

FOREWORD

This manual covers the service procedures of the TOYOTA FORKLIFT 7FGU/7FDU35 ~ 80 series and 7FGCU35 ~ 70 series. Please use this manual for providing quick, correct servicing of the corresponding forklift models.

This manual deals with the above models as of December 2000. 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.

For the service procedures of the mounted engine, read the repair manuals listed below as reference together with this manual.

(Reference)

Repair manuals related to this manual are as follows:

TOYOTA GM6-262 ENGINE
REPAIR MANUAL (No. C4630)

TOYOTA GM6-262 ENGINE
REPAIR MANUAL Supplement (No. CU668)

TOYOTA 11Z, 12Z, 13Z, 14Z ENGINE
REPAIR MANUAL (No. C4615-2)

TOYOTA 15Z ENGINE
REPAIR MANUAL (No. CE673)

Three Way Catalytic System
REPAIR MANUAL (No. CU643-2)

LPG DEVICE (for GM6-262 engine)
REPAIR MANUAL (No. CU667)

TOYOTA INDUSTRIAL EQUIPMENT 7FGU/7FDU35-80 OPS
REPAIR MANUAL (No. CU041)

TOYOTA INDUSTRIAL EQUIPMENT
PARTS & SERVICE NEWS (No. GE-7008)

TOYOTA Material Handling Company

A Division of TOYOTA INDUSTRIES CORPORATION

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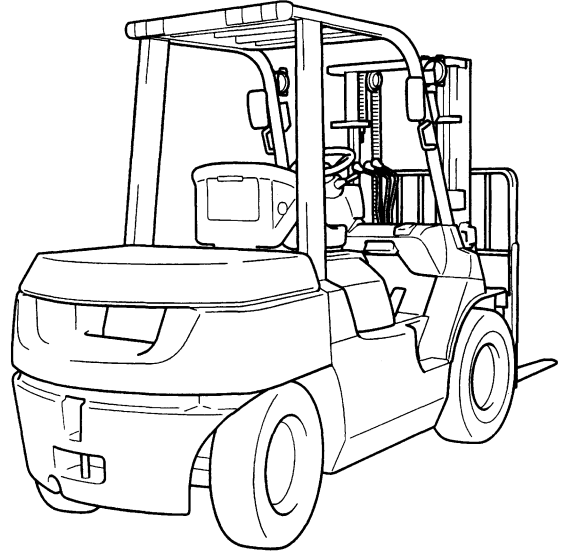
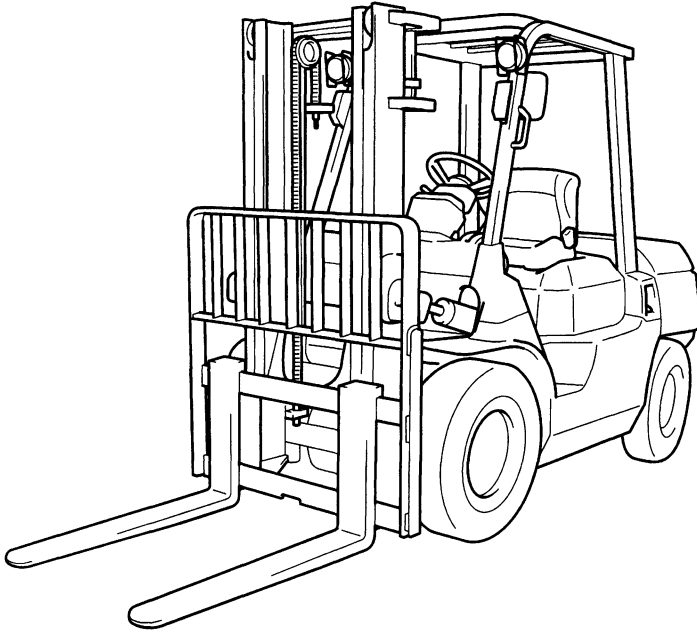
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GENERAL

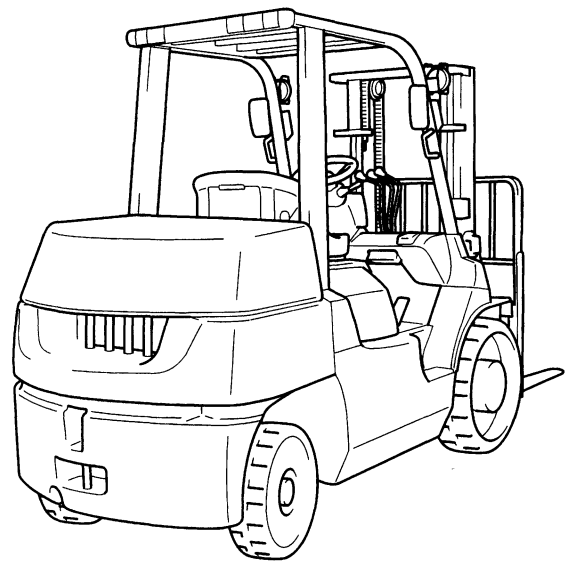
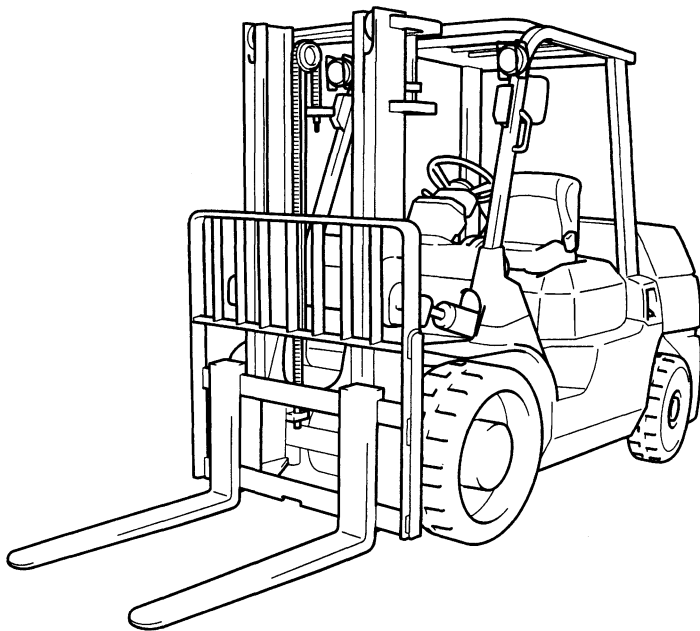
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EXTERIOR VIEWS

Pneumatic tire model



Cushion tire model



VEHICLE MODEL (~ 2007.12)

Pneumatic Tire Models (Pn)

Classification		Load Capacity	Vehicle Model	Transmission Type	Engine	
Series	Model					
Pn3.5 ton series	Pn35	8000 lbs	7FGU35	T/C	G4 (GM6-262)	Gasoline
			7FDU35	T/C	13Z	Diesel
	Pn40	9000 lbs	7FGKU40	T/C	G4 (GM6-262)	Gasoline
			7FDKU40	T/C	13Z	Diesel
Pn4.5 ton series	Pn45	10000 lbs	7FGU45	T/C	G4 (GM6-262)	Gasoline
			7FDU45	T/C	13Z	Diesel
	Pn50	11000 lbs	7FGAU50	T/C	G4 (GM6-262)	Gasoline
			7FDAU50	T/C	13Z	Diesel
Pn6.0 ton series	Pn60	13500 lbs	7FGU60	T/C	G4 (GM6-262)	Gasoline
			7FDU60	T/C	13Z	Diesel
	Pn70	15500 lbs	7FGU70	T/C	G4 (GM6-262)	Gasoline
			7FDU70	T/C	13Z	Diesel
	Pn80	17500 lbs	7FGU80	T/C	G4 (GM6-262)	Gasoline
			7FDU80	T/C	13Z	Diesel

Cushion Tire Models (Cu)

Classification		Load Capacity	Vehicle Model	Transmission Type	Engine	
Series	Model					
Cu3.5 ton series	Cu35	8000 lbs	7FGCU35	T/C	G4 (GM6-262)	Gasoline
	Cu45	10000 lbs	7FGCU45	T/C	G4 (GM6-262)	Gasoline
Cu5.5 ton series	Cu55	12000 lbs	7FGCU55	T/C	G4 (GM6-262)	Gasoline
	Cu60	13500 lbs	7FGCU60	T/C	G4 (GM6-262)	Gasoline
	Cu70	15500 lbs	7FGCU70	T/C	G4 (GM6-262)	Gasoline

Note:

The G4 engine is the same as the GM6-262 engine except for the nomenclature.

VEHICLE MODEL (2008.1 ~)

Pneumatic Tire Models (Pn)

Classification		Load Capacity	Vehicle Model	Transmission Type	Engine	
Series	Model					
Pn3.5 ton series	Pn35	8000 lbs	7FGU35	T/C	G4 (GM6-262)	Gasoline
			7FDU35	T/C	15Z	Diesel
	Pn40	9000 lbs	7FGKU40	T/C	G4 (GM6-262)	Gasoline
			7FDKU40	T/C	15Z	Diesel
Pn4.5 ton series	Pn45	10000 lbs	7FGU45	T/C	G4 (GM6-262)	Gasoline
			7FDU45	T/C	15Z	Diesel
	Pn50	11000 lbs	7FGAU50	T/C	G4 (GM6-262)	Gasoline
			7FDAU50	T/C	15Z	Diesel
Pn6.0 ton series	Pn60	13500 lbs	7FGU60	T/C	G4 (GM6-262)	Gasoline
			7FDU60	T/C	15Z	Diesel
	Pn70	15500 lbs	7FGU70	T/C	G4 (GM6-262)	Gasoline
			7FDU70	T/C	15Z	Diesel
	Pn80	17500 lbs	7FGU80	T/C	G4 (GM6-262)	Gasoline
			7FDU80	T/C	15Z	Diesel

Cushion Tire Models (Cu)

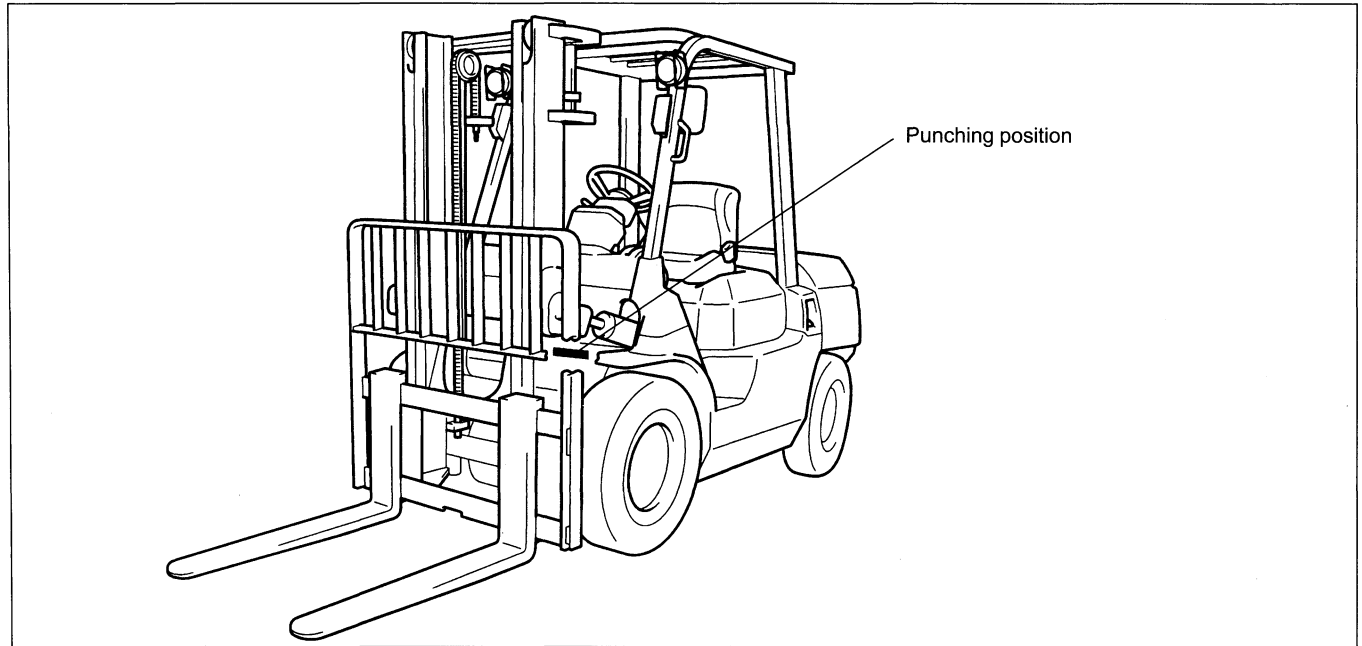
Classification		Load Capacity	Vehicle Model	Transmission Type	Engine	
Series	Model					
Cu3.5 ton series	Cu35	8000 lbs	7FGCU35	T/C	G4 (GM6-262)	Gasoline
	Cu45	10000 lbs	7FGCU45	T/C	G4 (GM6-262)	Gasoline
Cu5.5 ton series	Cu55	12000 lbs	7FGCU55	T/C	G4 (GM6-262)	Gasoline
	Cu60	13500 lbs	7FGCU60	T/C	G4 (GM6-262)	Gasoline
	Cu70	15500 lbs	7FGCU70	T/C	G4 (GM6-262)	Gasoline

Note:

The G4 engine is the same as the GM6-262 engine except for the nomenclature.

FRAME NUMBER (~ 2007.12)

Frame No. Punching Position



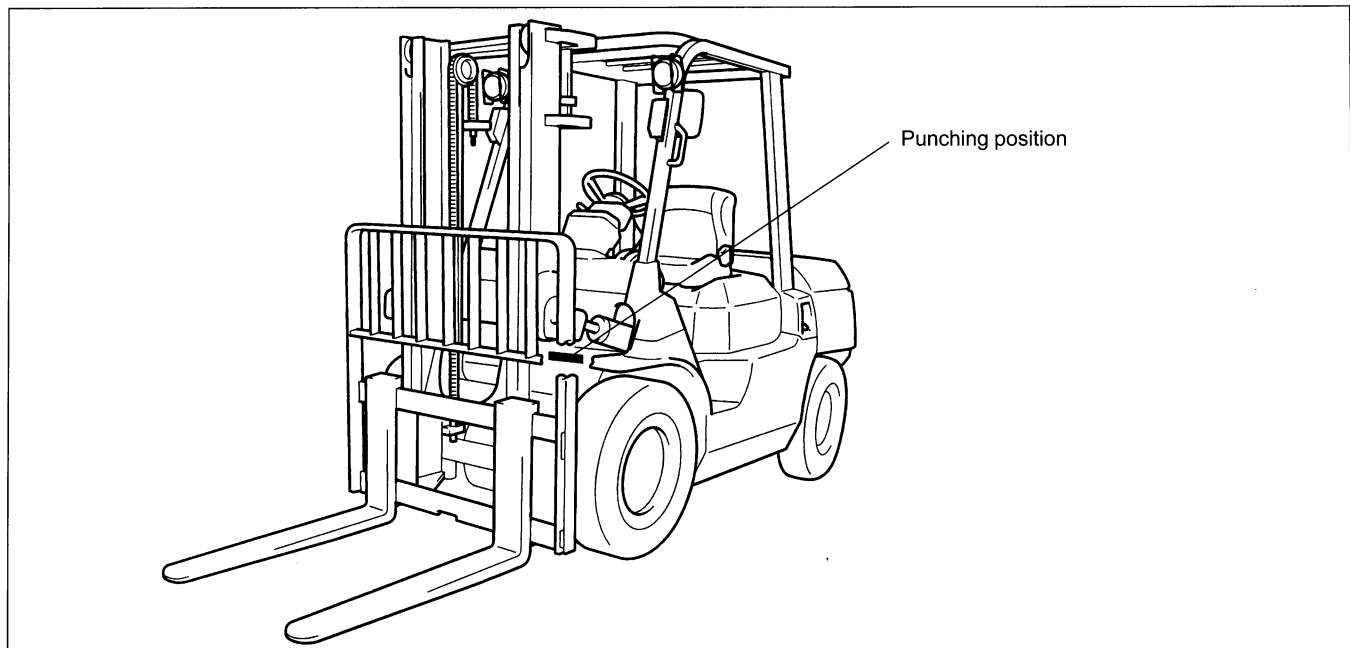
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	Series	Engine	Vehicle model	Punching format
Pneumatic tire	3.5 ton series	G4 (GM6-262)	7FGU35	7FGKU40 - 60011
			7FGKU40	
		13Z	7FDU35	7FDKU40 - 60011
			7FDKU40	
	4.5 ton series	G4 (GM6-262)	7FGU45	7FGAU50 - 60011
			7FGAU50	
		13Z	7FDU45	7FDAU50 - 60011
			7FDAU50	
	6.0 ton series	G4 (GM6-262)	7FGU60	7FGU80 - 60011
			7FGU70	
7FGU80				
13Z		7FDU60	7FDU80 - 60011	
		7FDU70		
		7FDU80		
Cushion tire	3.5 ton series	G4 (GM6-262)	7FGCU35	7FGCU45 - 60011 * 7FGCU45 © 60011
			7FGCU45	
	5.5 ton series	G4 (GM6-262)	7FGCU55	7FGCU70 - 60011
			7FGCU60	
			7FGCU70	

*: EEC spec.

FRAME NUMBER (2008.1 ~)

Frame No. Punching Position



	Series	Engine	Vehicle model	Punching format
Pneumatic tire	3.5 ton series	G4 (GM6-262)	7FGU35	7FGKU40 - 70011
			7FGKU40	
		15Z	7FDU35	A7FDKU40 - 70011
			7FDKU40	
	4.5 ton series	G4 (GM6-262)	7FGU45	7FGAU50 - 70011
			7FGAU50	
		15Z	7FDU45	A7FDAU50 - 70011
			7FDAU50	
	6.0 ton series	G4 (GM6-262)	7FGU60	7FGU80 - 70011
			7FGU70	
			7FGU80	
		15Z	7FDU60	A7FDU80 - 70011
7FDU70				
7FDU80				
Cushion tire	3.5 ton series	G4 (GM6-262)	7FGCU35	7FGCU45 - 70011 * 7FGCU45 © 70011
			7FGCU45	
	5.5 ton series	G4 (GM6-262)	7FGCU55	7FGCU70 - 70011 * 7FGCU70 © 70011
			7FGCU60	
			7FGCU70	
			7FGCU70	

*: EEC spec.

HOW TO USE THIS MANUAL

EXPLANATION METHOD

1. Operation procedure

(1) The operation procedure is described in either pattern A or pattern B below.

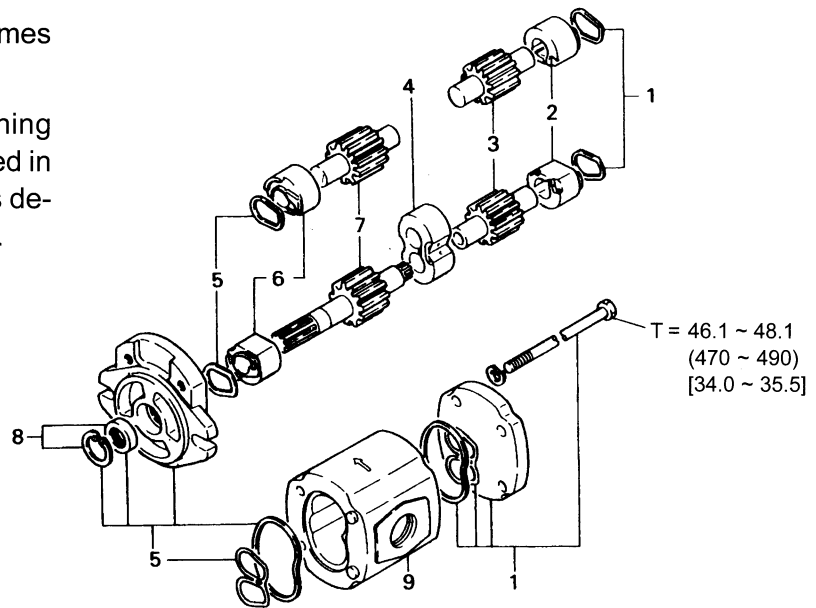
Pattern A: Explanation of each operation step with illustration.

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.
- When a part requiring tightening torque instruction is not indicated in the illustration, the part name is described in the illustration frame.



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]

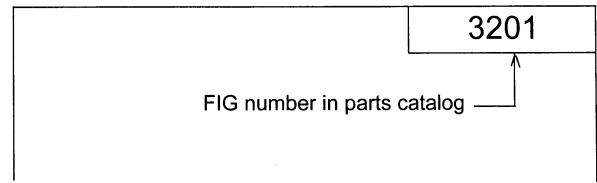
Inspection: Measure the bushing inside diameter.

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 hazards on human body. Be sure to observe them.

Note:

Important items of which negligence may cause breakage or breakdown, 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	SAE	Society of Automotive Engineers (USA)
Cu	Cushion tire models	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
NMR	No-load maximum speed	T/C	Torque converter & transmission
OPT	Option	○ ○ T	Number of teeth (○ ○)
O/S	Oversize	U/S	Undersize
Pn	Pneumatic tire models	W/	With
PS	Power steering	L/	Less
RH	Right hand		

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 terminal 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, packings 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.

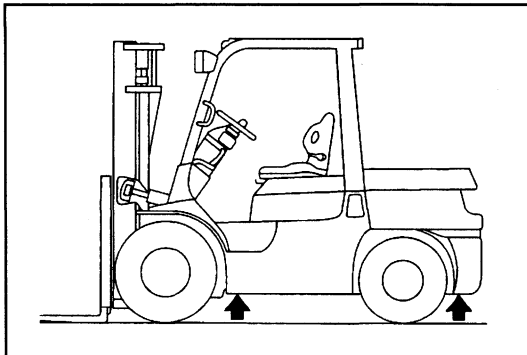
3. Grasping the trouble state

When a trouble occurs, do not attempt immediate disassembly or replacement but first check if the trouble requires disassembly or replacement for remedying.

4. Disposal of waste fluid, etc.

When draining waste fluid from the vehicle, receive it in a container.

If any oil, fuel, coolant, oil filter, battery or other harmful substance is directly discharged or scrapped without permission, it will either adversely affect human health or destroy the environment. Always sort waste fluids, etc. and treat them properly by requesting disposal by specialized companies.



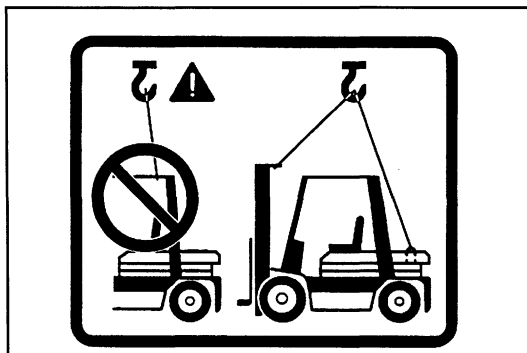
5. Jack up points

Front side:

Jack up at the bottom surface of the frame.

Rear side:

Jack up at the under the counterweight.



HOISTING THE VEHICLE

When hoisting the vehicle, sling with wire rope(s) at the mast hook holes and the counterweight hook holes.

ATTENTIVE POINTS ON SAS

1. Reference should be made to separate manual "New Model Feature 7FG(C)U/7FDU35-80 Pub. No.PU017" for the explanations of SAS functions and operations.
2. Read Section 15 SAS "Precautions for Repair" on Page 15-8 in this repair manual in advance.
3. 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 15-23)
4. 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 15-11)
5. 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.
6. 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.
7. 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.).

CIRCUIT TESTER

Circuit testers are available in both the analog and digital types. They should be used selectively according to the purpose of measurement.

Analog type: This type is convenient for observing movement during operation, but the measured value should only be used for reference or rough judgement.

Digital type: Fairly accurate reading is possible, but it is difficult to observe the variation or movement.

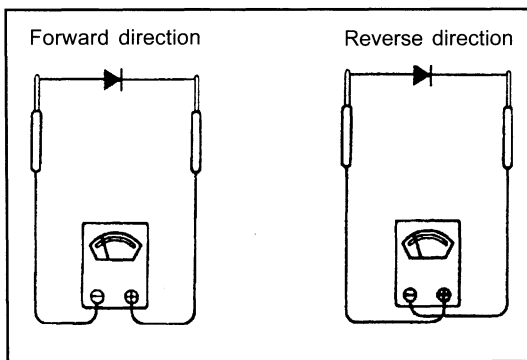
1. Difference in measurement results with the digital type and analog type

- * The result may be different between measurements with the analog type and digital type.

Always use a circuit tester according to its operation manual.

Cautions when the polarities are different between the analog type and digital type are described below.

(1) Analog circuit tester

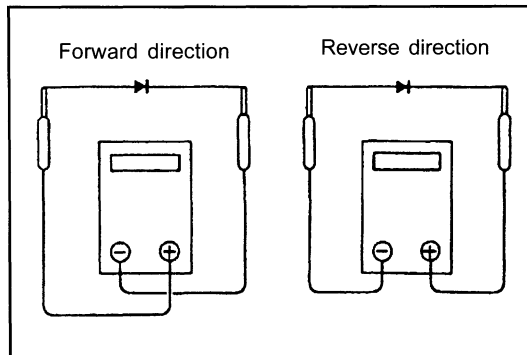


Measurement result example

Tester range: $k\Omega$ range

	Analog type
Forward	Continuity exists
	11 $k\Omega$
Reverse	No continuity
	∞

(2) Digital circuit tester



Measurement result example

Tester range: $M\Omega$ range

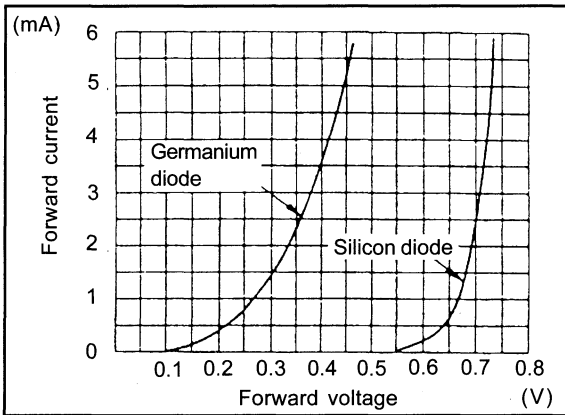
	Digital type
Forward	No continuity
	1
Reverse	Continuity exists
	2 $M\Omega$

2. Difference in result of measurement with circuit tester

The circuit tester power supply voltage depends on the tester type. 1.5 V, 3.0 V or 6.0 V is used.

The resistance of a semiconductor such as a diode varies with the circuit tester power supply voltage.

The diode characteristics are shown in the figure below.

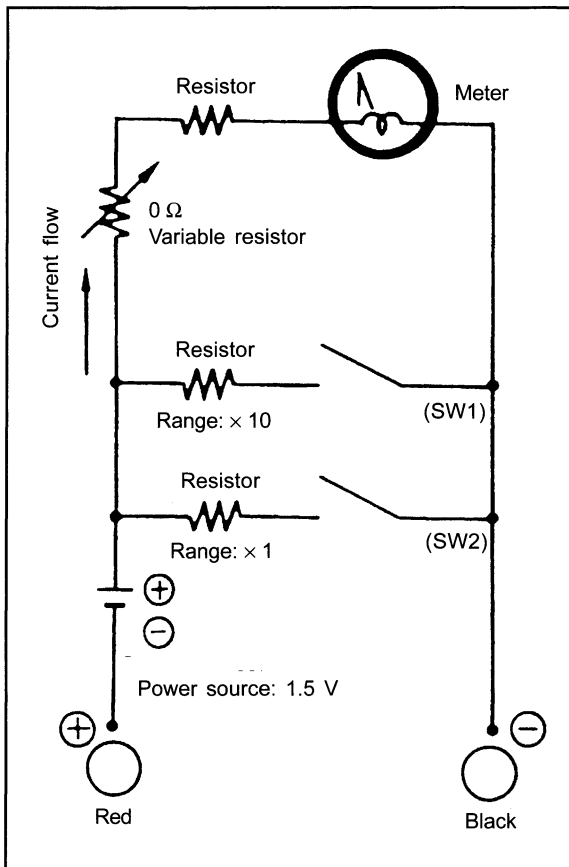


The resistance values of the same semiconductor measured with two types of circuit testers having different power supply voltages are different.

This manual describes the results of measurement with a circuit tester whose power supply voltage is 3.0 V.

3. Difference in measurement result by measurement range (analog type)

In the analog type circuit tester, changing the measurement range switches over the internal circuit to vary the circuit resistance. Even when the same diode is measured, the measurement result varies with the measurement range.



Always use the range described in the repair manual for measurement.








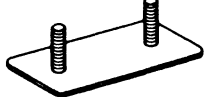


STANDARD BOLT & NUT TIGHTENING TORQUE

Standard bolt and tightening torques are not indicated.
 Judge the standard tightening torque as shown below.

1. Find out the type of the bolt from the list below and then find the bolt tightening torque from the table.
2. The nut tightening torque can be judged from the mating bolt type.

BOLT STRENGTH TYPE IDENTIFICATION METHOD

IDENTIFICATION BY BOLT SHAPE

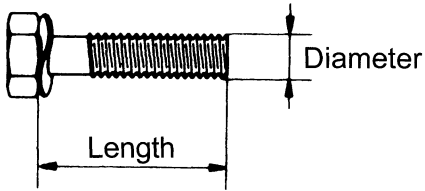
	Shape and class	Class
Hexagon head bolt	 Bolt head No.	4 = 4T 5 = 5T 6 = 6T 7 = 7T 8 = 8T
	 No mark	4T
Hexagon flange bolt	 No mark	4T
Hexagon head bolt	 Two protruding lines	5T
Hexagon flange bolt	 Two protruding lines	6T
Hexagon head bolt	 Three protruding lines	7T
Hexagon head bolt	 Four protruding lines	8T
Welded bolt		4T
Stud bolt	 No mark	4T
	 Grooved	6T

IDENTIFICATION BY PART NO.

Hexagon head bolt

Parts No.
91611-40625

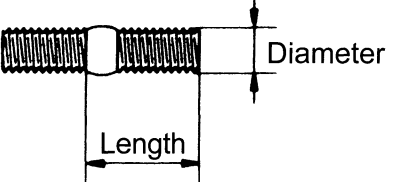
Length (mm)
Diameter (mm)
Class





Stud bolt

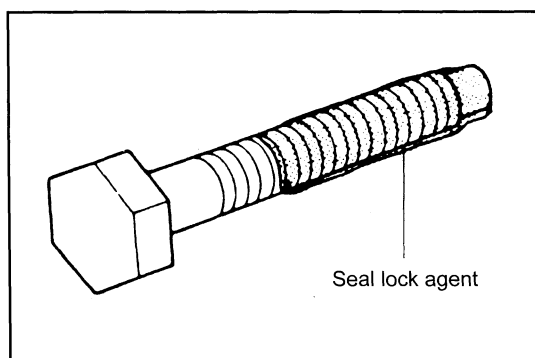
Part No.
92132-40614

Length (mm)
Diameter (mm)
Class



TIGHTENING TORQUE TABLE

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	1.0	5.4	55	48 in-lbf	5.9	60	52 in-lbf
	8	1.25	13	130	9	14	145	10
	10	1.25	25	260	19	28	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	75	760	55	83	850	61
	16	1.5	113	1150	83	—	—	—
5T	6	1.0	6.4	65	56 in-lbf	7.5	75	65 in-lbf
	8	1.25	16	160	12	18	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	1050	76
	16	1.5	137	1400	101	157	1600	116
6T	6	1.0	7.8	80	69 in-lbf	8.8	90	78 in-lbf
	8	1.25	19	195	14	21	215	16
	10	1.25	38	400	29	43	440	32
	12	1.25	72	730	53	79	810	59
	14	1.5	110	1100	80	123	1250	90
	16	1.5	170	1750	127	191	1950	141
7T	6	1.0	11	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	103	1050	76
	14	1.5	147	1500	108	167	1700	123
	16	1.5	226	2300	166	—	—	—
8T	6	1.0	12	125	9	14	145	9
	8	1.25	29	300	22	32	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	108	1100	80	123	1250	90
	14	1.5	172	1750	127	196	2000	145
	16	1.5	265	2700	195	299	3050	221



PRECOAT BOLTS

(Bolts with seal lock agent coating on threads)

1. Do not use the precoat bolt as it is in either of the following cases:
 - (a) After it is removed.
 - (b) When the precoat bolt is moved (loosened or tightened) by tightness check, etc.

Note:

For torque check, use the lower limit of the allowable tightening torque range. If the bolt moves, re-tighten it according to the steps below.

2. Method for reuse of precoat bolts
 - (1) Wash the bolt and threaded hole. (The threaded hole must be washed even for replacement of the bolt.)
 - (2) Perfectly dry the washed parts by air blowing.
 - (3) Coat the specified seal lock agent to the threaded portion of the bolt.

HIGH PRESSURE HOSE FITTING TIGHTENING TORQUE

1. When connecting a high pressure hose, wipe the hose fitting and mating nipple contact surfaces with clean cloth to remove foreign matters and dirt. Also check no dent or other damage on the contact surfaces before installation.
2. When connecting a high pressure hose, hold the hose to align the fitting with the nipple and tighten the fitting.
3. The maximum tightening torque must not exceed twice the standard tightening torque.

Nominal diameter of screw	Standard tightening torque N·m (kgf·cm) [ft·lbf]		Hose inside diameter mm (in)
	Standard	Tightening range	
7/16 — 20UNF	25 (250) [18.1]	24 ~ 26 (240 ~ 270) [17.4 ~ 19.5]	6 (0.24)
9/16 — 18UNF	49 (500) [36.2]	47 ~ 52 (480 ~ 530) [34.7 ~ 38.3]	9 (0.35)
3/4 — 16UNF	59 (600) [43.4]	56 ~ 62 (570 ~ 630) [41.2 ~ 45.6]	12 (0.47)
7/8 — 14UNF	59 (600) [43.4]	56 ~ 62 (570 ~ 630) [41.2 ~ 45.6]	12 (0.47), 15 (0.59)
1-1/16 — 12UNF	118 (1200) [86.8]	112 ~ 123 (1140 ~ 1250) [82.5 ~ 90.4]	19 (0.75)
1-5/16 — 12UNF	137 (1400) [101.3]	130 ~ 144 (1330 ~ 1470) [96.2 ~ 106.4]	25 (0.98)
PF1/4	25 (250) [18.1]	24 ~ 26 (240 ~ 270) [17.4 ~ 19.5]	6 (0.24)
PF3/8	49 (500) [36.2]	47 ~ 52 (480 ~ 530) [34.7 ~ 38.3]	9 (0.35)
PF1/2	59 (600) [43.4]	56 ~ 62 (570 ~ 630) [41.2 ~ 45.6]	12 (0.47)
PF3/4	118 (1200) [86.8]	112 ~ 123 (1140 ~ 1250) [82.5 ~ 90.4]	19 (0.75)
PF1	137 (1400) [101.3]	130 ~ 144 (1330 ~ 1470) [96.2 ~ 106.4]	25 (0.98)



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