SM141

SHOP MANUAL

DX-7 AND DX-8 FORKLIFT TRUCKS

DX-7: FG50/60/70-7 **S/N 40001-45999**
DX-8: FD50/60/70/80-8 **S/N 46001~**

DX20

WARNING

Read and observe all warnings on this unit before operating it.
DO NOT operate this equipment unless all factory installed guards and shields are properly secured in place.

KOMATSU®

ISSUED: MAY 2005

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INTRODUCTION

This Service Manual has been developed as an information resource to help the reader learn about, understand, repair and maintain the DX20 Series forklift trucks, and the various equipment, systems, inspections, sensors, diagnostic procedures and diagnostic equipment utilized to maintain, adjust and troubleshoot these systems. Although reference is made to maintenance procedures necessary to perform servicing of this vehicle, you should refer to the applicable *Operation and Maintenance Manual* for these lift trucks for more complete maintenance information.

Read this manual carefully, refer to it often and learn the repair, testing and adjustment procedures to the best of your ability. Please note that some illustrations are generic and may not look exactly like your unit in every detail.

Ensure that, when you are working on or around industrial trucks, **Safety is priority Number One**. Read, understand and obey all **WARNINGS** and **CAUTIONS**.

Follow the instructions and procedures presented in this manual when working on these lift trucks and their systems. Damage to the equipment, and possible injury to yourself or others, may result if these procedures are not adhered to carefully.

Keep this manual nearby and accessible for use when necessary. If this book becomes dirty, worn or illegible, contact Komatsu for a replacement. The procedures outlined in this manual will be updated periodically. Be sure that you have the latest revision in order to learn the newest information available. Revision dates will be clearly displayed on the lower left hand corner of the cover page.

This will aid in maintaining your equipment in excellent condition and in ensuring that these lift trucks will operate safely at maximum efficiency.

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FOREWORD

For a machine and its components to maintain their performance for a long time, it is necessary to carry out appropriate operation, preventive maintenance, troubleshooting, and service to prevent failures or problems before they occur.
Of these operations, this shop manual gives information mainly on operations carried out at a repair shop. These include an outline needed for service and maintenance operations, together with details of the structure and function, inspection and maintenance, installation and removal, disassembly and assembly, maintenance standards, troubleshooting, and periodic inspection and adjustment of components for the machine. The units given for tightening torques in this manual use the SI units as the standard, so a conversion table is given at the end of the section 10.
This shop manual has been prepared with the target of making materials that will help you to gain proper knowledge of the product, its structure and function, and proper methods for maintenance, to use proper judgement and remedies when there is a failure or problem with the machine, and to improve the quality of maintenance.
Always be sure that you fully understand the contents of this manual together with the Operation and Maintenance Manual, and make full use of it when handling the machine.

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.
kgm	**Tightening torque**	Fastening parts that require specified tightening force when assembling.
kg	**Weight**	Weight of parts or systems.
	Coat	Places to be coated with adhesives, etc. When assembling.

10. GENERAL AND SPECIFICATIONS

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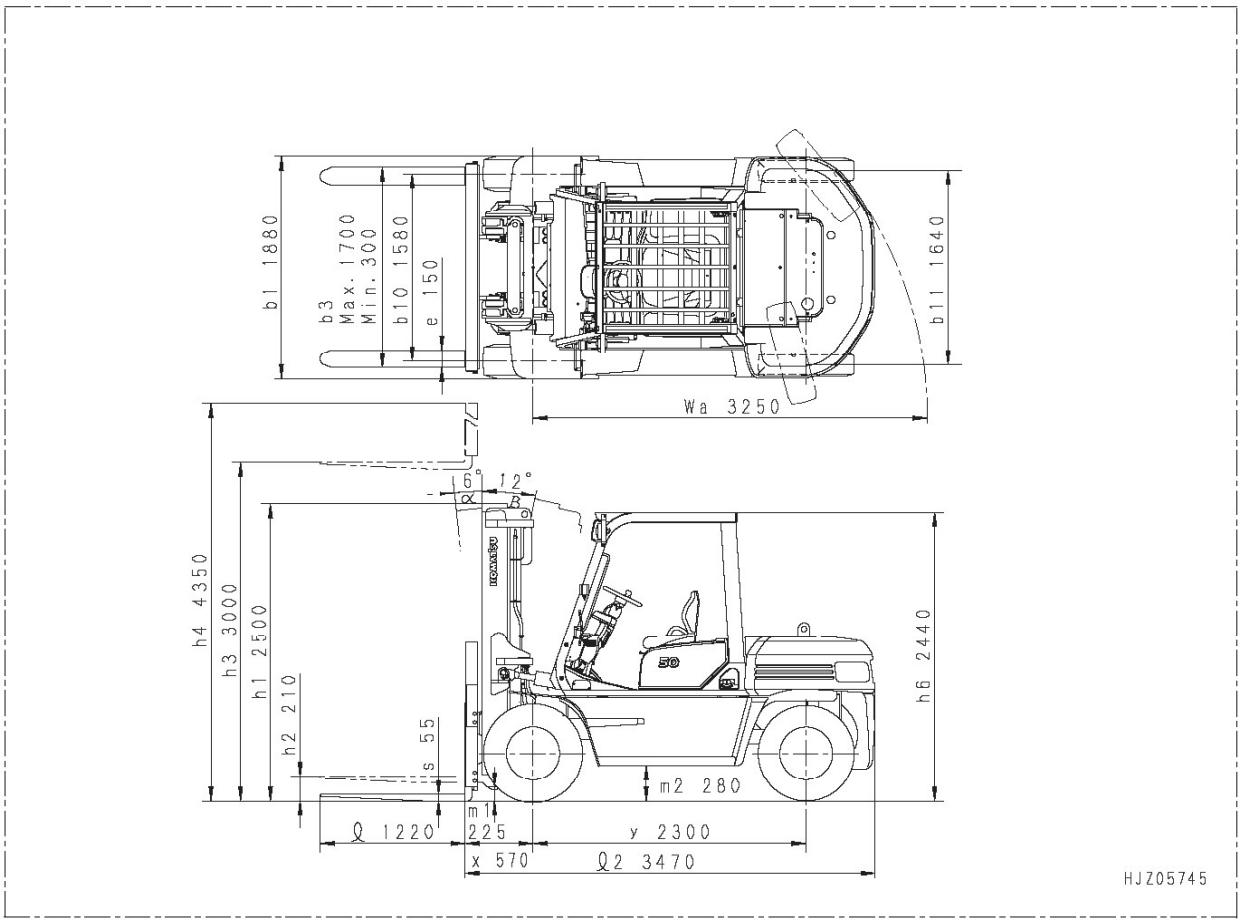
SPECIFICATIONS (FG50-7, FD50-8)

• SPECIFICATION TABLE

Characteristics	Model	Manufacturer's designation				FG50-7	FD50-8
	Power type	Electric, diesel, gasoline, LPG, cable				Gasoline	Diesel
	Operation type	Pedestrian, driver standing, sitting, order picking				Sitting	Sitting
	Rated capacity	Q	Rated capacity		kg	5,000	
	Load center	c	Rated load center		mm	600	
	Load distance	x	Front axle center to fork face		mm	570	
	Wheelbase	y			mm	2,300	
Weight	Service weight				kg	7,340	7,645
	Axle loading	Loaded		Front	kg	11,105	11,225
				Rear	kg	1,235	1,420
		Unloaded		Front	kg	3,560	3,685
				Rear	kg	3,780	3,960
Tyre	Tyre type	Cushion, elastic cushion, pneumatic, polyurethane				Pneumatic	
	Tyre size	Front				300-15-18PR(I)	
		Rear				8.25-15-12PR(I)	
	Number of wheel	Front/rear (x=driven)				2x/2	
	Tread, front	b10			mm	1,580	
	Tread, rear	b11			mm	1,640	
Basic measurement	Tilting angle	a/ß			degree	6/12	
	Mast height, lowered	h1			mm	2,500	
	Std. free lift	h2			mm	210	
	Std. lift height	h3			mm	3,000	
	Mast height, extended	h4			mm	4,350	
	Height, overhead guard	h6			mm	2,440	
	Length, with Std. forks	ℓ1			mm	4,690	
	Length, to fork face	ℓ2			mm	3,470	
	Width, at tyre	b1			mm	1,880	
	Forks	s/e/ℓ	Thickness/width/length		mm	55x150x1,220	
	Fork carriage class					Class IV, Type A	
	Width, fork carriage	b3			mm	1,700	
	Ground clearance	m1	Under mast		mm	225	
		m2	At center of wheelbase		mm	280	
	Right angle stacking aisle	Ast	With 1,000 x 1,200 pallet, lateral		mm	3,820	
	Turning radius	Wa			mm	3,250	
Performance	Travel speed (FWD)	Loaded,1st/2nd/3rd			km/h	11.0/28.0	11.0/30.0
		Unloaded,1st/2nd/3rd			km/h	12.0/31.0	12.0/32.0
	Lifting speed	Loaded/unloaded			mm/s	420/430	530/560
	Lowering speed	Loaded/unloaded			mm/s	550/580	
	Max. drawbar pull	Loaded at 1.5 km/h			kN{kgf}	55{5,610}	49{5,000}
	Max. gradeability	Loaded at 1.5 km/h			%	52	43
	Service brake	Operation/control				Foot/hydraulic	
	Parking brake	Operation/control				Hand/mechanical	
	Steering	Type				Hydraulic power steering	
Engine	Battery	Voltage/capacity at 5-hour rating			V/Ah	12/48	24/56
	Make/model					NISSAN/TB42	KOMATSU/S6D102E
	Rated output (SAE gross)				kW(HP)	66(88)	77(103)
	Rated RPM				rpm	2,300	2,250
	Max. torque (SAE gross)				Nm{kgf•m}/rpm	275{28}/1,900	392{40}1,600
	No. of cylinder/displacement				No. of cyl./ℓ{cc}	6/4.169{4,169}	6/5.880{5,880}
	Fuel tank capacity				ℓ	140	
Others	Relief pressure for attachment				MPa{kgf/cm^2}	17.5{178}	
	Tank capacity				ℓ	70	
	Clutch					Torque converter	
	Transmission					TORQFLOW	

• OUTSIDE VIEW DRAWINGS



SPECIFICATIONS (FG60-7, FD60-8)

• SPECIFICATION TABLE

Characteristics	Model	Manufacturer's designation				FG60-7	FD60-8
	Power type	Electric, diesel, gasoline, LPG, cable				Gasoline	Diesel
	Operation type	Pedestrian, driver standing, sitting, order picking				Sitting	Sitting
	Rated capacity	Q	Rated capacity		kg	6,000	
	Load center	c	Rated load center		mm	600	
	Load distance	x	Front axle center to fork face		mm	575	
	Wheelbase	y			mm	2,300	
Weight	Service weight				kg	8,200	8,445
	Axle loading	Loaded		Front	kg	12,705	12,795
				Rear	kg	1,495	1,650
		Unloaded		Front	kg	3,640	3,730
				Rear	kg	4,560	4,715
Tyre	Tyre type	Cushion, elastic cushion, pneumatic, polyurethane				Pneumatic	
	Tyre size	Front				8.25-15-12PR(I)	
		Rear				8.25-15-12PR(I)	
	Number of wheel	Front/rear (x=driven)				4x/2	
	Tread, front	b10			mm	1,450	
	Tread, rear	b11			mm	1,640	
Basic measurement	Tilting angle	a/ß			degree	6/12	
	Mast height, lowered	h1			mm	2,500	
	Std. free lift	h2			mm	215	
	Std. lift height	h3			mm	3,000	
	Mast height, extended	h4			mm	4,350	
	Height, overhead guard	h6			mm	2,440	
	Length, with Std. forks	ℓ1			mm	4,695	
	Length, to fork face	ℓ2			mm	3,475	
	Width, at tyre	b1			mm	1,960	
	Forks	s/e/ℓ	Thickness/width/length		mm	60x150x1,220	
	Fork carriage class					Class IV, Type A	
	Width, fork carriage	b3			mm	1,700	
	Ground clearance	m1	Under mast		mm	225	
		m2	At center of wheelbase		mm	285	
	Right angle stacking aisle	Ast	With 1,000 x 1,200 pallet, lateral		mm	5,225	
	Turning radius	Wa			mm	3,250	
Performance	Travel speed (FWD)	Loaded,1st/2nd/3rd			km/h	11.0/28.0	11.0/30.0
		Unloaded,1st/2nd/3rd			km/h	12.0/31.0	12.0/32.0
	Lifting speed	Loaded/unloaded			mm/s	420/430	500/560
	Lowering speed	Loaded/unloaded			mm/s	550/580	
	Max. drawbar pull	Loaded at 1.5 km/h			kN{kgf}	54{5,510}	46{4,690}
	Max. gradeability	Loaded at 1.5 km/h			%	44	35
	Service brake	Operation/control				Foot/hydraulic	
	Parking brake	Operation/control				Hand/mechanical	
	Steering	Type				Hydraulic power steering	
Engine	Battery	Voltage/capacity at 5-hour rating			V/Ah	12/48	24/56
	Make/model					NISSAN/TB42	KOMATSU/S6D102E
	Rated output (SAE gross)				kW(HP)	66(88)	77(103)
	Rated RPM				rpm	2,300	2,250
	Max. torque (SAE gross)				Nm{kgf•m}/rpm	275{28}/1,900	392{40}/1,600
	No. of cylinder/displacement				No. of cyl./ℓ{cc}	6/4.169{4,169}	6/5.880{5,880}
	Fuel tank capacity				ℓ	140	
Others	Relief pressure for attachment				MPa{kgf/cm^2}	17.5{178}	
	Tank capacity				ℓ	70	
	Clutch					Torque converter	
	Transmission					TORQFLOW	