# **NISSAN FORKLIFT**

SERVICE MANUAL &

# TECHNICAL BULLETIN

**MODEL P01 & P02 SERIES** 

### INTRODUCTION

This service manual has been prepared to provide necessary information concerning the maintenance and repair procedures for the NISSAN FORKLIFT P01 and P02 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 fourteen 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)
CONTROL SYSTEM	(CS)
BATTERY & CHARGER	(BC)
ELECTRICAL SYSTEM	(EL)
MOTOR MECHANISM	(MM)
DIFFERENTIAL CARRIER	(DF)
FRONT AXLE	(FA)
REAR AXLE	(RA)
BRAKE SYSTEM	(BR)
STEERING SYSTEM	(ST)
HYDRAULIC SYSTEM	(HD)
LOADING MECHANISM	(LM)
BODY & FRAME	(BF)

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### **FOREWORD**

This manual contains maintenance and repair procedures.

In order to assure your safety and the efficient functioning of the lift truck, this manual should be read thoroughly. It is especially important that the PRECAUTIONS in the GI section be completely understood before starting any repair task.

All information in this manual is based on the latest product information at the time of publication. The right is reserved to make changes in specifications and methods at any time without notice.

### **IMPORTANT SAFETY NOTICE**

The proper performance of service is essential for both the safety of the technician and the efficient functioning of the lift truck.

The service methods in this Service Manual are described in such a manner that the service may be performed safely and accurately.

Service varies with the procedures used, the skills of the technician and the tools and parts available.

Accordingly, anyone using service procedures, tools or parts which are not specifically recommended by NISSAN must first be completely satisfied that neither personal safety nor the lift truck's safety will be jeopardized by the service method selected.

No modifications or alterations to a powered industrial truck, which may affect, for example, capacity, stability or safety requirements of the truck shall be made without the prior written approval of NISSAN, its authorized representative, or a successor thereof. Contact an authorized NISSAN

FORKLIFT dealer before making any modification or alteration to your industrial truck that may affect, for example braking, steering, visibility and the addition of removable attachments. After getting approval of NISSAN, its authorized representative, or a successor thereof, capacity plate, decals tags and operation and maintenance handbooks shall also be changed to the appropriate one.

Only in the event that NISSAN is no longer in business and there is no successor in the interest to the business, the user may arrange for a modification or alteration to a powered industrial truck, provided, however, that the user shall:

A. Arrange for the modification or alteration to be designed, tested and implemented by an engineer(s)

expert in industrial trucks and their safety,

- B. Maintain a permanent record of the design, test(s) and implementation of the modification or
- C. Approve and make appropriate changes to the capacity plate(s), decals, tags and Instruction Handbook;
- D. Affix a permanent and readily visible label to the truck stating the manner in which the truck has been modified or altered together with the date of the modification or alteration, and the name and address of the organization that accomplished the tasks.

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### **GENERAL INFORMATION**

SECTION G

### CONTENTS

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### HOW TO USE THIS MANUAL

### Outline of This Manual

Section symbol	Section title	Topics
GI	General information	How to use this manual, identification information, general precautions, jacking, lifting, towing and tightening torque of standard bolts.
MA	Maintenance	Inspection, adjustment, part replacement and lubricant replen- ishment
cs	Control system	Precautions, controller unit inspection and adjustment, meter panel, LCD letter display mode description, trouble diagnostic procedures, trouble diagnoses for controller and battery charging systems.
BC	Battery and battery charger https:	//www.forkdiftpolfmenteals.cobattery charger.
		Precautions, electrical component parts, location of electrical

EL	Electrical system	units, harness layout, fuses, lighting system, meter panel, mis- cellaneous electrical parts and location of optional parts.
мм	Motor mechanism	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, traction motor, hydraulic pump motor, power steering motor and motor inspection.
DF	Differential carrier	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, construction, removal, disassembly, inspection, assembly and installation.
FA	Front axle	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, construction, component parts, hub and axle housing.
RA	Rear axle	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, construction, component parts, removal, inspection, installation and adjustment.
BR	Brake system	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, construction, brake assembly, brake pedal, master cylinder, brake piping and parking brake.
ST	Steering system	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, steering wheel, steering column assembly, steering gear box, power cylinder and steering linkage.
НД	Hydraulic system	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, hydraulic piping system, hydraulic pump (gear pump), control valve, control lever, tilt cylinder, lift (mast) cylinder and oil tank.
LM	Loading mechanism	Service data, trouble diagnoses and corrections, precautions and preparation, construction, backrest, lift chain, carriage assembly and mast assembly.
BF	Forklift body and frame	Service data, precautions, construction, removal, installation, body parts and accessories.

This Manual contains the essential information required to perform effective forklift maintenance procedures. All forklift units are included. Informational configuration in the CS (control system) section differs from that of other sections. The CS section introduces how to utilize information in the section.

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### HOW TO USE THIS MANUAL

## Outline of This Manual (Cont'd) MAIN TEXT ENTRIES

Main text entries describe unit removal, unit disassembly, https://www.forkiifibulmanuals.com/bly, unit installation and adjustment procedures. Step-by-step descriptions are provided for all of

mese procedures.

Together with the step-by-step descriptions, other important information is provided. This information includes service points and tips, basic units and values, required specified tightening torques and required special service tools. Information pertaining to common tools generally found in all maintenance facilities is generally omitted. This information is included in the exploded part views and other drawings as required.

#### OTHER ENTRIES

The following information is included at the beginning of all sections as a supplement to the main text.

### Service data and specifications

Adjustment values, part selection information and specified tightening torque values are shown for all procedures described in the main text.

### Trouble diagnoses and corrections

Individual symptoms, probable causes and remedial measures indicated by these symptoms are described.

### Precautions and preparation

- Precautionary and reference information related to the entire section is provided.
- Special service tools are required for some maintenance procedures. Special service tool name, tool number and tool application information as well as illustrations depicting tool shapes are included.

### **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.

### **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:

#### Main unit conversions

	SI unit	Metric system	Yard/pound system	Conversion factor to SI unit
Torque and	N-m	kg-m		9.807
moment		-	ft-lb	1.356
	N	kg		9.807
Force		_	lb	4.448
	kPa	kg/cm <sup>2</sup>	_	98.07
Pressure		V-4	psi	6.895
	MPa	kg/cm <sup>2</sup>		0.0981
		-	psi	0.0069

### NOTE:

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

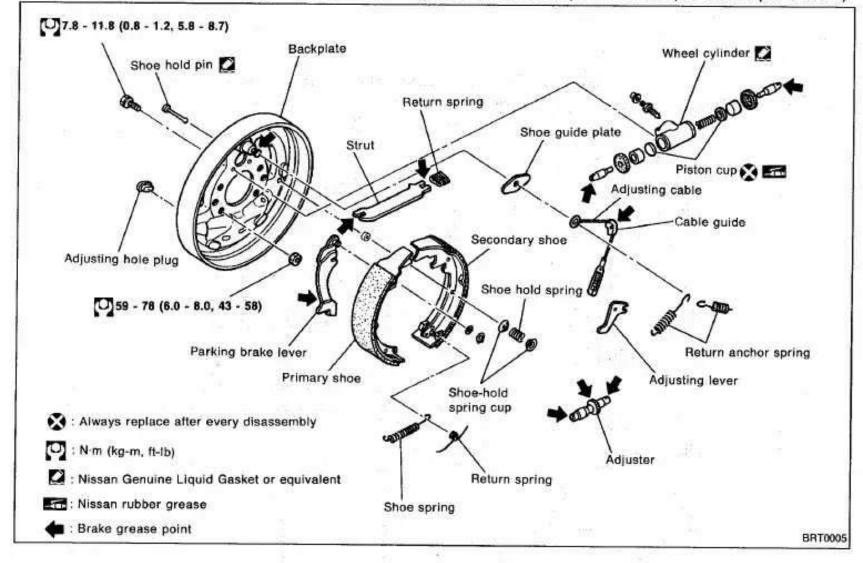
Unit in metric system or yard/pound system x conversion factor = SI unit

### 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.)

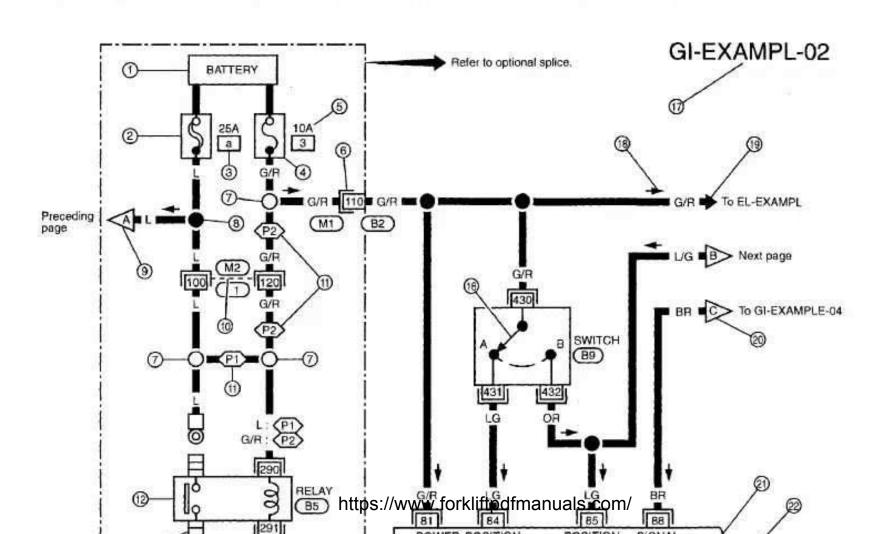


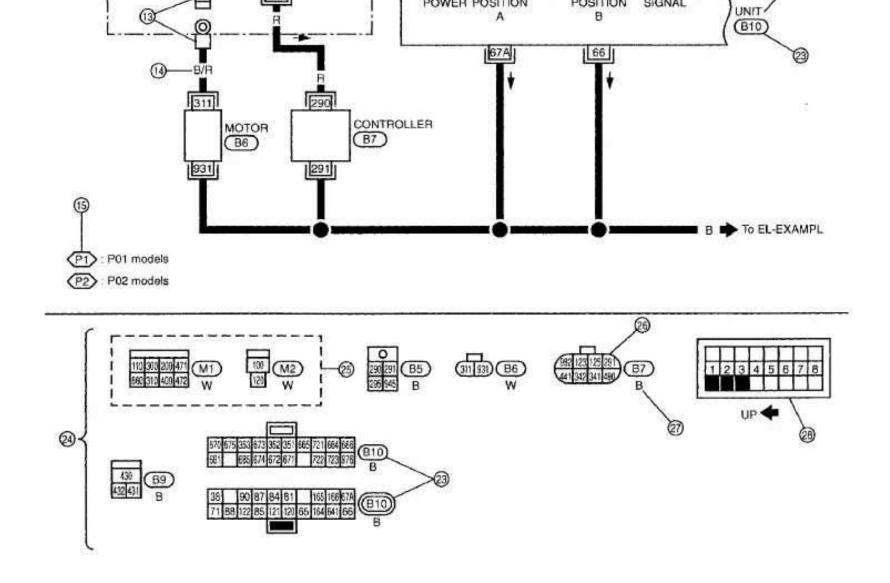
Symbols used in exploded views https://www.forkliftpdfmanuals.com/

Symbol Meaning Symbol Meaning

O	Specified tightening torque is required for part installation. When a torque range is given, use the average figure as the standard.	8	Always replace after every disassembly.
	Should be lubricated with specified grease.	*	Select parts of proper thickness.
	Should be lubricated with oil.	立	Adjustment is required.
2	Sealing point		

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HOW TO READ WIRING DIAGRAMS

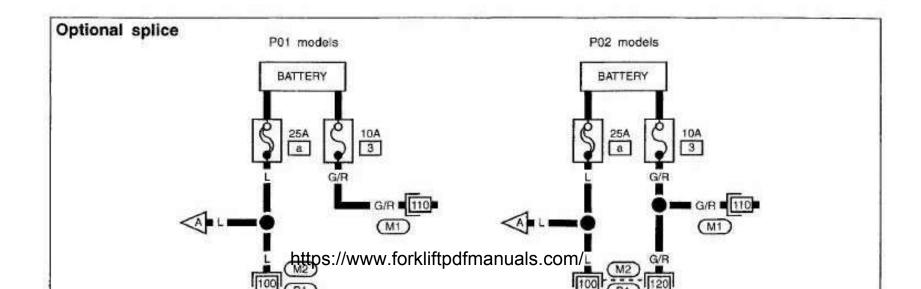


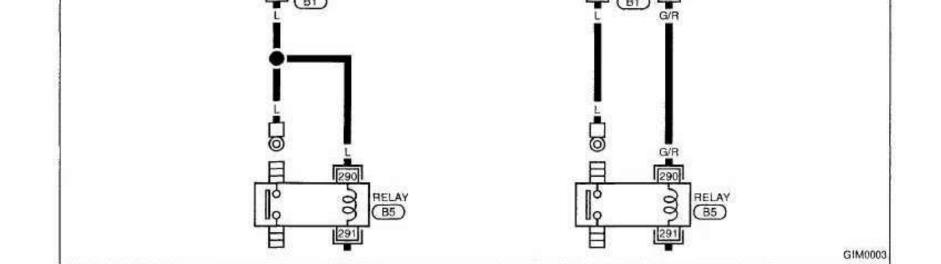


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### **HOW TO READ WIRING DIAGRAMS**





### **HOW TO READ WIRING DIAGRAMS**

**Description** https://www.forkliftpdfmanuals.com/

Number Item Descript

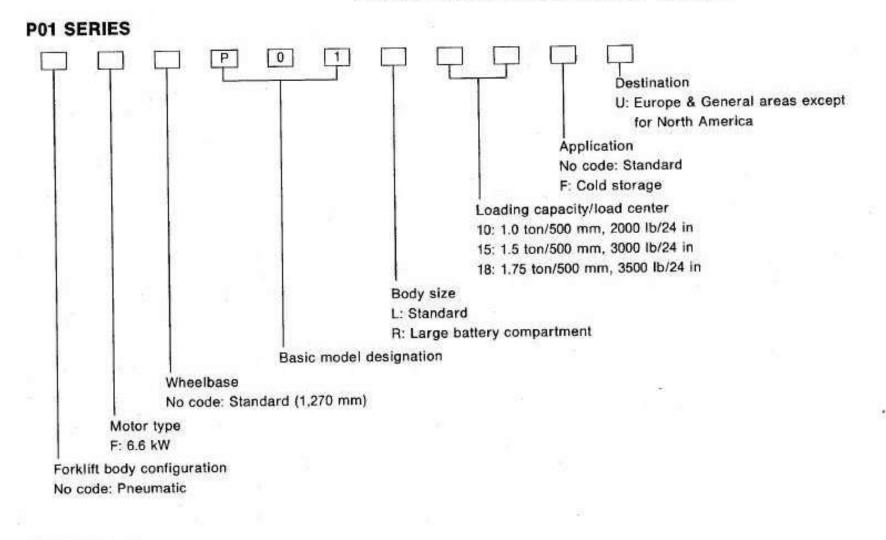
Nomboi	item	Description		
•	Power condition	<ul> <li>This shows the condition when the system receives battery positive (+) voltage (can be operated).</li> </ul>		
2	Fusible link	The double line shows that this is a fusible link. The open circle shows current flow in, and the shaded circle shows current flow out.		
3	Fusible link/fuse location	This letter or number shows the location of the fusible link, or fuse in the fusible link or fuse box.		
4	Fuse	The single line shows that this is a fuse. The open circle shows current flow in, and the shaded circle shows current flow out.		
(5)	Current rating	This shows the current rating of the fusible link or fuse.		
6	Connectors	This shows that connector M1 is female and connector B2 is male. The G/R wire is located in the 110 terminal of both connectors.		
•	Optional splice	<ul> <li>The open circle shows that the splice is optional depending on vehicle appli- cation.</li> </ul>		
8	Splice	<ul> <li>The shaded circle shows that the splice is always on the vehicle (standard specifications).</li> </ul>		
9	Page crossing	This arrow shows that the circuit continues to an adjacent page. The A will match with the A on the preceding or next page.		
10	Common connector	The dotted lines between terminals show that these terminals are part of the same connector.		
00	Option abbreviation	This shows that the circuit is optional depending on vehicle application.		
(2)	Relay	This shows an internal representation of the relay.		
13	Connectors	This shows that the connector is connected to the body or a terminal with bolt or nut.		
14)	Wire color	This shows a code for the color of the wire.  B = Black BR = Brown  W = White OR = Orange  R = Red P = Pink  G = Green PU = Purple  L = Blue GY = Gray  Y = Yellow SB = Sky Blue  LG = Light Green CH = Dark Brown  DG = Dark Green  When the wire color is striped, the base color is given first, followed by the stripe color as shown below:  Example: L/W = Blue with White Stripe		
15	Option description	This shows a description of the option abbreviation used on the page.		
•	Switch	<ul> <li>This shows that continuity exists between terminals 430 and 431 when the switch is in the A position. Continuity exists between terminals 430 and 432 when the switch is in the B position.</li> </ul>		
0	Cell code	<ul> <li>This identifies each page of the wiring diagram by section, system and wiring diagram page number.</li> </ul>		
18	Current flow arrow	<ul> <li>Arrow indicates electric current flow, especially where the direction of standard flow (vertically downward or horizontally from left to right) is difficult to follow.</li> <li>A double arrow " &gt; " shows that current can flow in either direction https://www.forkliftpdfmanuals.com/</li> </ul>		

### **HOW TO READ WIRING DIAGRAMS**

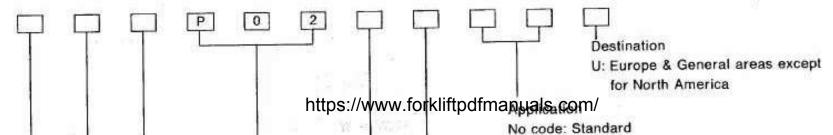
	Description (Cont'd)			
Number	Item	Description		
19	System branch	<ul> <li>This shows that the system branches to another system identified by cell code (section and system).</li> </ul>		
<b>@</b>	Page crossing	<ul> <li>This arrow shows that the circuit continues to another page identified by cocde.</li> <li>The C will match with the C on another page within the system other than the next or preceding pages.</li> </ul>		
20	Component box in wave line	<ul> <li>This shows that another part of the component is also shown on another page (indicated by wave line) within the system.</li> </ul>		
22)	Component name	This shows the name of a component.		
<b>(3</b> )	Connector number	<ul> <li>This shows the connector number.</li> <li>The letter shows which harness the connector is located in.</li> <li>For detail and to locate the connector, refer to EL section ("Main Harness", "HARNESS LAYOUT"). A coordinate grid is included for complex harnesses to aid in locating connectors.</li> <li>Harness side connectors: shown in</li></ul>		
24)	Connector views	<ul> <li>This area shows the connector faces of the components in the wiring dia- gram on the page.</li> </ul>		
25)	Common component	<ul> <li>Connectors enclosed in broken line show that these connectors belong to the same component.</li> </ul>		
26	Terminal No.	This shows the terminal number indicated in the connector on the manual- end wiring diagram. Refer to the diagram at the manual end.		
27)	Connector color	This shows a code for the color of the connector.		
28)	Fuse box	This shows the arrangement of fuses.  The open square shows current flow in, and the shaded square shows current flow out.		

### **IDENTIFICATION INFORMATION**

### Vehicle Model Classification Number



### **P02 SERIES**



F: Cold storage

Loading capacity/load center

20: 2.0 ton/500 mm, 4000 lb/24 in

25: 2.5 ton/500 mm, 5000 lb/24 in

Body size

L: Standard

R: Large battery compartment

Basic model designation

Wheelbase

No code: Standard (1,450 mm)

G: Long (1,595 mm)

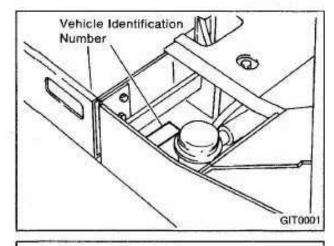
Motor type Q: 9.0 kW

Forklift body configuration

No code: Pneumatic

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### IDENTIFICATION INFORMATION



### Vehicle Identification Number

The vehicle identification number is stamped on the frame at the right rear side of the floor area next to the hydraulic oil filler plug.

### VEHICLE IDENTIFICATION NUMBER ARRANGEMENT

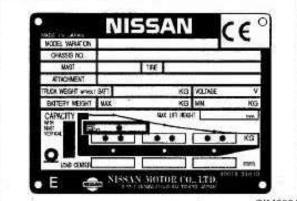
FP01 - XXXXXX

QP02 - XXXXXX

QGP02 - XXXXXX

### Identification Plate

The identification plate shows the vehicle type, vehicle model classification number, vehicle identification number (chassis number), permissible load at load center, mast type, maximum mast elevation, battery voltage, available vehicle attachments and vehicle weight.



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CHASES NO.	-		Service may
MAST .	198	1	_
ATDICHMENT			
TRICK WEIGHT which	901	KG VOLDISE	V
BATTERY MERCHT	MAX	KG MM	KG
CAPACITY BRIT NOT BRITISE		MC UT HOSE	Lon.
© LL			J mm
• E 05	a NISSAN MI	TOR COLUED.	

### **GENERAL PRECAUTIONS**

- The vehicle may be hoisted and/or suspended only under the direct supervision of a person who has completed the required educational courses in forklift hoisting and suspension techniques.
- The forklift service area must be well ventilated and free of flammable objects and materials.
- If servicing the forklift in an area that has previously been closed off or poorly ventilated, open all windows and doors and thoroughly ventilate the area before starting the service procedure.
- Be extremely careful whenever handling flammable materi-

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Do not smoke during service operations.

- rotating or sliding area of the forklift. Avoid burns and other serious injuries.
- When removing a heavy unit or component from the vehicle, be careful not to lose you balance and drop it.
- Before beginning disassembly and inspection, remove all rings, your watch and other metallic objects from your body to prevent an accidental short circuit.
- Carefully analyze all symptoms during troubleshooting. This
  will allow you to make repairs safely and efficiently. After
  completing a troubleshooting and repair procedure, carefully check to make sure that all existing problems have
  been rectified.
- Before beginning part removal and disassembly, carefully note the manner in which the unit or part is installed to the forklift and the way in which the part or unit is assembled. This will ensure smooth reassembly and installation.
- Make alignment marks on parts to be disassembled as required for easier and proper reassembly. Marks should be made in areas of the parts that will not affect function.
- When removing wires, note the color codes and remember the wiring configuration before removal.
- Use the proper tools for the disassembly and inspection procedures. Use the designated special service tools if required.
- Tools used for disassembly and inspection must be clean and completely free of foreign material. Place disassembled parts in a clean area after disassembly.
- Turn the key switch to the OFF position and disconnect the battery plugs before beginning the disassembly and inspection procedure.
- Do not mix up disassembled parts. Place them carefully to the side in their order of removal.
- Under no circumstances should electrical components (controllers, motors, battery charging units and wiring) be steam-cleaned.
- Clean internal areas of the controllers, motors and battery charger (the areas near the magnetic switches) with an air blower (never with steam). Following cleaning, check the insulation resistance.

### **GENERAL PRECAUTIONS**

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When disconnecting pressurized pipes or hoses, release

the pressure from the line before removing.

 When removing the battery or the counterweight chock the wheels. Never remove the battery or the counterweight when the forklift is raised on jacks.

Carefully clean all disassembled parts before inspection

and reassembly.

 Use only the specified nuts and bolts to install parts. Tighten the nuts and bolts to the specified torque as required.

- Carefully check all removed oil seals, gaskets, packing materials, O-rings, lock washers, cotter pins and self-locking nuts against the instructions on each section to see whether or not they can be reused. If they cannot be reused, they must be replaced with new ones. If replacement parts are required, refer to the Parts Catalog distributed by Nissan Motors. Be sure that the replacement parts have the correct part number. Use only genuine Nissan parts.
- When replacing taper roller bearings or needle bearings, always replace their inner races and outer races as a set.

Use only the specified lubricants and sealants.

 Be careful not to splash the brake fluid on the vehicle body or other painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, immediately wipe it and wash the area with water.

Never reuse drained brake fluid.

- Following repair of any system containing oil or brake fluid, carefully check the system for fluid leakage.
- Do not carelessly dispose of discarded oil from oil changes and part cleaning operations. Dispose of the oil following established procedures.

### PRECAUTIONS FOR ELECTRICAL SYSTEM INSPECTION

- Turn the key switch to the OFF position and disconnect the battery plugs when disconnecting or connecting the print board connectors. Disconnecting and/or connecting the main print board or meter print board connectors with the key switch ON and the battery plugs in place can damage the print board. Exercise care.
- Avoid twisting and turning the print board connectors when connecting and/or disconnecting them. This can result in poor connector connections.
- When disconnecting connectors, do not pull on the wire attached to the connector. Always hold the connector body.
- When using a circuit tester, be very careful not to use the wrong range (A, V or Ω) and/or polarity.
- Static electricity can damage the main and meter print boards. Be sure to eliminate static electrical charges when handling the print boards.
- Following completion of the inspection procedure, once again check that all of the leads are connected to their original terminals.

### **GENERAL PRECAUTIONS**

#### PRECAUTIONS FOR HANDLING BATTERY

- Do not permit open flames in close proximity to the battery when handling it.
- It is possible to burn yourself when working with a battery.
   Be careful not to allow your body and clothing to come in direct contact with the battery fluid.
- If large amounts of battery fluid have been spilled or leaked over an area, immediately neutralize the spill with some neutralizing agent (sodium bicarbonate, calcium hydroxide, carbon soda, etc.). Rinse the area with a large volume of water.
- Highly-explosive hydrogen gas leaks from the battery. If this
  gas is ignited by sparking from a short circuit in the battery
  terminal area, an explosion and serious damage can result.
  Avoid this danger by not placing tools and other metallic
  objects on top of the battery where they might short the
  battery terminals.
- Hydrogen gas escaping from the battery can also be ignited by static electricity in the area. Again, an explosion can result. Never wipe or dust the battery upper surface and terminal areas with a completely dry cloth as this will generate static electricity. Never cover the battery with a vinyl sheet or similar object to protect it. This can also generate static electricity. Clean the battery with a damp cloth.

#### CAUTION:

- Fluid leakage from a loosely closed battery electrolyte filler cap can cause many problems. Always be sure that the filler cap is tightly closed.
- Never entrust battery maintenance procedures to personnel who are not familiar with the techniques and safety precautions required for battery maintenance.

#### SPECIAL SERVICE TOOLS

Special Service Tools play a very important role in the maintenance of the vehicle. These are essential to safe, accurate and speedy servicing.

The working times listed in the column under FLAT RATE TIME in FLAT RATE SCHEDULE are computed based on the use of Special Service Tools.

The identification code of maintenance tools is made up of 2 alphabetical letters and 8-digital figures.

The heading two letters roughly classify tools or equipment as:

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### **JACKING, TOWING AND LIFTING**

#### CAUTION:

- Never get under the vehicle or the fork while jacking or lifting the vehicle.
- Always perform jacking or lifting operation on a flat and solid surface.
- Operate the key switch and individual operational levers only when sitting in the operator's seat. Never touch these controls when you are standing near the forklift.
- Be sure to apply the parking brake whenever jacking or lifting the vehicle.
- Do not chock the vehicle with multiple wooden blocks stacked one on top of the other. Only use one wooden block in place.
- Be sure to use wooden blocks of sufficient strength to support the weight of vehicle.
- Never use cracked or broken wooden blocks. These may cause unstable support, putting you in danger.
- Never place wooden blocks of different heights side by side under the vehicle or the mast.

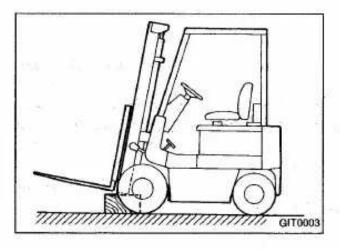
### Jacking

#### CAUTION:

- Using the mast to raise the front wheels for an extended time period will eventually bend the mast. Place wooden blocks tightly under the front of the frame on both sides of the vehicle to take the stress off the mast.
- Wooden block area and height should be such that the https://www.forchidendforckedsagogost be inserted between the mast and the ground surface when the mast is tilted back. Front-to-

back wooden block length should be 50 - 100 mm (1.97 - 3.94 in) larger than the mast rail front-to-back length. Side-to-side wooden block width should be 20 - 40 mm (0.79 - 1.57 in) greater than the outer mast outside width.

 When jacking up the vehicle, raise it until the wheels are slightly clear of the ground. Stop jacking. Do not attempt to raise the vehicle above this level.



#### JACKING FRONT OF VEHICLE

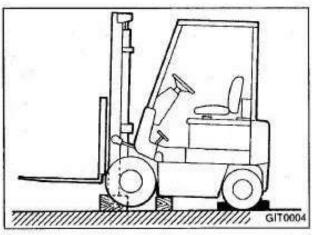
- Raise forks 200 300 mm (7.87 11.81 in) above ground or floor. Tilt mast back as far as it will go.
- 2. Place wooden blocks under mast.

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### JACKING, TOWING AND LIFTING

### Jacking (Cont'd)

- Tilt mast forward just enough to raise front wheels off ground.
- 4. Place wooden blocks under frame on both sides.
- Chock rear wheels to hold vehicle stationary.



### JACKING REAR OF VEHICLE

- Raise forks approximately 100 mm (3.94 in) above ground or floor. Tilt mast back slightly.
- Place a garage jack having a capacity of at least 3 tons under the center of counterweight. Use the jack to raise the rear of vehicle.

#### CAUTION:

Groove-type lacks can easily slip. Do not use a groove-type https://www.forkliftpdfmanuals.com/

