FOREWORD

This Manual contains specifications, maintenance, repair, diagnostic and service procedures for the chassis, body and material handling system of the TOYOTA ELECTRIC POWERED FORKLIFT 7FB10 to *30* series and 7FBJ35.

Please use this manual for providing quick, correct servicing of the corresponding forklift models.

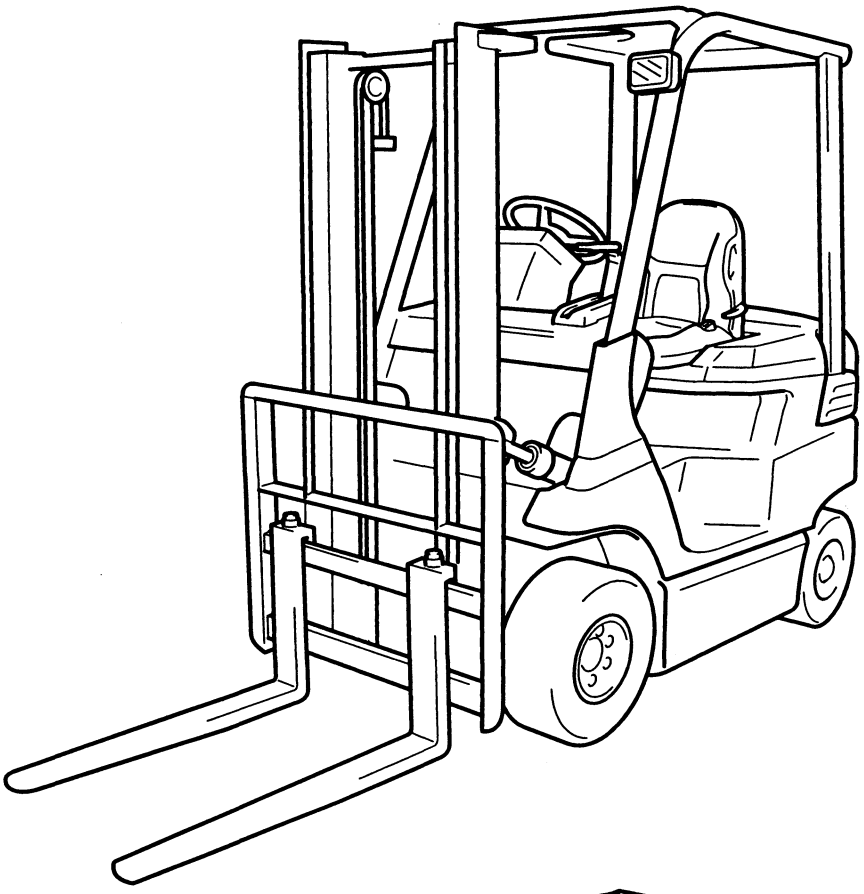
This manual deals with the above models as of September 1999. Please understand that disagreement can take place between the descriptions in the manual and actual vehicles due to change in design and specifications. Any change or modifications thereafter will be informed by Toyota Industrial Equipment Parts & Service News.

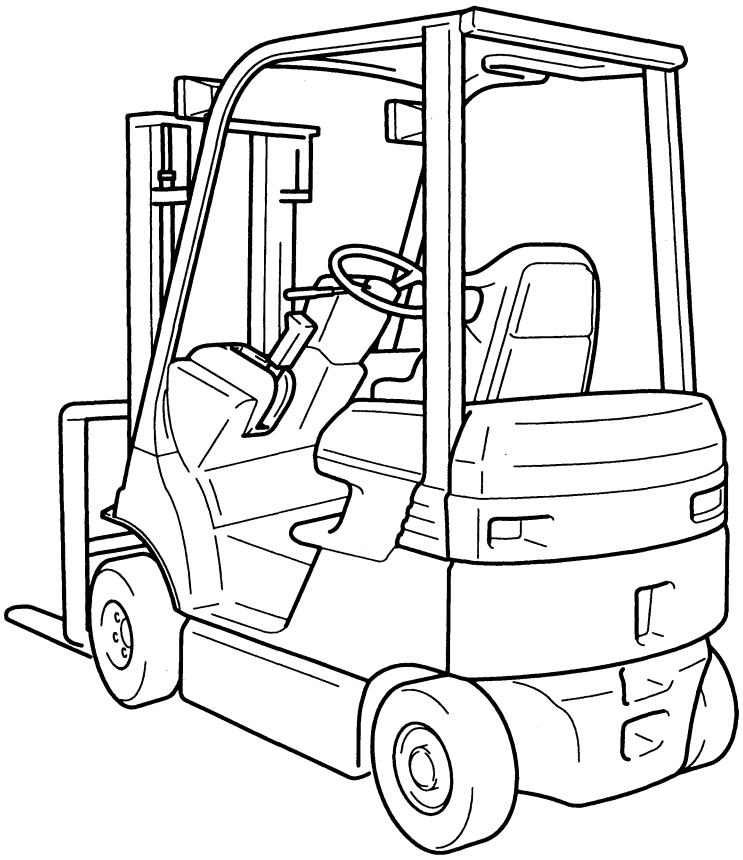
TOYOTA Material Handling Company
A Division of TOYOTA INDUSTRIES CORPORATION

SECTION INDEX

GENERAL

EXTERIOR VIEWS

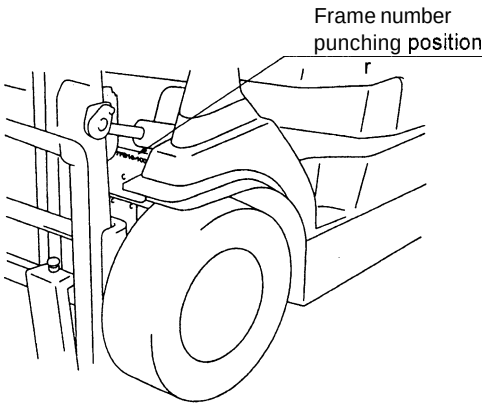




VEHICLE MODEL

Classification		Vehicle model	Controller type	Voltage (V)
Series	Model			
1 ton series	1.0 ton model	7FB10	AC Micon controller	48
		7FBH10	↑	↑
	1.35 ton model	7FB14	↑	↑
		7FBH14	↑	↑
	1.5 ton model	7FB15	↑	↑
		7FBH15	↑	↑
		40-7FB15	↑	↑
	1.8 ton model	7FB18	↑	↑
		7FBH18	↑	↑
2 ton series	2.0 ton model	7FB20	↑	↑
		7FBH20	↑	↑
		40-7FB20	↑	↑
	2.5 ton model	7FB25	↑	↑
		7FBH25	↑	↑
		40-7FB25	↑	↑
3 ton series	3.0 ton model	7FB30	↑	80
	3.5 ton model	7FBJ35	↑	↑

FRAME NUMBER

	Drive motor model	Vehicle model	Punching format	Punching position
1 ton series	AP11	7FB10	7FB18–10001	
		7FBH10		
		7FB14		
		7FBH14		
		7FB15		
		7FBH15		
		7FB18		
		7FBH18		
	AP15	40-7FB15	7FB25–10001	
2 ton series		7FB20		
		7FBH20		
		7FB25		
		7FBH25		
	AP15	40-7FB20	407FB25–10001	
		40-7FB25		
3 ton series	AP16	7FB30	7FBJ35–10001	
		7FBJ35		

Note: © in place of [–] on vehicles for EEC.

HOW TO USE THIS MANUAL

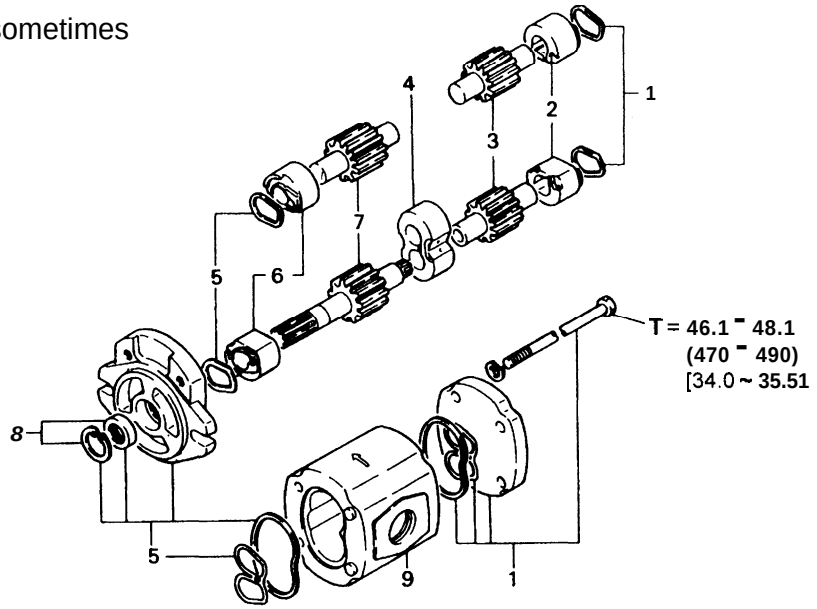
EXPLANATIONMETHOD

1. Operation procedure
   (1) The operation procedure is described in either pattern A or pattern B below.
   Pattern A: Explanation of each operation step with illustration.
   Pattern B: Explanation of operation procedure by indicating step numbers in one illustration, followed by explanation of cautions and notes summarized as point operations.

Example of description in pattern B

DISASSEMBLY·INSPECTION·REASSEMBLY Tightening torque unit T = N·m(kgf-cm)[ft-lbf]

- Step Nos. are partially sometimes omitted in illustrations.



Disassembly Procedure

1 Remove the cover. **[Point 1]**

2 Remove the bushing **[Point 2]** ● Operation explained later

3 Remove the gear.

Point Operations

Explanation of key point for operation with an illustration

[Point 1]
Disassembly: Put a match mark when removing the pump cover.

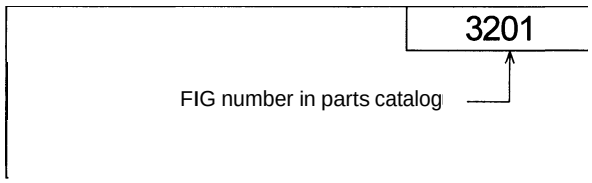
[Point 2]
Inspection: Measure the bush inside diameter.

Limit: 19.12 mm (0.7528 in)

2. How to read components figures

(1) The components figure uses the illustration in the parts catalog for the vehicle model. Please refer to the catalog for checking the part name.
The number at the right shoulder of each components figure indicates the Fig. number in the parts catalog.

(Example)



3. Matters omitted in this manual

(1) This manual omits description of the following jobs, but perform them in actual operation:
① Cleaning and washing of removed parts as required
② Visual inspection (partially described)

TERMINOLOGY

Caution:
Important matters of which negligence may cause accidents. Be sure to observe them.

Note:
Important items of which negligence may cause accidents, or matters in operation procedure requiring special attention.

Standard: Values showing allowable range in inspection and adjustment.
Limit: Maximum or minimum allowable value in inspection or adjustment.

ABBREVIATIONS

Abbreviation (code)	Meaning	Abbreviation (code)	Meaning
ASSY	Assembly	SAS	System of active stability
LH	Left hand	SST	Special service tool
LLC	Long life coolant	STD	Standard
M/T	Manual transmission	T=	Tightening torque
OPT	Option	TIC	Torque converter & transmission
O/S	Oversize	OOT	Number of teeth (0 0)
PS	Power steering	U/S	Undersize
RH	Right hand	W/	With
SAE	Society of Automotive Engineers (USA)	L/	Less

SI UNITS

Meaning of SI

SI represents the International System of Units, which has been established for unifying various systems of units used in the past, for smoother international technical communication.

New Units Adopted in SI

Characteristic	New unit	Conventional unit	Conversion rate*' (1 [conventional unit] = X [SI unit])
Force*2	N (newton)	kgf	1 kgf = 9.80665 N
Torque*2 (moment)	N.m	kgf·cm	1 kgf·cm = 9.80665 N·m
Pressure*2	P (pascal)	kgf/cm^2	1 kgf/cm^2= 98.0665 kPa = 0.0980665 MPa
↑	↑	mmHg	1 mmHg = 0.133322 kPa
Revolving speed	r/min	rpm	1 rpm = 1 r/min
Spring constant*2	N/mm	kgf/mm	1 kgf/mm = 9.80665 N/mm
Volume	L	cc	1 cc = 1 mL
Power	W	PS	1 PS = 0.735499 kW
Heat quantity	W·h	cal	1 kcal = 1.16279 W·h
Specific fuel consumption	g/W·h	g/PS·h	1 g/PS·h = 1.3596 g/kW·h

<Reference>

*1: X represents the value in SI unit as converted from 1 [in conventional unit], which can be used as the rate for conversion between conventional and SI units.

*2: In the past, kilogram [kg] representing the mass was often used in place of weight kilogram [kgf] that should be used as the unit of force.

Conversion between Conventional and SI Units

Value in SI unit = Conversion rate *x* value in conventional unit	Conversion rate: Figure corresponding to X in the conversion rate column in the table above
Value in conventional unit = Value in SI unit ÷ Conversion rate	

Caution:

At the time of conversion, change the unit of the value in conventional or SI unit to the one in the conversion rate column in the table above before calculation. When converting 100 W to the value in conventional unit PS, change it to 0.1 kW first and divide by 0.735499 as the conversion rate.

OPERATIONAL TIPS

1. Safe operation
   (1) After jacking up, always support with wooden blocks or rigid stands.
   (2) When hoisting the vehicle or its heavy component, use wire rope(s) with a sufficient reserve in load capacity.
   (3) Always disconnect the battery plug before the inspection or servicing of electrical parts.

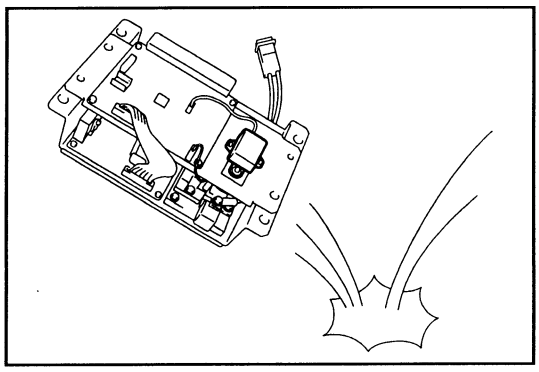
2. Tactful operation
   (1) Prepare the mechanic tools, necessary measuring instruments (circuit tester, megger, oil pressure gauge, etc.) and SSTs before starting operation.
   (2) Before disconnecting wiring, always check the cable color and wiring state.
   (3) When overhauling functional parts, complicated portions or related mechanisms, arrange the parts neatly to prevent confusion.
   (4) When disassembling and inspecting such a precision part as the control valve, use clean tools and operate in a clean location.
   (5) Follow the described procedures for disassembly, inspection and reassembly.
   (6) Replace, gaskets, packing and O-rings with new ones each time they are disassembled.
   (7) Use genuine Toyota parts for replacement.
   (8) Use specified bolts and nuts. Observe the specified tightening torque at the time of reassembly. (Tighten to the center of the specified tightening torque range.)
   If no tightening torque is specified, tighten the bolt or nut according to the standard tightening torque table.

3. Protection of functional parts
   (1) Thoroughly check each connector for any failure in or imperfect connection before reconnecting the battery plug after the end of vehicle inspection or maintenance.
   Failure in or imperfect connection of connectors related to controllers, especially, may damage elements inside the controllers.

4. Confirming defect status
   Do not start immediate disassembly or replacement, but first confirm if such disassembly or replacement is actually needed.

5. Handling of waste fluid, etc.
   When draining waste fluid from the vehicle, always receive it with an appropriate container.
   Since careless or arbitrary discharge or disposal of oil, fuel, coolant, oil filter, battery or any other harmful substance may cause adverse affect to people or environmental destruction, sort each waste and always ask an authorized contractor for appropriate disposal.

6. Handling of electronic parts

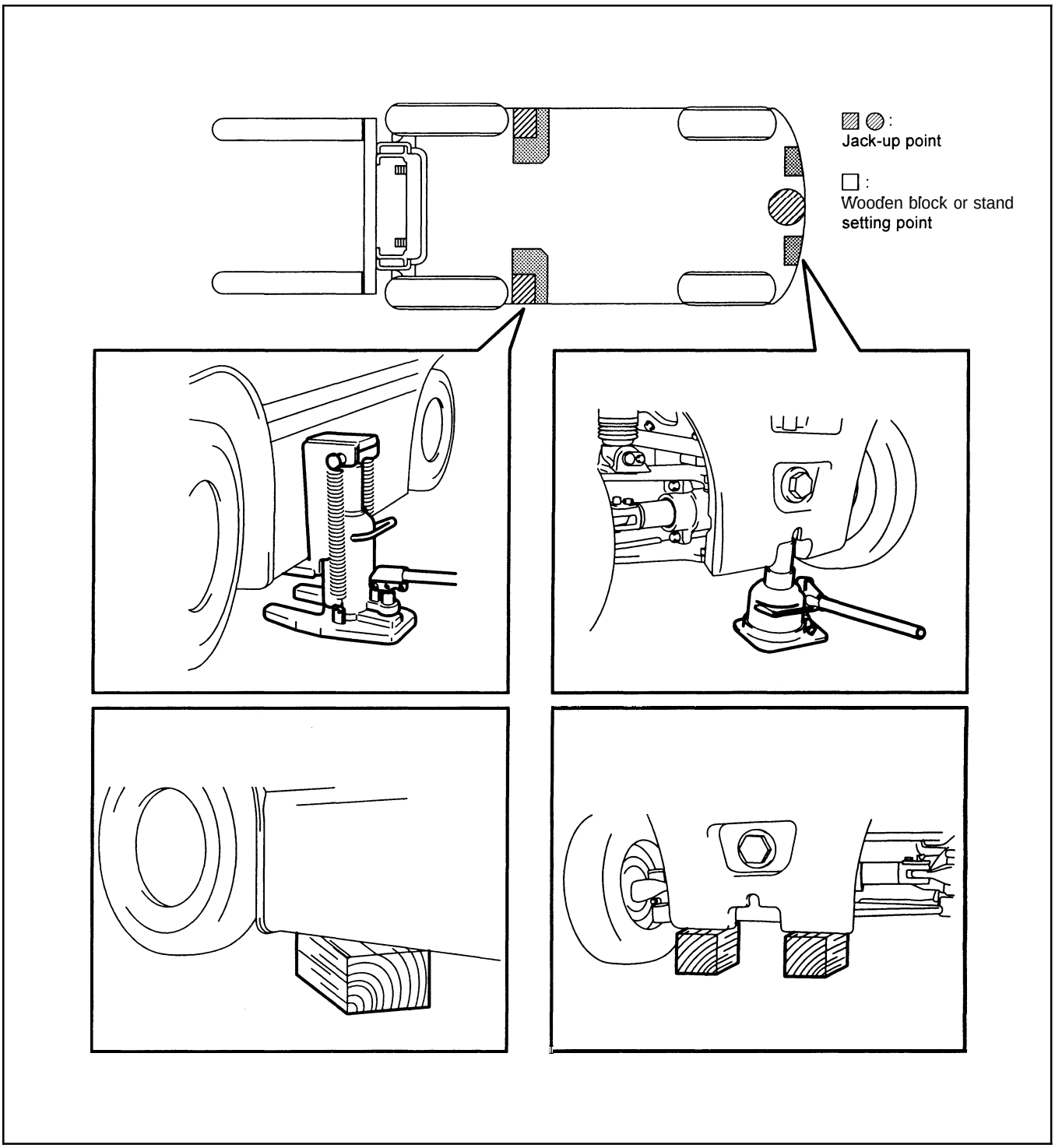


   (1) Never apply impacts to electronic parts such as a microcomputer or relay.
   (2) Never let electronic parts be exposed to a high temperature or humidity.
   (3) Do not touch connector pins since they may be deformed or be damaged due to static electricity.

JACK-UP POINT

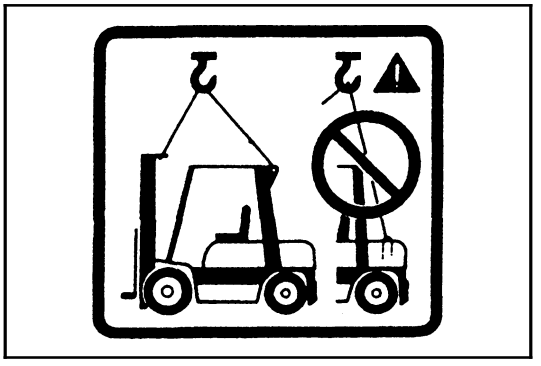
Strictly observe the following instructions when jacking up the vehicle.

- When a load is on the fork, unload it and park the vehicle on a flat floor. Be sure to avoid an inclined or rugged place.
- Use a jack with ample capacity and jack up the vehicle at the specified jack-up point. Jacking up at any other point will be dangerous.
- Never operate while the vehicle is held with a jack. Always support the frame with a wooden block after jacking up.
- In any case, never let a part of the body (including hands and feet) be under the jacked-up vehicle.

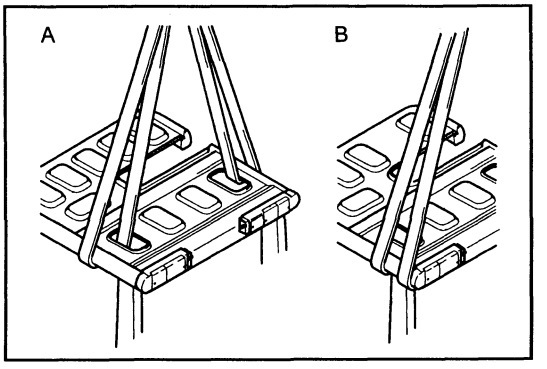


HOISTING THE VEHICLE

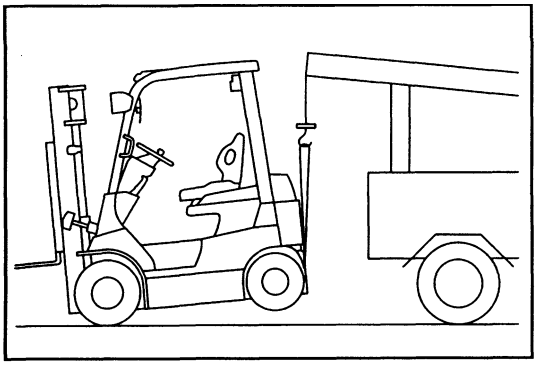
Always hoist each part of the vehicle at the specified position. Never hoist at any other position because it is very dangerous.

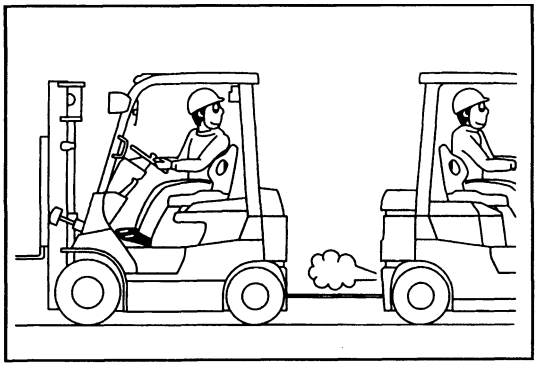


When hoisting the vehicle, sling with a fiber or wire rope at the mast hook hole and the rear end of the head guard.



Slinging the head guard can be done in two illustrated ways.
Case A:
Remove the head guard sheet.
case B:
If the fiber or wire rope comes into contact with a rear combination lamp, remove the lamp ASSY.





CAUTION FOR TOWING

1. When towing the forklift, always lift the rear wheels away from the ground.

2. The traveling speed in towing must not exceed the maximum traveling speed of the forklift.

3. Always set the key switch to OFF and the direction switch to the neutral position before starting towing. In case of towing by connection with a wire rope with the operator on the forklift, however, set the key switch to ON (PS operation) and always set the direction switch to the neutral position.

4. Before towing, either remove the fork or take an action to prevent fork contact with the ground due to bounding.

ATTENTIVE POINTS ON SAS

1. Read Section 18 SAS "Precautions for Repair" on Page 18-9 in this repair manual in advance.

2. Whenever the repair or replacement is performed to the place where relative to SAS function, re-setting procedure by which the SAS regain proper function must be performed. (See Page 18-19)

3. The warning on the SAS caution label must be confirmed when the modification or change is such as to change the original specification.
If improper, change the label. (See Page 18-10-1)

4. Care should always be exercised for safety operation whenever you operate the truck.
Make distinction between the SAS featured trucks and those of none, because the control features are different.

5. The SAS oil control valves comprise many precision valves. Since dirty or contaminated hydraulic oil will adversely affect the functions of these valves, always wash the parts clean at the time of installation after disassembly or for replacement of hydraulic parts (valves, piping, etc.). Periodic replacement of the hydraulic oil is very important.

6. Since this vehicle uses high-precision electronic devices, modification of electrical parts may cause faults. Always use genuine Toyota parts when replacing or installing electrical parts (auxiliary equipment, optional parts, etc.).

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