



SERVICE MANUAL & TECHNICAL BULLETIN

TX series

SERVICE

INTRODUCTION

This service manual has been prepared to provide necessary information concerning the maintenance and repair procedures for the NISSAN FORKLIFT 1N1 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)
DRIVE UNIT	(DU)
FRONT TIRE & REAR TIRE	(TR)
BRAKE SYSTEM	(BR)
REAR AXLE	(RA)
STEERING SYSTEM	(ST)
HYDRAULIC SYSTEM	(HD)
LOADING MECHANISM	(LM)
BODY & FRAME	(BF)
OPTION	(OP)

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 alteration;
- 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.

GENERAL INFORMATION

SECTION **GI**

CONTENTS

HOW TO USE THIS MANUAL	GI-2	GENERAL PRECAUTIONS	GI-8
Outline of This Manual	GI-2	JACKING, TOWING AND LIFTING	GI-11
Technical Term Definitions	GI-3	Jacking	GI-11
Manual Illustrations	GI-5	Towing (Freeing a stuck forklift)	GI-14
IDENTIFICATION INFORMATION	GI-6	Lifting	GI-14
Vehicle Model Classification Number	GI-6	TIGHTENING TORQUE OF STANDARD	
Vehicle Identification Number	GI-7	BOLTS	GI-16
Identification Plate	GI-7		

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 replenishment
CS	Control system	Precautions, controller unit inspection and adjustment, meter panel, LCD mode description, switches and sensors inspection, trouble diagnostic procedures, trouble diagnoses for controller.
BC	Battery and battery charger	Precautions, battery and battery charger.
EL	Electrical system	Precautions, electrical component parts, location of electrical units, harness layout, fuses, lighting system, switches, miscellaneous electrical parts and location of optional parts.
MM	Motor mechanism	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, traction motor, hydraulic pump motor and motor inspection.
DU	Drive unit	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, construction, removal, disassembly, inspection, assembly and installation.
TR	Front tire and rear tire	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, tire and road wheel.
BR	Brake system	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, construction, service brake (wet type), brake pedal, master cylinder, brake piping and parking brake.
RA	Rear axle	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, construction, component parts, removal, inspection, installation and adjustment.
ST	Steering system	Service data and specifications, trouble diagnoses and corrections, precautions and preparation, steering wheel, steering column assembly, power steering valve, power cylinder, rear axle and steering piping.
HD	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, fork, 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.

Outline of This Manual (Cont'd)

MAIN TEXT ENTRIES

Main text entries describe unit removal, unit disassembly, inspection, unit reassembly, unit installation and adjustment procedures. Step-by-step descriptions are provided for all of these 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 foot/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 Foot/pound system

Main unit conversions

	SI unit	Metric system	Foot/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 foot/pound system to SI unit is shown below.

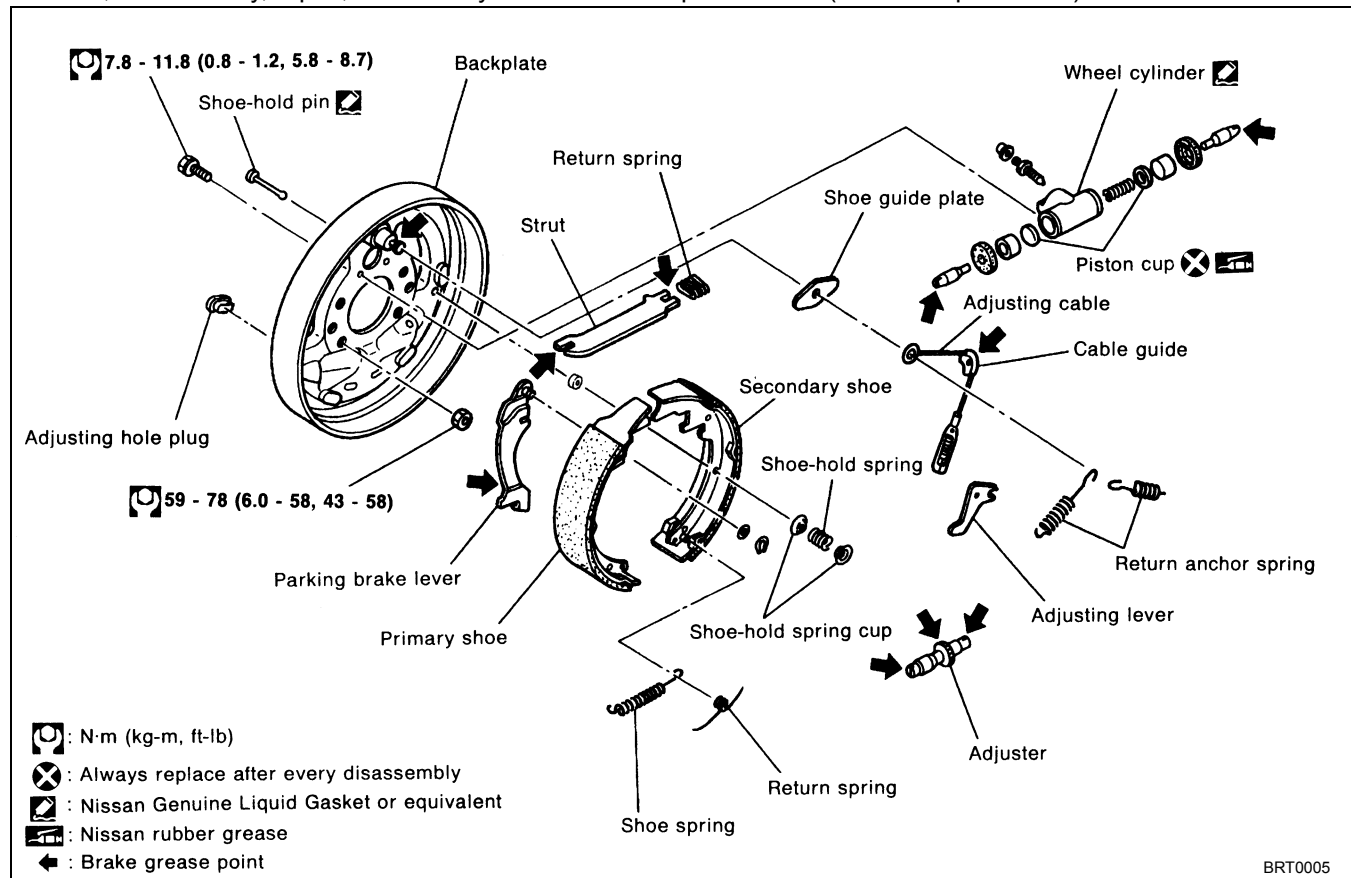
Unit in metric system or foot/pound system x conversion factor = SI unit

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.)

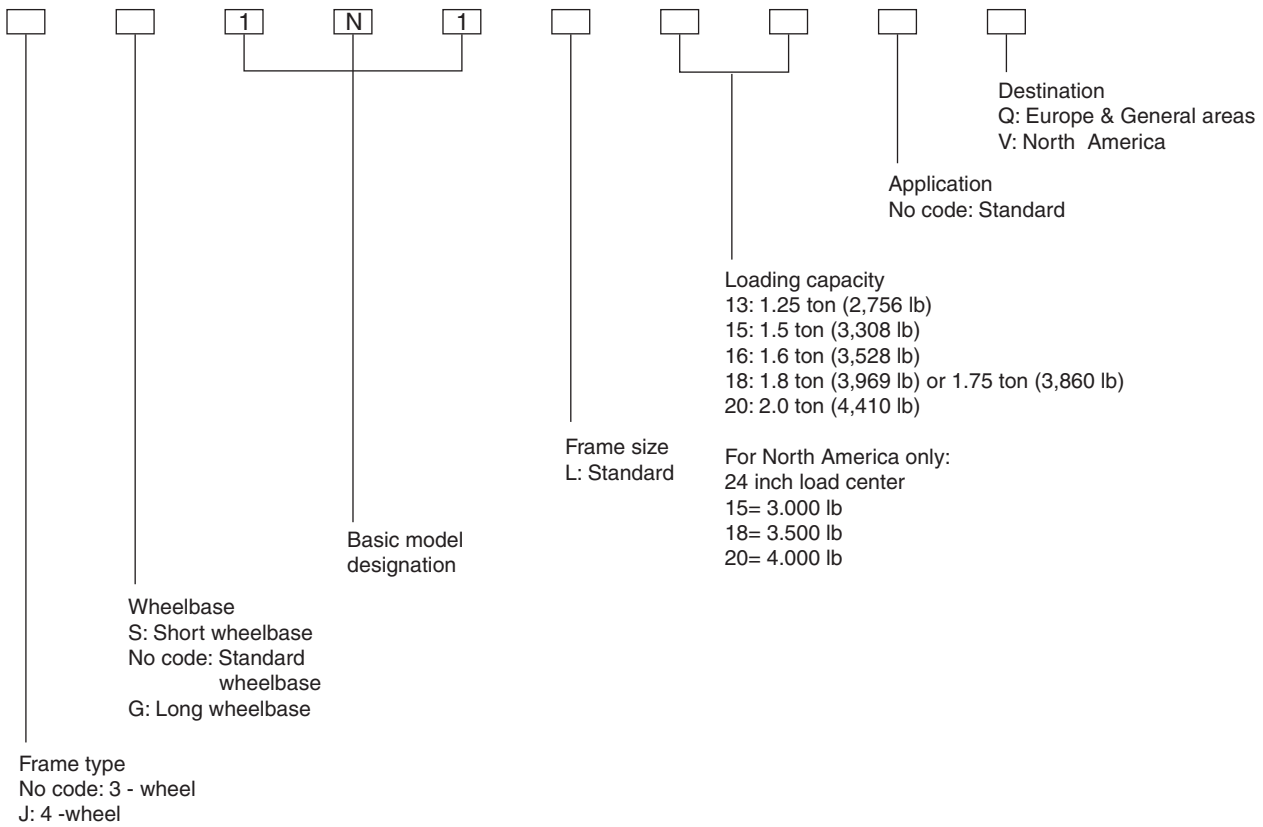


Symbols used in exploded views

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.
	Sealing point		

IDENTIFICATION INFORMATION

Vehicle Model Classification Number



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