

# MAINTENANCE



## CENTRALIZED MAINTENANCE POINTS FOR EASY INSPECTION AND MAINTENANCE

Inspection and maintenance is made easy thanks to a fully extendable engine hood, removable side covers and centralized maintenance points. In addition, the time intervals between oil changes and lubrication requirements have been increased, resulting in lower maintenance costs.



*Ready to Perform  
To Your Applications*



# GRENDIA

Internal Combustion Pneumatic Tyre  
1.5–3.5 ton



[www.mitforklift.com.sg](http://www.mitforklift.com.sg)

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(11/11)



PRESENTED BY:

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 Mitsubishi forklift truck dealers. Mitsubishi Forklift Trucks follows a policy of continual product improvement. For this reason, some materials, options and specifications could change without notice.

# SETTING NEW STANDARDS

Mitsubishi

# GRENDIA

## Series Forklift Trucks



FGE15N

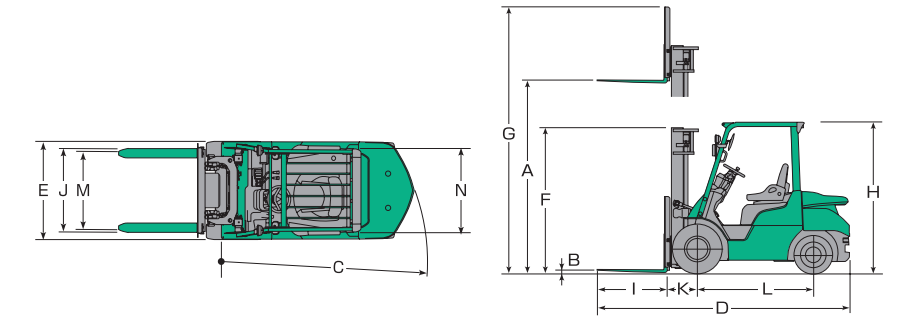
Electronically controlled gasoline engine  
Capacity rating 1500kg @ 500mm load center

A next generation, higher performance machine.

Thanks to the application of new technologies, the Mitsubishi Grendia is not only easier to operate but friendly to the environment as well.

The new Mitsubishi Grendia's engine is very fuel-efficient and has ultra low emissions, which either complies with or exceeds the latest international environmental standards. In addition to its newly designed engine, Mitsubishi Forklift Trucks has increased rider comfort and enhanced safety. For instance, all Grendia forklift trucks incorporate an Integrated Presence System (IPS), which enhances safety and helps reduce accidents. LCD graphic displays and digital monitoring systems also make the Grendia safer and more efficient.

It's the forklift of tomorrow that's available today.



GASOLINE ENGINE TRUCK											ELECTRONICALLY CONTROLLED GASOLINE ENGINE TRUCK																														
FG15N		FG15ZN		FG18N		FG18ZN		FG20CN		FG20N		FG20ZN		FG25N		FG25ZN		FG30N		FG35AN		FGE15N		FGE18N		FGE20CN		FGE20N		FGE20ZN		FGE25N		FGE25ZN		FGE30N		FGE35AN			
1500		1500		1750		1750		2000		2000		2500		2500		3000		3500		3000		1500		1750		2000		2000		2500		2500		3000		3500					
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560		650		560		650		650		600		660		600		660		530		450		650		650		590		660		590		660		530		440					
520		520		520		520		520		500		500		530		420		530		420		520		520		500		500		500		530		420							
500		500		500		500		500		500		500		500		400		500		400		500		500		500		500		500		500		400							
6		6		6		6		6		6		6		6		6		6		6		6		6		6		6		6		6		6							
12		12		12		12		12		12		12		12		12		12		12		12		12		12		12		12		12		12							
19		19		19		19		19		19		19		19		19		19		19		19		19		19		19		19		19		19							
19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5		19.5							
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1130		1110		1530		1090		1520		1480		1520		1750		1500		1730		1710		1630		1710		1670		1690		1860		1690		1870		1860		1750			
990		960		1280		950		1270		1230		1280		1620		1250		1590		1590		1500		1390		1380		1360		1390		1630		1380		1620		1660		1560	
38		29		41		25		36		31		30		35		25		30		24		20		48		42		36		34		38		29		33		27		22	
33		24		33		22		29		25		25		32		21		27		22		19		38		34		29		28		33		24		28		20			
1910		1950		1950		1980		1980		2020		2200		2230		2230		2380		2440		2380		1950		1980		2020		2200		2230		2380		2440					
2045		2065		2065		2080		2080		2105		2195		2215		2215		2325		2365		2325		2065		2080		2105		2195		2215		2325		2365					
3610		3650		3650		3680		3680		3735		3955		3985		3985		4170		4230		4170		3650		3680		3735		3955		3985		4170		4230					
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4.50-12-8-PR											4.50-12-8-PR																														
5.00-8-8-PR											5.00-8-8-PR																														
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2170											2170																														
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Hyd.											Hyd.																														
Hand											Hand																														
K15											K15																														
26 / 2450											26 / 2450																														
35.4 / 2450											35.4 / 2450																														
109 / 2000											109 / 2000																														
11.1 / 2000											11.1 / 2000																														
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46											46																														
Powershift / Manual											Powershift / Manual																														
AT:1 / MT:2											AT:1 / MT:2																														
18.1											18.1																														
K21											K21																														
34 / 2200											34 / 2200																														
46.2 / 2200											46.2 / 2200																														
158 / 1600											158 / 1600																														
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186 / 1600											186 / 1600																														
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# MOVING AHEAD

FD25N

Diesel engine

Capacity rating 2500kg @ 500mm load center

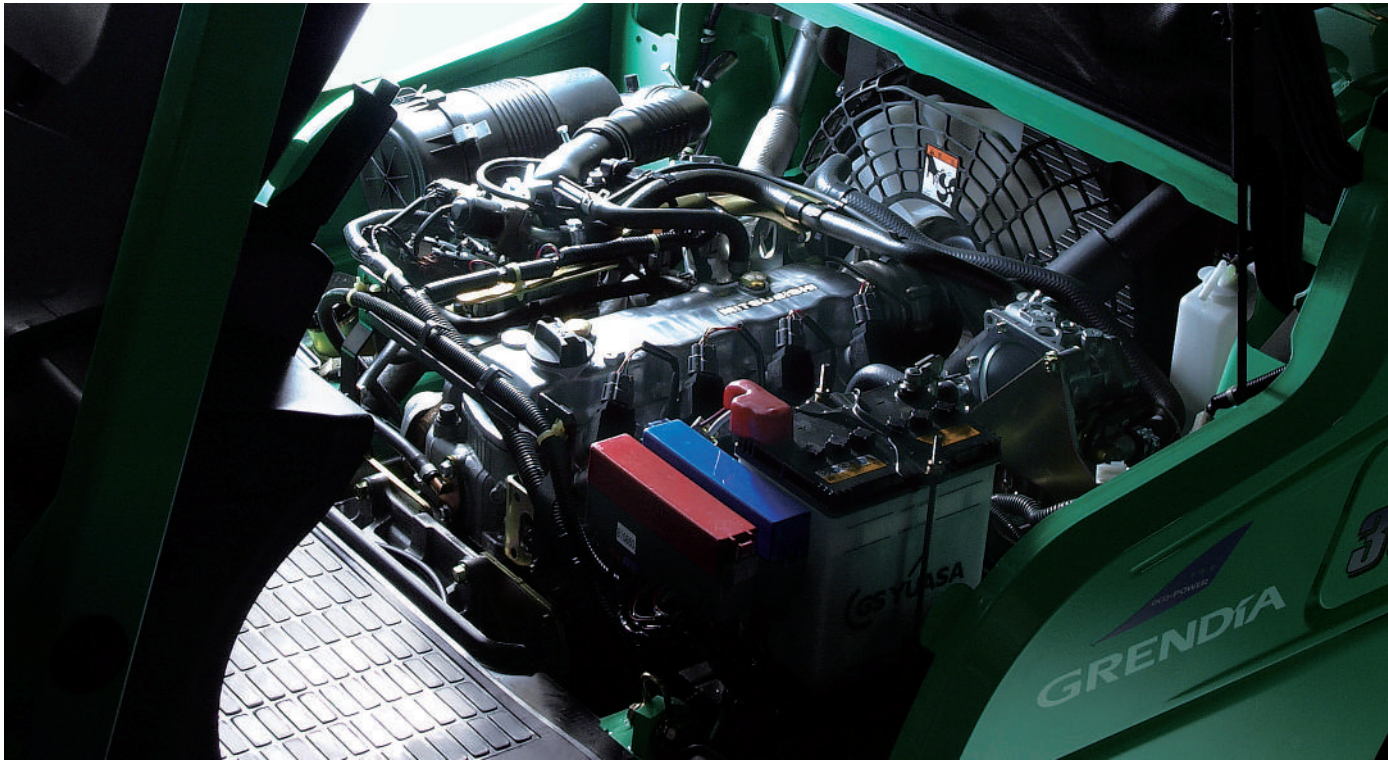


3PR  
2PR

MITSUBISHI

# GRENDIA'S ECO-POWER

**MEETS THE ENVIRONMENTAL REQUIREMENTS OF TODAY AND TOMORROW.**



**NEW 2007 EMISSION STANDARDS COMPLIANT\*:  
NEW ELECTRONICALLY CONTROLLED GASOLINE ENGINE**

Mitsubishi Grendia's advanced gasoline engine, which helped pioneer the standard use of electronically controlled fuel injection and three-way catalytic converters in forklift trucks, has evolved even further. The new Grendia has achieved remarkable environmental controls and complies with all 2007 Emission Standards while still maintaining high performance and reliability levels.

\* 2007 Emissions Standard for Specific Special Vehicles (including off-road vehicles)  
Compliant with Emissions Standard for Specific Special Vehicles  
Ministry of the Environment  
Ministry of Economy, Trade and Industry  
Ministry of Land, Infrastructure and Transport



■ Electronically controlled gasoline engine K25E



■ Three-way catalytic converter

**TWO-LEVEL HIGH/LOW SPEED LIMITER**



The Grendia's automatic speed limiter can be set to two levels – outdoors (HIGH) and indoors (LOW).

Drivers can alternate between the two speed limits at the flick of a switch, helping them to choose the most appropriate fuel efficiency for the location.

- Standard for Electronically Controlled Gasoline Engine Trucks

**POWER/SOFT MODE SWITCH**



Depending on the task, two power levels can be selected: POWER mode, which maximizes power output and SOFT mode for fuel efficiency and low noise levels. Selecting SOFT mode cuts CO<sub>2</sub> emissions by approximately 13% compared to the POWER mode.

- Standard for Electronically Controlled Gasoline Engine Trucks

## 2007 EMISSION STANDARDS COMPLIANT\*: HIGH RELIABILITY DIESEL ENGINE

The well-known performance levels of the highly acclaimed Mitsubishi Diesel Engine have been maintained but now come with eco-friendly refinements. The upgraded engines have now achieved low emission levels in compliance with the 2007 Emission Standards without compromising horsepower or reliability.

- 2007 Emissions Standard for Specific Special Vehicles (including off-road vehicles)  
Compliant with Emissions Standard for Specific Special Vehicles  
Ministry of the Environment  
Ministry of Economy, Trade and Industry  
Ministry of Land, Infrastructure and Transport



■ Swirl-chamber diesel engine S4S



## LOW-NOISE DESIGN FOR MAXIMUM COMFORT WITH MINIMAL OPERATOR FATIGUE

With features such as low-noise engine, enhanced soundproofing of the engine compartment and floor level noise dampening, Mitsubishi Forklift Trucks has achieved a quiet working environment both for the operator and the surrounding working environment.

- ISO-equivalent noise level (When diesel engine is in SOFT mode at high idle speed)



## OPTIONAL ECO-FRIENDLY VEHICLES WITH CLEAN EXHAUST EMISSIONS

Besides the gasoline-powered and diesel-powered models, the Grendia is also available in other clean exhaust, energy-efficient models. These include LPG-powered or diesel trucks fitted with DPF (Diesel Particulate Filter) that helps eliminate possible black smoke.

■ LPG powered version



Vehicle fitted with DPF helps eliminate black smoke.



The ceramic DPF filter recovery unit is fitted inside the right-side step of the machine.



DPF exhaust monitor. Displays filter levels and necessary recovery time.

# “SAFETY FIRST”

## – YET ANOTHER GRENDIA HALLMARK



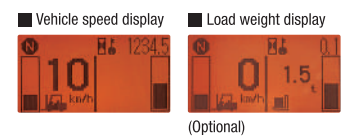
### INTEGRATED PRESENCE SYSTEM – “IPS”



*Grendia is fitted with Mitsubishi’s IPS, an integrated active safety system designed to improve vehicle safety by actively detecting problems before they become accidents. It not only ensures safety during vehicle operation but also prevents errors when the operator is not seated, protecting both the operator and the workplace from potential accidents.*

#### NEW INTEGRATED DIGITAL MONITORS

In the cab, digital displays are used to provide easier monitoring of systems and controls. The digital panel illuminates when the ignition is switched on allowing speed, load weight and system monitors to be checked at a glance.



#### MAST AND TRAVEL INTERLOCK

Mitsubishi Grendia forklift trucks are equipped with mast and travel interlock protection device that is linked to the operator’s seat. If the operator is not seated, the mast and (for torque-converter models) the movement of the vehicle itself, is automatically locked in order to prevent injury or damage to property.

- Note that brakes are not applied in travel interlocking, so trucks can still move on slopes due to gravity.



#### LIFT LOCK

The fork on the Mitsubishi Grendia is automatically locked when the ignition is switched off, so it remains in position even if the lift lever is accidentally bumped or moved.



# **INNOVATIVE AND RELIABLE SAFETY FEATURES HELP PROTECT OPERATORS AND WORKPLACE**

## **NEUTRAL SAFETY**

A Neutral Safety device, which prevents the engine from starting unless the forward/backward lever is positioned at neutral, is now built in on all vehicles, including all torque-converter-fitted vehicles and all direct drive vehicles.

## **HIGH-MOUNTED REAR COMBINATION LAMP**

All Mitsubishi Grendias are installed with rear combination lamps above the head guard that clearly signals braking or stopping to vehicles or persons behind the forklift truck.



• Positions will differ for forklifts requiring vehicle inspections in Japan.

## **WIDE FORWARD VISIBILITY CLEAR REAR VISIBILITY**

Unlike some forklift trucks, Mitsubishi Grendias have wide unobstructed visibility that extends from the tip of the fork to the top of the mast. Greater rear visibility is made possible by the Grendia's compact tail design.





# POWERFUL, SMOOTH AND COMPACT. EXCELLENT PERFORMANCE FOR SPEEDY WORK.

## POWERFUL LIFTING CAPACITY

Mitsubishi Grendias are constructed with a low center of gravity frame that optimizes vehicle balance and stability during lifting. That means a greater load capacity with much greater stability. The high-torque, high-power engine maintains a stable lift speed regardless of the load, helping operators to increase productivity.



### EXCELLENT LIFTING ABILITY

Lift speed: **640mm/s** (when loaded)  
**660mm/s** (when not loaded) • FGE25ZN  
No capacity deration up to a height of 4 meters (2-stage mast).

### SOFT LANDINGS

Another exclusive feature found on the Mitsubishi Grendia is soft landing system that activates when the fork nears the ground, automatically protecting loads from hard drops or shocks.  
• Only for two-stage masts.

## SMOOTH RUNNING

The high power engine and the high performance transmission are perfectly matched to produce an extremely smooth start/acceleration as well as excellent traction even on uphill slopes. Excellent braking and stopping control is provided by a robust and reliable duo-servo system.



### SMOOTH ACCELERATION

10m acceleration **3.1 seconds** (unloaded)  
• FD25N



### POWERFUL UPHILL ABILITY

12 degree uphill velocity **5.0km/h** (unloaded)  
• FD25N

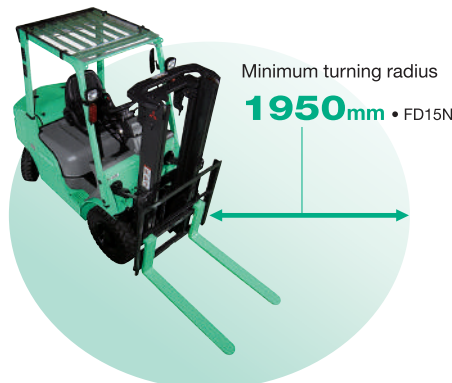


## COMPACT TURNING

Tight turns are easy with the Grendia thanks to a fully hydraulic power steering fitted with steering synchronizer/mechanism for 100% stationary steering. Its maneuverability allows for easy U-turns and navigation in small workspaces.

\* Steering synchronizer is optional on alternate sourced (MFD) Grendia trucks.

### EXCELLENT STEERING ABILITY



### GRENDIAS ARE EASY TO MANEUVER EVEN IN CRAMPED WAREHOUSES AND DELIVERY BAYS





## EASY OPERATION. DRIVER COMFORT.



1 – **Suspension seat** with hip support mechanism. Ability to adjust position and extent of reclining according to body shape for maximum comfort. Seat belt fitted with warning light. Soft-grip handle makes getting in and out easier.



2 – **Electric shift lever** can be moved back and forth at the touch of a finger. (for torque-converter models only)

3 – **Acrylic roof** (optional) for comfortable operation in outdoor conditions. Easily installed and uninstalled.

4 – **Tilttable steering column.**

5 – **Fully hydraulic power steering.**

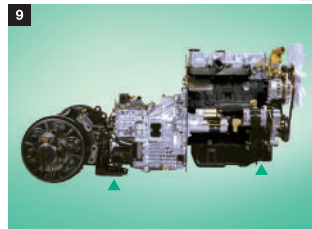
Fitted with steering synchronizer, a mechanism that automatically matches the rear wheel angle to the steering angle.

6 – **Inching pedal** allows delicate movements.

7 – **Switches** for optional functions positioned on the right side of the dashboard.

8 – **Combination switch** integrating indicators and headlight switches.

9 – **Power-train full floating structure** for excellent vibration reduction. The entire power-train is supported by vibration absorbent rubber mounts.



\* Steering synchronizer is optional on alternate sourced (MFD) Grendia trucks.

# Specifications

CHARACTERISTICS												
Type of Truck			DIESEL ENGINE TRUCK									
Model			FD15N	FD18N	FD20CN	FD20N	FD25N	FD30N	FD35AN			
Loading Capacity			kg	1500	1750	2000		2500	3000	3500		
Load Center			mm	500			500		500			
PERFORMANCE												
Maximum Fork Height			mm	A	3000			3000		3000		
Free Fork Height			mm	B	115			120	140		145	
Speeds	Lifting	Loaded	mm/s	640	630		630		500	420		
		Unloaded	mm/s	690			650	660		530	450	
	Lowering	Loaded	mm/s	520			520	500		530	420	
		Unloaded	mm/s	500			500		500	400		
Tilt	Mast	Forward	deg	6			6		6			
		Backward	deg	12			12		12			
Speeds	Traveling (Powershift)	Loaded	km/h	19			19		19			
		Unloaded	km/h	19,5			19,5		19,5			
	Traveling (Manual)	Loaded	km/h	19			19		19			
		Unloaded	km/h	19,5			19,5		19,5			
Maximum Drawbar Pull	Powershift	Loaded	kgf	1290	1260	1250	1210	1830	1810	1770	1680	
	Manual	Loaded	kgf	1200	1180	1160	1130	1500	1480	1460	1380	
Maximum Gradeability	Powershift	Loaded	%	44	33	29	25	36	31	25	21	
	Manual	Loaded	%	40	30	27	23	29	24	20	17	
Turning Radius			mm	C	1910	1950	1980	2020	2200	2230	2380	2440
Practical Intersecting Aisle Width			mm		2045	2065	2080	2105	2195	2215	2325	2365
Practical Aisle for Right Angle Stacking			mm		3610	3650	3680	3735	3955	3985	4170	4230
DIMENSIONS												
Overall Length			mm	D	2980	3180	3220	3275	3405	3480	3805	3865
Width	with Standard Tires		mm	E	1065			1065	1150		1275	1290
	with Optional Duals		mm		1330			–	1480		1490	
Height	with Lowered Mast		mm	F	1990			1990		2015	2130	
	with Extended Mast (with Backrest)		mm	G	4055			4055		4055		
	to Top of Overhead Guard		mm	H	2065			2065	2074		2093	2103
Forks (Thickness x Width x Length)			mm	I	35x100x770	35x100x920		40x122x920		50x125x1070		
Fork Spread (Out-to-Out Minimum / Maximum)			mm	J	200–920			244–920	244–1000		244–1000	
Front Overhang (Center of Front Axle to Fork Face)			mm	K	400			415	455		490	
Wheelbase			mm	L	1400			1400	1600		1700	
Tread Width	Front, standard tires		mm	M	890			890	960		1060	
	Front, optional duals		mm		1025			–	1140		1140	
	Rear tyres		mm	N	900			900	980		980	
Ground Clearance	at Lowest point mast		mm		110			110	115		135	150
	at Center of Wheelbase		mm		150			150	160		190	200
Tyre Size	Size Front, standard				6.50–10–10–PR		6.50–10/5.00	7.00–12–12PR		28x9–15–12PR	250–15–16PR	
	Size Front, optional dual				4.50–12–8–PR		–	5.50–15–8PR		6.00–15–10PR		
	Size Rear				5.00–8–8–PR		5.00–8/3.00	6.00–9–10PR		6.50–10–10PR	6.50–10–12PR	
WEIGHT												
Empty	Powershift (standard)		kg		2180	2550	2740	3060	3410	3710	4350	4740
	Manual (standard)		kg		2220	2590	2780	3100	3450	3750	4390	4780
	Powershift (optional dual)		kg		2220	2590	2780	–	3500	3800	4390	4770
	Manual (optional dual)		kg		2260	2630	2820	–	3540	3840	4430	4810
BRAKE												
Service Brake					Hyd.			Hyd.		Hyd.		
Parking Brake					Hand			Hand		Hand		
POWERTRAIN												
Engine	Model				S4Q2		S4Q2	S4S		S4S		
	Max. Rated Power / rpm to DIN 70020	Kw/rpm		30 / 2500		30 / 2500	38.1 / 2250		38.1 / 2250			
		ps/rpm		40,8 / 2500		40,8 / 2500	51.8 / 2250		51.8 / 2250			
	Max. Rated Torque / rpm to DIN 70020	Nm/rpm		131 / 1800		131 / 1800	185 / 1700		185 / 1700			
		kgm/rpm		13,4 / 1800		13,4 / 1800	18,9 / 1700		18,9 / 1700			
	Displacement		cc	2505			2505	3331		3331		
Fuel Tank Capacity		ℓ	46			46	66		66			
Transmission	Type				Powershift / Manual			Powershift / Manual		Powershift / Manual		
	Number of Speeds				AT:1 / MT:2			AT:1 / MT:2		AT:1 / MT:2		
Relief Pressure			Mpa		18,1			18,1		18,1		