Heavy-Duty Forklift Trucks

16-23ton

FD160 FD180
FD200 FD230

New engines are more powerful and durable than ever!

The TCM FD160 to FD230 forklift trucks have been substantially upgraded to be more powerful, yet eco-friendly workhorses with a variety of state-of-the-art features. They include a new type of diesel engine which meets the world's latest emission control regulations and a traveling and load handling interlock system which helps ensure safe operation of the truck.

The new type of diesel engine used in this series complies with the world's latest emission control regulations!

These environmentally friendly diesel engines emit substantially less nitrogen oxides (NOx) and particulate matter (PM).


Isuzu 6HK1 Diesel Engine

- The powerful diesel engines with a turbocharger and an intercooler provide a high rated output and an increased maximum torque to ensure greater productivity.
- The rated speed is as low as 2,000 rpm, making these engines more durable than ever.

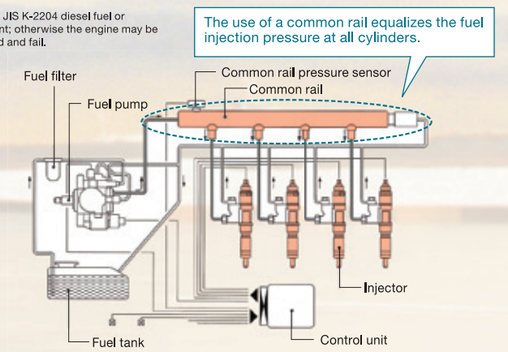
Rated output:
132 kW at 2,000 rpm (Gross)

Max. torque:
807 N-m at 1,400 rpm (Gross)

Common rail fuel injection system

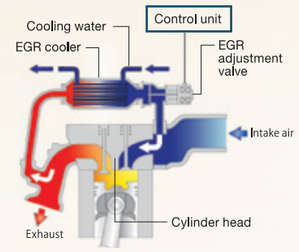
The common rail fuel injection system is a totally new type of fuel injection system which has been developed in response to successively more stringent emission control regulations that have recently been introduced. It uses a single fuel pump to put the fuel under extremely high pressure. Then, the fuel is distributed through the common rail to the injector of each cylinder under high and consistent pressure. The injector for each cylinder delivers precisely the optimal amount of fuel at the perfect time, thanks to an electronically controlled governor, to suit the engine's immediate operating conditions. Optimized fuel combustion substantially reduces the amount of pollutants, including PM and black smoke, in the exhaust gas. It also helps improve fuel economy and reduces engine vibration.

Note:
Use only JIS K-2204 diesel fuel or equivalent; otherwise the engine may be damaged and fail.



Cooled exhaust gas recirculation (EGR) system

Cooled exhaust gas recirculation (EGR) is a technique for reducing nitrogen oxide (NOx) emissions by mixing a portion of an engine's exhaust gas with the intake air to reduce the concentration of oxygen in the combustion chamber. This helps reduce the temperature during combustion, which lowers the formation of NOx. In addition, the EGR cooler reduces the exhaust temperature, while the fuel to air ratio control system uses a feedback loop to control the fuel/air mixture supplied to the engine, reducing the formation of NOx even more and improving fuel economy.



The EGR system cools part of the exhaust and mixes it with the intake air to achieve more efficient fuel combustion when the engine is running at low speeds.

3-speed automatic transmission

The 3-speed automatic transmission automatically shifts up and down through the gears, allowing the operator to control the truck like an ordinary passenger car.

Hydraulic pilot-valve load handling levers

The load handling levers require less operating force than before, substantially improving controllability of the truck.

Feather touch shift lever

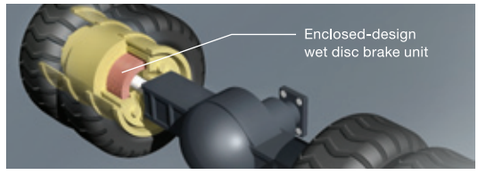
The use of an electromagnetic valve allows the operator to move the shift lever with the flick of a finger.

Pillar-less operator cabin (option)

The front pillars of the operator cabin have been eliminated for a great improvement in forward visibility, bringing higher safety, better load handling efficiency and a wider view for the driver.

View angle: 115 °

Enclosed-design wet disc brakes (option)



Enclosed-design wet disc brakes (with a forced cooling system) offer stable braking performance while eliminating the possibility of pad wear, thus substantially reducing maintenance costs.

Five load handling levers

Trucks with a sideshift attachment combined with a hydraulic fork positioner have five load handling levers. The elimination of the selector switch offers improved operability.

Deluxe, multi-function operator's seat

An adjustable suspension seat is a favorite option. It features:

- Adjustable Suspension
- Fore-and-aft position adjustment
- Reclining backrest
- Adjustable height
- Seat swivel
- Adjustable-height armrests

Power and economy modes are selectable

You can select between the power drive mode (1st → 2nd → 3rd) and the economy drive mode (2nd → 3rd) easily with the flip of a switch.

Gearshift hold switch

The most appropriate gearshift pattern for the job can be selected from three modes by turning the dial switch: held in 1st gear, held in 2nd gear, and automatic.

Automatic correction of steering wheel knob deviation

Fully-hydraulic power steering systems unintentionally allow the steering wheel to move gradually away from the center position you want to hold while traveling.
On this truck, however, any deviation in the steering wheel center position is automatically corrected, back to the position you want.

The light switch is combined in the turn signal lever and the turn signal lever automatically returns to neutral

You can operate the turn signal lever and light switch like those in an ordinary passenger car.

Fully hydraulic power brake system with a master cylinder

The new brake system offers better braking response and stable braking force.

Electric parking brake system

The parking brake can be turned on and off just by pressing a switch. Furthermore, the parking brake is applied automatically when the engine is shut off, to prevent the truck from accidentally being left unattended without the parking brake set.

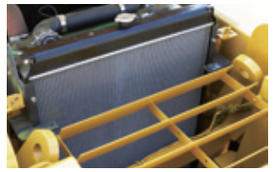
LED instrument panel

The instrument panel uses LEDs for its lighting to provide excellent viewability and give a longer service life than bulbs. An odometer is displayed while the starter switch is turned ON and the engine is OFF. (Meters automatically switch from the odometer mode to the hour meter mode when the engine starts running.)

★The photo above shows the instrument panel with the starter switch ON and the engine OFF.

All aluminum radiator

The all aluminum-made radiator is resistant to corrosion and is environmentally friendly.



Reliable wet disc parking brake

The wet disc brake unit requires no adjustment of the brake pads, making the parking brake maintenance free and thus reducing annual maintenance costs substantially.

Large-capacity fuel tank

The large, 400-liter fuel tank allows longer working hours, which considerably improves operating efficiency.

Use of a "Hybrid fan"

The hybrid fan sharply reduces its operating noise.

Liquid-filled rubber mounts

The operator's cabin is connected to the chassis by liquid-filled rubber mounts (Viscous Mounts) to absorb vibration.

The photo shows an FD230 with optional equipment.

Load handling and traveling interlock system is standard

The load handling and traveling interlock system is a safety device for lift trucks (Complying with ISO/DIS3691 Industrial Vehicle Safety Standards). It helps prevent an accident from happening if the operator of the truck is not in the proper driving position or if a control is moved unintentionally when the operator is not in the operator's seat.

★The interlock system only shifts the transmission into neutral; it does not engage the brakes. When leaving the truck, always apply the parking brake.

A buzzer sounds if the operator leaves his seat while the starter switch is on. After about 3 seconds, the transmission will be locked in neutral, the load handling system will be disabled, and the warning light will come on.

- TCM retains the right to change these products and specifications without incurring any obligation relating to such changes.
- These products and specifications are subject to change without notice.
- Photos and illustrations may or may not include optional equipment and accessories.
- Features and specifications may vary depending on markets.
- Performance data and dimensions are nominal and subject to tolerances.

ISO 9001 Certification (TCM Shiga plant)

ISO 14001 Certification (TCM Shiga plant)

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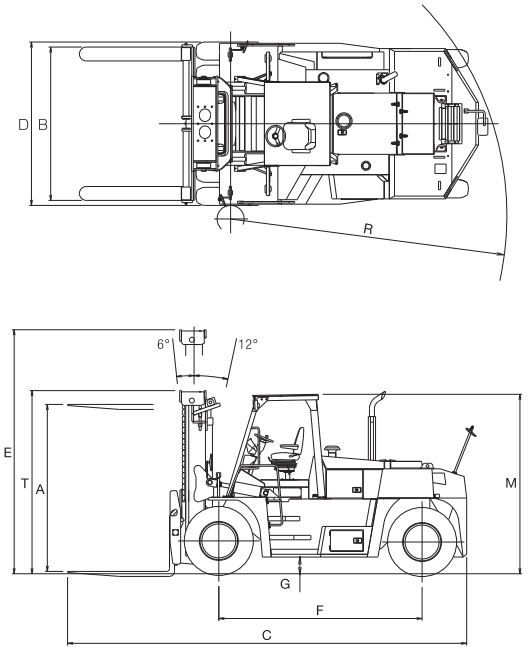
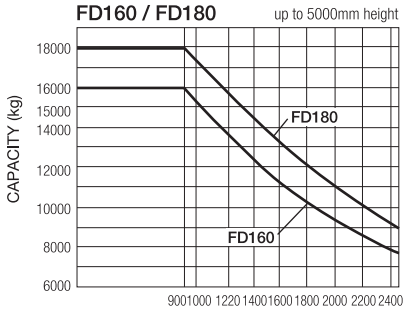
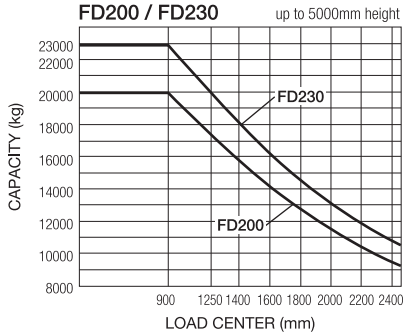
STANDARD DIMENSIONS

mm



LOAD CHART





STANDARD SPECIFICATIONS

● Model				FD160-3	FD180-3	FD200-3	FD230-3
● Characteristics & Performance							
Load Capacity			kg	16000	18000	20000	23000
Load Center			mm	900	900	900	900
Lifting Speed	Full Load		mm/sec	350	280	280	230
Max. Travel Speed			km/h	33	33	33	32
Max. Gradeability	Full Load		%	24	20	17	15
● Dimensions & Weight							
Maximum Fork Height		A	mm	3000	3000	3000	3000
Overall Length : with forks		C	mm	7165	7205	7205	7990
Fork Size	L x W x T		mm	1830x250x90	1830x260x100	1830x260x100	2440x310x98
Fork Spread (outside)	Max./Min.	B	mm	2750/790	2750/810	2750/810	2750/950
Tilt Angle	Fwd./Bwd.		deg	6/12	6/12	6/12	6/12
Length to Fork Fece			mm	5335	5375	5375	5550
Overall Width		D	mm	2970	2990	3060	3060
Mast Lowered Height		T	mm	3290	3545	3575	3580
Mast Extended Height		E	mm	4790	5045	5075	5080
Overhead Guard Height		M	mm	3225	3225	3285	3280
Turning Radius (outside)		R	mm	5000	5000	5150	5350
Total Weight			kg	23030	25440	27460	31080
● Engine & Transmission							
Internal Combustion Engine	Make/Model			ISUZU 6HK1 Diesel engine (with turbo-charger/inter-cooler)			
	Piston Displacement		cc	7790			
	Rated Horsepower		kw/r.p.m.	132/2000			
	Maximum Torgue		N-m/r.p.m.	807/1400			
Transmission	Type			Automatic power-shift transmission			
	Stage (Fwd./Rvs.)			3-3			
● Chassis & Wheels							
Tires Size				12.00-24-18PR	13.00-24-20PR	14.00-24-24PR	14.00-24-24PR
Wheelbase		F	mm	3650	3650	3650	3650
Under-Clearance (Center of Wheelbase)		G	mm	300	330	360	355
Brake	Service (Foot)			Hydraulic dry disc brake			
	Parking			Built in transmission-wet disc brake			
Steering System				Full hydrostatic power steering			

STANDARD EQUIPMENT

- Common rail electronically – controlled diesel engine(Complying with Tire3 and Stage ⅢA regulations)
- Automatic 3-speed powershift transmission
- Hydraulic dry disc brake
- Overhead guard type cab
- Delux suspension seat
- Travel & load handling interlock system
- Electrically-controlled parking brake
- Full hydrostatic power steering with synchronised steering mechanism
- Tilt adjustable steering column
- Hydraulic pilot valve assisted lift/tilt levers
- Arm-rest
- Large capacity fuel tank (400litters)
- Full-power hydraulic brake system with Power Master
- Back-up buzzer
- Cluster instrument panel
- Side view mirrors ·Rear under-view mirror
- Front combination lights:turn signal & clearance
- Rear combination lights:turn signal, tail & stop
- Back-up lights
- Head lights:halogen light
- Cartridge type filters:engine fuel, engine oil, mission oil & hydraulic oil
- Cyclopack type double element air cleaner
- Key-off lift lock system
- Wide view 2-stage mast