FOREWORD

This manual covers the service procedures of the TOYOTA FORKLIFT 6FGU/6FDU15 — 30. Please use this manual for providing quick, correct servicing of the corresponding forklift models.

This manual deals with the above models as of July 1995. 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 INDUSTRIAL EQUIPMENT 4Y ENGINE
REPAIR MANUAL (No. CE602-1)

TOYOTA INDUSTRIAL EQUIPMENT GM4-181 ENGINE
REPAIR MANUAL (No. CU629)

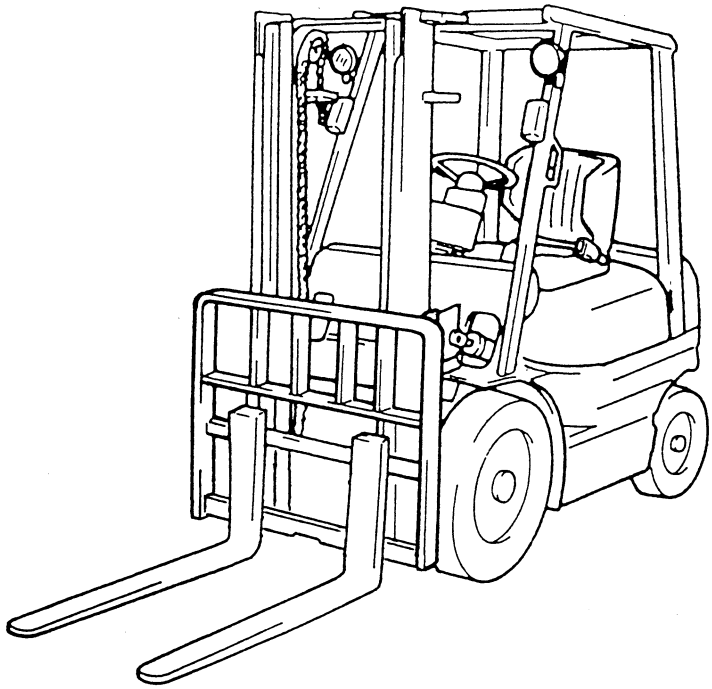
TOYOTA INDUSTRIAL EQUIPMENT 1DZ ENGINE
REPAIR MANUAL (No. CE618)

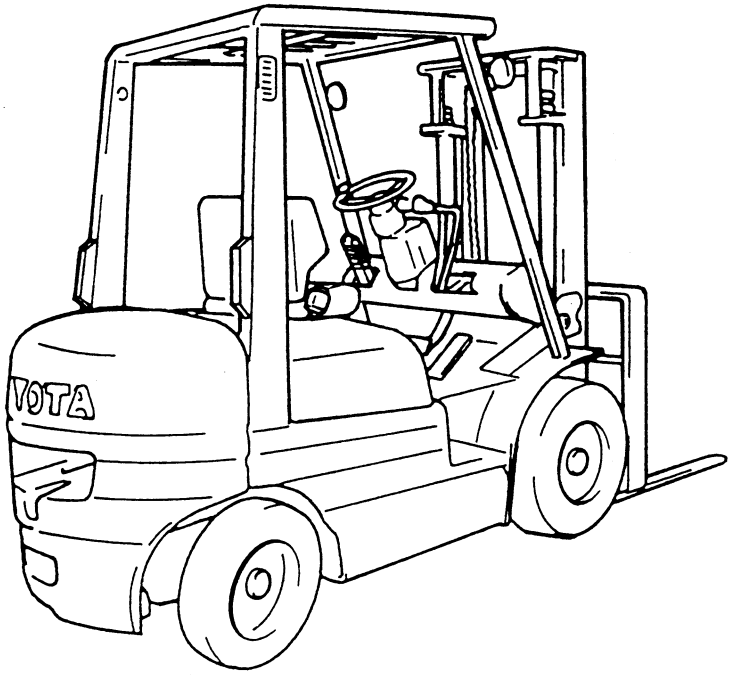
TOYOTA Material Handling Company
A Division of TOYOTA INDUSTRIES CORPORATION

SECTION INDEX

GENERAL

EXTERIOR VIEWS



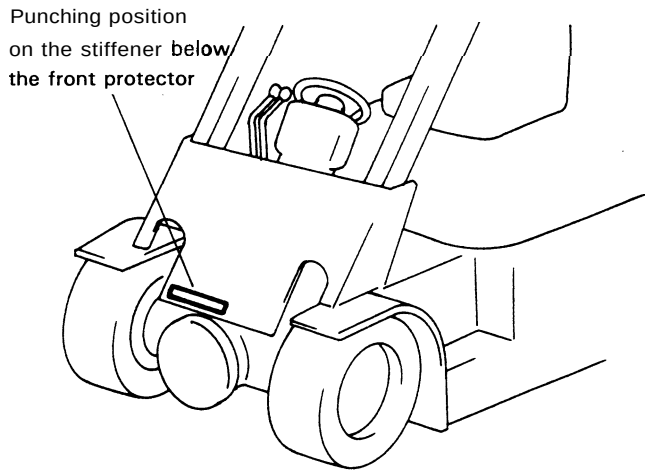


VEHICLE MODEL

Series	Load capacity	Model	Engine model	Engine type	Drive system
1 ton series	1.5 ton	42-6FGU15	4Y	Gasoline	Torque converter
		02-6FDU15	1DZ	Diesel	↑
	1.75 ton	42-6FGU18	4Y	Gasoline	↑
		02-6FDU18	1DZ	Diesel	↑
2 ton series	2.0 ton	42-6FGU20	4Y	Gasoline	↑
		52-6FGU20	GM	↑	↑
		62-6FDU20	1DZ	Diesel	↑
	2.5 ton	42-6FGU25	4Y	Gasoline	↑
		52-6FGU25	GM	↑	↑
		62-6FDU25	1DZ	Diesel	↑
3 ton series	3.0 ton	02-6FGU30	4Y	Gasoline	↑
		52-6FGU30	GM	↑	↑
		62-6FDU30	1DZ	Diesel	↑

FRAME NUMBER

Frame No. Punching Position



	Engine	Model	Punching format
1 ton series	4Y	42-6FGU15	406FGU18-60011
		42-6FGU18	
	1DZ	02-6FDU15	6FDU18-60011
		02-6FDU18	
2 ton series	4Y	42-6FGU20	406FGU25-60011
		42-6FGU25	
	GM	52-6FGU20	506FGU25-60011
		52-6FGU25	
	1DZ	62-6FDU20	606FDU25-60011
		62-6FDU25	
3 ton series	4Y	02-6FGU30	6FGU30-60011
	GM	52-6FGU30	506FGU30-60011
	1DZ	62-6FDU30	606FDU30-60011

HOW TO READ THIS MANUAL

EXPLANATION METHOD

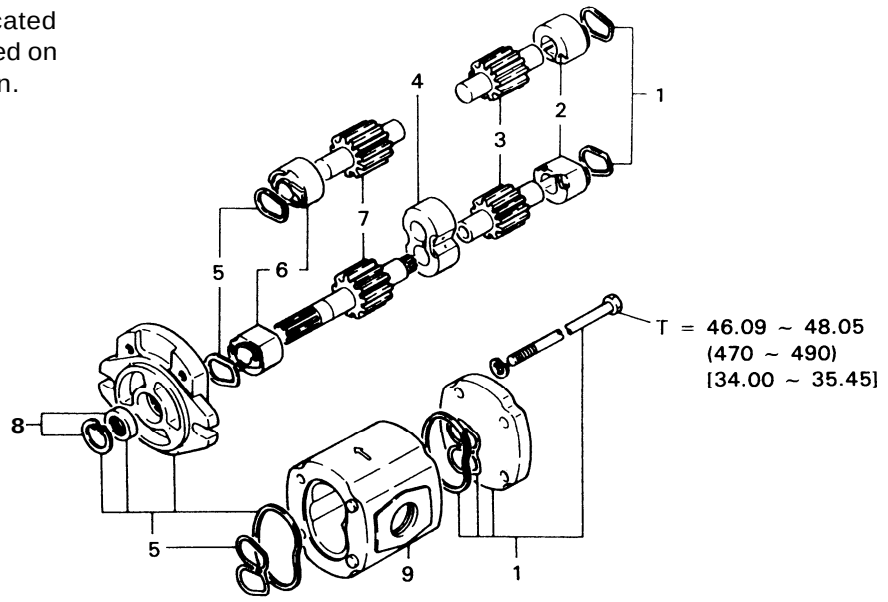
1. Operation procedure
   (1) The operation procedure is described in either pattern A or pattern B below.
   Pattern A: Explanation of each operation step with a photo or illustration.
   Pattern B: Explanation of operation procedure by indicating step numbers in one illustration, followed by ex'planation 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) [fb-lbf]

If a place or part cannot be indicated directly, the part name is described on the either side of the illustration.

Example: 1 Piping



Disassembly Procedure

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

2 Remove the bush **[Point 2]** ← Operation explained later

3 Remove the gear.

Point operations Explanation of key point for operation with an illustration

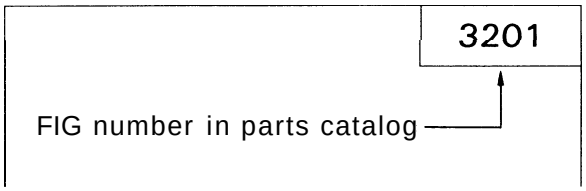
[Point 1]
Disassembly: Put a match mark when removing the pump cover.

[Point 2]
Inspection: Measure the bush inside diameter.
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 inthe 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 abserve 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	SST	Special service tool
LH	Left hand	STD	Standard
LLC	Long life coolant	T =	Tightening torque
OPT	Option	O O T	Number of teeth (○ ○)
O/S	Oversize	U/S	Undersize
PS	Power steering	W/	With
RH	Right hand	L/	Less
SAE	Society of Automotive Engineers (USA)		

OPERATIONAL TIPS

1. Safe operation
   (1) After jacking up, always support with rigid stands.
   (2) When hoisting the vehicle or its heavy component, use wire repe(s) with a sufficient reserve in load capacity.
   (3) Always disconnect the battery plugs 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. 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.

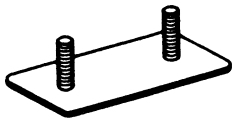
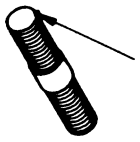
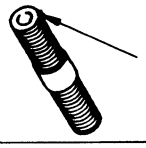
STANDARD BOLT & NUT TIGHTENING TORQUE

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.

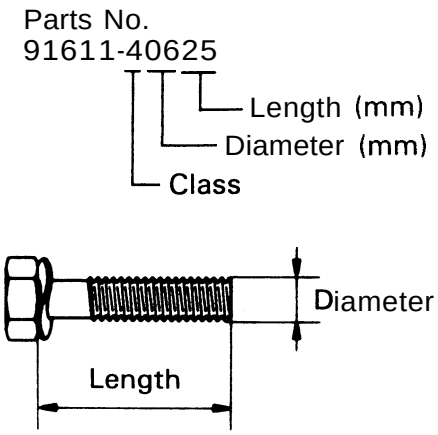
BOLT STRENGTH TYPE IDENTIFICATION METHOD

1. Indentification by bolt shape

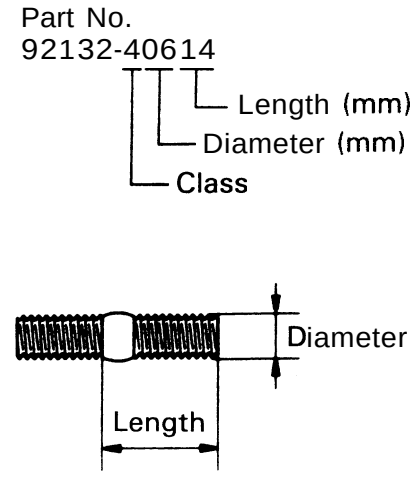
	Shape and class	Class
Hexagon head bolt	 Bolt head No.	4 = 4T 5 = 5T 6 = 6T 7 = 7T 8 = 8T
	 No mark	4T
Hexagon flange bolt	 No mark	4T
Hexagon head bolt	 Two protruding lines	5T
Hexagon flange bolt	 Two protruding lines	6T
Hexagon head bolt	 Three protruding lines	7T
Hexagon head bolt	 Four protruding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

2. Identification by part No.

Hexagon head bolt

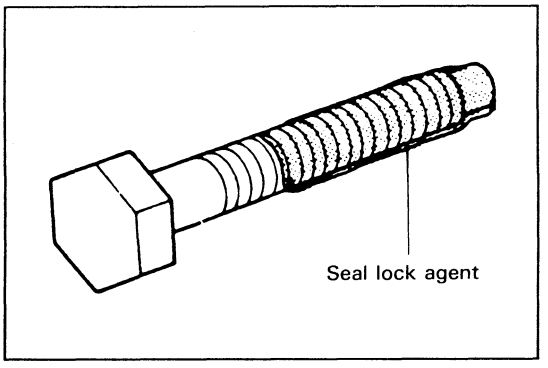


Stud bolt



TIGHTENING TORQUE TABLE

Class	Diameter rnrn	Pitch rnm	Specified torque					
			Hexagon head bolt 			Hexagon flange bolt 		
			N·m	kgf-crn	ft-lbf	N·m	kgf-crn	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	—	—	—
	8	1.25	16	160	12			
	10	1.25	32	330	24			
	12	1.25	59	600	43			
	14	1.5	91	930	67			
	16	1.5	137	1400	1101			
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	39	400	29	43	440	32
	12	1.25	72	730	53	79	810	59
	14	1.5	—	—	—	123	1250	90
7T	5	1.0	11	110	8	12	120	9
	8	1.25	25	260	19	28	290	1 2 1
	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	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1100	80	120	1250	90



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, retighten 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) Parfectly 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

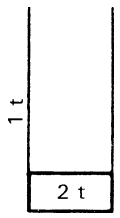
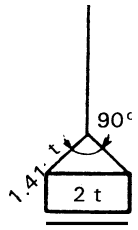
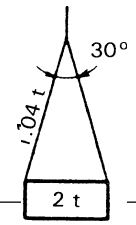
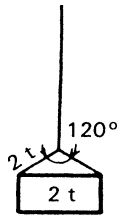
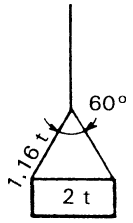
1. When connecting a high pressure hose, wipe the hose fitting and mating nipple contact surfaces with clean cloth to remove foreign matters and dirt. Also check no dent or other damage on the contact surfaces before installation.

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) [18.11	24 - 26 (240 ~ 270) [17.4 - 19.51	6 (0.24)
9/16 — 18UNF	49 (500) [36.21	47 - 52 (480 - 530) [34.7 ~ 38.31	9 (0.35)
3/4 — 16UNF	59 (600) [43.41	56 - 62 (570 - 630) [41.2 - 45.61	12 (0.47)
7/8 — 14UNF	59 (600) [43.41	56 - 62 (570 - 630) [41.2 - 45.61	12 (0.47)
7/8 — 14UNF	78 (800) [57.91	74 ~ 82 (760 - 840) [55.0 ~ 60.81	15 (0.59)
1·1/16 — 12 UNF	118 (1200) [86.81	112 - 123 (1140 ~ 1250) [82.5 ~ 90.41	19 (0.75)
1·5/16 — 12UNF	137 (1400) [101.3]	130 - 144 (1330 ~ 1470) [96.2 ~ 106.41	25 (0.98)
PF1/4	25 (250) [18.11	24 - 26 (240 - 270) [17.4 ~ 19.51	6 (0.24)
PF3/8	49 (500) [36.21	47 - 52 (480 - 530) [34.7 - 38.31	9 (0.35)
PF1/2	59 (600) [43.41	56 - 62 (570 - 630) [41.2 - 45.61	12 (0.47)
PF3/4	118 (1200) [86.81	112 ~ 123 (1140 - 1250) [82.5 ~ 90.41	19 (0.75)
PF1	137 (1400) [101.3]	130 - 144 (1330 ~ 1470) [96.2 - 106.41	25 (0.98)

WIRE ROPE SUSPENSION ANGLE LIST

Lifting angle	Tension	Compres-sion	Suspension method	Lifting angel	Tension	Compres-sion	Suspension method
0°	1.00 time	0 time		90°	1.41 time	1.00 time	
30°	1.04 time	0.27 time		120°	2.00 time	1.73 time	
60°	1.16 time	0.58 time					

SAFE LOAD FOR EACH WIRE ROPE SUSPENSION ANGLE unit: N (ton) [lbf]

Rope diameter	Cutting load	Single-rope suspension	Two-rope suspension				Four-rope suspension			
		0°	0°	30°	60°	90°	0°	30°	60°	90°
6 mm (0.24 in)	21380 (2.18) [4807]	3040 (0.31) [683.6]	6080 (0.62) [13671	5880 (0.6) [13231	5200 (0.53) [1169]	4310 (0.44) [970]	12160 (1.24) [2734]	11770 (1.2) [2646]	10400 (1.06) [2337]	8630 (0.88) [1940]
8 mm (0.32 in)	31480 (3.21) [7078]	4410 (0.45) [992.3]	8830 (0.9) [1985]	8530 (0.87) [1918]	7650 (0.78) [1720]	6280 (0.64) [1411]	17650 (1.8) [3969]	17060 (1.74) [3937]	15300 (1.56) [3440]	12550 (1.28) [2322]
10 mm (0.4 in)	49230 (5.02) [11.691	6960 (0.71) [1565.61	14020 (1.43) [3153]	13440 (1.37) [3021	11770 (1.2) [2646]	9810 (1.0) [2205]	27460 (2.8) [6174]	26480 (2.7) [5954]	23540 (2.4) [5292]	19610 (2.0) [4410]
12.5 mm (0.5 in)	76880 (7.84) [17387]	10980 (1.12) [2469.5]	21570 (2.2) [4851]	21280 (2.1) [4631]	18630 (1.9) [4190]	14710 (1.5) [3308]	43150 (4.4) [9702]	41190 (4.2) [9261]	37270 (3.8) [8379]	29420 (3.0) [6615]
14 mm (0.56 in)	96400 (9.83) [21675]	13730 (1.4) [3087]	27460 (2.8) [6174]	26480 (2.7) [5954]	23540 (2.4) [5292]	18630 (1.9) [4190]	54920 (5.6) [123481	52960 (5.4) [119071	47070 (4.8) [10584]	37270 (3.8) 183791

OM ENTS WEIGHT

Unit: kg (lb)

Component		Weight (mass)
Engine	4Y	134 (295)
	GM	150 (331)
	1DZ	176 (388)
Torque converter	For 1 speed	128 (282)
	For 2 speeds	163 (359)
Balance weight	1.5 ton model	Approx. 785 (1731)
	1.75 ton model	Approx. 925 (2040)
	2.0 ton model	Approx. 1160 (2558)
	2.5 ton model	Approx. 1470 (3241)
	3.0 ton model	Approx. 1880 (4145)
V mast ASSY W/lift bracket (with lift cylinder, without fork, max. lifting height: 3000 mm (118 in))	1 ton series	Approx. 410 (904)
	2 ton series	Approx. 510 (1125)
	3 ton series	Approx. 590 (1301)
V mast ASSY L/lift bracket and fork (with lift cylinder max. lifting height: 3000 mm (118 in))	1 ton series	Approx. 340 (750)
	2 ton series	Approx. 415 (915)
	3 ton series	Approx. 465 (1025)

RECOMMENDED LUBRICANT QUANTITY & TYPES

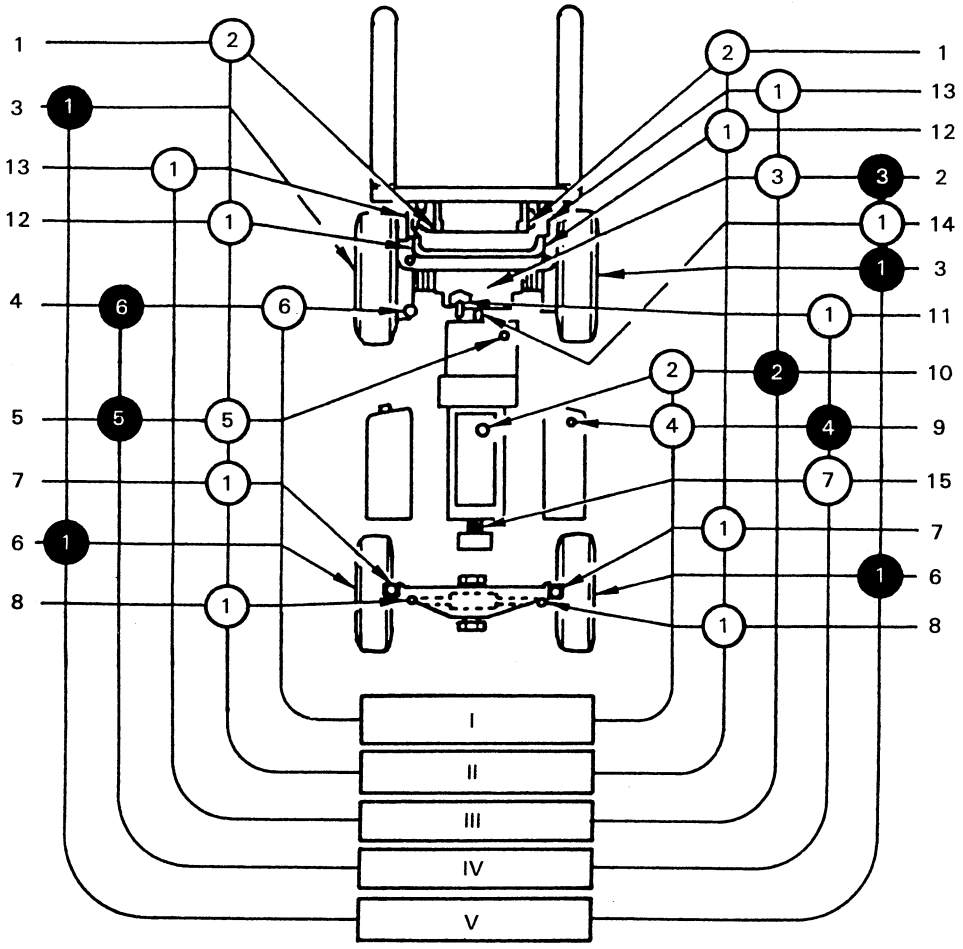
Description		Classification	Type	Application	Quantity
Engine	Gasoline	API SD, SE	Motor oil SAE30 (SAE20 in cold area) SAE20W-40 (SAE1OW-30 in cold area)	4Y	4.0 ℓ (1.06 US gal)
				GM	3.8 ℓ (1.00 US gal)
	Diesel	API CC, CD or better	Diesel engine oil SAE30 (SAE20 in cold area) SAE1OW-30	1DZ	7.9 ℓ (2.09 US gal)
Torque converter		ATF	GM Dexron® II	1-speed	11.5 ℓ (3.04 US gal)
				2-speed	14.0 ℓ (3.70 US gal)
Differential		API GL-4 GL-5	Hypoid gear oil SAE85W-90	1 ton series	5.4 ℓ (1.43 US gal)
				2 ton series	6.4 ℓ (1.69 US gal)
				3 ton series	9.0 ℓ (2.38 US gal)
Hydraulic oil [Max. for height = 3000 mm (118 in)]		ISO VG32	Hydraulic oil	1 ton series	27 ℓ (7.1 US gal)
				2 ton series	34 ℓ (9.0 US gal)
				3 ton series	37 ℓ (9.8 US gal)
Fuel tank				1 ton series	45 ℓ (11.9 US gal)
				2 ton series	65 ℓ (17.2 US gal)
				3 ton series	65 ℓ (17.2 US gal)
Brake line			SAE J-1703 DOT-3	All models	Proper quantity Reservoir Tank 0.2 ℓ (0.05 US gal)
Chassis parts			See page 0-14	All models	Proper quantity
Coolant (excluding reservoir tank)		LLC	• LLC 30-50% mixture (for winter or all-season) • Cooland with rust-inhibitor (for spring, summer and autumn)	Attached Table 1 Coolant volume	
Coolant (Reservoir Tank)		↑	↑	All models	1.1 ℓ (0.29 US gal) (at Full level)

Attached Table 1 Coolant volume

Unit: ℓ (US gal)

Engine	1 ton series	2 ton series	3 ton series
4Y	9.6 (2.53)	9.3 (2.46)	9.6 (2.53)
GM		8.8 (2.32)	←
1DZ	8.1 (2.14)	8.3 (2.19)	←

LUBRICATION CHART



○ Inspection
● Replacement
① MP grease
② Engine oil
③ Hypoid gear oil
④ Hydraulic oil
⑤ Automatic transmission fluid
⑥ Brake flluid
⑦ Molykote G-n paste

I. Inspect every 8 hours (daily)
II. Inspect every 40 hours (weekly)
III. Inspect every 170 hours (monthly)
IV. Inspect every 1000 hours (6 monthly)
V. Inspect every 2000 hours (annually)

1 Chain
2 Differential gear
3 Front wheel bearing
4 Brake master cylinder
5 Torque converter case
6 Rear wheel bearing
7 Steering knuckle king pin
8 Power steering cylinder pin
9 Oil tank
10 Engine crankshaft
11 Tilt steering locking mechanism
12 Mast support bushing
13 Tilt cylinder front pin
14 Propeller shaft
15 Oil pump spline shaft (GM engine model)

PERIODIC MAINTENANCE

INSPECTION METHOD

I : Inspection. Repair or replacement if required.
M : Measurement. Repair or adjustment if required.
T : Retightening C : Cleaning L : Lubrication
* : For new vehicle *1 : Flaw detector

Item \ Inspection Period		Every 1 month / Every 170 hours	Every 3 months / Every 500 hours	Every 6 months / Every 1000 hours	Every 12 months / Every 2000 hours
ENGINE					
Main body	Proper starting and abnormal noise	I	←	←	←
	Rotating condition at idling	M	←	←	←
	Rotating condition during acceleration	M	←	←	←
	Exhaust gas condition	I	←	←	←
	Air cleaner element	C	←	←	←
	Valve clearance				M
	Compression				M
	Cylinder head bolt loosening				T
	Muffler rubber mount				I
PCV system	Cologging and damage in PCV valve and piping	I	←	←	←
Governor	No-lead maximum rpm	M	←	←	←
Lubrication system	Oil leak	I	←	←	←
	Oil level	I	←	←	←
	Clogging and dirt of oil filter	I	←	←	←
Fuel system	Fuel leak	I	←	←	←
	Operation of carburetor link mechanism	I	←	←	←
	Dirt and clogging of fuel filter and element	I	←	←	←
	Injection timing			M	←
	Injection nozzle injection pressure and spray status				M
	Draining of sedimenter			I	←
Cooling system	Coolant level in radiator and leak	I	←	←	←
	Rubber hose degradation	I	←	←	←
	Radiator cap condition	I	←	←	←
	Fan belt tension, looseness and damage	I	←	←	←
	Radiator rubber mount				I

Item \ Inspection Period		Every 1 month / Every 170 hours	Every 3 months / Every 500 hours	Every 6 months / Every 1000 hours	Every 12 months / Every 2000 hours
POWER TRANSMISSION SYSTEM					
Differential	Leak	I	←	←	←
	Oil level	I	←	←	←
	Bolt loosening				T
Torque converter and transmission	Leak	I	←	←	←
	Fluid level	I	←	←	←
	Operating mechanism function and looseness	I	←	←	←
	Control valve and clutch functions	I	←	←	←
	Inching valve function	I	←	←	←
	Stall and hydraulic pressure measurement			M	←
Propeller shaft and axle shaft	Loose joint		T	←	±
	Looseness of universal joint				I
	Twisting and cracks of axle shaft				I
DRIVE SYSTEM					
Wheels	Tire inflation pressure	M	←	←	←
	Tire cuts, damage and uneven wearing	I	←	←	←
	Loose rim and hub nuts	T	←	←	←
	Tire groove depth	M	←	←	←
	Metal chips, pebbles and other foreign matter trapped in tire grooves	I	←	←	←
	Rim, side ring and disc wheel damage	I	←	←	←
	Abnormal sound and looseness of front wheel bearing	I	←	←	←
	Abnormal sound and looseness of rear wheel bearing	I	←	←	←
Front axle	Crack, damage and deformation of houseing				I
Rear axle	Cracks, damage and deformation of beem				I

Item \ Inspection Period		Every 1 month / Every 170 hours	Every 3 months / Every 500 hours	Every 6 months / Every 1000 hours	Every 12 months / Every 2000 hours
STEERING SYSTEM					
Steering wheel	Play and looseness	I	←	←	←
	Function	I	←	←	←
Steering valve	Oii leak	I	←	←	←
	Looseness of mounting	T	←	←	←
Power Steering	Oil leak	I	←	←	←
	Mounting and linkage looseness	I	←	←	←
	Damage of power steering hose				I
Knuckle	King pin looseness	I	←	←	←
	Cracks and deformation				I
BRAKING SYSTEM					
Brake pedal	Play and reserve	M	←	←	←
	Braking effect	I	←	←	←
Parking brake	Operating force	I	←	←	←
	Braking effect	I	←	←	←
	Rod and cable looseness and damage	I	←	←	←
Brake pipe	Leak, damage and mounting condition	I	←	←	←
Reservoir tank	Leak and fluid level	I	←	←	←
Master cylinder and wheel cylinder	Function, wear, damage, leak and mounting looseness				I
Brake drum and brake shoe	Clearance between drum and lining	M	←	←	←
	Wear of shoe sliding portion and lining				I
	Drum wear and damage				I
	Shoe operating condition				I
	Anchor pin rusting				I
	Return spring fatigue				M
	Automatic adjuster function				I
Backing plate	Deformation, cracks and damage				I
	Loose mounting				T
MATERIAL HANDLING SYSTEM					
Forks	Abnormality of fork and stopper pin	I	←	←	←
	Misalignment between left and right fork fingers	I	←	←	←
	Cracks at fork root and welded part				I*1

Item \ Inspection Period		Every 1 month	Every 3 months	Every 6 months	Every 12 months
		Every 170 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Mast and lift bracket	Deformation and damage of each part and crack at welded part	I	←	←	←
	Mast and lift bracket looseness	I	←	←	←
	Wear and damage of mast support bush				I
	Wear, damage and rotating condition of rollers	I	←	←	←
	Wear and damage of roller pins				I
	Wear and damage of mast strip	I	←	←	←
Chain and chain wheel	Tension, deformation and damage of chain	I	←	←	←
	Chain lubrication	I	←	←	←
	Abnormality of chain anchor bolt	I	←	←	←
	Wear, damage and rotating condition of chain wheel	I	←	←	←
Various attachments	Abnormality and mounting condition of each part	I	←	←	←
HYDRAULIC SYSTEM					
Cylinder	Loosening and damage of cylinder mounting	I	←	←	←
	Deformation and damage of rod, rod screw and rod end	I	←	←	←
	Cylinder operation	I	←	←	←
	Natural drop and natural forward tilt (hydraulic drift)	M	←	←	←
	Oil leak and damage	I	←	←	←
	Wear and damage of pin and cylinder bearing	I	←	←	←
	Lifting speed	M	←	←	←
	Uneven movement	I	←	←	←
Oil pump	Oil leak and abnormal sound	I	←	←	←
Hydraulic oil tank	Oil level and contamination	I	←	←	←
	Tank and oil strainer			C	←
	Oil leak	I	←	←	←
Control lever	Loose linkage	I	←	←	←
	Operation	I	←	←	←

Item \ Inspection Period		Every 1 month	Every 3 months	Every 6 months	Every 12 months
		Every 170 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Oil control valve	Oil leak	I	←	←	←
	Relief pressure measurement				M
	Relief valve and tilt lock valve functions	I	←	←	←
Hydraulic piping	Oil leak	I	←	←	←
	Deformation and damage	I	←	←	←
	Loose joint	T	←	←	←
ELECTRICAL SYSTEM					
Ignition timing	Cracks on distributor cap	I	←	←	←
	Spark plug burning and gap	I	←	←	←
	Distributor side terminal burning	I	←	←	←
	Distributor cap center piece wear and damage	I	←	←	←
	Plug cord internal discontinuity				I
	Ignition timing			M	←
Starting motor	Pinion gear meshing status	I	←	←	←
Charger	Charging function	I	←	←	←
Battery	Battery fluid level	I	←	←	←
	Battery fluid specific gravity			M	←
Electrical wiring	Damage of wiring harness	I	←	←	←
	Fuses	I	←	←	←
Preheater	Open-circuit in glow plug			I	←
Engine stopping system	Diesel engine key stop device function	I	←	←	←
SAVETY DEVICES, ETC.					
Head guard	Cracks at welded portion	I	←	←	←
	Deformation and damage	I	←	←	←
Back-rest	Loosening of mounting	T	←	←	←
	Deformation, crack and damage	I	←	←	←
Lighting system	Function and mounting condition	I	←	←	←
Horn	Function and mounting condition	I	←	←	←

Item \ Inspection Period		Every 1 month	Every 3 months	Every 6 months	Every 12 months
		Every 170 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Direction indicator	Function and mounting condition	I	←	←	←
Instruments	Functions	I	←	←	←
Backup buzzer	Function and mounting condition	I	←	←	←
Rear-view mirror	Dirt, damage	I	←	←	←
	Rear reflection status	I	←	←	←
Seat	Loosening and damage of mounting	I	←	←	←
Seat belt	Mounting looseness	I	←	←	←
	Webbing damage	I	←	←	←
	Plate damage	I	←	←	←
	Buckle damage	I	←	←	←
Body	Damage and cracks of frame, cross members, etc.				I
	Bolt looseness				T
Others	Grease up	L	←	←	←

PERIODIC REPLACEMENT QF PARTS AND LUBRICANTS

●: Replacement

Item \ Interval	Every 1 month	Every 3 months	Every 6 months	Every 12 months
	Every 170 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Engine oil	●	←	←	←
Engine oil filter	●*1	●	←	←
Engine coolant (every 2 years for LLC)		●	←	←
Fuel filter			●	←
Torque converter oil			●	←
Torque converter oil filter			●	←
Differential oil				●
Hydraulic oil			●	←
Hydraulic oil return filter	●*1		●	←
Wheel bearing grease				●
Spark plugs			●	←
Air cleaner element				●
Cups and seals for brake master and wheel cylinders				a
Brake fluid			●	←
Power steering hoses				●*2
Power steering rubbers parts				●*2
Hydraulic hoses				●*2
Brake fluid reservoir tank hose				●*2
Fuel hoses				●*2
Torque converter rubber hoses				●*2
Chains				●*3

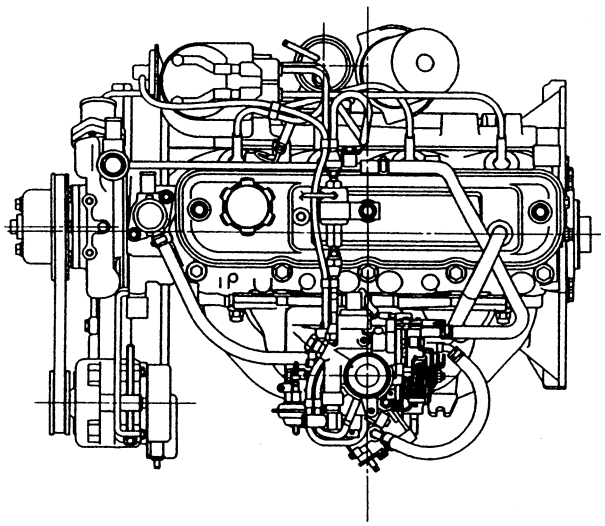
*1: for new vehicle *2: Every 2 years *3: Every 3 years

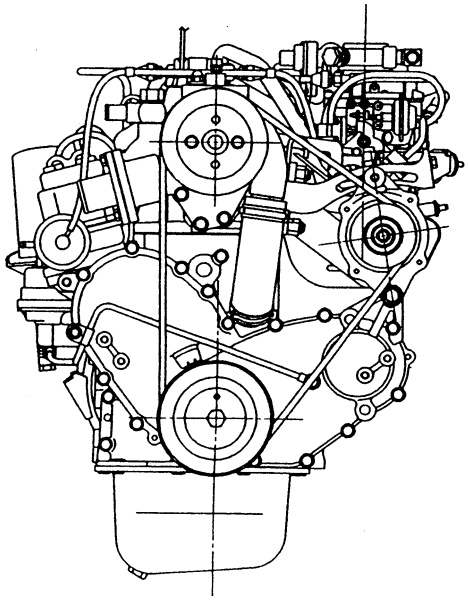
Replacement shall be made upon arrival of the operation hours or months, whichever is earlier.

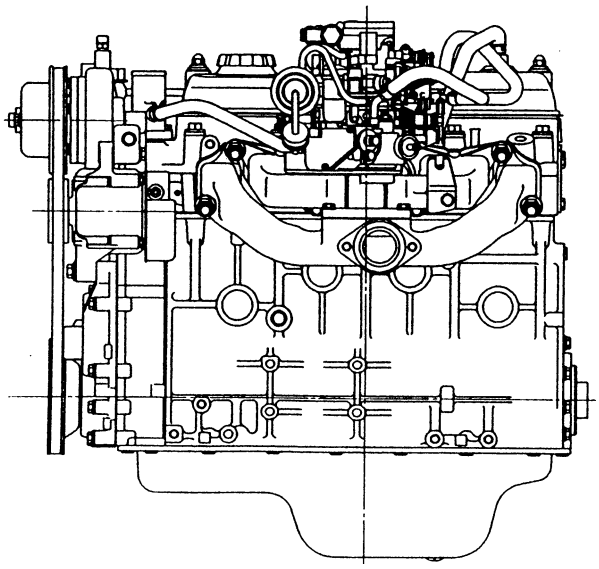
ENGINE

ENGINE EXTERIOR VIEWS

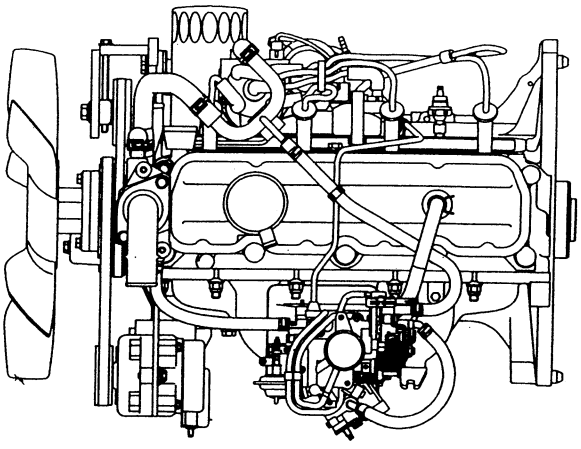
4Y Engine

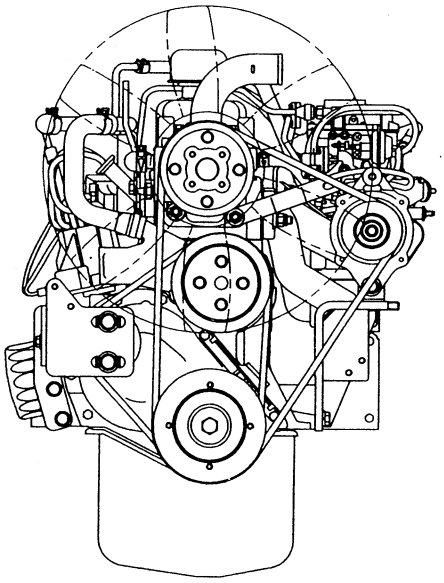


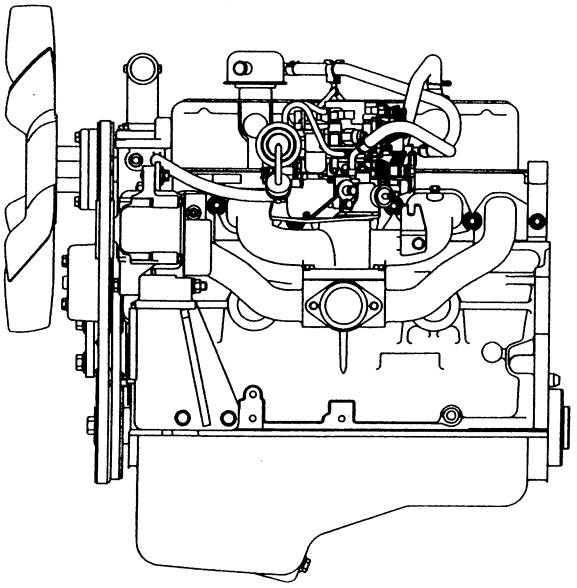


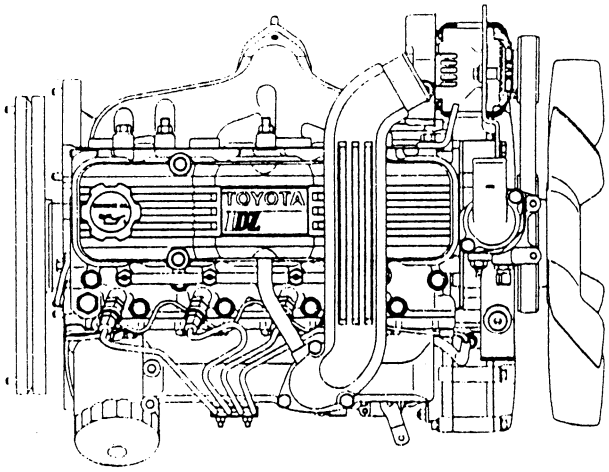


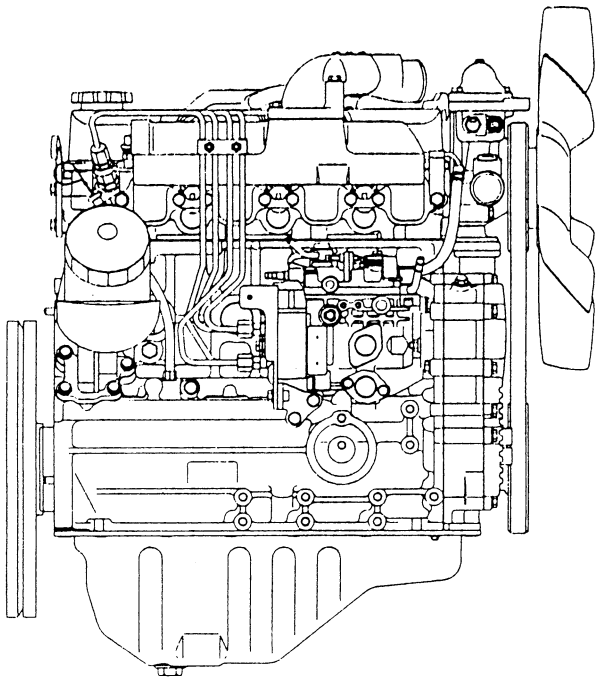
GM Engine

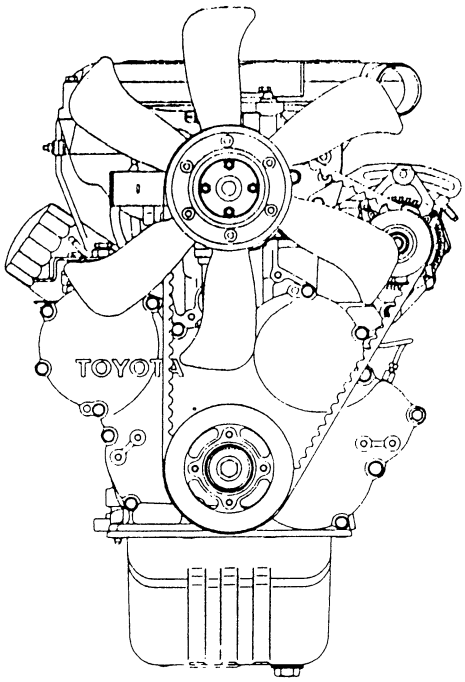







TOYOTA
1DZ




TOYOTA

MAJOR SPECIFICATIONS

Gasoline Engines

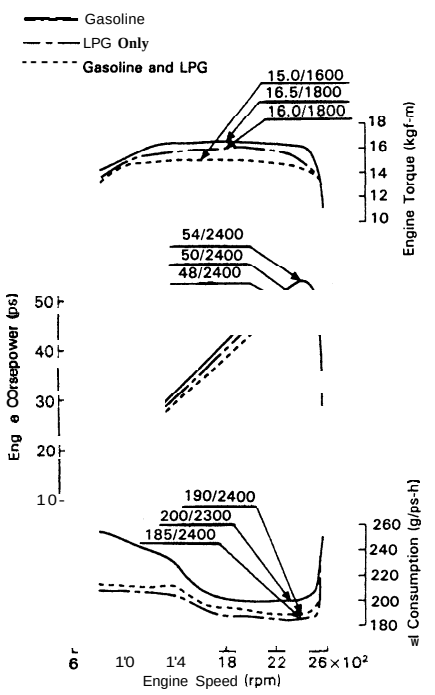
Item \ Engine		4Y (1.2 ton series)	4Y (3 ton series)	GM (2.3 series)
Engine type		Gasoline 4-cycle	←	←
Number of cylinders and arrangement		Inline 4-cylinder .longitudinal	←	←
Combustion chamber type		Wedge type	←	←
Valve mechanism		OHV·chain drive	←	OHV·gear drive
Bore × Stroke	mm (in)	91.0 x 86.0 (3.583 x 3.386)	←	101.6 x 91.4 (4.000 x 3.600)
Total displacement	cc (cu-in)	2237 (136.51)	←	2965 (241.96)
Compression ratio		8.8	←	8.2
Maximum power	PS/rpm	5412400	5812600	6012400
Maximum torque	kgf-m/rpm	16.511800	←	1911400
Maximum specific fuel consumption	g/PS-h (rpm)	200 (2300)	←	230 (1600)
Service weight	kg (lb)	134 (295)	←	150 (331)
No-load maximum rpm	rpm	2650	2800	2600

Diesel Engines

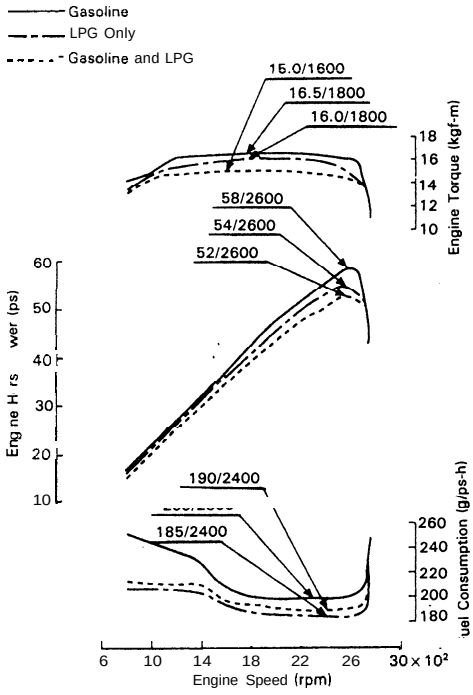
Item \ Engine		1DZ (1 ton series)	1DZ (2·3 ton series)
Engine type		Diesel 4-cycle	←
Number of cylinders and arrangement		In line 4 cylinder .longitudinal	←
Combustion chamber type		Vortex chamber type	←
Valve mechanism		OHV·gear drive	←
Bore × Stroke	mm (in)	86.0 x 107.0 (3.386 × 4.213)	←
Total displacement	cc (cu-in)	2486 (151.71)	←
Compression ratio		21.5	←
Maximum power	PS/rpm	5512400	6012600
Maximum torque	kgf-mlrpm	17.0 (1600)	←
Maximum specific fuel consumption	g/PS-h (rpm)	18511400	←
Service weight	kg (lb)	176 (338)	←
No-load maximum rpm	rpm	2600	2800

ENGINE PERFORMANCE CURVES

4Y Engine

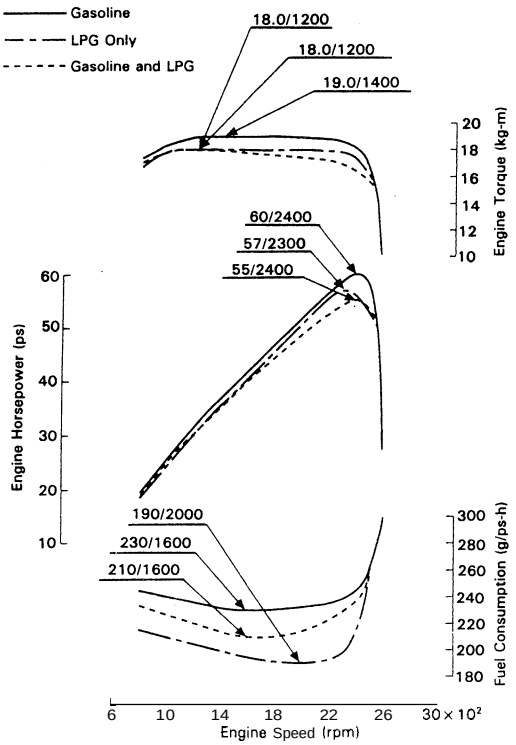


1.2 ton series

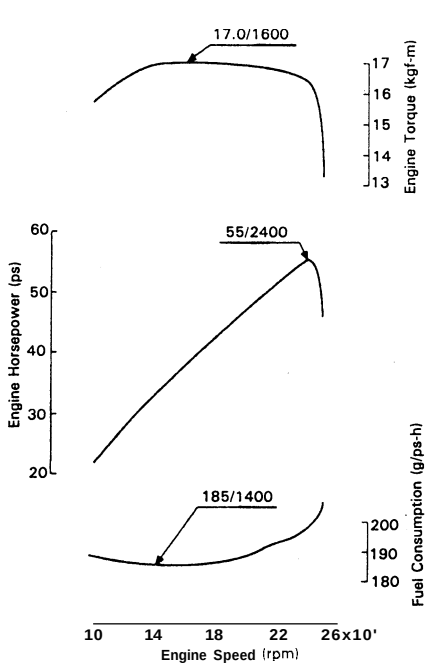


3 ton series

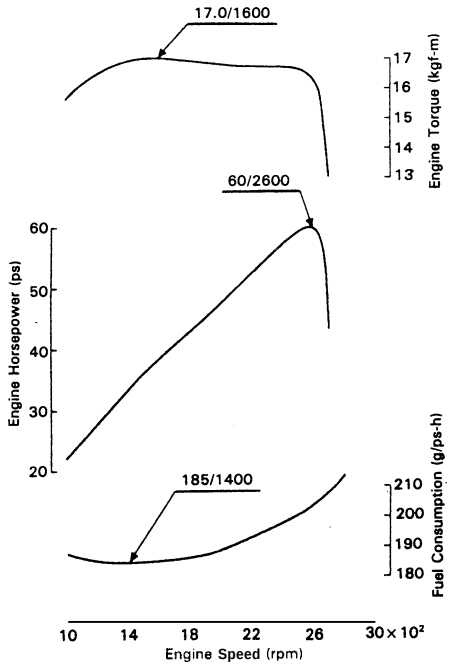
GM Engine



1DZ Engine



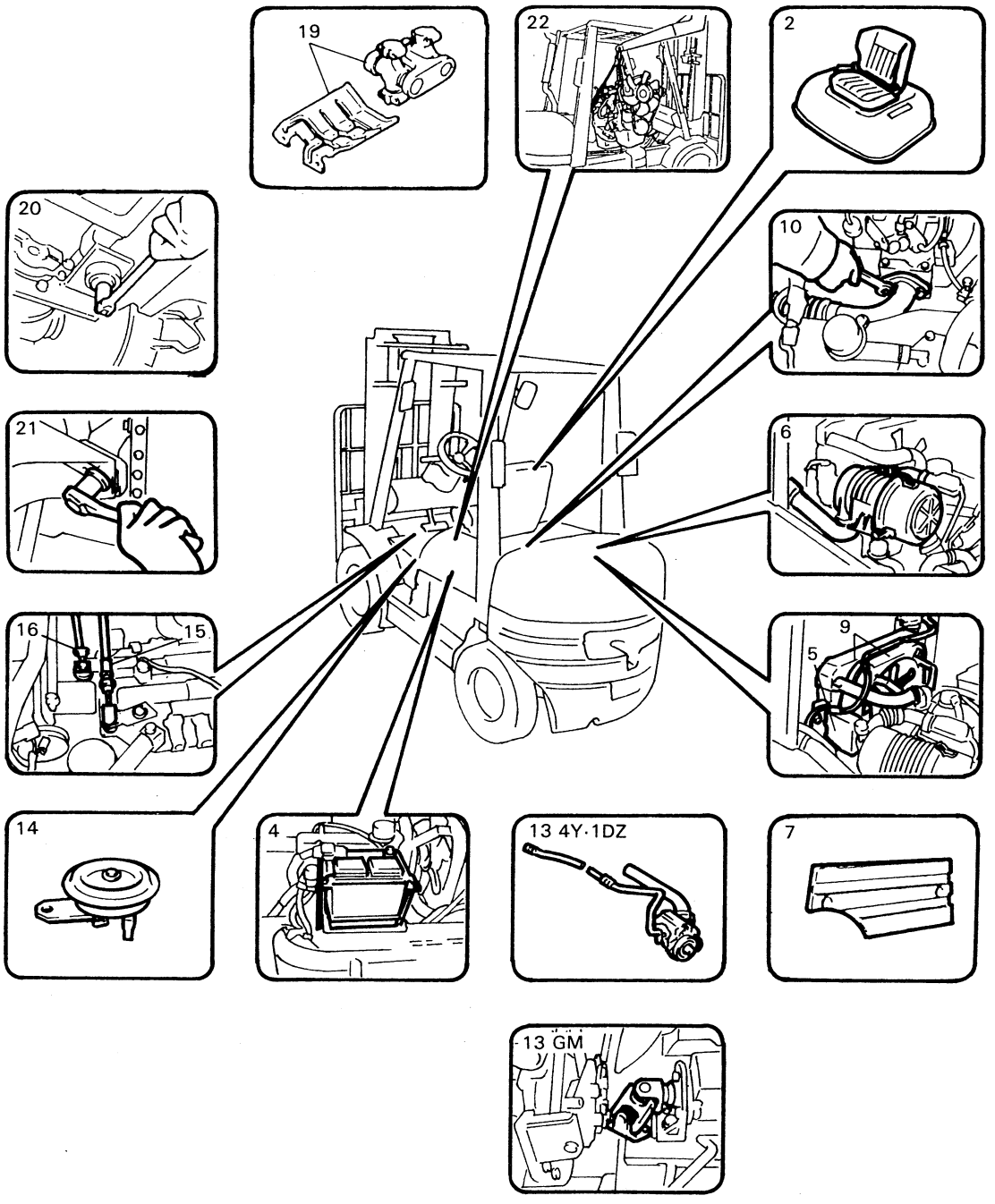
1 ton **series**



2.3 ton **series**

ENGINE ASSY

ENGINE W/TORQUE CONVERTER REMOVAL·INSTALLATION



1 Radiator cover
3 Toe board
8 Coolant
11 Fuel hose
12 Accelerator wire
17 Torque converter cooler hose
18 Electrical wiring

Removal Procedure

1 Remove the radiator cover.

2 Remove the engine hood.

3 Remove the toe board.

4 Remove the battery and battery case.

5 Remove the radiator reservoir tank and bracket.

6 Remove the air cleaner.

7 Remove the flame side cover

8 Drain the coolant.

9 Remove the radiator and fan shroud.

10 Disconnect the exhaust pipe.

11 Disconnect the fuel hose. **[Point 1]**

12 Disconnect the accelerator wire (on the carburetor side in gasoline engine models, or on the injection pump side in diesel engine models).

13 Remove the oil pump W/pump hose. (4Y·1DZ)
Disconnect the pump universal joint. (GM)

14 Remove the horn.

15 Disconnect the shift lever link rod

16 Disconnect the inching wire.

17 Disconnect the torque converter cooler hose.

18 Disconnect the electrical wiring.

19 Remove the propeller shaft cover and propeller shaft.

20 Remove the torque converter mounting set bolts.

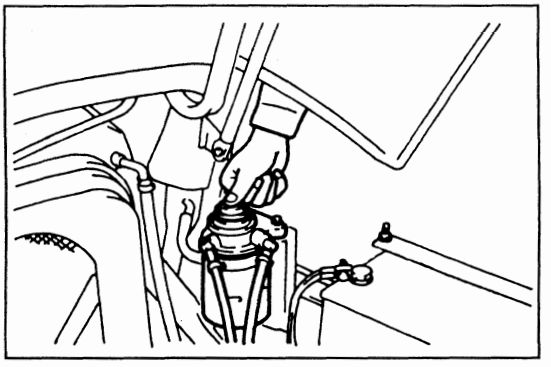
21 Remove the engine mounting set nuts.

22 Remove the engine W/torque converter. **[Point 2]**

Installation Procedure

The installation procedure is the reverse of the removal procedure.

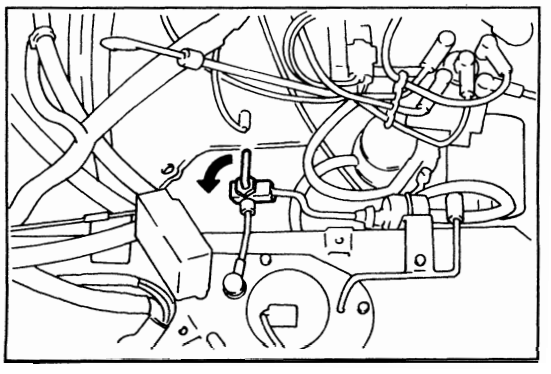
Note:
Carry out the following job after engine installation:
Air bleeding from fuel system (in diesel engine models only)
- **Inching wire adjustment (see page 8-28.)**
- **The tightening torque for each parts is as follows.**
  Torque converter mounting bolt. T = 49 – 88 N·m (500 – 900 kgf-cm) [36 – 65 ft-lbf]
  Engine mounting set nut. T = 53.9 – 99.0 N·m (550 – 1010 kgf-cm) [39.8 – 73.1 ft-lbf]



Bleeding Air from Fuel System (Diesel engine model)

IDZ engine

Operate the fuel filter band pump unit till the pump operation becomes heavy to indicate the end of air bleeding.

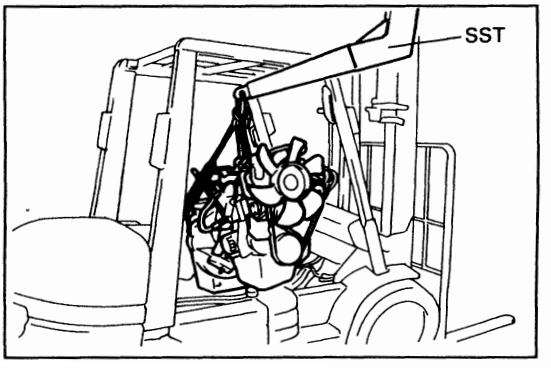


Point Operations

[Point 1]

Removal: Always close the fuel piping cock.

Installation: Do not mistake the fuel hose connecting position. (Gasoline engine model.)



[Point 2]

Removal. Installation: SST 09010-20111-71

Removal: Remove after checking through disconnection of the wiring, hoses and cables.