OPERATION

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⚠ WARNING

Please be sure that you fully understand this manual and the precautions related to safety for the lift truck.
When operating the lift truck, always strictly follow these precautions. Failing to heed this warning may result in serious injuries.

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INSPECTION AND MAINTENANCE

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⚠ WARNING

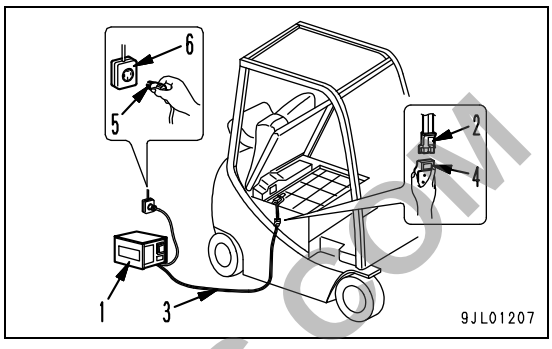
Please be sure that you fully understand this manual and the precautions related to safety for the lift truck.
When inspecting or servicing the lift truck, always strictly follow these precautions. Failing to heed this warning may result in serious injuries.

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4.6.1 OPERATION OF STATIONARY BATTERY CHARGER

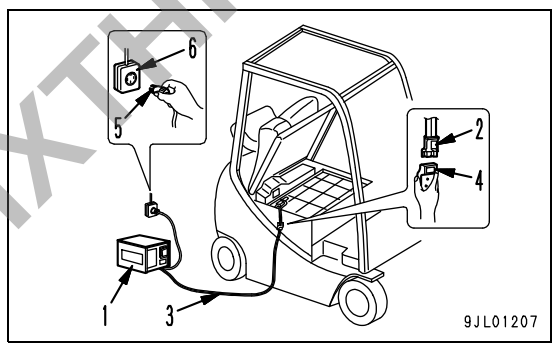
OVERALL VIEW OF STATIONARY BATTERY CHARGER

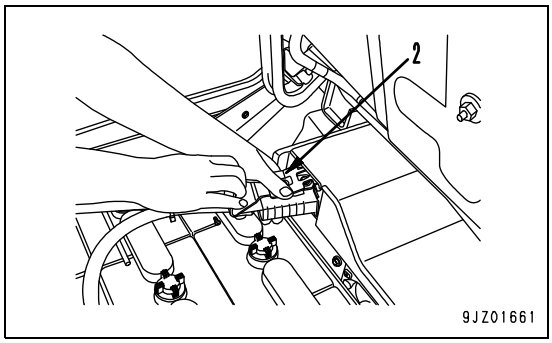
(1) Stationary battery charger
(2) Battery plug
(3) Charging cord
(4) Charging plug
(5) Power supply plug
(6) AC power receptacle



CHARGING PROCEDURES

1. Park the lift truck in the place where a stationary battery charger is installed.
2. Turn the starting switch to the [○] (OFF) position.
3. Open the battery hood fully, lock gas spring stopper (bright red) and check that the battery hood will not close by mistake.
4. Check the battery electrolyte level. If battery electrolyte level is lower than the minimum line, refill distilled or purified water to specified range. For information about inspecting and refilling of battery electrolyte, see the operating manual attached to the battery.
5. Connection of charging cord
   1) While pressing the lock with one hand to release battery plug (2) from the plug on the lift truck side located at the rear side under the battery hood, pull the handle with the other hand to disconnect the plug.
   2) Insert charging plug (4) attached to charging cord (3) securely into battery plug (2).
      Please use the charging plug attached to the lift truck as this plug has been specified by Komatsu Ltd.
      Do not use plugs from other manufacturers or that are different shapes.
   3) Turn AC power breaker/switch ON and insert the power plug to the power supply receptacle.
6. Start charging
7. Progress of charging
8. When charging is completed, charging automatically stops. (Charging completed)





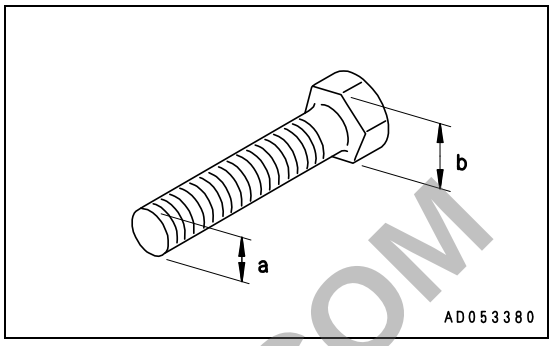
NOTICE
For information about starting, progress checking, and completion procedures for charging, see the operating manual attached to the charger.

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BOLT TIGHTENING TORQUE

- For unspecified metric bolts and nuts, use the torques specified in this list.
- Select a proper torque corresponding to the width across flats (b) of bolts and nuts.
- When replacing bolts and nuts, always use Genuine Parts of the same size as the previous ones.



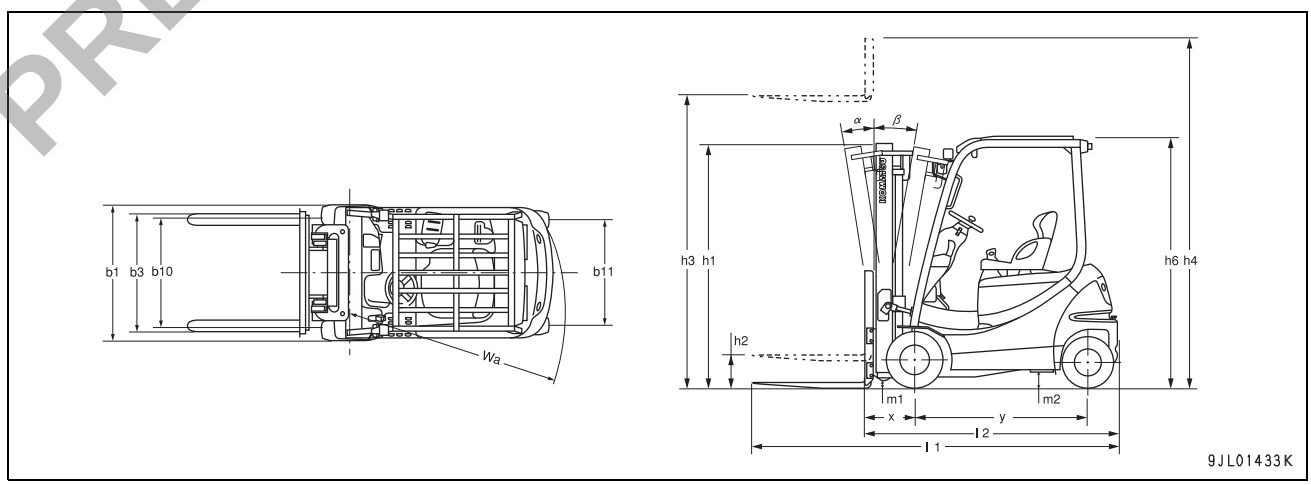
Thread outside diameter (a) mm {in}	Width across flat (b) mm {in}	Tightening torque Nm {kgfm, lbft}	
		Within target	allowable range
6 {0.24}	10 {0.40}	13 {1.35, 9.8}	12 - 15 {1.2 - 1.5, 8.7 - 10.8}
8 {0.32}	13 {0.51}	31 {3.2, 23.1}	27 - 34 {2.8 - 3.5, 20.3 - 25.3}
10 {0.40}	17 {0.67}	66 {6.7, 48.5}	59 - 74 {6.0 - 7.5, 43.4 - 54.2}
12 {0.47}	19 {0.75}	113 {11.5, 83.2}	98 - 123 {10.0 - 12.5, 72.3 - 90.4}
14 {0.55}	22 {0.87}	177 {18.0, 130.2}	157 - 196 {16.0 - 20.0, 115.7 - 144.7}
16 {0.63}	24 {0.94}	279 {28.5, 206.1}	245 - 309 {25.0 - 31.5, 180.8 - 227.8}
18 {0.71}	27 {1.06}	382 {39.0, 282.1}	343 - 427 {35.0 - 43.5, 253.2 - 314.6}
20 {0.79}	30 {1.18}	549 {56.0, 405.0}	490 - 608 {50.0 - 62.0, 361.7 - 448.4}
22 {0.87}	32 {1.26}	745 {76.0, 549.7}	662 - 829 {67.5 - 84.5, 488.2 - 611.2}
24 {0.94}	36 {1.42}	927 {94.5, 683.5}	824 - 1030 {84.0 - 105.0, 607.6 - 759.5}
27 {1.06}	41 {1.61}	1324 {135.0, 976.5}	1177 - 1471 {120.0 - 150.0, 868.0 - 1085.0}
30 {1.18}	46 {1.81}	1716 {175.0, 1265.8}	1520 - 1912 {155.0 - 195.0, 1221.1 - 1410.4}
33 {1.30}	50 {1.87}	2206 {225.0, 1627.4}	1961 - 2452 {200.0 - 250.0, 1446.6 - 1808.3}
36 {1.42}	55 {2.17}	2746 {280.0, 2025.2}	2452 - 3040 {250.0 - 310.0, 1808.3 - 2242.2}
39 {1.54}	60 {2.37}	3285 {335.0, 2423.1}	2893 - 3628 {295.0 - 370.0, 2133.7 - 2676.2}

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5. TECHNICAL DATA

Characteristics	1.2	Model	Manufacturer's Designation			FB15U-12	FB18U-12	FB20AU-12
	1.3	Power Type	Electric, Diesel, Gasoline, LPG, Cable			Electric	Electric	Electric
	1.4	Operation Type				Sitting	Sitting	Sitting
	1.6	Load Center	c	Rated Load Center	mm {in}	600 {24}	600 {24}	600 {24}
	1.6.1	Alternative Capacity	Q	Capacity	kg {lb}	1350 {3000}	1570 {3500}	1800 {4000}
	1.8	Load Distance	x	Front Axle Center to Fork Face	mm {in}	405 {15.9}	405 {15.9}	425 {16.7}
	1.9	Wheelbase	y		mm {in}	1410 {55.5}	1410 {55.5}	1470 {57.9}
Weight	2.1	Service Weight	Including Min. Capacity Battery, See line 6.5		kg {lb}	3140 {6910}	3380 {7440}	3800 {8370}
	2.2	Axle Loading	Loaded	Front	kg {lb}	3940 {8740}	4320 {9620}	4930 {10940}
	2.2.1			Rear	kg {lb}	550 {1170}	630 {1320}	670 {1430}
	2.3		Unloaded	Front	kg {lb}	1590 {3510}	1600 {3520}	1830 {4020}
	2.3.1			Rear	kg {lb}	1550 {3400}	1780 {3920}	1970 {4350}
tires	3.1	Tire Type	Cushion, Elastic Cushion, Pneumatic, Poly-urethane			Elastic Cushion	Elastic Cushion	Elastic Cushion
	3.2	Tire Size	Front			18x7-8	18x7-8	200/50-10
	3.3		Rear			16x6-8	16x6-8	16x6-8
	3.5	Number of Wheel	Front/Rear (x=driven)			2*/2	2*/2	2*/2
	3.6	Tread, Front	b10		mm {in}	940 {37.0}	940 {37.0}	950 {37.4}
	3.7	Tread, Rear	b11		mm {in}	865 {34.1}	865 {34.1}	865 {34.1}
Dimensions	4.1	Tilting Angle	α/β	Forward/Backward	degree	6/10	6/10	6/10
	4.2	Mast Height, Lowered	h1	2-stage Mast	mm {in}	2145 {84.4}	2145 {84.4}	2260 {89}
	4.3	Std. Free Lift	h2	2-stage Std. Mast, from Ground	mm {in}	150 {5.9}	150 {5.9}	170 {6.7}
	4.4	Std. Lift Height	h3	2-stage Std. Mast, from Ground	mm {in}	3300 {130}	3300 {130}	3300 {130}
	4.5	Mast Height, Extended	h4	2-stage Std. Mast	mm {in}	4255 {167.5}	4255 {167.5}	4270 {168.1}
	4.7	Height, Overhead Guard	h6		mm {in}	2070 {81.6}	2070 {81.6}	2070 {81.6}
	4.19	Length, with Std. Forks	l1		mm {in}	3130 {123.2}	3165 {124.6}	3250 {128}
	4.20	Length, to Fork Face	l2		mm {in}	2060 {81.2}	2095 {82.5}	2180 {85.9}
	4.21	Width, at Tire	b1	Single	mm {in}	1110 {43.7}	1110 {43.7}	1160 {45.7}
	4.22	Forks	s/e/l	Thickness / Width / Length	mm {in}	35x100x1070 {1.4x3.9x42}	35x100x1070 {1.4x3.9x42}	36x122x1070 {1.4x4.8x42}
	4.23	Fork Carriage Class	ISO 2328, Type A/B/no			Class 2, Type A	Class 2, Type A	Class 2, Type A
	4.24	Width, Fork Carriage	b3		mm {in}	970 {38.2}	970 {38.2}	970 {38.2}
	4.31	Ground Clearance	m1	Under Mast	mm {in}	95 {3.7}	95 {3.7}	95 {3.7}
	4.32		m2	at Center of Wheelbase	mm {in}	85 {3.3}	85 {3.3}	85 {3.3}
	4.33	Right Angle Stacking Aisle	Ast	with L1000 x W1200 pallet	mm {in}	3155 {124.3}	3190 {125.7}	3480 {137}
	4.34		Ast	with L1200 x W800 pallet	mm {in}	3355 {132.2}	3390 {133.6}	3475 {136.9}
	4.35	Turning Radius	Wa		mm {in}	1750 {69.0}	1785 {70.3}	1850 {72.9}
Performance	5.1	Travel Speed (FWD)	Loaded / Unloaded		km/h {mph}	15.0/17.0 {10/11}	15.0/17.0 {10/11}	14.0/16.0 {9/10}
	5.2	Lifting Speed	Loaded / Unloaded		mm/s {fpm}	340/600 {67/118}	320/600 {63/118}	280/500 {55/98}
	5.3	Lowering Speed	Loaded / Unloaded		mm/s {fpm}	450/550 {89/108}	450/550 {89/108}	370/440 {73/87}
	5.6	Max. Drawbar Pull	Loaded, 3min. rating		N {lbf}	9560 {2150}	9560 {2150}	9045 {2033}
	5.8	Max. Gradeability	Loaded, 3min. rating/1.5/h		%	19	16	14
	5.10	Service Brake	Operation/Control			Foot/Hydraulic	Foot/Hydraulic	Foot/Hydraulic
	5.10.1	Parking Brake	Operation/Control			Hand/Mechanical	Hand/Mechanical	Hand/Mechanical
	5.10.2	Steering	Type			FHPS	FHPS	FHPS
Drive	6.1	Drive Motor (AC)	60min.rating		kW	4.5x2	4.5x2	4.5x2
	6.2	Pump Motor (AC)	5 min.rating		kW	9.0	9.0	9.0
	6.4	Battery Voltage			V	48	48	48
	6.4.2	Battery Capacity, Max			Ah/6hr	600	600	600
	6.5	Battery Weight	Min.Capacity Battery, See line 6.4.1		kg {lb}	760 {1680}	760 {1680}	760 {1680}
Others	8.1	Drive Motor Control				Transistor	Transistor	Transistor
	8.2	Relief Pressure Attachment			Mpa {kg/cm^2, PSI}	17.6 {180, 2560}	17.6 {180, 2560}	17.6 {180, 2560}
	8.2.1	Reservoir Capacity			Ltr {US gal}	23 {6.1}	23 {6.1}	23 {6.1}



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ATTACHMENT

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⚠ WARNING

In this section, only the attachment parts different from the standard lift truck are described. For the parts not shown in this section, see the explanation of the standard lift truck.

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SAFETY

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⚠ WARNING

Please be sure that you fully understand this manual and the precautions related to safety for the lift truck.
When operating, inspecting, or servicing the lift truck, always follow these precautions strictly.

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1.2 FOR YOUR SAFETY

For your safety, the information of possible hazards and how to avoid them are provided on this manual and with the safety indicators attached to this lift truck.

1.2.1 SIGNAL WORDS

The following signal words indicate the possible hazard which leads bodily injury.
For this lift truck and this manual, the following signal words are used depending on the degree of possible hazard.

⚠ WARNING WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Example of safety message using signal word

> **⚠ CAUTION**
> Entering of water into the electrical parts (controllers, sensors, connectors) may cause a malfunction, which is dangerous. Do not wash the electrical parts or use a high-pressure washer (steam cleaner) on them.

Other signal words
Besides the above signal words, the followings indicate precautions you must take for the lift truck as well as useful information.

NOTICE - - - - - - The lift truck can get damaged or shortens its service life when handled incorrectly.

REMARKS - - - - Useful information.

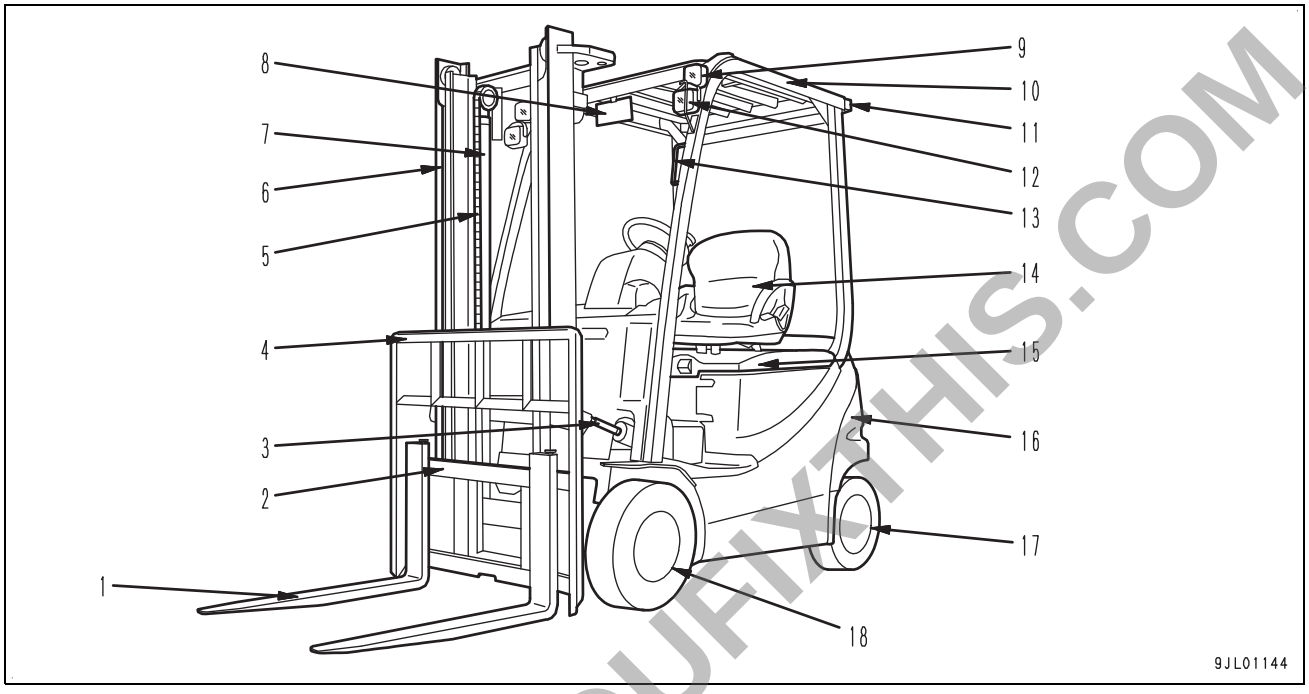
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3. OPERATION

3.1 GENERAL VIEW

3.1.1 GENERAL VIEW OF LIFT TRUCK

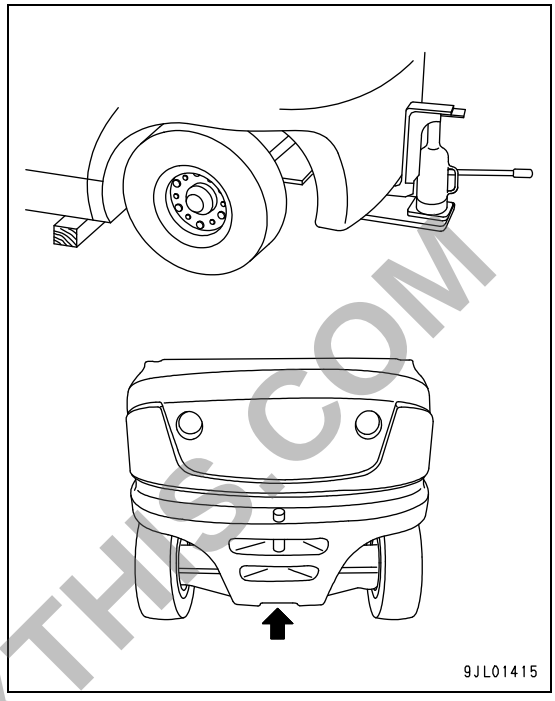


(1) Fork
(2) Fork carriage
(3) Tilt cylinder
(4) Load backrest
(5) Lift chain
(6) Mast
(7) Lift cylinder
(8) Rear view mirror (option)
(9) Turn signal lamp and clearance lamp (parking lamp) (option)
(10) Overhead guard
(11) Rear combination lamps (turn signal lamp, back-up lamp, brake lamp, and tail lamp) (option)
(12) Head lamp
(13) Assist grip
(14) Operator's seat
(15) Battery hood
(16) Counterbalance-weight
(17) Rear wheel
(18) Front wheel

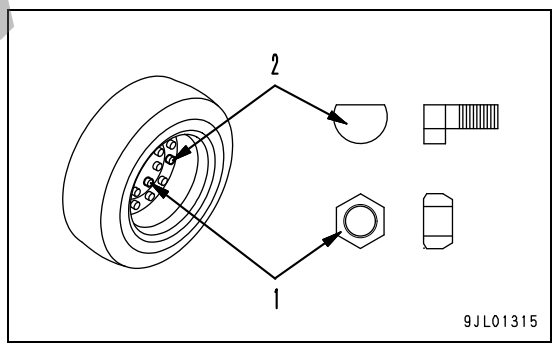
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4. Jack the lift truck up to a level where the tire is still slightly in contact with the ground.
   Place a block under the lift truck frame for preventing the falling.
   Place the block in front when replacing a front wheel, and in the rear when replacing a rear tire.



5. Using a hub nut wrench or other tool, loosen the hub nuts (1) until they can be turned manually.
6. Jack the lift truck up until the tire slightly clear the ground. Remove the hub nuts (1) and remove the tire.
7. Install a replacement tire to the hub. Tighten the hub nuts (1) temporarily. Tighten the nuts diagonally until the tire does not rattle.
8. Remove the block from under the frame. Lower the jack and tighten the hub nuts (1) with the specified torque. For the right tightening torque, see "4.18 SERVICE DATA (PAGE 4-50)".
9. Adjust the tire inflation pressure to specified pressure. For the right tire inflation pressure, see "4.18 SERVICE DATA (PAGE 4-50)".
10. After replacing the tire, have a trial run to check the hub nuts (1) for looseness. Tighten if necessary.



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