16·20B-9

NO ONE DELIVERS MORE

HYUNDAI
MATERIAL HANDLING

ELEVEX™
Material Handling Solutions

Your satisfaction is our priority.

Robust AC technology!
Hyundai's 9-Series Electric Forklifts

Hyundai's 9-Series brings you powerful, efficient AC technology in a four-wheel, counterbalance forklift engineered to deliver greater productivity with unmatched operator comfort and simplified maintenance.

Work Efficiency & Productivity
- Dual drive motors deliver strong and precise driving performance
- Optimized performance mode setting (H,N,E)
- Easy and efficient directional & horn switch on lever (OPT)
- Curve control
- Load weight indicator (OPT)

Durability & Reliability
- AC motor exclusive - IP65 ZAPI controller
- Semi-permanent wet disc brake
- IP43 AC motor

Safety
- Anti-roll back system
- Turtle mode & Speed limit setting
- Operator Presence Sensing System (OPSS)
- Panoramic rearview mirror

Maintenance
- Self Diagnostics function
- Password starting system

Some of the photos may include optional equipment

Power & Performance

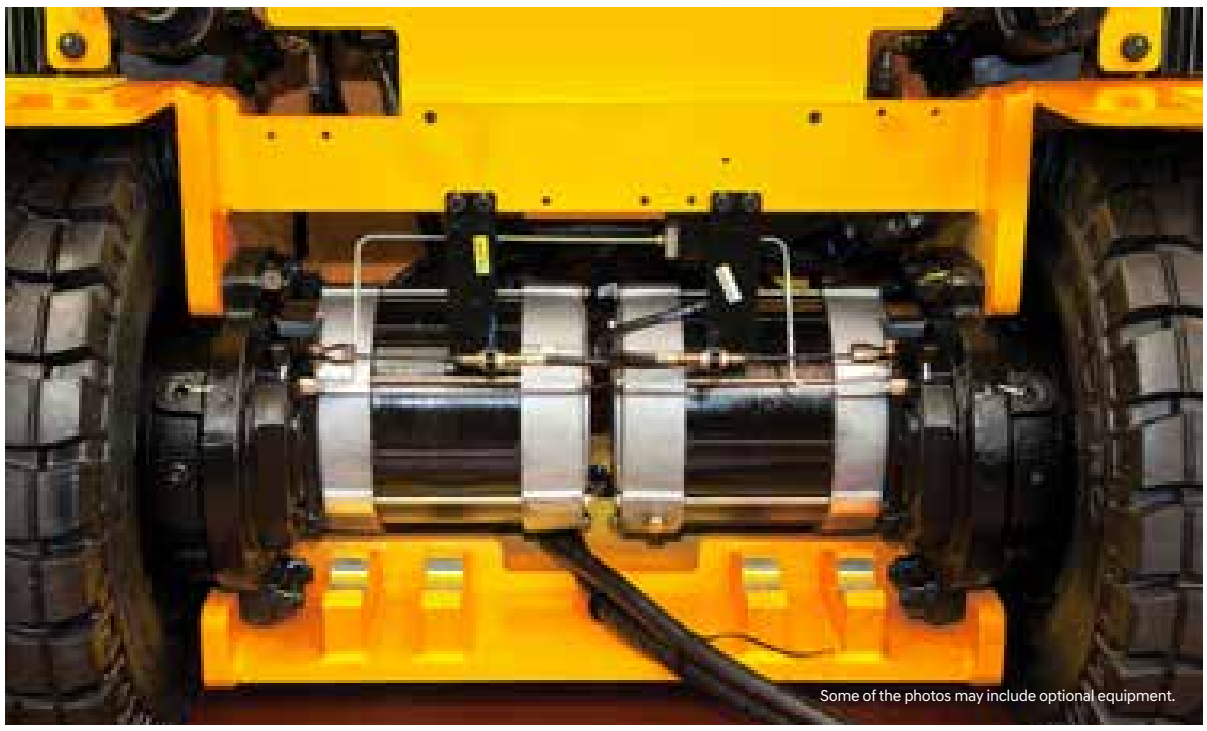
High Efficiency & Optimal Performance

An efficient, smooth running and compact design provides enhanced performance and outstanding productivity.

Some of the photos may include optional equipment.

Strong Driving Power : Dual Drive Motor System

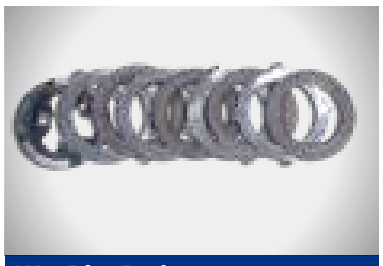
The dual drive motor system consists of two separately controlled drive motors. Unlike the single drive motor system, it prevents the wheels from spinning even when the grip force of the left and right wheels is different. In addition, it enables strong drive performance even on a dirty road. As the pivot point is the axle of the wheels, the dual system enables a relatively small turning radius compared to the single system, thus improving efficiency in small worksites.



Some of the photos may include optional equipment.

Robust, Economical AC Motor

The AC drive and pump motors deliver greater controllability and durability compared to DC motors. Without commutators and brushes, Hyundai AC motors cost less to maintain. Plus, they have an IP43 rating for protection against contamination.

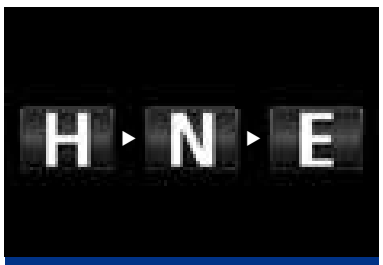


Wet Disc Brake

The semi-permanent wet disc brake provides constant braking force without overheating even when used for long hours of repetitive work, thus improving work efficiency. Without requiring brake linings, which need regular replacement, maintenance costs are relatively low.

ZAPI Controller

The virtually noiseless 8 khz (high frequency) ZAPI controller enables high efficiency control and protects the system from low and high voltages and overheating.



Optimized Operation Mode Setting

Through the cluster and the performance selection function of the ZAPI controller, the operator can select an optimal performance mode depending on working conditions, worksite size and operator proficiency.
H (High), **N** (Normal) to **E** (Economic)

Curve Control

Curve control limits travel speed based on turning radius for a smooth, precise turning operation for the driver.

Extended Battery Life

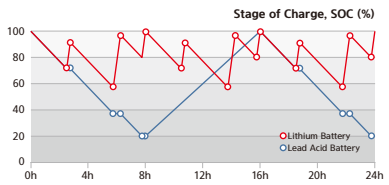
When the operator's foot is lifted from the accelerator, the kinetic energy is converted to electrical energy and stored in the battery. The stored energy reduces energy consumption, improving battery efficiency and cutting costs.

Directional & Horn Switch on Lever (OPT)

Electronic directional control and secondary horn are mounted to the hydraulic lift lever for quick and precise maneuvering.

Fingertip Control Levers (OPT)

The electric control levers reduce operator fatigue, and the ergonomically designed armrests can be adjusted up, down, forward and backward for operator's body types.



• Graph comparing the charge and discharge

Li-ion Battery (OPT)

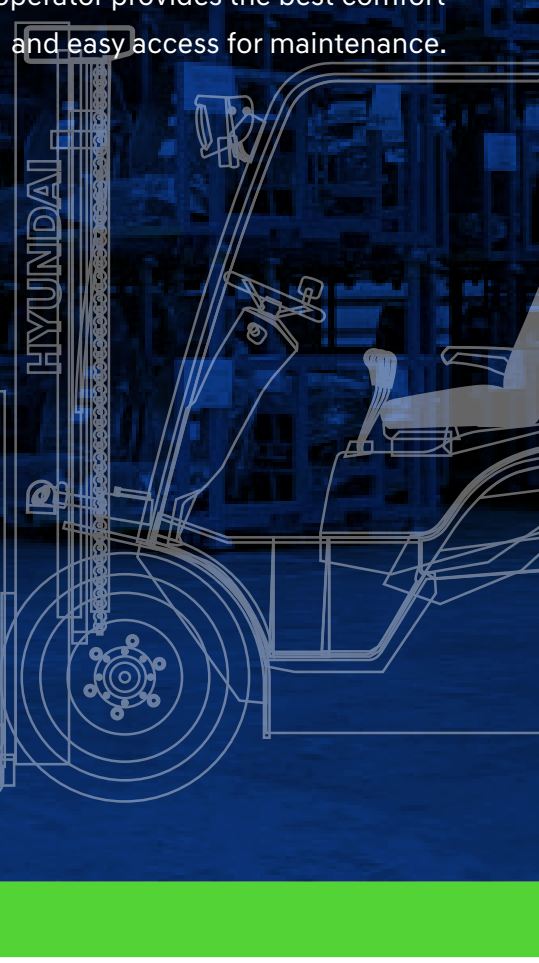
The demand for Li-ion batteries is increasing due to their high energy conversion efficiency and fast charging capability within the 2-hour range.
(Li-ion Battery Capacity : 51.2V/690Ah)

Some of the photos may include optional equipment.

Comfort & Convenience

Optimized Ergonomics & Fast and Easy Maintenance

An ergonomically designed workspace for the operator provides the best comfort and easy access for maintenance.



Ergonomically Designed Workspace

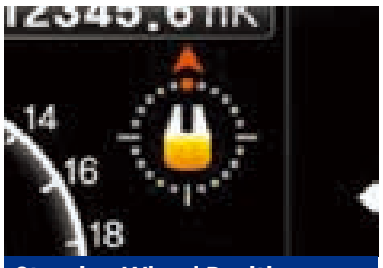
Ergonomic design focusing on operator convenience and maneuverability further enhances work efficiency. Easy to operate levers and pedals, adjustable handle, suspension seat and a large multi-functional cluster dashboard allow comfortable and efficient driving. A 12V power socket is a standard feature to improve operator convenience.

Some of the photos may include optional equipment.

Full Suspension Grammer™Seat

An adjustable ergonomic seat provides unmatched comfort. The adjustable armrest further reduces operator fatigue.

- ELR(Emergency Locking Retractable) type seatbelt
- Seat heater (STD) & headrest (OPT)

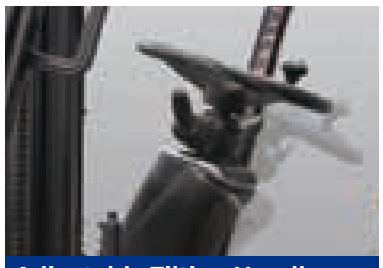


Steering Wheel Position

A steering sensor, applied to the kingpin of the rear axle, communicates with the LCD monitor to show the direction of the vehicle in relation to the angle of the steering wheel.

Open Footplate

Non-slip and wider open steps offer convenience and safety when entering and exiting the vehicle.



Adjustable Tilting Handle

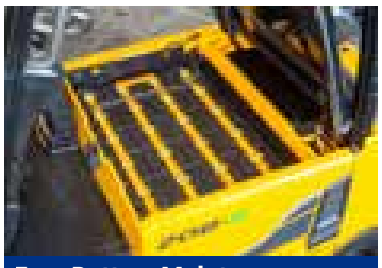
The handle angle can be adjusted with the lever on the right side of the steering wheel to suit the operator's physique and driving habit.

3.5 Inch LCD Color Monitor

The 3.5 inch TFT LCD color monitor indicates speed, steering angle & driving direction, battery charge level and hour meter & working mode, thus allowing easy and efficient control for the operator. In addition, diagnostic error codes allow easy fault diagnosis.

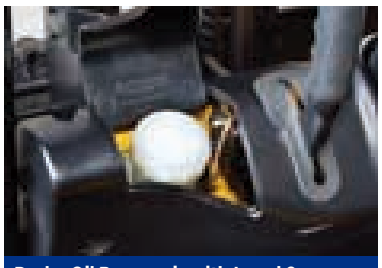
Main Functions of the Monitor

- Steering wheel position & driving direction
- Turtle mode
- Driving speed (Digital)
- Battery discharge indicator
- High temp warning lamp
- Wrench warning light
- Roll up
- ESC
- Menu / Scroll left
- Performance / Scroll right
- Enter
- Turtle / Scroll down



Easy Battery Maintenance

The battery cover opens fully with the assistance of a gas strut that locks when fully opened to give easy access to the battery and to prevent the hood from dropping.



Brake Oil Reservoir with Level Sensor

The enhanced brake oil reservoir, located in the upper left dash, is equipped with an electronic level sensor that shows the level in the LCD color monitor.

Safe & Secure

Advanced Safety

Designed for safety, the operator's compartment gives drivers more comfort and confidence when operating a 9-Series forklift.

Some of the photos may include optional equipment.

Great Visibility for Safe Operation

The optimized lift cylinder array design provides a clear, wide field of vision for the operator. A rear camera (OPT) and panoramic mirror expand the driver's view when backing up.

Some of the photos may include optio

Strong Overhead Guard

Exceeding ISO6055 regulations, the overhead guard offers great protection combined with excellent all around visibility.

Panoramic Mirror

The panoramic mirror expands the driver's view when backing up.

Maximum Speed Control

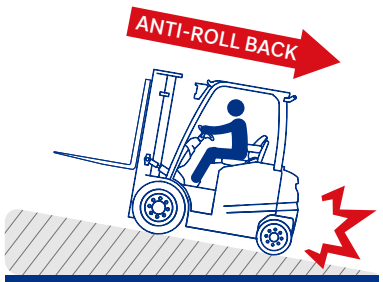
The operator can set and limit the maximum speed from 6.2 mph by .6 mph units, to safely handle the curve and congestion of an aisle and the shape of the load.

Password Starting System

The operator can set a password to prevent vehicle theft and possible safety accidents in case the vehicle is used by an unauthorized person.

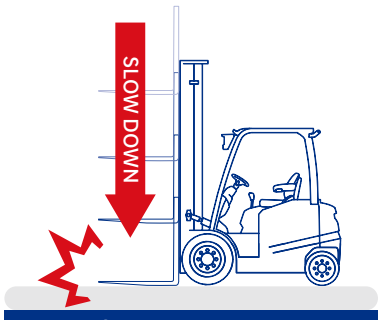
Advanced Safety System Helps Prevent Accidents

The highly sensitive sensor prevents possible accidents from an operator error or unexpected event. The system lets operators focus on work without worrying about safety in intensive work environments.



Anti-roll Back System

This system prevents the forklift from rolling rapidly down a slope when the accelerator & brake pedal are not applied while also offering improved ramp start-up abilities.



Fork Safety Features

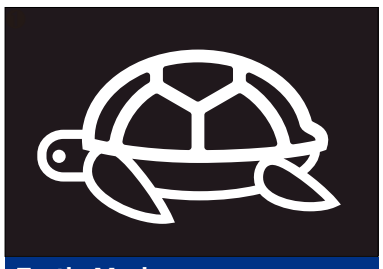
When the forks are being lowered, a down-control valve maintains the controlled speed. The down-safety valve prevents forks from dropping down in case of sudden damage of hydraulic line.

Operator Presence Sensing System (OPSS)

To provide maximum safety, the Operator Presence Safety System (OPSS) requires the operator to be present, in the seat, to have use of the travel and hydraulic functions.

Strengthened Work Safety

Rear LED lights and halogen lights offer excellent visibility even during night operations. Safety has been increased by installing an additional reflector on the counterweight.



Turtle Mode

Selecting turtle mode allows the operator to reduce travel to a pre-set speed, which is ideal when working in narrow and or congested work areas.

9-Series Mast Specifications

16B-9

Mast Type		Maximum Fork Height		Overall Height (Lowered)		Free lift height						Tilt Angle		Load capacity w/o side shift		Load capacity w/side shift		Truck Weight (Unloaded)	
						With Load Backrest		Without Load Backrest		Without Load Backrest (3/4-SPOOL)		Fwd	Bwd	24 in LC	500mm LC	24 in LC	500mm LC		
		in	mm	in	mm	in	mm	in	mm	in	mm	deg	deg	lb	kg	lb	kg	lb	kg
2-STAGE LIMITED FREE LIFT	V300	119.1	3,025	77.6	1,970	1.4	35	1.4	35	1.4	35	5	7	3,200	1,600	2,760	1,420	6,900	3,130
	*V330	130.9	3,325	83.5	2,120							5	7	3,200	1,600	2,710	1,390	6,944	3,150
	V350	138.8	3,525	87.4	2,220							5	7	3,200	1,600	2,670	1,370	6,973	3,163
	V370	146.7	3,725	91.3	2,320							5	7	3,200	1,600	2,620	1,340	7,002	3,176
	V400	158.5	4,025	97.2	2,470							5	7	3,200	1,550	2,540	1,300	7,057	3,201
	V450	178.1	4,525	111.0	2,820							5	5	3,040	1,500	2,340	1,200	7,205	3,268
2-STAGE FULL FREE LIFT	VF/VS330	130.9	3,325	83.5	2,120	44.2	1,122	64.1	1,629	58.6	1,489	5	5	3,200	1,600	3,090	1,530	7,033	3,190
3-STAGE FULL FREE LIFT	TF400	158.9	4,035	73.6	1,870	34.3	872	51.4	1,305	45.9	1,165	5	5	3,060	1,500	2,820	1,440	7,200	3,266
	TF430	170.7	4,335	77.6	1,970	38.3	972	55.3	1,405	49.8	1,265	5	5	3,000	1,475	2,760	1,420	7,242	3,285
	TF450	178.5	4,535	81.5	2,070	42.2	1,072	61.2	1,555	55.7	1,415	5	5	2,950	1,450	2,710	1,390	7,286	3,305
	TF470	186.4	4,735	83.5	2,120	44.2	1,122	61.2	1,555	55.7	1,415	5	5	2,910	1,420	2,670	1,370	7,308	3,315
	TF500	198.2	5,035	87.4	2,220	48.1	1,222	65.2	1,655	59.6	1,515	5	5	2,870	1,400	2,620	1,340	7,352	3,335
	TF550	217.9	5,535	95.3	2,420	56.0	1,422	75.0	1,905	69.5	1,765	5	5	2,760	1,320	2,540	1,300	7,440	3,375
	TF600	237.6	6,035	103.1	2,620	63.9	1,622	82.9	2,105	77.4	1,965	5	5	2,560	1,250	2,340	1,200	7,579	3,438
	TF650	257.3	6,535	111.0	2,820	71.7	1,822	90.0	2,285	84.4	2,145	3	3	2,160	1,050	1,960	1,000	7,679	3,483
	TF700	277.0	7,035	118.9	3,020	79.6	2,022	97.0	2,465	91.5	2,325	3	3	1,870	900	1,700	860	7,765	3,522
	TS430	170.7	4,335	77.6	1,970	38.3	972	51.5	1,307	44.8	1,137	5	5	2,990	1,475	2,880	1,420	7,242	3,285
	TS450	178.5	4,535	81.5	2,070	42.2	1,072	57.4	1,457	50.7	1,287	5	5	2,950	1,450	2,840	1,390	7,286	3,305
	TS470	186.4	4,735	83.5	2,120	44.2	1,122	57.4	1,457	50.7	1,287	5	5	2,910	1,420	2,670	1,370	7,308	3,315
	TS500	198.2	5,035	87.4	2,220	48.1	1,222	61.3	1,557	54.6	1,387	5	5	2,870	1,400	2,620	1,340	7,352	3,335
	TS550	217.9	5,535	95.3	2,420	56.0	1,422	71.1	1,807	64.4	1,637	5	5	2,760	1,320	2,540	1,300	7,440	3,375
	TS600	237.6	6,035	103.1	2,620	63.9	1,622	79.0	2,007	72.3	1,837	5	5	2,560	1,250	2,340	1,200	7,579	3,438
	TS650	257.3	6,535	111.0	2,820	71.7	1,822	86.1	2,187	79.4	2,017	3	3	2,160	1,050	1,960	1,000	7,679	3,483

* : Standard
**TS-Mast : Wide Visible 3-Stage Full Free Lift Mast with 2 Free Lift Cylinders.

9-Series Mast Specifications

20B-9

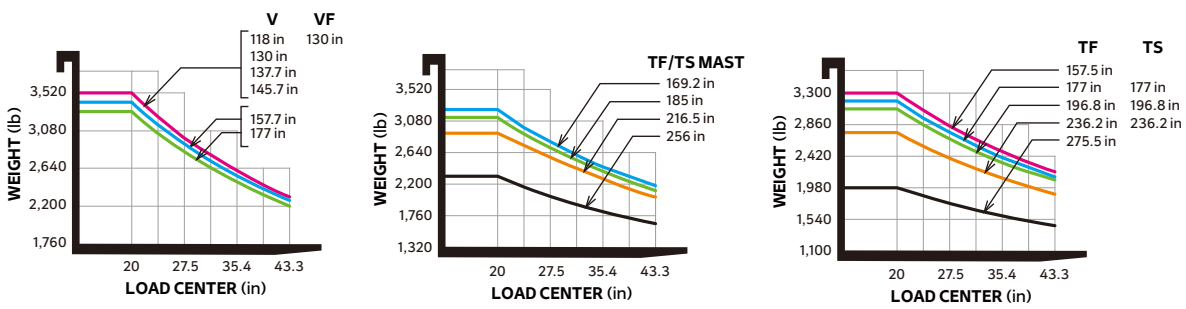
Mast Type		Maximum Fork Height		Overall Height (Lowered)		Free lift height						Tilt Angle		Load capacity w/o side shift		Load capacity w/side shift		Truck Weight (Unloaded)	
						With Load Backrest		Without Load Backrest		Without Load Backrest (3/4-SPOOL)		Fwd	Bwd	24 in LC	500mm LC	24 in LC	500mm LC		
		in	mm	in	mm	in	mm	in	mm	in	mm	deg	deg	lb	kg	lb	kg	lb	kg
2-STAGE LIMITED FREE LIFT	V300	119.3	3,030	77.9	1,979	1.6	40	1.6	40	1.6	40	5	7	4,000	2,000	4,000	1,930	7,628	3,460
	*V330	131.1	3,330	83.8	2,129							5	7	4,000	2,000	3,990	1,930	7,672	3,480
	V350	139.0	3,530	87.8	2,229							5	7	4,000	2,000	3,920	1,930	7,701	3,493
	V370	146.9	3,730	91.7	2,329							5	7	4,000	2,000	3,860	1,930	7,729	3,506
	V400	158.7	4,030	97.6	2,479							5	7	4,000	2,000	3,770	1,920	7,784	3,531
	V450	178.3	4,530	111.4	2,829							5	5	3,900	1,925	3,620	1,860	7,932	3,598
2-STAGE FULL FREE LIFT	VF/VS330	131.1	3,330	83.8	2,129	44.7	1,136	64.3	1,634	56.3	1,430	5	5	4,000	2,000	3,860	1,930	7,760	3,520
3-STAGE FULL FREE LIFT	TF400	159.1	4,040	74.0	1,879	34.9	886	51.6	1,310	43.5	1,106	5	5	3,970	1,950	3,660	1,880	7,928	3,596
	TF430	170.9	4,340	77.9	1,979	38.8	986	55.5	1,410	47.5	1,206	5	5	3,920	1,925	3,620	1,860	7,970	3,615
	TF450	178.7	4,540	81.9	2,079	42.8	1,086	61.4	1,560	55.4	1,406	5	5	3,880	1,900	3,570	1,840	8,014	3,635
	TF470	186.6	4,740	83.8	2,129	44.7	1,136	61.4	1,560	53.4	1,356	5	5	3,770	1,850	3,460	1,790	8,036	3,645
	TF500	198.4	5,040	87.8	2,229	48.7	1,236	65.4	1,660	57.3	1,456	5	5	3,700	1,800	3,420	1,750	8,080	3,665
	TF550	218.1	5,540	95.6	2,429	56.5	1,436	75.2	1,910	69.1	1,756	5	5	3,480	1,700	3,200	1,640	8,168	3,705
	TF600	237.8	6,040	103.5	2,629	64.4	1,636	83.1	2,110	77.0	1,956	5	5	3,280	1,600	3,020	1,540	8,307	3,768
	TF650	257.5	6,540	111.4	2,829	72.3	1,836	90.2	2,290	83.3	2,116	3	3	2,690	1,300	2,450	1,250	8,406	3,813
	TF700	277.2	7,040	119.3	3,029	80.2	2,036	98.6	2,504	92.3	2,344	3	3	2,400	1,150	2,180	1,100	8,492	3,852
	TS430	170.9	4,340	77.9	1979	38.8	986	51.7	1,312	38.6	980	5	5	3,920	1,925	3,770	1,860	7,970	3,615
	TS450	178.7	4,540	81.9	2,079	42.8	1,086	57.6	1,462	46.5	1,180	5	5	3,880	1,900	3,720	1,840	8,014	3,635
	TS470	186.6	4,740	83.8	2,129	44.7	1,136	57.6	1,462	44.5	1,130	5	5	3,770	1,850	3,460	1,790	8,036	3,645
	TS500	198.4	5,040	87.8	2,229	48.7	1,236	61.5	1,562	48.4	1,230	5	5	3,700	1,800	3,420	1,750	8,080	3,665
	TS550	218.1	5,540	95.6	2,429	56.5	1,436	71.3	1,812	60.2	1,530	5	5	3,480	1,700	3,200	1,640	8,168	3,705
	TS600	237.8	6,040	103.5	2,629	64.4	1,636	79.2	2,012	68.1	1,730	5	5	3,280	1,600	3,020	1,540	8,307	3,768
	TS650	257.5	6,540	111.4	2,829	72.3	1,836	86.3	2,192	74.4	1,890	3	3	2,690	1,300	2,450	1,250	8,406	3,813

* : Standard
**TS-Mast : Wide Visible 3-Stage Full Free Lift Mast with 2 Free Lift Cylinders.

9-Series Mast Specifications

Load Capacity

16B-9



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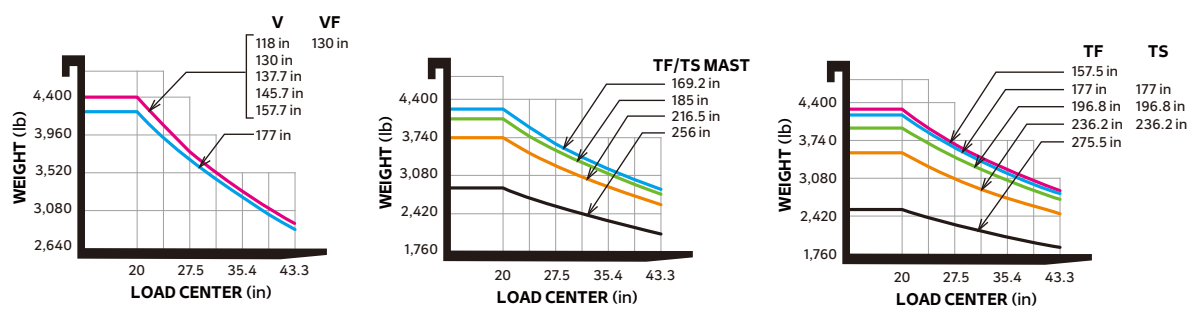
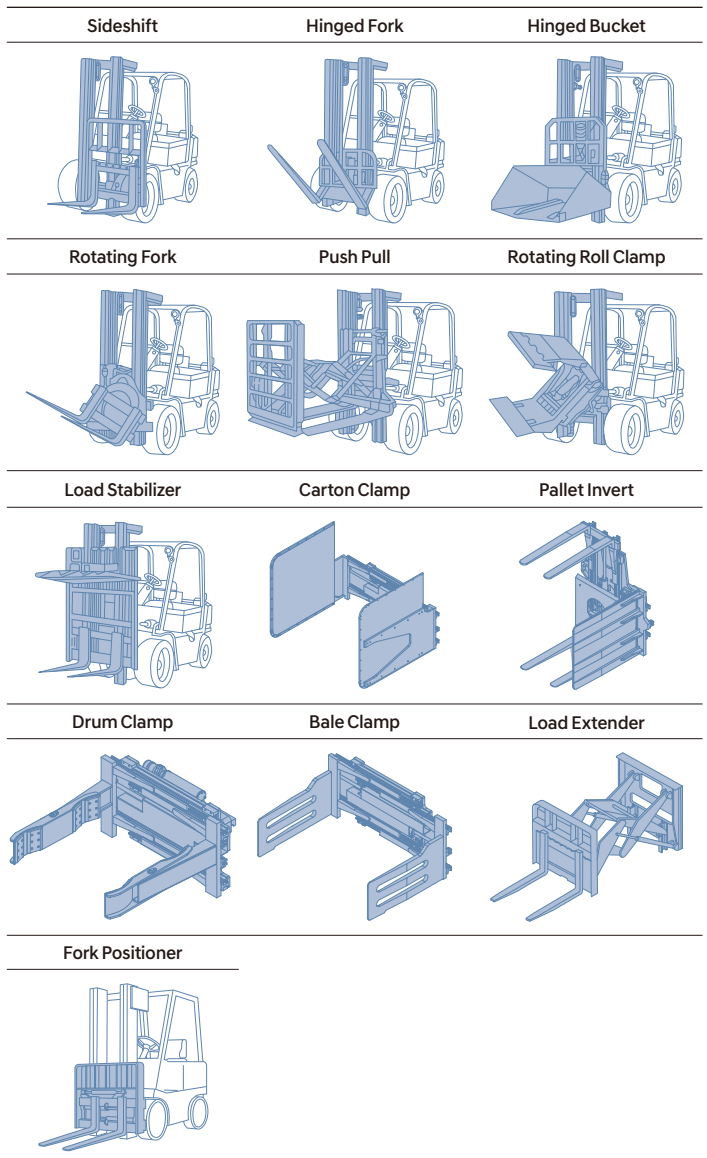


Various Attachments



Optional Items

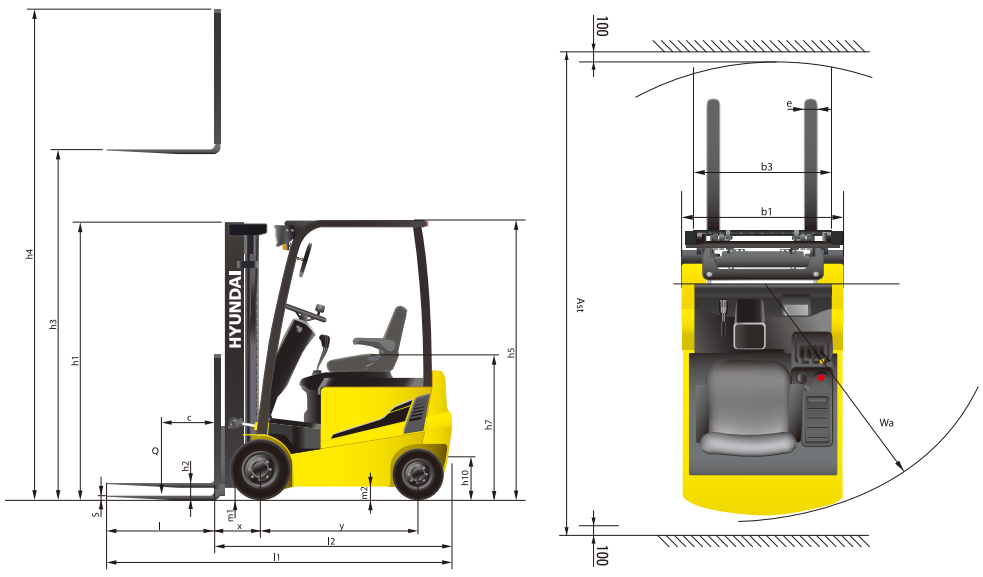
- **Fork (mm)**
  16B-9 : 1.4 x 4 x 29.5 / 33.5 / 35.4 (std) / 41.3 / 47.3 / 53 / 59
  20B-9 : 1.6 x 4 x 35.4 (std) / 37.4 / 39.4 / 41.3 / 45.3 / 47.3 / 53 / 59 / 63
- **Integral Sideshift / Sideshift**
- **Tire :** SOLID (std) / Non-marking / Wide tire [16B-9 : Front tire (200 / 50-10)]
- **Seat :** Grammer
- **M.C.V :** 2-Spool (std), 3-Spool, 4-Spool
- **Auto Fork Leveling**
- **Beacon Lamp**
- **Load Indicator**
- **Work Lamp**
- **OPSS :** Mast
- **UL :** ES, EE
- **Direction Switch on Lever**
- **Cold Storage**
  (for -7.6° F cold working environments)
- **Cabin**
  ❶ : Front + Roof / ❷ : ❶ + Rear / ❸ : ❷ + Side door / ❹ : ❸ + Heater / ❺ : ❹ + Audio

* Exterior designs and forklift options in this catalog may change for improvement

Specifications

Identification				
1.1	Manufacturer		Hyundai	
1.2	Model		16B-9	20B-9
1.3	Power type / Electric		Electric	Electric
1.4	Operator type / Driver-seated		seated	seated
1.5	Load capacity	lb	3,200	4,000
1.6	Load center distance	c in	24	24
1.8	Forward overhang (LMC)	x in	14	14.4
1.9	Wheelbase distance	y in	53.3	56.7
Weights				
2.1	Truck weight	lb	6,945	7,672
2.2	Axle load (w/ front, rear load)	lb	9,259 / 1,212	10,692 / 1,389
2.3	Axle load (w/o front, rear load)	lb	3,494 / 3,450	3,637.6 / 4,034.5
Tires				
3.1	Tire type: solid (V), superelastic (SE), pneumatic (P), polyurethane (PE)		SE	SE
3.2	Front Tire size (Φx width)		18x7-8	200 / 50-10
3.3	Rear tire size (Φx width)		16x6-8	16x6-8
3.5	Wheels, number front rear (x = driven wheels)		2x / 2	2x / 2
3.6	Track width (front)	in	35.2	35.6
3.7	Track width (rear)	in	34.6	34.6
Dimensions				
4.1	Mast / fork carriage tilt forward / backward	degrees	5 / 7	5 / 7
4.2	Lowered mast height	h1 in	83.5	84
4.3	Free lift height	h2 in	1.4	1.6
4.4	Lift height	h3 in	131	131
4.5	Extended mast height	h4 in	170	170
4.7	Overhead guard (cab) height	h5 in	81.3	81.3
4.8	Seat height / Standing height	h7 in	43	43
4.12	Coupling height	h10 in	250	250
4.19	Overall length	l1 in	115.5	119.3
4.20	Length to face of forks	l2 in	80.1	83.8
4.21	Overall width	b1 in	42.3	43.5
4.22	Fork dimensions	H x W x L	1.4 x 4 x 35.4	1.6 x 4 x 35.4
4.23	Fork carriage ISO 2328, class / type A, B	in	Φ/A	Φ/A
4.24	Fork - carriage width	b3 in	93.6	39.6
4.31	Minimum ground clearance (mast)	m1 in	3.3	3.7
4.32	Minimum ground clearance (center of wheelbase)	m2 in	3.5	3.9
4.34.1	Aisle width for pallets (39.4 x 47 crossway)	Ast in	135.5	135.5
4.34.2	Aisle width for pallets (31.5 x 47 lengthway)	Ast in	3138	141.6
4.35	Minimum turning radius	Wa in	68.2	71.6
Performance Data				
5.1	Travel speed, loaded / unloaded	mph	9.9 / 10.6	9.9 / 10.6
5.2	Lift speed, loaded / unloaded	fpm	80.7 / 118	410 / 600
5.3	Lowering speed, loaded / unloaded	fpm	99 / 89	500 / 450
5.6	Loaded/unloaded maximum drawbar pull	lbf	3,395 / 3,318	14,367 / 14,043
5.8	Loaded/unloaded gradeability	%	29.5	24.5
5.10	Service brake		hydraulic	hydraulic
E - Motor				
6.1	Drive motor rating S2 60 min	hp	6.3 x 2	6.3 x 2
6.2	Pump motor rating at S3 - 15 %	hp	18.7	18.7
6.4	Battery voltage, nominal capacity K5	V/Ah	48 / 510	48 / 585
6.5	Battery weight	lb	1,720	2,094
	Battery dimensions (L x W x H)	in	38.5 x 21.5 x 25	38.5 x 24.8 x 25
Other Details				
8.1	Type of drive control		AC	AC

Dimensions



* Exterior designs and forklift options in this catalog may change for improvement

HI-MATE MANAGEMENT SYSTEM

Hi-Mate is one of the industry's most advanced remote management system. With continuous data collection, Hi-Mate delivers more communication, control, and ability to track, monitor, maintain, and manage your forklift fleet. It is the proven way to efficiently coordinate both your equipment and human resources.

HiMATE

ONLY HYUNDAI OFFERS YOU SUCH A COMPREHENSIVE, FULLY INTEGRATED TELEMATICS SYSTEM.

Hi-Mate works by collecting key data from sensors mounted to your equipment that track operation of the forklift, relaying that information to your computer or mobile device in real time. By monitoring key components, such as the engine, electric system, and hydraulics, Hi-Mate can help you evaluate machine and operator performance, create preventive maintenance programs, and help you minimize downtime as you maximize productivity.

Equipment operation management

Real-time monitoring and follow-up management of individual pieces of equipment or equipment fleet deliver essential operational status and information, including:

- Key-on time, travel hours, work hours, and GPS location

Equipment status management

Vital diagnostic and maintenance data is relayed as alerts, while Hi-Mate Premium provides tracking of pre-shift checklists to help reduce downtime and ensure OSHA compliance:

- Alerts are sent for DTCs, system warning, and required maintenance

Safe traveling control

An impact monitor provides alerts, accountability, and follow-up management of safety incidents involving equipment during operation:

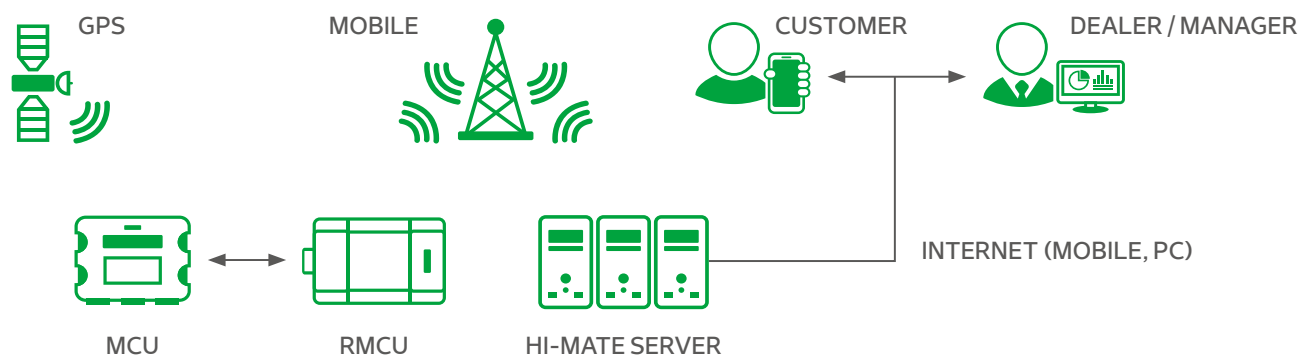
- The system logs the number and severity of impacts as well as the operator who was logged into the unit at the time of the incident

Human resource management

Hi-Mate Premium can control who operates equipment via a pin pad and RFID reader:

- Provided information can be used to evaluate productivity, efficiency, and workforce safety
- Tracking the weight load indicator captures operator productivity

Data Flow



BEST -IN- CLASS WARRANTY

THE 16/20B-9 COMES WITH OUR BEST-IN-CLASS WARRANTY

When you build better equipment, you can back them better. That's why Hyundai forklifts come with a 3-year, 4,000-hour warranty that sets a new standard for overall lowest cost of ownership.

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