



OPERATOR MANUAL / ENGLISH

8FG / 8FD 35-80N - Gen II

Manufacturer: Toyota

Publication: A3034-0ZA19

June 2024

MODELS / FAMILIES

8FG35N / 40N / M40N / 45N / 50N / 60N / 70N / 80N

8FD35N / 40N / M40N / 45N / 50N / 60N / 70N / 80N

40-8FD35N / 40N / 45N / 50N / 60N / 70N / 80N

50-8FD35N / 40N / M40N / 45N / 50N / 60N / 70N / 80N

90-8FG35N / 40N / 45N / 50N / 60N / 70N / 80N

SUPPLIED BY FORKLIFT CO

Confirm the exact model, options and serial applicability before use.

Complete English operating instructions follow. Original diagrams, warnings, capacity tables and page references are retained.

Multilingual cover material replaced with this English cover.

Forklift Co cover added 22 September 2026.

This is not a new Toyota technical revision.

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1 FOREWORD

Models Covered by this Manual

Internal Combustion Counterbalanced Forklift Trucks

Capacity (Load Center 600mm) kg	Engine	Model
3500	1FS	8FG35N
		90-8FG35N
	14Z-II	8FD35N
	15Z	50-8FD35N
4000	1FS	8FG40N
		90-8FG40N
	14Z-II	8FGM40N
		8FD40N
4500	1FS	8FD40N
		8FDM40N
	14Z-II	50-8FD40N
		50-8FDM40N
5000	1FS	40-8FD40N
		8FG45N
	14Z-II	90-8FG45N
		8FD45N
6000	1FS	50-8FD45N
		40-8FD45N
	14Z-II	8FG50N
		90-8FG50N
6000	1FS	8FD50N
		50-8FD50N
	14Z-II	40-8FD50N
		8FG60N
6000	1FS	90-8FG60N
		8FD60N
	14Z-II	50-8FD60N
		40-8FD60N

Capacity (Load Center 600mm) kg	Engine	Model
7000	1FS	8FG70N
		90-8FG70N
	14Z-II	8FD70N
	15Z	50-8FD70N
8000	1FS	40-8FD70N
		8FG80N
	14Z-II	90-8FG80N
		8FD80N
8000	15Z	50-8FD80N
	1KD	40-8FD80N

This manual contains information essential for proper operation and maintenance, as well as daily lubrication and periodic inspection procedure for your Toyota forklift truck.

Please read this manual thoroughly, even though you may already be familiar with our forklift trucks, because it contains information which is exclusive to this series of trucks. This manual is based on a standard truck model. If you have questions about other model(s), please contact the Toyota forklift dealer (authorized Toyota dealer).

In addition to this manual, please be sure to read the separate publication entitled "Manual for Safe Operation." It contains important information about the safe operation of forklift trucks.

Toyota is constantly developing our products. We therefore reserve the right to make modifications at anytime without prior notice.

Illustrations may differ from actual design.

TOYOTA INDUSTRY (KUNSHAN) CO., LTD.

369 Honghu RD., Kunshan E.&T. Development zone, Jiangsu, P.R. CHINA, 215301

Name and address of EAC distributor

Toyota Material Handling RUS

Solnechnogorskiy district, Lunevskoe s.p., 141580 Moscow region, Russian Federation

Belpromimpex

Behetereva Str. 10, 220026 Minsk, Belarus

MP Industrial Equipment LLC

2a, G. Kutateladze Str. 0179, Tbilisi, Geougia

HINO MOTORS KAZAKHSTAN LLP

Kuldja Tract 26/1, Talgar region, Almaty, the Republic of Kazakhstan Postal code: 050019

2 SAFE USE

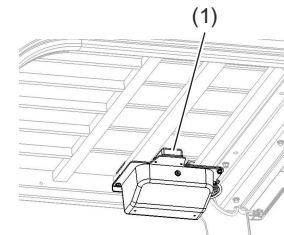
Before Starting Operation

- **Please read this manual thoroughly.** This will give you a complete understanding of Toyota forklift trucks and enable you to operate them correctly and safely. Proper handling of a new truck promotes performance and extends service life. Operate with special caution while becoming familiar with a new truck. In addition to the standard operating procedures, pay attention to the following safety items.
- **Please acquire a thorough knowledge of the Toyota forklift truck.** Read the operator's manual thoroughly prior to operating the truck. Get to know its operation and components. Learn about the safety devices and accessory equipment and their limits and precautions. Be sure to read the warning labels attached to the truck.
- **Please familiarize yourself with safe operating points and safe maintenance operation.** Understand and maintain work area traffic rules. Ask the work area supervisor about any special working precautions.
- **Wear appropriate clothing for operation.** Improper clothing for truck operation may interfere with smooth operation and cause an accident. Always wear appropriate clothing for easier operation.
- **Please keep away from live electric power lines.** Know the locations of inside and outside power lines and maintain sufficient distance.
- **Be sure to perform pre-operation checks and planned maintenance.** This will prevent sudden malfunctions, improve work efficiency, save money and insure a safe working operation.
- **Always warm up the engine before starting operation.**
- **Be sure to avoid forward tilt when the forks are elevated with a load.** In the worst case, this may cause overturning due to loss of stability resulting from forward movement of the center of gravity.
- **Never attempt traveling and turning with a load on the forks when they are elevated.** If travelling and turning when the forks are elevated, this may impact stability and may cause the fork lift to tip-over. When travelling, maintain a fork height above the ground of 15 - 20 cm (6 - 8 inches).
- **Please avoid overloading or uneven loading.** Overloading or an uneven load is dangerous. If the centre of gravity is not evenly distributed, the heaviest side of the load should be against the fork carriage/load backrest even if the load is less than that specified on the nameplate. Also, the load should have the heaviest weight closest to the forks with lighter items on the top.
- **If you hear any unusual noise or sense anything unusual, stop, inspect and repair immediately.**
- **If the engine stops during traveling, this will affect the operation.** Stop the truck in a safe place and apply the parking brake. Steering operation becomes heavy because the power steering becomes ineffective. Operate the steering wheel more firmly than usual.
- **Please use only the recommended types of fuel and lubricants.** Low-grade fuel and lubricants will shorten service life.
- **Flammable and/or combustible materials can be damaged and in some cases ignited by a hot exhaust system or hot exhaust gases. To minimize the possibility for such damage or fire, the operator must obey the following recommended practices:**

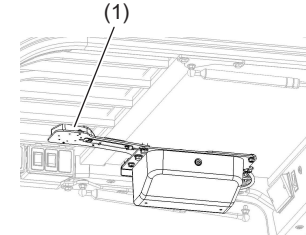
- Do not operate the forklifts over or near flammable and/or combustible materials, including dried grass and paper scraps, etc.
 - Park the forklift with rear end at least 30 cm (12 inches) away from lumber (timber), veneer board, paper products and other similar materials to avoid discoloration, deformation or combustion of those materials.
- **Check the effectiveness of the brake after washing the truck.** After washing the truck, the brake lining or pads may get wet. Check the effectiveness of the brake after washing the truck. If you believe the brakes are less effective, please dry the brakes by operating the truck at a very slow speed in a safe environment with no hazards. Repeat these steps until the brakes are appropriately working or contact the authorized Toyota dealer for additional inspections and support.
 - **When wind is blowing, there is a risk of falling of a load and overturn of a truck by wind pressure. In particular, when the load is elevated, the risk increases. Take appropriate measures such as suspending the work.**
 - **Before inspecting the truck, make sure to stop the engine, turn the key switch off, and remove the negative battery terminal if necessary.**
 - **Do not place any metal objects on top of the GNSS antenna that may interfere with radio waves.**

2

Except cabin



Models with cabin (Option)



(1) GNSS antenna

Safety Requirements

- Trucks equipped with a load bearing clamp (e.g. paper clamp) shall feature control(s) with a secondary action to prevent unintentional release of the load. When any "load bearing clamp" is used on a lift truck, the control (hydraulic hand lever for example) must be configured to conform to the ISO3691-1.

Clamp release interlock is set as an option. For details, refer to Clamp release button (Option) section of this manual.

3 FAILURE DIAGNOSIS FUNCTION OF EXHAUST GAS CONTROL SYSTEM

1KD engines have NOx Control Diagnostic system (NCD) and Particulate Control Diagnostic system (PCD) as failure diagnosis functions, which are legal requirements.

(Except 1KD engine models for China spec.)

NOx Control Diagnostic system (NCD)

If the Exhaust Gas Recirculation (EGR) valve fails, the Malfunction indicator lamp lights and duration of failure is counted.

If EGR valve is left unrepaired, the torque and rotation of the engine will be limited in stages depending on the duration.

Applicable error code: 11-1, 11-2, 11-4, 11-5, 11-6

Particulate Control Diagnostic system (PCD)

This system makes the Malfunction indicator lamp light up when this system detects the removal of DPF main unit or DPF-related parts or when this system becomes unable to detect such removal of them.

Applicable error code: 02-1, 02-2, 0C-1, 0C-2, 0C-3, 0F-3, 0F-4, 0F-5, 0F-6, 10-1, 10-5, 10-6, 10-7, 18-1

CAUTION

Do not modify the exhaust gas control system including but not limited to the EGR valve.

(1KD engine models for China spec.)

When the following states are detected, the operating performance limiting system and the operator warning system will operate.

- NOx control system abnormality (NCD error)
- Abnormalities in the DPF system (DPF clogging, DPF removal, DPF system removal) and in the systems that monitor this (PCD error)

If an abnormality is detected, stop using the systems and correct the inappropriate operation, usage, or maintenance status.

Defects covered by NCD errors and PCD errors are as shown in the table below.

Diagnosis error codes list of PCD malfunction

Diagnosis error code	Error mode
10-1	Diesel Particulate Filter differential pressure too low
10-2	Diesel Particulate Filter differential pressure too high
10-5	Diesel Particulate Filter pressure sensor circuit / Low
10-6	Diesel Particulate Filter pressure sensor circuit / High
10-7	Diesel Particulate Filter pressure sensor circuit / Electrical failures
0C-2	Air flow meter circuit short abnormality (Low input)
0C-1	Air flow meter circuit open abnormality (High input)
0C-3	Mass air flow circuit sensor range/performance abnormality
18-1	Crankshaft position sensor circuit malfunction

Diagnosis error codes list of NCD malfunction

Diagnosis error code	Error mode
11-4	Exhaust Gas Recirculation valve position abnormality
11-6	Exhaust Gas Recirculation motor circuit short abnormality (Low input)
11-5	Exhaust Gas Recirculation motor circuit open abnormality (High input)
11-2	Exhaust Gas Recirculation position sensor circuit short abnormality (Low input)
11-1	Exhaust Gas Recirculation position sensor circuit open abnormality (High input)

Operating performance limiting system

When an NCD error or PCD error occurs, the operating performance limiting system will operate, and limits will be applied in steps to the engine performance as follows.

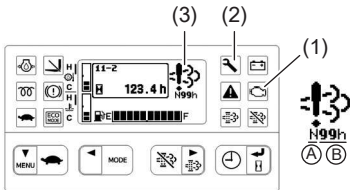
- Up to 100 hours after defect detected
 - Initial limit (torque limit only)
- More than 100 hours after defect detected
 - Strict limit (torque limit and engine speed limit more strict than initial limit (up to 900 rpm))

However, the engine will stop immediately upon detection of an error code 18-1 defect, and starting the engine will be disabled.

Operator warning system

When an NCD error or PCD error occurs, the operator warning system will operate and notify the operator of an abnormality in the exhaust gas system. The following three indicators will light or blink.

- Malfunction indicator: lit orange
- Spanner indicator: flashing red
- NCD/PCD error warning indicator
 - Up to 100 hours after defect occurs (initial limit state): Lit
 - More than 100 hours after defect occurs (strict limit state): Blinking



- (1) Malfunction indicator
- (2) Spanner indicator
- (3) NCD/PCD error warning indicator

Portion A of the NCD/PCD error warning indicator shows the status of the defect.

For details, refer to the following table.

Mark	Status
N	NCD error
P	PCD error
NP	NCD and PCD error

Portion B of the NCD/PCD error warning indicator shows the number of hours until the strict limit state is reached.

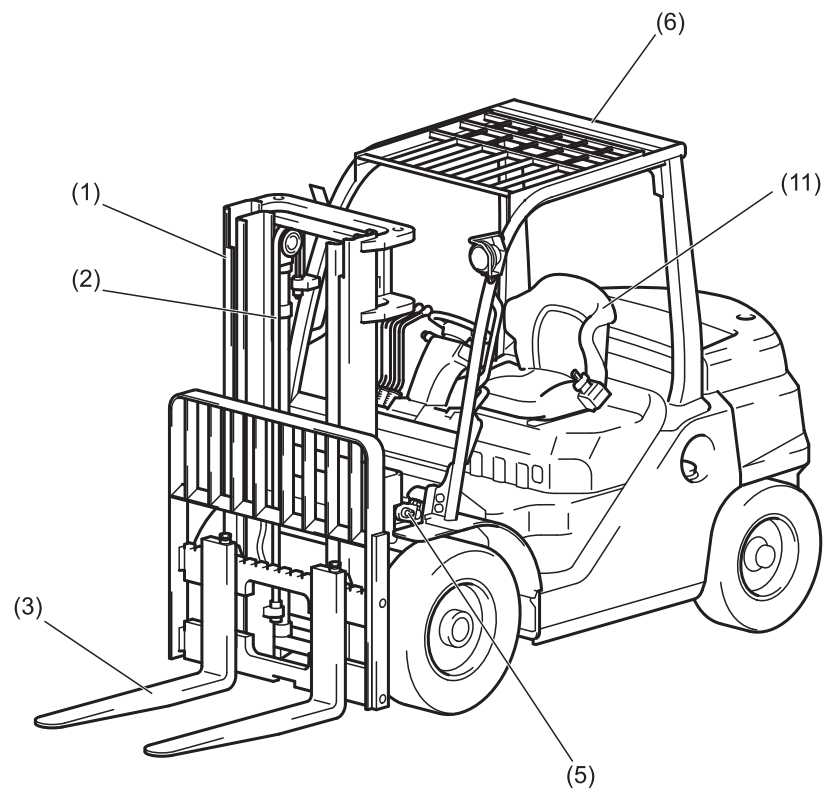
This starts at 99h, and when it reaches 0h, the system enters the strict limit state.

If the defect occurs again within 40 hours after the abnormal state is restored to normal, the limit state will become the initial limit state. In this case, the number of hours until the strict limit starts is as follows.

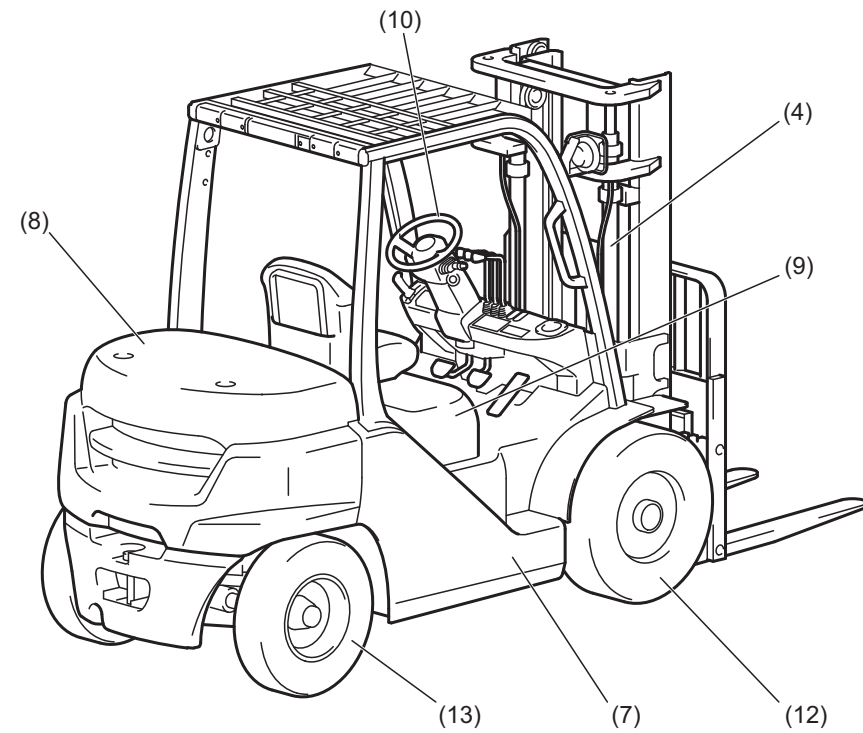
- If the timing after restoration from the previous defect is up to 100 hours
 - The number of hours until the start of the strict limit at the time of the previous restoration continues to be applied.
- If the timing after restoration from the previous defect is more than 100 hours
 - The number of hours is 5 hours.

CAUTION
Use genuine parts to maintain the exhaust gas and output performances.

4 MAIN COMPONENTS

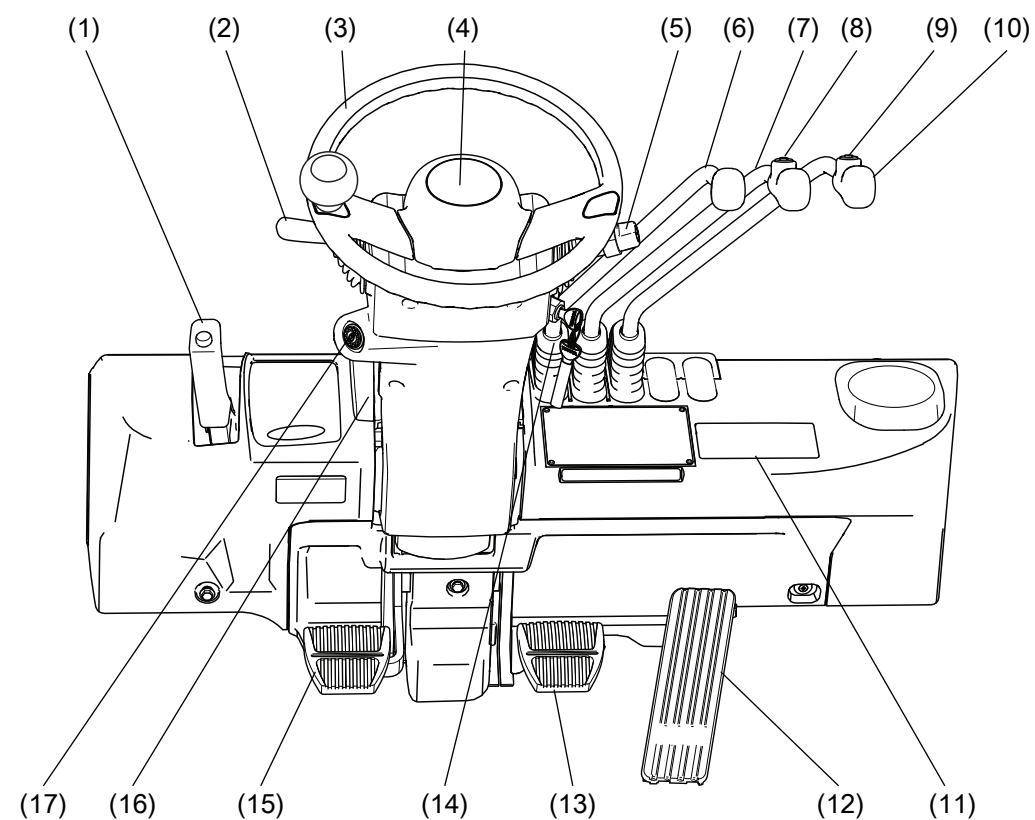


- (1) Mast
- (2) Chain
- (3) Forks
- (4) Lift cylinder
- (5) Tilt cylinder
- (6) Overhead guard
- (7) Frame



- (8) Counterweight
- (9) Engine hood
- (10) Steering wheel
- (11) Operator's seat
- (12) Drive axle
- (13) Steer axle

5 OPERATING CONTROLS



- (1) Parking brake lever
- (2) Direction control lever
- (3) Steering wheel
- (4) Horn button
- (5) Light control and turn signal switch
- (6) Lift lever

- (7) Tilt lever
- (8) Tilt lever knob switch
- (9) Clamp release button (Option)
- (10) Attachment lever (Option)
- (11) Multi-function display II (Option)
- Combination meter

- (12) Accelerator pedal
- (13) Brake pedal
- (14) Ignition key switch
- (15) Inching pedal
- (16) Tilt steering adjusting lever
- (17) Gear lock switch (Option)

6 HOW TO READ THE NAMEPLATE

The load capacity is engraved on the nameplate.

Make sure of the load center and capacity before starting the operation.

(The sample shows that of an English version.)

TOYOTA FORKLIFT TRUCK

MODEL	(1)	FRONT TREAD	(6)
CODE NO. OF SPECIAL MODEL, MODEL OF ATTACHMENT	(2)	TIRE SIZE FR	(7)
FRAME NO.	(3)	TIRE PRESS. FR	(8)
TRUCK WEIGHT	(4)	TIRE SIZE RR	(7)
MAX. LIFTING HEIGHT 'A'	(5)	TIRE PRESS. RR	(8)
		PROD. YEAR	(9)
		TYPE	
		NOMINAL POWER	(10)
		RATED CAPACITY	(11)

CAPACITY WITH VERTICAL UPRIGHT EQUIPPED AS SHOWN.

CAPACITY	(12)	(12)	(12)
LOAD CENTER 'B'	(13)	(13)	(13)

TOYOTA INDUSTRIES CORPORATION
2-1, Toyoda-cho, Kariya-shi, Aichi 448-8671 Japan

- (1) Truck model
- (2) Code No. of special model, model of attachment
- (3) Frame No. - special number for the truck
- (4) Truck weight
- (5) Maximum lifting height
- (6) Front tread
- (7) Tire size
- (8) Tire pressure
- (9) Year of production
- (10) Nominal power
- (11) Rated capacity (Option:English only)
- (12) Actual capacity (Mast vertical)
- (13) Load center

Chinese specification

平衡重式叉车

型号	(1)	前轮距	(8)
销售型号	(2)	前轮胎尺寸	(9)
特殊车型代号	(3)	前轮胎充气压力	(10)
附件型号	(4)	后轮胎尺寸	(9)
产品编号	(5)	后轮胎充气压力	(10)
车架编号	(6)	制造日期	(11)
车重	(6)	型式	
最大提升高度 'A'	(7)	设备代码:	(12)
		额定起重量	(13)
		许可证编号:	
		额定功率	(14)

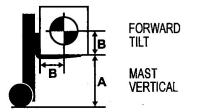
装备图示垂直门架时的载荷重量

载荷重量	(15)	(15)	(15)
载荷中心距 'B'	(16)	(16)	(16)

制造单位名称: 丰田工业 (昆山) 有限公司 江苏省昆山开发区洪湖路369号 (制造地址)

- (1) Certification model
- (2) Truck model
- (3) Code No. of special model, model of attachment
- (4) Product No.
- (5) Frame No.
- (6) Truck weight
- (7) Maximum lifting height
- (8) Front tread
- (9) Tire size
- (10) Tire pressure
- (11) Year of production
- (12) Special equipment code
- (13) Rated capacity
- (14) Nominal power
- (15) Load capacity
- (16) Load center

Australian specification

TOYOTA FORKLIFT TRUCK												
MODEL	(1)	FRONT TREAD	(7)									
CODE NO. OF SPECIAL MODEL, MODEL OF ATTACHMENT	(2)	TIRE SIZE FR	(8)									
FRAME NO.	(3)	TIRE PRESS. FR	(9)									
TRUCK WEIGHT	(4)	TIRE SIZE RR	(8)									
MAX. LIFTING HEIGHT 'A'	(5)	TIRE PRESS. RR	(9)									
MAST FORWARD TILT ANGLE	(6) DEG	PROD. YEAR	(10) TYPE									
		NOMINAL POWER	(11)									
 FORWARD TILT MAST VERTICAL LOAD CENTER 'B'												
ACTUAL CAPACITY <table border="1"> <tr> <td>(12)</td> <td>(12)</td> <td>(12)</td> </tr> <tr> <td>(13)</td> <td>(13)</td> <td>(13)</td> </tr> <tr> <td>(14)</td> <td>(14)</td> <td>(14)</td> </tr> </table>				(12)	(12)	(12)	(13)	(13)	(13)	(14)	(14)	(14)
(12)	(12)	(12)										
(13)	(13)	(13)										
(14)	(14)	(14)										
This forklift complies with requirements of Australian Standard AS2359.1 and AS2359.6 as a minimum TOYOTA TOYOTA INDUSTRIES CORPORATION 2-1, Toyoda-cho, Kariya-shi, Aichi 448-8671 Japan												

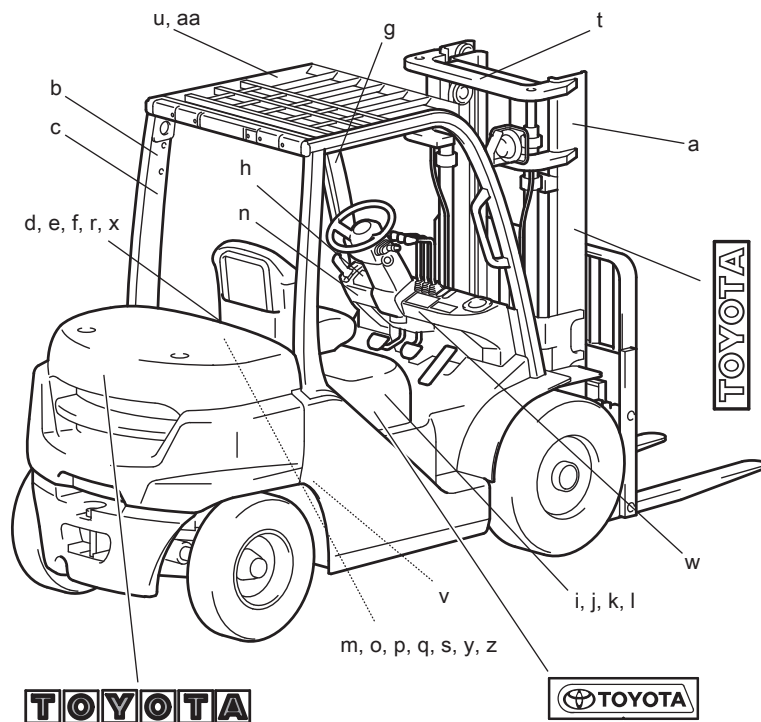
S2 ENGLISH 57842-N31B1-71

6

- (1) Truck model
- (2) Code No. of special model, model of attachment
- (3) Frame No. - special number for the truck
- (4) Truck weight
- (5) Maximum lifting height
- (6) Mast forward tilt angle
- (7) Front tread
- (8) Tire size
- (9) Tire pressure
- (10) Year of production
- (11) Nominal power
- (12) Actual capacity (Mast forward tilt)
- (13) Actual capacity (Mast vertical)
- (14) Load center

7 WARNING LABELS

Warning labels are attached on a truck. Please be sure to read them thoroughly. (The sample shows those of an English version.)

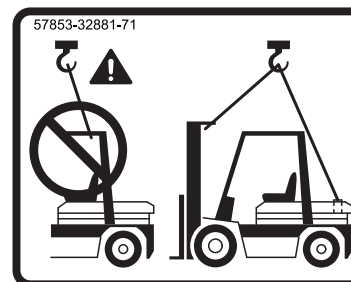


a



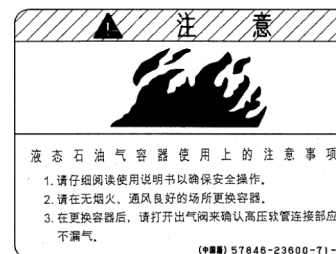
Never lift people with your truck or allow anyone under the forks or load. Safety of people around you is your responsibility.

b



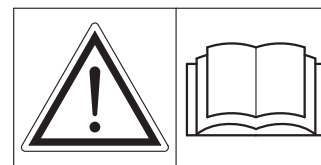
When lifting the truck, don't risk dropping the truck, never use the overhead guard to pick it up. Use the counterweight to lift the truck.

c



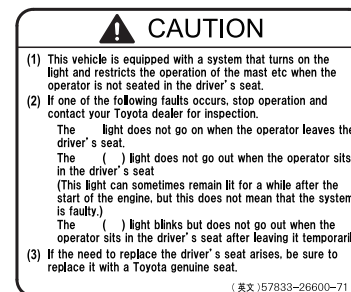
LPG models (China spec only)
Be sure to read safety instructions on the warning label and in this Operator's Manual before using LPG-powered trucks.

d



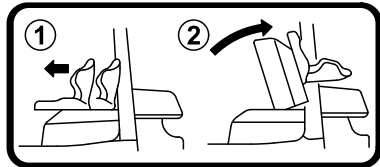
⚠ WARNING
Please read this Operator's Manual carefully before use.

e

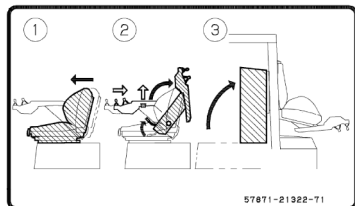


This truck is equipped with OPS (Operator Presence Sensing). Be sure to read and follow the instruction of the warning label.

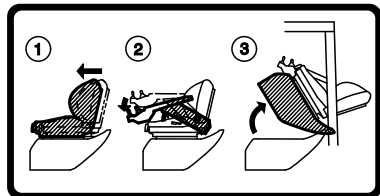
f 3.5 - 4.5 ton models/ Models with Cabin (Option)



Models with Mini lever/Joy stick (Option)

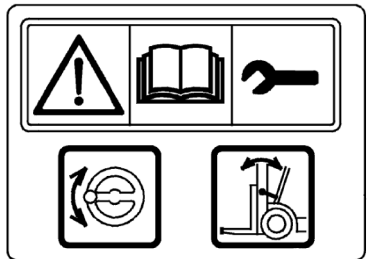
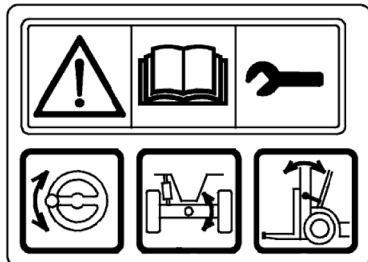


Models with Cabin (Option) + Mini lever/ Joy stick (Option)



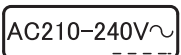
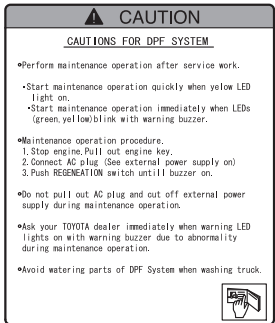
Don't damage your truck, slide the seat forward first when opening the engine hood.

h



This decal is affixed on trucks equipped with SAS option. Be sure to read and follow the instruction in the SAS FUNCTION section of this manual.

i



Models with DPF(14Z-II engine models (Option))

Be sure to read safety instructions on the warning label and in this Operator's Manual before using DPF system.

Models with DPF(14Z-II engine models (Option))

Use a single phase AC210~240V external power source, rated 15 A or more to carry out DPF regeneration.

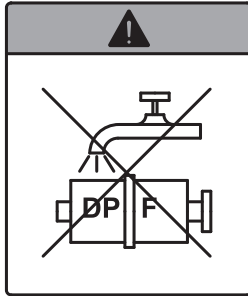
g

Tip over can cause serious injury or death. Lookout for and avoid the hazards that cause them and use the seat belt. If your truck tips, stay in the seat, lean away from the tipping direction, hang on, and brace your feet.

j

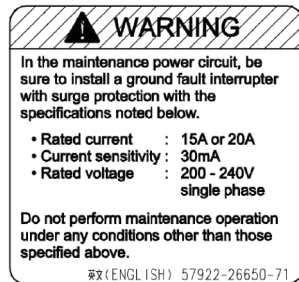
7 WARNING LABELS

k



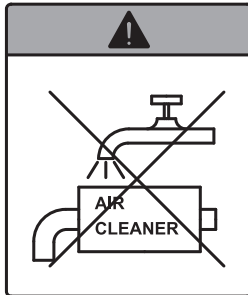
Models with DPF(14Z-II engine models (Option))
Do not put water on the DPF muffler

l



Models with DPF(14Z-II engine models (Option))
Be sure to follow the instruction on the warning label.

m



Models with DPF(14Z-II engine models (Option))
Do not put water on the DPF air cleaner

n



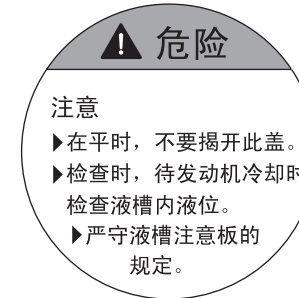
Apply the parking brake according to the Parking brake lever section of this manual.

o



The fan is coloured white to make it easier to see when it is turning. You still need to watch out for this decal and stay clear.

p



China spec. only
Do not open the radiator cap when the coolant is hot.

q



Be sure to use only specified fuses. Refer to the FUSE REPLACEMENT section of this manual for specified fuses.

r

Gasoline engine models



If you fill the fuel tank, make sure you use the proper fuel. A mistake could cause very costly repairs.

Diesel engine models



Diesel engine models (Chinese)



s



Diesel engine models
Be sure to read the instructions in this Operator's Manual before performing the maintenance of the sediment.

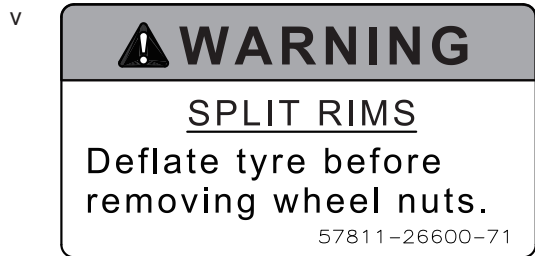


This decal may be placed in several places on the truck, but look for it, especially on the mast and on attachments. When you see it, stay clear.



Low height overhead guard (Option)
CAUTION
Low height overhead guard is equipped.

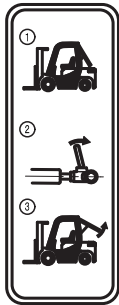
The height of overhead guard is lower than the regulation height specified by ISO 6055.
 Operate this truck only when your head clearance (containing a helmet) from the underside of the overhead guard is 24 mm and over.



Divided Rim Tire Caution (Australia spec. only)



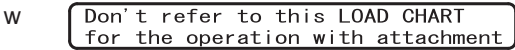
LPG Models (LPG Australia spec. only)
 The maximum size of the LPG container is 20 kg.



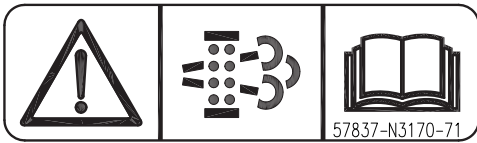
Models with optional Cabin
 Rear window of the Cabin can be opened by releasing the lock lever at the bottom of the window. Refer to the CABIN (OPTION) chapter of this manual for details.



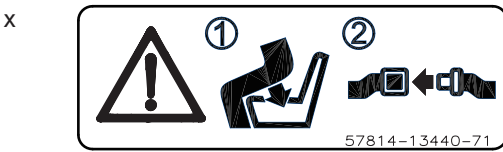
Models with optional Cabin
 Do not travel the truck with Cabin with the rear window opened at maintenance mode.



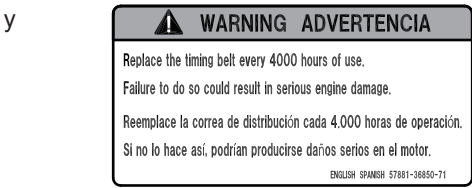
Models with A4 attachment
 Don't refer to the load chart for the operation with attachment.



Models with DPF (1KD engine models)
 Be sure to read safety instructions on the warning label and in this Operator's Manual before using DPF system.



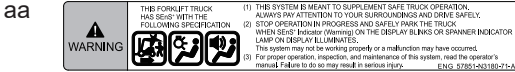
Seatbelt interlock caution (Option)



1KD engine models only
 Replace the timing belt every 4000 hours of use. Failure to do so could result in serious engine damage. The timing belt caution function will inform the operator when the timing belt needs to be replaced. Refer to the INSTRUMENT chapter of this manual for details.



1KD engine models
 Do not touch the exhaust pipe when it is hot.



(Option: SENs+)
 For details, refer to SENs+ (Option) [p 22].

8 SAS FUNCTION (OPTION)

* Australian spec and India spec models are equipped with SAS as standard

8.1 Precautions on SAS

(SAS: System of Active Stability)

Whenever you use a Toyota forklift equipped with SAS, check the warning labels to determine which SAS feature(s) your truck has been equipped with. Do not operate the truck if any SAS feature is not operating properly.

The following are examples of the warning labels which will be affixed on SAS equipped trucks to identify the SAS features installed on that specific truck.

[Figure 1]

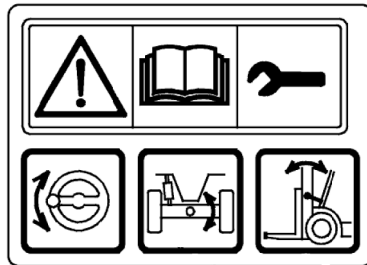


Figure 1

This label will be affixed on SINGLE TIRE trucks equipped with SAS. As pictographs on the label indicates, this truck is equipped with the following SAS features:

- Active control rear stabilizer
- Active mast function control
- Active steering control

[Figure 2]

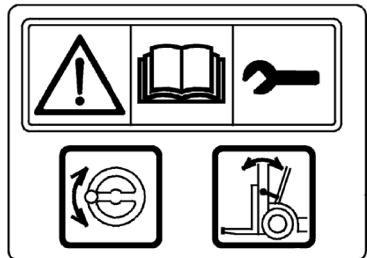


Figure 2

This label will be affixed on DUAL TIRE trucks equipped with SAS. As pictographs on the label indicates, this truck is equipped with the following SAS feature:

- Active mast function control
- Active steering control

For those models fitted with double/dual wheels, there is no Active control rear stabilizer.

⚠ DANGER

Toyota forklifts equipped with SAS will operate and handle differently than similar forklifts without SAS. Operators must use caution when changing between trucks with and without SAS features. Operation of forklifts without SAS in the same manner as forklifts with SAS can result in loss of control and potential tip over.

⚠ CAUTION

Before operating a truck equipped with SAS, familiarize yourself with the SAS feature or features and be sure that the spanner indicator lamp is not illuminated. The span-

ner indicator lamp  will illuminate or blink in the event of a SAS malfunction and the truck should not be operated until it has been repaired.

- While operating a truck equipped with SAS, should the spanner indicator lamp illuminate or blink, or an error code be indicated on the display, park the truck in a safe location, apply the parking brake and have the truck inspected by the authorized Toyota dealer.
- The SAS is electronically controlled. The system may need to be initialized after completion of maintenance.
- Do not remove or modify the SAS features. If inspection of the SAS is required, ask the authorized Toyota dealer.
- When washing the truck, caution is required to prevent water from being directly applied to the electrical parts used in the SAS. These electrical parts include a controller, sensors and switches.
- Once you have fitted or replaced any attachment on a forklift, ask the authorized Toyota dealer for an inspection and load rating if required.
- If you use two or more removable attachments alternately, the heaviest one should be used to carry out matching (SAS setting). Ask the Toyota dealer to request compatibility matching.
- When mounting forks or attachments to a truck without forks, the attachments must be compatible with the model. Ask the authorized Toyota dealer to request compatibility matching.

8.2 Description of SAS features

8.2.1 Active control rear stabilizer

When the truck makes a turn on the spot, a centrifugal force will be generated in the lateral direction of the truck. In such event, this feature will temporarily lock the rear wheels to support the truck on four wheels and prevent the rear axle swing motion on the truck. Thus, the stability of the truck during right and left turns will be enhanced.

The locking of the rear axle swing motion is referred as "Swing Lock".

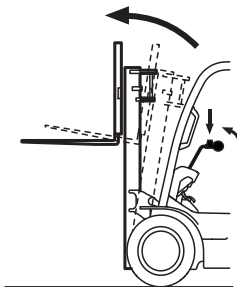
⚠ CAUTION

- This feature is intended to enhance the stability of the forklift under certain conditions, but cannot prevent the forklift from tipping over under all circumstances. You must continue to use caution when operating the forklift.
- Traveling with forks elevated may cause tip-over as the center of gravity shifts forward and upward. Never travel or turn when forks are elevated with or without load.

8.2.2 Automatic fork leveling control

Trucks with a standard lever

When moving the tilt lever forward while pressing the tilt lever knob switch, the forks will stop automatically at the horizontal position (the mast positioned vertically).



NOTICE

- When moving the tilt lever backwards, the forks will not stop at the horizontal position even if the tilt lever knob switch is pressed (except trucks equipped with Mini lever or Joy stick).
- To cancel the Automatic fork leveling control in the middle of operation, release the tilt lever knob switch.
- After stopping the forks at the horizontal position with the tilt lever knob switch pressed, you may want to tilt the forks further forward. Return the tilt lever to the neutral position once. Then, after releasing the tilt lever knob switch, move the tilt lever again.

When moving the tilt lever from the backward to forward position while pressing the tilt lever knob switch, the forks will:

	Not loaded	Loaded
High Lift Height (Over 6 feet or 2 m)	Stop at the horizontal position (with mast positioned vertically)	Not tilt forward
Low Lift Height	Stop at the horizontal position (with mast positioned vertically)	Stop at the horizontal position (with mast positioned vertically) or up to 1° backward depending on the load

Trucks with Mini lever or Joy stick (Option)

When moving the tilt lever forward while pressing the automatic fork leveling switch, the forks will stop automatically at the horizontal position (the mast positioned vertically).

When moving the tilt lever backward while pressing the automatic fork leveling switch, the forks will also stop automatically at the horizontal position (the mast positioned vertically).

NOTICE

- To cancel the Automatic fork leveling control in the middle of operation, release the automatic fork leveling switch.
- After stopping the forks at the horizontal position with the tilt lever knob switch pressed, you may want to tilt the forks further forward or backward. Return the tilt lever to the neutral position once. Then, after releasing the automatic fork leveling switch, move the tilt lever again.

When moving the tilt lever while pressing the automatic fork leveling switch, the forks will:

		Not Loaded	Loaded
Forward tilt	High Lift Height (Over 6 feet or 2 m)	Stop at the horizontal position (with mast positioned vertically)	Not tilt forward
	Low Lift Height	Stop at the horizontal position (with mast positioned vertically)	Stop at the horizontal position (with mast positioned vertically) or up to 1° backward depending on the load
Backward tilt	High Lift Height (Over 6 feet or 2 m)	Stop at the horizontal position (with mast positioned vertically)	Stop at the horizontal position (with mast positioned vertically) or up to 1° backward depending on the load
	Low Lift Height	Stop at the horizontal position (with mast positioned vertically)	Stop at the horizontal position (with mast positioned vertically) or up to 1° backward depending on the load

CAUTION

- When you move the tilt lever forward while pressing the tilt lever knob switch or the automatic fork leveling switch, with a load at a high lift height, the mast will stop moving suddenly. Avoid such operation, because the truck may tip over.
- If the truck is equipped with an attachment, do not use automatic fork leveling with an elevated load, and the engine running at high RPM.
- A heavy attachment may affect a lift truck equipped with automatic fork leveling control. Ask the authorized Toyota dealer before installing this type of attachment.

8.2.3 Active mast forward tilt angle control

This function automatically limits the forward tilt angle of the mast depending on the load weight and lift height.

	Light Load (no load)	Medium Load	Heavy Load
High Lift Height (Over 6 feet or 2 m)	No limitation for forward tilt angle	Forward tilt angle limited from 1° to 5°	Forward tilt angle limited to 1°
Low Lift Height	No limitation for forward tilt angle		

⚠ CAUTION

- This feature is intended to enhance the stability of the forklift under certain conditions, but cannot prevent the forklift from tipping forward or the load from falling off under all circumstances. You must continue to use caution when operating the forklift.
- When you lift a load from a low lift height with the mast tilted forward, the active mast forward tilt angle control does not work. Avoid such operation, because the truck may tip forward.
- Never tilt the mast beyond its vertical position with a load at a high lift height, or the truck may tip forward, losing its stability forward or backward.
- Even with a load within the allowable capacity, tilting the mast beyond its vertical position with a load elevated may cause tip-over as the center of gravity shifts forward and upward. Never tilt the mast forward when a load is elevated.
- A heavy attachment may affect a lift truck equipped with active mast forward tilt angle control. Ask the authorized Toyota dealer before installing this type of attachment.
- Once you have replaced forks with any attachment, have the truck inspected by the authorized Toyota dealer.
- If you use two or more removable attachments alternately, the heaviest one should be used to carry out matching (SAS setting). Ask the authorized Toyota dealer for help in advance.
- When attaching forks or attachment to a forkless model, the attachments must be compatible with the model. Ask the authorized Toyota dealer to request compatibility matching (SAS setting).

NOTICE

When forks are at the maximum lift height, high pressure (relief pressure) may remain in the lift cylinder. This will cause the truck to detect that it has a heavy load even if there is no load. As a result, the tilt forward angle is limited. In such case, lower the mast slightly to tilt the mast forward.

8.2.4 Active mast backward tilt speed control

This function automatically reduces the backward tilt speed of the mast at a lift height higher than approximately 6 feet (2 m) in order to help prevent the load from shifting.

- At a high lift height, the backward tilting speed is automatically limited regardless of the load weight. When lowering from a high lift height to a lower lift height while tilting the mast backward, the tilting speed will not change.
- At a low lift height, the backward tilting speed is not limited even if there is a load. When lifting from a low lift height to a higher lift height while tilting the mast backward, the tilting speed will not change.
- When operating the tilt lever backward while pressing the tilt knob switch at any lift height, the backward tilting speed is limited as long as the tilt lever knob switch is pressed (except trucks equipped with Mini lever or Joy stick).

8.2.5 Key-lift interlock

When the key switch is turned off, the forks will not lower even if the lift lever is operated. The forks can be lowered when the operator is seated in the operator's seat and the key switch is turned on even if the engine is stopped. (Except Mini lever or Joy stick models)

8.2.6 Active steering control

If the steering wheel knob is not at the same angle as the steer tires, such out-of-position will be automatically corrected while turning the steering wheel. Thus, the knob is kept at a constant position relative to the steer tires.

8.2.7 Should a problem with SAS occur:

The truck with SAS is equipped with a controller, sensors and various switches. Should one or more of these components experience a problem, the following may occur:

- The automatic fork leveling control, active mast forward tilt angle control and/or active mast backward tilt speed control may not operate properly.
- The swing lock cylinder may be locked.
- Steering wheel knob position may not be corrected automatically even if it is out-of-position.

Should any of the above occur, you can expect the following:

- An error code will be displayed in the hour meter.

- The spanner indicator lamp  will illuminate or blink.

Should one or more of these conditions occur, stop the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

9 OPS FUNCTION

9.1 Precautions on OPS

(OPS: Operator Presence Sensing)

The OPS prevents powered traveling and load handling operations when the operator is not seated in the normal operating position (operator's seat).

If the operator leaves the seat while the truck is in operation, the buzzer will sound for approx. one second and the OPS indicator lamp will illuminate to inform the operator that the system is going to be activated.

If the operator remains out of the seat for 2 seconds or more, the system will be activated and stop powered travel and load handling operations. If the operator returns to the seat within 2 seconds, operation can be continued normally.

This truck is equipped with the OPS. Confirm the OPS is functioning properly before operating truck.

If an error occurs within the OPS, the spanner indicator lamp will illuminate on the display to inform the operator of the error. This indicates that there is a malfunction. Have the truck inspected by the authorized Toyota dealer.

9.2 Description of OPS features

9.2.1 Travel OPS function

If the operator leaves the seat while the truck is traveling, the OPS indicator lamp will illuminate and powered travel will be stopped after 2 seconds. If the operator returns to the normal seating position within 2 seconds, traveling can be continued.

The OPS will not apply the brakes to stop coasting or prevent rolling back on inclines.

To restart powered travel, release the accelerator pedal, return the direction control lever to the neutral position and sit in the seat.

⚠ CAUTION

Travel OPS is not a brake.

OPS stops powered travel, but does not apply the brake. Apply the parking brake at all times when leaving the operator's seat.

9.2.2 Load handling OPS function

If the operator leaves the seat for 2 seconds or more during load handling operations, the OPS indicator lamp will illuminate and load handling operations will be stopped.

If the operator returns to normal seating position within 2 seconds, lowering operation can be continued.

If the operator leaves the seat while operating the control lever, lowering operation can be continued for 2 to 4 seconds.

Trucks with a standard lever (Except for China certification specification)

If the load handling OPS is activated when the lift lever is in the lowering position, return the lever to a neutral position and return to the normal operating position to restart load handling operation.

If the load handling OPS is activated when the lift lever is in a position other than the lowering position, the load handling OPS is deactivated 1 second after the operator returns to the normal operating position.

Trucks with a standard lever (China certification specification)

Trucks with Mini lever, Joy stick (Option)

To restart load handling operation, return all levers to the neutral position and return to the seat.

⚠ CAUTION

If you operate the attachment lever when the OPS is activated, the attachment might move or lower by its own weight.

9.2.3 OPS operation information function

If the operator leaves the seat, the buzzer will sound for approx. one second and the OPS indicator lamp will illuminate to inform the operator that the OPS is going to be activated.

The OPS indicator remains on until the operator returns to the seat to confirm the activation of the OPS.

9.2.4 Return-to-neutral

Traveling

When the travel OPS is activated, if the operator returns to the seat without returning the direction control lever to the neutral position, the buzzer will sound and the travel OPS cannot be deactivated.

To deactivate the travel OPS, always return the direction control lever to the neutral position, before returning to the seat.

Load Handling

Trucks with a standard lever (Except for China certification specification)

When the load handling OPS is activated, if the operator returns to the seat without returning the lift lever to the neutral position from the lowering position, the buzzer will sound and the load handling OPS cannot be deactivated.

To deactivate the load handling OPS, always return the lift lever to the neutral position, before returning to the seat.

Trucks with a standard lever (China certification specification)

Trucks with Mini lever, Joy stick (Option)

If the operator returns to the seat when not all levers are in the neutral position, the buzzer will sound and the load handling OPS cannot be deactivated.

To deactivate the load handling OPS, always return all levers to the neutral position and return to the seat.

9.2.5 Parking brake OFF warning

If the operator leaves the truck or turns off the key switch without applying the parking brake, a warning sound will warn the operator.

If the operator releases the parking brake within 1 minute after turning off the key switch, a warning sound will also warn the operator.

The warning sound will stop after 30 seconds.

CAUTION

When leaving the seat, always put the control levers in neutral, apply the parking brake and lower the forks onto the floor or ground. Then, turn off the key switch and remove the key.

9.2.6 Seat belt interlock (Option)

This feature activates OPS and prevents powered traveling and load handling operations if the correct sequence of the seat belt connection ((i). seating to the seat and (ii). then connecting the seat belt and buckle) is not followed or the operator's seat belt becomes unfastened after the correct sequence of the seat belt connection.

The OPS indicator lamp will illuminate and OPS will be activated immediately if the correct sequence of the seat belt connection in the operator's seat is not followed.

When the operator fastens the seat belt in the correct sequence of the seat belt connection, this feature is not activated and the travel and load handling operation can be continued normally. However, if the operator seat belt becomes unfastened after the correct sequence of the seat belt connection, the buzzer will sound for approx. one second and the OPS indicator will illuminate to notice OPS activation. In this case, the traveling OPS and load handling OPS will be activated 2 seconds after the operator's seat belt becomes unfastened, but if the operator fastens the seat belt again within such 2 seconds, the OPS indicator will go off and OPS is not activated.

To deactivate OPS, release the accelerator pedal, return the direction lever and lift lever to the neutral position and then fasten the seat belt in the correct sequence of the seat belt connection.

For details of the indicator, refer to "COMBINATION METER or MULTIFUNCTION DISPLAY II".

Should a problem with seat belt interlock system occur:

Should the system experience a problem, spanner indicator lamp will blink and notify the operator.

In addition, in any of the following cases, a malfunction may have occurred to OPS. Park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.

- The OPS indicator lamp does not illuminate when the seat belt becomes unfastened after the correct sequence of the seat belt connection is followed.
- The OPS indicator lamp does not illuminate when the operator leaves the seat.
- The OPS indicator lamp does not go off after the operator gets on the seat and fastens the seat belt in the correct sequence.
- The spanner indicator lamp blinks but does not go off when the operator returns to the seat soon after leaving and fastens the seat belt.

9.2.7 Should a problem with OPS occur:

Should OPS experience a problem, OPS indicator lamp will blink and notify the operator.

In any of the following cases, a malfunction may have occurred to the OPS. Park the truck in a safe location, apply the parking brake, remove the key, and contact your authorized Toyota dealer for an inspection.

- The OPS indicator lamp does not illuminate when the operator is not seated in the normal operating position.
- The OPS indicator lamp does not go off when the operator is in the normal operating position.

CAUTION

If the operator remains seated for a long period with the key switch turned off, the next time the key switch is turned on, the spanner indicator lamp may start blinking. If this occurs, turn the key switch off, return to the normal operating position and then turn the key switch back on. The spanner indicator lamp will then go off.

10 MAIN FUNCTIONS

10.1 Travel control function

Function	Equipped Models
Maximum speed limitation	1KD engine models or 1FS engine models with SAS (Option)
Low-speed setting	1KD engine models or above models with Multi-function display II (Option)

NOTICE

Depending on the truck weight, the set speed may not be attained while traveling up a gradient or incline. Similarly, the set speed may be exceeded during travel down a gradient or incline, but will resume at the set speed when it is reached after going down the gradient or incline.

Low-speed Setting

This function limits the maximum travel speed to a preset value when the low-speed setting switch is pressed on the Multi-function display II (Option)

The setting value of the low-speed setting can be changed on the Multi-function display II (Option) by the operator and a supervisor.

For details, refer to INSTRUMENT section of this manual.

Maximum Speed Limitation

This function limits the maximum travel speed to a preset value.

To change the setting of the maximum speed limitation, ask a supervisor or the authorized Toyota dealer.

10.2 Engine auto stop function

1FS engine models or 1KD engine models with Multi-function display II (Option)

If the operator leaves the truck with the parking brake applied and without turning off the key switch for a certain amount of time, the engine and the power will be stopped automatically, thus preventing the waste of fuel.

To restart the truck, turn off the key switch, and then turn it back on. Your truck has an anti-restart ignition key switch to protect the engine, so you must turn the switch from the ON position to the OFF position before attempting to start the engine again.

To change the setting time of the engine auto stop function, ask a supervisor or the authorized Toyota dealer.

⚠ CAUTION

When leaving the seat, always return the control levers to the neutral position, apply the parking brake and lower the forks to the floor or ground. Then, turn off the key switch and remove the key.

NOTICE

- When the Engine auto stop function is activated, the Key off head light off system will also be activated in order to save power and prevent the battery over discharge. For details, refer to Key off head light off system section of this manual.
- This function may not be activated during engine warm-up.

10.3 Eco-mode

1FS engine models or 1KD engine models with Multi-function display II (Option)

When the eco-mode is active, traveling and load handling acceleration is limited, in order to assist with the improvement in fuel consumption.

This function can be turned on/off on the Multi-function display II (Option). For details, refer to INSTRUMENT section of this manual.

To change the setting value of the acceleration limit, ask the authorized Toyota dealer.

10.4 Exhaust gas aftertreatment device (1KD engine models)

10.4.1 Handling of DPF (Diesel Particulate Filter)

To reduce soot in the exhaust gas, the DPF device collects soot with a filter built in the muffler. When soot collected in the filter is piled up to a certain amount, regeneration (combustion of soot) is performed automatically. This prevents abnormal piling up of soot to constantly keep a good purification capacity of the DPF device. In addition, a high-performance catalyst and a common rail type fuel injection system allow for regeneration (combustion of soot) during traveling.

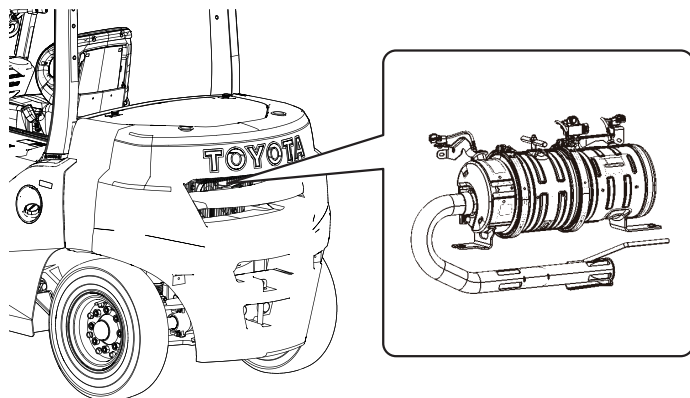
To prevent a fault of the device, be sure to observe the following items.

- Use engine oil that complies with the ACEA C2. For the recommended oil, refer to RECOMMENDED LUBRICANT QUANTITY & TYPES in this manual.
- When the Manual Regeneration indicator lamp (Orange) on the Multi-function display II starts blinking, perform manual regeneration as soon as possible. For operation of the Multi-function display II, refer to Indicator and switch for DPF device in this manual.
- If using the oil other than the one in compliance with ACEA C2, the soot filter could be clogged sooner, and may cause not only deterioration of engine output and fuel consumption but also failure of the DPF in a short period of time.

Notes on regeneration

WARNING

- Do not stop a truck in a place where a material that easily catches fire, such as dry grass and paper, exists. The areas around the exhaust pipe and muffler and exhaust gas become a high temperature immediately after or during traveling or regeneration of the DPF device. A flammable object near the truck may cause fire. Also, there is a risk of scalding by a high temperature of the areas around the exhaust pipe and muffler and exhaust gas.
- Perform regeneration (combustion of soot) in a large, well-ventilated space. Inhaling the exhaust gas is dangerous because it may cause carbon monoxide (CO) poisoning because the exhaust gas contains hazardous carbon monoxide that is colorless and odorless.



10.5 SEnS+ (Option)

Operator assist system with pedestrian and object detection

10.5.1 SEnS+ Functions

(SEnS Plus: **Smart Environment Sensor Plus**)

With SEnS+, a camera designed specifically for forklift trucks detects detection targets (pedestrians or objects) in the detection range behind the truck, and notifies the operator that pedestrians or objects are nearby with a warning buzzer and warning lamps. In addition, this system is linked with the truck to control the traveling speed and starting, and to support the operator in reverse operation.

If the traveling speed exceeds 10 km/h, detection or notification of detection targets (pedestrians or objects) may not be possible.

System start-up and operating states

During function stop (during start-up preparation)

- When you turn on the key switch of the truck, a buzzer will sound for up to around 5 seconds from the multifunction display, and the SEnS+ function stop indicator will be displayed, notifying that the cameras are in a start-up preparation state. This indicates that the camera unit is in a state where detection targets (pedestrians or objects) cannot be detected, and thus the notification function does not operate.
- While in use, the SEnS+ function stop indicator may be displayed. This indicates that the camera unit is in a state where obstacles cannot be detected, and thus the notification and truck control functions do not operate. If this happens, inspect the camera unit. If you do not find any problems, the environment may be such that the camera unit cannot be operated. Furthermore, when the system is unable to notify, the buzzer will sound for approx. 5 seconds to notify the operator.

During function operation

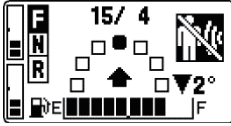
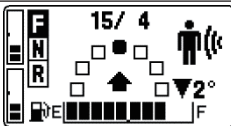
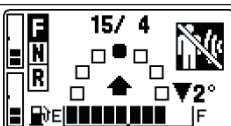
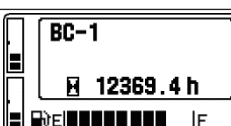
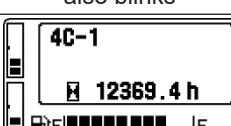
Approximately 10 seconds after you turn on the key switch, when checking the warning buzzer and the warning lamps is completed, the display switches to the SEnS+ function operation indicator, notifying that the preparation for starting up the camera unit has been completed and that the camera unit is in operation.

NOTICE

- If, after turning off the key switch, the key switch is turned on again within the waiting time, the function will operate without preparation for starting up (start-up time reduction function). The waiting time can be changed to between 0 minutes and 70 minutes, but during the waiting time, the camera unit consumes battery current. Therefore extending the waiting time is not recommended. In addition, if dead battery occurs on a daily basis, disable the start-up time reduction function. To change settings, contact an authorized Toyota dealer.
- If the key switch is turned on when the battery is over-discharged or at low temperatures, the camera unit may detect a low voltage and the start-up time reduction function may not operate. Make sure to check the SEnS+ function operation indicator is displayed and the camera unit is working properly.

Display

The system operating state can be checked with the multifunction display.

Truck/System		Multi-function display	
Key switch OFF		OFF	
Key switch ON	During start-up preparation		Refer to SEnS+ function indicator (Option: SEnS+) [➤ 70]
	During function operation		Refer to SEnS+ function indicator (Option: SEnS+) [➤ 70]
	During function stop / Camera detection impossible		Refer to SEnS+ function indicator (Option: SEnS+) [➤ 70]
	Camera error		Refer to Spanner indicator [➤ 58] *Spanner indicator also blinks
	Camera communication disruption error		Refer to Spanner indicator [➤ 58] *Spanner indicator also blinks

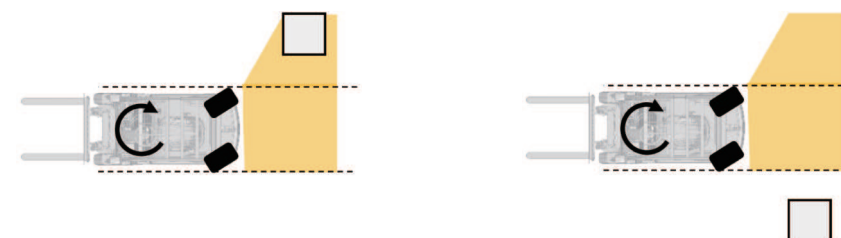
10.5.1.1 Start control

When detection targets (pedestrians or objects) are detected in the start control area behind the truck with the parking brake released before starting, the operator is notified with a warning buzzer and warning lamps. When the start control area is clear of detection targets (pedestrians or objects), the notification is canceled.

When the direction lever is switched to reverse while there are detection targets (pedestrians or objects) in the traveling direction, starting of the truck is restricted.

○: With start control —: No control		Steering state		
		Steering to the left	Straight ahead	Steering to the right*
Detection target position	Direction turning to the right	—	—	○
	Straight ahead	○	○	○
	Direction turning to the left	○	—	—

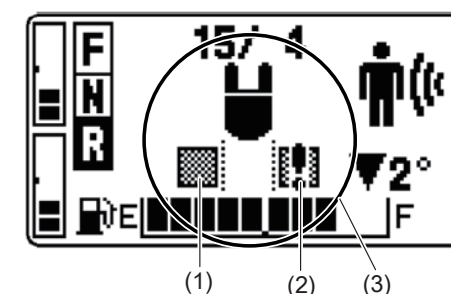
*: Start control when steering to the right



With start control

No control

Additionally, during start control (while the truck is stopped), the display start limitation indicator indicates the detection target position.



- (1) Detected target
- (2) Detection target that is the cause of start limitation
- (3) Start limitation indicator

- “Pedestrians or objects” or “pedestrians only” can be selected as the detection target. To change settings, contact an authorized Toyota dealer.
- The start control is released when the direction lever is returned to neutral, the accelerator is off and the direction lever is put in backwards again. This all enables to travel. The traveling speed is limited to 3 km/h because the purpose is to evacuate only. (Traveling speed is not limited below idle speed.)
- When obstacles, such as pedestrians or objects, disappear or removed in the start control area, notification level will be reduced, but the traveling speed limit is kept to prevent sudden acceleration. Releasing the accelerator pedal or changing the direction lever to the forward position, the traveling speed limit is canceled.

⚠ CAUTION

If the start control function is activated, the truck may move unexpectedly in the downhill direction depending on the slope of the road surface. The operator should always check the surrounding conditions before starting off and, if the start control function is activated, take appropriate action, such as depressing the brake, depending on the surrounding conditions and truck behaviour.

10.5.1.2 Traveling speed control

If pedestrians or objects are detected in the notification range, the operator is notified with a warning buzzer and warning lamps, and the speed of the truck is gradually reduced. This is a system that decelerates by engine brake, and is not a function to decelerate the truck using the brake. Also, this is not a function to automatically stop the truck. Deceleration operation by the operator is necessary.

Truck control varies depending on the detection target (pedestrian or object).

⚠ WARNING

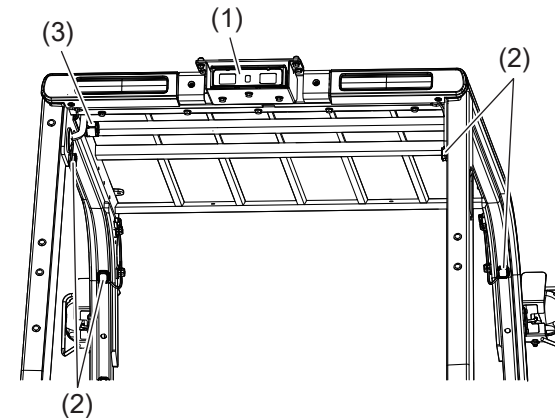
- This system is a reverse operation supporting system that assumes safe operation on the forklift operator's side. Although it is a system to detect detection targets (pedestrians or objects) behind the truck and notify the operator, it is not a system to prevent the operator's lack of attention to the rear side, such as looking aside during operation and absent-minded operation, or to support operation under poor visibility in a bad environment.
- This system is not a function to automatically stop the truck by decelerating with the brake.
- This system detects detection targets (pedestrians or objects) using image processing with cameras. There are limitations to the detection performance, and thus detection of detection targets (pedestrians or objects) may not be possible depending on the customer's use environment and operating conditions. Do not overestimate the system. The operator is still responsible for grasping the surrounding condition and needs to keep in mind safe operation.
- This system is designed for the truck traveling at less than 10 km/h. At speeds higher than 10 km/h, the system may not be able to detect detection targets (pedestrians or objects).
- If you rely on this system or perform operation while leaving safety to this system, this may lead to an unexpected accident, thus possibly causing major injuries or, in the worst case, death to the operator or pedestrians.

- Do not rush pedestrians or objects into the area behind the truck while it is moving in order to check the functioning of this system.

⚠ CAUTION

- During use, if a SEnS+ function stop indicator, camera error, or camera communication disruption error is displayed, immediately stop operation, stop the truck in a safe place, apply the parking brake, and remove the key. Then, inspect the camera unit, and consult an authorized Toyota dealer as necessary.
- Depending on the position or form of detection targets (pedestrians or objects) within the detection range, it may be difficult for the operator to determine whether the speed limit is imposed because of start control or traveling speed control. In such cases, check the working environment including detection targets (pedestrians or objects), take appropriate countermeasures such as testing the conditions for canceling each of these controls, moving detection targets (pedestrians or objects) to the extent possible, and moving forward to try avoiding these obstacles.

10.5.2 Devices and names



- (1) Camera unit
- (2) Warning lamps
- (3) Warning buzzer

⚠ WARNING

- Do not modify the camera unit.
- Do not cover or otherwise modify the warning lamps and warning buzzer. Doing so makes it more difficult for the operator to notice them.
- If the glass on the front face of the camera unit becomes cracked or scratched, the system may not operate normally even if a SEnS+ function stop indicator is not displayed.

⚠ CAUTION

- Although the camera unit is equipped with a function that automatically detects dirt, fogging on the front of the camera and then the SEnS+ function stop indicator is displayed, but it is not perfect.
Even if dirt or substances, such as water droplets, snow, ice, and salt, adhered to the front face of the cameras, the SEnS+ function stop indicator may not be able to display depending on the situation. If the front face of the cameras is dirty, the system may not operate normally. Wipe off water droplets or the like and always keep the front faces of the cameras clean.
- Do not directly touch with your hands the front face of the cameras as the unit can become very hot during operation.
- Never disassemble the camera unit.
- Make sure that the accessories of the truck do not come inside the range of the visual field of the camera unit. If they do, the visual field of the camera unit is blocked, thus possibly causing the system to malfunction.
- If a notification is consistently issued even if no detection targets (pedestrians or objects) are present, consult an authorized Toyota dealer.
- Do not directly look at a laser beam.
- Be sure to contact an authorized Toyota dealer for replacement of the camera unit.
- Setting only the warning lamps may limit the effectiveness of this system. To change settings, consult an authorized Toyota dealer.
- When you are wearing earplugs, earmuffs or the like, or in places where a loud noise occurs, the sound of the buzzer may be hard to hear.

NOTICE

You can set the warning buzzer ON/OFF. To change settings, contact an authorized Toyota dealer.

Laser safety

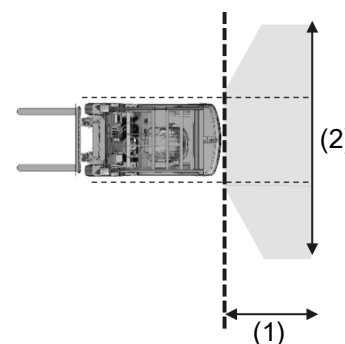
This camera complies with the requirements of IEC 60825-1:2014 (EN 60825-1:2014) for class 1 laser products. This camera includes one VCSEL (Vertical Cavity Surface Emitting Laser) with a wavelength of 840 to 865 nm. The angle of convergence of the beam is 3.5 degrees (minimum) and 4.5 degrees (maximum) in the vertical direction, and 3.5 degrees (minimum) and 4.5 degrees (maximum) in the horizontal direction, and a laser beam is generated in pulse wave (PW) mode.

Optical peak output (typ): 40 mW

Optical average output (typ): Less than 0.6 mW

10.5.3 Target area**Start control area**

The start control area is the area in which if a detection target (pedestrian or object) is detected, a limitation is imposed on reverse starting.

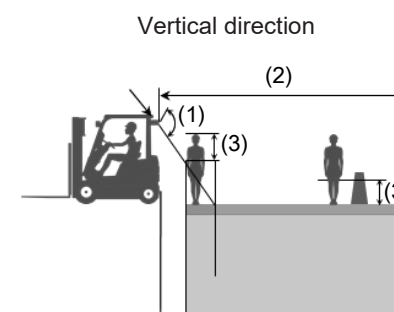


- (1) Distance: Approx. 1.6 m
(2) Width: Truck width + approx. 2.0 m

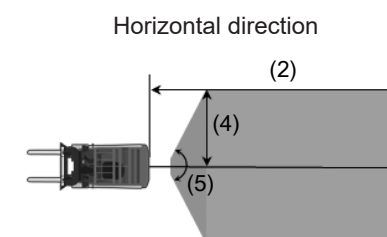
10**Detection range**

The detection range is the area in which the system can detect detection targets (pedestrians or objects).

Detection targets (pedestrians or objects) with a height of 500 mm or more are detected. When a pedestrian is recognized, tracking occurs, thus enabling pedestrian recognition to continue even if the silhouette of the body changes a little.



- (1) Detection angle: 120°
(2) Distance: Approx. 10 m
(3) Height: Approx. 500 mm or more*



- (4) Lateral: Approx. 5.5 m per side
(5) Detection angle: 130°

*Height changes depending on the distance from the camera unit

Distance from the camera unit	Detectable detection target height (lower limit)
Less than 5 m	500 mm
5 m or more, less than 8 m	650 mm
8 m or more	800 mm

Furthermore, there is an area (cancellation region) which is not detected so that the counterweight and items such as beacons installed on the counterweight are not recognized as detection targets (pedestrians or objects).

⚠ WARNING

- Do not push the camera bracket too hard or hang down from it. If the installation angle of the cameras is changed, this may cause reduced detection target (pedestrian or object) detection and reduced distance accuracy.
- Detection targets (pedestrians or objects) with a height of less than 500 mm are not detected. Also, depending on the distance from the camera unit, the height of detection targets (pedestrians or objects) that can be detected varies.
- Detection targets (pedestrians or objects) outside the effective detection angles of the camera (range that does not appear on the camera) cannot be detected. Before driving backward, be sure to check the surroundings, including the traveling direction.

⚠ CAUTION

- The areas at the sides and in front of the truck are out of the notification range of this system.
- Do not directly touch with your hands the front face of the cameras of the camera unit. Dirt on the front face of the cameras may cause reduced detection target (pedestrian or object) detection.
- Even in the detection range, detection may not be possible depending on the customer's use environment, operating conditions, and state of detection targets (pedestrians or objects).

NOTICE

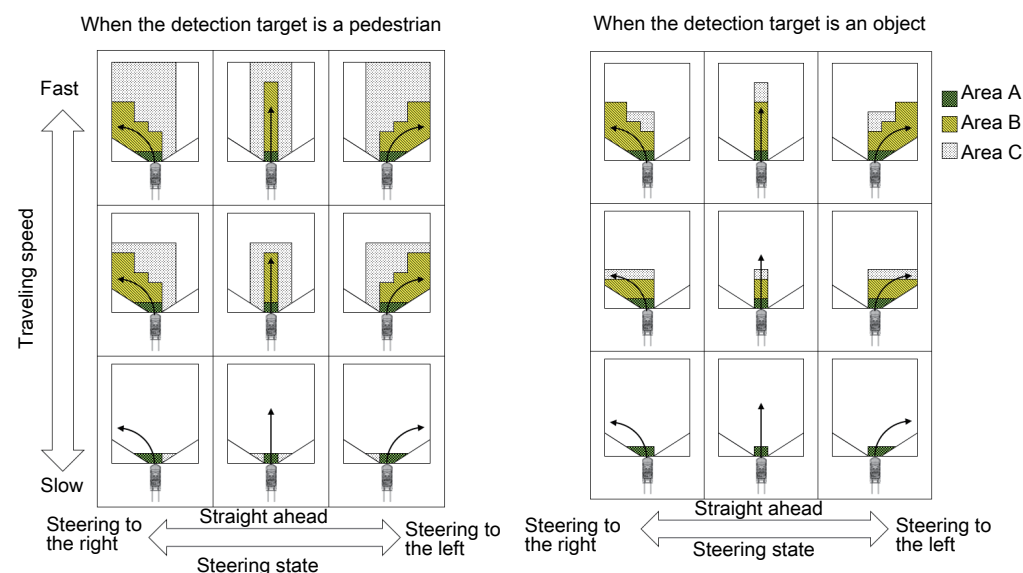
The cancellation region can be changed. To change settings, contact an authorized Toyota dealer.

Notification range

The notification range is the area in which the system detects detection targets (pedestrians or objects) and notifies the operator. This automatically changes depending on the detection targets, traveling speed, and steering angle.

Additionally, the notification range is divided into three notification ranges (Area A, Area B, and Area C), and the notification level and traveling speed control level are set for each area.

Illustration

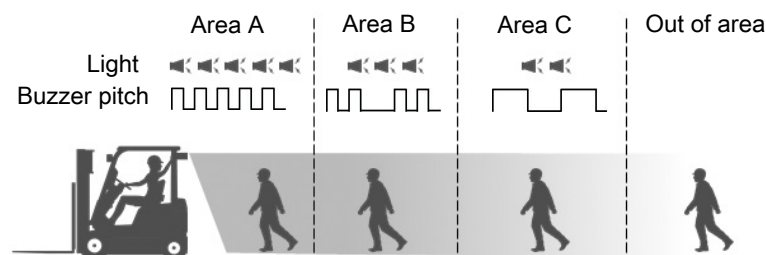


10.5.4 Notification level

Notification levels and traveling speed control levels in these three notification ranges (Area A, Area B, and Area C) change depending on the detection targets (pedestrians or objects), distance, and position.

The closer a detection target (pedestrian or object) approaches, the faster the warning lamps blink and the higher and more frequent the warning buzzer sounds, notifying the operator of approaching detection targets. Additionally, if the detection target is a pedestrian, detection in Area C will result in “traveling speed control according to the distance,” and detection in Areas A and B will result in “traveling speed control toward to idle speed.” If the detection target is an object, this will result in truck speed control only in Areas A and B. If the detection target moves from Area A or B toward Area C, and then further away from these areas, the notification level of the warning lamps and warning buzzer will reduce.

For details of settings, check with an authorized Toyota dealer.



⚠ WARNING

- When a notification from the warning lamps and warning buzzer has been confirmed, a pedestrian may be nearby. First check the surrounding area, and then perform proper operation, such as depressing the brake pedal, at the operator's judgment.
- Even if the notification level drops, pedestrians may be within the notification range. Before driving backward, be sure to visually check the rear.

⚠ CAUTION

- Depending on the use environment of the customer's forklift, there may be cases where it becomes hard to differentiate the tones of the warning buzzer and/or the warning lamps become hard to see.

NOTICE

- The notification range and truck control level can be changed. To change settings, contact an authorized Toyota dealer.

10.5.5 Detection conditions

The cameras detect pedestrians or objects in the notification range as “detection targets” first and then recognizes pedestrians as such according to the characteristics of the silhouette of the person standing and walking.

Carefully read the following for details on detection conditions.

⚠ WARNING

Under the following conditions, pedestrians are not recognized or may not be recognized:

- When their height is less than 1,500 mm or exceeds 1,900 mm
- When pedestrians are squatting down, lying down, bending forward, or standing in an upright position while facing sideways
- When pedestrians are raising their hands or legs
- When pedestrians are running
- When a part of their body is hidden behind the walls, shelves, or other detection targets
- When pedestrians are holding something in their arms or hands
- When pedestrians are dressed in clothes that blend in with the background
- When the whole body contour is ambiguous (for example, when pedestrians are wearing a skirt, an apron, or a muffler, when pedestrians are putting up an umbrella, or when pedestrians have long hair)
- When pedestrians are riding a bicycle or a motorcycle
- When pedestrians are in group
- When pedestrians are pushing a dolly
- When pedestrians are near walls, shelves, or other detection targets
- When pedestrians are running out suddenly
- When pedestrians are in dark places or when a part of their body is under light
- At nighttime or in buildings without lighting; under the strong light of the blazing sun; when light comes from ahead of the cameras (backlight)
- When the visual field of the cameras is blocked, or pedestrians are hidden by dust, smoke, fog or the like
- On a steep uphill or downhill slope; when the forklift and pedestrians are not positioned on the same ground
- When the cameras otherwise cannot correctly recognize pedestrians as the shape of a pedestrian

⚠ WARNING

The following objects may be falsely recognized as pedestrians:

- Collision protection poles at the building entrance
- Chairs with a backrest
- Standing trees and road signs
- Objects with a shape that the cameras recognize as the shape of a pedestrian, for example, stepladders and tripods

⚠ WARNING

Under the following conditions, target detection does not occur or may not occur:

- At nighttime or in buildings without lighting (less than 100 lux (the illumination level recommended for very rough visual work and warehouses according to JIS Z 9110:2010)); under the strong light of the blazing sun; when light comes from ahead of the cameras (backlight)
- When the visual field of the cameras is blocked, or detection targets are hidden by dust, smoke, fog or the like
- When detection targets blend in with the background
- When the truck has not been well maintained, for example, when tires are worn, when air pressure is insufficient, or when unspecified or repaired tires are used
- When the truck is loaded with heavy loads that exceed the rated capacity
- When visibility is limited due to inclement weather
- When condensation has occurred on the front face of the cameras or substances, such as water droplets, snow, ice, salt, and dirt, adhere to the front face of the cameras
- When the glass of the front face of the cameras is cracked or scratched
- When the front face of the cameras is covered with a protective film
- When incident light differs at the building entrance
- When the forklift and detection targets are not positioned on the same flat ground, for example, when there are detection targets on a steep uphill or downhill slope while the forklift is positioned on a flat ground
- When the cameras vibrate when traveling on unpaved, uneven surfaces, or over bumps
- When the forklift makes small turns
- When pedestrians run out or objects move suddenly
- When the truck has been modified to the extent that the visual field of the cameras is blocked or when the installation angle/height of the cameras is changed
- When detection targets are too close to the cameras (within 300 mm)

⚠ WARNING

Under the following conditions, false detection of detection targets occurs or may occur:

- In places such as racks, elevators, trucks, narrow gates, and aisles
- When road gradients change suddenly
- When roads are winding or uneven
- When the truck passes over clusters of water vapor, smoke, etc.
- In inclement weather
- When there are detection targets on a right-angle aisle ahead
- When the truck passes by an oncoming truck
- When the truck drives through vinyl curtains or the like
- When the truck drives near walls or detection targets
- When the truck approaches walls or trucks behind it

⚠ WARNING

The following detection targets are not detected or may not be detected:

- Detection targets with a height of less than 500 mm
- Detection targets having a uniform surface without decoration or patterns, such as walls, shutters, doors, glass, and mirrors
- Thin detection targets, such as fences, mesh baskets, wires, wire nets, ropes, chains, and poles
- Short or small detection targets, such as pallets, returnable boxes, corrugated cardboard boxes, and steps
- Hoists, objects hung in the air, and piping in and out of premises

10.5.6 Software

The camera unit of this system includes Open Source Software (OSS).

About software license

The software incorporated in this camera unit consists of multiple, independent software components. Each software component is copyrighted by Toyota Industries Corporation or third parties.

1. Software developed jointly by Toyota Industries Corporation and RICOH Industrial Solutions Inc. (hereinafter called "RINS")

Of the software components of this camera unit, the source codes developed or created by Toyota Industries Corporation and RINS are copyrighted by Toyota Industries Corporation and RINS and protected by the Copyright Law, international conventions, and other related laws and regulations.

2. Software copyrighted by third parties (Open Source Software)

The license information about the OSS is available at the following URL:

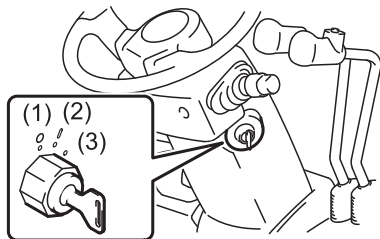
<http://www.toyota-lf.com/oss/english/>

⚠ CAUTION

If the software is modified by someone other than manufacturer or at any factory not specified by the manufacturer, the camera unit may not operate normally.

11 SWITCHES AND LEVERS

11.1 Ignition key switch



- (1) OFF
- (2) ON
- (3) START

OFF - Position to stop the engine. Insert/withdraw the key in this position.

ON - Engine operating position. Located one position clockwise from the OFF position.

START - Position to start the engine. Located one position clockwise from the ON position. To start the engine, turn the key switch to START position. After the engine starts, release the key and it will return to the ON position automatically. To restart the engine, turn back the key switch to OFF position, and turn it to START position.

The engine does not start unless the direction control lever is in the neutral position.

⚠ WARNING

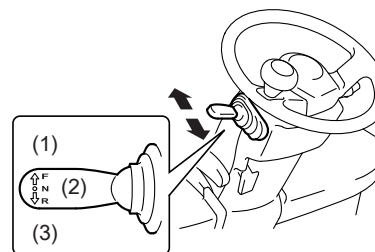
- When you turn on the key switch, be sure that you are in the normal operating position with the seat belt fastened and the parking brake is applied. Otherwise, the truck may start suddenly, leading to an unexpected accident.
- If the OPS indicator lamp is illuminated, return the direction control and load handling control levers to the neutral positions and sit in the seat and fasten the seat belt. Confirm that the OPS indicator lamp is not illuminated.
- When starting 1FS engine models (gasoline/ LPG), do not press the accelerator pedal.
- Do not leave the key switch in the ON position when the engine is stopped. It will cause the battery to over discharge.
- Do not operate the starter motor for more than 30 seconds continuously. Return the switch to the OFF position and wait at least 30 seconds prior to attempting restart.
- Do not turn the switch to the START position while the engine is running (except trucks fitted with optional anti-restart ignition key switch). This may damage the starter motor.
- If your truck has an anti-restart ignition key switch and optional keyless ignition switch to protect the engine, you must turn the switch from the ON position to the OFF position before attempting to start the engine again.
- When the key switch is turned off (engine stopped), the forks will not lower even if the lift lever is operated. The forks can be lowered when the operator is seated in the operator's seat and key switch is turned on (Key-lift interlock).

- If the spanner indicator lamp is illuminated and does not go off when you sit in the seat, the battery voltage may be low (over discharged). In such case, do not operate the truck until the indicator lamp turns off, because the truck may not operate correctly. If the spanner indicator lamp does not go off approximately 1 to 2 minutes after engine starts or when the engine speed is increased, stop operation and have the truck inspected by the authorized Toyota dealer. (For diesel engine models, the spanner indicator lamp may stay illuminated during engine warm-up after a cold engine start. This does not indicate a malfunction.)

NOTICE

- For diesel engine models, start the engine after the glow indicator lamp goes off.

11.2 Direction control lever



- (1) Forward
- (2) Neutral
- (3) Reverse

Shift lever to change the travel direction between forward and reverse.

Forward travel - Push the lever forward

Reverse travel - Pull the lever backward

The neutral position is halfway between the forward and reverse position.

Forward and reverse travel speed can be adjusted by the amount the accelerator pedal is depressed.

⚠ CAUTION

- Always operate the direction control lever from a normal operating position.
- The engine cannot be started unless the direction control lever is in the neutral position.
- Stop the truck before shifting between forward and reverse direction.

NOTICE

To restart powered travel after the activation of the OPS, release the accelerator pedal, return the direction control lever to the neutral position and sit in the seat. Sitting in the seat without returning the direction control lever to the neutral position will not allow powered travel.

11.3 Torque converter interlock function (Option)

If you move the direction control lever to change travel direction (i.e. forward to reverse direction) while traveling at high speed, this function electrically disengages the drive and sets the torque converter to neutral. Once the speed drops below the set speed while traveling in neutral, the travel direction will be automatically switched.

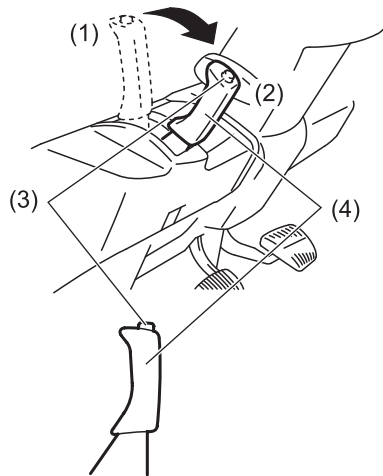
To change travel direction, operate the direction control lever after travel speed is reduced sufficiently.

Ask the authorized Toyota dealer about changing the speed setting.

⚠ CAUTION

- When the interlock is engaged, release the accelerator pedal and use the brake pedal to reduce speed. After the truck has stopped moving, slowly press the accelerator pedal down to start moving again. Disengaging the interlock while the accelerator pedal is pressed down could result in wheel spin.
- Do not perform forward or reverse operation on a gradient or incline. If direction control lever is operated on a down gradient or incline, the torque converter interlock function may not operate correctly.

11.4 Parking brake lever



- (1) Released
- (2) Locked
- (3) Release knob button
- (4) Grip

Use the parking brake lever when parking or stopping.

Applying the parking brake

Grasp the grip of the parking brake lever and fully pull it toward you while depressing the brake pedal.

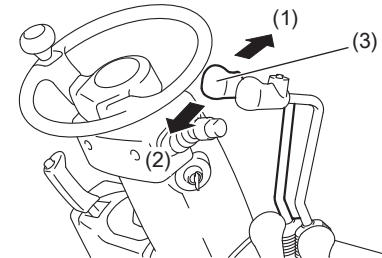
Releasing the parking brake

Push back the lever while pressing the release knob button. Keep the brake pedal fully depressed.

⚠ WARNING

- Before applying the parking brake, depress the brake pedal and always confirm that the truck has come to a stop.
- Never hold the lever at other than the grip because a finger may be pinched. Hold the grip at above the protrusion.
- Do not park the truck on a slope. Always park on level ground with forks flat on the floor so that no one will run into them or trip over them. If parking on a slope is unavoidable, place blocks behind the wheel to prevent the truck from rolling.
- Traveling without releasing the brake will damage the truck and brakes.
- If the parking brake is engaged when the direction control lever is in traveling position, the parking brake on warning indicator on the Multi-function display II (Option) will blink and a warning will sound to warn the operator (Multi-function display II (Option)). If the truck is operated without disengaging the parking brake, the brakes will lose effectiveness to hold the truck when the parking brake is applied. Ask the authorized Toyota dealer for an inspection.
- If the operator leaves the truck or turns off the key switch without engaging the parking brake, a warning will sound to warn the operator. (Multi-function display II (Option) or Australian spec.) When leaving the seat, always apply the parking brake, turn the key switch off and remove the key.

11.5 Lift lever



- (1) Lower
- (2) Lift
- (3) Lift lever

Lever to lift and lower the forks.

Lower - Push the lever forward

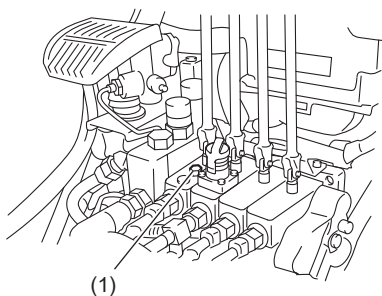
Lift - Pull the lever backward

The lifting speed can be adjusted by the amount the accelerator pedal is depressed and the amount the lift lever is pulled backward.

The lowering speed can be adjusted only by the amount the lift lever is pushed forward.

⚠ WARNING

- Always operate the lift lever from a normal operating position.
- If the OPS is activated, fully release the accelerator pedal, return the lift lever to the neutral position and return to the normal operating position to deactivate the OPS. If you return to the seat while the lift lever is in the lifting position, the OPS will be deactivated and the forks will start moving 1 second later.
- After the OPS is activated, if you return to the normal operating position while the lift lever is in the lowering position, the OPS will not be deactivated and the forks will not move due to the return-to-neutral function. Always return the lift lever to the neutral position before returning to the seat when deactivating the OPS.
- As long as the engine is off, the forks will not lower even if the lever is moved to the lowering position. When you sit in the normal operating position and turn the key switch to ON position, you can lower the forks even if the engine is stopped (except trucks with optional Mini lever or Joy stick).

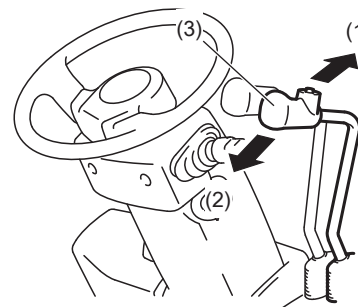
11.6 Manual lowering valve

(1) Manual lowering valve

If the forks can not be lowered for whatever reason, you can lower the fork by loosening the manual lowering valve located on the oil control valve.

NOTICE

Once the forks have been lowered with the manual lowering valve, be sure to close and lock the valve. When loosening the manual lowering valve, do not make more than one rotation.

11.7 Tilt lever

- (1) Forward tilt
(2) Backward tilt
(3) Tilt lever

Lever to tilt the mast forward and backward.

Forward tilt - Push the lever forward

Backward tilt - Pull the lever backward

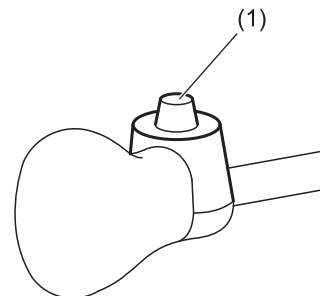
The forward or backward tilting speed can be adjusted by the amount the accelerator pedal is depressed and the amount the tilt lever is moved.

⚠ WARNING

- Always operate the tilt lever from a normal operating position.
- If the OPS is activated, fully release the accelerator pedal, return the tilt lever to the neutral position and return to the normal operating position to deactivate the OPS. If you return to the seat while the tilt lever is operated, the OPS will be deactivated and the forks will start moving 1 second later.

11.8 Tilt lever knob switch (Option)

(Only with models equipped with SAS option)



(1) Tilt lever knob switch

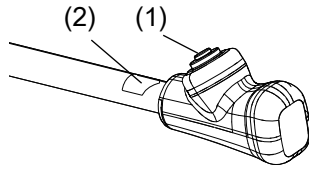
Forks will automatically stop at the horizontal position when operating the tilt lever from backward to forward position with pressing the tilt lever knob switch.

It is also possible to slow down the backward tilting speed at a low lift height by pressing the knob switch (At a high lift height, the backward tilting speed is automatically reduced by the active mast backward tilt speed control function of SAS).

For details of this function, please refer to the SAS FUNCTION section of this manual.

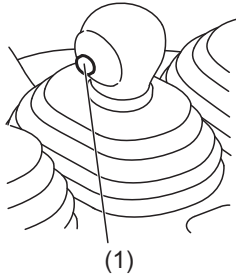
11.9 Clamp release button (Option)

Standard lever

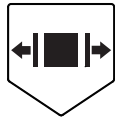


The clamp release button is fitted on the attachment lever (clamp operating lever).
To open the clamp attachment, operate the attachment lever forward with the clamp release button pressed.

Mini lever (Option)



- (1) Clamp release button
(2) Clamp release decal



11.10 Attachment lever (Option)

Levers to operate attachments.

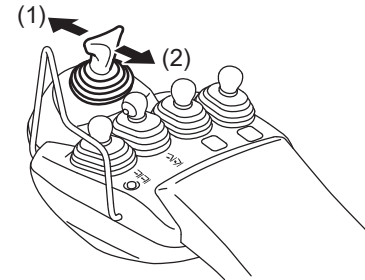
Attachment operating speed can be adjusted by the amount the accelerator pedal is depressed and the amount the levers are moved.

⚠ WARNING

- Always operate the attachment levers from a normal operating position.
- If the OPS is activated, fully release the accelerator pedal, return all levers to the neutral position and return to the normal operating position to deactivate the OPS.
- After the OPS is activated, if you return to the normal operating position while the lever(s) are operated, the OPS will not be deactivated and the forks will not move due to the return-to-neutral function. Always return all levers to the neutral position before returning to the seat when deactivating the OPS.

11.11 Mini lever (Option)

11.11.1 Direction control lever



- (1) Forward travel
(2) Reverse travel

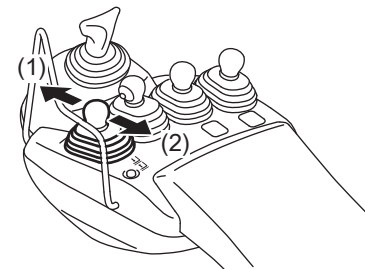
⚠ CAUTION

- Always operate the direction control lever from a normal operating position.
- The engine cannot be started unless the direction control lever is in the neutral position.
- Stop the truck before shifting between forward and reverse.

NOTICE

- To restart powered travel after the activation of OPS, release the accelerator pedal, return the direction control lever to the neutral position and sit in the seat. Sitting in the seat without returning the direction control lever to the neutral position will not allow powered travel.
- The position of the direction control lever may vary depending on the truck specifications.

11.11.2 Lift lever



- (1) Lower
(2) Lift

Shift the lever to change the travel direction between forward and reverse.

Forward travel - Push the lever forward

Reverse travel - Pull the lever backward

The neutral position is halfway between the forward and backward position.

Forward and reverse travel speed can be adjusted by the amount the accelerator pedal is depressed.

Lever to lift and lower the forks.

Lower - Push the lever forward

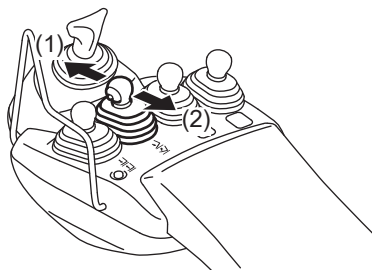
Lift - Pull the lever backward

The lifting speed can be adjusted by the amount the accelerator pedal is depressed and the amount the lift lever is pulled backward.

The lowering speed can be adjusted only by the amount the lift lever is pushed forward.

⚠ WARNING

- Always operate the lift lever from a normal operating position.
- If the OPS is activated, fully release the accelerator pedal, return all levers to the neutral position and return to the normal operating position to deactivate the OPS.
- After the OPS is activated, if you return to the normal operating position while the lever(s) are operated, the OPS will not be deactivated and the forks will not move due to the return-to-neutral function. Always return all levers to the neutral position before returning to the seat when deactivating the OPS.

11.11.3 Tilt lever

- (1) Forward tilt
(2) Backward tilt

Lever to tilt the mast forward and backward

Forward tilt - Push the lever forward

Backward tilt - Pull the lever backward

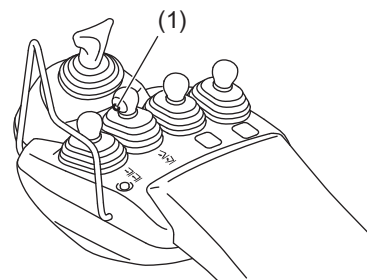
The forward or backward tilting speed can be adjusted by the amount the accelerator pedal is depressed and the amount the tilt lever is moved.

⚠ WARNING

- Always operate the tilt lever from a normal operating position.
- If the OPS is activated, fully release the accelerator pedal, return all levers to the neutral position and return to the normal operating position to deactivate the OPS.
- After the OPS is activated, if you return to the normal operating position while the lever(s) are operated, the OPS will not be deactivated and the forks will not move due to the return-to-neutral function. Always return all levers to the neutral position before returning to the seat when deactivating the OPS.

11.11.4 Automatic fork leveling switch

(Automatic fork leveling control)

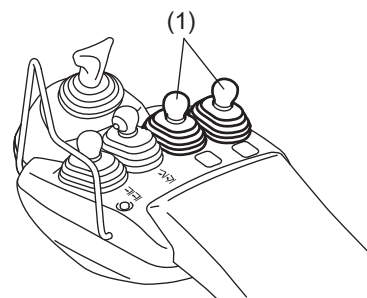


(1) Automatic fork leveling switch

Forks will automatically stop at the horizontal position when operating the tilt lever from the backward to forward position or from the forward to backward position while pressing the automatic fork leveling switch.

It is also possible to slow down the backward tilting speed at a low lift height by pressing this switch (At a high lift height, the backward tilting speed is automatically reduced by the active mast backward tilt speed control function of SAS).

For details of this function, please refer to the SAS FUNCTION section of this manual.

11.11.5 Attachment lever

(1) Attachment levers

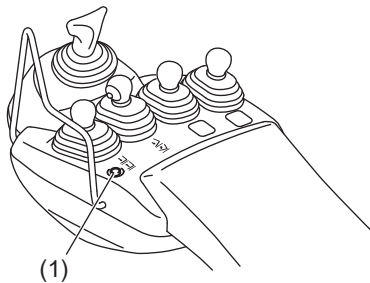
Levers to operate attachments.

Attachment operating speed can be adjusted by the amount the accelerator pedal is depressed and the amount the levers are moved.

⚠ WARNING

- Always operate the attachment levers from a normal operating position.
- If the OPS is activated, fully release the accelerator pedal, return all levers to the neutral position and return to the normal operating position to deactivate the OPS.
- After the OPS is activated, if you return to the normal operating position while the lever(s) are operated, the OPS will not be deactivated and the forks will not move due to the return-to-neutral function. Always return all levers to the neutral position before returning to the seat when deactivating the OPS.

11.11.6 Horn switch

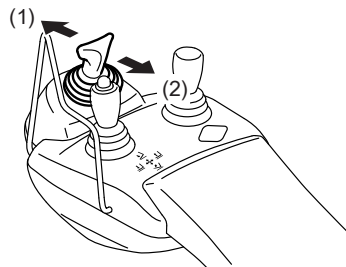


(1) Horn switch

Press this switch to sound the horn.

11.12 Joy stick (Option)

11.12.1 Direction control lever



(1) Forward travel
(2) Reverse travel

Shift the lever to change the travel direction between forward and reverse.

Forward travel - Push the lever forward

Reverse travel - Pull the lever backward

The neutral position is halfway between the forward and backward position.

Forward and reverse travel speed can be adjusted by the amount the accelerator pedal is depressed.

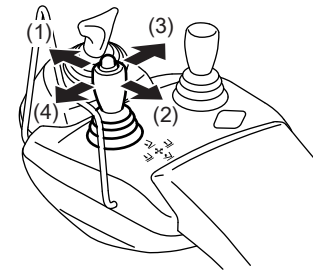
⚠ CAUTION

- Always operate the direction control lever from a normal operating position.
- The engine cannot be started unless the direction control lever is in the neutral position.
- Stop the truck before shifting between forward and reverse.

NOTICE

- To restart powered travel after the activation of OPS, release the accelerator pedal, return the direction control lever to the neutral position and sit in the seat. Sitting in the seat without returning the direction control lever to the neutral position will not allow powered travel.
- The position of the direction control lever may vary depending on the truck specifications.

11.12.2 Load handling lever



(1) Forward tilt
(2) Backward tilt
(3) Lift
(4) Lower

Lever to tilt the mast forward and backward and lift and lower the forks.

Forward tilt - Push the lever forward

Backward tilt - Pull the lever backward

The forward or backward tilting speed can be adjusted by the amount the accelerator pedal is depressed and the amount the lever is moved.

Lift - Push the lever to the right

Lower - Push the lever to the left

The lifting speed can be adjusted by the amount the accelerator pedal is depressed and the amount the lever is moved.

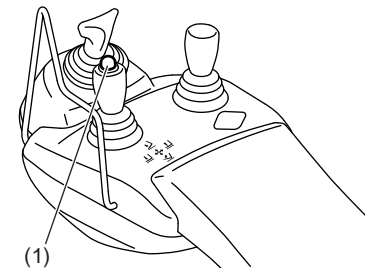
The lowering speed can be adjusted only by the amount the lever is moved.

⚠ WARNING

- Always operate the load handling lever from a normal operating position.
- If the OPS is activated, fully release the accelerator pedal, return all levers to the neutral position and return to the normal operating position to deactivate the OPS.
- After the OPS is activated, if you return to the normal operating position while the lever(s) are operated, the OPS will not be deactivated and the forks will not move due to the return-to-neutral function. Always return all levers to the neutral position before returning to the seat when deactivating the OPS.

11.12.3 Automatic fork leveling switch

(Automatic fork leveling control)



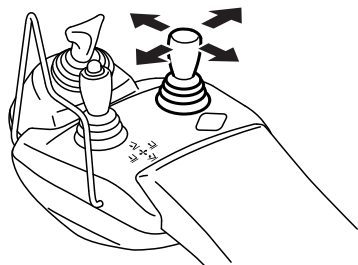
(1) Automatic fork leveling switch

Forks will automatically stop at the horizontal position when operating the load handling lever from the backward to forward position or from the forward to backward position while pressing the automatic fork leveling switch.

It is also possible to slow down the backward tilting speed at a low lift height by pressing this switch (At a high lift height, the backward tilting speed is automatically reduced by the active mast backward tilt speed control function of SAS).

For details of this function, please refer to SAS FUNCTION (OPTION).

11.12.4 Attachment lever



Lever to operate attachments.

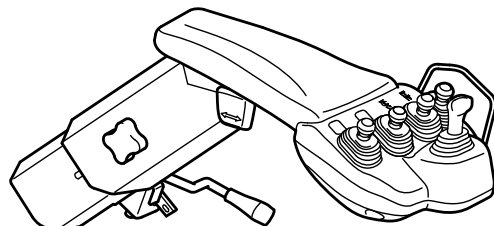
Attachment operating speed can be adjusted by the amount the accelerator pedal is depressed and the amount the lever is moved.

⚠ WARNING

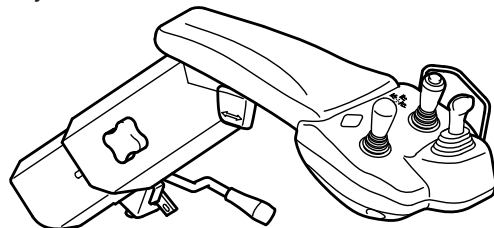
- Always operate the attachment lever from a normal operating position.
- If the OPS is activated, fully release the accelerator pedal, return all levers to the neutral position and return to the normal operating position to deactivate the OPS.
- After the OPS is activated, if you return to the normal operating position while the lever(s) are operated, the OPS will not be deactivated and the forks will not move due to the return-to-neutral function. Always return all levers to the neutral position before returning to the seat when deactivating the OPS.

11.13 Arm rest (Mini lever or Joy stick models)

Mini lever



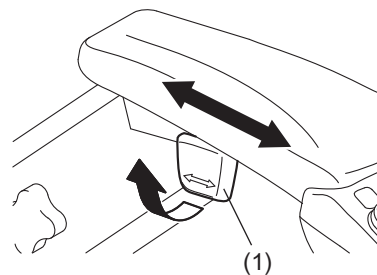
Joy stick



Before starting the engine, adjust the arm rest to set the optimum driving position.

⚠ CAUTION

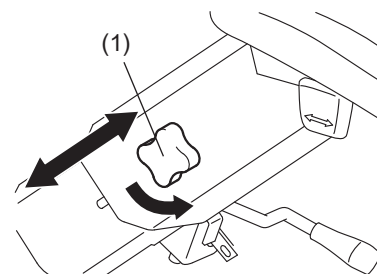
- Do not adjust the arm rest position while the truck is moving.
- After the adjustment of the arm rest position, confirm that the knobs and the lever have been secured in place. A loose knob or lever may cause an accident.
- To operate the truck safely, lock the arm rest securely. Before operating the truck, always confirm that the lever for turning and securing the arm rest is locked.



(1) Forward-backward position adjustment knob

Adjusting the forward-backward position

1. Pull up and loosen the forward-backward position adjustment knob.
2. Adjust the arm rest forward-backward position.
3. Then press the knob, securing the arm rest position in place.



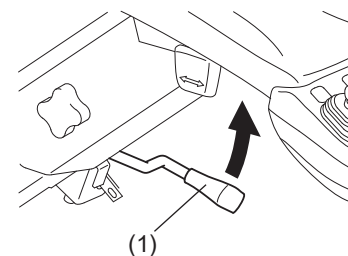
(1) Height adjustment knob

Adjusting the height position

1. Turn the height adjustment knob counter-clockwise to release the lock.
2. Then, move the arm rest up-and-down to place it to a desired position.
3. Turn knob clockwise to lock.

Tilt adjustment

1. Pull up and loosen the lever for turning and securing the arm rest.
2. Adjust the tilt of the arm rest.
3. Then push the lever down, securing the arm rest position in place. This lever is also used in order to turn the arm rest when you open and close the engine hood.

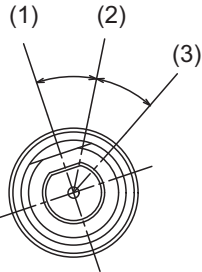
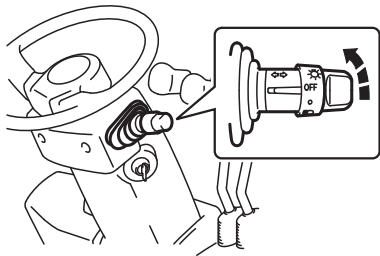


(1) Lever for turning and securing the arm rest

11.14 Integrated light and turn signal switch

This switch serves as both two-position light control switch and turn signal switch.

Light control switch



- (1) OFF
- (2) Position 1
- (3) Position 2

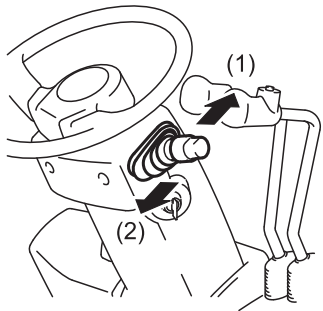
Irrespective of the key switch position, this switch allows you to turn the lights on or off.
NOTICE
For models with Multi-function display II (Option) or Key off head light off system (Option), the lights can be turned on only when the key switch is in the ON position.

This switch has two positions. With the switch at each position, the lights come on as shown below.

Light name	Position 1	Position 2
Head lights	OFF	ON
Tail lights, clearance lights (Option)	ON	ON
Meter illumination light	ON	ON

CAUTION
Do not keep lights such as the head lights on for a long time when the engine is stopped. It may cause over discharge of the battery and makes engine starting impossible.

Turn signal switch



- (1) Left turn
- (2) Right turn

This is a switch to make turn signal lights blink.
Left turn - Push forward
Right turn - Pull backward
The signal switch operates when the key switch is turned on.
The turn signal lever returns automatically to the original position after making a direction change.

11.15 Key off head light off system (Option)

The following lights will be turned off automatically when turning off the key switch.

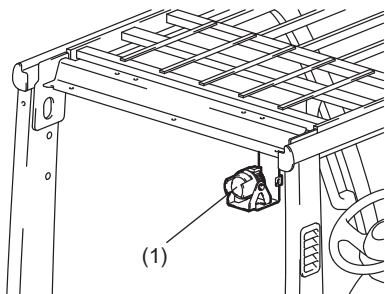
- Head lights
- Clearance lights of the front combination light (Option)
- Tail lights of the rear combination light (Option)

The following lights will not be turned off by Key off head light off system.

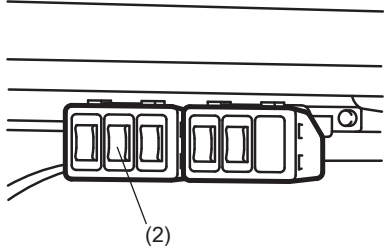
- Interior lamp (Option: Cabin models)
- LED rear working light (Option)
- Stop light of the rear combination light

11.16 LED rear working light (Option)

LED rear working light



(1) LED rear working light
Switch



(2) LED rear working light switch
LED rear working light switch

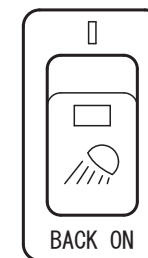


LED rear working light is fitted to the right rear of the overhead guard (to the left rear for models with optional Pre-cleaner).

LED rear working light switch

ON- Upper position
OFF- Lower position

LED rear working light switch (Selective lighting condition)



LED rear working light switch (Selective lighting condition)

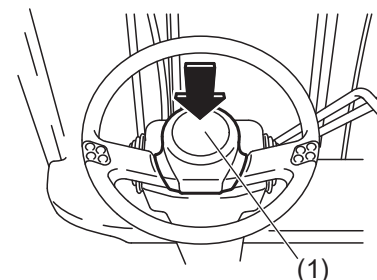
ON- Upper position

OFF- Center position

BACK ON- Lower position

When the switch is at BACK ON position, light turns on only when the direction control lever is placed in reverse position.

11.17 Horn button



(1) Horn button

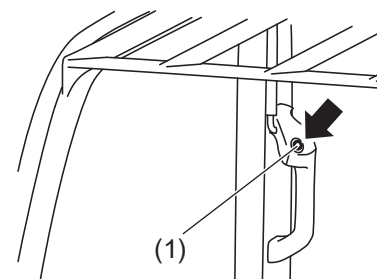
Press the button in the center of the steering wheel to sound the horn.

The horn will sound even when the ignition key switch is turned off.

NOTICE

- Do not operate the horn continuously more than 3 minutes. This may result in a malfunction.
- Do not operate the horn frequently more than necessary. This may result in a malfunction.

11.18 Rear assist grip with horn button (Option)

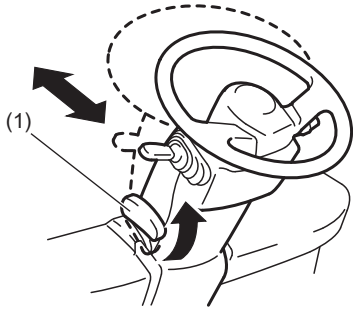


(1) Horn button

Press the button on the rear assist grip to sound the horn. Use this horn when reversing.

The horn will sound even when the ignition key switch is turned off.

11.19 Tilt steering adjusting lever



(1) Tilt steering adjusting lever

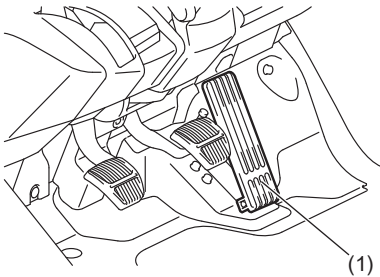
⚠ WARNING

- Always adjust the steering wheel position before traveling. Do not adjust the steering wheel position while the truck is moving. It may lead to incorrect operation and cause an unexpected accident.
- After adjustment, lightly shake the steering wheel back and forth to make sure it is locked securely. Otherwise, the steering wheel could move during operation, causing an accident.

The steering wheel position can be adjusted back and forth by the following procedure.

1. Pull the tilt steering adjusting lever up.
2. Adjust the steering wheel to the desired position.
3. Lock the steering wheel position by pushing down the lever.
4. After adjustment, try to move the steering wheel back and forth to make sure it is locked.

11.20 Accelerator pedal



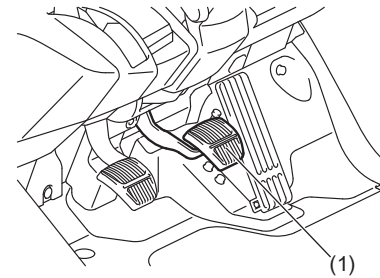
(1) Accelerator pedal

⚠ CAUTION

To avoid an unintended start of the truck, do not depress the accelerator pedal suddenly. Particularly when loaded or when stacking, the load may fall or collapse due to a sudden start. Always depress the accelerator pedal slowly.

Pedal to control the engine speed. The engine speed can be adjusted by the amount the accelerator pedal is depressed. Use the accelerator pedal to adjust the travel speed and the load handling speed.

11.21 Brake pedal



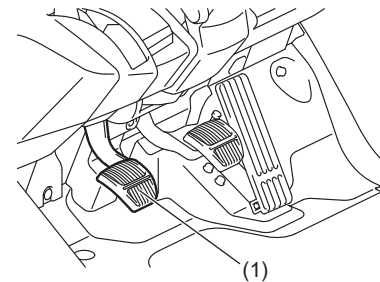
(1) Brake pedal

⚠ CAUTION

- Avoid sudden stop. Sudden stop will make the truck unstable and it may cause the truck to tip-over.
- The brake feeling differs between loaded and unloaded truck. Adjust the amount the brake pedal is depressed according to the loading state.

Pedal to make a truck slow down or stop.

11.22 Inching pedal



(1) Inching pedal

Pedal used to make fine adjustment of the travel speed.

Depressing the inching pedal slightly will partially disengage the transmission and make the truck move slowly. Fully depressing the inching pedal will completely disengage the transmission and bring the truck to a complete stop.

Operating the inching pedal

To slowly start the truck to the forward or reverse direction, follow the next procedure.

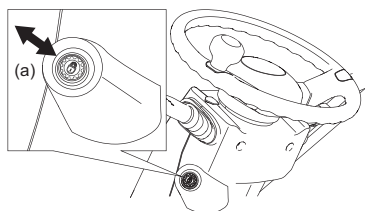
1. Fully depress the inching pedal.
2. Operate the direction control lever to the forward or reverse position.
3. Gradually depressing the accelerator pedal and releasing the inching pedal at the same time will start the truck slowly.

⚠ CAUTION

- To come to a stop, always use the brake pedal. Depressing the inching pedal will disengage the transmission and the engine braking will not work.
- When starting the truck on a slope or traveling down a slope, do not use the inching pedal. The use of the inching pedal disables the engine braking and it becomes hard to brake the truck safely.

11.23 Gear lock switch (Option)

(Not available on 1 speed Transmission)



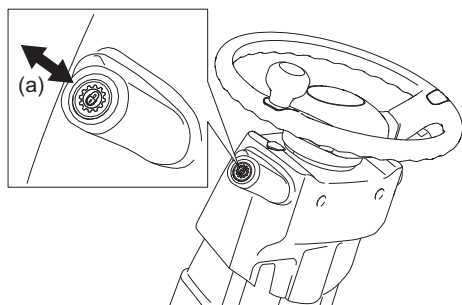
To activate or deactivate the gear lock switch, press the switch once.

(a) ON/OFF

NOTICE

This is not a gear selector.

In case of Telescopic Steering



Indicator Status	Description
ON (Light ON)	Truck is locked in first gear.
OFF (Light OFF)	Truck can be in first or second gear.
Light Flashing	Conditions are not met for locking the truck in first gear.

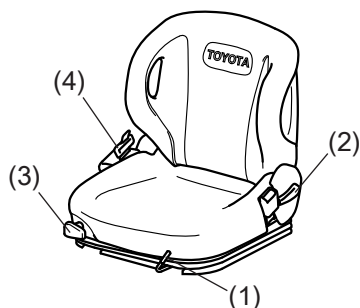
⚠ CAUTION

- Even if the gear lock switch is pressed during running in 2nd gear, the 1st gear lock function will not be activated. After that, the gear lock lamp blinks for a several seconds. By decelerating and running in 1st gear while the lamp is blinking, the 1st gear lock function will be activated and the gear lock lamp will light.
- If you keep running in the 2nd gear, the gear lock lamp turns off after a few seconds and return to the state before pressing the switch.

12 BODY COMPONENTS

12.1 Operator's seat

ORS seat (ORS: Operator Restraint System)



- (1) Seat slide lever
- (2) Recliner adjustment lever
(Option: Full suspension seat)
- (3) Weight adjustment lever
(Option: Full suspension seat)
- (4) Seat belt

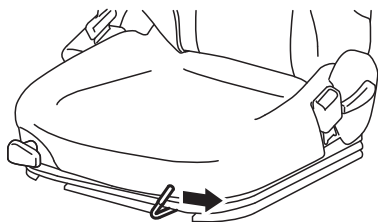
⚠ WARNING

To avoid accidents, adjust the seat position before operating the truck. Never adjust your seating position while the truck is moving.

⚠ CAUTION

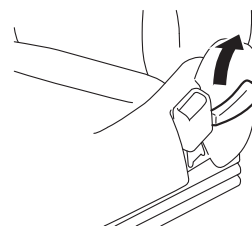
- The OPS seat switch prevents powered traveling and load handling operations when the operator is not seated in the seat. Be sure to remain seated in the seat while in operation. Do not operate the truck with any objects placed on the seat.
- Do not bypass the seat switch by any method other than sitting on the seat.

Adjusting the operator's seat position



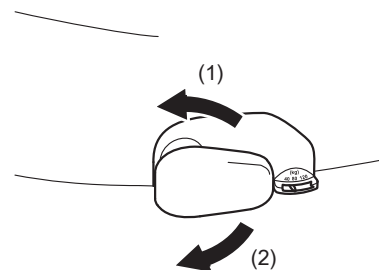
1. Turn the seat slide lever to adjust the seat back and forth.
2. Release the lever and the seat position is fixed.
3. After adjustment, lightly shake the seat back and forth to make sure it is locked securely.

Adjusting the reclining angle of the operator's seat (Option: Full suspension seat)



1. Pull the recliner adjustment lever to adjust the angle of the backrest.
2. Release the lever and the backrest position is fixed.
3. Lightly shake the seat back and forth to make sure it is locked securely.

Adjusting the suspension seat weight (Option: Full suspension seat)



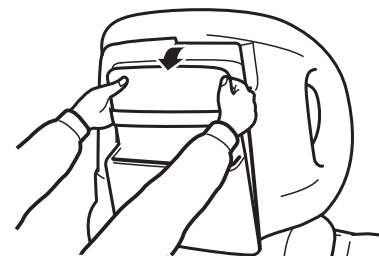
- (1) Upward (Lighter)
- (2) Downward (Heavier)

Turning the weight adjustment lever counter-clockwise moves the seat position upward (lighter side) and turning the lever clockwise moves the seat position downward (heavier side).

NOTICE

Weight adjustment range is from 40 to 120kg.

Pocket



An Operator's Manual and Manual for Safe Operation are stored in the pocket located on the rear side of the seat.

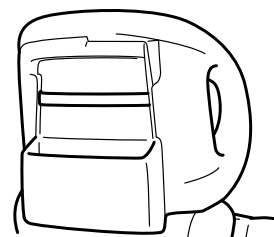
Make sure to open the pocket with both hands.

If your truck does not have these manuals, ask the authorized Toyota dealer for a copy.

NOTICE

Make sure the pocket is closed securely.

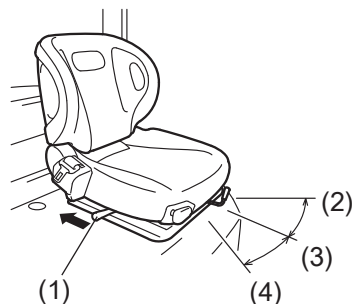
Magazine box



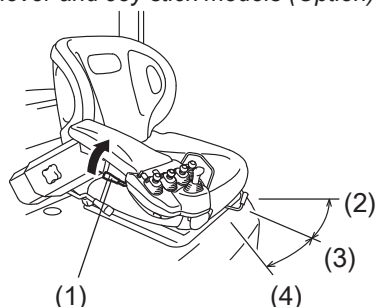
There is a box to store small items such as a sketch board, gloves, etc. attached on the rear side of the seat. Fix the items securely with the belt so that they will not come out when opening and closing the engine hood or while traveling on a rough road.

12.2 Swivel seat (Option)

Standard models



Mini lever and Joy stick models (Option)



- (1) Lock release lever
- (2) Getting off position (no lock)
- (3) Normal traveling position (with lock)
- (4) Traveling in reverse position (with lock)

The swivel seat is useful when traveling in the reverse direction over long distances or when getting off the truck. The seat can be rotated to right and left by releasing the lock release lever attached to the seat.

Traveling in reverse (rotating the seat to the right)

1. For standard models, pull the release lever backward to release the lock.

For Mini lever and Joy stick models (option), pull the lock release lever upward to release the lock.

2. Rotate the seat to the right and release the lever to lock the seat.

NOTICE

Release the lock release lever once the seat starts to rotate.

3. After traveling in reverse, release the lever and return the seat to normal position.

Getting off the truck (rotating the seat to the left)

1. For standard models, pull the release lever backward to release the lock.

For Mini lever and Joy stick models (option), pull the lock release lever upward to release the lock.

2. Rotate the seat to the left when getting off the truck. The seat will not be locked into place when rotating to the left.

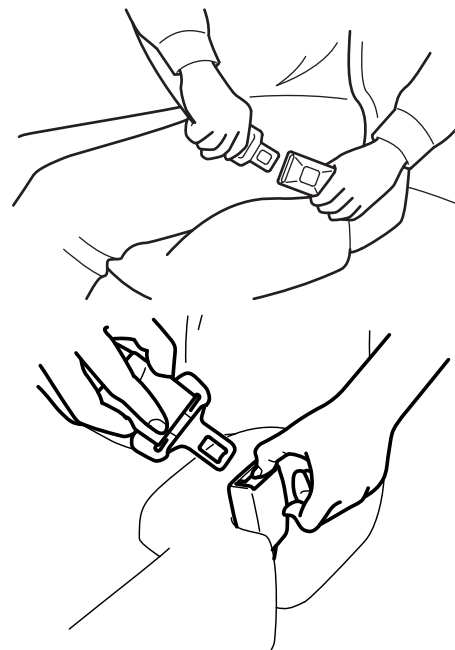
NOTICE

Release the lock release lever once the seat starts to rotate.

⚠ CAUTION

- When rotating the seat, be careful not to get your hand caught between the seat and cab.
- After rotating the swivel seat, return the seat to normal position and confirm that the seat is locked in place.
- While operating the truck forward or in reverse, make sure that the seat is securely locked.
- To prevent accidents, do not rotate the seat while operating the truck.
- The seat will not be locked into place when rotating to the left.

12.3 Seat belt



Fastening the seat belt

1. To fasten your seat belt, pull it out of the retractor and insert the tongue into the buckle.
2. You will hear a click when the tongue locks into the buckle. Pull on the belt to make sure the buckle is securely latched. The seat belt length will be automatically adjusted to your size.

Disconnecting the seat belt

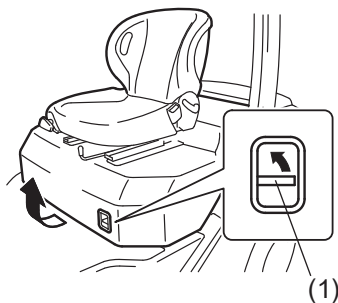
To release the lock, press the red button at the mouth of the buckle. The belt will be automatically retracted into the retractor.

⚠ WARNING

- Always wear your seat belt when operating the truck. To protect operators from the risk of serious injury or death in the event of a tip over, it is best to be held securely in the seat. The seat and seat belt will help to keep you safely within the truck and operator's compartment. In the event of a tip over, don't jump, grip the steering wheel, brace your feet, lean away from the direction of tip over, and stay with the truck.
- Before fastening the seat belt, check its bracket and belt itself for any abnormal condition.
- Do not fasten the seat belt if it is twisted.
- Wear the seat belt at the lowest possible part of the hip bone tightly.
- Do not adjust the seat belt so it is loose on the body by adding slack purposely with a clip or the like.
- If the seat belt is exposed to a strong impact in an accident, the belt may be damaged or torn. As such seat belt can not perform its intended function, replace it.
- If the seat belt is damaged, do not use the forklift until it is repaired.

12.4 Engine hood

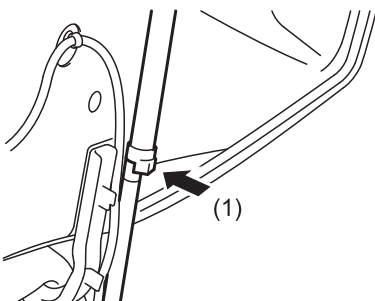
12.4.1 Except Mini lever or Joy stick models



(1) Engine hood lock release lever

⚠ WARNING

Working on the engine without locking of the hood may be hazardous.



(1) Hood damper lock

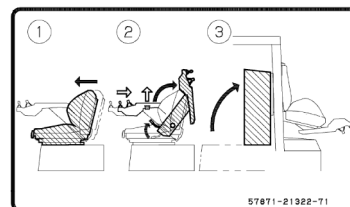
Opening

1. Pull up the seat slide lever and slide the seat to the forward-most position. (Applicable models: 3.5-4.0 ton models/ Models with optional Cabin)
2. Pull up on the engine hood lock release lever to release the engine hood lock. The engine hood will pop up slightly.
3. Lift the engine hood.
4. Open the engine hood all the way, then shake the hood slightly to check that the hood damper has been securely locked before letting go.

Closing

1. Lift up the engine hood and press the hood damper lock to release the lock.
2. Close the engine hood gently, and press down on the hood until you hear a clicking sound.

12.4.2 Mini lever and Joy stick models



Opening (Models with Mini lever or Joy stick)

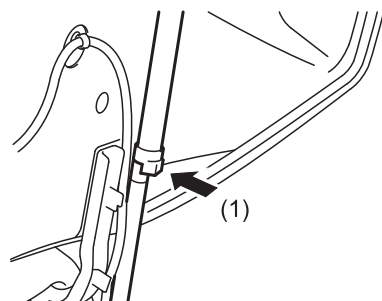
1. Pull up the seat slide lever and slide the seat to the forward-most position.
2. Pull up the forward-backward position adjustment knob and adjust the armrest to proper forward/backward position. Return the forward-backward position adjustment knob to its prior position and lock it in place.
3. Pull up on the lever for turning and securing the armrest and raise the armrest. Lower the lever for turning and securing the armrest to lock the armrest in place.
4. Pull up on the engine hood lock release lever to release the engine hood lock. The engine hood will pop up slightly.
5. Lift the engine hood.
6. Open the engine hood all the way, then shake the hood slightly to check that the hood damper has been securely locked before letting go.

Opening (Models with Cabin + Mini lever or Joy stick)

1. Pull up the seat slide lever and slide the seat to the forward-most position.
2. Pull up on the lever for turning and securing the armrest and tilt the armrest downward. Lower the lever for turning and securing the armrest to lock the armrest in place.
3. Pull up on the engine hood lock release lever to release the engine hood lock. The engine hood will pop up slightly.
4. Lift the engine hood.
5. Open the engine hood all the way, then shake the hood slightly to check that the hood damper has been securely locked before letting go.

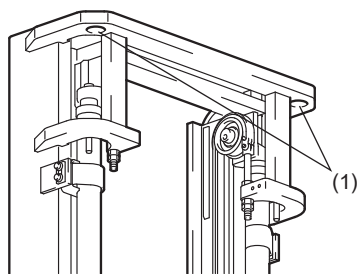
⚠ WARNING

Working on the engine without locking of the hood may be hazardous.

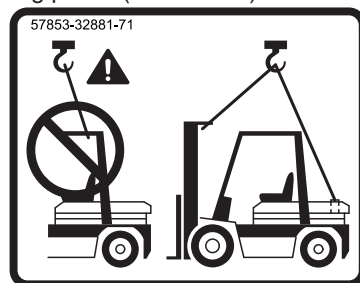


(1) Hood damper lock

12.5 Lifting points



(1) Lifting points (Outer mast)



⚠ WARNING

- When lifting the truck at lifting points, be sure to use wire cable or strap that has plenty of strength. For the weight of the truck, refer to Truck weight section of this manual.
- Never use a cable that has kinks, distortions, fraying or friction damage.
- Never walk under a suspended forklift.
- Never use the overhead guard to hoist the truck.

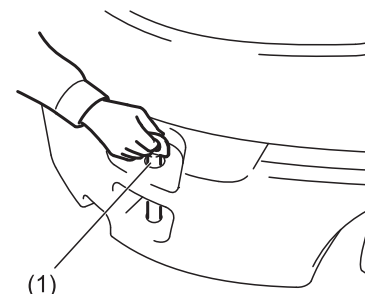
Closing

1. Lift up the engine hood and press the hood damper lock to release the lock.
2. Close the engine hood gently, and press down on the hood until you hear a clicking sound.
3. Return the seat and arm rest to the normal position.

Observe the following cautions when lifting the forklift:

- Lifting points are located on the outer mast and the counterweight. The lifting points are indicated on the warning labels attached to the forklift.
- When required to attach a wire cable or strap to the top of the collapsed mast use an aid such as a ladder. Do not climb on any parts of the forklift e.g. counterweight and then overhead guard to gain access to lifting points on the mast as you may fall.

12.6 Draw bar

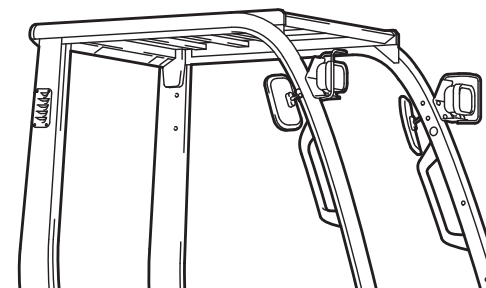


(1) Draw bar

⚠ CAUTION

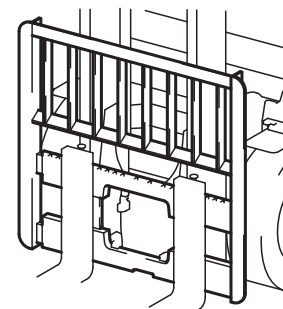
The draw bar should not be used for towing the forklift or for towing another trucks.

12.7 Overhead guard



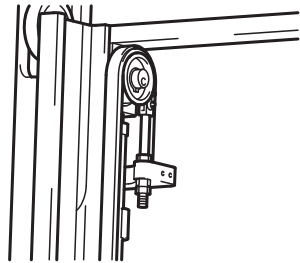
When properly maintained, the overhead guard will help protect the operator from falling objects.

12.8 Load backrest extension



When properly maintained, the load backrest extension will help stabilize the load and prevent parts of a load from falling back into the operator's compartment.

12.9 Mast



The mast uses special steel and precision bearings to make your Toyota lift truck reliable and economical.

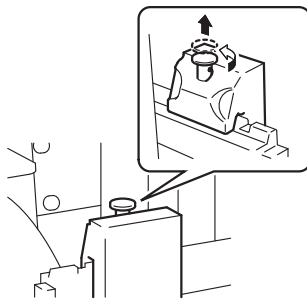
The mast is mounted to the front of the truck. Hydraulic cylinders are used to tilt the mast forward and backward. Hydraulic cylinders and chains are used to raise the carriage and attachments.

⚠ WARNING

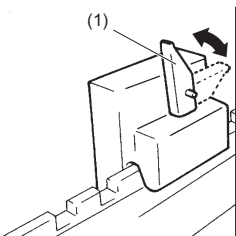
- The mast is designed for lifting loads not people. Do not use your forklift in place of an elevating work platform.
- Never place any part of your body in any part of the mast, the carriage or attachment.

12.10 Forks

Type A



Type B



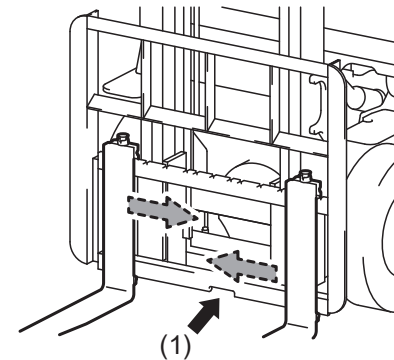
(1) Fork stopper

Adjust the forks in the position most appropriate for the load by unlocking the fork stopper.

1. Pull up and rotate the fork stoppers (Type A) or lift up the fork stoppers (Type B) to unlock.
2. Adjust the fork position.
3. After the adjustment, make sure to set the stopper to locked position to keep the forks in place.

⚠ WARNING

- Securely lock the fork stopper. If the fork stopper comes off, the forks may move and detach.
- Make sure the forks are securely locked before carrying a load.
- Forks are heavy. Caution is required when sliding a fork on the carriage as it may become difficult to slide even if force is applied to the fork when sliding it on the carriage.
- Do not grab forks when adjusting the fork position. A finger may be pinched. Push and slide the forks from the opposite side of the moving direction.
- When adjusting the forks, make sure that the weight of the load is centered on the truck. If the weight of the load is not centered, it may cause the load to fall off or the truck to tip-over.
- The fork detachment groove is to be used only when detaching the forks for maintenance. In the event that the forks pass over the detachment groove, they may detach, so be sure to take due care. Contact the authorized Toyota dealer for replacement of the forks.



(1) Fork detachment groove

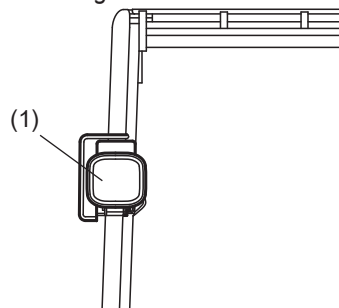
NOTICE

- When moving the forks, set the mast forward a little by operating the tilt lever so as to reduce the sliding friction.
- If the fork does not move easily, do not force it, and contact the authorized Toyota dealer.

12.11 Lights

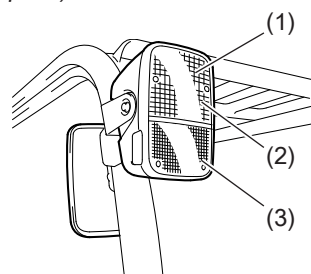
Head lights and front combination lights

Halogen head lights

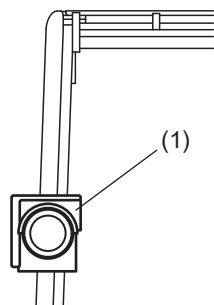


Head lights and front combination lights are fitted to right and left front side of the overhead guard.
The lights can be operated by the light control switch.

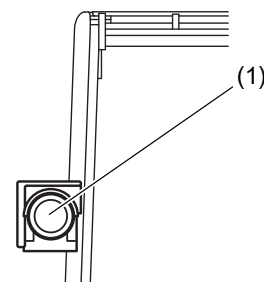
Halogen head lights and front combination lights (Option)



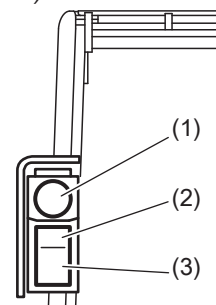
LED head lights (Option) (3.5 - 5.0 ton models)



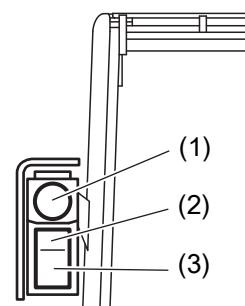
LED head lights (Option) (6.0 - 8.0 ton models)



LED Front combination lights (Option) (3.5 - 5.0 ton models)



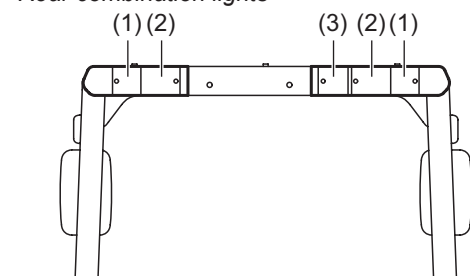
LED Front combination lights (Option) (6.0 - 8.0 ton models)



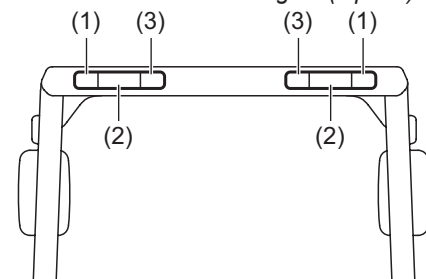
- (1) Head lights
- (2) Clearance lights
- (3) Turn light

Rear combination lights

Rear combination lights



LED Rear combination lights (Option)



- (1) Turn signal lights
- (2) Stop/tail lights
- (3) Back-up (reverse) light

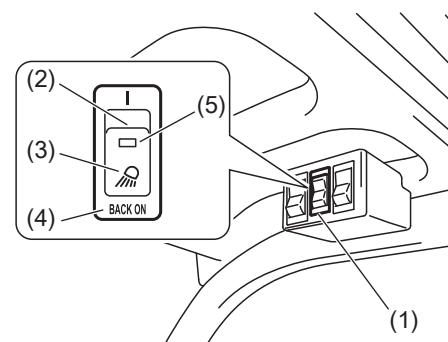
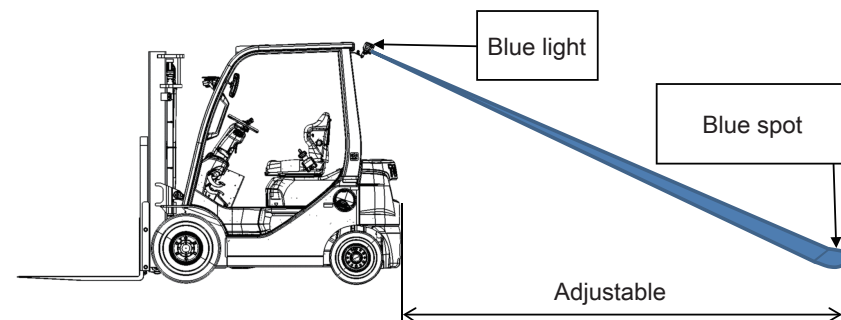
Rear combination light is fitted to the rear of the overhead guard.

Operate the turn signal lights by the turn signal switch.

12.12 Blue light (Option)

This light shines a blue-colored spot of light on the floor, allowing other workers or pedestrians behind the truck to be aware of the truck.

This light is adjustable and should be set based on the customer's specific application.



- (1) Blue light switch
- (2) ON
- (3) OFF
- (4) BACK ON
- (5) LED lamp

ON - Upper position

OFF - Center position

BACK ON - Lower position (light turns on only when the direction control lever is placed in reverse position.)

When the switch is turned to ON, the LED lamp lights up to indicate to the operator that the blue light is illuminated.

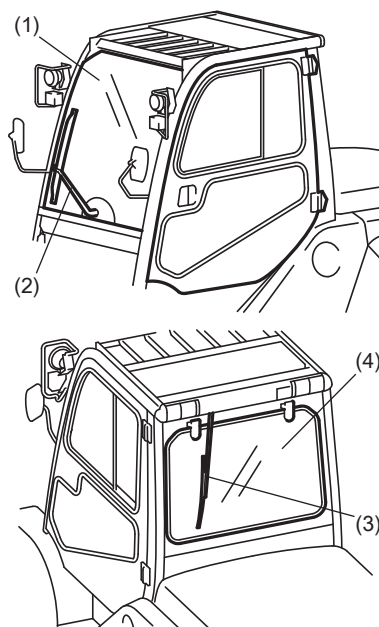
⚠ CAUTION

Do not directly look at a blue light.

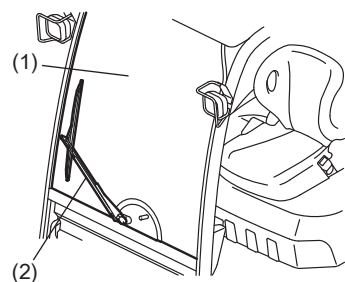
In case of any physical irregularities caused by the blue light, receive medical treatment from a doctor immediately.

12.13 Cabin (Option)

Standard Cabin



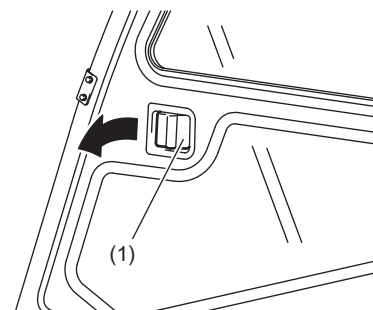
FR Glass W/ Wiper



- (1) Front glass
(2) Front wiper

- (3) Rear wiper
(4) Rear glass

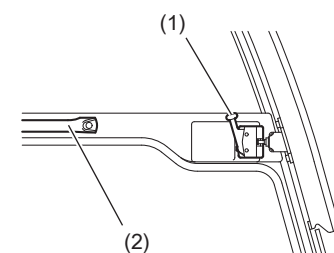
12.13.1 Doors



(1) Door handle

NOTICE

When opening the engine hood for cabin models, open the right and left doors of the cabin first.



- (1) Door inside lever
(2) Door pull handle

⚠ CAUTION

- When opening doors, be aware of pedestrians or other trucks.
- Always close the door by pulling the door pull handle. Before operating the truck, confirm that the doors are securely closed.

Opening/ closing doors (Outside the truck)

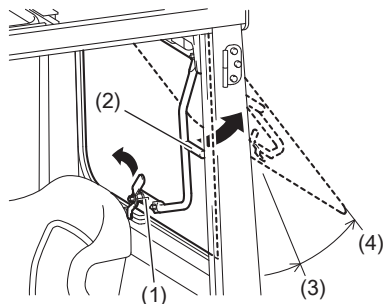
1. Grasp the door handle and pull toward you to release the lock and open the door.
2. When closing the door, press the door handle until the door lock catches.

Both doors can be locked by the key. (The door key is not the same as an ignition key switch.)

Opening/ closing doors (Inside the truck)

1. Shift the inside door lever to release the lock and open the door. Press the door pull handle to open the door.
2. When closing the door, pull the door pull handle until the door lock catches.

12.13.2 Rear window

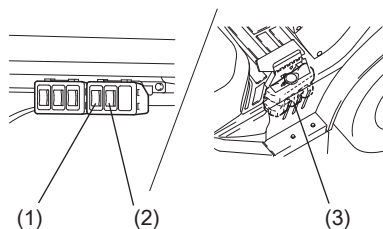


- (1) Lock lever
- (2) Assist lever
- (3) Ventilation mode
- (4) Maintenance mode

⚠ CAUTION

Do not travel with the rear window opened at the maintenance mode.

12.13.3 Wiper

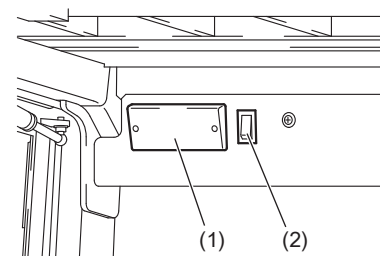


- (1) Front wiper switch
- (2) Rear wiper switch
- (3) Reservoir tank

NOTICE

To inspect or replenish washer fluid, use the reservoir tank located under the right step.

12.13.4 Interior lamp

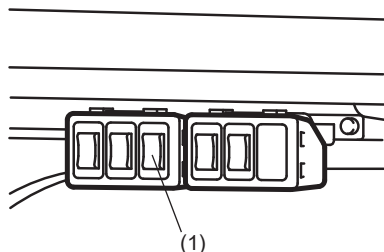


- (1) Room lamp
- (2) ON/OFF switch

The interior lamp is fitted to the right rear side of the cabin.

Use the switch to turn the light on and off.

12.13.5 Heater (Option)



(1) Heater switch

Using the heater

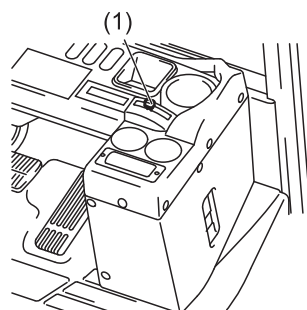
The heater is attached to the right side of the instrument panel.

The heater switch is located on the right-side of the overhead guard.

Press the heater switch to Hi or Low position to operate the heater in two air volumes. The air outlet can be opened or closed and the entry of debris and dust into the heater unit can be prevented.

NOTICE

- Use the heater after sufficiently warming up the engine.
- Running the heater fan for extended periods of time while the engine is stopped or while the engine is idling may cause over discharge of the battery and make engine starting impossible.
- Using the heater for extended periods of time will cause the air inside the cabin to become stale and the glass to fog, so take care to open windows and ventilate inside the cabin.



(1) Temperature adjustment lever

Temperature adjustment

This lever adjusts the temperature of the heater. Adjust the temperature to your preference.

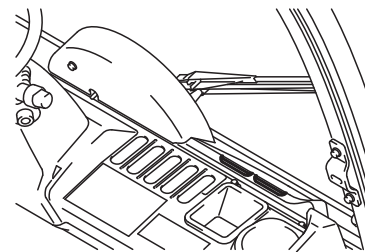
Raising the temperature - Shift the lever to the left

Lowering the temperature - Shift the lever to the right.

⚠ CAUTION

Exposure to the warm air from the heater outlet for a long time may cause low-temperature burns. Adjust the temperature of the heater appropriately.

Defroster (Option)



(1) Defroster

The defroster is attached at the base of the front windshield.

It will allow you to quickly defog the front windshield.

Close the air outlet of the heater to turn on the defroster.

Use the heater switches to switch on and off the defroster.

13 INSTRUMENT

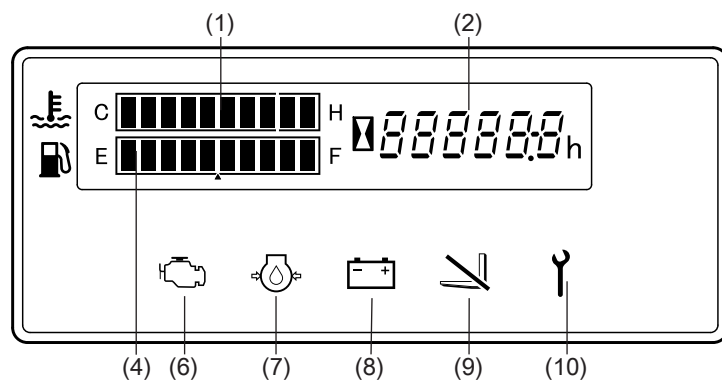
13.1 Combination meter

NOTICE

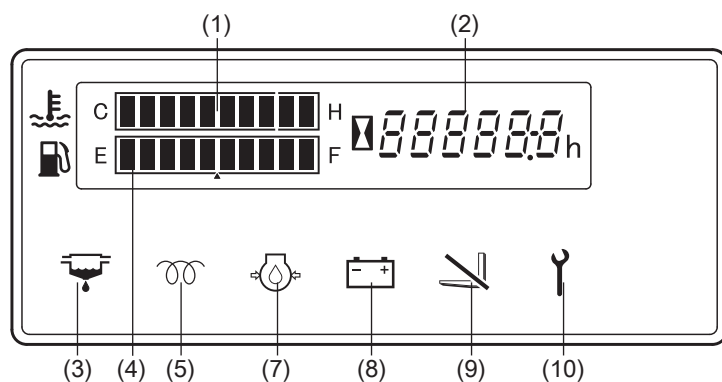
It is not attached on model with Multi-function display II.

Gauges and warning lamps on the combination meter are as follows:

1FS engine models



14Z-II and 15Z engine models



- (1) Water temperature gauge
- (2) Hour meter
- (3) Sediment warning (14Z-II and 15Z engine models)
- (4) Fuel gauge
- (5) Glow indicator (14Z-II and 15Z engine models)
- (6) Malfunction indicator lamp (1FS engine models)

- (7) Engine oil pressure warning
- (8) Charging system warning
- (9) OPS indicator
- (10) Spanner indicator

13.1.1 Warning lamp check



(1) Key switch on

⚠ CAUTION

- The glow indicator lamp illuminates for 2 seconds when the engine coolant temperature exceeds 50°C (15Z engine models).
- The preheating indicator lamp does not illuminate when the engine coolant temperature exceeds 2.5°C (14Z-II engine models).

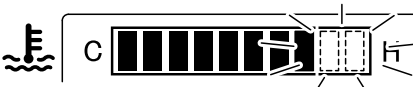
13.1.2 Water temperature gauge



1FS engine models



14Z-II and 15Z engine models



Indicates the temperature of the engine coolant.

- This gauge functions with the key switch on and displays the cooling water temperature from left to right in a 10-stage gradation scale (In normal condition, the final two stages on the far right do not illuminate).
- (1FS engine models) The operator will be notified when the water temperature is abnormally high as the entire gauge starts blinking. At that time, engine output will be limited to prevent engine overheating.
- (14Z-II and 15Z engine models) The operator will be notified when the water temperature is abnormally high (above 8th stage) as the final two stages at far right start blinking.
- Temporary overheating may be caused by coolant leakage, low engine coolant level, loose fan belt, or other problem in the cooling system. Ask the authorized Toyota dealer for an inspection.

⚠ CAUTION

Once the gauge blinks, discontinue the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

13.1.3 Hour meter

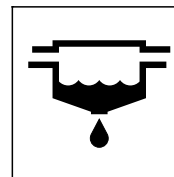


The hour meter operates when the ignition key switch is turned on. It indicates the total number of truck operating hours. The digit on the far right displays in 1/10 of an hour. When the truck operating hour reaches 62500 hours, the meter will display "FULL". Use this meter for the timing of periodic maintenance and recording the operating hours. When an abnormality occurs to the truck (spanner indicator lamp blinks) the error code and hour meter will be alternately displayed.

⚠ CAUTION

Should an error code be displayed, stop the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

13.1.4 Sedimenter warning (14Z-II and 15Z engine models)



The sedimenter is a device for separating water from the fuel.

- The sedimenter warning lamp comes on to indicate that water in the sedimenter exceeds the predetermined level while the engine is running.
- If normal, the warning lamp comes on when the key switch is turned on and goes off when the engine starts.
- If the warning lamp comes on while the engine is running, drain the water from the sedimenter immediately. (See the OPERATOR MAINTENANCE chapter of this manual for the draining method.)
- If the warning lamp continues to illuminate while the engine is running, ask the authorized Toyota dealer for an inspection.

⚠ CAUTION

Continued operation with warning on may cause damage to the injection pump.

13.1.5 Fuel gauge (Excluding LPG models)

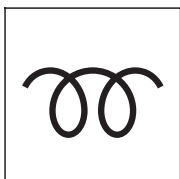


Indicates the amount of remaining fuel in the fuel tank in terms of a 10-stage gradation scale.

The operator will be warned that the remaining fuel level is low when the two stages at far left start blinking. It takes some time for the indicator to stabilize after refueling and the ignition key switch is turned on.

NOTICE

- If the operating area is not level, the correct level may not be indicated. Always check the fuel level on a level surface.
- When the gauge begins blinking, refuel as soon as possible.
- In case of the diesel engine, when the fuel runs out, it will become necessary to bleed air from the fuel supply system. Be sure to refuel before it runs out.

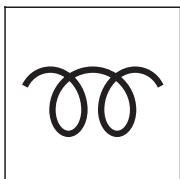
13.1.6 Glow indicator**(15Z engine models)**

Indicates heating of the glow plugs.
The indicator lamp comes on and glow plug heating begins when the key switch is turned on. The lamp goes off automatically when glow plug heating is completed.
The engine will start easily once the glow plugs are heated.

⚠ CAUTION

If the glow indicator lamp does not go off, the glow plugs may be defective. Ask the authorized Toyota dealer for an inspection.

The glow indicator lamp illuminates for 2 seconds when the engine coolant temperature exceeds 50°C (122°F).

13.1.7 Preheating indicator**(14Z-II engine models)**

Indicates preheating of the intake heater.

- When the ignition key switch is turned on, the lamp comes on and preheating starts. The lamp goes off automatically when preheating is complete. The engine will start easily.

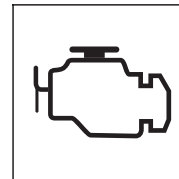
NOTICE

When the engine coolant temperature exceeds 2.5°C, this lamp does not come on because preheating is not carried out.

- The length of preheating time is automatically controlled according to the engine coolant temperature. It gets somewhat longer when the engine coolant temperature is low or in a cold season.

⚠ CAUTION

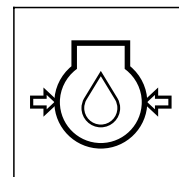
If the indicator lamp does not go off or it comes on when the engine is running, the preheating intake heater may be defective. Ask the authorized Toyota dealer for an inspection.

13.1.8 Malfunction indicator lamp**(1FS engine models)**

- When an error occurs to the engine control system, the lamp illuminates to inform the operator.
- When the condition is normal, the lamp illuminates when the key switch is turned on and goes off when the engine starts.

⚠ CAUTION

Once the malfunction indicator lamp has come on during operation, stop the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

13.1.9 Engine oil pressure warning

- The engine oil pressure warning lamp comes on to indicate low engine oil pressure while the engine is running.
- If normal, the warning lamp comes on when the ignition key switch is turned on and goes off when the engine starts.

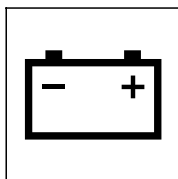
⚠ CAUTION

If the warning lamp comes on while the engine is running, either the engine oil is low or the lubrication system is faulty. Stop the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

NOTICE

The engine oil pressure warning lamp does not indicate the oil level. Check the oil level with the oil level gauge before starting work.

13.1.10 Charging system warning

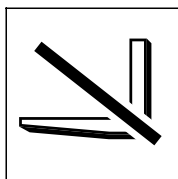


- The charging system warning lamp comes on to indicate a problem in the charging system while the engine is running.
- If normal, the warning lamp comes on when the ignition key switch is turned on and goes off when the engine starts.

⚠ CAUTION

- If the warning lamp comes on while the engine is running, stop the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. After the engine has cooled down, inspect the engine ancillary drive belt for cuts or looseness, adjust it, and restart the engine.
- If lamp does not go off, the electrical system may be faulty. Ask the authorized Toyota dealer for an inspection.

13.1.11 OPS indicator



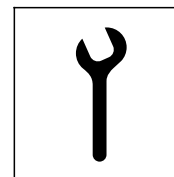
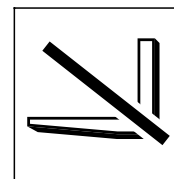
- If the operator leaves the seat while the truck is in operation, the OPS indicator lamp illuminates to inform the operator that the system is going to be activated.
- If this lamp illuminates, and OPS is activated, return the direction control lever, lift and tilt levers and accelerator pedal to their neutral positions and return to the seat. For details of OPS function, refer to OPS FUNCTION section of this manual.

⚠ CAUTION

In any of the following cases, a malfunction may have occurred to the OPS. Park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.

- The OPS indicator lamp does not illuminate when the operator is not seated in the normal operating position.
- The OPS indicator lamp does not go off when the operator is in the normal operating position.

13.1.12 Seat belt interlock warning



When this feature detects that the correct sequence of the seat belt connection (I. seating to the seat and II. then connecting the seat belt and buckle) is not followed or the operator's seat belt becomes unfastened after the correct sequence of the seat belt connection, the OPS indicator lamp illuminates on the display (in case of unfastening the seat belt, additionally the buzzer sounds for approx. one second) to inform the operator that OPS is going to be activated.

Also, OPS is activated and the traveling and load handling operation is restricted in any of the following cases:

1. Immediately after the correct sequence of the seat belt connection is not followed.
2. 2 seconds after the operator's seat belt becomes unfastened.

⚠ CAUTION

If any of the following cases happen, a malfunction may have occurred to the system. Park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.

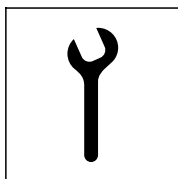
- The OPS indicator lamp does not illuminate when the seat belt is unfastened after the correct sequence of the seat belt connection is followed.
- The OPS indicator lamp does not illuminate when the operator leaves the seat.
- The OPS indicator lamp does not go off after the operator gets on the seat and fastens the seat belt in the correct sequence.
- The spanner indicator lamp blinks but does not go off when the operator returns to the seat soon after leaving and fastens the seat belt.

NOTICE

To deactivate OPS, perform the following sequence of actions:

- Release the accelerator pedal.
- Return the direction control lever and lift lever to the neutral position.
- Fasten the seat belt in the correct sequence.
- Perform traveling and load handling again.

13.1.13 Spanner indicator



The spanner indicator lamp illuminates or blinks when an error is found in the engine control system or SAS/OPS and an error code will be displayed in the hour meter display area.

⚠ CAUTION

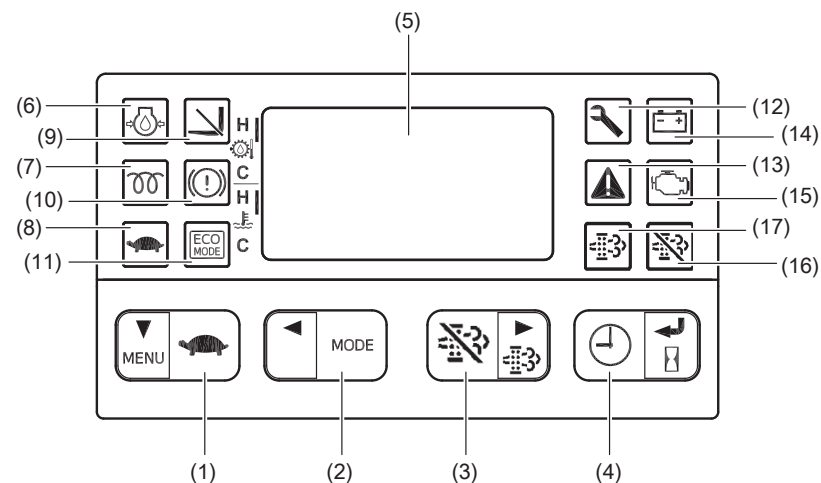
- In any of the following cases, a malfunction may have occurred to the system. Park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.
 - The indicator lamp does not illuminate when the ignition key switch is turned on.
 - The indicator lamp illuminates or blinks during traveling (operation).
- Continuing to use the truck while the spanner indicator lamp is illuminated or blinking may lead to a breakdown. When the indicator lamp illuminates or blinks, stop the operation, park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection. (For diesel engine models, the spanner indicator lamp may stay illuminated during engine warm-up after a cold engine start. This does not indicate a malfunction.)
- If the operator remains seated for a long period with the ignition key switch turned off, the next time the ignition key switch is turned on, the spanner indicator lamp may start blinking. If this occurs, turn the ignition key switch off, return to the normal operating position and then turn the ignition key switch back on. The spanner indicator lamp will then go off.

13.2 Multi-function display II (Option)

(1KD engine models are equipped with Multi-function display II as standard)

NOTICE

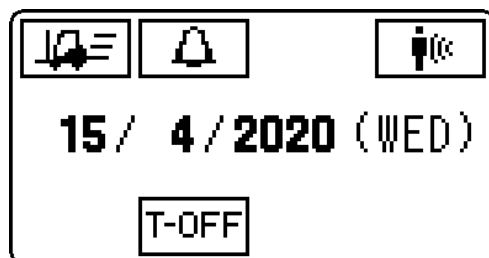
It is not attached on model with Combination meter.



Switch name		Description
(1)	Switch (1)	Low speed setting switch / Down switch
(2)	Switch (2)	Mode select switch / Left switch
(3)	Switch (3)	Right switch / DPF switch (1KD engine models)
(4)	Switch (4)	Time or date select switch / Enter switch
(5)		Multiple screen display area
(6)		Engine oil pressure warning indicator
(7)		Glow indicator (1KD, 14Z, 15Z engine models)
(8)		Low speed setting indicator (1FS, 1KD engine models)
(9)		OPS indicator
(10)		Parking brake indicator
(11)		ECO-mode indicator (1FS, 1KD engine models)
(12)		Spanner indicator
(13)		Master warning indicator
(14)		Charge warning indicator
(15)		Malfunction indicator lamp
(16)		DPF regeneration inhibit indicator (1KD engine models)
(17)		DPF regeneration indicator (1KD engine models)

NOTICE

- Only operate the switch panel when the truck is stopped.
- Always operate switches on the display with a fingertip. If a sharp pointed tool is used, the switch may be damaged.

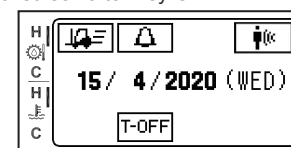
13.2.1 Initial screen after Key-On

Initial screen is displayed for 2 seconds after key-switch is turned on.

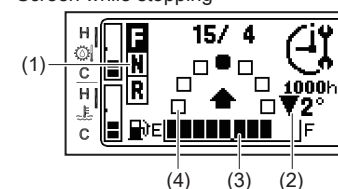
Display	Description
15/4/2020 (WED)	Calendar is displayed.
	Indicates if the maximum speed limitation function is in active setting.
	Indicates if the over speed alarm is in active setting.
	Indicates if the active mast front tilt control is inactive.
	Indicates if the SEnS+ function is in active setting.

13.2.2 Status screen

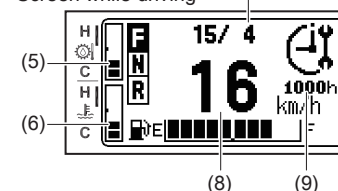
Initial screen after Key-On



Screen while stopping



Screen while driving



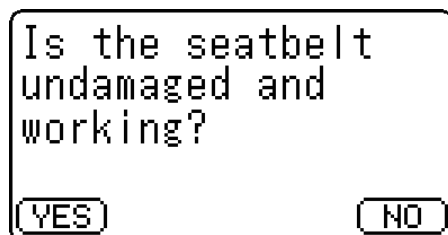
After the initial screen, the status screen is displayed. Mast tilt indicator and wheel indicator is displayed while the truck stops.

- (1) Direction indicator
- (2) Mast tilt indicator
- (3) Fuel gauge
- (4) Wheel indicator
For the truck equipped with SEnS+ (Option), the start limitation indicator will be displayed instead of the wheel indicator when start limitation is applied by SEnS+.
For details, refer to Start limitation indicator (Option: SEnS+) [➤ 70] section in this manual.
- (5) Torque converter oil temperature indicator
- (6) Water temperature gauge
- (7) Date / Time
- (8) Speedometer
- (9) Feature activation indicator

13.2.3 Pre operation check screen

(Telematics with POC (Option), Telematics with Cardkey entry system and POC (Option))

POC screen display example



When POC (Pre operation check) is enable by I_Site, registered question is displayed during status screen.

13.2.4 Indicator

13.2.4.1 Warning lamp check



(1) Key switch on

⚠ CAUTION

- The glow indicator lamp illuminates for 2 seconds when the engine coolant temperature exceeds 50°C (15Z engine models).
- The preheating indicator lamp does not illuminate when the engine coolant temperature exceeds 2.5°C (14Z-II engine models).
- The glow indicator lamp illuminates for a second when the engine coolant temperature exceeds 40°C (1KD engine models).

13.2.4.2 OPS indicator



If the operator leaves the seat while the truck is in operation, the OPS indicator illuminates to inform the operator that the system is going to be activated.

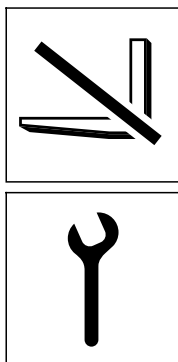
This indicator lights when the seatbelt is not fastened as well.

⚠ CAUTION

In any of the following cases, a malfunction may have occurred to the OPS. Park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.

- The OPS indicator does not illuminate when the operator is not seated in the normal operating position.
- The OPS indicator does not go off when the operator is in the normal operating position.

13.2.4.3 Seat belt interlock warning



When this feature detects that the correct sequence of the seat belt connection (I. seating to the seat and II. then connecting the seat belt and buckle) is not followed or the operator's seat belt becomes unfastened after the correct sequence of the seat belt connection, the OPS indicator lamp illuminates on the display (in case of unfastening the seat belt, additionally the buzzer sounds for approx. one second) to inform the operator that OPS is going to be activated.

Also, OPS is activated and the traveling and load handling operation is restricted in any of the following cases:

1. Immediately after the correct sequence of the seat belt connection is not followed.
2. 2 seconds after the operator's seat belt becomes unfastened.

⚠ CAUTION

If any of the following cases happen, a malfunction may have occurred to the system. Park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.

- The OPS indicator lamp does not illuminate when the seat belt is unfastened after the correct sequence of the seat belt connection is followed.
- The OPS indicator lamp does not illuminate when the operator leaves the seat.
- The OPS indicator lamp does not go off after the operator gets on the seat and fastens the seat belt in the correct sequence.
- The spanner indicator lamp blinks but does not go off when the operator returns to the seat soon after leaving and fastens the seat belt.

NOTICE

To deactivate OPS, perform the following sequence of actions:

- Release the accelerator pedal.
- Return the direction control lever and lift lever to the neutral position.
- Fasten the seat belt in the correct sequence.
- Perform traveling and load handling again.

13.2.4.4 Parking brake indicator



This indicator lights while the parking brake is engaged. (It turns off when the brake is released.)

⚠ CAUTION

- Before starting the truck, always release the parking brake and check that the indicator goes off.
- If the warning indicator remains on even after the parking brake is released, see the brake fluid level. (See the PRE-OPERATION CHECK section of this manual for the method of adding brake fluid.)
- If the indicator comes on while the brake fluid level is proper, ask the authorized Toyota dealer to inspect.

13.2.4.5 Eco-mode indicator

(1FS, 1KD engine models only)

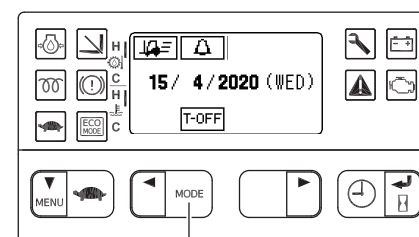


This indicator lights and goes off alternately when the operator presses the mode select switch. The Eco-mode function is effective when this indicator lights.

But this indicator cannot be switched by pressing the mode select switch when the menu lock is effective.

For detail, please refer to the Eco-mode section of this manual.

Also, for detail, please refer to Menu lock indicator section.



(1)

(1) Mode select switch

13.2.4.6 Engine oil pressure warning indicator



The engine oil pressure warning indicator comes on to indicate low engine oil pressure while the engine is running. If normal, the indicator comes on when the key switch is turned on and goes off when the engine starts.

⚠ CAUTION

If the warning indicator comes on while the engine is running, either the engine oil is low or the lubrication system has trouble. Stop the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

NOTICE

The engine oil pressure warning indicator does not indicate the oil level. Check the oil level with the oil level gauge before starting work.

13.2.4.7 Glow indicator (1KD, 14Z-II, 15Z engine models)



Indicates heating of the glow plugs.

- The indicator comes on and glow plug heating begins when the key switch is turned on. The indicator goes off automatically when glow plug heating is completed. The engine will start easily once the glow plugs are heated.
- The length of glow plug heating time is automatically controlled according to the engine coolant temperature. It gets somewhat longer when the engine coolant temperature is low or in a cold season.

⚠ CAUTION

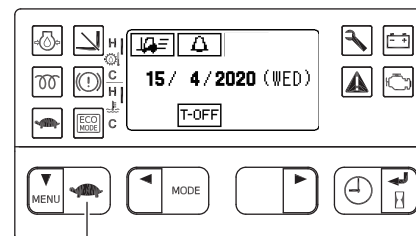
If the glow indicator does not go off, the glow plugs may have trouble. Ask the authorized Toyota dealer for an inspection.

13.2.4.8 Low speed setting indicator

(1FS, 1KD engine models)



This indicator lights and goes off alternately when the operator presses the Low speed setting switch. This indicator lights when the low speed setting is effective and the truck speed is limited at a preset value. When this setting is "OFF", the indicator goes off.



(1)

(1) Low speed setting switch

The low speed setting value can be set on the Setting menu for operator screen. Refer to the Setting menu for operator section of this manual for details.

13.2.4.9 Spanner indicator



This indicator lights or blinks when abnormality is found in the engine control system or SAS/OPS control system.

NOTICE

- The spanner indicator lamp blinks but does not go off when the operator return to the seat soon after leaving and fastens the seat belt.
- When the spanner indicator is displayed, ask the authorized Toyota dealer for an inspection.

13.2.4.10 Master warning indicator



This indicator lights when the warning indicator, as described below, is displayed to inform the truck needs maintenance.

- LPG Warning (Option)
- Sedimenter / Fuel filter warning (1KD engine models only)
- Sedimenter Warning (14Z-II, 15Z engine models only)
- Air Cleaner Warning
- Cooling Water Level Warning
- POC Warning (Telematics with POC (Option), Telematics with Cardkey entry system and POC (Option))
- DPF Maintenance Warning (1KD engine models)

13.2.4.11 Charge warning



This indicator lights when abnormality is found in the charge system.
If normal, the warning indicator comes on when the key switch is turned on and goes off when the engine starts.

⚠ CAUTION

- If the warning lamp comes on while the engine is running, stop the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. After the engine has cooled down, inspect the engine ancillary drive belt for cuts or looseness, adjust it, and restart the engine.
- If lamp does not go off, the electrical system may have problem. Ask the authorized Toyota dealer for an inspection.

13.2.4.12 Malfunction indicator lamp

(1FS, 1KD engine models only)



This indicator lights when abnormality is found in the engine control system.
If normal, the warning indicator comes on when the key switch is turned on and goes off when the engine starts.

⚠ CAUTION

Once the malfunction indicator lamp has come on during operation, stop the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

13.2.4.13 DPF regeneration indicator

(1KD engine models)



This indicator blinks or lights with green while automatic regeneration of the soot.
This indicator blinks with orange while manual regeneration is required.
Also, this indicator lights with orange while manual regeneration is operating.

NOTICE

When the manual regeneration indicator (orange) starts blinking, perform manual regeneration as soon as possible. (For the method of manual regeneration, refer to Manual Regeneration operating procedure in this manual.)

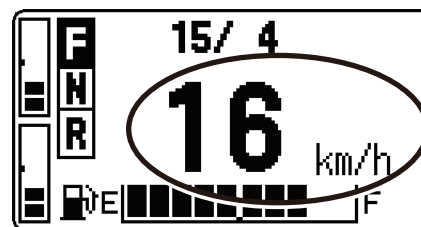
13.2.4.14 DPF regeneration inhibit indicator

(1KD engine models)



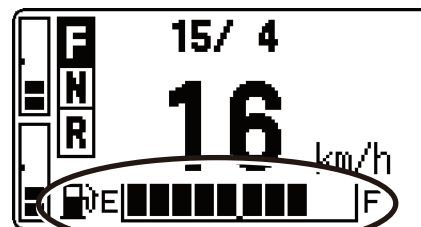
This indicator lights while regeneration inhibition function is activated.
While the lamp is on, neither automatic nor manual regeneration is available.

13.2.5 Speedometer



Speedometer indicates the truck speed digitally in 1 km/h increments.

13.2.6 Fuel gauge



Indicates the amount of remaining fuel in the fuel tank in terms of a 10-stage gradation scale.

The operator will be warned that the remaining fuel level is low when the two stages at far left start blinking.

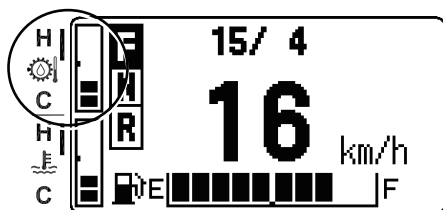
If the first segment is blinking, it means that there is almost no fuel left in the fuel tank.

NOTICE

- If the operating area is not a level surface, the correct level may not be indicated. Always check the fuel level on a level surface.
- When the gauge begins blinking, refuel as soon as possible.
- The fuel gauge is not applicable to LPG exclusive models.

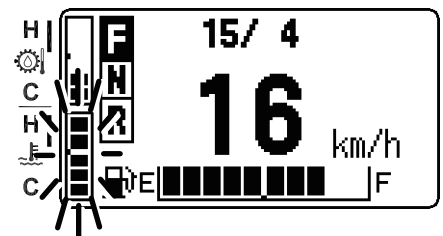
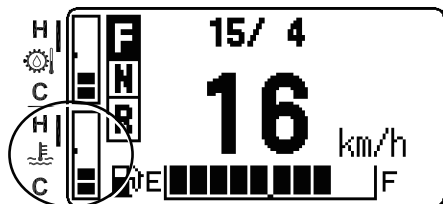
13.2.7 Torque converter oil temperature indicator

This indicates the torque converter oil temperature in 5 levels.



13.2.8 Water temperature gauge

This indicates the engine coolant temperature in 5 levels.

**(1FS, 1KD engine models)**

All segments blink for warning when engine output is limited to prevent engine overheat.

(14Z-II, 15Z engine models)

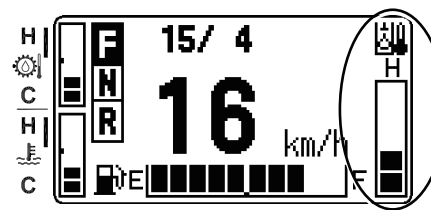
The segments (above 4 segment) blink at 115 °C or more for warning.

⚠ CAUTION

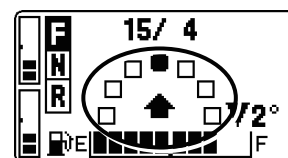
Once the gauge blinks, discontinue the operation in progress and park the truck in a safe location, apply the parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

13.2.9 Hydraulic oil temperature gauge (Option)

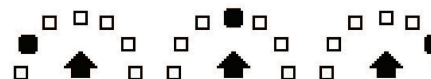
Indicates the temperature of the hydraulic oil temperature in a 5-stage gradation scale.



13.2.10 Wheel indicator



(1) (2) (3)



(1) Turn left

(2) Straight

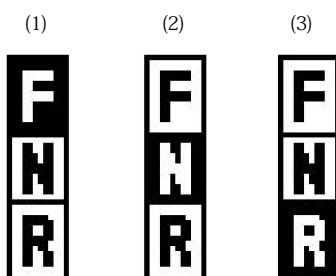
(3) Turn right

If the truck is equipped with Synchronized Steering (Option), the traveling direction of the truck is indicated with the "■" mark. When the truck speed is detected, the speedometer value is displayed.

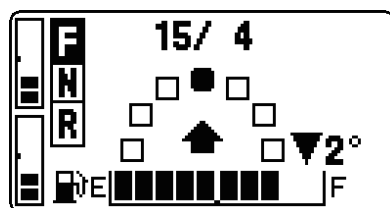
For the truck equipped with SEnS+ (Option), the start limitation indicator will be displayed instead of the wheel indicator when start limitation is applied by SEnS+.

For details, refer to Start limitation indicator (Option: SEnS+) [➤ 70] section in this manual.

13.2.11 Direction indicator



- (1) Forward
(2) Neutral
(3) Reverse



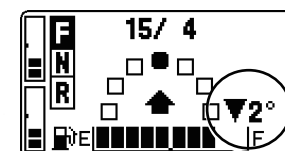
- (1) Forward
(2) (No indicate) Neutral
(3) Reverse

The selected direction by the direction switch is indicated.

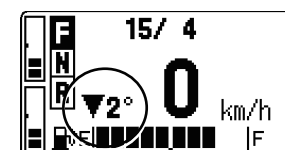
This function is indicated at the center of the Wheel indicator too. When the truck speed is detected, the speedometer value is displayed.

13.2.12 Mast tilt indicator

When Wheel indicator is indicated



When Wheel indicator isn't indicated



- (1) In forward-tilted state
(2) In horizontal state
(3) In backward-tilted state

NOTICE

This function displays the tilting angle that is calculated based on the memorized angle at a level position with no-load condition.

Even if the indication displays 0°, the mast may incline to forward when handling a heavy load.

On the other hand, automatic fork leveling control function compensates the horizontal position backward, depending on the detected load.

Therefore, 0 degrees may not be displayed when the automatic fork leveling control function is used with a heavy load.

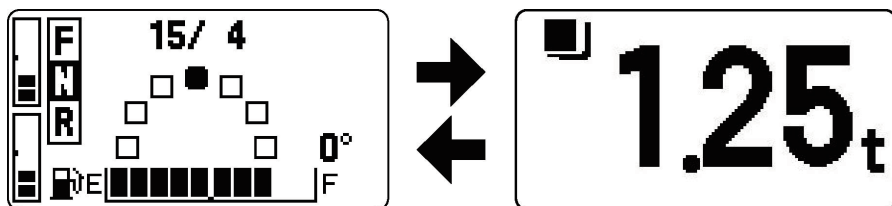
The displayed angle might be slightly different from the actual angle when the mast is tilted either all the way forward or all the way back.

The tilt angle of the mast is displayed in 1 degree increments when the truck speed is not detected.

13.2.13 Load meter

Returning the lift lever to the neutral from the lifting position will display the weight of the load being handled on the status screen.

The weight of the load is displayed from 100 kg and in increments of 0.01 ton or 10 kg. The load weight is not displayed when the travel speed is detected.



The load weight is displayed for 5 seconds each time the lift lever is returned to neutral position.

Recommended operating conditions:

- The traveling and load handling is stopped.
- Adjust the load to a height of approx. 500 mm above the ground and set the mast in a vertical position.

⚠ CAUTION

This function should be used as reference when conducting load handling operations, and not used in business dealings or as proof of actual weight.

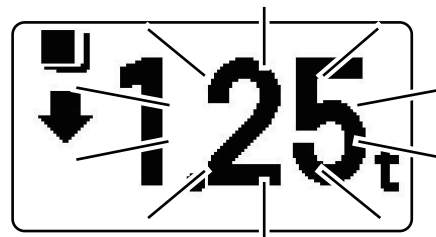
NOTICE

- Use this function when traveling and load handling operations are stopped.
- If the load is less than 100 kg, the meter will indicate 0.00 t.
- This load meter detects the lift cylinder pressure to facilitate measurements, so do not use it to judge whether the overload value is near the allowable value.

NOTICE

Ask the authorized Toyota dealer in the following cases.

- If you want to change the load display time.
- When you want to change the load display unit to "kg".
- Correct the load display value of the actual load.



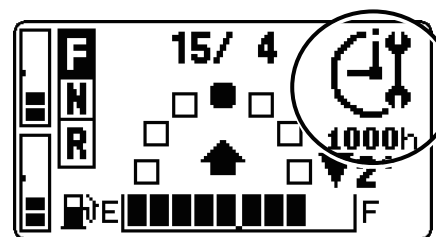
The accuracy of the load meter drops while the load is lifted to a high position because of the influence of the mast deflection and friction.

In that case, an arrow will appear at left of the screen and the measured weight indication will blink to notify the operator that the reading is inaccurate.

To measure the load, always set the load to a height of approx. 500 mm above the ground and set the mast vertically.

13.2.14 Feature activation indicator

13.2.14.1 Maintenance hour meter indicator



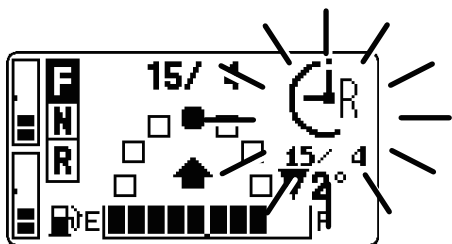
When the elapsed time of the maintenance hour meter exceeds the preset hour, the screen informs of it with the maintenance indicator. The buzzer also sounds to inform of it for 5 seconds each time when the key switch is turned on under the above condition.

However, the buzzer doesn't sound at that time when the elapsed time has just exceeded the preset hour while the truck is in operation. (The indicator is displayed during operation).

NOTICE

To change the maintenance time setting, ask a supervisor or the authorized Toyota dealer.

13.2.14.2 Rental hour meter indicator



- Rental notice before deadline

When the rental hour meter exceeds the hour preset by your authorized Toyota dealer to display Rental notice before deadline, Rental hour meter indicator blinks for 5 seconds each time when the key switch is turned on, and then the indicator stops blinking.

- Rental notice after deadline

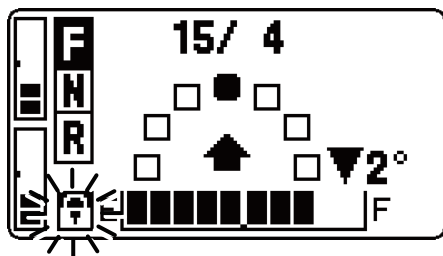
When the rental hour meter exceeds the hour preset by your authorized Toyota dealer to display Rental notice after deadline, Rental hour meter indicator blinks and the buzzer also sounds for 5 seconds each time when the key switch is turned on. Rental hour meter indicator lights after blinking. If the truck is driven for certain time after expiration, the travel speed is limited based on a separately preset speed limitation set by your authorized Toyota dealer.

Travel speed limitation are available on 1FS, 1KD engine models.

NOTICE

- To change the hour preset for Rental notice before deadline or Rental notice after deadline, ask the authorized Toyota dealer.
- To prevent cheating on rental hour, Clock set screen is not displayed when Rental hour meter is activated.

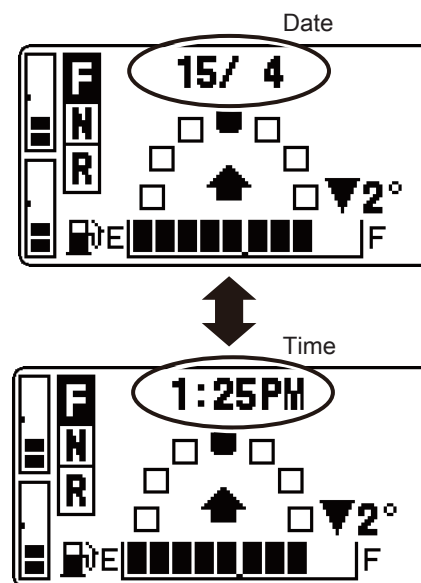
13.2.14.3 Menu lock indicator



The menu lock indicator is displayed when the menu lock setting is active.

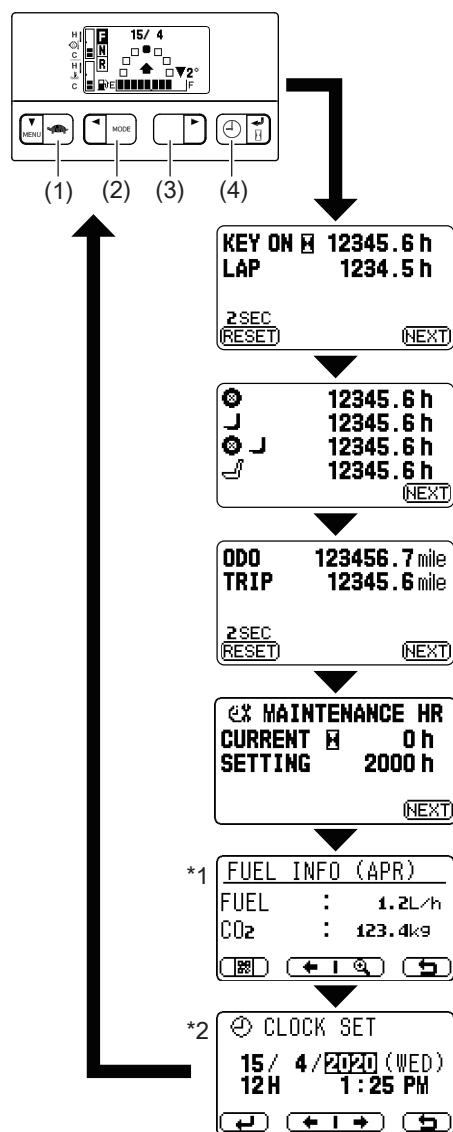
When the menu lock setting is active, the Setting menu for operator screen cannot be operated. If switch (1) is pressed for 2 seconds or more on the status screen to open the Setting menu for operator screen, the indicator will blink to inform that the operation is invalid. Also, the Eco-mode cannot be turned on/off when the menu lock setting is active.

13.2.15 Date and Time display



The date and time are displayed alternately by pressing switch (4) in the status screen.

13.2.16 Multi meter display screen



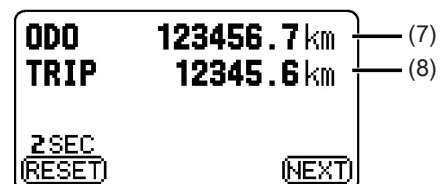
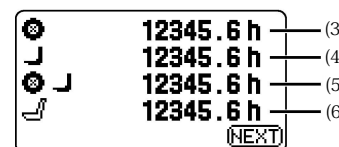
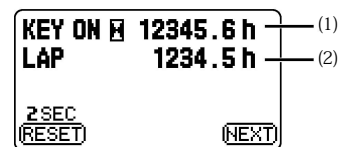
- (1) Switch (1)
 (2) Switch (2)
 (3) Switch (3)
 (4) Switch (4)

Multi meter is displayed by pressing switch (4) on the status screen for more than 2 seconds. Press switch (4), the display changes in a sequence:

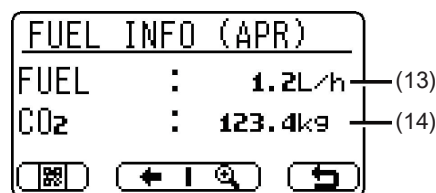
1. Key switch on hour meter
2. Lap time meter
3. Traveling hour meter
4. Load handling hour meter
5. Traveling/Load handling hour meter
6. Seat on hour meter
7. Odometer
8. Trip meter
9. Planned maintenance hour meter
10. Current time
11. Setting time
12. Fuel information
13. Clock Set
14. Status screen

*1: Fuel information screen isn't displayed by LPG exclusive spec. (Option), and 1FS engine models.

*2: Clock Set screen isn't displayed when Rental hour meter is activated. For detail, see "Clock set" section.

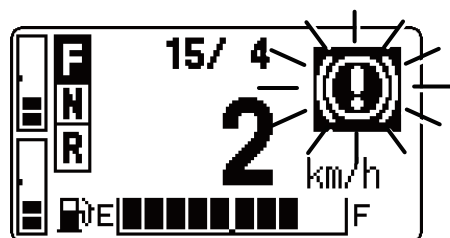


- (1) **Key switch on hour meter**
Indicates aggregated key ON time when the key switch has been turned ON.
- (2) **Lap time meter**
Indicates lap time when the key switch is turned ON. To reset the meter, press switch (1) for 2 seconds or more.
- (3) **Traveling hour meter**
This hour meter indicates the time while driving.
- (4) **Load handling hour meter**
This hour meter indicates the time while the lifting and tilting.
- (5) **Traveling/Load handling hour meter**
This hour meter indicates the time while driving, lifting or tilting.
- (6) **Seat on hour meter**
This hour meter indicates the time while the operator is seated and key switch is turned on.
- (7) **Odometer**
Indicates a total truck traveling distance.
- (8) **Trip meter**
Indicates the aggregated truck traveling distance and can be reset.
To reset the meter, press switch (1) for 2 seconds or more.
- (9) **Planned maintenance hour meter**
The preset service interval time and the current elapsed time are displayed.
The maintenance hour meter indicates the time while the key switch is turned on.
It also continues to indicates the time even if it exceeds the preset service interval time.
- (10) **Current time**
- (11) **Setting time**

**(12) Fuel information**

Both monthly Fuel rate and monthly CO2 emission are displayed over past 3 months.

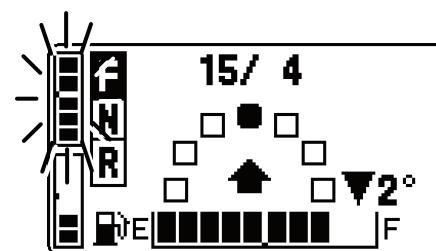
Fuel information screen isn't displayed by LPG exclusive spec. (Option), and 1FS engine models.

(13) Fuel rate**(14) CO2 emission****13.2.17 Warning functions****13.2.17.1 Parking brake ON warning**

The parking brake on warning indicator will blink and the warning sound will warn the operator if the truck travels without releasing the parking brake.

⚠ CAUTION

- If the truck is operated without releasing the parking brake, the brake will lose effectiveness. Ask the authorized Toyota dealer for an inspection.
- Should the truck be operated with the parking brake applied, contact your authorized Toyota dealer and request an inspection.

13.2.17.2 Torque converter oil temperature overheat warning

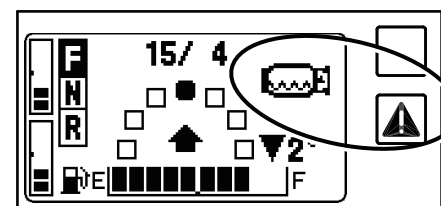
When the torque converter oil temperature reaches level 4 on the indicator [approx. 120 °C or over], the indicator will blink and the buzzer sounds about 5 seconds.

When the torque converter oil temperature reaches level 5 [approx. 135 °C or over], the entire indicator will blink to notify the operator. Also, with 1FS or 1KD engine models, the buzzer sounds when the accelerator is turned on in that state.

When the key switch is turned ON when the torque converter oil temperature is level 4 or higher, the buzzer sounds for about 5 seconds.

NOTICE

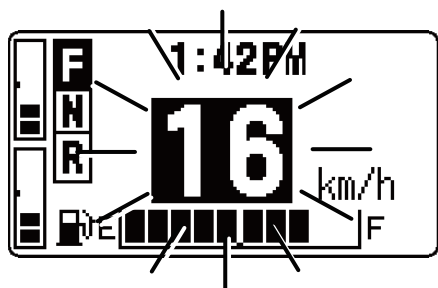
When the indicator blinks, park the truck in a safe location, apply the parking brake, open the engine hood with the motor idling, and allow the torque converter oil to cool.

13.2.17.3 LPG Warning Indicator (Option)

When the amount of LPG in the tank is low, LPG warning indicator is displayed, the master warning indicator lights and the buzzer sounds for 5 seconds.

For details, refer to Switches

13.2.17.4 Over speed alarm

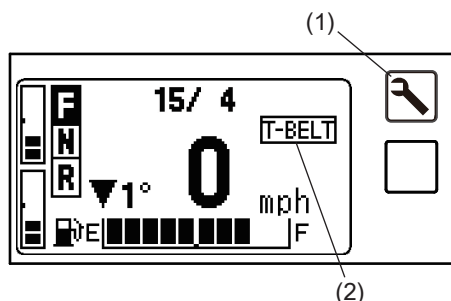


When the traveling speed exceeds the preset speed, the speedometer will blink and a warning sound will notify the operator. The over-speed alarm setting value can be set on the Setting menu for operator screen. Refer to the Setting menu for operator screen section of this manual for details.

NOTICE

Unlike the low-speed setting, this function does not limit the traveling speed. Pay attention to the speed when operating the truck.

13.2.17.5 Timing belt caution function (1KD engine models only)



- (1) Spanner indicator
(2) Timing belt caution indicator

When the engine timing belt is used over 4000 hours, the Multi-function display II indicates that the timing belt needs to be replaced by the following behavior:

- Spanner indicator - Illuminates continuously after the key switch is turned on.
- Timing belt caution indicator - Displays "T-BELT" for 10 seconds after the key switch is turned on.

Should the above conditions occur, park the truck in a safe location, apply the parking brake, remove the key and contact the authorized Toyota dealer immediately.

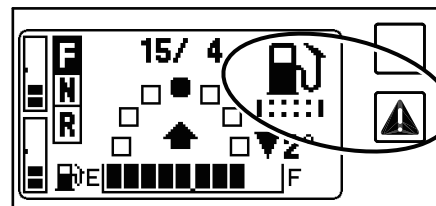
⚠ CAUTION

Once the timing belt caution function is on, have the timing belt replaced by the authorized Toyota dealer immediately. Failure to do so could cause serious damage to the engine.

NOTICE

The diesel engine timing belt needs to be replaced after every 4000 hours of use. It also needs to be replaced when the SAS/OPS controller or the Multi-function display II is replaced.

13.2.17.6 Sedimenter / Fuel filter warning (1KD engine models only)

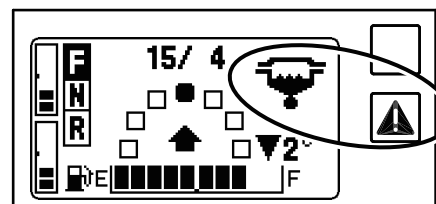


The sedimenter is a device for separating water from the fuel.

The fuel filter is a device for separating foreign material from the fuel.

- The sedimenter / fuel filter warning and master warning indicator lights comes on to indicate that water in the sedimenter exceeds the predetermined level while the engine is running or the negative pressure of the fuel filter reaches the predetermined pressure while the engine is running.
- If the warning indicator comes on while the engine is running, drain the water from the sedimenter immediately. (See the OPERATOR MAINTENANCE chapter of this manual for the draining method.)
- If the warning indicator continues to illuminate while the engine is running, ask the authorized Toyota dealer for an inspection.

13.2.17.7 Sedimenter warning (14Z-II, 15Z engine models only)



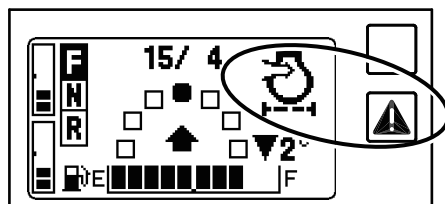
The sedimenter is a device for separating water from the fuel.

- The sedimenter warning and master warning indicator lights comes on to indicate that water in the sedimenter exceeds the predetermined level while the engine is running.
- If the warning indicator comes on while the engine is running, drain the water from the sedimenter immediately. (See the OPERATOR MAINTENANCE chapter of this manual for the draining method.)
- If the warning indicator continues to illuminate while the engine is running, ask the authorized Toyota dealer for an inspection.

⚠ CAUTION

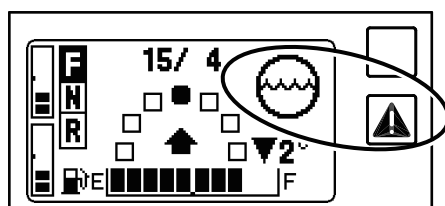
Continued operation with warning on may cause damage to the supply pump.

13.2.17.8 Air cleaner warning



- Air cleaner warning indicator is displayed and master warning indicator lights when the air cleaner element gets clogged while the engine is running.
- If the warning indicator comes on while the engine is running, stop the operation and park the truck in a safe location, apply the parking brake. Stop the engine, remove the key and clean the element. Refer to WEEKLY MAINTENANCE section of this manual for the cleaning method.

13.2.17.9 Cooling water level warning



- Cooling water level warning indicator is displayed and master warning indicator lights when the engine coolant level in the radiator reservoir tank is too low.
- When the warning indicator comes on, add engine coolant to the upper level in the reservoir tank.

Refer to PRE-OPERATION CHECK section of this manual for the method of adding coolant.

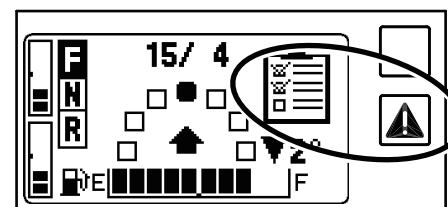
NOTICE

Even if the cooling water level warning lamp is not on, always inspect the coolant level before starting operations.

13.2.17.10 Pre operation check warning indicator

(Telematics with POC (Option), Telematics with Cardkey entry system and POC (Option))

POC (Pre-operation check) warning indicator is displayed and master warning indicator lights when anything unusual is found during the pre-operation check.



Check not OK

This message is displayed when one or more important inspection items are answered as defective or one or more important inspection items are not answered.

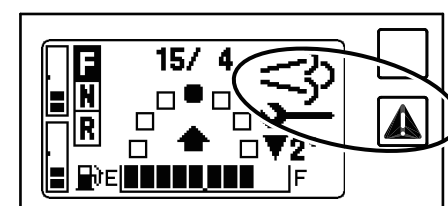
Check not complete

This message is displayed when there is no answer for one or more non-critical inspection items.

Even if one or more non-important check items are not answered, or if there is a defect, it is not displayed if there is no defect in the important check item.

13

13.2.17.11 DPF maintenance warning indicator (1KD engine models)

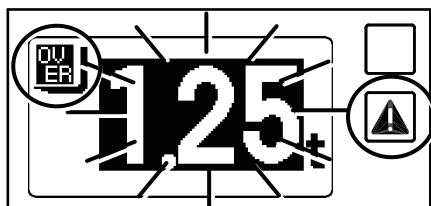


DPF maintenance warning indicator is displayed and master warning indicator lights when DPF maintenance is required.

NOTICE

When the DPF maintenance warning indicator is displayed, ask the authorized Toyota dealer for an inspection.

13.2.17.12 Over set load alarm



If the detected weight goes over the preset value when you return the lift lever to the neutral from the lifting position, the sign of the weight of the load blinks.

So over load indicator is displayed, master warning indicator lights and the buzzer sound inform the operator.

If the Over set load alarm buzzer sounds, the load has exceeded the preset load weight, so check the load.

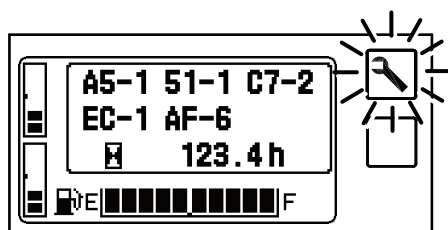
CAUTION

This function should not be used to judge the allowable load.

NOTICE

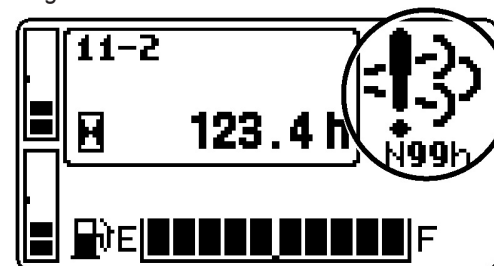
To change the over set load alarm setting, ask a supervisor or the authorized Toyota dealer.

13.2.17.13 Diagnostic code display

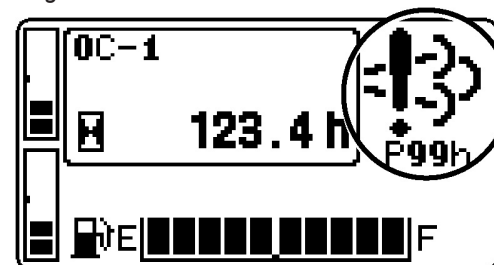


When diagnosis is activated, the spanner indicator lights or blinks and diagnosis error codes are displayed to warn the operator that some abnormality has occurred on the truck. The buzzer also sounds when the diagnosis process in the multi-function display II acts. Also, up to six diagnosis error codes are displayed on the screen.

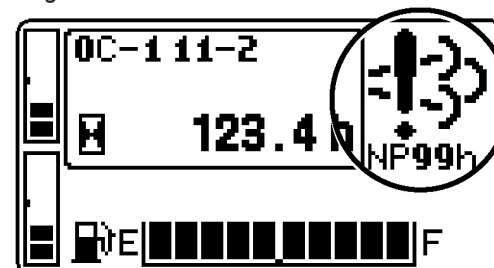
Engine failure about NOx controls



Engine failure about PM controls



Engine failure about NOx and PM controls



(1KD engine models for China specification)

When a defect occurs in engine NOx or PM (Particulate Matter) control-related locations, the NCD/PCD error warning indicator, spanner indicator and malfunction indicator will light or blink, and the engine output will be restricted.

Furthermore, if use of the truck continues while in a defective condition, the time shown on the indicator will decrease.

When this time reaches 0h, the NCD/PCD error warning indicator will blink, and more restrictive limits will be implemented.

NOTICE

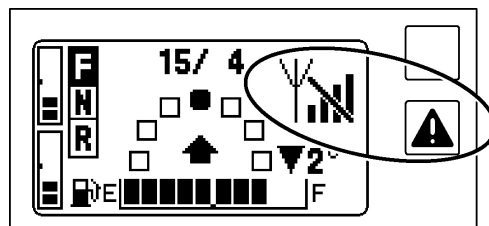
For China specification 1KD engine models, if a network disconnected warning is issued at the same time, the indicator display will alternate between the two.

CAUTION

If the spanner (diagnosis activation) indicator is blinking, park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.

13.2.17.14 Network disconnected warning

(1KD engine models for China spec.)

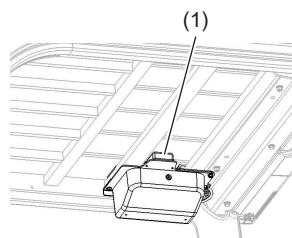


If the on-truck terminal cannot connect to the cell phone communication lines, a network disconnected warning will be displayed, and the master warning indicator will light up.

NOTICE

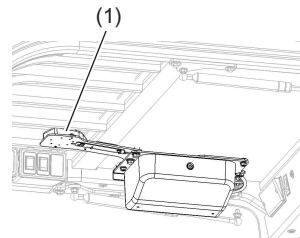
- This indicator may display alternated with other indicators, or temporarily switched with other indicators.
- Do not place any metal objects on top of the GNSS antenna that may interfere with radio waves.

Except cabin



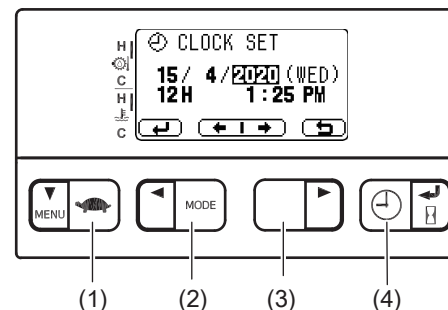
(1) GNSS antenna

Models with cabin (Option)



13.2.18 Setting functions

13.2.18.1 Clock set



- (1) Switch (1)
(2) Switch (2)
(3) Switch (3)
(4) Switch (4)

The year, month, day, time and 12/24-hour display can be set.

Multi meter is displayed by pressing switch (4) on the status screen for more than 2 seconds. Select Clock Set screen by pushing switch (4) the appropriate number of times.

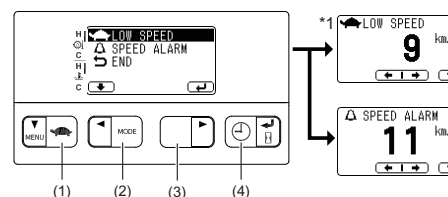
Functions of switches on the clock set screen:

- (1): Enter the selected (blinking) value and proceed to the next item.
(2): decrease the selected (blinking) value.
(3): Increase the selected (blinking) value.
(4): exit (without set)

By pressing switch (1) at "MINUTES" setting, the setting is completed and the screen returns to the status screen.

To prevent potential manipulation, Clock set screen isn't displayed when Rental hour meter is activated.

13.2.18.2 Setting menu for operator



- (1) Switch (1)
(2) Switch (2)
(3) Switch (3)
(4) Switch (4)

Press switch (1) on the status screen for more than 2 seconds to display the Setting menu for operator screen.

Each setting screen is displayed by selecting an item with switch (1), and pressing switch (4).

*1: 1FS, 1KD engine models

NOTICE

When the menu lock is active, the Setting menu for operator screen is not displayed.

13.2.18.3 Low speed setting (1FS, 1KD engine models)



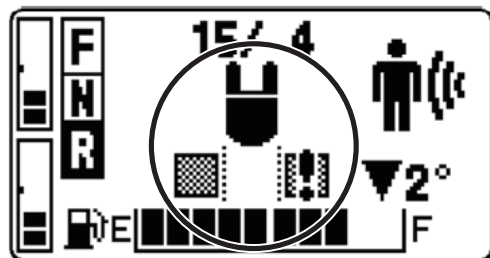
Switch (2): Lowering speed limit setting.
 Switch (3): Increasing speed limit setting.
 Switch (4): Returning to setting menu screen.
 It is adjustable from 5 to 32 km/h by 1 km/h increments.
 If the operator sets the speed to more than 32 km/h, the low speed function is disabled. In that case "OFF" is displayed.

13.2.18.4 Over speed alarm setting



The speed to activate the over speed alarm function can be changed.
 Switch (2): Lowering speed limit setting.
 Switch (3): Increasing speed limit setting.
 Switch (4): Returning to setting menu screen.
 It is adjustable from 5 to 32 km/h by 1 km/h increments.
 If the operator sets the speed to more than 32 km/h, the over speed alarm function is disabled. In that case "OFF" is displayed.

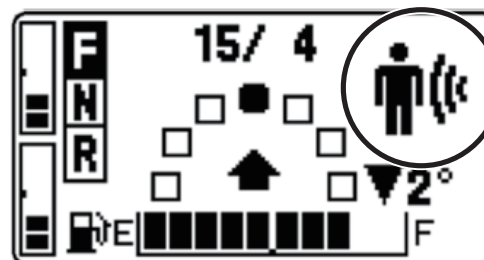
13.2.19 Start limitation indicator (Option: SEnS+)



When start limitation is applied by SEnS+, the detection target position is displayed if the truck is stopped.
 When the truck speed is detected, the speedometer value is displayed.
 For details, refer to SEnS+ (Option) [➤ 22] in this manual.

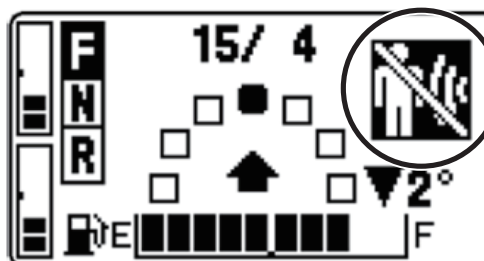
13.2.20 SEnS+ function indicator (Option: SEnS+)

SEnS+ function operation indicator



The SEnS+ function operating indicator is displayed when the SEnS+ function is operating. For details, refer to SEnS+ (Option) [➤ 22] in this manual.

SEnS+ function stop indicator



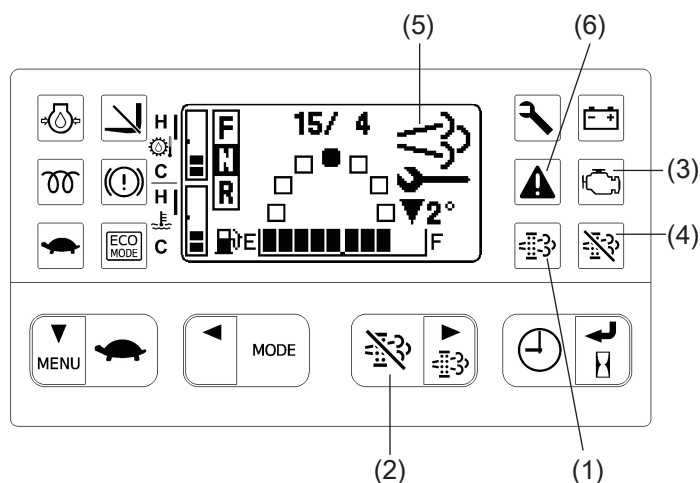
The SEnS+ function stopped indicator is displayed when the SEnS+ function is stopped. For details, refer to SEnS+ (Option) [➤ 22] in this manual.

13.3 Indicator and switch for DPF device (1KD engine models)

This is a monitor that shows the operating status and abnormality of the exhaust gas aftertreatment devices (DPF device).

A message is displayed on the Multi-function display II according to the situation as well as notification by warning lamps, etc.

13.3.1 How to See Multi-function display II



(1) Automatic Regeneration indicator lamp (Green)

Manual Regeneration indicator lamp (Orange)

(2) DPF switch

(3) Malfunction indicator lamp (Orange)

(4) Regeneration inhibit indicator lamp (Orange)

(5) DPF maintenance indicator

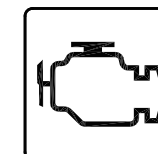
(6) Master warning indicator

NOTICE

- Only operate the switch panel when the truck is stopped.
- Always use your fingers to press the manual regeneration and regeneration inhibit switches. If a sharp pointed tool is used, the switch may be damaged.

13.3.1.1 Malfunction indicator lamp

- This lamp turns on to warn the operator of an abnormality in the engine control system and exhaust gas aftertreatment device.
- In normal situations, the lamp turns on when the engine key switch is turned ON and turns off when the engine is started.



⚠ CAUTION

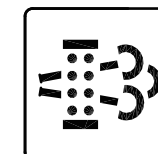
When the Malfunction indicator lamp turns on during operation, stop operation, stop the truck in a safe place, apply the parking brake, and remove the engine key switch. Then, contact the authorized Toyota dealer for inspection.

13.3.1.2 Automatic Regeneration indicator lamp (Green)

This lamp lights while combustion (regeneration) of the soot collected by the filter is performed automatically (during automatic regeneration).

Any operation is not required to start this automatic regeneration.

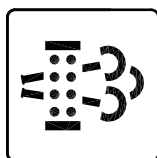
Color when the lamp is on: Green



13.3.1.3 Manual Regeneration indicator lamp (Orange)

- This is the DPF indicator to indicate the manual regeneration is required or manual regeneration is operating.
- If the truck is continuously used without completing automatic regeneration, the Manual Regeneration indicator lamp blinks to prompt the operator to perform manual regeneration.
- If you conduct the load handling operation or traveling operation during the manual regeneration, manual regeneration is stopped. For assured combustion, perform the manual regeneration without conducting the load handling operation or traveling operation.

Color when the lamp is on: Orange



NOTICE

- If you conduct the load handling operation or traveling operation during the manual regeneration, manual regeneration is stopped. For assured combustion, perform the manual regeneration without conducting the load handling operation or traveling operation.
- When the lamp starts blinking, perform manual regeneration as soon as possible. (For the method of manual regeneration, refer to Manual Regeneration operating procedure in this manual)

13.3.1.4 Regeneration inhibit indicator lamp (Orange)

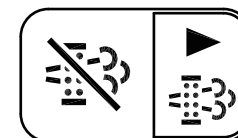
- The Regeneration inhibit indicator lamp lights while regeneration inhibition is activated. Switch activation and cancellation of the regeneration inhibition function with the DPF switch. (For the DPF switch, refer to DPF switch in this manual)
- While the lamp is on, neither automatic nor manual regeneration is available.



13.3.1.5 DPF switch

Press the DPF switch in order to:

- activate or cancel regeneration inhibition (Press less than 2 seconds);
- perform the Manual Regeneration (Press more than 2 seconds); or
- cancel the Manual Regeneration (Press again).

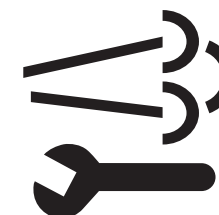


NOTICE

- Be sure to operate the DPF switch while the truck is stopped.

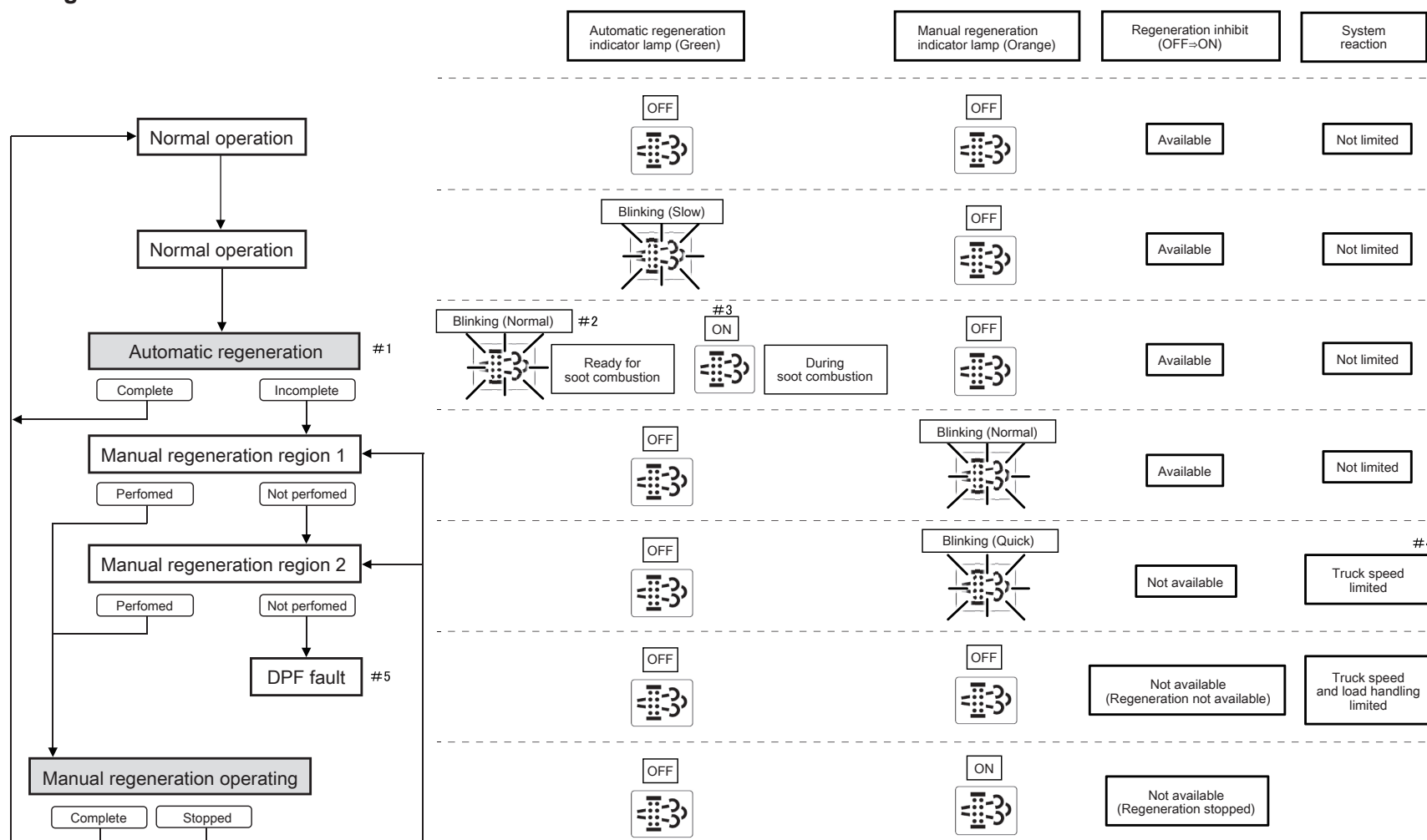
13.3.1.6 DPF Maintenance indicator

This indicator lights to indicate the DPF maintenance is required. Master warning indicator lights at the same time.



13.4 How to Regenerate (1KD engine models)

13.4.1 Flow of Regeneration



#1: Manual regeneration is available except blinking intermittently.

#2: Blinking (Normal) has 2 patterns, blinking continuously and intermittently. When the lamp blinks intermittently, manual regeneration is not available.

#3: Exhaust gas temperature rises sufficiently, then soot combustion is started.

#4: Manual regeneration is operated and soot amount is decreased to "Manual regeneration region 1" then, truck speed limit is released.

#5: Contact the authorized Toyota dealer

Blinking speed

- Slow: 4.0 second intervals
- Normal: 1.0 second intervals
- Quick: 0.5 second intervals

NOTICE

- **When Automatic regeneration is not completed within 40 minutes (Accumulated time of regeneration combustion), manual regeneration is required.**
- **Regeneration inhibit state is maintained, if engine key switch is OFF.**

NOTICE**DPF error**

If soot is accumulated more than the specified amount when operation is continued without performing manual regeneration even if the soot accumulation is in the manual generation range, Manual Regeneration indicator lamp blinks to warn about it. If operation is continued further without manual regeneration, a DPF error occurs and the Malfunction indicator lamp turns on. The operation is limited due to decrease in engine torque. Contact the authorized Toyota dealer for inspection immediately.

13.4.2 Automatic Regeneration

- When the collected soot exceeds a certain amount, the automatic regeneration control works and combusts the soot automatically during operation. No regeneration operation is required.
- Soot combustion may not be completed by automatic regeneration in some operating conditions.

Example: Long time idling, Low load operation, Repeated short trip operation.

13.4.3 Manual Regeneration

- When soot combustion is not completed by automatic regeneration, soot can be combusted surely by performing manual regeneration.
- Manual Regeneration indicator lamp blinks on the Multi-function display II to prompt the operator to perform manual regeneration. In this case, perform manual regeneration soon.
- If you conduct the load handling operation or traveling operation during the manual regeneration, manual regeneration is stopped. For assured combustion, perform the manual regeneration without conducting the load handling operation or traveling operation.

Manual regeneration operating procedure

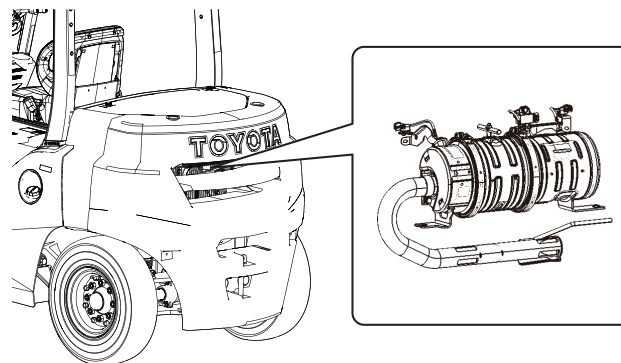
1. Stop a truck in a safe place.
2. Apply the parking brake and set the control lever in the neutral position. At this time, the engine should be kept running.
3. Press the DPF switch more than 2 seconds. When regeneration process is started, the blinking Manual Regeneration indicator lamp becomes lit steadily. The idle speed is increased.
4. When manual regeneration is completed, the Manual Regeneration indicator lamp turns off. The idle speed returns to the normal level.

⚠ CAUTION

- **When the Malfunction indicator lamp is on, Manual regeneration may not be available. Then, for inspection of the DPF device, contact the authorized Toyota dealer.**
- **When the Manual Regeneration indicator lamp starts blinking, perform manual regeneration as soon as possible.**
- **Manual regeneration should be completed with a single attempt. Stopping manual regeneration many times may cause the engine or exhaust gas aftertreatment device to fail, such as diluted engine oil by fuel.**
- **During soot combustion (regeneration), white smoke may come out from the area around the DPF assy. It indicates the gathered moisture discharged as water vapor, which is not an abnormal situation.**
- **Regeneration increases the exhaust gas temperature to a certain degree, so manual regeneration can be completed early and efficiently when it is performed while the exhaust gas temperature is high, such as immediately after working.**

⚠ WARNING

- Do not stop a truck in a place where a material that easily catches fire, such as dry grass and paper, exists. The areas around the exhaust pipe and muffler and exhaust gas become a high temperature immediately after or during traveling or regeneration of the DPF device. A flammable object near the truck may cause fire. Also, there is a risk of scalding by a high temperature of the areas around the exhaust pipe and muffler and exhaust gas.
- Perform combustion (regeneration) of soot in a large, well-ventilated space. Inhaling the exhaust gas is dangerous because it may cause carbon monoxide poisoning because the exhaust gas contains hazardous carbon monoxide that is colorless and odorless.

**⚠ CAUTION**

Do not leave the truck during regeneration. If any abnormality is sensed, stop manual regeneration. After confirming that no abnormality occurs, perform manual regeneration again.

13

13.4.4 Stopping of Regeneration

- Manual regeneration can be stopped by either of the following means.
 - Press the DPF switch again
 - Set the control lever in a position other than neutral
 - Release the parking brake
- If an abnormality related to regeneration occurs, the regeneration process is stopped.

NOTICE

During and right after the regeneration, the temperature is high. Idle the engine for 5 minutes for cooling down after the completion of regeneration.

13.4.5 Inhibition of Regeneration

- When the activation of regeneration control is not wanted, it is possible to inhibit automatic and manual regenerations.
- The Regeneration inhibit indicator lamp of the Multi-function display II lights while regeneration inhibition function is activated.
- The DPF switch can activate or cancel regeneration inhibition function.

13.4.6 DPF Device Maintenance

The maintenance is required because a small amount of metal components (Ash) that are not burned even when regeneration is performed is accumulated in the DPF.

DPF maintenance indicator lights to prompt the operator to perform DPF maintenance.

When the DPF maintenance indicator turns on, clean or replace the DPF filter.

NOTICE

When the DPF maintenance indicator turns on, contact the authorized Toyota dealer.

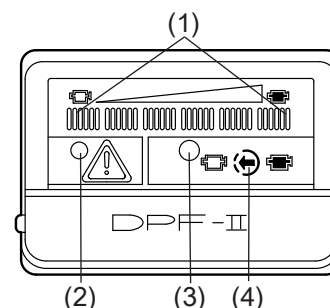
13.5 Handling the Toyota DPF-II system (14Z-II engine models (Option))

The Toyota DPF System is a device which traps the minute particles of black smoke in diesel engine exhaust gas with a DPF (diesel particulate filter) and carries out correct regeneration (combustion and elimination) by microcomputer control depending on the trapped amount.

⚠ CAUTION

- Do not proceed to a long-hours' continuous operation before regenerating the DPF.
- When the yellow trapping indicator lamp on the display is illuminated, carry out regeneration soon.
- Once the "Green/Yellow" lamp has begun to blink on the trapping indicator display, with the alarm buzzer sounding, carry out a regeneration treatment immediately.
- Do not turn off the power during regeneration except in an emergency. (Turning off the power will cause the buzzer to sound. Turning off the power for one minute or longer will cause the regeneration indicator lamp to blink.)
- If the display's alarm indicator lamp illuminates and the alarm buzzer rings due to an abnormality during regeneration, have the device inspected by the authorized Toyota dealer.
- Do not allow water to get into the DPF System when your vehicle is being washed or it will cause the system to malfunction or create a shock hazard.
- The DPF System uses a high voltage (single phase AC210~240V), so be careful of electric shocks.
- The DPF System reaches high temperatures during operation so do not place objects that can easily catch fire, such as paper, etc., around it during regeneration.
- Use automobile light oil. If you use a crude fuel such as heavy oil, a pale smoke will be emitted and the running time and life span of the DPF System might be adversely affected.
- An engine that consumes a lot of engine oil will have an adverse affect on the DPF System, so have it serviced by the authorized Toyota dealer.
- If white smoke (vapor, etc.) is emitted in some cases such as in acceleration just after starting the engine, there is nothing wrong with the engine system.
- Due to the operation of the AC power input detection function, if the AC power is not turned on during regeneration, regeneration will not start even when the regeneration switch is pressed. Again, when the AC power is turned on when starting the engine, the engine will not start and the operator will be notified via the blinking of the alarm indicator lamp and a buzzer sound.
- Due to the affects of gaseous and liquid substances, abnormal amounts of debris may be trapped in the DPF, and regeneration may not function. In this case, ask the authorized Toyota dealer for an inspection.

Display



- (1) Trapping indicator lamps
 (2) Alarm indicator lamp
 (3) Regeneration indicator lamp
 (4) Regeneration switch

▪ Trapping indicator lamps

According to a level of the trapped black smoke, the "Green" lamps will incrementally come on one by one and then the "Yellow" will come on sequentially.

▪ Alarm indicator lamp

This lamp comes on and the buzzer rings simultaneously to warn you when the amount of black smoke trapped exceeds the limit or when malfunction occurs in the DPF System.

NOTICE

When the alarm indicator lamp comes on, request an inspection from the authorized Toyota dealer.

▪ Regeneration indicator lamp

Indicate that DPF regeneration is underway.

▪ Regeneration switch

Starts regeneration.

Display

DPF trapping stage	Trapping indicator lamps		Alarm indicator lamps	Alarm buzzer	Regeneration
	Green 1-5	Yellow			
Small	On	-	-	-	Normal
Large	On	On	-	-	Regeneration required
Limit	Flashing	Flashing	-	Intermittent "beep, beep, ..."	Regeneration required immediately
Breakdown	Flashing	Flashing	On	Continuous "beep" (5 second)	Replace DPF (Contact the authorized Toyota dealer)

Explanation of display

1. Turn on the key switch.
 - All the display lamps come on, so check if any are off, and the buzzer rings.
 - 1 second later, the display shows the amount of black smoke trapped.

2. Starting the engine

⚠ CAUTION

Do not start up the engine with the external power connector plugged in. If so, the buzzer will sound and the alarm indicator will blink.

3. During operation

The amount of black smoke trapped is indicated by the trapping indicator lamp, the alarm indicator lamp and the buzzer, in that order.

4. If a malfunction occurs in the DPF System, the alarm indicator lamp comes on and the buzzer rings for 5 seconds.

⚠ CAUTION

When the alarm indicator lamp comes on, stop operation and request an inspection from the authorized Toyota dealer.

5. Operation completion

Carry out DPF regeneration when a day's operation is over.

Toyota DPF-II System regeneration method (Option)

Notes on regeneration

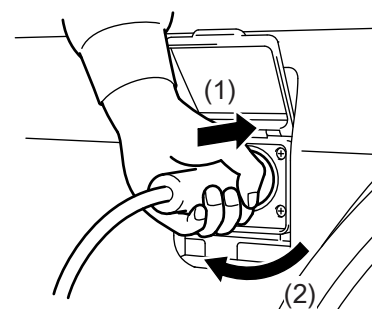
⚠ WARNING

- Do not stop a truck in a place where a material that easily catches fire, such as dry grass and paper, exists. The areas around the exhaust pipe and muffler and exhaust gas become a high temperature immediately after or during traveling or regeneration of the DPF device. A flammable object near the truck may cause fire. Also, there is a risk of scalding by a high temperature of the areas around the exhaust pipe and muffler and exhaust gas.
- Perform regeneration (combustion of soot) in a large, well-ventilated space. Inhaling the exhaust gas is dangerous because it may cause carbon monoxide poisoning because the exhaust gas contains hazardous carbon monoxide that is colorless and odorless.

⚠ CAUTION

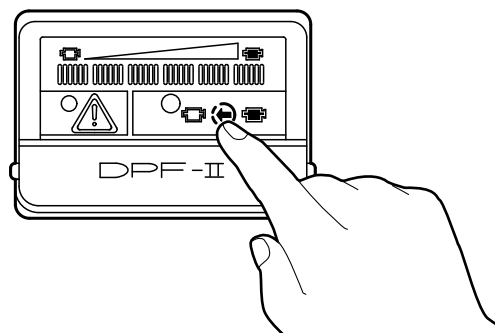
- Use a single phase AC210~240V external power source, rated 15 A or more. Connect securely to a power source earth. The yellow/ green cord of the AC cable for regeneration is the earth wire.
- Have any repairs to the external power supply plug done by an electrical specialist.
- Always fit an electromagnetic switch with earth leakage breaker that complies with the specifications described below to the external current plug electrical source.
 - Rated Current: 15 A or 20 A
 - Sensed Current: 30 mA
 - Rated Voltage: Single phase AC210~240V
- Do not allow water into the DPF air cleaner when washing the vehicle, etc.
- When the external power is cut off for one minute or longer due to power outage among others, the abnormality is detected, and the operator is notified by the blinking of the regeneration indicator lamp. At this time, after confirming that the external power has been normally restored, conduct regeneration again.
- Check that there are no objects that can easily catch fire around the DPF System before carrying out regeneration. Select a location for regeneration which is well ventilated (with a draught), away from the rain and not near any waste paper etc. that can easily catch fire.
- Do not handle the power plug with wet hands. A high voltage is used (single phase AC210~240V), so there is a danger of electric shock.
- Before starting DPF regeneration operation, make sure that a specified external power is supplied to the machine. So long as the external power is not supplied, regeneration will fail to start, even if attempted.
- During regeneration operation, combustion smoke is emitted out of the tail pipe.

Regeneration operation procedure



- (1) Insert
- (2) Lock

1. Stop the operation, apply the parking brake and remove the key.
2. Insert the plug into an external power supply connection socket and turn it in the locking direction.



- Press the regeneration switch on the display. The buzzer rings to start regeneration.

⚠CAUTION

Remove your finger once the buzzer rings and the regeneration indicator lamp comes on. Pressing the switch for a long time stops regeneration operation procedure.

⚠CAUTION

With the ignition switch ON, the power will not come on even if you press the regeneration switch.

⚠CAUTION

If the external power is supplied, with the engine switch ON, the buzzer will sound.

⚠CAUTION

Always use your fingertip to operate the switch panel on the display.

⚠CAUTION

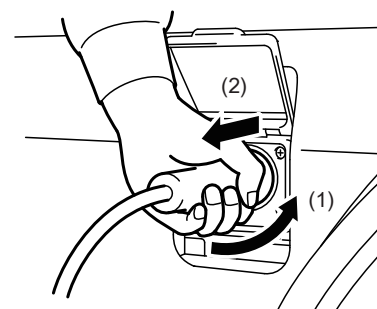
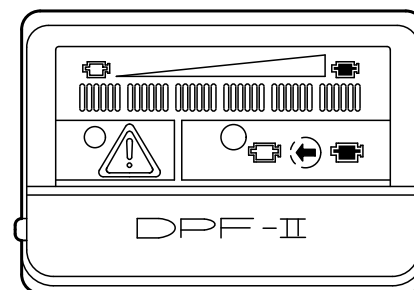
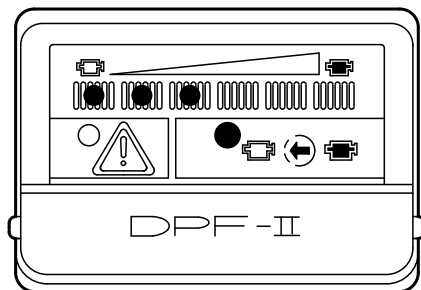
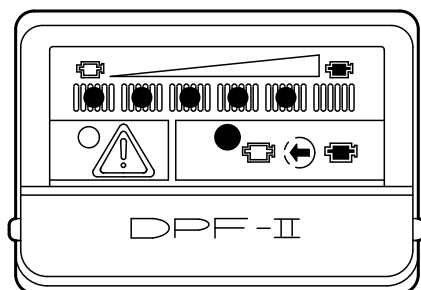
If the regeneration indicator lamp should come on without the buzzer sounding, ask an authorized Toyota dealer for an inspection.

- When regeneration starts, the regeneration indicator lamp and the trapping indicator lamps (all six) come on.

NOTICE

The microcomputer (ECU) automatically carries out regeneration, so the operator does not have to attend to the vehicle.

- The trapping indicator lamps go out in sequence from right to left (yellow / green) as regeneration proceeds. (every 10 minutes)



- (1) Unlock
- (2) Remove

- Once regeneration is over, all the indicator lamps go out and regeneration automatically stops.

NOTICE

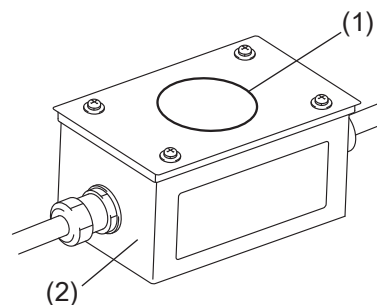
The regeneration time is about 50 minutes when the green trapping indicator lamp illuminates (up to 5) and about 70 minutes when the yellow trapping indicator lamp illuminates.

- Be sure to remove the power plug.

⚠CAUTION

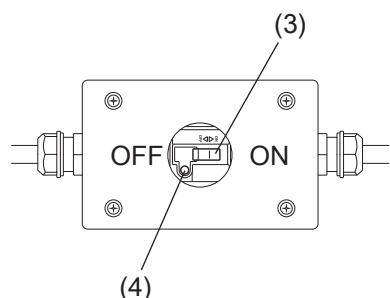
Soot combustion interruption (Regeneration interruption): When interruption soot combustion in progress is unavoidable, press the regeneration switch for about 5 seconds until the buzzer sounds. Then, the left green lamp and the regeneration indicator lamp will come on. After about 5 minutes, when all the indicator lamps are off, the engine can be activated again. Plug out the power cable after the regeneration indicator lamp is off. Do not interrupt soot combustion unless unavoidable as next soot combustion will be required earlier due to combustion remains.

Handling the DPF AC cable with earth leakage breaker



- (1) Rubber cover
- (2) Cable case

- After plugging into an electrical source, remove the rubber cover from the cable case and turn on the earth leakage breaker (hereafter "the switch"). The breaker needs to be turned on at the beginning only. There is no need to turn the switch on or off for regeneration. Replace the rubber cover. Do not dismantle the case when replacing back the rubber cover.



(3) Switch
(4) Test button

2. Check the switch operation regularly (about once per month) by the method described below:
 - Remove the rubber cover from the cable case.
 - Start the regeneration process.
 - After the regeneration process begins, swiftly press the grey switch test button (within 10 minutes).
 - Check that the switch has turned off. At this time, the display's alarm indicator lamp will start blinking and the buzzer will continue to ring. After one minute elapses, the alarm indicator lamp will turn off, the regeneration indicator lamp will start blinking, and the regeneration process will stop. Then, when the buzzer stops, all indicator lamps will turn off. (This completes the check operation)
 - Turn the switch on and replace the rubber cover.
 - If you wish to continue with the regeneration process, press the regeneration switch to start the process. If you wish to start the operation, disconnect the plug and start up the engine.
3. If the switch will not turn off, there is a possibility of switch malfunction. Request an inspection from the authorized Toyota dealer.

13.6 Cardkey entry system (Option)

Radio-type-approvals of Cardkey entry system

⚠ CAUTION

- As the radio regulations and requirements are different by country, please check the laws and regulations of each country and the certification system before using.
- Disassembling or modifying this unit may be punishable by the law.

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

TRA
REGISTERED No:
ER73696/19

DEALER No:
DA83366/19

TRA
REGISTERED No:
ER73697/19

DEALER No:
DA83366/19

This telecommunication equipment conforms to the standard or technical requirements of NBTC.

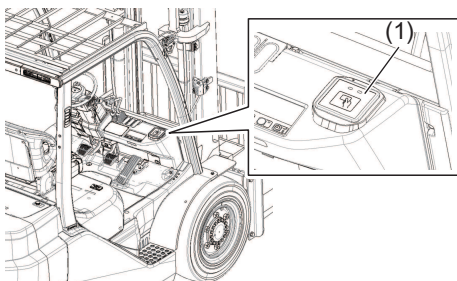


For more information on the requirements of the Chinese Radio Law, please refer to the following.

使用微功率短距离无线电发射设备应当符合国家无线电管理有关规定

- (一) 符合“微功率短距离无线电发射设备目录和技术要求”的具体条款和使用场景，采用的天线类型和性能，控制、调整及开关等使用方法；
- (二) 不得擅自改变使用场景或使用条件、扩大发射频率范围、加大发射功率（包括额外加装射频功率放大器），不得擅自更改发射天线；
- (三) 不得对其他合法的无线电台（站）产生有害干扰，也不得提出免受有害干扰保护；
- (四) 应当承受辐射射频能量的工业、科学及医疗（ISM）应用设备的干扰或其他合法的无线电台（站）干扰；
- (五) 如对其他合法的无线电台（站）产生有害干扰时，应立即停止使用，并采取措施消除干扰后方可继续使用；
- (六) 在航空器内和依据法律法规、国家有关规定、标准划设的射电天文台、气象雷达站、卫星地球站（含测控、测距、接收、导航站）等军民用无线电台（站）、机场等的电磁环境保护区域内使用微功率设备，应当遵守电磁环境保护及相关行业主管部门的规定；
- (七) 禁止在以机场跑道中心点为圆心、半径 5000 米的区域内使用各类模型遥控器；
- (八) 微功率设备使用时温度和电压的环境条件。
使用温度范围：-40 ~ 65℃
动作电压范围：8 ~ 18V

Only operators who have touched the registered access card on the card reader can activate the truck with this feature. This can contribute to avoidance of irregular uses by unauthorized persons.



(1) Card reader

Login operation

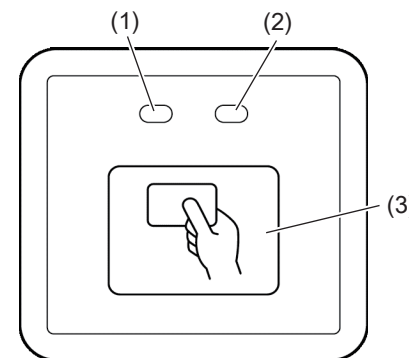
- The ignition key switch turn to ON position.

The green LED is on for 1 second and 3 seconds off, the preparation for authentication is complete.

- Touch the access card on Card reader.

If the access card is registered, the green LED is on and the engine can be started.

If the access card is not registered, the red LED is on, then the green LED is on for 1 second, and 3 seconds off. The system returns to the logoff state.



(1) Green LED

(2) Red LED

(3) Card reading area

⚠ CAUTION

When you log on to the truck, be sure that you are in the normal seated position with the seat belt fastened and the parking brake is applied. Otherwise, the truck may start suddenly, leading to an unexpected accident.

NOTICE

- Red LED and green LED are off when the key switch is off.
- Please do not touch together with other contactless IC card. It may not be read correctly.

Logoff operation

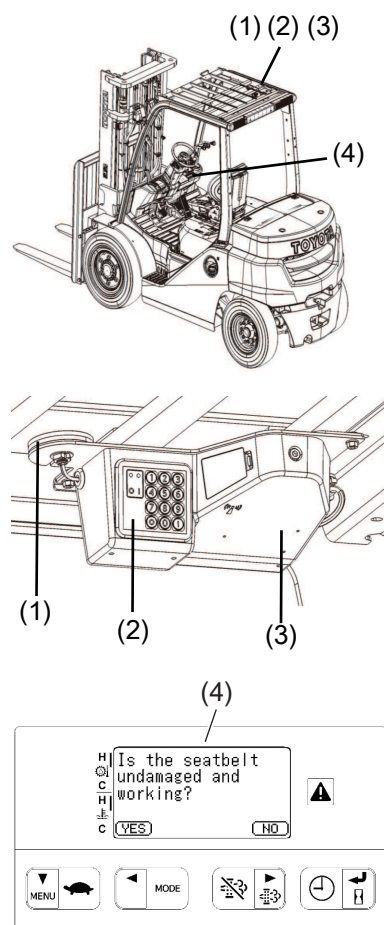
After the truck is started, turn off the ignition key switch.

13.7 TELEMATICS with POC (Option)

Only operators who have registered PINs (Personal Identification Number) can activate the truck with this feature. This can contribute to avoidance of irregular uses by uncertified persons.

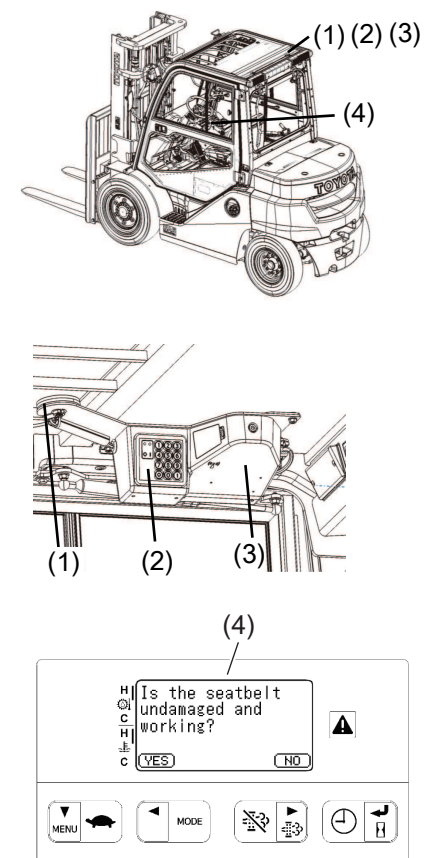
PINs consist of 5 figures. If leading digits are "0", they can be skipped when entering the code on the keypad (Example: When the PIN is "00123", you can enter "123").

Except cabin



- (1) External antenna
- (2) Keypad
- (3) Built-in antenna
- (4) Multi-function display II

Models with cabin (option)



- (1) External antenna
- (2) Keypad
- (3) Built-in antenna
- (4) Multi-function display II

⚠ CAUTION

- Telematics emits radio waves. Do not use Telematics near medical equipment or explosives.
- The data communication terminal (using cell phone service (4G LTE / 3G / 2G)) in Telematics sends and receives radio signals. Please Keep your body at least 20 cm away from the antenna.

Compliance with radio-type-approvals

[R] H-29634

ANATEL 19510-23-05911

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Para maiores informações, consulte o site da ANATEL – <https://www.gov.br/anatel>



מספר אישור התאמה מטעם משרד התקשורת: 11-12452

חל איסור לבצע פעולות במכשיר שיש בהן כדי לשנות את תכונותיו האלחוטיות של המכשיר, ובכלל זה שינויי תוכנה, החלפת אנטנה מקורית או הוספת אפשרות לחיבור לאנטנה חיצונית, בלא קבלת אישור משרד התקשורת, בשל החשש להפרעות אלחוטיות.

Connection and use of this communications equipment is permitted by the Nigerian Communications Commission

13.7.1 Login operation

1. The ignition key switch turn to ON position.
2. Enter the PIN

Each time the numeric key is pressed, the green LED illuminates for a short time to let the operator know that the key operation is valid.

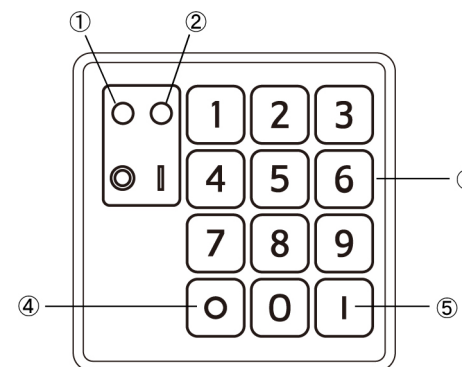
3. Press the login switch.

The system checks if the entered PIN is registered or not.

4. The ignition key switch turn to Start position.

When the entered PIN is approved, the green LED illuminates.

When the entered PIN is not approved, the red LED illuminates for 1 second and the system returns to the logoff state.



- (1) Red LED
- (2) Green LED
- (3) Numerical keypad
- (4) Logoff switch
- (5) Login switch.

⚠ CAUTION

When you log on to the truck, be sure that you are in the normal seated position with the seat belt fastened and the parking brake is applied. Otherwise, the truck may start suddenly, leading to an unexpected accident.

NOTICE

- In case the logoff switch is pressed before completing PIN entry, the login operation is canceled and the system returns to the logoff state.
- In case the login switch is pressed after over 5 digits are entered, the system reads the last 5 digits as PIN code.
- In case the login switch is pressed after less than 5 digits are entered, the system adds "0" at the top and read it as PIN code. (Example: "123" becomes "00123")
- If the truck is left without completing the login operation, entered code remains.
- If the buzzer sounds when the truck speed is more than 2km/h and the keypad's green LED is off, the operation data of the truck might not be recorded correctly. In this case, turn the key off and login again after a few seconds.

13.7.2 Logoff operation

After the truck is started, turn off the ignition key switch to send the truck into the logoff status.

NOTICE

The truck does not become to the logoff status even if you press the logoff switch.

13.7.3 Shock detection function setting

When this feature detects the intense shock on the truck, it warns the operator with the buzzer sound, and it records its impact value, date and time, and PIN code.

NOTICE

- At the same time, the truck speed will be limited to creep speed. (1FS or 1KD engine equipped models).
- In case it is permitted by a supervisor and under certain condition, an operator can reset the buzzer.
- A supervisor can change the shock detection level by using PC or mobile devices.
- The strength of the shock generated on the truck depends on the objects where the truck collided. Not all of the collisions can be detected.
- The shock generated in the usual operation depends on the road conditions, the loads, and the load handling operations. To prevent detecting collisions in the usual operation, ask a supervisor for setting the detection level.

13.7.3.1 Shock detection function and Warning Operation

In the case shock exceeds the shock detection value set in either of the longitudinal or lateral direction, the buzzer sounds to warn the operator. Even if the operator turned the ignition key switch off or disconnected the battery once, the buzzer sounds to warn the operator and at the same time the truck speed will be limited to creep speed (1FS or 1KD engine equipped models).

In case it is permitted by a supervisor and the detected shock is under the preset value, an operator can reset the shock detection alarm by logging off and logging in again with the operator PIN code. If the detected shock exceeds the preset value, only a supervisor can reset the alarm.

13.7.4 Pre-operation check

13.7.4.1 Pre-operation check function

(POC: Pre-operation check)

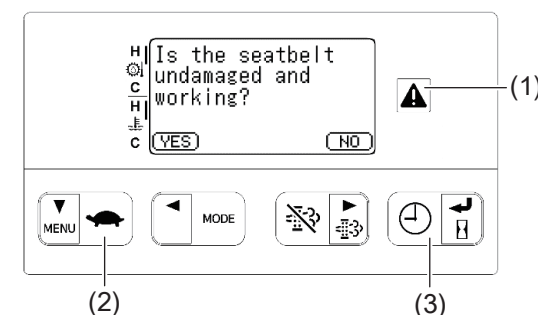
The Pre-operation check function is a feature which records the pre-operation check results based on the checklists. It also limits the truck operation if anything unusual is found during the pre-operation check.

After logging in to the truck, operators need to respond to all questions in the checklist or the truck cannot be started. This option can help prevent the truck from being used without pre-operation check.

The pre-operation checklists are created by means of the website by a supervisor.

Up-to 20 question are stored in the checklist and each inspection item is marked as "Critical item" or "Non-critical item".

Multi-function display II



(1) Master warning indicator

(2) YES button

(3) NO button

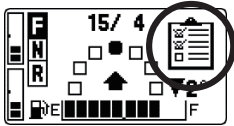
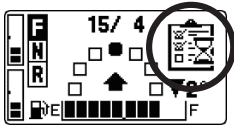
Pre-operation check procedure

1. Log in to the truck according to "Login operation" section of this manual.
2. The Pre-operation check function is activated and the first question appears on the display window in a few seconds and the Master warning indicator is blinking.
3. Respond to the questions as they show up on the display window.

The question is displayed again if the answer there is defect against the critical check item in the previous pre-operation check, or new check list was downloaded after the previous check.

Respond to the questions as they show up on the panel display by pressing either YES button or NO button.

4. One of the following display is given when the checks are finished:
5. At the end of the work, log off the truck according to "Logoff operation" section of this manual.

Display symbol	Master warning indicator	Description	Effect on truck	Reference: POC display
Normal screen	Turn off	Check OK All critical checks have been replied to in a way that indicates that the truck is in good working order.	It is possible to use the truck without any limitations.	Green LED lit for 3 seconds
	Lit 	Check not OK One or more critical checks have been replied to in a way that indicates that the truck need to be seen to, or some checks were not responded to at all.	Limit the operation of the truck. (truck speed limited to creep speed. 1FS or 1KD engine equipped model only).	Red LED blinks
Display symbol for 3 seconds 	Lit for 3 seconds 	Check not complete The check was not performed correctly, but no critical checks were left unanswered.	It is possible to use the truck without any limitations.	Yellow LED lit for 3 seconds

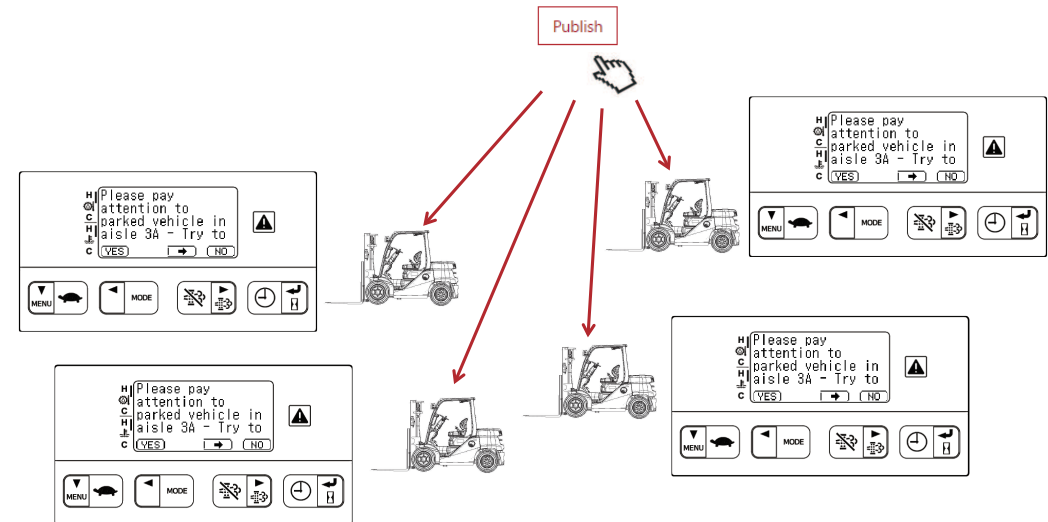
13.7.4.2 Messaging function

This feature allows you to send ad-hoc messages from the I_Site web application directly to the operator(s) / truck(s), which is convenient in remote or noisy sites where communication can be difficult.

To enable this function, it is necessary to enable the Pre-operation check in the "Machine Configuration" for each truck on I_Site.

Examples:

- Safety messages to all operators.
- Fleet manager allocating a job to a specific truck for the operator to accept and act on next time the truck is started.
- Call all operators to information meeting, allowing each operator to accept or reject the invite.



- If a operator is logged on (and a Pre-operation check is not ongoing) the message shall be shown immediately. At this time, the master warning indicator is light on.
- The message is accepted by the operator by pressing the YES button. The message is rejected by the operator by pressing the NO button. After replying the message, display and master warning indicator turns off.
- If not expired, the message shall be shown at each log on of a new operator (but not to operators who have already accepted or rejected the message).
- If a Pre-operation check session is ongoing, the message shall be shown on the display 10 seconds after the Pre-operation check session has been completed.
- If the message is shown and the operator logs out without having accepted or rejected, the message is shown again at next log on (if not expired), even if it is the same operator.
- If timeout is reached without the operator having accepted or rejected the message, it shall be shown again at next log on (if not expired).
- Operator ID and timestamp for acceptance or rejection is reported to web server at next communication so maybe it will take some time to update the report.

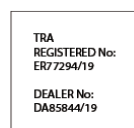
13.7.4.3 Telematics with Cardkey entry system (Option)

Radio-type-approvals of Cardkey entry system

⚠ CAUTION

- As the radio regulations and requirements are different by country, please check the laws and regulations of each country and the certification system before using.
- Disassembling or modifying this unit may be punishable by the law.

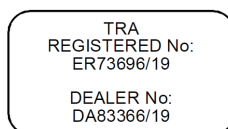
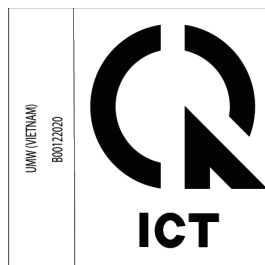
La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.



Complies with
IMDA Standards
DA107248



NTC
Type Approval No
ESD-1921037C

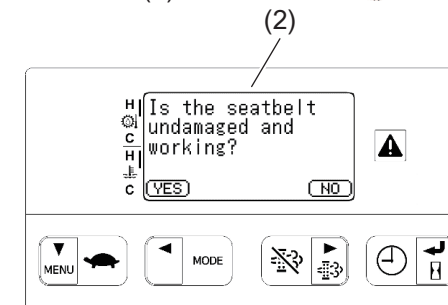
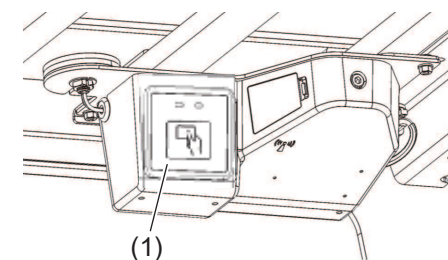
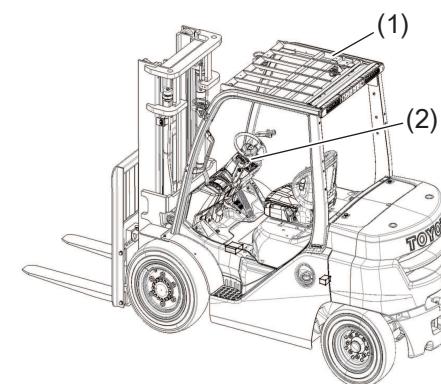


This telecommunication equipment conforms to the standard or technical requirements of NBTC.



Only operators who have touched the registered access card on the card reader can activate the truck with this feature. This can contribute to avoidance of irregular uses by unauthorized persons.

Except cabin



(1) Card reader, Data handling unit and antenna

(2) Multi-function display II

Login operation

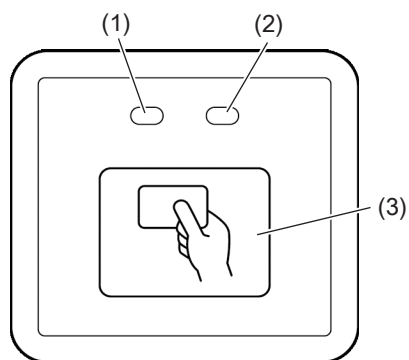
1. The ignition key switch turn to ON position.

The green LED is on for 1 second and 3 seconds off, the preparation for authentication is complete.

2. Touch the access card on Card reader.

If the access card is registered, the green LED is on and the engine can be started.

If the access card is not registered, the red LED is on, then the green LED is on for 1 second, and 3 seconds off. The system returns to the logoff state.



(1) Green LED

(2) Red LED

(3) Card reading area

⚠ CAUTION

When you log on to the truck, be sure that you are in the normal seated position with the seat belt fastened and the parking brake is applied. Otherwise, the truck may start suddenly, leading to an unexpected accident.

NOTICE

- Red LED and green LED are off when the key switch is off.
- Please do not touch together with other contactless IC card. It may not be read correctly.

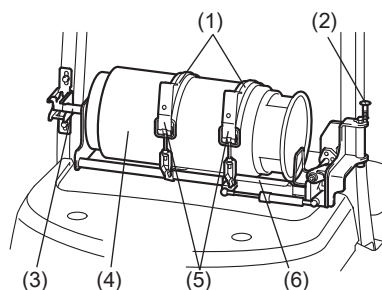
Logoff operation

After the truck is started, turn off the ignition key switch.

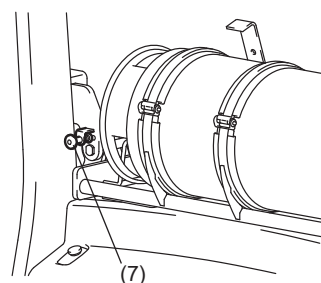
14 LPG DEVICE (OPTION)

Names of LPG device components

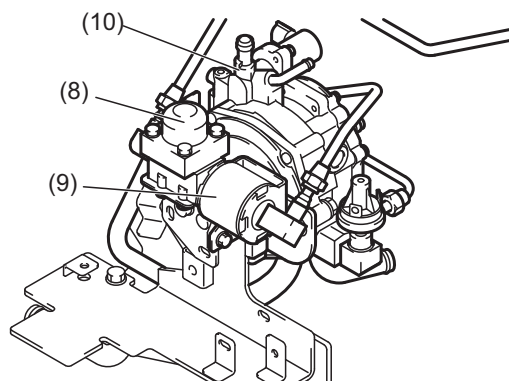
LPG tank (view from counterweight side)



LPG tank (view from operator's seat side)



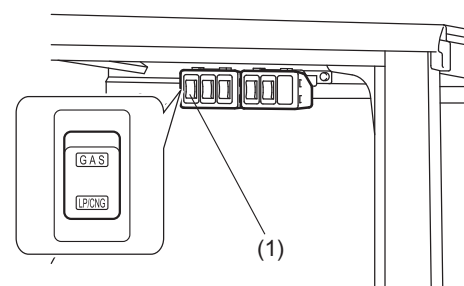
Regulator



- | | |
|--------------------------|--------------------------|
| (1) Tank band | (6) Tank bracket |
| (2) Set pin (upper side) | (7) Set pin (lower side) |
| (3) Tank bracket stopper | (8) Filter |
| (4) LPG tank | (9) Main solenoid valve |
| (5) Tank clamp | (10) Regulator |

14.1 Switches

Fuel changeover switch (Gasoline-LPG models)



This is a switch to select the type of fuel to be used (gasoline or LPG).

OFF - Horizontal position (Fuel is not supplied and the engine does not start up).

LPG - Lower position

GASOLINE - Upper position

- (1) Fuel changeover switch

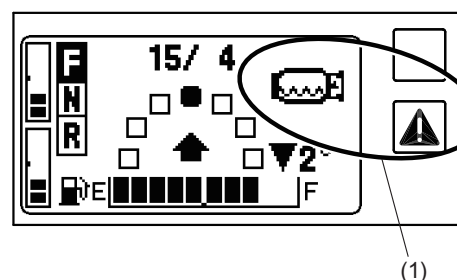
⚠ CAUTION

Do not change the fuel changeover switch (GAS↔LPG) while the engine is running. The engine speed becomes unstable and it may cause serious damages to the engine.

NOTICE

If the key switch is turned off, fuel is not supplied to the engine even when the fuel changeover switch is positioned at LPG or GAS position.

LPG warning indicator (Option)



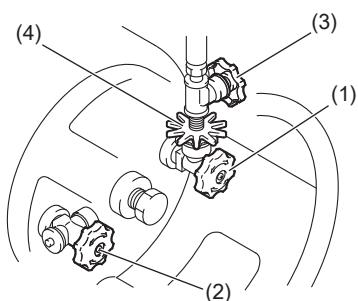
- (1) LPG warning indicator

When the amount of LPG in the tank is low, LPG warning indicator is displayed, the master warning indicator lights and the buzzer sounds for 5 seconds to notify the operator of the low LPG condition.

The indicator remains on until LPG is re-fuelled.

NOTICE

- On Gasoline-LPG models, the alarm will only function when fuel changeover switch is positioned on the LPG side.
- Once the LPG warning indicator activates, immediately refuel.
- It is possible to travel for approximately 3 minutes (700 m) after the alarm has sounded. (it will vary slightly according to the type of operation being performed, ambient temperature, LPG composition, etc.)
- Even when the amount of LPG in the tank is not low, the warning lamp will light up and the buzzer will sound when the key is turned on. The warning lamp will be turned off after engine is started.

14.2 LPG related parts**(1) Outflow valve**

This valve controls the flow of LPG fuel from the LPG tank to the regulator.

To open the valve - turn it counterclockwise

To close the valve - turn it clockwise

(2) Inflow valve

LPG is filled in the tank through this valve. The tank must be filled by an LPG filling station attendant. Be sure that this valve is shut tightly at all times during use.

(3) Pipe valve

When the fuel hose needs to be disconnected for tank replacement, etc., close this valve to prevent the liquid from running out of the hose.

To open the valve - turn it counterclockwise

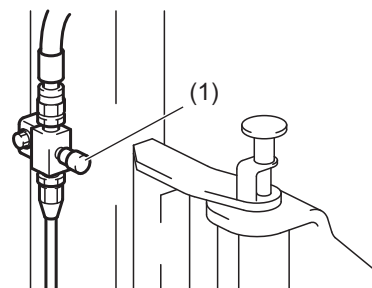
To close the valve - turn it clockwise

(4) Screw

Open this screw when the fuel hose needs to be disconnected for tank replacement, etc.

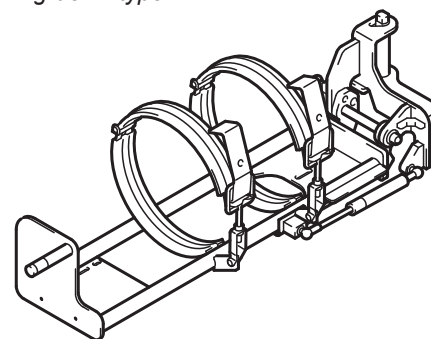
To open the valve - turn it clockwise

To close the valve - turn it counterclockwise

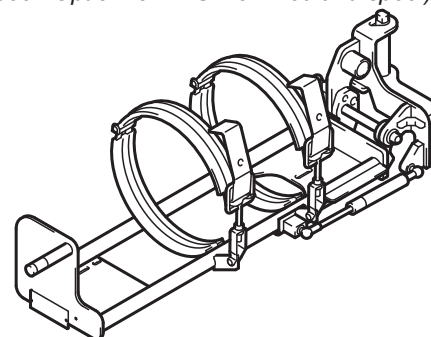


(1) Relief Valve

Swing-down type



Swing-down type (Standard for LPG Australia spec./ Option for LPG New Zealand spec.)

**Relief Valve**

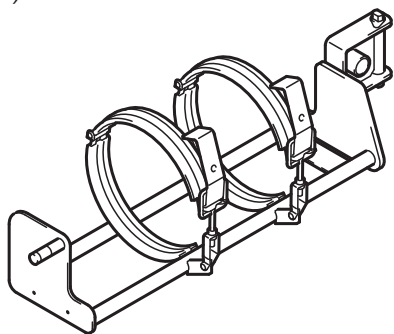
This valve prevents explosion that might be caused when the LPG pressure rises above a normal level or when the hose becomes deteriorated.

LPG tank bracket

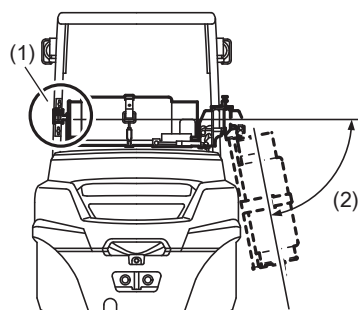
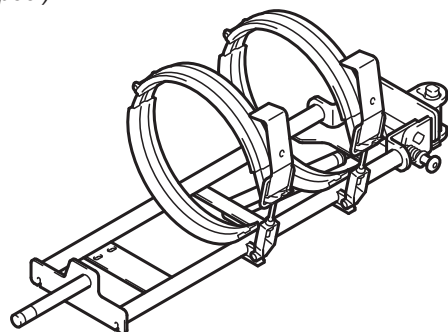
LPG tank is securely locked on the tank bracket by the tank bracket stopper.

For swing-down type, LPG tank can be lowered at the angle up to 65°.

Swing type (Standard for LPG New Zealand spec.)



Swing-down type (Standard for LPG Russia spec.)

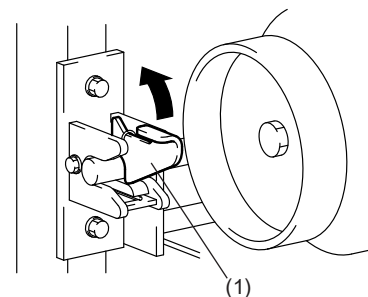


(1) Tank bracket stopper
(2) 65°

14.3 Engine hood

Opening

1. Lift up the tank bracket stopper on the left tank bracket and release the lock.

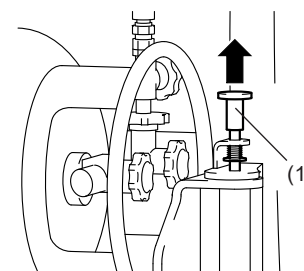


(1) Tank bracket stopper

2. Unlock the set pin (upper side) on the right side of the tank bracket, by lifting it, turn the bracket rearward, and fix the set pin.

⚠ WARNING

Shake the tank bracket and check that the set pin is applied securely.



(1) Set pin (upper side)

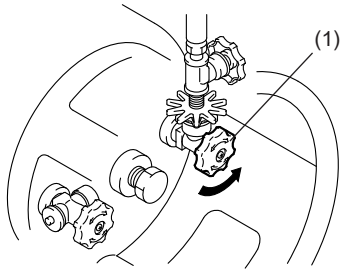
3. Open the engine hood according to instructions in "BODY COMPONENTS" chapter.

Closing

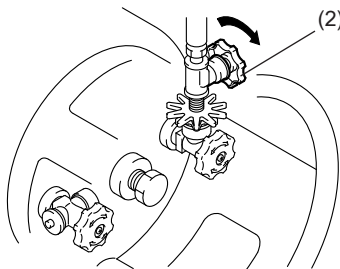
Close the engine hood according to instructions in "BODY COMPONENTS" chapter.

14.4 Operating LPG-powered forklift

Starting the engine (LPG models)



(1) Outflow valve



(2) Pipe valve

1. Set the direction control lever in the neutral position and apply the parking brake.
2. Turn the outflow valve of the tank counter-clockwise to open it.

3. Be sure that the pipe valve is open.

4. Wait for the engine to start running, and set the key switch to the ON position.
5. Let the engine idle for 5 to 6 minutes.

⚠ CAUTION

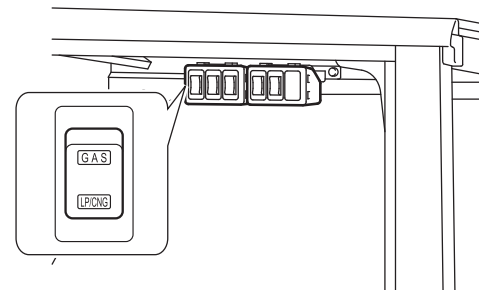
- Never depress the accelerator pedal repeatedly or hold it down completely during starting. The engine will not start easily.
- Never depress the accelerator pedal completely. It will send an extra amount of LPG and may freeze the regulator and damage the engine.

Starting the engine (Gasoline-LPG models)

If the ambient temperature is sufficiently high:

- Start the engine the same way as you would start the engine of LPG models.

If the temperature is very low and starting engine with LPG fuel is difficult:



1. Set the control lever in the neutral position and apply the parking brake.
2. Set the fuel changeover switch to the GAS position.
3. Start and warm up the engine as you would start and warm up a gasoline engine.
4. Set the fuel changeover switch to the OFF position (horizontal position) and let the engine stop in the idle state.

⚠ CAUTION

Do not change the fuel changeover switch (GAS↔LPG) while the engine is running. The engine speed becomes unstable and it may cause serious damages to the engine.

5. Set the fuel changeover switch in the LPG position. It must be left in that position for starting the engine and during use of the truck.
6. Start the engine again as you would start the engine of LPG models.

When the engine will not start easily:

Even if the LPG system is working properly, too lean or rich LPG makes engine starting difficult.

When LPG gas is rich:

Depress the accelerator pedal and start the engine again.

⚠ CAUTION

- If engine starting fails, wait for about 2 minutes. Further cranking will make LPG more rich and make starting impossible.
- If the engine still does not start, ask your supervisor to get a professional service staff to make repairs or ask the authorized Toyota dealer.

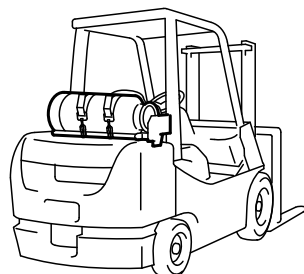
To Prolong the Engine Life:

Refrain from handling and driving the truck roughly especially when it is new.

Parking

⚠ CAUTION

- Park LPG-powered trucks only in well ventilated area.



When parking for a short time:

1. For Gasoline-LPG models, turn the fuel changeover switch to the OFF position (horizontal position).
2. Let the engine stop in the idle state so that any LPG fuel in the piping leaves the system. Turn off the key switch and remove the key.

When parking for a long time:

1. Turn the LPG tank outflow valve clockwise to shut the fuel supply.
2. Let the engine stop in the idle state so that any LPG fuel in the piping leaves the system. Turn off the fuel changeover switch (Gasoline-LPG models) and the key switch. Remove the key.

14.5 Refueling your truck

⚠ DANGER

Under no circumstances what so ever may the LPG tank replacement be performed near a lighted cigarette, lighted match, gas stove burner, electric heater, motor or any other electric appliance that emits sparks, flame or any type of fire (referred to collectively as "fire" below).

To avoid serious injury from fire or explosion, you must follow these rules:

- Turn off the ignition key switch and lights.
- Change tanks only in well ventilated, approved areas.
- No fire or flames allowed.
- Check all connections for damage or missing parts.
- Check for leaks.
- Do not restart until all smell of gas is gone.
- If truck will not restart, ask the authorized Toyota dealer to inspect it.
- Filling tanks requires special procedures and trained personnel.

14.5.1 LPG refueling

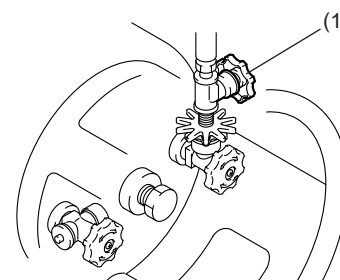
- LPG is heavier than air, and can accumulate in low areas and even on clothing. Any flame or spark can cause a fire and lead to a serious accident.
- Always refuel in the designated area. Check that the supplier is equipped with proper connections to ensure a secure supply.
- Always exchange tanks when refueling with LPG.
- When exchanging LPG tanks, always visually check the connections for damage or other abnormalities. Be careful so that the LPG hose will not be caught by the tank or bracket. If a gas leak occurs, do not start the engine and request repairs immediately.
- When the LPG tank needs refilling, ask the LPG station attendant to fill the tank. Never attempt to fill the tank yourself. This is extremely dangerous.

14.5.2 Removing the LPG tank

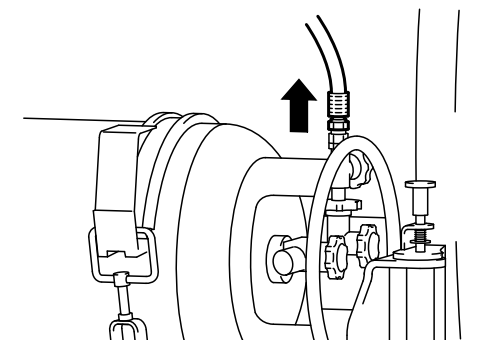
⚠ WARNING

- You must be trained and authorised to replace the tank.
- Wear leather gloves or other protective equipment when replacing the LPG tank. LPG can freeze hands and fingers in case the gas leaks.

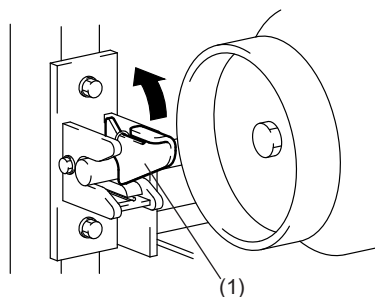
1. Stop the engine according to instructions for "When parking for a long time".
2. Turn the pipe valve clockwise to shut it.



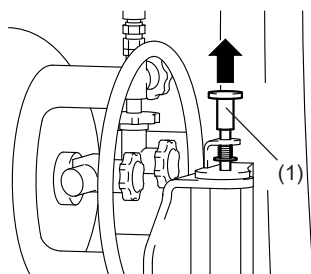
(1) Pipe valve



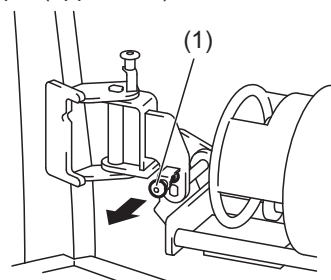
3. Disconnect the piping from the LPG tank (turn the screw counterclockwise).



(1) Tank bracket stopper



(1) Set pin (upper side)



(1) Set pin (lower side)

4. Lift up the tank bracket stopper on the left tank bracket and release the lock.

5. Unlock the set pin (upper side) on the right side of the tank bracket, by lifting it, turn the bracket rearward, and fix the set pin.

⚠ WARNING

Shake the tank bracket and check that the set pin is applied securely.

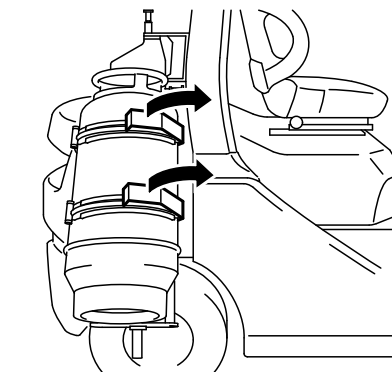
6. Pull the set pin (lower side) on the lower side of the tank bracket for unlocking. Lower the tank bracket and fix the set pin.

⚠ WARNING

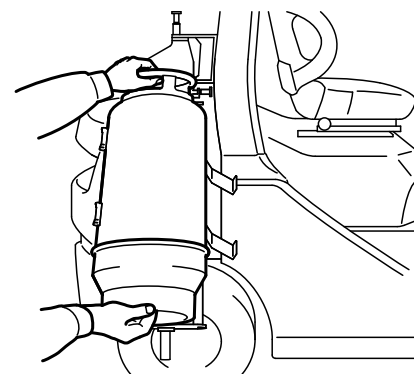
When unlocking the tank bracket set pin, never enter the area under the tank bracket. Pay special attention as the tank bracket may lower due to its own weight.

⚠ WARNING

Never unlock the set pin when the tank is full. Otherwise, it may cause the tank bracket to lower suddenly, which can cause personal injury.



7. Pull the tank clamp toward you and unlock the tank bands.

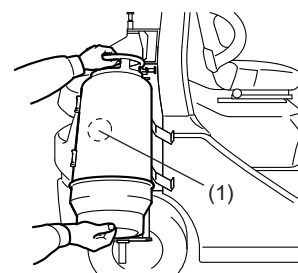


8. Raise the tank bands away from you and remove the LPG tank.

14.5.3 Installing LPG tank

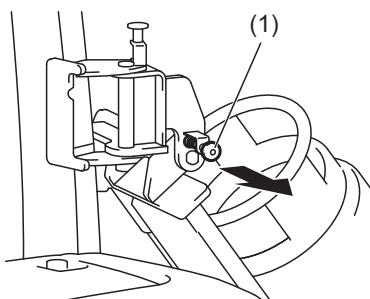
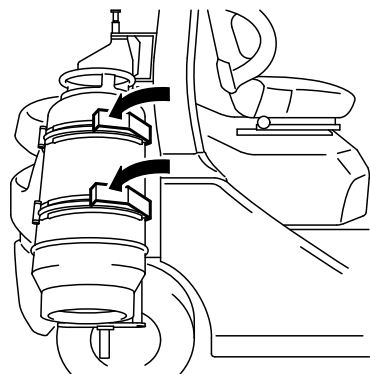
⚠ WARNING

- You must be trained and authorised to replace the tank.
- Wear leather gloves or other protective equipment when replacing the LPG tank. LPG can freeze hands and fingers in case the gas leaks.

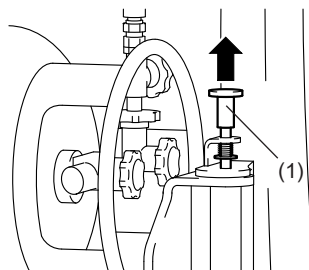


(1) Marking

1. Put the LPG tank on the bracket. The tank must be placed with the correct side up. Find a hole for indexing pin or marking on the tank. It must face upward or rearward.



(1) Set pin (lower side)



(1) Set pin (upper side)

2. Put bands over the tank, hook clamps to bands and push clamps up to clamp the tank.

3. Unlock the tank bracket by pulling the set pin (lower side) under the tank bracket. Raise the tank bracket and fix the set pin.

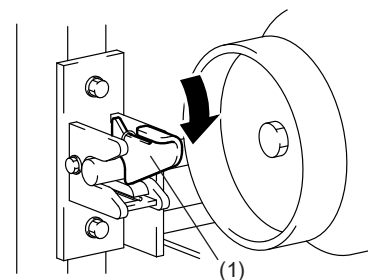
⚠WARNING

It is dangerous to unlock the set pin without a full tank because the bracket may raise up suddenly due to the spring force. To raise the bracket unlock the set pin only when there is a full tank on the bracket. Remove the set pin, turn the tank bracket around the pivot and ensure the bracket stopper knob is securing the bracket in place.

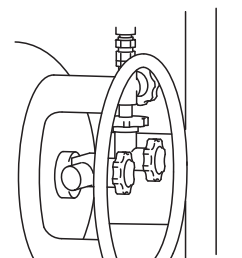
4. Pull up the set pin (upper side) to swing the tank bracket. Fix the set pin with the bracket stopper on the left tank bracket.

⚠WARNING

Check the tank outlet and coupling to make sure all seals are in place and undamaged.



(1) Tank stopper bracket

**⚠WARNING**

Make sure that the tank bracket stopper is securely in place.

5. Connect the piping to the outflow valve of the tank (turn the screw counterclockwise).

6. Wet the pipe connection to the tank with soap water or neutral detergent. Open the outflow valve and check the connection for any gas leaks.

⚠WARNING

If any gas leakage is found, immediately report it to a supervisor for repair by a qualified mechanic or the authorized Toyota dealer. Tag truck "out of service".

7. Do not try to start engine until all gas smell is gone.

8. Wipe off the soap water or detergent after inspection is completed.

14.6 Important information about LPG

- LPG normally contains a substance that gives it a noticeable odor in concentration of 1/200 or more in air.

If a large amount of the LPG is leaking from the tank, it can be detected by the smell. LPG does not contain carbon monoxide and is not poisonous although it is explosive.

- LPG is a highly pressurized gas and leaks very easily.

The vapor has a volume 250 times that of the liquefied gas and it is twice as dense as air. Therefore, it collects in low places.

- LPG increases in pressure as the temperature increases.

14.7 Safety precautions on LPG-powered forklifts

- LPG is flammable. A tiny spark can cause a fatal explosion if it is handled carelessly. It is very crucial that the following precautions are observed most strictly to avoid hazards.
- Only operate a LPG-powered forklift in a well ventilated area.
- All LPG-powered forklifts must be operated and maintained (including the LPG tank renewal) by designated persons only.
- Never stop or park an LPG-powered forklift near fire.
- Do not operate an LPG-powered forklift in the presence of fire.
- When operating or inspecting an LPG-powered forklift, post a large "FIRE HAZARD" sign and make sure that persons using fire do not approach the truck.
- Remove the ignition key from an LPG-powered forklift before parking or storing it so that no unauthorized person can operate it.
- Use only soap water or neutral detergent to check the truck for gas leaks. Do not use any other fluid.
- If the gas leak inspection must be performed at night with the help of a flashlight, turn the flashlight on far away from the truck and walk toward it. The flashlight might cause a spark when it is turned on and cause an accident.
- If a gas leak is detected, immediately put out any fire, ventilate the area and keep the area in a strictly fire free condition. Then call an authorized Toyota dealer or service garage.
- Store LPG tanks in a strictly predetermined area equipped with a gas detector at all times.
- Have LPG tanks refilled only by an LPG gas filling station attendant.
- Use LPG of an appropriate chemical composition according to the climate. In cold climate, use LPG with a relatively high propane content.

15 PRE-OPERATION CHECK

Be sure to inspect trucks at the start of every shift. These and other periodic inspections are your responsibility and these guidelines are to assist you in your job.

Item	Inspection
Previously detected malfunctions	Correct
Exterior	Body, oil leakage, water leakage, loose parts and exterior damage
Overhead guard	Parts, bends, cracks, and looseness.
Wheels	Tire pressure, wear or damage, rims and hub nuts
Lights	Light condition and damaged lights
Rear-view mirror	Damage, adjustment
Nameplate, warning labels	In-place, clean, legible
Hydraulic oil	Oil level, contamination and viscosity
Radiator	Coolant level and anti-freeze requirement.
Engine	Oil level, contamination, viscosity, noise and exhaust
LPG	Damage and gas leakage
Inching and brake pedal	Pedal play and braking effect
Parking brake	Operating force and brake effect
Operator restraint device	Seat belt damage (cut or frayed straps, loose stitching), tongue damage, buckle and retractor damage
Instruments	Functioning
Fuel	Amount and any leaks
Steering wheel	Looseness, play, vibration
Load handling system	Parts, oil leakage, damaged hoses, cracking and looseness Make certain that the SAS and clamp release interlock (Option) is functioning
Load backrest	Parts, bends, cracks, and looseness.
Horn	Sound
SEnS+ (Option)	Dirt, damage on the front of camera, warning buzzer, warning lamp functions.

15.1 Walkaround inspection

15.1.1 Alignment

Does the truck lean to one side or the other? If so, check for flat tire or a problem with the undercarriage.

15.1.2 Beneath the truck

Check for any oil or coolant leakage on the ground or floor where the truck was parked. Check for loose parts or damage.

If any unusual condition is found, have the truck inspected. The authorized Toyota dealer can provide this inspection.

15.1.3 Tire inspection

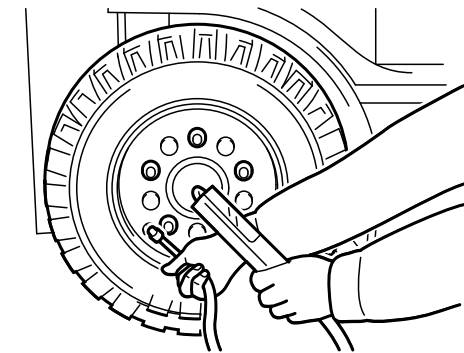
Damage, cracking and wear of tires and rims

Check the tires for damage and wear, and the rims for damage.

⚠ CAUTION

If the tires are damaged, or there is a marked difference in tire wear between front and rear or between left and right, or damaged rims are found, you should request an inspection from an authorized Toyota dealer. Damaged or low tires could cause the tire to burst or skid.

Inflation pressure of tires



1. Use a tire pressure gauge and measure the inflation pressure. Adjust it to the proper pressure.

⚠ CAUTION

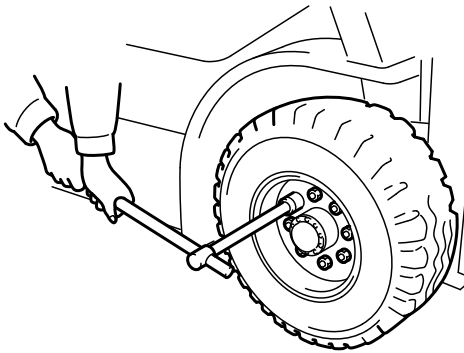
Do not raise the pressure beyond the proper level.

NOTICE

See the **SERVICE DATA** section of this manual for the proper inflation pressure.

2. After adjustment, check for air leakage from the valve.

15.1.4 Hub nut inspection

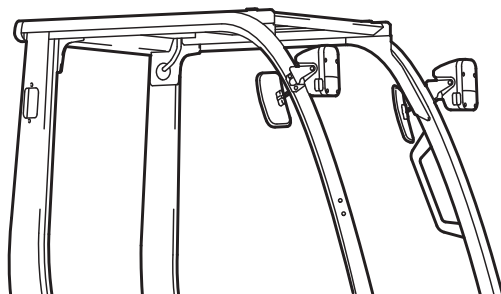


Check the tightness of the hub nuts. Avoid uneven torque and tighten all of the nuts uniformly.

NOTICE

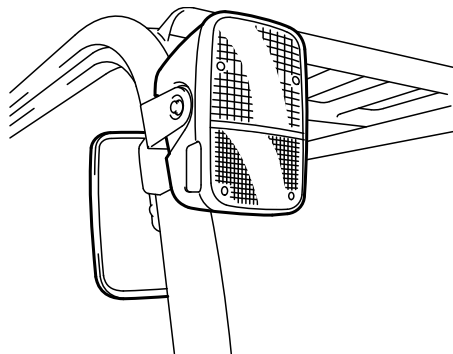
Refer to **SERVICE DATA** section of this manual for proper tightening torque.

15.1.5 Overhead guard inspection



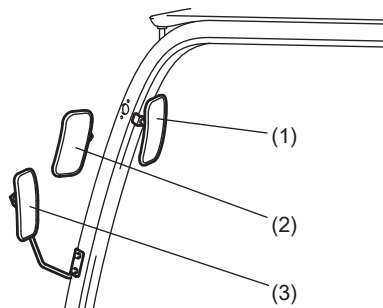
Check the overhead guard for bends, cracks and mounting bolt looseness.

15.1.6 Light inspection



Check the lights "function and lens" damage. Keep the lenses clean to ensure proper vision. (Turn signal lights and rear-view mirrors are optional)

15.1.7 Rear view mirror inspection



- (1) Rear view mirror
- (2) Rear view mirror for models with Low head guard (Option)
- (3) Rear view mirror for models with Cabin (Option)

Check the rear view mirror for any damage and adjust the mirror angle before operating the truck.

⚠ CAUTION

To avoid accidents, adjust the mirror angle before operating the truck. Never adjust the mirror angle while the truck is moving.

15.1.8 Nameplate and warning labels inspection

Check the nameplate and warning labels if they are in-place, clean and can be read.

If the nameplate or warning labels are missing, damaged or illegible, ask a supervisor or the authorized Toyota dealer and replace them.

15.1.9 SEnS+ (Option) inspection

Check that the SEnS+ warning lamp blinks orange and the SEnS+ warning buzzer sounds (1 long + 2 short beeps) when the key switch is turned ON.

Furthermore, check for any dirt or damage on the front of the camera.

⚠ WARNING

Do not use alkaline solvent to clean any of the camera components. It may damage the system or cause a fault.

⚠ CAUTION

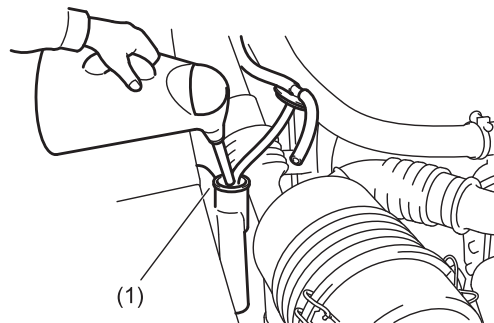
- Whenever you see dirt or other obstructions on the camera lenses, gently and carefully wipe it off.
- When wiping off dirt, use a soft cloth so as not to damage the camera lenses.
- If metal powder, sand or the like is adhered to the camera lenses, remove it with an alcohol solvent, such as parts cleaner, and then wipe it off with a soft cloth.
- Never disassemble the camera unit.

15.2 Engine compartment inspection

15.2.1 Checking the engine coolant level in the reservoir tank

⚠ WARNING

Level check and supply of engine coolant shall be performed while the coolant is cool.



(1) Reservoir tank

1. With the engine off, open the engine hood and check the engine coolant level in the reservoir tank.

NOTICE

The reservoir tank automatically supplies the engine coolant when the level in the radiator is low.

2. The coolant level is correct if it is between the upper and lower limits. If the level is below the lower limit, supply coolant to the upper limit.

NOTICE

The concentration of the long-life coolant (LLC) in the engine coolant must be 50%.

3. If coolant supply is frequently required, the cooling system may be leaky. Conduct an inspection immediately.

⚠ CAUTION

If no engine coolant remains in the reservoir tank, be sure to check the coolant level in the radiator, but only when cool.

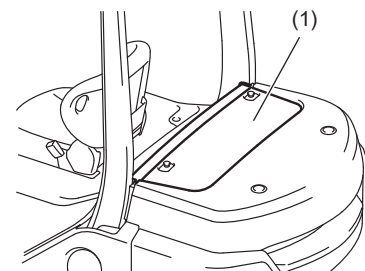
15.2.2 Checking the engine coolant level in radiator

⚠ WARNING

Coolant level checks must always be performed when the radiator is cold. Removing the cap when engine is hot can cause serious injury.

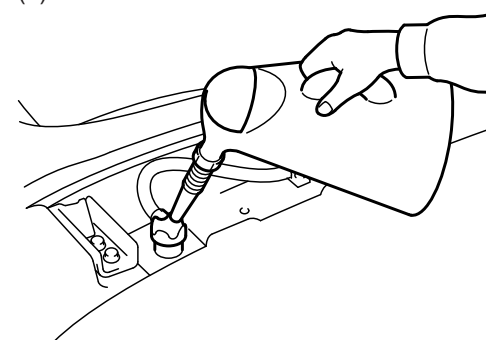
⚠ CAUTION

Check the coolant level in the radiator only when no engine coolant remains in the reservoir tank.



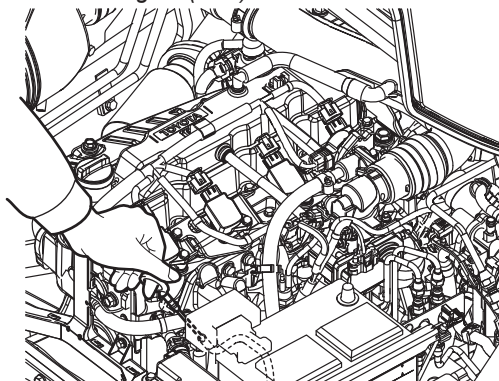
(1) Radiator cover

1. Remove the rear side radiator cover.
2. Remove the cap and check the coolant level from the filler port.
3. If the engine coolant is not visible through the filler port, add an appropriate amount of diluted coolant (LLC).
4. To close and tighten the radiator cap, match the pawl on the reverse side of the cap with the notch in the filler port and turn the cap fully clockwise while pressing it down.

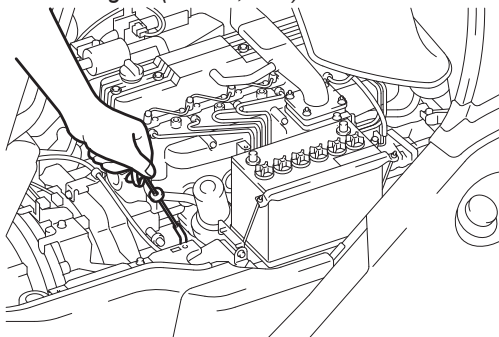


15.2.3 Engine oil inspection

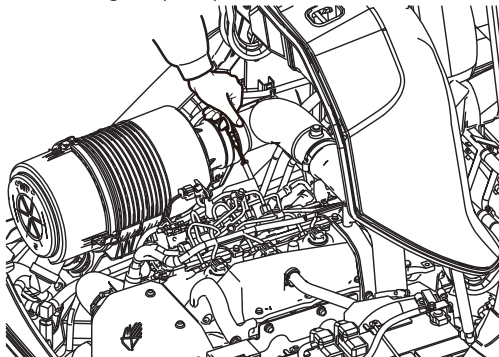
Gasoline Engine (1FS)



Diesel Engine (14Z-II, 15Z)



Diesel Engine (1KD)



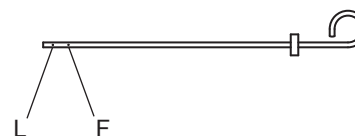
1. Park the truck on level ground. If the truck is inclined, the indicated level may be incorrect.
2. Open the engine hood. (Refer to "Engine hood" section of this manual)
3. The oil level must be checked before starting the engine or at least 5 minutes after the engine has stopped.
4. Remove the oil level gauge and wipe it with a clean cloth. Insert it again and check if the oil level is between the F and L levels.
5. If the oil level is below the L line, add oil to the F line.

For 1KD engine models For the soot combustion (regeneration) by DPF, fuel is sprayed in engine, and such sprayed fuel may be in-poured into the engine oil compartment and mixed into the engine oil. For this reason, the amount of oil in such compartment may increase than at the time of last inspection of engine oil, but this does not make any trouble.

Oil level gauge (1FS, 1KD)

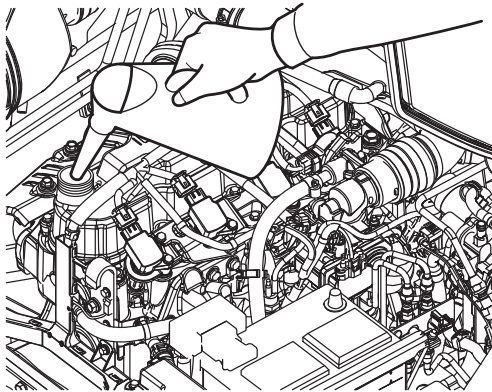


Oil level gauge (14Z-II, 15Z)

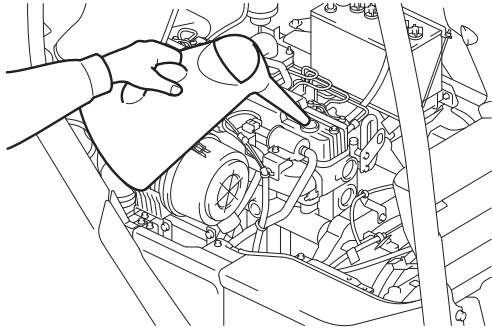


15.2.4 Adding engine oil

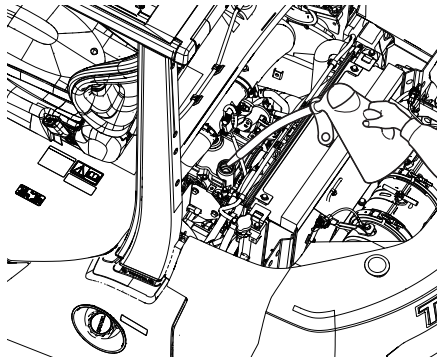
Gasoline Engine (1FS)



Diesel Engine (14Z-II, 15Z)



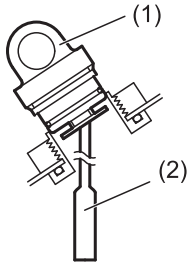
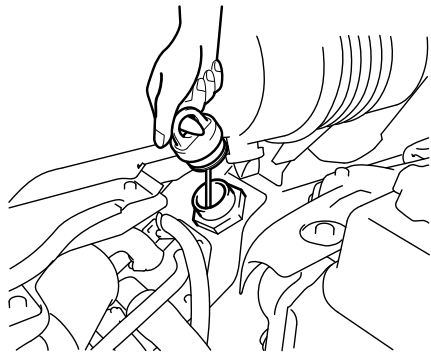
Diesel Engine (1KD)



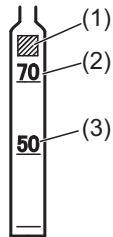
1. To supply oil, remove the filler cap and pour oil through the filler port. Never let the oil level exceed the F line.
2. Refer to the RECOMMENDED LUBRICANT QUANTITY & TYPES section of this manual for the recommended types of engine oil for replacement.

CAUTION
Always use the same brand of oil.

15.2.5 Checking hydraulic oil level



- (1) Oil cap
(2) Oil level gauge



- (1) Identification marking
(2) Lift height 5,500 - 7,000 mm
(3) Lift height 5,000 mm or less

1. Always stop the engine and lower the forks to the ground before checking the level of the hydraulic oil while the truck is on level ground.
2. Open the engine hood and remove the oil cap.
3. Wipe the level gauge attached to the oil cap with a clean cloth, and insert it again into the tank.
4. Remove the level gauge gently and check if the oil is up to the level line.

NOTICE
Inspect the oil level by placing the level gauge on the opening of the oil supply inlet, without pushing the oil cap in.

NOTICE
The oil level varies with the maximum lift height.

5. If the oil level is insufficient, add oil. Spilled and splashed oil must be wiped off thoroughly.

Identification marking	Applicable models
35, 40	8FG/D35N, 40N, 90-8FG35N 40-8FD35N, 40N
45, 80	8FG/DM40N 8FG45N-80N, 90-8FG45N-80N 8FD45N-80N, 40-8FD45N-80N

15.2.6 Leakage inspection

⚠ CAUTION

Always stop the engine before carrying out the leakage inspection.

Check the engine compartment for any oil or fuel leakage.

Clean the radiator if it is clogged and check if there are any foreign objects, such as paper, on the radiator grill.

15.2.7 LPG leakage inspection (Option: LPG and Gasoline-LPG models)

⚠ DANGER

To avoid serious injury from fire or explosion, you must follow these rules;

- Turn the ignition key switch and lights off.
- Check for leaks only in well ventilated, approved areas.
- No smoking, fire or flames allowed. Make certain that there is no source of fire in the area throughout the gas leak check.
- To check for leaks, only use soap water or neutral detergent. Never use open flame or other liquids for leak checks.
- Do not try to start engine until all gas smell has gone.
- If any gas leakage is found, immediately report it to a supervisor for repair by a qualified service staff or the authorized Toyota dealer. The truck is not allowed to be operated until the repair is completed.

Inspect for any LPG leakage before starting operation by the following procedure:

1. Open the outflow valve by turning counterclockwise.
2. Be sure that the pipe valve is open.
3. Operate the fuel changeover switch between LPG and the OFF repeatedly for several times, and leave it in the OFF position finally (only for Gasoline-LPG models).
4. Wet all hoses and the LPG tank and regulator connections with soap water or neutral detergent. Look for gas leak. Bubbles will show leaks.
 - Tag truck "out of service" if any leaks are found and immediately report to a supervisor.
5. After the gas leak check is completed, wipe off the soap water or neutral detergent from the wet parts.

15.3 On board truck inspection

15.3.1 Brake pedal inspection

NOTICE

The brake pedal must be inspected after starting the engine.

NOTICE

Ensure rubber pad is in place on the pedal.

1. Depress the brake pedal fully, and check the floor clearance (clearance between the pedal and floor).

NOTICE

See the SERVICE DATA section of this manual for the floor clearance.

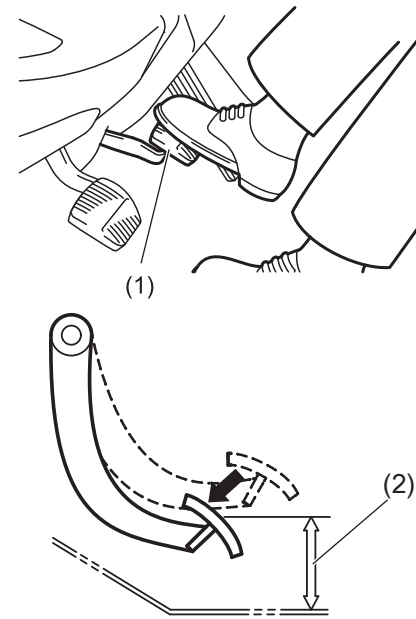
2. Make sure that the pedal does not go any further when it is kept depressed.
3. Also check that no problem is observed with pedal depression and return.
4. Manually depress the brake pedal to check the play until a resistance is felt.

NOTICE

See the SERVICE DATA section of this manual for the amount of brake pedal play.

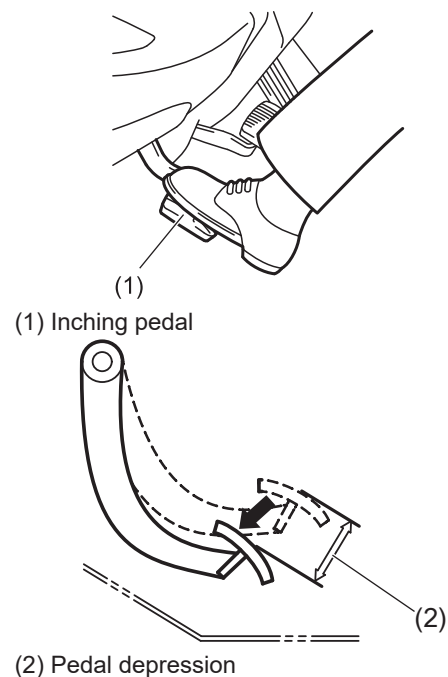
⚠ WARNING

Ask the authorized Toyota dealer for an inspection if play is excessive, pedal movement has a problem or brake performance is not normal.



(1) Brake pedal
(2) Floor clearance

15.3.2 Inching pedal inspection



NOTICE

Ensure rubber pad is in place on the pedal.

1. Depress the inching pedal and check if you feel a click under your foot.

NOTICE

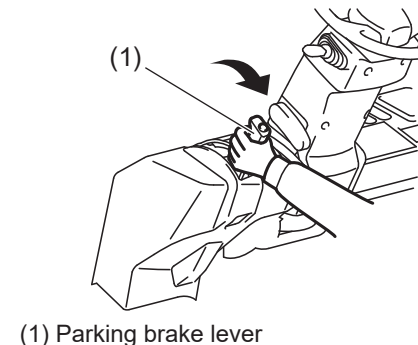
See the **SERVICE DATA** section of this manual for the amount of pedal depression.

2. Also check that no problem is observed with pedal depression and return.

⚠ WARNING

Ask the authorized Toyota dealer for an inspection if pedal movement has a problem.

15.3.3 Parking brake lever inspection



1. Pull the parking brake lever fully and ensure that the brake is functioning normally.
2. Check the operating force required for pulling the parking brake lever. For the adjustment, see the section entitled "Adjusting of parking brake operation force" of this manual.

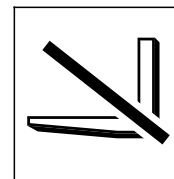
NOTICE

See the **SERVICE DATA** section of this manual for the parking brake operating force.

⚠ WARNING

Ask the authorized Toyota dealer for an inspection if any abnormality is found.

15.3.4 OPS indicator inspection



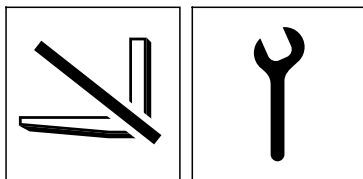
Sit on the seat, start the engine, and check that the OPS indicator lamp is not illuminated.

⚠ CAUTION

In any of the following cases, a malfunction may have occurred to the OPS. Park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.

- The OPS indicator lamp does not illuminate when the operator is not seated in the normal operating position.
- The OPS indicator lamp does not go off when the operator is in the normal operating position.

15.3.5 Seat belt interlock inspection (Option)



Perform the following to check the seat belt interlock function before operating the truck.

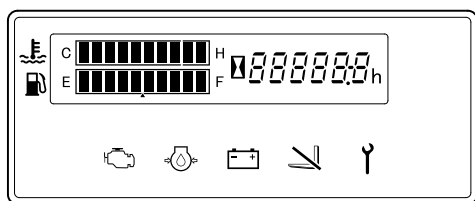
- The OPS indicator lamp illuminates when the operator unfastens the seat belt while seated in the operator's seat.
- The OPS indicator lamp illuminates when the operator leaves the seat while seat belt is fastened.
- The OPS indicator lamp does not go off when the seat belt is fastened while the operator remains out of the seat.

⚠ CAUTION

If any of the following cases happen, a malfunction may have occurred to the system. Park the truck in a safe location, apply the parking brake, remove the key and ask the authorized Toyota dealer for an inspection.

- The OPS indicator lamp does not illuminate when the seat belt is unfastened after the correct sequence of the seat belt connection is followed.
- The OPS indicator lamp does not illuminate when the operator leaves the seat.
- The OPS indicator lamp does not go off after the operator gets on the seat and fastens the seat belt in the correct sequence.
- The spanner indicator lamp blinks but does not go off when the operator returns to the seat soon after leaving and fastens the seat belt.

15.3.6 Instrument inspection



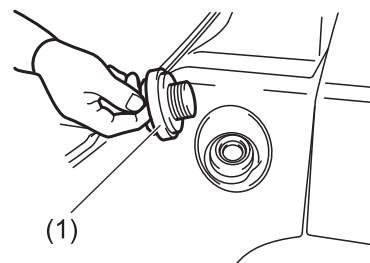
Start the engine and see that they operate properly.

15.3.7 Fuel level check and supply (Gasoline and diesel models)

⚠ DANGER

Follow these rules when refueling to avoid serious injury or death:

- Refuel only in authorized areas
- Turn the ignition key switch off
- No smoking or naked flames allowed
- Clean up spills before starting the engine



(1) Fuel tank cap

1. Check the gauge to see if the fuel is sufficient to finish your shift.

NOTICE

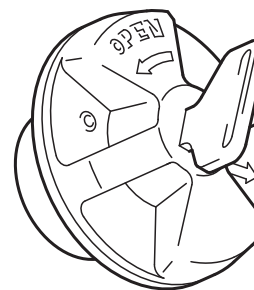
After the end of daily operation, fill the tank with fuel to prevent moisture in the tank from mixing with the fuel.

2. When filling the fuel tank, stop the engine, remove the fuel tank cap by turning it counterclockwise, and pour fuel through the fuel filler neck.
3. After fueling, be sure to tighten the fuel tank cap.

⚠ CAUTION

Prevent entrance of water and dirt into the tank during fueling, use only clean, properly marked containers.

15.3.7.1 Fuel cap with key (Option)



The fuel cap can be locked by the dedicated key.

(The key is not the same as an ignition key switch or cabin door key.)

Gasoline fuel recommendation

Use only un-leaded gasoline of 89 octane (RON89) rating or higher.

⚠ CAUTION

If any other kind of fuel is used, it may cause a serious damage to the engine.

NOTICE

- Do not use gasoline with more than 10% Ethanol (E10) or engine/fuel system damage may occur.
- Do not use deteriorated fuel which has been stored for a long period of time or impure fuel in which foreign material, water etc. is included.

Diesel fuel recommendation

(Except China specification)

Use diesel fuel defined by EN590: 2004 or better.

Refer to the following table for details.

Detailed Requirement for EN590: 2004

Property	Unit	Lower Limit	Upper Limit
Distillation Temperature 95% (V/V)	°C	-	360
Kinematic Viscosity at 40°C	mm ² /s	2.0	4.5
Sulfur	ppm (mg/kg)	-	50
Cetane number		51	-
Cetane index		46	-
Polycyclic aromatic hydrocarbons	% (m/m)	-	11
Lubricity, HFFR at 60°C	μ m	-	460
Density at 15°C	kg/m ³	820	845

(China specification)

Use only ultra low-sulfur fuel defined by GB19147: 2016.

Refer to the following table for details.

Detailed Requirement for GB19147: 2016

Property	Unit		Quality index					
			#5	#0	#-10	#-20	#-35	#-50
Sulfur	ppm (mg/kg)	Upper limit	10					
Cetane number		Lower limit	51			49	47	
Polycyclic aromatic hydrocarbons	% (m/m)	Upper limit	7					

⚠ CAUTION

If any other kind of fuel is used, it may cause a serious damage to the engine.

NOTICE

- Do not use bio-diesel fuel except for bio-diesel fuel specification. Damage to engine will occur.
- In cold weather, use winter diesel fuel to prevent clogging of the fuel filter caused by paraffin precipitation. In hot weather, do not use winter diesel fuel. Damage to engine will occur.
- Do not use deteriorated fuel which has been stored for a long period of time or impure fuel in which foreign material, water etc. is included.

For biodiesel fuel specifications (option) of diesel engine model (14Z-II, 15Z):

The fuel available for this specification is biodiesel fuel PME (Palm Methyl Ester) derived from palm oil with mixed concentration of 35 % or less and SME (Soy Methyl Ester) derived from Soy oil with mixed concentration of 20 % or less.

⚠ CAUTION

- Use the biodiesel fuel specified by the laws and regulations of each country. The use of non-standard fuels can cause serious damage to the engine.
 - Do not use deteriorated fuel that has been left for a long time, or impure fuel that contains foreign matter or water.
 - Biodiesel fuels are more susceptible to oxidative degradation than regular fuels, and oxidatively degraded fuels may cause serious damage to the engine. Do not leave it in the fuel tank of the truck or external tank for a long time (more than 3 months*).
- *: Depends on environmental conditions
- Biodiesel fuel (PME) has the property of easily solidifying at low temperatures. In low temperature (20 °C or less as a guide) areas such as highlands, the fuel filter may become clogged early. If the engine startability deteriorates, take warming measures such as pouring hot water on the fuel filter.

15.3.8 Fuel tank check

Check fuel tank, tank covering, fuel inlet, and drain plug against possible fuel leak. Follow the steps below.

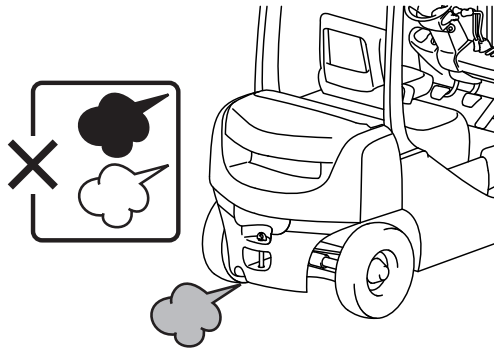
1. Try to smell leak.
2. Look for leak.

See the nearest authorized Toyota dealer upon finding leak and have them repair tank immediately.

⚠ CAUTION

Never perform do-it-yourself welding or other repair work for it might cause explosion or fire.

15.3.9 Engine inspection

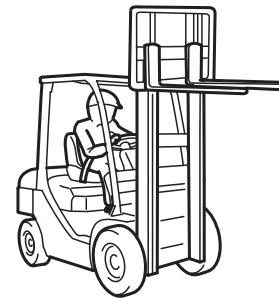


1. Start the engine and warm it up sufficiently.
2. Check each meter and warning lamp to see if there is any problem.
3. Check if the engine is making an abnormal sound or vibration.
4. Check the exhaust gas color to see if it is normal. If the exhaust gas color is colorless or light blue, the engine condition is normal. If not (e.g. black or white), ask the authorized Toyota dealer for an inspection.

⚠ WARNING

- The exhaust gas can cause serious injury if inhaled. If you must start the engine inside building or enclosure, insure sufficient ventilation. Leave the building or enclosure as soon as possible after starting the engine.
- The gasoline engine in the idle state revs up at a relatively high speed when cold. The engine resumes normal speed when it is fully warmed.

15.3.10 Load handling system inspection



1. Check the forks and load backrest for cracks and bending.
2. Check for mast distortion, chain tension, and oil leakage from cylinders and piping.
3. Operate the lift and tilt levers to check their operation. If anything unusual is found, have the truck inspected at the authorized Toyota dealer.

⚠ WARNING

Never check for oil leaks by hand. Oil under pressure can penetrate your skin causing a severe injury. Wear gloves and use a piece of cardboard to find leaks.

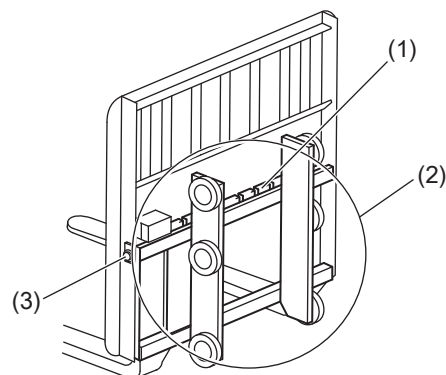
15.3.11 Load backrest

The load backrest will help stabilize and prevent loads from falling back into the operator's compartment. Also, it has the function as a stopper to prevent lateral disengagement of the forks from the finger bar of the lift bracket.

For the specifications without the load backrest, the parts such as bolts and washers has the function as the stopper instead of the load backrest.

Check that the load backrest and the bolts are properly in place, securely fastened, and without bends or cracks.

For the specifications without the load backrest, check that the parts such as bolts and washers are properly in place, securely fastened, and without bends or cracks.

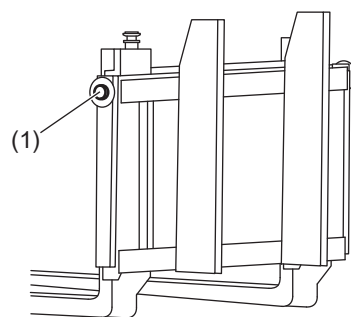


Standard

- (1) Finger bar
- (2) Lift bracket
- (3) Bolt for backrest

⚠ WARNING

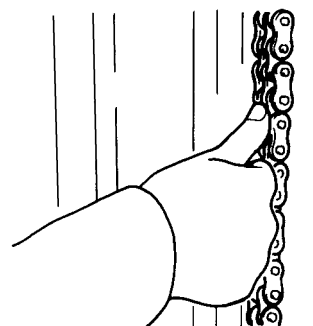
Should the load backrest or other parts functioning a stopper be not properly in place, or securely fastened, or should they have bends or cracks, it creates a hazardous possibility that loads or forks might drop and hit the operator or bystanders. Do not start operation and immediately report it to a supervisor for repair by a qualified mechanic or the authorized Toyota dealer.



Example of specification without load backrest

- (1) Bolt and washer (stopper)

15.3.12 Checking and adjusting chain tension



With the truck parked on a level surface and the forks raised about 20 - 30 cm (10 in.) above the ground, check the chains for tension differences by pressing each chain with thumb or by noting the tilt in forks rail. If the chains do not have the same amount of tension, ask the authorized Toyota dealer to adjust.

15.3.13 Steering wheel and horn button inspection

NOTICE

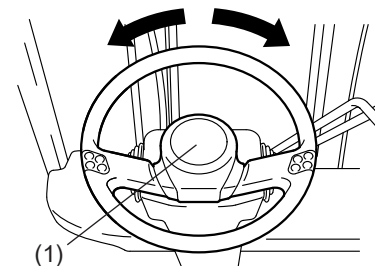
Perform the inspection after starting the engine.

1. Check steering wheel play with the rear wheels set for straight travel.

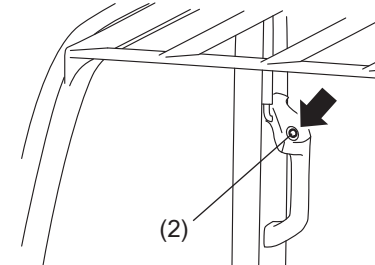
NOTICE

See the **SERVICE DATA** section of this manual for the standard steering wheel play.

2. Rotate the steering wheel and also move it up and down to check that there is no looseness.
3. Push the horn button to check if the horn sounds normally.
4. If any problems are found, ask the Toyota dealer to inspect.



- (1) Horn button of steering wheel



- (2) Horn button of rear assist grip (Option)

15.4 While moving slowly

15.4.1 Torque converter clutch disengagement

Press the inching pedal and check the clutch engagement while moving.

Inspection result	Condition
Truck travels even when the inching pedal is fully depressed	Disengagement issue
Truck does not increase traveling speed	Clutch slipping

CAUTION

Insure that the direction control lever operates properly and then make the above checks while moving slowly.

15.4.2 Steering inspection

While moving the truck slowly in a safe location, turn the steering wheel to the left and right and check for any unusual movement.

15.4.3 Brake effectiveness

Inspect to see if there is anything unusual when the brake pedal is pressed or if the brakes only work on one side.

Apply the parking brake on and insure that the truck can be stopped and held against moderate engine speed.

WARNING

If you should feel something abnormal even slightly, stop the truck operation immediately and have the truck inspected by the authorized Toyota dealer.

15.4.4 Inspecting SAS

Check the SAS function to make certain that it is functioning properly.

Check the mast to make certain that it can be properly tilted either forward or backward and moved up. Also, make certain that the automatic fork leveling control is functioning properly.

CAUTION

If you should feel something abnormal even slightly, or when the spanner indicator lamp illuminates or blinks, or once an error code has appeared on the hour-meter display, immediately stop the operation in progress and park the truck in a safe location, apply parking brake and remove the key. Then, ask the authorized Toyota dealer for an inspection.

16 STORAGE

At the end of every shift, remove dirt from all truck components and then perform the following:

1. Inspect for oil and water leakage.
2. Inspect each component for warping, scratches, dents or cracks.
3. Clean the air filter element and lubricate parts as required.
4. Clean the fuel inlet, oil filler holes and oil level gauges to avoid dirt to get into.
5. Move the forks all the way up and down the mast to lubricate the inside of the lift cylinder.

WARNING

Even a small malfunction can cause a serious accident.

- **Report any damage, malfunction, unusual or unsafe condition to your supervisor or the authorized Toyota dealer immediately.**
- **Do not use the truck until it is repaired by the qualified service staff or at the authorized Toyota dealer.**

NOTICE

Performing inspections at the end of work will lead to early detection of failures and prevents malfunction of the truck.

17 OPERATOR MAINTENANCE

17.1 Changing tires

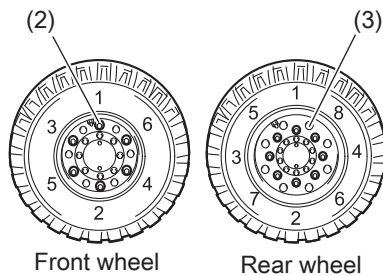
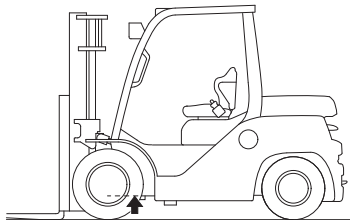
⚠ WARNING

In the case of a wheel with a divided rim, do not loosen the rim bolts and nuts when loosening the hub nuts. When loosening the rim nuts or removing the rim bolts, be sure to completely remove the air before loosening.

⚠ CAUTION

- Use proper safety precautions when jacking the truck. Never get under the forks or frame.
- Refer to SERVICE DATA section of this manual for hub nut tightening torque and tire air pressure.
- Tire air pressure is very high, so pay attention to rim damage, cracks, etc. Never exceed proper air pressure.
- Do not replace any tire without turning on the key switch before jacking up the truck. Upon completion of the tire replacement, return the key switch to the OFF position. (SAS models)

Front wheels



- (1) Front jack-up position
(2) Hub nuts
(3) Rim bolts

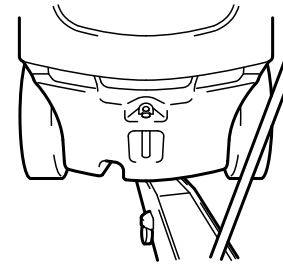
1. Ensure truck is on level ground and there is no load.
2. Apply the parking brake and chock the wheels. Locate the jack-up point at the bottom edge of the front plate of the frame. Securely insert the jack there. Confirm that the jack is properly positioned.
3. Jack up to just prior to the wheels coming up off the ground and loosen the hub nuts.

⚠ CAUTION

Always support the truck by blocking or jack stands after jacking up.

4. Jack up until the wheels come off the ground. Completely remove the air pressure from the tire then remove the hub nuts and remove the wheel.
5. To reinstall the wheel after changing a tire, perform the steps for removing in reverse order. The hub nuts should be tightened evenly and in the sequence shown in the figure.
6. After replacing the wheel, check and adjust the tire air pressure.

Rear wheels



1. Place the truck on level ground.
2. Apply the parking brake and chock the wheels then insert the jack under the counterweight.
3. Jack up to just prior to the wheels coming up off the ground and loosen the hub nuts.

⚠ CAUTION

Always support the truck by blocking or jack stands after jacking up.

⚠ CAUTION

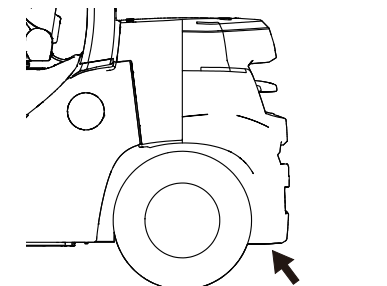
Never loosen the divided rim nuts. Should any of the nuts be found loose or otherwise abnormal, deflate the tires and then loosen the hub nuts to remove the tires.

4. Jack up until the wheels come off the ground. Completely remove the air pressure from the tire then remove the hub nuts and remove the wheel.
5. To reinstall the wheel after changing a tire, perform the steps for removing in reverse order. The hub nuts should be tightened evenly and in the same sequence as for the front wheels.
6. After replacing the wheel, check and adjust the tire air pressure.

Jack setting position

- Hydraulic garage jack

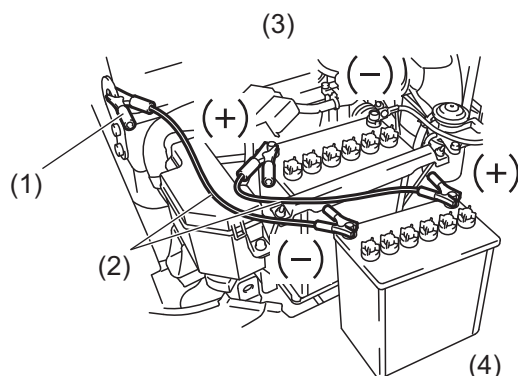
Set the jack in the jack point under the counterweight.



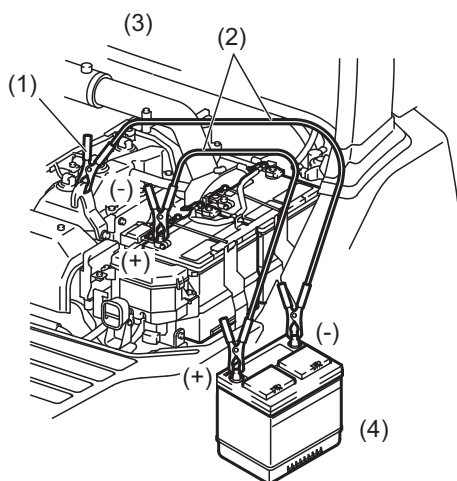
17.2 Using booster cables

If booster cables are available, it is possible to start the engine of a truck with a discharged battery using a fully charged booster battery in another truck.

In case of models equipped with 1 battery



In case of models equipped with 2 batteries (diesel engine models with optional Cold weather spec. or High capacity battery)



- (1) Engine hanger frame
- (2) Booster cables
- (3) Stalled truck
- (4) Helper truck

⚠ WARNING

To avoid damage to your truck, or the possibility of harm to yourself, follow these instructions and warnings. If you have any questions, ask the authorized Toyota dealer.

- Never connect (+) to (-) or (-) to (+) as this may damage the alternator.
- Do not connect batteries directly to avoid a danger of explosion. (An inflammable gas generated from batteries may catch fire.)

1. Use only a 12-volt battery for 12-volt battery models. If you are not sure of the voltage, or if the ground is different, do not try to boost start. Personal injury or damage to the electrical system can result. Damage to the electrical system will not be covered by the manufacturer's warranty.
2. Check fluid level of the discharged battery. If low, add distilled water to the correct level. Be sure to install the caps before boost starting.

⚠ CAUTION

Use face shield to protect your face when adding water to the battery.

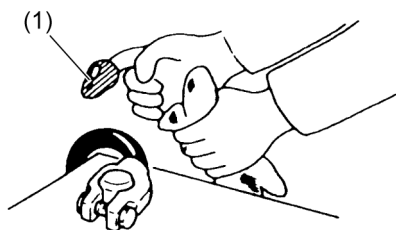
3. Put the booster battery as near to the truck as necessary for the booster cables to reach both batteries. Check and make sure that the trucks do not touch each other.
4. Use particular care when connecting a booster battery to prevent sparks. On both trucks, be sure to:
 - Apply the parking brake.
 - Put the control levers in the neutral position.
 - Turn off the key switch.
 - Turn all lights and accessories off and leave them off until after the engine has been started and the booster cables removed.
5. Connect the booster cables in the following procedure and sequence of the illustration:
 - Connect the red booster cable from the positive (+) terminal on the dead battery to the positive (+) terminal on the "helper truck" battery. Make sure the clamps do not touch any other metal.
 - Connect one end of the black cable to the ground (-) terminal of the helper truck battery.
 - Connect the other end of the black booster cable to the engine hanger frame of the stalled truck. (NOT TO NEGATIVE (-) TERMINAL OF THE BATTERY.)

⚠ CAUTION

Make this connection as far as possible from the battery. Do not connect it to pulleys, fans, or other parts that move.

6. Start the engine on the helper truck, and run the engine at a moderate speed.
7. Start the engine of the stalled truck. Be sure that the engine is at idle speed before disconnecting the booster cables.
8. Remove the booster cables by reversing the above sequence exactly. Start by removing the black booster cable from the engine hanger frame of the stalled truck. Then remove the other end of the negative (-) cable from the helper truck.
9. Remove both ends of the red cable.
10. After boost starting, be sure to fully charge the battery.

17.3 Maintaining the battery terminals



(1) Grease

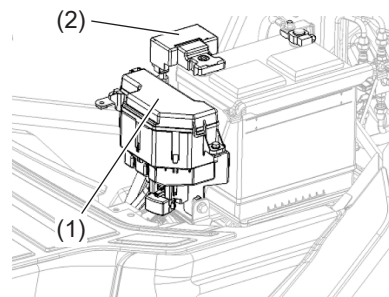
1. A loose or corroded terminal causes failure in connection. Remove white powder, if any, from the terminal by pouring warm water over it to dissolve it and then apply grease on the terminal.
2. If the terminal is extremely corroded, remove it from the battery and brush off the corrosion using a wire brush or emery paper. Connect the terminal tightly to the battery and apply grease on the terminal.

⚠ WARNING

- Always stop the engine before working on the battery or terminals.
- Remove the negative terminal (-) first, but replace it last.
- Never allow an open flame near the battery. The battery produces explosive hydrogen gas. An open flame or spark can cause the gas to explode.
- Never allow the battery electrolyte to come into contact with the eyes, skin or clothing. The electrolyte used in battery contains diluted sulfuric acid, which causes burns and/or blindness. If battery electrolyte contacts your skin or clothing, flush the area immediately with cold water. If the electrolyte gets in the eyes, flush the eyes immediately with cold water and contact a doctor. Make sure that a shower and eye wash station are nearby.
- When cleaning the battery, make sure the vent caps are all tightly closed to prevent foreign materials from getting into.
- Always charge the battery in well-ventilated areas with all vent caps open. If the electrolyte temperature is increased over 45°C when charging, stop the charging operation and start it again when the electrolyte gets cold.
- Wash any electrolyte spilled with water.

17.4 Fuse replacement

Fuse box



- (1) Relay block
(2) Battery fusible link

If a lamp/light does not come on or an electrical device does not function, the corresponding fuse may have blown.

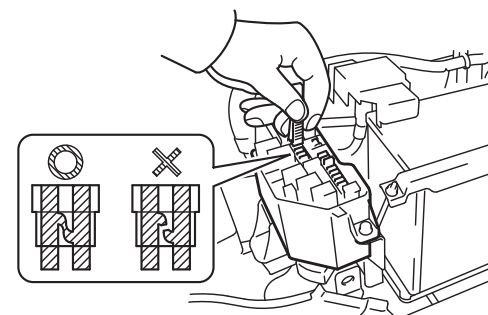
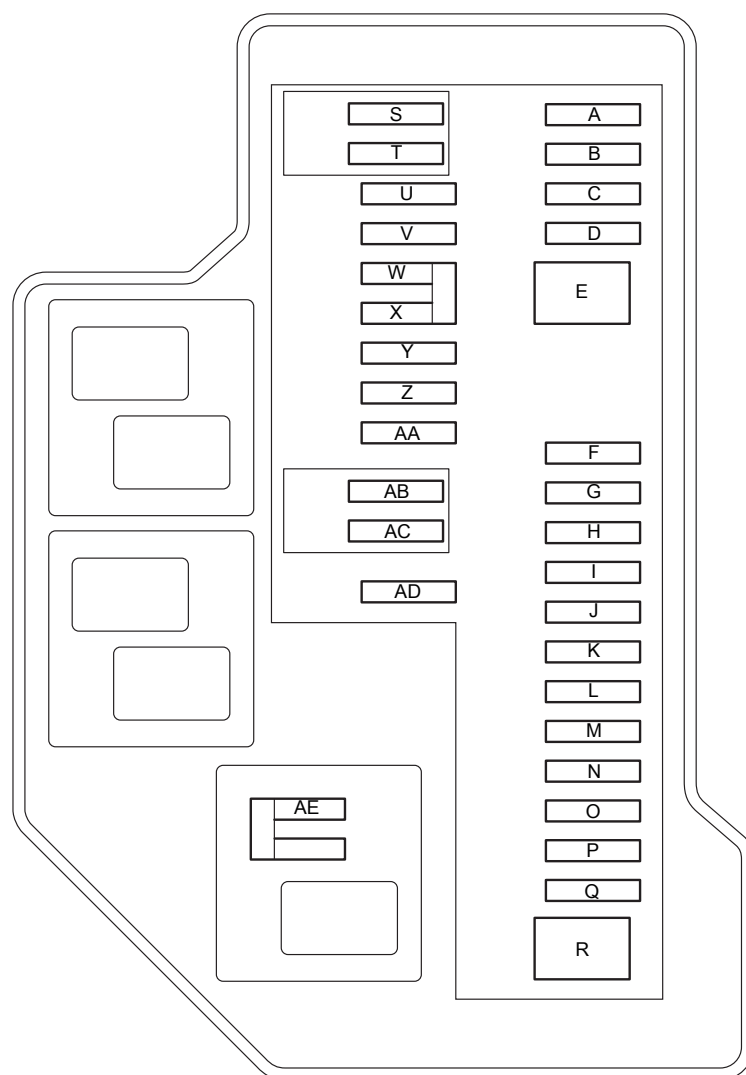
Check the fuse for each device. The fuse box is located next to the battery. Access the fuse box by opening the engine hood.

When replacing the battery fusible link or the middle fuses in the relay block, ask the authorized Toyota dealer for the replacement.

See the fuse assignment table below for the device corresponding to each fuse.

Fuse assignment

A	30A	AM2	P	15A	HORN
B	20A	FR WIP	Q	15A	HEAD
C	20A	RR WIP	R	50A	STA
D	20A	E-THRO (1FS engine models)	S	30A	SPARE
		EDU (1KD engine models)	T	7.5A	SPARE
E	40A	AM1	U	7.5A	MATCH
F	20A	EFI (1FS, 1KD engine models)	V	5A	ST
		DPF (14Z-II engine models)	W	10A	GAUGE
G	20A	ACC-B	X	10A	BACK LP
H	10A	ACC-B2	Y	7.5A	SFT
I	7.5A	ALT-S	Z	7.5A	TURN
J	7.5A	STOP	AA	15A	IGN
K	7.5A	TAIL	AB	15A	SPARE
L	7.5A	ECU-B	AC	10A	SPARE
M	10A	EFI2	AD	10A	ECU-IG
N	10A	WORK LP	AE	10A	SAS-IG
O	15A	HTR			



The fuse check and replacement procedure is as follows:

1. Turn off the key switch.
2. Remove the relay block cover and the fuse clip attached to the relay block.
3. Remove the fuse by clipping with fuse clip.
4. The fuse is blown if its state is as shown in the illustration. Replace it with a spare fuse.

⚠CAUTION

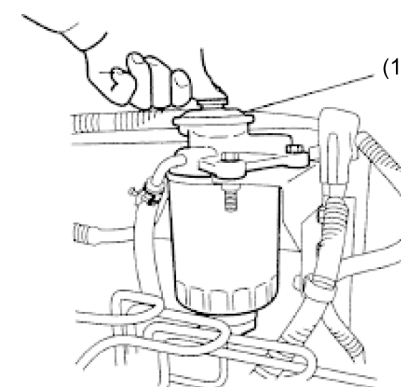
Use a fuse having the capacity designated in the fuse assignment table.

⚠CAUTION

If the replaced fuse blows again, ask the authorized Toyota dealer for an inspection.

17.5 Air purging of the fuel system

(Diesel engine models)



(1) Priming pump

When the fuel tank has been completely emptied or when maintenance has been performed on the fuel system, be sure to perform air purging in the following sequence.

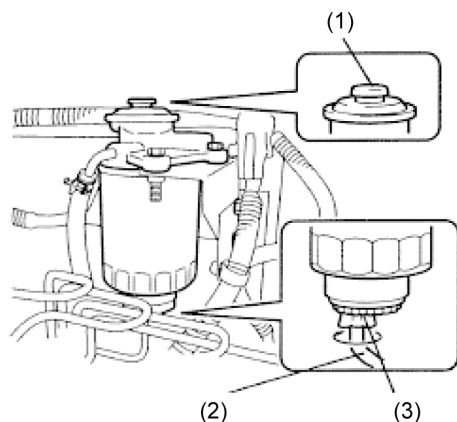
1. Open the engine hood.
2. Operate the priming pump up and down to perform air bleeding.

⚠CAUTION

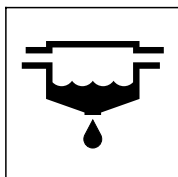
Wipe up any fuel spill as it might cause a fire.

17.6 Draining the sedimenter

(Diesel engine models)



- (1) Priming pump
(2) Drain hose
(3) Drain plug



Sedimenter warning



Sedimenter/ fuel filter warning

The sedimenter separates the water contained in the fuel. It is integrated with the fuel filter. If the sedimenter warning lamp comes on, immediately drain water according to the following procedure because the accumulated water in the sedimenter is above the specified level:

1. Place a container to receive the water under the open end of the drain hose under the fuel filter.
2. Turn the drain plug once or twice to loosen it and operate the priming pump up and down to drain the water from the sedimenter.
3. When fuel starts to flow out after the water has drained, firmly tighten the drain plug.

⚠ CAUTION

Be careful not to loosen the drain plug too much as fuel may spill from the plug.

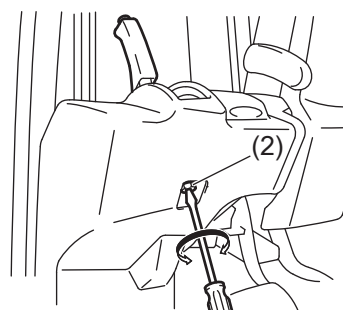
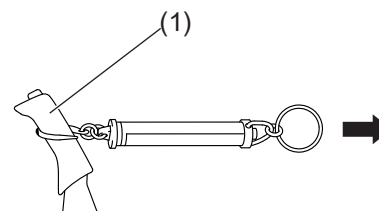
⚠ CAUTION

Wipe up any fuel spill as it might cause a fire.

⚠ CAUTION

If the sedimenter/ fuel warning lamp continues to illuminate, after draining the water and while the engine is running, ask the authorized Toyota dealer for an inspection.

17.7 Adjusting of parking brake operating force



- (1) Parking brake lever
(2) Screw

⚠ CAUTION

- If the force value is short of the desired range, it is very dangerous because the parking brake does not provide enough braking force. Be sure to adjust the force value to the desired range.
- Ask the authorized Toyota dealer for an inspection if any abnormality is found.

1. Attach a spring scale to the center of the grip of the parking brake lever.
2. Pull the scale backward to measure the operating force.

NOTICE

Please refer to SERVICE DATA section of this manual for the desired range of force value.

3. Should the force value be low or in excess of the desired range, adjust screw for higher and lower force and re-check.

Be sure to release the parking brake so brakes are not applied when the adjustment is made.

Turn clockwise - Higher (increase braking force)

Turn counterclockwise - Lower (decrease braking force)

17.8 Radiator fin cleaning

Clean the radiator and radiator fins. If debris is trapped in the fins, this may cause over-heating.

⚠ CAUTION

- After stopping the engine, confirm that the engine has sufficiently cooled down before you start cleaning. Take adequate precautions to avoid burns.
- When cleaning the radiator fins, take care not to cause it to become deformed.
- When cleaning, always wear safety goggles and dust mask.

17.9 Cleaning pre-cleaner (Option)

Pre-cleaner is mounted to the inlet port on the right side pillar of the overhead guard.
Inspect the pre-cleaner and clean it if the dust has accumulated up to the white line.

17.10 Securing the forklift for transport

⚠ CAUTION

The truck must be properly secured with appropriate restraint (straps, wire cables or tensioning belts) when transported on a trailer or a lorry.

Be sure to follow the cautions below before conducting the restraining procedure. If cautions are not followed, it could cause injury to people or damage to property.

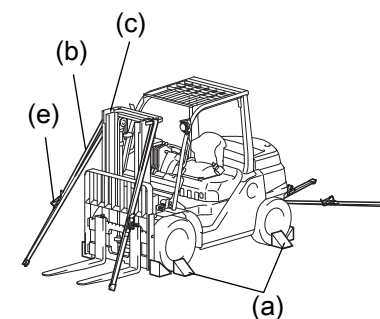
- Make sure that restraint equipment has sufficient strength to secure the truck weight.
- The trailer or lorry used for transport must be equipped with means for restraining e.g. fastening hooks and the floor should be capable of supporting/ securing the truck.
- Protect the truck with cushioning materials as appropriate to prevent damage during restraining or transporting the truck.
- Restraining must be carried out by specially trained staff and they must take necessary safety measures for each operation.
- If the truck is to be secured in a different way as is indicated in this manual, make sure to confirm safety on customer's responsibility.

Securing the truck (General) (Including models with Cabin)

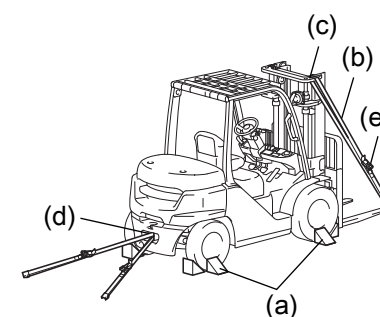
Secure the truck in a following procedure.

1. Chock all wheels using blocks (a).
2. Attach restraints (b) to top of the mast (c) and to the draw bar (d).
3. Tighten the restraints with tensioners (ratchet handles or lever blocks) (e) as shown in the figures.

Securing the truck (Truck front side)



Securing the truck (Truck rear side)

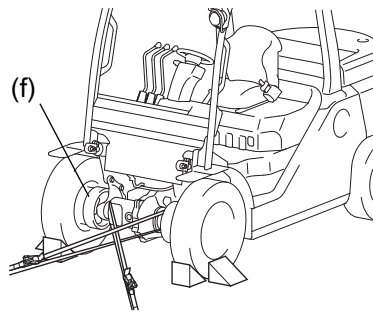


Securing the truck without mast (Including models with Cabin)

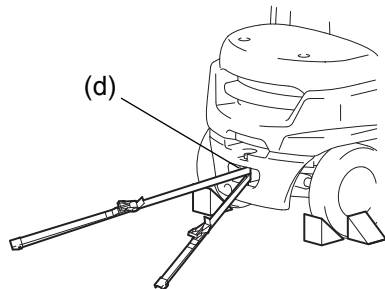
Secure the truck without mast in a following procedure.

1. Chock all wheels using blocks (a).
2. Attach restraints (b) to the front axle (f) and to the draw bar (d).
3. Tighten the restraints with tensioners (ratchet handles or lever blocks) (e) as shown in the figures.

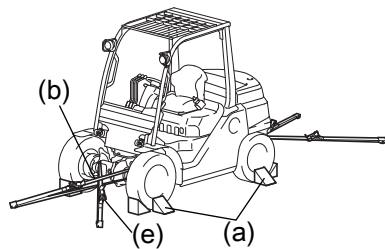
Securing the truck without mast (Enlarged figure of the front axle)



Securing the truck without mast (Enlarged figure of the draw bar)



Securing the truck without mast (Truck overview)



18 WEEKLY MAINTENANCE

To prevent malfunctions and accidents, it is important to perform weekly maintenance together with pre-operation checks. According to this section of the manual, inspect the trucks thoroughly to insure safety and pleasant working conditions. Have necessary adjustments or replacements performed by qualified service staff or by the authorized Toyota dealer.

Lack of proper lubrication and servicing will quickly show up in increased breakdowns and shortening of the truck life.

Set up a certain day and make it a rule to inspect on that day. Record all inspection results and file them for future reference.

Perform the following inspection every week (40 hours of operation time) together with before-operation inspection.

Weekly (40 hours) Inspection Item	
Air cleaner	Clean
Fan and engine ancillary drive belt	Check
Battery electrolyte level	Check
Torque converter oil level	Check
Bolts and nuts	Tighten
Mast and steering linkage	Grease
Chain	Grease
Removing Tar from the LPG Regulator	Service

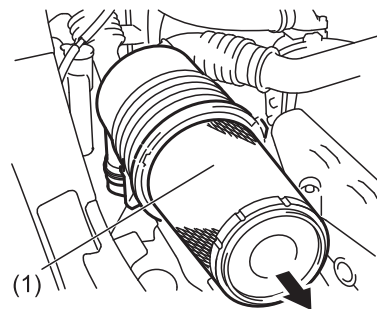
The above items are concerned with inspection and lubrication. Replacement of lubricants will depend on the amount of contamination and foreign matter in them. Changes should be made to conform with the conditions of your workplace and equipment.

18.1 Air cleaner cleaning

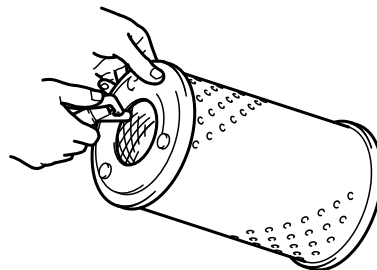
Element cleaning

⚠ CAUTION

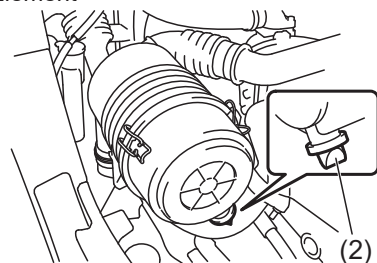
Always use eye protection when cleaning with air.



1. Remove the three clips fixing the element and take out the element from the air cleaner.
2. Tap the element filter paper lightly without causing any damage or blow dust off with compressed air (700 kPa (7 kg/cm²) (99.4 psi) or less) from inside.
3. After the element is cleaned, remove any dust in the vacuator valve.



(1) Element



(2) Vacuator valve

NOTICE

- Always replace the element if the filter paper is torn or damaged.
- Wash the element if heavily contaminated.

How to wash the element

1. Soak the element in water containing mild detergent for approximately 30 minutes and then wash. Use care not to scratch the filter paper.
2. After washing, rinse the element with clean water (water pressure less than 280 kPa (2.8 kg/cm²) (40 psi)).
3. Allow to dry naturally or use a dryer (cold air). Never use compressed air or flame.

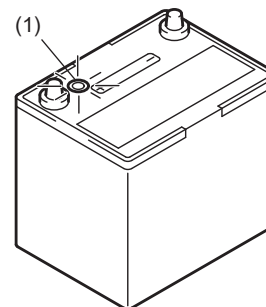
NOTICE

- The element should be replaced after washing six times or after it has been used for one year.
- It is unnecessary to clean the inside element when cleaning the double cyclone air cleaner (Option). Only clean the outside element. It is essential to replace both outside and inside elements, at time of replacement.

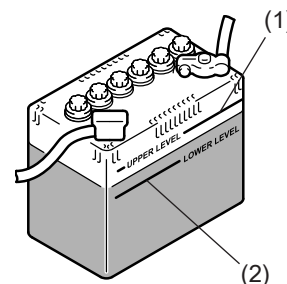
18.2 Fan and engine ancillary drive belt check

Check the fan and engine ancillary drive belt for wear, damage and cracks. If any problem is found, have the belt replaced or repaired by the authorized Toyota dealer.

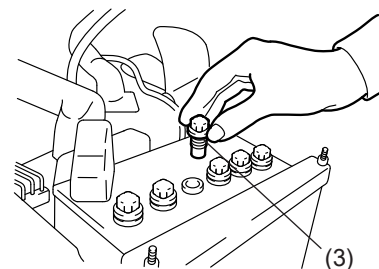
18.3 Battery electrolyte check



(1) Electrolyte level indicator



(1) UPPER level
(2) LOWER level



(3) Cap

⚠ WARNING

See Battery Maintenance Section of the separate publication, "Manual for Safe Operation", for important rules on batteries. Batteries can be very dangerous if you do not follow those rules.

Gasoline engine models

1. Use the electrolyte level indicator to check the battery condition.
2. The indicator shows green color if the electrolyte level is normal, white if the level is low, and red if the battery needs to be replaced.

NOTICE

When the indicator shows red color, ask the authorized Toyota dealer to replace the battery.

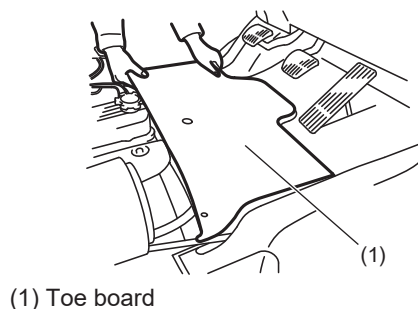
Diesel engine models

1. The battery electrolyte level should be maintained between the UPPER and LOWER level lines.
2. If the level is below LOWER level, remove the cap and add distilled water up to the UPPER level line.

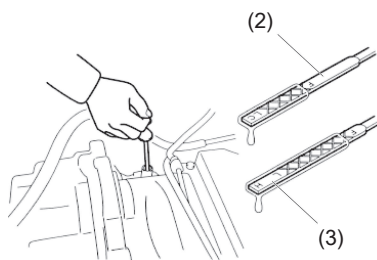
⚠ WARNING

Be sure to use distilled water for battery electrolyte. Also, wear protective glasses when working on the battery.

18.4 Torque converter oil inspection



(1) Toe board



(2) COLD side

(3) HOT side

1. Park the truck on a safe and level ground with the direction control lever in the neutral position, stop the engine, apply the parking brake and the remove the key from the switch.

⚠ CAUTION

Inspect with the parking brake applied and the forks lowered to the ground.

2. Open the engine hood and remove the toe board.
3. Remove the level gauge and wipe it with clean cloth.
4. Insert the level gauge back into the transmission and extract it. Check that the oil level is between the F and L lines on the level gauge.

NOTICE

The level gauge contains the inscriptions "COLD" and "HOT" on either side. Conduct inspections using the "COLD" side before operating the truck and when the oil temperature is 40 °C or under. If you have operated the truck and the oil temperature is 60 °C or over, use the "HOT" side to conduct inspections after 30 seconds and within five minutes after the engine is stopped.

5. If the level is near or below the L line, add oil to the F line. Use only oil specified in the lubrication table.

18.5 Greasing chains, mast and steering linkage

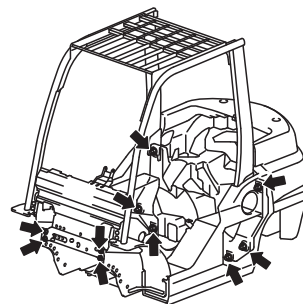
Grease in accordance with the lubrication table.

⚠ CAUTION

- Clean the grease fittings thoroughly prior to greasing.
- After greasing, wipe off excess grease.

18.6 Retightening of nuts and bolts

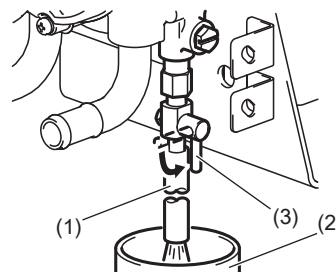
Retighten each nut and bolt on the chassis and load handling system.



⚠ CAUTION

The frame is fixed by 10 frame bolts as shown in the figure to the left. Make sure not to loosen the frame bolts at the time of maintenance. In case the frame bolts are found loose, contact the authorized Toyota dealer immediately for an inspection and repair. Never attempt to retighten the frame bolts by yourself. Do not use the truck until the frame bolts are retightened by the dealer.

18.7 Removing Tar from the Regulator (LPG and Gasoline-LPG models)



(1) Hose

(2) Oil pan

(3) Drain cock (Option)

Tar tends to collect in the regulator and it must be removed regularly. Please refer to the periodic maintenance table. Tar removal should be completed as listed below after the engine has cooled down.

1. Set the fuel changeover switch to the OFF position (Gasoline- LPG models) and open the engine hood.
2. Put an oil pan under the regulator hose. Open the plug or the drain cock (Option) and let tar drop into the oil pan.
3. After all tar is removed from the regulator, close the plug completely, or turn the drain cock (Option) to the horizontal position.

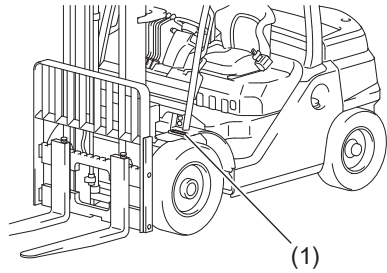
⚠ CAUTION

Be sure to close the plug or the drain cock completely after removing tar, or it will cause LPG gas leakage.

⚠ CAUTION

If tar is adhering to the truck, it must be wiped off completely with a cloth.

19 FRAME SERIAL NUMBER



(1) Frame serial number

Frame serial number location

The frame serial number is stamped on the left mud guard. Refer to the frame serial number when making inquiries about your truck.

20 PROTECT YOUR INVESTMENT WITH TOYOTA GENUINE PARTS

Why gamble with your valuable assets? When your forklift needs periodic maintenance - as every forklift does - you need Toyota Genuine Parts.

The same parts used on Toyota assembly lines - meeting the same tough Toyota standards for "PERFORMANCE", "DURABILITY", and "SAFETY".

TOYOTA GENUINE PARTS

Offer Excellent Dust-catching Performance on:

e.g. Air element, Torque converter oil filter, Return oil filter, Engine oil filter Fuel filter

IF YOU USE A NON-GENUINE ENGINE OIL FILTER:

1. Clogging may result, which can lead to engine seizure.
2. The engine oil may become dirty faster, necessitating frequent oil changes.
3. It can pass dirty oil to the engine, causing engine wear.

TOYOTA GENUINE PARTS

Offer Supreme Durability on:

e.g. Clutch disc, Radiator hose, V belt

IF YOU USE A NON-GENUINE RADIATOR HOSE:

1. The hose may wear out extremely rapidly.
2. The hose may be susceptible to water leakage, necessitating frequent replacement.

TOYOTA GENUINE PARTS

Ensure Safe Performance on:

e.g. Lift roller, Lift chain, Tie-rod end, Brake shoe

IF YOU USE A NON-GENUINE BRAKE SHOE:

1. Braking performance may be excessive, insufficient, or erratic, which is dangerous.
2. The brakes may drag, wasting fuel or battery power.



Call your Toyota authorized shop for after-sale service

With high quality TOYOTA genuine parts and superior service technology, Toyota helps keep customer's forklifts in the best condition for efficient work and higher productivity. We deliver satisfaction to the customers with Toyota genuine parts.

21 PERIODIC MAINTENANCE AND REPLACEMENT

Periodic inspection and maintenance are necessary to keep your Toyota industrial truck running safely and smoothly. The maintenance experts at the authorized Toyota dealer are specially trained to use the right tools and approved procedures to protect the investment you have made in this high quality truck. Do not entrust it to amateurs.

The designated numbers of hours in the inspection cycle are as follow:

Daily (pre-operation check)- Every 8 hours

Weekly- Every 40 hours

Every 6 weeks- Every 250 hours

Every 3 months- Every 500 hours

Every 6 months- Every 1000 hours

Every 12 months- Every 2000 hours

If the operation time exceeds 250 hours within 6 weeks, use the number of hours as a guide for performing periodic inspection. Pre-operation checks and weekly inspections should preferably be performed by the user. 6-week, 3-month, 6-month and 12-month inspections should be performed by the authorized Toyota dealer.

Refer to the Periodic Maintenance Table to determine the inspection and maintenance items and inspection cycles.

Use only genuine Toyota parts for replacements, and always use the recommended types of lubricants.

21.1 Periodic replacement of parts and lubricants

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

● : Replacement

*: for new truck

Inspection Period (Accumulated hours of operation or monthly periods of operation, whichever is earlier.)	Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item	Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Engine oil	●*	●		
Engine oil filter	●*	●		
Engine coolant except LLC (every 2 years for LLC)		●		
Fuel filter			●	
Torque converter oil			●	
Torque converter oil filter			●	

Inspection Period (Accumulated hours of operation or monthly periods of operation, whichever is earlier.)	Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item	Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Differential gear oil				●
Planetary gear oil				●
Hydraulic oil			●	
Hydraulic oil filter	●*		●	
Wheel bearing grease				●
Spark plugs			●	
Air cleaner element				●
Cups and seals for brake booster and wheel cylinders				●
DPF inline filter (14Z-II (Option))			●	
Catalytic muffler (14Z-II, 15Z (Op- tion))				●
Power steering hoses	Every 2 years			
Power steering rubbers parts	Every 2 years			
Hydraulic hoses	Every 2 years			
Fuel hoses	Every 2 years			
Torque converter rubber hoses	Every 2 years			
O-ring for LPG tank valve (Option)	Every 2 years			
LPG high and low-pressure rubber hoses (Option)	Every 2 years			
LPG regulator diaphragm and gasket, O-ring (Option)	Every 2 years			
LPG filter & shut-off valve O-ring and gasket (Option)	Every 2 years			
Chains	Every 3 years			
Timing belt of 1KD *1	Every 4000 hours			
DPF muffler filter (14Z-II (Option))	Every 3 years			
DPF air cleaner (14Z-II (Option))	Every 2 years			
Hydraulic oil pump seal	Every 3 years or 6000 hours			
SAS Swing lock cylinder (SAS mod- els)	Every 10000 hours			

*1: The timing belt caution function will inform the operator when the timing belt needs to be replaced. Refer to the INSTRUMENT chapter of this manual for details.

NOTICE

- In case of the harsh or severe operating condition, the service interval of 170 hours or 1 month may be recommended.
- 1KD engine models: 10W-30 and 15W-30 oil is not recommended for cold climates.

21.2 Periodic maintenance table**MAINTENANCE METHOD**

I : Inspect; replace and repair damaged parts

M : Measurement; adjust/repair to return to correct condition

T : Retightening

C : Cleaning

L : Lubrication

*1: For new truck

*2: Fissure and crack detector

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
ENGINE					
Basic components	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 *1 (except 1KD engine)			M
	Muffler rubber mount				I
	Engine ancillary drive belt tension, looseness and damage	M			
PCV system	Clogging and damage in PCV valve and piping	I			
Lubrication system	Oil leak	I			
	Oil level, contamination, viscosity	I			

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Fuel system	Fuel leak	I			
	Dirt and clogging of fuel filter element	I			
	Injection nozzle pressure and condition (14Z-II, 15Z only)				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	M			
	Radiator rubber mount				I
DPF (14Z-II (Option))	Filter			I	
	Inline filter (for back pressure sensor)		I		
	DPF valve				C
Exhaust emission control system	Exhaust piping joint loosening				T
	Exhaust piping damage	I			
	Sensor damage				I
	Injection cleaning and damage (1FS only)				I
POWER TRANSMISSION SYSTEM					
Differential	Leak	I			
	Oil level	I			
	Bolt loosening				T
Planetary gear	Leak	I			
	Oil level	I			
	Bolt loosening				T

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Torque converter & 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 universal joint bolts		T		
	Looseness at spline connections				I
	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 bearing 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	Cracks, damage and deformation of housing				I
Rear axle	Cracks, damage and deformation of beam				I
	Looseness of axle beam in vehicle longitudinal direction	M *1			M

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
STEERING SYSTEM					
Steering wheel	Play and looseness	I			
	Function	I			
Steering valve	Oil 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			
Brake booster 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
Backing plate	Automatic adjuster function				I
	Deformation, cracks and damage				I
Backing plate	Loose mounting				T

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
LOAD HANDLING SYSTEM					
Forks	Abnormality of fork and stopper pin	I			
	Misalignment between left and right fork fingers	I			
	Cracks at fork heel and hangers				I *2
Mast and lift bracket	Deformation and damage of each part and cracks on welded parts	I			
	Mast and lift bracket looseness	I			
	Wear and damage of mast support bushing				I
	Wear, damage and rotating condition of rollers	I			
	Wear and damage of roller pins				I
	Wear and damage of mast channel	I			
	Wear and damage of mast channel	I			
Chain and chain wheel	Tension, deformation and damage of chains	I			
	Chain lubrication	I			
	Elongation of chains				I
	Abnormality of chain anchor bolts	I			
	Wear, damage and rotating condition of chain pulleys	I			
Various attachments	Abnormality and mounting condition of each part	I			

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
HYDRAULIC SYSTEM					
Cylinder	Loosening and damage of cylinder mounting	T			
	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 support	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			
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 system	State of spark plug (burning, gap, carbon, soot)	I			
Starter motor	Pinion gear meshing status	I			
Battery	Battery electrolyte level	I			
	Battery electrolyte specific gravity			M	

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Electrical wiring	Damage of wiring harness	I			
	Fuses	I			
Preheater	Open-circuit in glow plug (1KD, 15Z only)			I	
	Open-circuit in intake heater (14Z-II only)			I	
LPG DEVICE					
LPG Device (Option)	Gas leak from fuel system	I			
	Damage of fuel lines and fittings	I			
	Tar removal from regulator	I			
	Regulator adjustment status	I			
	Regulator function		I		
	Mixer		I		
	Filter clogging		C		
	Service valve function		I		
	Leaks, damage, and cracks of the tank	I			
	Loose or damaged tank bracket	I			
	Damage to electrical wiring, loose terminals	I			
SAFETY DEVICES AND OTHERS					
Overhead 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			
	Grease horn contact ring and horn contact spring				L
Instruments	Functions	I			
Backup buzzer (Option)	Function and mounting condition	I			

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Rear-view mirror (Option)	Dirt, damage	I			
	Rear reflection status	I			
Seat	Loosening and damage of mounting	I			
	Seat damage and function	I			
Seat belt	Mounting looseness	I			
	Webbing damage (cut, frayed straps, loose stitching)	I			
	Tongue damage	I			
	Buckle and retractor damage	I			
	Function (retract and locks)	I			
Body	Damage and cracks of frame, cross members, etc.				I
	Bolt looseness				T
	Frame bolt				I
SAS (SAS models)	Functions	I			
	Loosening and damage at sensor mounting	I			
	Damage, deformation, oil leakage and loosening of the mounting of functional parts	I			
	Loosening and damage of wire harnesses	I			
	Lock cylinder accumulator performance				I
	Rusting and corrosion of load sensor				I
OPS	Functions	I			
SEnS+ (Option)	Warning buzzer, warning lamp functions	I			
	Dirt, damage on the front of camera	I			
	Loosening of camera bracket mounting	I			
	Camera mounting condition				I
	Camera mounting angle				I

Inspection Period (Based on operating hours or months, whichever is earlier.)		Every 6 weeks	Every 3 months	Every 6 months	Every 12 months
Item		Every 250 hours	Every 500 hours	Every 1000 hours	Every 2000 hours
Others	Grease (See the LUBRICATION CHART of this manual)	L			

NOTICE

In case of the harsh or severe operating condition, the service interval of 170 hours or 1 month may be recommended.

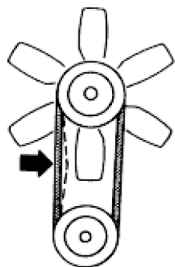
22 SERVICE DATA

Adjustment value table

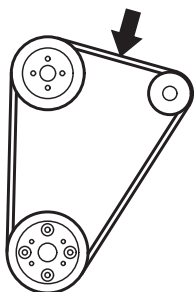
ENGINE

Engine model	1FS (Gasoline)	14Z-II (Diesel)	15Z (Diesel)	1KD (Diesel)
Item				
Fan belt tension [3 kg pressure applied] mm	New: 3.2 - 4.0 Inspection: 4.7 - 5.5	6 - 8	6 - 8	New: 3.2 - 4.0 Inspection: 4.7 - 5.5
Engine ancillary drive belt tension [10 kg pressure applied] mm	New: 7 - 9 Inspection: 8 - 13	New: 7 - 9 Inspection: 9 - 12	New: 7 - 9 Inspection: 9 - 12	(Only tension condition check)

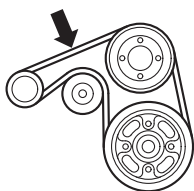
Fan belt



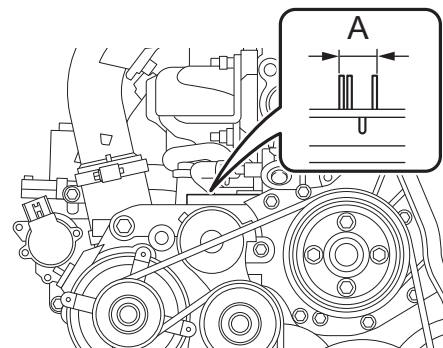
Engine ancillary drive belt 1FS, 14Z-II, 15Z



1KD



If any problem is found, have the belt replaced or adjusted by the authorized Toyota dealer.



NOTICE

1KD engine ancillary drive belt is a ribbed type. The belt tension is automatically fixed by an auto tensioner. If the mark is outside of A as the drawing on the left indicates, the belt replacement is required.

Engine model	1FS (Gasoline)	14Z-II (Diesel)	15Z (Diesel)	1KD (Diesel)
Item				
Spark plug gap mm	0.7 - 0.8	-	-	-
Spark plug type	K16HR-UA8	-	-	-
Ignition or fuel injection sequence	1-3-4-2	1-4-2-6-3-5	1-4-2-6-3-5	1-3-4-2
Valve clearance mm	Intake Exhaust	0.16 (Cold engine) 0.36 (Hot engine)	0.20 (Hot engine) 0.36 (Hot engine)	0.25 - 0.30 0.35 - 0.45
Engine compression kPa/rpm(kg/cm ² /rpm)	Standard valve Limit	1550/250 (15.8/250) 1100/250 (11.2/250)	3200/260 (33/260) 2000/260 (20/260)	3900/260 (40/260) 3500/260 (36/260)
Idling speed rpm	750±30	750±30	750±30	750±30
No load maximum speed rpm	3.5 - 5.0 ton 6.0 - 8.0 ton	2350±35 2550±35	2300±50 2600±50	2350±35 2600±35

BATTERY

Battery electrolyte specific gravity [at 20°C (68°F)]	1.280
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STEERING

Steering wheel play (at engine idle speed) mm	25 - 50
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BRAKE

Brake pedal mm	Play	3 - 7
	Floor clearance (pedal pressure: approx. 196 N [20kgf])	95 or more
Inching pedal	Pedal depression	27 -33
Parking brake operating force N	3.5 - 4.5 ton	226 - 265
	6.0 - 7.0 ton	275 - 315

OIL CONTROL VALVE

Model		3.5 - 5.0 ton	6.0 - 8.0 ton
Item			
Set pressure kPa (kg/cm ²)	Lift	18100 (185)	20600 (210)
	Tilt		

WHEEL*Front tire air pressure*

Series	Type	Tire size	Rim	Air pressure kPa
3.5 - 4.0 ton	Standard	250-15-20PR	Side ring	825
	Standard Dual	28 x 8-15-12PR	Side ring	700
M4.0, 4.5 - 5.0 ton	Standard	300-15-20PR	Side ring	800
	Special Dual	8.25-15-14PR	Side ring	800
6.0 - 8.0 ton	Standard Dual	8.25-15-14PR	Side ring	800

Rear tire air pressure

Series	Type	Tire size	Rim	Air pressure kPa
3.5 ton	Standard	7.00-12-14PR	Divided	850
	Side Ring	7.00-12-14PR	Side ring	900
M4.0, 4.0 - 4.5 ton	Standard	7.00-12-14PR	Divided	850
	Side Ring	7.00-12-14PR	Side ring	900
5.0 ton	Standard	7.00-12-14PR	Side ring	900
6.0 - 8.0 ton	Standard	8.25-15-14PR	Side ring	800

Hub nut tightening torque

Series	Type	Hub nut tightening torque N-m(kgf-m)
Front		294 - 588 (30.0 - 60.0)
Rear	3.5 - 5.0 ton	177 - 392 (18.0 - 40.0)
	6.0 - 8.0 ton	294 - 588 (30.0 - 60.0)

23 RECOMMENDED LUBRICANT QUANTITY & TYPES

Description		Application	Quantity ℓ	Classification	Type	
Engine oil	Gasoline	1FS	All: 8.8 Oil pan: 8.2	API SN and above	SAE 10W-30	
	Diesel	14Z-II	All: 12.8 Oil pan: 11.5	API CE and above	SAE 10W-30	
		15Z	All: 14.5 Oil pan: 13.2	API CE and above	SAE 10W-30	
		1KD	All: 7.8 Oil pan: 6.6	ACEA C2		SAE 0W-30, 5W-30, 10W-30, 15W-30
				Toyota Genuine Motor Oil ACEA C2		SAE 0W-30
				(China spec.)		
				JASO DL-I		SAE 5W-30
				JASO DH-2		SAE 5W-30
				JASO DL-2F		SAE 5W-30
	ACEA C2		SAE 0W-30, 5W-30, 10W-30, 15W-30			
Torque converter oil		1FS, 1KD	15.5	ATF	GM Dexron® II	
		14Z-II, 15Z	10.4			
Differential gear oil		3.5 - 5.0 ton	9.5	API GL-4 API GL-5	Hypoid gear oil SAE 85W-90	
		6.0 - 8.0 ton	10.5			
Planetary gear oil		6.0 - 8.0 ton	0.8			
Hydraulic oil (V mast, max. lifting height 5000mm (197in))		3.5 - 4.0 ton	57.5	ISO VG32	Hydraulic oil	
		M4.0, 4.5 - 5.0 ton	64.5			
		6.0 - 8.0 ton	73.5			
Fuel tank		3.5 - 4.0 ton	90	-	Refer to Fuel level check and supply (Gasoline and diesel models) [➤ 102] for the recommended type of fuel. Gasoline/LPG engine model (1FS): Gasoline Diesel engine model (standard model of 1KD, 14Z-II, 15Z): Diesel Diesel engine model (option model of biodiesel fuel specifications of 14Z-II, 15Z): Biodiesel fuel PME (Palm Methyl Ester)* ¹ or SME (Soy Methyl Ester)* ²	
		M4.0, 4.5 - 5.0 ton	120			
		6.0 - 8.0 ton	130			
Chassis parts		All models	Proper quantity	-	- MP grease - Molybdenum disulfide grease	
Engine cooling system (excluding reservoir tank)		1FS, 15Z	12.0	LLC (Long Life Coolant/ Appropriately diluted with fresh water)	LLC 50%	
		14Z-II	13.0			
		1KD	9.5			
Radiator reservoir tank (at FULL mark level)		All models	Proper quantity			

*1: Biodiesel fuel PME (Palm Methyl Ester) derived from palm oil with mixed concentration of 35 % or less

*2: Biodiesel fuel SME (Soy Methyl Ester) derived from soy mixed concentration of 20 % or less

⚠ CAUTION

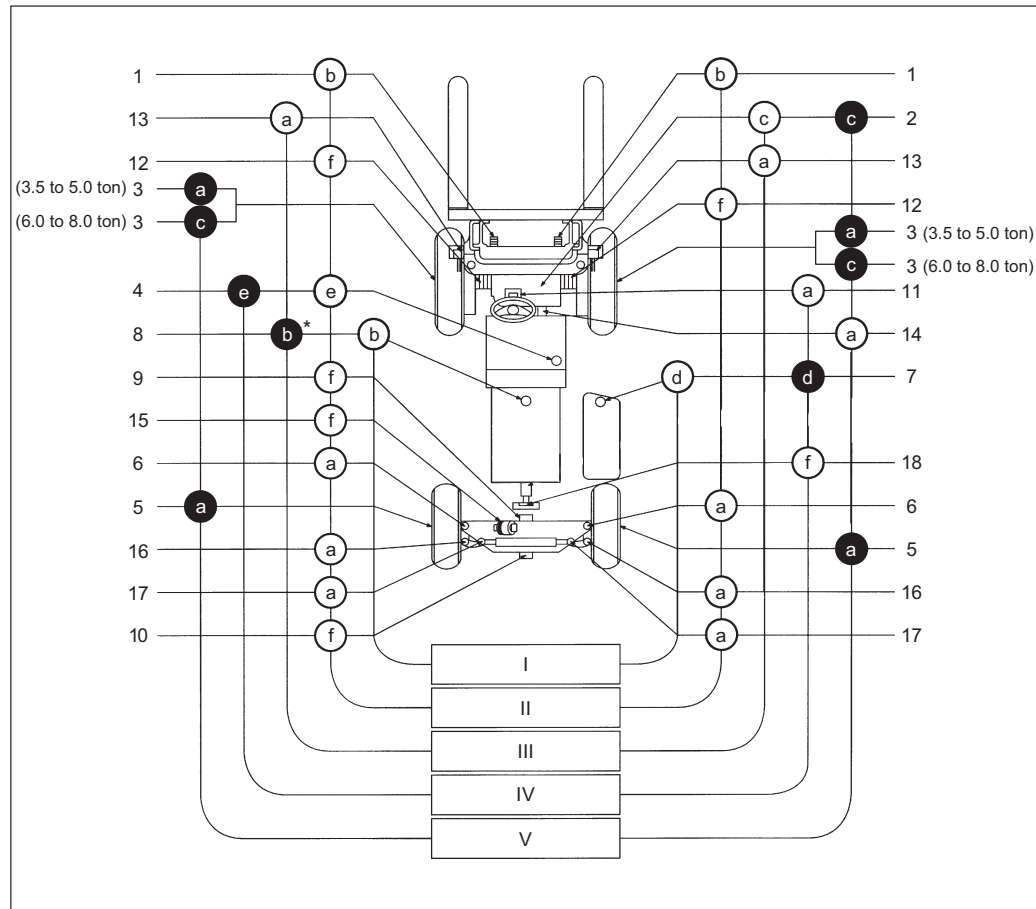
- Use the biodiesel fuel specified by the laws and regulations of each country. The use of non-standard fuels can cause serious damage to the engine.
 - Do not use deteriorated fuel that has been left for a long time, or impure fuel that contains foreign matter or water.
 - Biodiesel fuels are more susceptible to oxidative degradation than regular fuels, and oxidatively degraded fuels may cause serious damage to the engine. Do not leave it in the fuel tank of the truck or external tank for a long time (more than 3 months*).
- *: Depends on environmental conditions
- Biodiesel fuel (PME) has the property of easily solidifying at low temperatures. In low temperature (20°C or less as a guide) areas such as highlands, the fuel filter may become clogged early. If the engine startability deteriorates, take warming measures such as pouring hot water on the fuel filter.

NOTICE

The LLC has changed to Toyota Super LLC (used also for Toyota Cars). In connection we have the following requirement:

- Do not use only water.
- Use of improper engine coolant may damage the engine coolant system.
- Use only Toyota Super LLC or similar high quality specifications:
 - ethylene glycol based non-silicate
 - non-amine
 - non-nitrite
 - non-borate engine coolant with long-life hybrid organic acid technology.
- Note that coolant with long-life hybrid organic acid technology consists of a combination of low phosphates and organic acids.

24 LUBRICATION CHART



*: Change the engine oil of the new truck at 6 weeks or 250 hours.

From the second time, change the engine oil as follows:

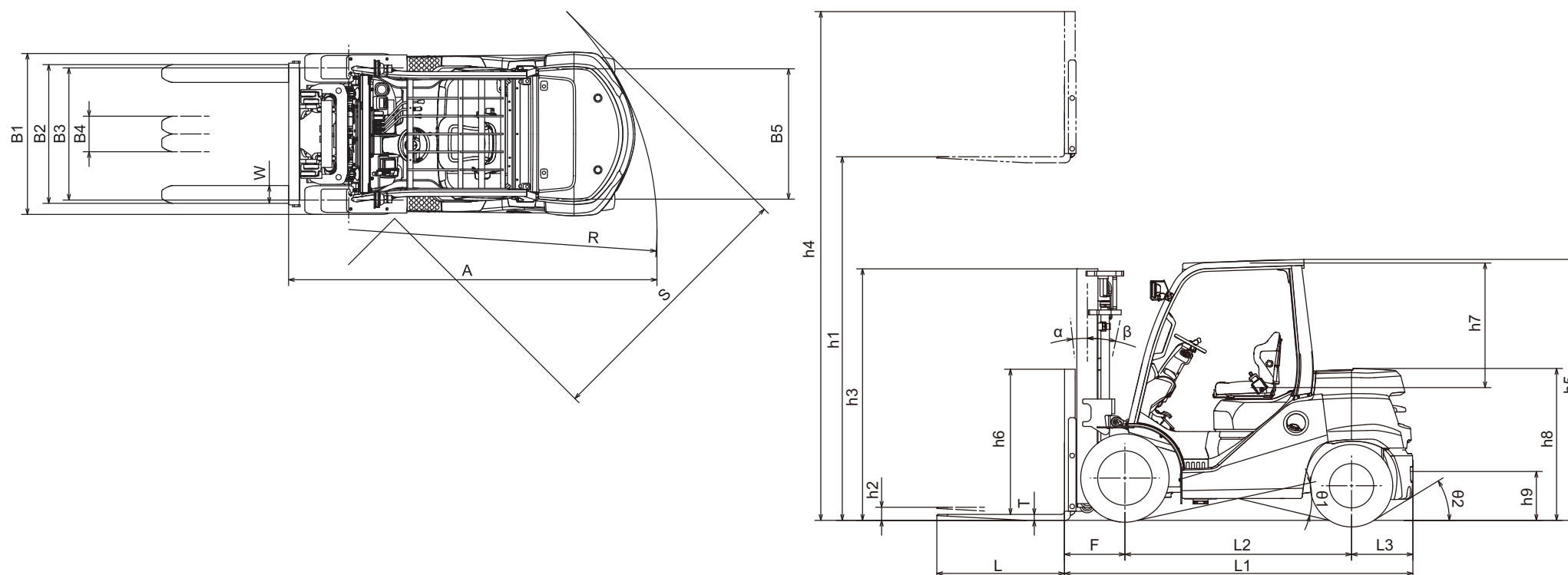
1KD engine models: every 3 months or 500 hours (oil grade: ACEA C2, SAE 0W-30, 5W-30, 10W-30, 15W-30) or every 6 months or 1000 hours (only Toyota Genuine Motor Oil ACEA C2, SAE 0W-30)

Inspection or replacement oil	
○	Inspection
●	Replacement
a	MP grease
b	Engine oil
c	Hypoid gear oil
d	Hydraulic oil
e	Automatic transmission fluid
f	Molybdenum disulfide grease

Inspection cycle	
I	Inspect every 8 hours (daily)
II	Inspect every 40 hours (weekly)
III	Inspect every 500 hours (3 monthly)
IV	Inspect every 1000 hours (6 monthly)
V	Inspect every 2000 hours (annual)

Inspection parts	
1	Chain
2	Differential gear
3	Front wheel bearing (3.5 to 5.0 ton) Planetary gear (6.0 to 8.0 ton)
4	Torque converter case
5	Rear wheel bearing
6	Steering knuckle king pin
7	Oil tank
8	Engine crank case
9	Rear axle beam front pin
10	Rear axle beam rear pin
11	Tilt steering locking mechanism
12	Mast support bushing
13	Tilt cylinder front pin
14	Propeller shaft
15	Swing lock cylinder lower pin
16	Tie rod end pin
17	Rear axle cylinder end pin
18	Fan drive shaft

25 TRUCK DIMENSIONS



	Unit	(90-)8FG/ (50-)8FD35N	(90-)8FG/ (50-)8FD40N	8FG/ (50-)8FDM40N	(90-)8FG/ (50-)8FD45N	(90-)8FG/ (50-)8FD50N	(90-)8FG/ (50-)8FD60N	(90-)8FG/ (50-)8FD70N	(90-)8FG80N	(50-)8FD80N
A *1	mm	3120	3170	3300	3300	3370	3810	3870	3910	3910
B1	mm	1350	1350	1450	1450	1450	1965	1965	1965	1965
B2/B4	mm	1170/300	1170/300	1160/300	1160/300	1160/300	1700/300	1700/300	1700/300	1700/300
B3	mm	1115	1115	1150	1150	1150	1440	1440	1440	1440
B5	mm	1100	1100	1100	1100	1100	1460	1460	1460	1460
F	mm	505	505	545	545	555	580	585	590	590
h1	mm	3000	3000	3000	3000	3000	3000	3000	3000	3000
h2	mm	110	110	110	110	120	125	125	130	130
h3	mm	2110	2110	2200	2200	2450	2460	2460	2610	2610
h4	mm	4270	4270	4270	4270	4435	4435	4435	4440	4440
h5	mm	2210	2210	2300	2300	2300	2310	2310	2310	2310
h6	mm	1220	1220	1220	1220	1370	1370	1370	1370	1370

25 TRUCK DIMENSIONS

	Unit	(90-)8FG/ (50-)8FD35N	(90-)8FG/ (50-)8FD40N	8FG/ (50-)8FDM40N	(90-)8FG/ (50-)8FD45N	(90-)8FG/ (50-)8FD50N	(90-)8FG/ (50-)8FD60N	(90-)8FG/ (50-)8FD70N	(90-)8FG80N	(50-)8FD80N
h7	mm	1065	1065	1065	1065	1065	1065	1065	1065	1065
h8	mm	1300	1300	1330	1330	1325	1350	1350	1350	1350
h9	mm	420	420	420	420	420	485	485	485	485
L	mm	1070	1070	1070	1070	1220	1220	1220	1220	1220
L1	mm	2925	2980	3110	3110	3170	3490	3545	3590	3590
L2	mm	1900	1900	2000	2000	2000	2250	2250	2250	2250
L3	mm	520	575	565	565	615	660	710	750	750
R	mm	2610	2660	2750	2750	2810	3230	3280	3320	3320
S	mm	2260	2280	2380	2380	2430	2880	2910	2930	2930
T	mm	50	50	50	50	60	60	65	70	70
W	mm	150	150	150	150	150	150	150	150	150
α/β	deg	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
$\theta 1$	%	50	50	56	56	55	48	48	47	47
$\theta 2$	%	61	55	66	66	56	69	60	54	54

	Unit	40-8FD35N	40-8FD40N	40-8FD45N	40-8FD50N	40-8FD60N	40-8FD70N	40-8FD80N
A *1	mm	3120	3170	3300	3370	3810	3870	3910
B1	mm	1350	1350	1450	1450	1965	1965	1965
B2/B4	mm	1170/300	1170/300	1160/300	1160/300	1700/300	1700/300	1700/300
B3	mm	1115	1115	1150	1150	1440	1440	1440
B5	mm	1100	1100	1100	1100	1460	1460	1460
F	mm	505	505	545	555	580	585	590
h1	mm	3000	3000	3000	3000	3000	3000	3000
h2	mm	110	110	110	120	125	125	130
h3	mm	2110	2110	2200	2450	2460	2460	2610
h4	mm	4270	4270	4270	4435	4435	4435	4440
h5	mm	2210	2210	2300	2300	2310	2310	2310
h6	mm	1220	1220	1220	1370	1370	1370	1370
h7	mm	1030	1030	1030	1030	1030	1030	1030
h8	mm	1300	1300	1330	1325	1350	1350	1350
h9	mm	420	420	420	420	485	485	485
L	mm	1070	1070	1070	1220	1220	1220	1220
L1	mm	2925	2980	3110	3170	3490	3545	3590
L2	mm	1900	1900	2000	2000	2250	2250	2250
L3	mm	520	575	565	615	660	710	750

	Unit	40-8FD35N	40-8FD40N	40-8FD45N	40-8FD50N	40-8FD60N	40-8FD70N	40-8FD80N
R	mm	2610	2660	2750	2810	3230	3280	3320
S	mm	2260	2280	2380	2430	2880	2910	2930
T	mm	50	50	50	60	60	65	70
W	mm	150	150	150	150	150	150	150
α/β	deg	6/12	6/12	6/12	6/12	6/12	6/12	6/12
$\theta 1$	%	42	42	50	50	45	45	44
$\theta 2$	%	61	55	66	56	69	60	54

*1: Add load length and clearance for basic right angle stacking aisle width. Ask the authorized Toyota dealer for the detailed calculation.

25.1 Truck weight

kg

	(90-)8FG35N	8FD35N	(90-)8FG40N	8FD40N	8FGM40N	8FDM40N	(90-)8FG45N	8FD45N	(90-)8FG50N	8FD50N	(90-)8FG60N	8FD60N
Truck total weight	5700	5800	6070	6170	6400	6500	6610	6710	7140	7240	8370	8390
Front axle load (with load)	8670	8135	9360	8850	9140	9180	10430	9940	10880	10930	12900	12860
Front axle load (without load)	2550	2595	2480	2520	2850	2890	2830	2870	3000	3045	3750	3715
Rear axle load (with load)	1030	1165	1210	1320	1260	1320	1170	1270	1260	1310	1470	1530
Rear axle load (without load)	3150	3205	3590	3650	3550	3610	3780	3840	4140	4195	4620	4675

	(90-)8FG70N	8FD70N	(90-)8FG80N	8FD80N	50-8FD35N	50-8FD40N	50-8FDM40N	50-8FD45N	50-8FD50N	50-8FD60N	50-8FD70N	50-8FD80N
Truck total weight	9030	9125	9880	9980	5820	6190	6520	6730	7260	8400	9135	9990
Front axle load (with load)	14300	14340	15830	15880	8145	8860	9190	9950	10940	12870	14350	15890
Front axle load (without load)	3610	3650	3600	3650	2605	2530	2900	2880	3055	3725	3660	3660
Rear axle load (with load)	1730	1785	2050	2100	1175	1330	1330	1280	1320	1530	1785	2100
Rear axle load (without load)	5420	5475	6280	6330	3215	3660	3620	3850	4205	4675	5475	6330

	40-8FD35N	40-8FD40N	40-8FD45N	40-8FD50N	40-8FD60N	40-8FD70N	40-8FD80N
Truck total weight	5780	6150	6690	7220	8360	9090	9940
Front axle load (with load)	8690	9380	10450	10910	12850	14330	15860
Front axle load (without load)	2570	2500	2850	3030	3705	3640	3630
Rear axle load (with load)	1090	1270	1230	1310	1510	1760	2080
Rear axle load (without load)	3210	3650	3840	4190	4655	5450	6310

26 SOFTWARE

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