

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.

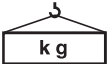
Never attempt any work where danger to yourself or to other persons.

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

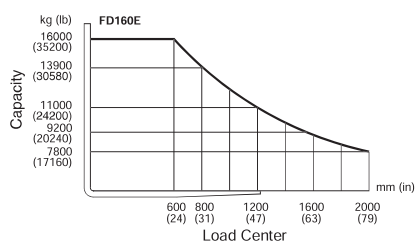
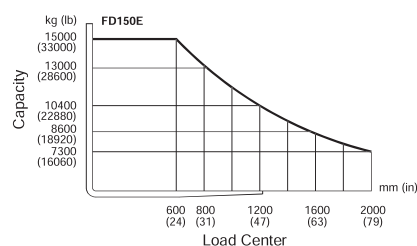
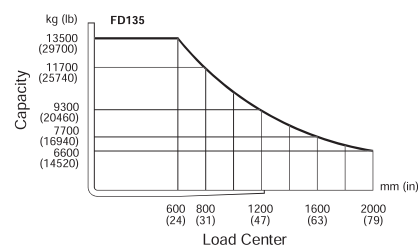
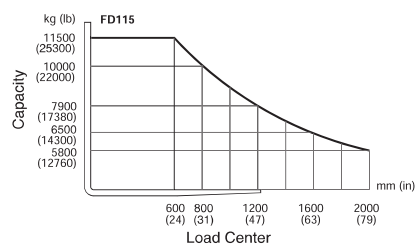
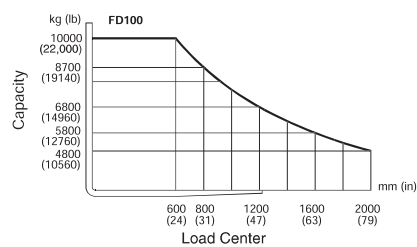
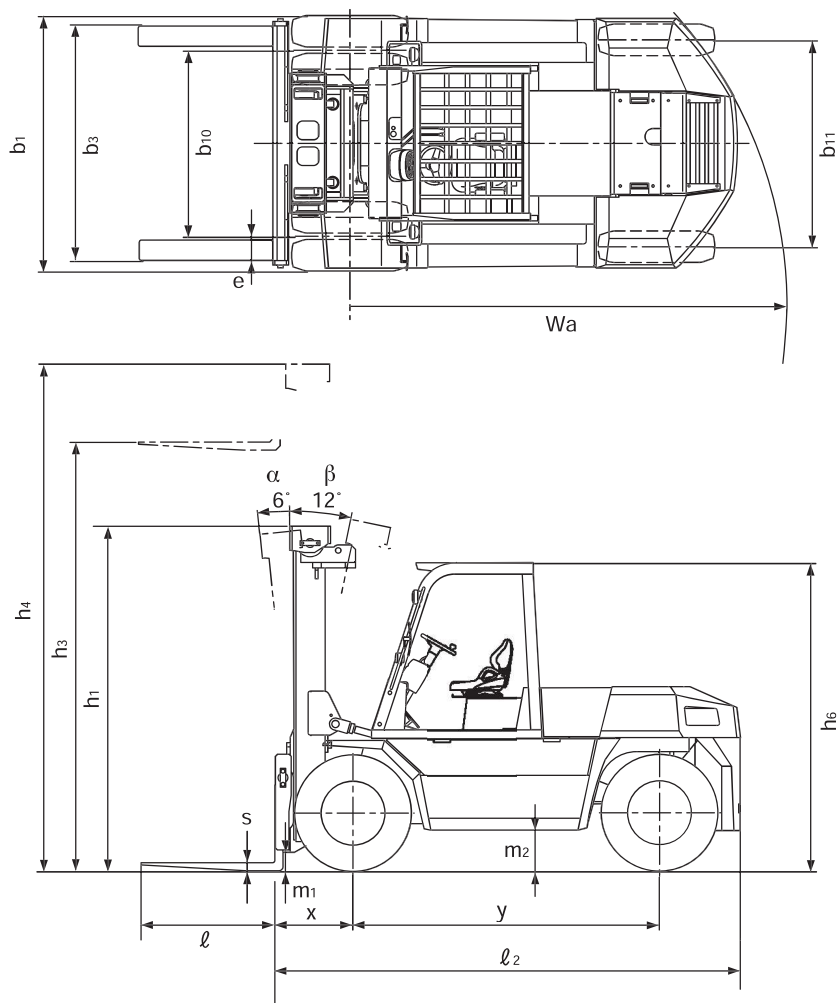
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SPECIFICATIONS



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)
	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)	
	Rear			9.00-20-14PR(I)	10.00-20-14PR(I)	11.00-20-14PR(I)		
	3.3	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)
	Dimensions	4.1	Tilting Angle		Forward/Backward	degree	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)
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(lbf)@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)	
	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			11.00-20-16PR(I)	12.00-20-16PR(I)	
	11.00-20-16PR(I)				12.00-20-16PR(I)		
	3.3	Number of Wheel			Front/Rear(x=driven)	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)	
Dimensions	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)
	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 reservoir 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 handling	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.