
2. Attach a wire to the crossbeam of the outer mast, and lift using a hoist.
3. Place a square timber under the left and right frame.
4. Gradually lower the forklift, supporting the forklift with the square timber. Make sure that the square timber does not slip out of position at this time.
5. Rock the forklift to make sure that the body is securely supported.

REAR

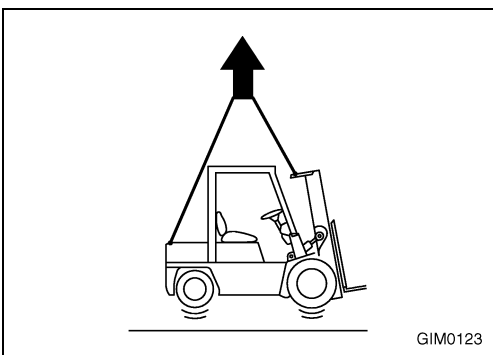
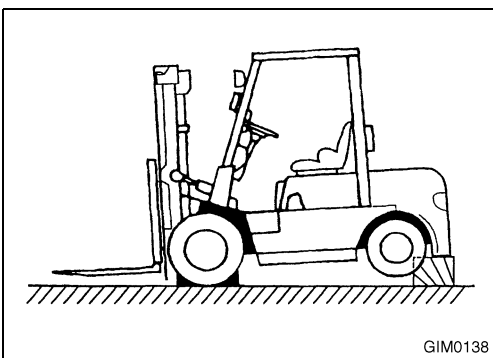
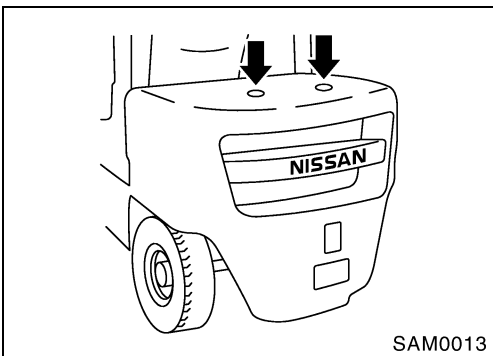
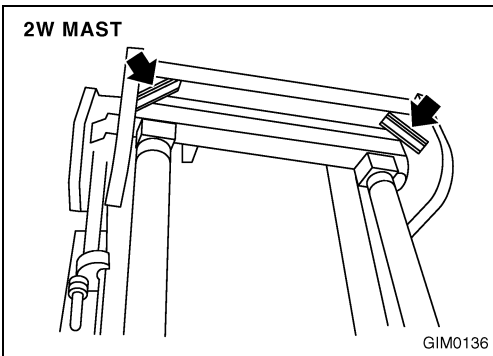
1. Raise the forks about 100 mm (3.94 in) from the ground, and tilt them slightly back.
2. Block the front wheels.
3. Utilizing the holes to the left and right of the counterweight, lift using a hoist.
4. Place a square timber under the counterweight.
5. Gradually lower the forklift. Make sure that the square timber does not slip out of position at this time.
6. Rock the forklift to make sure that the body is securely supported.

ENTIRE FORKLIFT

Utilizing the outer mast crossbeam and counterweight holes, attach a wire and then lift.

⚠ CAUTION:

Make sure that the wire does not interfere with the head guard.



TIGHTENING TORQUE OF STANDARD BOLTS

Tightening Torque

Grade	Nominal diameter (mm)	Pitch (mm)	Specified tightening torque		
			(N•m)	(kg-m)	(ft-lb)
4T	M6	1.00	3 - 4	0.3 - 0.4	2.2 - 2.9
	M8	1.25	8 - 11	0.8 - 1.1	5.8 - 8.0
		1.00	8 - 11	0.8 - 1.1	5.8 - 8.0
	M10	1.50	16 - 21	1.6 - 2.2	12 - 16
		1.25	16 - 21	1.6 - 2.2	12 - 16
	M12	1.75	27 - 36	2.7 - 3.7	20 - 26
1.25		31 - 40	3.1 - 4.1	23 - 29	
M14	1.50	46 - 61	4.7 - 6.3	34 - 45	
7T	M6	1.00	6 - 7	0.6 - 0.7	4.3 - 5.1
	M8	1.25	14 - 18	1.4 - 1.8	10 - 13
		1.00	14 - 18	1.4 - 1.8	10 - 13
	M10	1.50	26 - 35	2.6 - 3.6	19 - 26
		1.25	27 - 36	2.7 - 3.7	20 - 26
	M12	1.75	45 - 60	4.6 - 6.2	34 - 44
		1.25	50 - 67	5.1 - 6.9	37 - 49
	M14	1.50	76 - 103	7.7 - 10.5	56 - 75
	M16	1.50	118 - 156	12.0 - 16.0	87 - 115
	M18	1.50	177 - 235	18.0 - 24.0	130 - 173
M20	1.50	246 - 323	25.0 - 33.0	181 - 238	
M22	1.50	324 - 441	33.0 - 45.0	239 - 325	
9T	M6	1.00	8 - 11	0.8 - 1.1	5.8 - 8.0
	M8	1.25	19 - 24	1.9 - 2.5	14 - 18
		1.00	20 - 27	2.0 - 2.8	15 - 20
	M10	1.50	37 - 50	3.7 - 5.1	27 - 36
		1.25	40 - 51	4.0 - 5.2	29 - 37
	M12	1.75	65 - 88	6.6 - 9.0	48 - 65
		1.25	72 - 97	7.3 - 9.9	53 - 71
	M14	1.50	108 - 147	11.0 - 15.0	80 - 108
	M16	1.50	167 - 225	17.0 - 23.0	123 - 166
	M18	1.50	255 - 342	26.0 - 35.0	188 - 253
M20	1.50	344 - 460	35.0 - 47.0	254 - 340	
M22	1.50	471 - 631	48.0 - 64.4	347 - 465	

⚠ CAUTION:

- Special parts are excluded.
- This standard is applicable to bolts having the following marks embossed on the bolt head.

Grade	Mark
4T	4 or no mark
7T	7
9T	9

ABBREVIATION LIST

ABBREVIATION LIST

Abbreviation	Description
A/C	Air Conditioner
ABDC	After Bottom Dead Center
AFM	Air Fuel Management
ALT	Alternator
APPS	Accelerator Pedal Position Sensor
Assy	Assembly
ATDC	After Top Dead Center
ATM	Automatic Transmission
BAT	Battery
BBDC	Before Bottom Dead Center
BDC	Bottom Dead Center
BTDC	Before Top Dead Center
C/P	Crankshaft Pulley
C/U	Control Unit
CAN	Can Area Network
Cyl	Cylinder
DCM	Diesel Control Module
DTC	Diagnostic Trouble Code
ECM	Engine Control Module
ECO	Economy Mode
EGI	Electronic General Ignition (Relay/Fuse)
ELEG	Electronically Controlled Gasoline
ELEG.L	Electronically Controlled Gasoline/LPG
ELEL	Electronically Controlled LPG
ENG	Engine
ETC	Electronic Throttle Control
EXH	Exhaust
F/L	Fusible Link
FC1	Fingertip Controlled (1 Auxiliaries)
FC2	Fingertip Controlled (2 Auxiliaries)
FET	Mosfet
FR	Front
GOM	General Overseas Market
H02	Heated Oxygen Sensor
I/P	Idler Pulley
IAT	Intake Air Temperature
IGN	Ignition
INT	Intake
LCD	Liquid Crystal Display
LED	Light Emmitting Diode
LH	Left Hand
LLC	Long Lige Coolant
LPG	Liquefied Petroleum Gas

ABBREVIATION LIST

MAF	Mass Air Flow
MAFS	Mass Air Flow Sensor
MC	Mechanical Control Valve
MFC	Multi Function Control Valve (Joystick)
MIL	Malfunction Indicator Lamp
MTM	Mechanical Transmission
MP	Meter Panel
MPI	Multi Port Injection
NDIS	No Distributor Ignition System
NELEG	Non-Electronically Controlled Gasoline
NELEGL	Non-Electronically Controlled Gasoline/LPG
NELEL	Non-Electronically Controlled LPG
NFC	Nissan Forklift Corporation North America
NFE	Nissan Forklift Europe
NML	Nissan Motor CO., LTD
OBD	On Board Diagnostic System
OHV	Overhead Valves
OS	Oversize
P/S	Power Steering
PCV	Positive Carter Ventilation
PHASE	Camshaft Position Sensor
PNP	Park Neutral Position (Manual Transmission)
POS	Crankshaft Position Sensor
PTC	Positive Temperature Coefficient Heater
PTO	Power take Off
QGS	Quick Glow System
RH	Right Hand
RR	Rear
RX	Data Link Connector (communication reciever)
SDS	Service & Data Specifications
T/M	Trans Mission
T/M	Tilt Mechanism
TAS	Throttle Adjust screw
TDC	Top Dead Center
TPS	Throttle Position Sensor
TR	Transistor
TX	Data Link Connector (communication transmitter)
US	Undersize
VCM	Vehicle Control Module
VSS	Vehicle Speed Sensor
WOT	Wide Open Throttle
W/P	Waterpump Pulley

MEMO

BUY NOW

**Then Instant Download
the Complete Manual
Thank you very much!**