

GRENDA

MITSUBISHI FORKLIFT TRUCKS

1 ~ 3.5A ton



N



GRENDIA FGE20CNT

Capacity: 2000kg at 500mm Load Center
Overall length with 920mm forks = 3280mm



ew Logistics Standard

What is the ideal forklift truck for drivers to operate?

How should forklifts respond to the ever increasing demands of development of information and distribution systems?

Mitsubishi's new generation "GRENDA" model is the answer to these questions.

The moment you drive it you will experience the excellent operator comfort and unmatched productivity.

Mitsubishi forklift trucks have a worldwide reputation to be friendly to the environment.

Equipped with a variety of advanced safety features, a new standard in materials handling is set.



GRENDA FD25NT

Capacity: 2500kg at 500mm Load Center
Overall length with 1070mm forks = 3625mm

High Performance

Drive, turn, accelerate, lift and move. Excellent maneuverability.
Power is at hand for performing in even the most severe conditions.

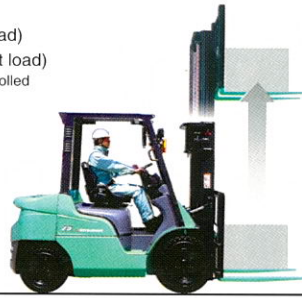


Lift

Load handling performance

The low center of gravity of the new frame ensures safe load handling and excellent residual capacities. Moreover, with or without load, the electronic controlled gasoline engine provides stable lifting speeds.

Lift speed:
680mm/sec (with load)
690mm/sec (without load)
(FGE25ZN electronic controlled gasoline engine type)



***Top-class lifting performance.**
 All 2-stage masts lifting height up to 4m without loss of capacity.

Drive

Driving performance

The newly developed engine and transmission present top-class driving performance. The maneuverability, one of the most important features of a forklift, is now more precised than ever before.

10m Acceleration:
 3.1 seconds
(FD25NT without load)

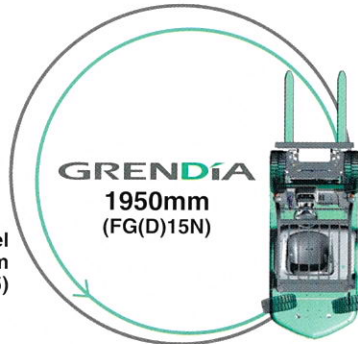
12° Gradeability:
 5.0km/h
(FD25NT without load)



Turn

Turning performance

Full hydraulic power steering allows turning "on-the-spot". With full power available at all times this system realizes top-class turning ability, even in the most confined areas.



Previous Model
 1990mm
 (FG(D)15)

Minimum turning radius:
 FG(D)15N 1950mm
 FG(D)20CN 2020mm
 FG(D)25N 2230mm

Friendly To The Environment

Environmental Performance

Friendly for the operator, friendly for the environment.

EXHAUST EMISSION CONTROL

Electronic Controlled Gasoline Engine with 3-stage Catalytic Muffler.

K15E, K21E, K25E



Reduced by more than 90% compared with previous model. The electronic controlled engine is equipped with a 3-stage catalytic muffler. The result is not just lower exhaust emissions but also higher torque, more power and lower fuel consumption levels as never realized before.



Displacement: 2065cc
 Rated Output: 42kW(57ps)/2700rpm
 Maximum Torque: 160Nm(16.3kgm)/2000rpm

Swirl-Chamber Diesel Engine.

S4Q2, S4S



Reduced by 50% compared with previous model. Major targets during the development of this new model were to limit the pollution caused by exhaust emissions and to reduce the noise levels of the engines. Mitsubishi has succeeded in reaching these targets for the entire range.



Displacement: 3331cc
 Rated Output: 44kW(60ps)/2300rpm
 Maximum Torque: 183Nm(18.7kgm)/1800rpm

Passed Euro Class II Regulation of Exhaust Emission Value (Worldwide)

The S4Q2 and S4S diesel engines do not only comply with the European Class II regulation of exhaust emission values of the Comité Européen de Normalisation (CEN), which is by far the strictest, but also the U.S.A. Tier-2 regulation of exhaust emission value of Environmental Protection Agency (EPA).

Comfortable Operation

A comfortable ride similar to today's passenger cars.
Automotive type features integrated in the dashboard.
Comfortable compartment for the operator to work in.



Entire Power Line Full Floating Realizing Low Vibration Levels

The principle of a full floating power train is proven technology in the automotive industry. Mitsubishi was among the first to introduce this technology on forklift trucks and has fine-tuned the system on this new model. The results are even lower vibration levels, just like in passenger cars, providing a comfortable working position for the driver.

Low Noise Levels

The noise that is coming directly from the exclusively developed engine and transmission is reduced tremendously. Improving the airflow to the engine and the careful choice of sound absorbing materials inside the engine compartment has further reduced noise levels. The reduction of noise both inside the compartment as well as the noise emitted to the surrounding ensures a quieter working environment.

Noise Level At Operator's Ear

77.5dB

(CEN standard: FD25NT with Sound Suppression Kit option)



Quality foam inside the engine cover as noise absorber.

Excellent Forward Visibility

A wide and unobstructed forward view is the trademark of Mitsubishi. The rigid structure of the mast and smart layout of the cylinders improve fast and safe working. Because of the low dash the visibility at the fork tip is excellent.



Rear Visibility

The new design of the counterweight with the strong wedge shape provides a clear full view of the rear while driving backwards.



Full Suspension Seat With Hip Restraint

The new machine is equipped with a new type of seat providing improved seating stability, more comfort while driving and easier on and off access. With the backrest reclining function, the weight-adjust system and its capability to slide forth and back, every operator can find a comfortable position.



Wide And Open Floor Area

As the height, angle and operating force of the pedals are improved Mitsubishi has accomplished easy operation for all drivers. As the steering valve is integrated in the steering column, the steering rod in the floor area is eliminated. The tilt cylinders have also been appropriately arranged, allowing wider floor space while maintaining rigidity.

Open Step

The wide and open step with non-slip plate provides easy on and off access. This is the design Mitsubishi focused on.



Soft Landing

When the forks are lowered and approach ground level, the lowering speed is slowed down automatically. The load is protected from the shock of hitting the ground.
(2-stage masts only)



ALS* **option** (Mast Vertical System)

When the operator tilts the mast forward without load and simultaneously pushes the ALS button, the mast stops in the vertical position, consequently placing the forks horizontally.

*Automatic Leveling System



Easy Operation

New and excellent driver's compartment provides an unobstructed view in all directions. The ease in operation substantially improves efficiency.





A
Electric FNR Lever
(Automatic Transmission Models)

The FNR lever is easily controlled with a fingertip. It is conveniently placed and needs no extra effort in reaching.



B
Power Steering With 100% Standstill Steering

Full hydraulic power steering with 100% standstill steering reduces the steering force substantially. With steering synchronizer, the steering angle of the rear tires always corresponds with the position of the steer knob on the steering wheel, leading to safer and more comfortable steering. **Steering operating force: Reduced by 20% (compared with the previous model)**



C
Combination Lever

Automotive type lever integrates control of the lights and the automatic return indicator. It is conveniently placed.



D
Parking Brake Lever

The double action-type parking brake lever, like in passenger cars, is released by keeping the top button pressed. Mitsubishi's safety system activates an alarm buzzer if the park brake lever is released while the engine is off.



Tiltable Steering Column

The steering column can be fixed in every possible position within the tilt range. Tilt position memory system, which remembers operator's preferred tilt, is equipped.



Multi-synchro Transmission
(Manual Transmission Models)

Thanks to the incorporation of a multi-synchro transmission, the operating force to shift the transmission has been reduced, making shifting a lot easier.



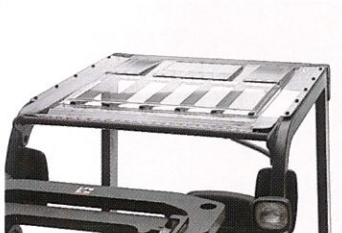
E
Switch Panel

On the right side of the dash, space is reserved for switches of optional functions.



F
Cup Holder

An automotive type cup holder is integrated in the dash area.



Transparent Roof

Removable roof with rain gutter is available as an option.

Active Safety

Mitsubishi's new forklift features Integrated Presence System that actively reduces the risk of accidents.

Instrument Panel

A large display is centrally located, behind the steering wheel within line of sight of the operator. The combination of the new LCD monitor, gauges and alarm lights provides all information necessary for the operator and service engineer. If a breakdown occurs, the self-diagnostic system shows an error code on the LCD display identifying the cause. The new LAN:CAN-bus system has created a leading-edge IT feature.



Park Brake Indicator

When the park brake lever is applied, a park brake indicator on the display lights up. If the park brake is released and the engine is not running, an alarm buzzer goes off.



Seatbelt Warning Indicator

A warning lamp on the display lights up when the seat-belt is not used while seated, just like in passenger cars.



Multi-purpose Indicator

When there is a minor accident, the multi purpose indicator lights up. Mitsubishi's new model is equipped with a monitoring system utilizing the in-vehicle LAN functionality.

Mast and Traveling Interlock System

Mitsubishi seats are equipped with a unique interlock switch. When the operator leaves the seat, this seat-switch is activated and the operation of the mast and shifting* transmission of the vehicle (automatic transmission type) will be locked. This is the safety system of the next generation of forklifts and gained from Mitsubishi's experience in the forklift industry over the past 10 years.

*It does not mean brakes are automatically applied during Travelling Interlock. Truck will still move on slopes due to gravity.



Neutral Indicator

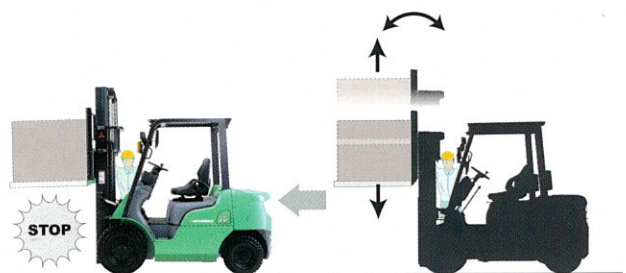
For automatic transmission types, the neutral indicator lights up if the shift lever is set to neutral when the operator is seated. If the seat is empty, the neutral indicator blinks to warn that the forward/reverse function is interlocked.

For manual transmission types, the neutral indicator lights up when the shift lever is set to neutral regardless if there is an operator in the seat.



Mast Interlock Indicator

The mast interlock indicator blinks when the seat is empty to indicate that the mast cannot be activated.



GRENDA

Lifting, tilting and shifting (automatic transmission types) is not possible when the seat is empty.

Previous model

Lifting, tilting and shifting is possible even if the seat is empty.



Neutral Safety Start System

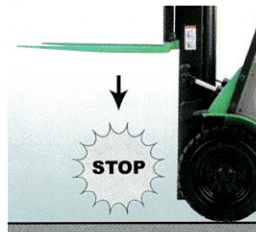
The FNR lever has to be in Neutral position before the engine can be started. This prevents the unexpected "jack-rabbit" start.

Drum Brakes Bring Reliable Braking Power

Along with the improvement of the engine performance, the brake performance is improved. The braking response is drastically improved by increasing the rigidity and capacity of the brake drum and brake shoe. A stable brake performance is realized at any situation.

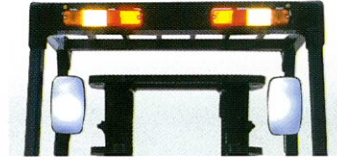
Lift Lock System

Mitsubishi's new Lift Lock System prevents the mast from lowering when the lift lever is operated and the engine is off. This prevents potentially dangerous situations.



High Mounted Rear Combination Lamp

The rear combination lamp is mounted on the upper rear cross bar of the head guard for improved visibility by surrounding workers or other operators.



Automatic Response To Engine Breakdown (Electronic Controlled Gasoline engine)

The engine revolutions are automatically controlled when the engine coolant temperature is getting too hot or the battery voltage becomes low. This is possible due to the combination of in-vehicle LAN:CAN-bus and the electronic controlled gasoline engine.

Rigid Frame With Low Center Of Gravity

The completely new designed frame withstands the most severe and harsh conditions.



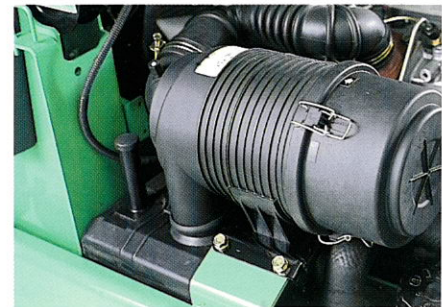
Easy Maintenance

Durable components to increase reliability and service intervals.
All items that require daily inspection are located within easy reach.



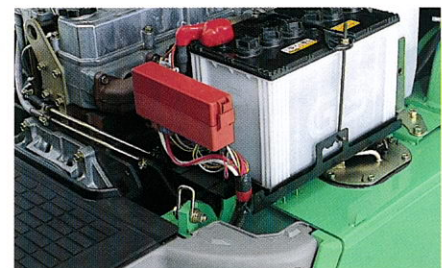
Removable Side Cover

The removable side cover and wide opening range of the engine cover provides unobstructed access to the engine compartment.



Easy Replacement Of Air Filters

Convenient arrangement of the air cleaner allows easy replacement of its filter.



Efficient Layout

The fuse box, relays and battery are clustered in one location. This layout provides easier inspection and maintenance.

Options

MAST VARIATIONS

Various masts with wide variations are available .
Select the type appropriate for your working place and operation.

- 2-stage mast
- 2-stage full-free mast
- 3-stage full-free mast

■ The “Green” Truck, Caring For The Environment

LPG Engine

Forklifts with LPG engines are friendly to the environment and LPG models benefit from the low fuel costs.

Black Smoke Reducing DPF System

The built-in ceramic filter in the muffler of the diesel models collects all black smoke. The collected soot is burnt by a built-in heater in the muffler and the filter is recovered.



The recovering unit is located within the right step.



The monitor of the DPF muffler indicates the clogging situation of the filter and recovering time.



● LPG Tank Swing Bracket

This tank bracket facilitates replacement of LPG tanks.

- This means no lifting of the bottle over the counterweight.
- Replacing the gas bottle can be done within the vehicle width. The operation in narrow aisles is thus possible.



Sound Suppression Kit

To have even lower noise levels, a belly plate with sound absorption material, an additional intake silencer and an insulated radiator cover can be ordered as a kit.

Panel Cabin

A panel cabin can be mounted on the standard overhead guard.

ATTACHMENT

For faster and more efficient operations, various attachments are available.



● Side shifter



● Hinged fork



● Fork positioner



● Rotating fork



● Rotating roll clamp



● Load stabilizer



● Bale clamp

- Others: Attachments meeting your specific requirements are available. Please feel free to contact your local dealer.

Equipments At-A-Glance

		Electronic Controlled Gasoline Engine		Gasoline Engine		Diesel Engine	
		Torque Converter	Direct Drive	Torque Converter	Direct Drive	Torque Converter	Direct Drive
Operator's Compartment	Steering with tilt position memory system	○	○	○	○	○	○
	Full hydraulic steering with Steering Synchronizer	○	○	○	○	○	○
	Combination switch with auto return indicator	○	○	○	○	○	○
	Electric automatic FNR shift lever	○	—	○	—	○	—
	Neutral safety start system	○	○	○	○	○	○
	Suspension seat with hip restraint feature	○	○	○	○	○	○
	Mast and traveling interlock system	○	○ * 1	○	○ * 1	○	○ * 1
	Cup holder	○	○	○	○	○	○
	Double action parking brake	○	○	○	○	○	○
	Anti-restart lock	○	○	○	○	○	○
	Open step	○	○	○	○	○	○
	Inching pedal	○	—	○	—	○	—
	Floor mat	○	○	○	○	○	○
	Speed meter	OP	OP	OP	OP	OP	OP
Foot heater	OP	OP	OP	OP	OP	OP	
Instrument Panel	Water temperature	○	○	○	○	○	○
	Fuel meter	○	○	○	○	○	○
	LCD hour meter	○	○	○	○	○	○
	Brake liquid level warning lamp	OP	OP	OP	OP	OP	OP
	Engine oil pressure warning lamp	○	○	○	○	○	○
	Battery charge lamp	○	○	○	○	○	○
	Diesel vehicle glow pilot lamp	—	—	—	—	○	○
	Diesel vehicle fuel filter drain warning lamp	—	—	—	—	○	○
	Seatbelt indicator	○	○	○	○	○	○
	Neutral indicator	○	—	○	—	○	—
	Parking indicator	○	○	○	○	○	○
	Mast interlock indicator	○	○	○	○	○	○
	Error code indicate at the breakdown	○	○	○	○	○	○
	Air cleaner dust indicator lamp + Radiator coolant level warning lamp	OP	OP	OP	OP	OP	OP
Torque convertor oil temperature warning lamp	OP	—	OP	—	OP	—	
Exterior	Rear-view mirror	○	○	○	○	○	○
	Back-up buzzer	○	○	○	○	○	○
	Halogen front headlight	○	○	○	○	○	○
	Front indicator light	○	○	○	○	○	○
	High mounted rear combination lamp	○	○	○	○	○	○
	Assist grip	○	○	○	○	○	○
	Engine cover with sound insulator	○	○	○	○	○	○
	Engine side cover with sound insulator	○	○	○	○	○	○
	Transparent roof	OP	OP	OP	OP	OP	OP
	Revolving Lamp on head guard	OP	OP	OP	OP	OP	OP
	Front Working Lamp	OP	OP	OP	OP	OP	OP
	Rear Working Lamp	OP	OP	OP	OP	OP	OP
	Sound Suppression Kit	OP	OP	OP	OP	OP	OP
	Front glass	OP	OP	OP	OP	OP	OP
Panel cabin	OP	OP	OP	OP	OP	OP	
Mast	Soft landing lift cylinder (2SP)	○	○	○	○	○	○
	Lift lock	○	○	○	○	○	○
	ALS (Automatic Leveling System)	OP	OP	OP	OP	OP	OP
Engine/Motors	Auto choke	—	—	○	○	—	—
	Multi-synchro transmission (Direct Drive models)	—	○	—	○	—	○
	Cyclone air cleaner	○	○	○	○	○	○
	Elevated air intake	○	○	○	○	○	○
	Three-stages catalytic muffler	○	○	—	—	—	—
	Black smoke eliminating equipment DPF	—	—	—	—	OP * 2	OP * 2
	Engine full floating	○	○	○	○	○	○
	Aluminum radiator	○	○	○	○	○	○
	Anti-clogging radiator (R/CSQ)	OP	OP	OP	OP	OP	OP
	Radiator dust-proof net	OP	OP	OP	OP	OP	OP
Cyclone muffler	OP	OP	OP	OP	OP	OP	
Speed limiter	OP	OP	—	—	OP * 3	OP * 3	

○: Standard equipment OP: Optional equipment —: Not Available

*1:The traveling interlock system is not equipped on the direct drive (manual transmission) vehicle.

*2:This is not available for 1.0 ton models.

*3:This is only for electronic controlled vehicles.

Capacity Table (standard single pneumatic tires @500mm load center)

	Maximum Lift Ht. (mm)	Maximum Capacity (kg)				Mast Overall Height (mm)	
		FG (D) 10N	FG (D) 15N	FG (D) 18N	FG (D) 20CN	Lifted (w/backrest)	Lowered
Simplex Mast	2000	1000	1500	1750	2000	3055	1495
	2560	1000	1500	1750	2000	3615	1775
	3000	1000	1500	1750	2000	4055	1995
	3290	1000	1500	1750	2000	4345	2140
	3530	1000	1500	1750	2000	4585	2260
	3720	1000	1500	1750	2000	4775	2400
	4090	975	1475	1750	2000	5145	2585
	4480	950	1425	1450	1950	5535	2790
	5000	900	1000	1000	1400	6055	3050
	Duplex Mast	2800	1000	1500	1750	2000	3855
3000		1000	1500	1750	2000	4055	1995
3295		1000	1500	1750	2000	4350	2140
3515		1000	1500	1750	2000	4570	2260
3700		1000	1500	1750	2000	4755	2400
4030		975	1475	1750	2000	5085	2585
3710		1000	1500	1750	2000	4765	1795
Triplex Mast	4010	975	1450	1725	2000	5065	1895
	4310	925	1425	1625	1950	5365	1995
	4750	900	1225	1225	1900	5805	2140
	5090	850	975	975	1325	6145	2260

*FG(D)20CN: Capacities shown are with solid pneumatic tires.

	Maximum Lift Ht. (mm)	Maximum Capacity (kg)		Mast Overall Height (mm)	
		FG (D) 20N	FG (D) 25N	Lifted (w/backrest)	Lowered
Simplex Mast	2000	2000	2500	3055	1495
	2570	2000	2500	3625	1790
	3000	2000	2500	4055	1995
	3300	2000	2500	4355	2145
	3540	2000	2500	4595	2265
	3740	2000	2500	4795	2410
	4100	2000	2500	5155	2590
	4500	1950	2250	5555	2800
	5000	1750	1750	6055	3050
	Duplex Mast	2820	2000	2500	3875
3000		2000	2500	4055	1995
3300		2000	2500	4355	2145
3530		2000	2500	4585	2265
3700		2000	2500	4755	2410
4020		2000	2500	5075	2590
3730		2000	2500	4785	1805
Triplex Mast	4030	2000	2500	5085	1905
	4300	1950	2450	5355	1995
	4750	1900	2150	5805	2145
	5060	1750	1750	6115	2265
	5500	1300	1300	6555	2410
5990	950	950	7045	2590	

	Maximum Lift Ht. (mm)	Maximum Capacity (kg)	Mast Overall Height (mm)	
			FG (D) 30N	Lifted (w/backrest)
Simplex Mast	2000	3000	3055	1530
	2560	3000	3615	1810
	3030	3000	4085	2045
	3270	3000	4325	2165
	3510	3000	4565	2285
	3700	3000	4755	2430
	4000	3000	5055	2610
	4500	2950	5555	2870
	5000	2850	6055	3120
	Duplex Mast	2770	3000	3825
3000		3000	4055	2045
3250		3000	4305	2165
3490		3000	4545	2285
3700		3000	4755	2430
4010		3000	5065	2610
3690		3000	4745	1825
Triplex Mast	3990	3000	5045	1925
	4320	3000	5375	2045
	4700	2900	5755	2165
	5060	2800	6115	2285
	5450	2750	6505	2430
5970	2050	7025	2610	

	Maximum Lift Ht. (mm)	Maximum Capacity (kg)	Mast Overall Height (mm)	
			FG (D) 35AN	Lifted (w/backrest)
Simplex Mast	2000	3500	3055	1650
	2570	3500	3625	1940
	3000	3500	4055	2180
	3300	3500	4355	2300
	3530	3500	4585	2445
	3720	3500	4775	2510
	4000	3500	5055	2765
	4500	3500	5555	3010
	5000	3400	6055	3260
	Duplex Mast	2760	3500	3815
3010		3500	4065	2180
3300		3500	4355	2300
3500		3500	4555	2445
3720		3500	4775	2625
4000		3500	5055	2765
3730		3500	4785	1940
Triplex Mast	4010	3500	5056	2060
	4390	3500	5445	2180
	4700	3450	5755	2300
	5030	3350	6085	2445
	5580	2800	6635	2625
	6000	2050	7055	2765



GRENDIA



enquiry@mitforklift.com.sg
www.mitforklift.com.sg

Copyright (c) 2004 by MCFS, All Rights Reserved. All registered trademarks are the property of their respective owners. Printed in Singapore.

FMIT0057

01/04

PRESENTED BY:



NG AI LING

H/P : 012 – 313 8168

Email : hsieg.ailing@gmail.com

Hup Soon Industrial Equipment Sdn Bhd
(783548-T)

13, Jalan Jurutera U1/23, Sek U1, Hicom Glenmarie
Ind Park 41050 Shah Alam, Selangor

Tel: 03-5569 5155 Fax: 03-5569 2880

Note: Performance specifications may vary depending on standard manufacturing tolerances, vehicle condition, types of tyres, floor or surface conditions, applications or operating environment. Trucks may be shown with non-standard options. Specific performance requirements and locally available configurations should be discussed with your distributor of Mitsubishi Forklift Trucks. Mitsubishi follows a policy of continual product improvement. For this reason, some materials, options and specifications could change without notice.