SM227
BEE07E1-01

KOMATSU

SHOP MANUAL

FD100/115-7
FD135/150E/160E-7

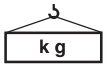
MACHINE MODEL	SERIAL No.	ENGINE
FD100/115-7	6001 and up	6BG1T
FD135/150E/160E-7	6001 and up	6BG1T

PRECAUTIONS WHEN PERFORMING THE SERVICE WORK

Always pay attention to “Safety” before starting any work — this is important.
Never attempt any work where danger to yourself or to other persons.
Whenever work requiring safety precautions are described in this manual, a flag mark ⚠ inserted, always make double sure that safety measures are taken.
Other unmarked work, should always be performed after studying and using your common sense to prevent accidents.

DESCRIPTION OF THE SYMBOLS

The symbols described below are used in this manual for convenience and better understanding.

Symbol	Item	Description
	**Safety**	Special safety precautions are needed to perform the work.
	**Note**	Special technical precautions are needed to perform the work
	**Tightening torque**	Fastening parts that require specified tightening force when assembling.
	**Weight**	Weight of parts or systems
	**Coat**	Places to be coated with adhesives, etc. when assembling

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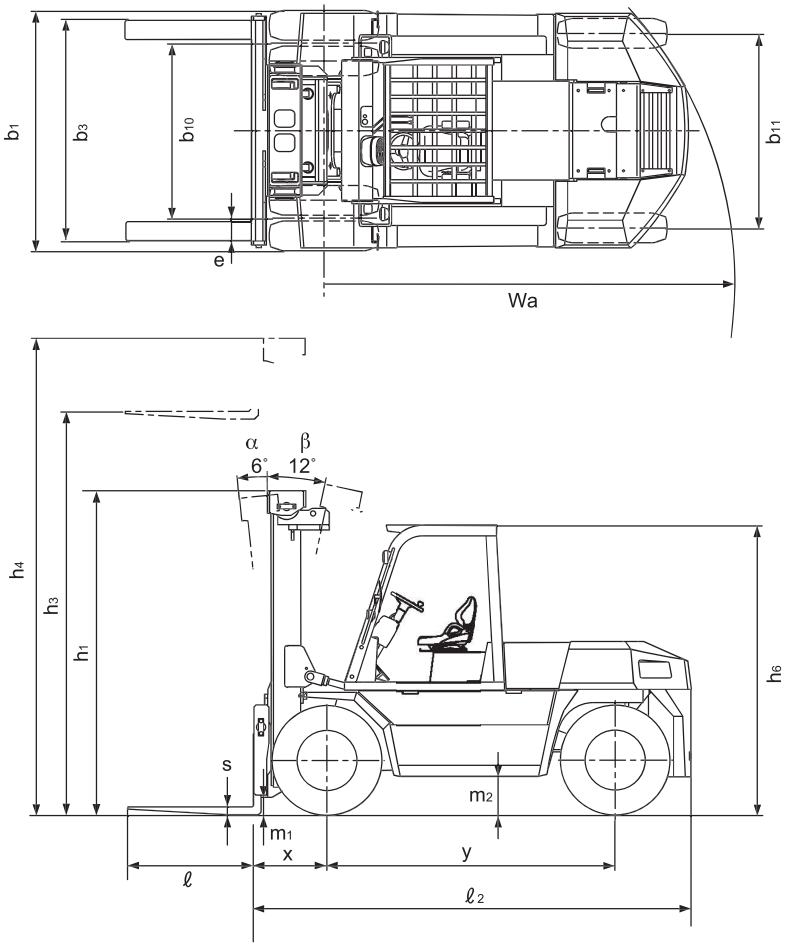
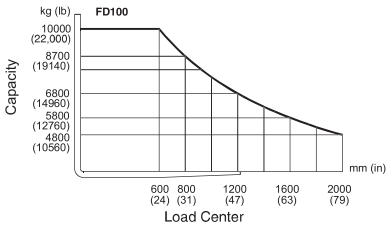
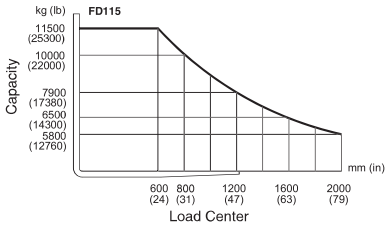
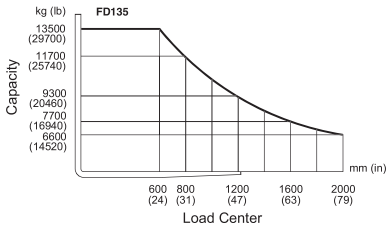
10. GENERAL AND SPECIFICATIONS

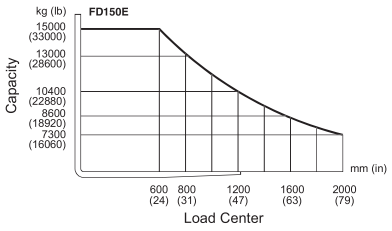
SPECIFICATIONS

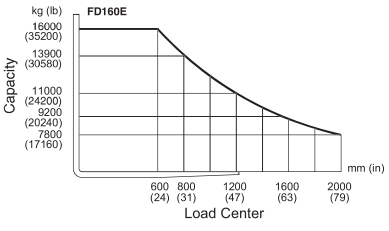












Characteristics	1.2	Model	Manufacturer's Designations				**FD100-7**	**FD115-7**	**FD135-7**
	1.3	Power Type	Electric, Diesel, Gasoline, LPG, Cable				Diesel	Diesel	Diesel
	1.4	Operation Type	Pedestrian, Drive Standing, Sitting, Order Picking				Sitting	Sitting	Sitting
	1.5	Rated Capacity	Q	Rated Capacity		kg(lb)	10000(22,000)	11500(25,000)	13500(30,000)
	1.6	Load Center	c	Rated Load Center		mm(in)	600(24)	600(24)	600(24)
	1.8	Load Distance	x	Front Axle Center to Fork Face		mm(in)	695(27.4)	715(28.1)	740(29.1)
	1.9	Wheelbase	y			mm(in)	2800(110.2)	2800(110.2)	3100(122.0)
Weight	2.1	Service Weight				kg(lb)	12800(28,220)	14200(31,310)	15400(33,950)
	2.2	Axle Loading	Loaded	Front		kg(lb)	20720(45,680)	23430(51,655)	26450(58,312)
	2.2.1			Rear		kg(lb)	2080(4,586)	2270(5,004)	2450(5,401)
	2.3		Unloaded	Front		kg(lb)	6095(13,440)	6530(14,400)	7115(15,686)
	2.3.2			Rear		kg(lb)	6705(14,780)	7670(16,910)	8285(18,265)
Tyres	3.1	Tyre Type					Pneumatic	Pneumatic	Pneumatic
	3.2	Tyre Size	Front				9.00-20-14PR(I)	10.00-20-14PR(I)	11.00-20-14PR(I)
	3.3		Rear				9.00-20-14PR(I)	10.00-20-14PR(I)	11.00-20-14PR(I)
	3.5	Number of Wheel	Front/Rear(x=driven)				4x/2	4x/2	4x/2
	3.6	Tread, Front	b10			mm(in)	1700(66.9)	1700(66.9)	1770(69.7)
	3.7	Tread, Rear	b11			mm(in)	1900(74.8)	1890(74.4)	1890(74.4)
Demensions	4.1	Tilting Angle		Forward/Backward		degree	6/12	6/12	6/12
	4.2	Mast Height, Lowered	h1	with Std. Mast		mm(in)	2890(113.8)	3160(124.4)	3170(124.8)
	4.3	Std. Free Lift	h2	with Std. Mast from Ground		mm(in)	0(0.0)	0(0.0)	0(0.0)
	4.4	Std. Lift Height	h3	with Std. Mast from Ground		mm(in)	3000(118)	3000(118)	3000(118)
	4.5	Mast Height, Extended	h4	with Std. Mast		mm(in)	4400(173.2)	4670(183.9)	4680(184.3)
	4.7	Height, Overhead Guard	h6			mm(in)	2780(109.4)	2800(110.2)	2810(110.6)
	4.19	Length, with Std. Forks	l1			mm(in)	5465(215.2)	5485(215.9)	5860(230.7)
	4.20	Length, to fork face	l2			mm(in)	4245(167.1)	4265(167.9)	4640(182.7)
	4.21	Width, at tyre	b1			mm(in)	2280(89.8)	2310(90.9)	2410(94.9)
	4.22	Forks	s/e/l	Thickness/Width/Lengh		mm(in)	75x170x1220(3.0x6.7x48.0)	75x185x1220(3.0x7.3x48.0)	80x185x1220(3.1x7.3x48.0)
	4.23	Fork Carriage Class	ISO 2328, Type A/B/no				Pin Mount	Pin Mount	Pin Mount
	4.24	Width, Fork Carriage	b3			mm(in)	2140(84.3)	2140(84.3)	2200(86.6)
	4.31	Ground Clearance	m1	Under the Mast		mm(in)	250(9.8)	250(9.8)	260(10.2)
	4.32		m2	at the center of wheelbase		mm(in)	325(12.8)	345(13.6)	350(13.8)
	4.33	Right Angle Stacking Aisle	Ast			mm(in)	6115(240.7)	6135(241.5)	6460(254.3)
	4.35	Turning Radius	Wa			mm(in)	4000(157.5)	4000(157.5)	4300(169.3)
Performance	5.1	Travel Speed(FWD)	Loaded, 1st/2nd/3rd			km/h(mph)	8.5/18/28(5.3/11.2/17.4)	8.5/19/28(5.3/11.8/17.4)	9/19.5/27.5(5.6/12.1/17.1)
	5.1.1		Unloaded, 1st/2nd/3rd			km/h(mph)	9/20/32(5.6/12.4/19.9)	9/21/32(5.6/13.0/19.9)	9.5/21/32.5(5.9/13.0/20.2)
	5.2	Lifting Speed	Loaded/Unloaded			mm/s(fpm)	470/500(93/98)	430/450(85/89)	350/375(69/74)
	5.3	Lowering Speed	Loaded/Unloaded			mm/s(fpm)	400/500(78.7/98.4)	400/500(78.7/98.4)	400/500(78.7/98.4)
	5.6	Max. Drawbar Pull	Loaded			kN(lb)	112(25,132)	108(24,339)	105(23,677)
	5.8	Max. Gradeability	Loaded 1.6km/h, 3min rating			%	38	32	28
	5.10	Service Brake	Operation/Control				Foot/Hydraulic, Powered	Foot/Hydraulic, Powered	Foot/Hydraulic, Powered
	5.11	Parking Brake	Operation/Control				Hand/Mechanical	Hand/Mechanical	Hand/Mechanical
	5.12	Steering	Type				Hydraulic Power Steering	Hydraulic Power Steering	Hydraulic Power Steering
	6.4	Battery	Voltage/Capacity at 5-hour rating			V/Ah	24/100	24/100	24/100
Drive	7.1	Maker/Model					ISUZU 6BG1T	ISUZU 6BG1T	ISUZU 6BG1T
	7.2	Rated Output, SAE gross				kW(HP)	119(160)	119(160)	119(160)
	7.3	Rated Speed				min^{-1}	2200	2200	2200
	7.3.1	Max Torque, SAE gross				N-m(lbft)@min^{-1}	540(398)@1600	540(398)@1600	540(398)@1600
	7.4	No. of Cylinder/Displacement				cm^3(cu.in)	6/6494(396)	6/6494(396)	6/6494(396)
Others	7.6	Fuel Tank Capacity				Ltr(US gal)	260(68.7)	260(68.7)	280(74.0)
	8.2	Relief Pressure for Attachment				bar(psi)	215(3,118)	215(3,118)	215(3,118)
	8.2.1	Hydraulic Tank Capacity				Ltr(US gal)	150(39.6)	150(39.6)	180(47.6)
	8.6	Clutch					Torque Converter	Torque Converter	Torque Converter
	8.7	Transmission					TORQFLOW	TORQFLOW	TORQFLOW

Specifications are subject to change without notice.
The performance values indicated herein represent nominal values obtained under typical operating conditions.

Characteristics	1.2	Model	Manufacturer's Designations				**FD150E-7**	**FD160E-7**
	1.3	Power Type	Electric, Diesel, Gasoline, LPG, Cable				Diesel	Diesel
	1.4	Operation Type	Pedestrian, Drive Standing, Sitting, Order Picking				Sitting	Sitting
	1.5	Rated Capacity	Q	Rated Capacity		kg(lb)	15000(33,000)	16000(35,000)
	1.6	Load Center	c	Rated Load Center		mm(in)	600(24)	600(24)
	1.8	Load Distance	x	Front Axle Center to Fork Face		mm(in)	750(29.5)	750(29.5)
	1.9	Wheelbase	y			mm(in)	3100(122.0)	3100(122.0)
Weight	2.1	Service Weight				kg(lb)	16500(36,380)	17050(37,590)
	2.2	Axle Loading	Loaded	Front		kg(lb)	28755(63,390)	30120(66,400)
	2.2.1			Rear		kg(lb)	2745(6,052)	2930(6,460)
	2.3		Unloaded	Front		kg(lb)	7225(15,930)	7155(15,770)
	2.3.2			Rear		kg(lb)	9275(20,450)	9895(21,810)
Tyres	3.1	Tyre Type					Pneumatic	Pneumatic
	3.2	Tyre Size	Front				11.00-20-16PR(I)	12.00-20-16PR(I)
	3.3		Rear				11.00-20-16PR(I)	12.00-20-16PR(I)
	3.5	Number of Wheel	Front/Rear(x=driven)				4x/2	4x/2
	3.6	Tread, Front	b10			mm(in)	1770(69.7)	1770(69.7)
	3.7	Tread, Rear	b11			mm(in)	1890(74.4)	1870(73.6)
Demensions	4.1	Tilting Angle		Forward/Backward		degree	6/12	6/12
	4.2	Mast Height, Lowered	h1	with Std. Mast		mm(in)	3270(128.7)	3290(129.5)
	4.3	Std. Free Lift	h2	with Std. Mast from Ground		mm(in)	0(0.0)	0(0.0)
	4.4	Std. Lift Height	h3	with Std. Mast from Ground		mm(in)	3000(118)	3000(118)
	4.5	Mast Height, Extended	h4	with Std. Mast		mm(in)	4780(188.2)	4800(189.0)
	4.7	Height, Overhead Guard	h6			mm(in)	2810(110.6)	2830(111.4)
	4.19	Length, with Std. Forks	l1			mm(in)	5920(233)	6020(237)
	4.20	Length, to fork face	l2			mm(in)	4700(185)	4800(189)
	4.21	Width, at tyre	b1			mm(in)	2410(94.9)	2480(97.6)
	4.22	Forks	s/e/l	Thickness/Width/Lengh		mm(in)	85x190x1220(3.3x7.5x48.0)	85x210x1220(3.3x8.3x48.0)
	4.23	Fork Carriage Class	ISO 2328, Type A/B/no				Pin Mount	Pin Mount
	4.24	Width, Fork Carriage	b3			mm(in)	2200(86.6)	2200(86.6)
	4.31	Ground Clearance	m1	Under the Mast		mm(in)	250(9.8)	270(10.6)
	4.32		m2	at the center of wheelbase		mm(in)	350(13.8)	370(14.6)
	4.33	Right Angle Stacking Aisle	Ast			mm(in)	6520(256.7)	6670(262.6)
	4.35	Turning Radius	Wa			mm(in)	4350(171.3)	4500(177.2)
Performance	5.1	Travel Speed(FWD)	Loaded, 1st/2nd/3rd			km/h(mph)	9/19.5/27.5(5.6/12.1/17.1)	9.5/20/28(5.9/12.4/17.4)
	5.1.1		Unloaded, 1st/2nd/3rd			km/h(mph)	9.5/21/32.5(5.9/13.0/20.2)	10/21.5/33(6.2/13.4/20.5)
	5.2	Lifting Speed	Loaded/Unloaded			mm/s(fpm)	330/350(65/69)	320/345(63/68)
	5.3	Lowering Speed	Loaded/Unloaded			mm/s(fpm)	450/450(88.6/88.6)	450/450(88.6/88.6)
	5.6	Max. Drawbar Pull	Loaded			kN(lb)	105(23,677)	100(22,487)
	5.8	Max. Gradeability	Loaded 1.6km/h, 3min rating			%	25	23
	5.10	Service Brake	Operation/Control				Foot/Hydraulic, Powered	Foot/Hydraulic, Powered
	5.11	Parking Brake	Operation/Control				Hand/Mechanical	Hand/Mechanical
	5.12	Steering	Type				Hydraulic Power Steering	Hydraulic Power Steering
	6.4	Battery	Voltage/Capacity at 5-hour rating			V/Ah	24/100	24/100
Drive	7.1	Maker/Model					ISUZU 6BG1T	ISUZU 6BG1T
	7.2	Rated Output, SAE gross				kW(HP)	119(160)	119(160)
	7.3	Rated Speed				min^{-1}	2200	2200
	7.3.1	Max Torque, SAE gross				N-m(lbft)@min^{-1}	540(398)@1600	540(398)@1600
	7.4	No. of Cylinder/Displacement				cm^3(cu.in)	6/6494(396)	6/6494(396)
Others	7.6	Fuel Tank Capacity				Ltr(US gal)	280(74.0)	280(74.0)
	8.2	Relief Pressure for Attachment				bar(psi)	215(3,118)	215(3,118)
	8.2.1	Hydraulic Tank Capacity				Ltr(US gal)	180(47.6)	180(47.6)
	8.6	Clutch					Torque Converter	Torque Converter
	8.7	Transmission					TORQFLOW	TORQFLOW

PERIODIC REPLACEMENT OF CONSUMABLE PARTS

For operation safety, never fail to perform periodic maintenance or make periodic replacement of the consumable parts listed in the following.
These parts may deteriorate in time and are susceptible to wear. It is difficult to estimate the degree of wear at time of periodic maintenance; therefore, even if no apparent wear is found, always replace with new parts within the prescribed period of replacement (or earlier if trouble is found).
Note that periodic replacement has nothing to do with guarantee service.

No.	Part name	Period of replacement
1	Master cylinder and wheel cylinder cups, dust seals	Every 1 year
2	Brake hose or tube	Every 2 years
3	Brake reservior tank and tube	Every 2 to 4 years
4	Power steering hose	Every 2 years
5	Stop lamp switch (Oil pressure type)	Every 2 years
6	Fuel hose	Every 2 years
7	Rubber parts of power steering	Every 2 years
8	Lift chain	Every 3 years
9	Hose of load handing	Every 2 years

SAFETY ITEMS FOR MAINTENANCE

FOR SAFETY OPERATION

⚠ USE QUALIFIED PERSONNEL FOR INSPECTION AND MAINTENANCE

- Only persons authorized by the owner or operator of the equipment and having proper certification (local or national) may carry out inspection, maintenance and repairs of the lift truck.
  If inspection, maintenance, or repair work is carried out incorrectly, it is very dangerous.

⚠ MAINTENANCE LOCATION

- When carrying out inspection and maintenance, use a level, dry, dust–free area.
- If the work is carried out inside a building, make sure that there is ample ventilation.

⚠ PRECAUTIONS FOR INSPECTION AND MAINTENANCE

- To be prepared in the event of a fire, have a fire extinguisher nearby and make sure that you know how to use it.
- Before carrying out inspection, lower the forks to the ground and stop the machine.
- Do not run the engine unless it is necessary.
- Place the directional lever, speed lever, and work equipment control levers in neutral.

⚠ PRECAUTIONS WHEN CARRYING OUT INSPECTION AND MAINTENANCE

- Wipe off any oil or grease. Immediately wipe up any oil that has leaked.
  If the lift truck is dirty, it becomes difficult or impossible to find cracks or other problems. Always clean the lift truck before starting inspection.
- Do not smoke or allow any flame to exist under any circumstances.
  Do not use any cloth which is soaked in fuel, oil, or grease. There is danger that it may catch fire.
- Wear suitable clothes for the job.
- Use suitable safety and protective equipment (hard hat, safety boots, safety glasses, gloves) for the job.
- When working on top of the lift truck, be careful not to fall.
- Do not put your feet under the forks.
- When opening or closing the floor plate or engine hood, be careful not to get your hands or body caught.
- When carrying out inspection with the forks raised, insert a stand under the inner mast to prevent the forks and mast from dropping.
- When carrying out job with another worker, decide who is the leader and carry out the job in accordance with instructions from that person.
- After repairing, make sure that the trouble has been corrected by performing a trial run.
- During the trial run, start/operate the lift truck carefully because it is possible that the trouble has not been fully corrected or that defective parts have not been removed.