



ERP-VM

Electric, Pneumatic Tire Trucks

8,000 · 9,000 · 10,000 lbs

Yale® ERP-VM electric trucks are available in 8,000 – 10,000 pound capacities designed for demanding applications that require clean, quiet-running, heavy-duty capability. These trucks are very maneuverable and offer plenty of power and high stacking ability, while also offering excellent ergonomics, reliability and maintenance ease. Pneumatic tires provide more comfort indoors and greater capabilities for outdoor applications.

AC Transistor Traction Control

AC technology offers smooth acceleration and directional changes, proportional regenerative braking and the Auto Deceleration System. The controller converts battery power to three phase AC power, and adjusts frequency and current to meet performance demands. Performance control settings and extensive diagnostics are accessible by technicians through the display or a PC. A Vehicle System Manager (VSM) utilizing CANbus technology monitors and controls key truck components and systems. The advanced thermal management system monitors component temperature and gradually adjusts performance to prevent damage to key components.

Controller Area Network (CANbus)

CANbus technology streamlines communications between truck systems through one main master controller, the Vehicle System Manager (VSM). Display, traction controller and pump controller are all controlled via the CANbus network. A connection point is provided for interface with a service PC.

Intellix VSM acts as a master truck controller, providing extensive monitoring and control of truck functions and systems. CANbus technology reduces wiring complexity and enables comprehensive communications between truck systems. The ergonomically positioned display transmits continual feedback to the operator and allows for communication of service codes.

Electrical System

The ERP-VM utilizes AC motor technology designed for exceptional performance. It uses a brushless induction motor for high starting torque and smooth rapid acceleration. A speed sensor provides feedback to the control system, allowing motor speed and direction to be continuously monitored.

Dual Drive Motors

Left hand and right hand AC Drive motors are contained in the drive axle assembly. The outer end of each motor drives a wheel through a planetary gear transmission.

The transmissions use helical gears with tooth geometry that is optimized to minimize gear noise. Each drive motor is individually controlled allowing for a “zero inside turning radius” scenario that provides excellent maneuverability.

Automatic Park Brake

The ERP-VM features an Automatic Park Brake that is applied by a spring when the truck is stationary. Upon sensing a demand at the accelerator pedal, the brake is released and held “off.” A manual override (located underneath the floor plate) is provided to disengage the brake if the truck has to be moved during service conditions or in the absence of power.

Wet Disc Brakes

The brake system features standard oil cooled wet disc brakes which are internal to the drive axle housing, protecting them against dirt and moisture. These low pedal effort brakes require no adjustments and very little maintenance, yet provide long service life.

Power Assisted Braking

Power Assisted Braking is accomplished via the VSM. The VSM monitors brake line pressure. When this pressure exceeds a set threshold the VSM sends a signal to the traction controller to decelerate the traction motor proportionally to the brake pressure. The higher the brake pedal pressure being applied, the more quickly the truck will decelerate. The master cylinder is sealed and has a fluid level sensor that illuminates an icon on the display if low. The standard Auto Deceleration System automatically slows the truck when the operator's foot is removed from the accelerator pedal, extending brake life.

Voltage

The ERP-VM uses an 80 volt electrical system for high performance and long run time to meet a variety of application requirements.

Operator Interface Display

The display is conveniently located in the upper right area of the operator's compartment. The display includes an hour meter, LCD display for status codes and descriptions, battery discharge indicator with lift interrupt, all LCD icons/indicators for brake fluid, seat belt indicator, performance mode indicator, and parking brake indicator. The display also permits access

for service technicians to adjust performance control settings, allowing the truck to be customized to meet customer applications. Additionally, extensive diagnostics allow service technicians to quickly troubleshoot problems. Operator selectable performance modes are standard. Options for operator passwords and an onboard, customizable operator checklist are also available.

Foot Directional Control Pedal (FDC)

The optional foot directional control pedal is a highly productive directional/accelerator pedal. One pedal allows the operator to change direction and acceleration reducing operator fatigue and resulting in increased productivity.

Hydraulic Components

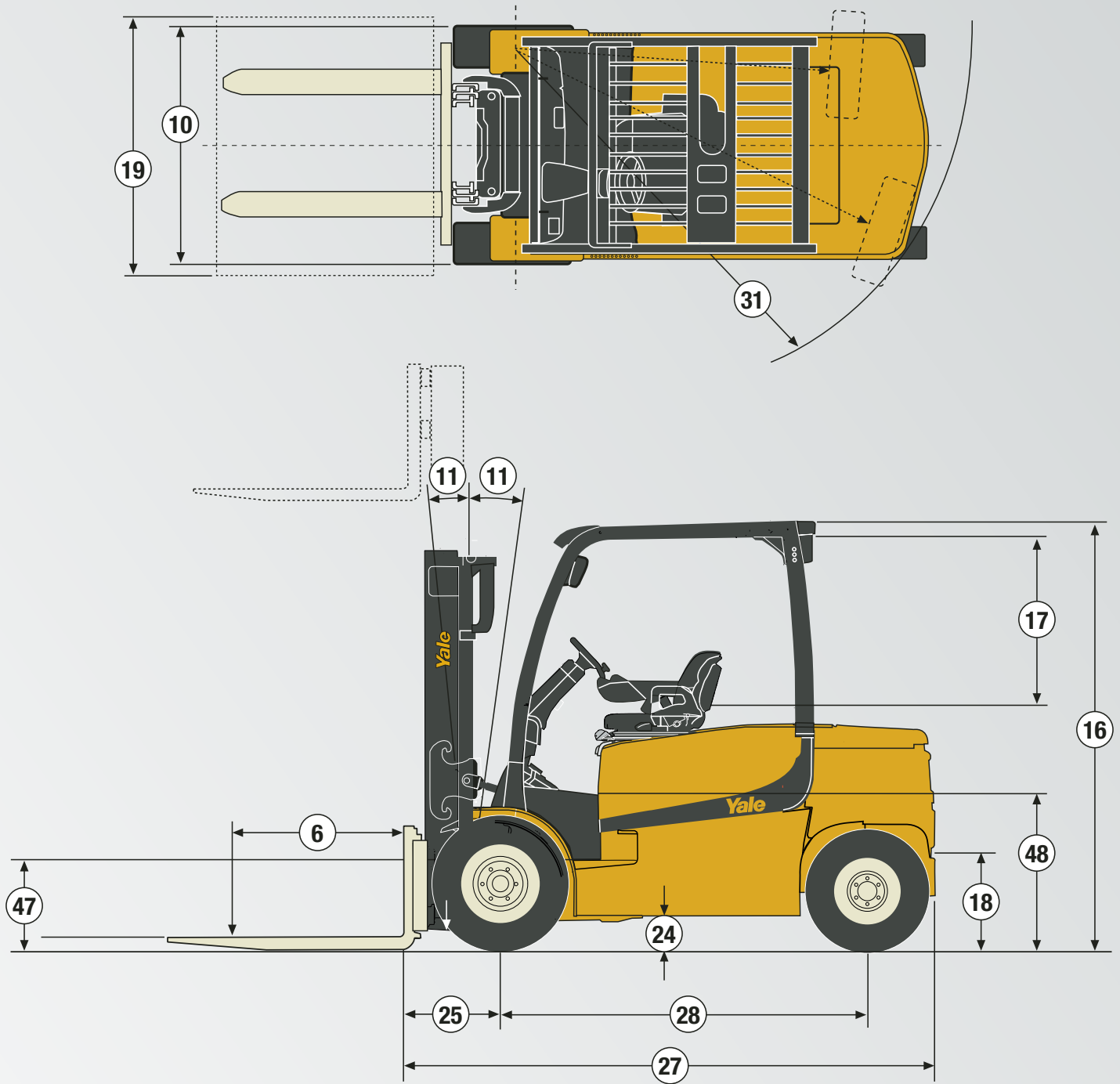
A transistor control hydraulic system is powered by a brushless, AC induction motor with wet spline. The motor and pump are mounted on rubber isolators for reduced noise and vibration. A combination of flexible wire-braid hoses and steel tubing is used to simplify the hydraulic plumbing. These hydraulic lines are carefully routed and held in place to reduce possible damage. A 10-Micron full flow hydraulic filter located in the return line protects the hydraulic system from contaminants and helps provide long life. A bypass relief valve permits oil flow in the event of the filter clogging.

Hydrostatic Power Steering

Hydrostatic power steering is standard and the all-hydraulic design gives precise, reliable control while eliminating mechanical linkages and

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BATTERY AND COMPARTMENT SPECIFICATIONS

Model	Compartment Dim.			Battery Dim – Max.			Battery Specifications					
							Electrical			Weight		
	W in (mm)	L in (mm)	H in (mm)	“X”	“Y”	“Z”	Volts	No. of cells	Plates per cell	Max Capacity 6 Hour Rate Amp Hr (kwh)	Min lbs (kg)	Max lbs (kg)
ERP080/090/100VM 40" Compartment	40.8 (1037)	39.6 (1006)	31.8 (808)	40.6 (1030)	39.4 (1000)	31.4 (798)	80	40	13	840 (65.2)	4600 (2080)	5400 (2440)
ERP080/090VM 34" Compartment	40.8 (1037)	33.8 (859)	31.8 (808)	40.6 (1030)	33.1 (840)	31.4 (798)	80	40	11	700 (54.3)	4400 (1991)	5100 (2319)

Battery Type: "EO" (Without Cover)

Max allowable battery capacity per UL is 1000 amp hr (77.6 kwh)

Commercially available lead acid batteries may not necessarily reach these max limits

34" Compartment achieved by use of a Front Compartment Spacer - Reduces Compartment Length from 39.6" to 33.8"

Allows use of 31.5" - 33" (840 - 800 mm) battery in the 40" (1037 mm) Battery Compartment

Battery Compartment Length is measured front to rear. Battery Compartment Width is measured across the truck.

Battery Notes - Conventional Charging

Battery Connector: 80 volt - Black SBE®320 (Anderson Power Products®)

P/N E6359G1 or equivalent)

Handle (not required): SB®350 and SBE®320 (Anderson Power Products®)

"A" TYPE (Grey) P/N 995G2 or equivalent)

Battery Lead: Length 20" (508 mm), Position "A", 2/0 AWG

GENERAL	1	Manufacturer			Yale®				
	2	Model Designation			ERP080VM	ERP090VM	ERP100VM		
	3	Power / Voltage			Electric / 80 Volts				
	4	Operation			Sit				
	5	Rated Capacity		lb. (kg)	8000 (3629)	9000 (4082)	10000 (4536)		
	6	Load Center		in. (mm)	24 (610)				
TIRES & WHEELS	7	Tire Type - Cushion, Solid, Pneumatic, etc. (Std / Opt)			Pneumatic / Pneumatic Shaped Solid				
	8	Tire Size (Drive / Steer)		in.	250 x 15-20 / 7 x 12-14		28 x 12.5-15 / 7 x 12-14		
	9	Wheels - Number (X=Driven) (Drive/Steer)			2X / 2				
	10	Tread (Tires)	Std Dr / Steer		in. (mm)	44.2 / 45 (1123 / 1143)	44.2 / 45 (1123 / 1143)	45.9 / 45 (1167 / 1143)	
Wide Dr / Steer				45.9 / 45 (1167 / 1143)	45.9 / 45 (1167 / 1143)	N/A			
DIMENSIONS	11	Mast Tilt	Std Opt Opt		degrees	6F / 6B 6F / 8B 6F / 4B			
	12	Mast - Lowered Height	Std Mast		in. (mm)	92 (2320)			
	13	Free Lift - Top of Fork	Std 2 Stg Limited Free Lift Mast		in. (mm)	5 (150)			
	14	Lift Height - Top of Fork	Std 2 Stg Limited Free Lift Mast		in. (mm)	131 (3350)	131 (3350)	121 (3090)	
	15	Mast - Extended Height	Std Mast with / without LBR		in. (mm)	181 / 162 (4591 / 4109)	181 / 162 (4591 / 4109)	172 / 159 (4364 / 4030)	
	16	Overhead Guard Height			in. (mm)	92 (2338)			
	17	SIP to Bottom of OHG (Seat Depressed)	Std / Susp / Swivel		in. (mm)	38.7 / 37.4 / 37.4 (983 / 950 / 950)			
	18	Tow Pin Height	Vertical Center of Pin		in. (mm)	20.7 (526)			
	19	Overall Width	Pneumatic Tires		Std / Wide Tread	in. (mm)	54.1 / 58 (1373 / 1472)		58 / N/A (1473 / N/A)
	PSS Tires		Std / Wide Tread	in. (mm)	55.4 / 60.6 (1407 / 1539)		60.6 / N/A (1539 / N/A)		
	20	Forks	Thickness x Width x Length		in. (mm)	2 x 4.9 x 48 (50 x 125 x 1219)	2 x 5.9 x 48 (50 x 150 x 1219)	2 x 5.9 x 48 (50 x 150 x 1219)	
	21	Standard Carriage Width – Class III (8000-9000 lb.) Class IV (10000 lb.)			in. (mm)	48 (1219)			
	23	Ground Clearance (Lowest Point) (NL / RL)			in. (mm)	5.9 / 5.5 (150 / 139)			
	24	Ground Clearance (Center of Truck) (NL / RL)			in. (mm)	7.2 / 7.0 (183 / 177)		6.9 / 6.7 (176 / 170)	
	25	Load Distance	Center of Wheel to Face of Forks		in. (mm)	20.6 (523)			
	26	Battery Compartment	Height w/ Vertical Battery Removal		in. (mm)	31.8 (808)			
			Width		in. (mm)	40.8 (1037)			
				Nominal	SIZE	40"			
			Length	Actual	in. (mm)	39.6 (1006)			
	27	Length to Face of Forks	Chassis Length		in. (mm)	114.5 (2908)			
	28	Wheelbase			in. (mm)	79.5 (2020)			
	29	Right Angle Stack			in. (mm)	163.9 (4164)			
	30	Equal Aisle	90° Intersecting Aisle		in. (mm)	91.4 (2322)		92.8 (2356)	
	31	Outside Turning Radius			in. (mm)	94.9 (2411)			
	WEIGHT	32	Truck Weight	Without Battery (NL)		lb. (kg)	11080 (5026)	11390 (5166)	12220 (5543)
33		Axle Loading - Drive	Static with Max. Wt. Battery (NL / RL)		lb. (kg)	8791 / 21276 (3988 / 9651)	8912 / 22958 (4042 / 10414)	9341 / 25235 (4237 / 11446)	
34		Axle Loading - Steer	Static with Max. Wt. Battery (NL / RL)		lb. (kg)	7687 / 3201 (3487 / 1452)	7870 / 2824 (3570 / 1281)	8272 / 2378 (3752 / 1079)	
PERFORMANCE						Standard Performance			
	35	Travel Speed	Extended Shift On (NL / RL)		mph (km/h)	11 / 9.9 (17.7 / 15.9)	10.7 / 9.5 (17.2 / 15.3)	10.4 / 9.4 (16.7 / 15.1)	
			Extended Shift Off (NL / RL)		mph (km/h)	13.0 / 12.4 (21.0 / 20.0)			
	36	Lift Speed	Std 2 Stg LFL Mast (NL / RL)		ft/min (m/sec)	118 / 87 (0.6 / 0.44)	93 / 75 (0.47 / 0.38)	93 / 71 (0.47 / 0.36)	
			Opt 2 Stg FFL Mast (NL / RL)		ft/min (m/sec)	107 / 78 (0.542 / 0.398)	87 / 71 (0.44 / 0.359)	87 / 67 (0.44 / 0.34)	
			Opt 3 Stg FFL Mast (NL / RL)		ft/min (m/sec)	110 / 81 (0.56 / 0.411)	89 / 72 (0.452 / 0.365)	89 / 68 (0.45 / 0.346)	
	37	Lower Speed	Std 2 Stg LFL Mast (NL / RL)		ft/min (m/sec)	94 / 104 (0.48 / 0.53)	73 / 89 (0.37 / 0.45)	73 / 89 (0.37 / 0.45)	
			Opt 2 Stg FFL Mast (NL / RL)		ft/min (m/sec)	75 / 91 (0.38 / 0.46)	57 / 81 (0.29 / 0.41)	57 / 81 (0.29 / 0.41)	
			Opt 3 Stg FFL Mast (NL / RL)		ft/min (m/sec)	77 / 98 (0.39 / 0.5)	63 / 87 (0.32 / 0.44)	63 / 87 (0.32 / 0.44)	
	38	Gradeability	5 Minute Rating (NL / RL)		%	23 / 15.6	22.7 / 14.9	22.2 / 14.1	
			60 Minute Rating (NL / RL)		%	8.4 / 5.8	8.3 / 5.5	8.1 / 5.2	
	39	Drawbar Pull	5 Minute Rating (NL / RL)		lbf	3985 / 3867	4025 / 3908	4022 / 3907	
			60 Minute Rating (NL / RL)		lbf	1475 / 1444	1493 / 1460	1490 / 1458	
	40	Brake	Method of Control (Service / Parking)			Hydraulic / Mechanical			
Method of Operation (Service / Parking)				Foot / Automatic					
ELECTRIC	41	Battery	Type			Lead Acid			
	42	Traction Motors (Dual)	60 Minute Rating (Each)		hp (kW)	19.7 (14.7)			
	43	Pump Motor	15 Minute rating (Each)		hp (kW)	48.3 (36)			
	44	Traction Motors	Type / Control Method			Dual AC / Transistor			
	45	Pump Motor	Type / Control Method			AC / Transistor			
	46	Number of Speeds	Traction / Pump			Infinitely Variable / Infinitely Variable			
OTHER	47	Step Height		in. (mm)	19.3 (490)				
	48	Floor Height		in. (mm)	33.1 (840)				
	49	Attachment Relief Pressure		psi (bar)	2250 (155)				
	50	Auxiliary Oil Flow	3rd and 4th Function		gal/min (l/min)	16 (60)			
	51	Sound Level (Measured per ANSI B56.11.5)	Extended Shift On		dB (A)	68			
Extended Shift Off			dB (A)	69					

Above specifications, unless otherwise listed, are for a standard truck without optional equipment.

Right Angle Stack and Equal Intersecting Aisle dimensions provided with a 48" long and 40" wide pallet load, allowing zero clearance

ERP080-090VM MAST DIMENSIONS							
Maximum Fork Height (TOF)	Overall Lowered Ht.	Overall Extended Height with Load Backrest	Overall Extended Height w/o Load Backrest	Free-Lift (TOF) w/Load Backrest	Free-Lift (TOF) w/o Load Backrest	Truck Weight	
in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	ERP080VM	ERP090VM
2-STAGE LIMITED FREE-LIFT (LFL) HI-VIS™ MAST							
131 (3350)	92 (2320)	181 (4591)	162 (4109)	5 (150)	5 (150)	11080	11390
143 (3650)	98 (2470)	193 (4891)	174 (4409)	5 (150)	5 (150)	11160	11460
167 (4250)	110 (2770)	217 (5491)	198 (5009)	5 (150)	5 (150)	11300	11610
2-STAGE FULL FREE-LIFT (FFL) HI-VIS™ MAST							
132 (3375)	92 (2320)	182 (4622)	165 (4187)	42 (1079)	59 (1514)	11240	11540
144 (3675)	98 (2470)	194 (4922)	177 (4487)	48 (1229)	65 (1664)	11320	11620
3-STAGE FULL FREE-LIFT (FFL) HI-VIS™ MAST							
185 (4715)	90 (2270)	235 (5962)	218 (5527)	40 (1029)	57 (1464)	11810	12110
194 (4950)	94 (2370)	244 (6197)	227 (5762)	44 (1129)	61 (1564)	11880	12190
206 (5250)	98 (2470)	256 (6497)	239 (6062)	48 (1229)	65 (1664)	11960	12260
218 (5550)	102 (2570)	268 (6797)	251 (6362)	52 (1329)	69 (1764)	12030	12340
236 (6000)	110 (2770)	286 (7247)	269 (6812)	60 (1529)	77 (1964)	12190	12490

ERP100VM MAST DIMENSIONS						
Maximum Fork Height (TOF)	Overall Lowered Ht.	Overall Extended Height w/Load Backrest	Overall Extended Height w/o Load Backrest	Free-Lift (TOF) w/Load Backrest	Free-Lift (TOF) w/o Load Backrest	Truck Weight
in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	ERP100VM
2-STAGE LIMITED FREE-LIFT (LFL) HI-VIS™ MAST						
121 (3090)	92 (2320)	172 (4364)	159 (4030)	5 (150)	5 (150)	12220
133 (3390)	98 (2470)	184 (4664)	171 (4330)	5 (150)	5 (150)	12300
157 (3990)	110 (2770)	208 (5264)	195 (4930)	5 (150)	5 (150)	12460
2-STAGE FULL FREE-LIFT (FFL) HI-VIS™ MAST						
122 (3115)	92 (2320)	173 (4389)	162 (4107)	41 (1052)	52 (1334)	12320
134 (3415)	98 (2470)	185 (4689)	174 (4407)	47 (1202)	58 (1484)	12400
3-STAGE FULL FREE-LIFT (FFL) HI-VIS™ MAST						
174 (4437)	90 (2270)	225 (5711)	214 (5429)	39 (996)	50 (1278)	12970
184 (4690)	94 (2370)	235 (5964)	224 (5682)	43 (1096)	54 (1378)	13050
196 (4990)	98 (2470)	247 (6264)	236 (5982)	47 (1196)	58 (1478)	13140
208 (5290)	102 (2570)	259 (6564)	248 (6282)	51 (1296)	62 (1578)	13220

Truck performance may be affected by the condition of the vehicle, how it is equipped and the application. Consult your Yale® Industrial Truck Dealer if any of the information shown is critical to your application. Specifications are subject to change without notice.

This truck meets all applicable mandatory requirements of ANSI B56.1 Safety Standard for Powered Industrial Trucks at the time of manufacture. Classified by Underwriters' Laboratories, Inc., as to fire and electric shock hazard only for Type E industrial trucks.

The Yale® products included in this document may be covered by US patent 6,684,148 and other patents pending.


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Manufactured in our own ISO 9001 and 14001 Registered Facilities

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road shocks at the steering wheel. An infinitely adjustable tilt steering column provides excellent operator comfort and visibility.

Steering Axle

The steering axle is a one-piece ductile iron casting mounted on elastic cushions that reduce shock and provide a softer ride. The Continuous Stability System (CSS™) enhances truck stability in a simple, maintenance free design, without compromising uneven surface travel. "Zero Turn Radius" steer axle design allows for increased maneuverability.

Masts/Carriage/Forks/Load Backrest Extension

Yale® Global Hi-Vis simplex, duplex and triplex masts provide excellent visibility. The mast features flush face design with geometrically matched, angled load rollers, which are canted, yet provide full-face roller contact. The mast front rail flange angle coupled with the inverted "J" inner channel and three degree mast rollers significantly reduces channel web milling and roller wear. Top accessible, "J-hook" mast mounting system allows convenient mast installation and removal. The J-hook mounting is standardized to allow direct mast interchangeability on a variety of Yale truck models without modification. Bronze steel backed bushings reduce mounting wear. Class III six-roller carriages are standard for the ERP-VM 8,000 and 9,000 lb. trucks. Class IV six-roller carriages are standard for the ERP-VM 10,000 lb. trucks. Forks are "upset forged" from a single piece of high-strength steel, giving added strength and thickness for wear. A 48" load backrest extension is standard.

Frame

The frame is a unitized construction, stress tested for durability. An integral step on both sides of the truck is provided for easy entry and exit. The truck has a two-piece floor plate that can be easily lifted out for service access. An easily removable counterweight top cover gives easy access to components. A stamped steel, gas spring-assisted hood allows easy changing of the battery.

Additional Features

Additional features on the ERP-VM include an overhead guard, Operator Presence System (OPS), 48" forks, non-suspension seat and seat belt. An infinitely adjustable tilt steering column, rubber floor mat, and electronic horn are also standard.

Options

Accutouch Electro-Hydraulic Mini-Levers
Foot Directional Control Pedal
Return to set tilt
Telescoping Steering Column with Tilt Memory
Full suspension cloth or vinyl seats (with and without swivel)
Keyless Start Switch
Seat Side Directional Control
Rear Drive Handle with Horn Button
Load Weight Indicator
Impact Monitor
LED and Halogen work light packages
LED Dome/reading light
6° forward tilt/4 or 8° back tilt
Integral sideshifter
Full Steel Cab
Front, Top and Rear Cab Panels
Audible Alarm – Reverse Operation – Self Adjusting
Visible Alarm – Amber LED Strobe with Continuous Operation
Pneumatic Shaped Solid tires
Type "EE" UL construction
Dual Rear View Mirrors
Panoramic Rear View Mirror
Fire Extinguisher
Accumulator