

3,000 • 3,500 • 4,000 lbs

Yale® ESC-AC

The ESC-AC industrial fork lift truck combines leading technology and operator comfort for high performance and productivity in docking, drive-in/drive-through rack applications within retail distribution, food manufacturing and processing, general warehousing and manufacturing, storage, plastic products, and freight transportation.

AC Technology

AC technology provides the ability to control the traction motor fields and armature independently. This results in enhanced performance and battery efficiency. In combination with the Metal Oxide Semiconductor Field Effect Transistor (MOSFET) motor controller we have reduced wearable components and improved performance. The AC control system provides high travel speeds and improved acceleration. Variable regenerative braking occurs when the throttle handle is reversed. Regenerative braking improves efficiency and reduces wear on brake components. The controller parameters are fully programmable including settings for acceleration, top speed, and neutral braking.

Operator's Compartment

The Yale ESC-AC features a new movement forward in ergonomic design. Designed for side-stance operation, the truck allows the driver flexibility of an angled stance with expanded hip room. The fully padded operator's compartment provides back,

hip, arm and knee support and offers the operator a cooler workspace. The high backrest support provides the operator both comfort and protection. The noticeably large floor has room for movement. The shock dampened suspended operator's compartment floor with full 3/4" thick cushioned floor mat absorbs vibration and minimizes fatigue. The brake pedal design allows for an easy entrance and exit into the operator compartment.

Drive Motors/Transaxles

The dual horizontal AC drive motors are designed and built specifically for the Yale three wheel trucks and are individually mounted for easy servicing. The motors have a temperature sensor mounted internally to monitor and provide feedback to the CAN bus. The temperature sensor monitors the motor thermal state and can react to various situations to self protect the motor. The dual transaxles are independently controlled for optimization of power and maneuverability. Power transfer occurs via a quiet double reduction design using a combination of spiral bevel and helical gears. Dual front wheel, continuous differential drive enables both wheels to be under power at all times, but operating separately. This gives power to each drive motor as needed for greater efficiency. The motors are controlled by two controllers, one for each motor. Cornering Speed Control provides proportional reduction of speed in cornering and automatically slows the truck depending on the radius of the turn.

The Yale Multi-Function Control Handle

Ergonomically designed with an integral palm rest, the Yale multi-function control handle is comfortably operated with a gloved or bare hand. The handle provides control for forward/reverse, lift/lower, tilt, horn, and up to two optional auxiliary functions for attachments. Hoist, travel and one additional hydraulic function can be activated simultaneously. Depressing the handle function pad activates tilt or optional sideshift. The 3rd optional auxiliary function

is activated by depressing buttons on the underside of the handle grip. Right-Left travel control is standard. The optional Gated Multi-Function Control Handle provides the productivity benefits of a Multi-Function handle and the feel of a single axis handle, allowing simultaneous lift and travel functions below 2 mph, while restricting lift above 2mph. Optional Push-Pull travel control is also available.

Brake System

The spring applied, electrically released brake assemblies provide emergency stopping and parking for the truck. The pre-adjusted brake assemblies require no maintenance and all truck models are equipped with brake over-ride connectors to move a disabled truck. During operation, as the operator releases the brake pedal, regenerative motor braking occurs to stop the truck. If the RPM of the AC traction motors reaches zero for at least 1 second, power is removed from the brakes engaging them. This feature eliminates unnecessary wear on the brake disc and provides positive engagement of the parking brake.

Transistor Hydraulic Control System

The AC Transistor Lift Pump Control matches pump speed with hydraulic flow requirements for increased efficiency, quieter operation and reduced maintenance. The transistor hydraulic control system controls the hydraulic motor with a Metal Oxide Semiconductor Field Effect Transistor (MOSFET) controller that provides smooth, quiet, energy-efficient operation. The controlled acceleration feature reduces pump and motor loadings on start-up for increased system life.

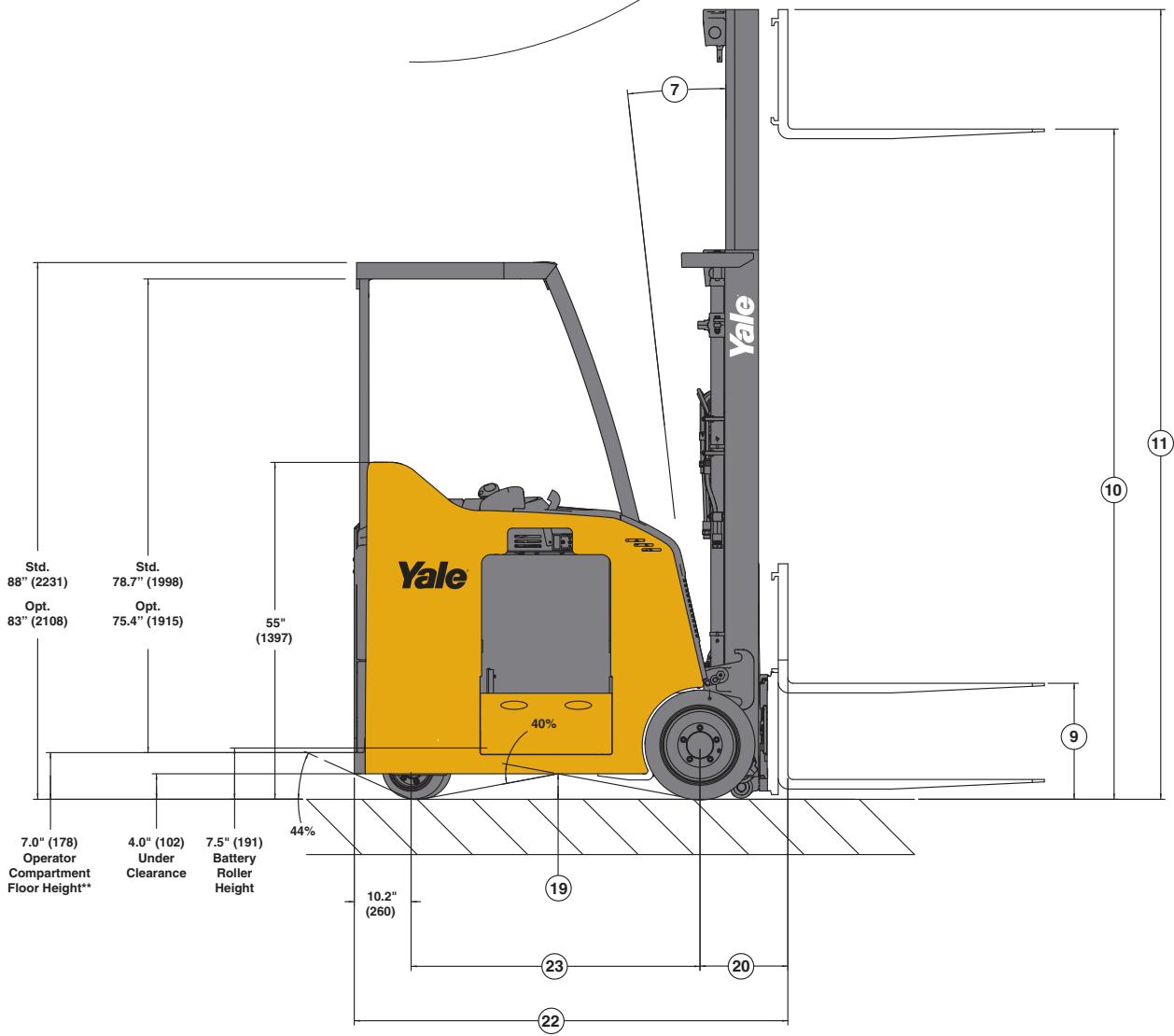
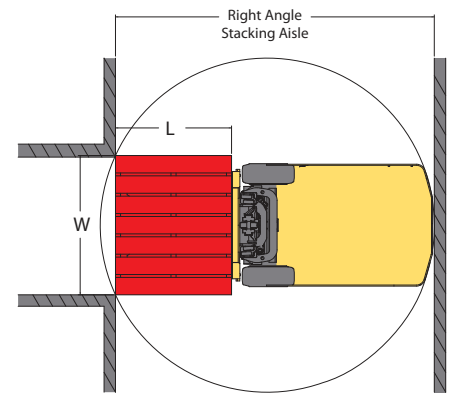
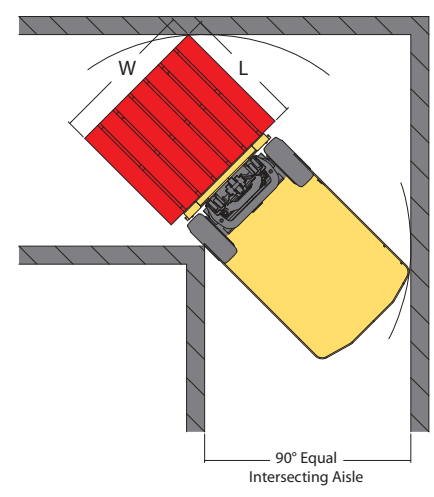
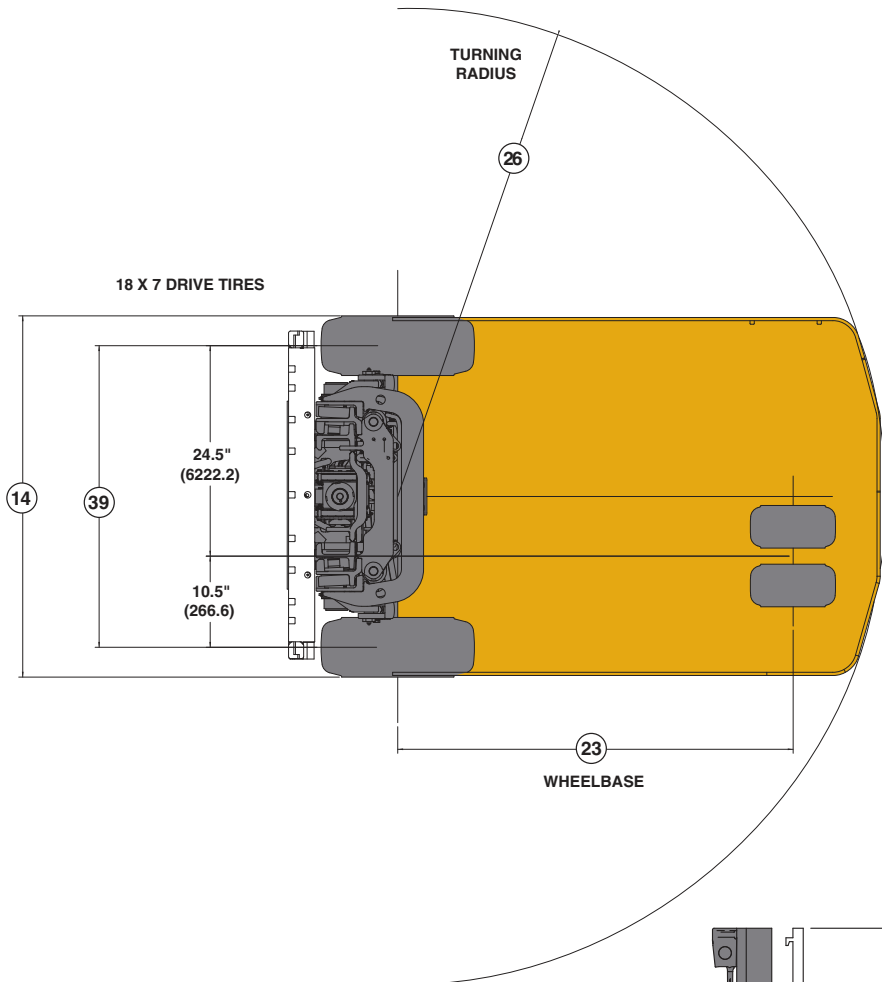
Console Covers

Console covers are UV resistant, thermally formed, high impact ABS plastic. The top and front covers provide access to main electrical components and are easy to remove without tools. The formed covers provide unobstructed use of the multi-function control handle. Storage areas in the operator's compartment supply a place to store pens, pencils, markers, etc.

(continued on back)



Truck shown with optional equipment



GENERAL	1	Manufacturer			Yale®
	2	Model Designation			ESC030AC
	3	Power / Voltage			Electric / 36 Volts
	4	Operation Type			Stand
	5	Rated Capacity		lb. (kg)	3000 (1361)
	6	Load Center		in. (mm)	24 (609)
DIMENSIONS	7	Mast Tilt Std (Opt)		degrees	5F / 5B (10F / 5B)
	8	Mast – Lowered Height (Std Mast)		in. (mm)	84 (2130)
	9	Free Lift – Top of Fork (Std 2 Stg Limited Free Lift Mast)		in. (mm)	5 (140)
		Free Lift – Top of Fork (Opt 2 Stg Full Free Lift Mast w/wo LBR)		in. (mm)	33 / 61 (860 / 1555)
	10	Lift Height – Top of Fork (Std 2 Stg Limited Free Lift Mast)		in. (mm)	131 (3332)
	11	Mast – Extended Height (Std Mast with / without LBR)		in. (mm)	180 / 154 (4555 / 3912)
	12	Overhead Guard Height (Std / Opt)		in. (mm)	88 / 83 (2234 / 2108)
	13	Grade Clearance (NL)		% %	40
	14	Overall Width		in. (mm)	42 (1067)
	15	Forks (Thickness x Width x Length)		in. (mm)	1.5 x 4 x 42 (38 x 102 x 1067)
	16	Standard Carriage Width (Class II)		in. (mm)	38.5 (978)
	17	Floor to Top of Battery Rollers		in. (mm)	7.5 (190)
	19	Ground Clearance (Center of Wheelbase) NL / RL		in. (mm)	4 (102)
	20	Load Distance (Center of Wheel to Face of Forks)		in. (mm)	12.6 (321)
	21	Battery Compartment	Height	in. (mm)	31.1 (790)
			Width	in. (mm)	18.3 (465)
			Length	Nominal	38"
				Actual	in. (mm)
	22	Length to Face of Forks		in. (mm)	66.7 (1696)
	23	Wheelbase		in. (mm)	43.9 (1115)
	24	Aisle Width*		in. (mm)	112.8 (2865)
	25	Equal Aisle (90° Intersecting Aisle)*		in. (mm)	69.2 (1757)
	26	Turning Radius		in. (mm)	55.0 (1397)
	27	Travel Speed (NL / RL)		mph (km/h)	7.2 / 7.2 (11.6 / 11.6)
	28	Lift Speed	Std 2 Stg LFL Mast (NL / RL)	ft/min (m/sec)	89 / 69 (0.45 / 0.35)
			Opt 2 Stg FFL Mast (NL / RL)	ft/min (m/sec)	55 / 43 (0.28 / 0.22)
			Opt 3 Stg FFL Mast (NL / RL)	ft/min (m/sec)	83 / 65 (0.42 / 0.33)
	29	Lower Speed	Std 2 Stg LFL Mast (NL / RL)	ft/min (m/sec)	55 / 102 (0.28 / 0.52)
			Opt 2 Stg FFL Mast (NL / RL)	ft/min (m/sec)	30 / 59 (0.15 / 0.30)
			Opt 3 Stg FFL Mast (NL / RL)	ft/min (m/sec)	71 / 88 (0.36 / 0.45)
	30	Gradability	5 Minute Rating (NL / RL)	%	15 / 15
			60 Minute Rating (NL / RL)	%	3.47 / 2.57
	31	Drawbar Pull	5 Minute Rating (NL / RL)	lbf	2645 / 2412
	32	Brake	Method of Control (Service / Parking)		Spring Apply / Elec. Released
			Method of Operation (Service / Parking)		Foot / Foot
WT.	33	Truck Weight	Without Battery (NL)	lb. (kg)	6355 (2882)
	34	Axle Loading – Drive	Static with Max. Wt. Battery (NL / RL)	lb. (kg)	4058 (1841) / 9563 (4338)
	35	Axle Loading – Steer	Static with Max. Wt. Battery (NL / RL)	lb. (kg)	4182 (1897) / 1677 (761)
TIRES/WHEELS	36	Tire Type – Rubber, Polyurethane etc. (Drive / Steer)			Rubber / Polyurethane
	37	Tire Size (Drive / Steer)		in.	18 x 7 - 12.1 / 10 x 5 - 6.5
	38	Wheels – Number (X=Driven) Drive / Steer			2X / 2
	39	Tread (Tires) Std Dr / Steer / Steer		in. (mm)	35 / 10.5 / 24.5 (889 / 267 / 622)
BATT.	40	Battery	Type		Lead Acid
			Volts		36
			Minimum Weight	lb. (kg)	1885 (855)
MOTORS	41	Traction Motors (Dual) 60 Minute Rating each		hp (kW)	6.4 (4.8)
	42	Pump Motor 15 Minute rating		hp (kW)	16.1 (12)
	43	Traction Motors (Type / Control Method)			AC / Transistor
	44	Pump Motor (Type / Control Method)			AC / Transistor
	45	Number of Speeds (Traction & Pump)			Infinitely Variable
OTHER	46	Step Height		in. (mm)	7 (179)
	47	Attachment Relief Pressure		psi (bar)	2000 (13789)
	49	Sound Level (Measured per ANSI B56.11.5)		dB (A)	69

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

Dimensions displayed in inches. Dimensions in parenthesis represent metric.

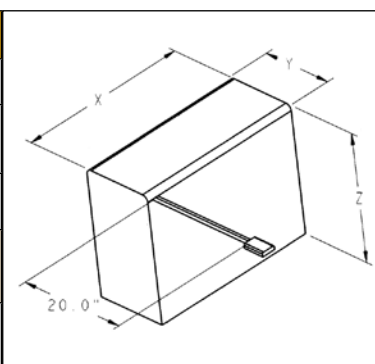
Yale®	Yale®	Yale®	1	GENERAL
ESC035AC	ESC035AC	ESC040AC	2	
Electric / 36 Volts	Electric / 36 Volts	Electric / 36 Volts	3	
Stand	Stand	Stand	4	
3500 (1588)	3500 (1588)	4000 (1814)	5	DIMENSIONS
24 (609)	24 (609)	24 (609)	6	
5F / 5B (10F / 5B)	5F / 5B (10F / 5B)	5F / 5B (10F / 5B)	7	
84 (2130)	84 (2130)	84 (2130)	8	
5 (140)	5 (140)	5 (140)	9	
33 / 61 (860 / 1555)	33 / 61 (860 / 1555)	33 / 61 (860 / 1555)		
131 (3332)	131 (3332)	131 (3332)	10	
180 / 154 (4555 / 3912)	180 / 154 (4555 / 3912)	180 / 154 (4555 / 3912)	11	
88 / 83 (2234 / 2108)	88 / 83 (2234 / 2108)	88 / 83 (2234 / 2108)	12	
40	40	40	13	
42 (1067)	42 (1067)	42 (1067)	14	
1.5 x 4 x 42 (38 x 102 x 1067)	1.5 x 4 x 42 (38 x 102 x 1067)	1.5 x 4 x 42 (38 x 102 x 1067)	15	
38.5 (978)	38.5 (978)	38.5 (978)	16	
7.5 (190)	7.5 (190)	7.5 (190)	17	
4 (102)	4 (102)	4 (102)	19	
12.6 (321)	12.6 (321)	12.6 (321)	20	
31.1 (790)	31.1 (790)	31.1 (790)	21	
18.3 (465)	20.8 (528)	20.8 (528)		
38"	38"	38"		PERFORMANCE
38.6 (980)	38.6 (980)	38.6 (980)		
66.7 (1696)	69.2 (1759)	69.2 (1759)	22	
43.9 (1115)	46.4 (1178)	46.4 (1178)	23	
112.8 (2865)	115.1 (2924)	115.1 (2924)	24	
69.2 (1757)	69.2 (1757)	69.2 (1757)	25	
55.0 (1397)	57.5 (1460)	57.5 (1460)	26	
7.2 / 7.2 (11.6 / 11.6)	7.2 / 7.2 (11.6 / 11.6)	7.2 / 7.2 (11.6 / 11.6)	27	
89 / 67 (0.45 / 0.34)	89 / 67 (0.45 / 0.34)	88 / 63 (0.45 / 0.32)	28	
55 / 41 (0.28 / 0.21)	55 / 41 (0.28 / 0.21)	55 / 41 (0.28 / 0.21)		
83 / 62 (0.42 / 0.32)	83 / 62 (0.42 / 0.32)	83 / 59 (0.42 / 0.30)		
55 / 106 (0.28 / 0.54)	55 / 106 (0.28 / 0.54)	55 / 106 (0.28 / 0.54)	29	WT.
30 / 61 (0.15 / 0.31)	30 / 61 (0.15 / 0.31)	30 / 61 (0.15 / 0.31)		
71 / 91 (0.36 / 0.46)	71 / 91 (0.36 / 0.46)	71 / 91 (0.36 / 0.46)		
15 / 15	15 / 15	15 / 15	30	
3.30 / 2.38	3.41 / 2.44	4.30 / 2.26		TIRES/WHEELS
2582 / 2335	2602 / 2356	2562 / 2280	31	
Spring Apply / Elec. Released	Spring Apply / Elec. Released	Spring Apply / Elec. Released	32	
Foot / Foot	Foot / Foot	Foot / Foot		
6838 (3102)	6410 (2908)	6893 (3127)	33	BATT.
4285 (1944) / 10707 (4857)	4347 (1972) / 10612 (4814)	4434 (2011) / 11594 (5259)	34	
4853 (2201) / 1931 (876)	4563 (2070) / 1798 (816)	5154 (2338) / 1994 (904)	35	
Rubber / Polyurethane	Rubber / Polyurethane	Polyurethane / Polyurethane	36	
18 x 7 - 12.1 / 10 x 5 - 6.5	18 x 7 - 12.1 / 10 x 5 - 6.5	18 x 7 - 12.1 / 10 x 5 - 6.5	37	MOTORS
2X / 2	2X / 2	2X / 2	38	
35 / 10.5 / 24.5 (889 / 267 / 622)	35 / 10.5 / 24.5 (889 / 267 / 622)	35 / 10.5 / 24.5 (889 / 267 / 622)	39	
Lead Acid	Lead Acid	Lead Acid	40	
36	36	36		OTHER
2300 (1043)	2500 (1134)	2695 (1222)		
6.4 (4.8)	6.4 (4.8)	6.4 (4.8)	41	
16.1 (12)	16.1 (12)	16.1 (12)	42	
AC / Transistor	AC / Transistor	AC / Transistor	43	
AC / Transistor	AC / Transistor	AC / Transistor	44	
Infinitely Variable	Infinitely Variable	Infinitely Variable	45	
7 (179)	7 (179)	7 (179)	46	
2000 (13789)	2000 (13789)	2000 (13789)	47	
69	69	69	49	

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

Dimensions displayed in inches. Dimensions in parenthesis represent metric.

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
in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)
2-STAGE LIMITED FREE-LIFT (LFL) MAST					
131 (3332)	84 (2130)	180 (4562)	154 (3906)	5 (140)	5 (140)
139 (3532)	88 (2230)	188 (4762)	162 (4106)	5 (140)	5 (140)
2-STAGE FULL FREE-LIFT (FFL) MAST					
40 (1018)	48 (1220)	90 (2286)	75 (1905)	0 (0)	12 (305)
130 (3318)	84 (2130)	180 (4568)	154 (3913)	35 (900)	61 (1555)
138 (3518)	88 (2230)	188 (4768)	162 (4113)	39 (1000)	65 (1655)
3-STAGE FULL FREE-LIFT (FFL) MAST					
187 (4750)	82 (2080)	236 (5980)	210 (5325)	33 (850)	59 (1505)
192 (4900)	84 (2230)	238 (6030)	212 (5375)	35 (900)	61 (1555)
198 (5050)	88 (2230)	248 (6280)	221 (5625)	39 (1000)	65 (1655)
222 (5650)	98 (2480)	271 (6880)	245 (6225)	49 (1250)	75 (1905)
228 (5800)	100 (2530)	277 (7030)	251 (6375)	51 (1300)	77 (1955)
4-STAGE FULL FREE-LIFT (FFL) MAST					
241 (6121)	84 (2121)	289 (7340)	264 (6708)	37 (935)	60 (1524)
259 (6578)	90 (2273)	306 (7772)	282 (7165)	43 (1087)	65 (1651)
283 (7188)	99 (2502)	331 (8407)	306 (7775)	52 (1316)	74 (1880)

BATTERY AND COMPARTMENT SPECIFICATIONS												
Truck Model	Compartment Dim.			Battery Dim - Max			Volts	No. of Cells	Plates per Cell	Max Capacity	Weight	
	Width (X)	Length (Y)	Height (Z)	"X"	"Y"	"Z"				6 Hr Rate	Min	Max
	in (mm)			in (mm)						amp hr (kwh)	lb (kg)	
ESC030AC Standard 18.3" Compartment	38.6 (980)	18.3 (465)	31.1 (790)	38.6 (980)	17.9 (455)	31 (787)	36	18	15	1085 (37.9)	2300 (1043)	2700 (1225)
ESC030AC *Optional 16.3" Compartment	38.6 (980)	16.3 (414)	31.1 (790)	38.6 (980)	15.8 (401)	31 (787)	36	18	13	930 (32.5)	1885 (855)	2300 (1050)
ESC035AC Standard 18.3" Compartment	38.6 (980)	18.3 (465)	31.1 (790)	38.6 (980)	17.9 (455)	31 (787)	36	18	15	1085 (37.9)	2300 (1043)	2700 (1225)
ESC035AC *Optional 20.8" Compartment	38.6 (980)	20.8 (528)	31.1 (790)	38.6 (980)	20.4 (518)	31 (787)	36	18	17	1240 (43.3)	2500 (1152)	3050 (1383)
ESC040AC Standard 20.8" Compartment	38.6 (980)	20.8 (528)	31.1 (790)	38.6 (980)	20.4 (518)	31 (787)	36	18	17	1240 (43.3)	2695 (1222)	3050 (1383)
ESC040AC *Optional 18.3" Compartment	38.6 (980)	18.3 (465)	31.1 (790)	38.6 (980)	17.9 (455)	31 (787)	36	18	15	1085 (37.9)	2300 (1043)	2700 (1225)



Battery compartment length is measured from front to rear. Battery Compartment Width is measured across the truck.

Battery Connector: 350 Amp / 36 Volt.

Battery Lead: Length 20" (508 mm) 2/0 guage leads, "B" Position.

* 18.3" battery compartment with a 2.5" spacer to accommodate a 16" Battery.

* 20.8" battery compartment with a 3.0" spacer to accommodate a 18" Battery.

(continued from page 1)

Standard Premium Dash Display

The LCD displays vehicle status, warning, and fault messages. The primary screen presents battery level, throttle command, vehicle speed, vehicle direction, steer angle, performance mode, and hours. In the service menus, the three line LCD is used for information display depending on submenu. The display contains vehicle diagnostics with fault history and can store 30 operator specific passwords. The display is also a control system input from operator or technician. The operator can select travel mode, enter passwords, or verify truck inspection when that option is installed. A service technician can input truck set-up values via dash to the control system.

Hydraulic Control System

The hydraulic functions of the truck are managed by the AC hoist controller. This system in conjunction with the electro-hydraulic valve provides low noise and low heat. Efficient design has allowed us significant reduction of hydraulic fittings reducing potential leak points. A replaceable cartridge full flow hydraulic filter is located at the top of the hydraulic tank. It has a bypass relief valve to ensure oil flow in the event of filter clogging. The filter contains a 10 micron element that protects the hydraulic system from contaminants, promotes reliable performance, and helps to provide long life for all the system components.

Power Steering

The on-demand power steering system is timed-off when not used, reducing noise and conserving energy. This system is powered by a brushless motor virtually eliminating maintenance.

Masts/Carriage/Forks/Load Backrest Extension

Yale simplex, duplex, triplex and quad masts provide excellent visibility. The mast features flush face design with geometrically matched, 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 3-degree mast rollers significantly reduces channel web milling and roller wear. Trunnion mounts have replaceable bushings for longer life. The standard Class II carriage features pre-lubed and sealed full radius, angled load rollers that resist forward, backward and lateral forces. Forks are "upset forged" from a single piece of high strength steel to give strength and added thickness for wear. A 48" load backrest extension is standard. The optional Trucker's Style Mast is a new 2 stage FFL mast providing 40" of lift with a 48" collapsed height and 12" of free lift (without load backrest).

Frame/Overhead Guard

The frame is a unitized stress-tested welded steel construction. Battery compartment has standard corrosion resistant ball bearing rollers. The frame is designed to distribute loads and stress uniformly throughout the structure. The application of this design concept through the finite element modeling and extensive stress testing produces a balanced design with long-term durability. There are two wheelbase lengths, one for 18" nominal battery, and one for the 21" nominal battery. The shorter truck offers 3,000 and 3,500 lb. capacities. The longer truck will offer 3,500 and 4,000 lb. capacities. Overhead Guard offers excellent visibility and strength. A single rear overhead guard leg provides additional operator protection. When fitted with the Trucker's Style Mast a truck can be ordered with the Overhead Guard Delete Option which may improve driver visibility and awareness in some applications.

All Wiring

Wiring is color coded for easy trouble-shooting. Sealed electrical connectors are used throughout the truck. Electrical connections are provided for convenient field installation of electric options.

Key Switch

The key switch is located to the left of the multi-function control handle. The power disconnect handle disrupts all power circuits when depressed. Power is reinstated when battery is reconnected by returning the disconnect handle back to the on position.

Additional Features

A bolt-on 48 inch (1220 mm) load backrest extension and 42 inch (1067 mm) hook type forks are standard. All non-sealed friction points are equipped with high pressure grease fittings. The truck is painted gold, parchment, and black.

Options

- Regulated Auxiliary Power Supply (suitable for electronic equipment)
25 amps / 300 watts @ 12 volts
- Headlights
 - Mast Mounted
 - Overhead Guard Mounted
 - LED or Halogen
- Rear Worklight (LED or Halogen)
- Drive-in Rack Overhead Guard
- 10 Degree Forward Tilt
- Integral Sideshifter
- Cooler/Freezer Package (Operating Temperatures: 0° to + 120°F)
- SubZero Freezer Package (Operating Temperatures: -40° to + 120°F)
- Various Drive & Steer Tire Types
- Dome Light and Two Speed Fan
- Backup Alarms
- Data Terminal Mounting Bracket
- Strobe Lights
- Push – Pull Travel Control
- Reduced Speed Tilt
- Hydraulic Attachment Extension Tubes with and without Quick Disconnect Fittings
- Keyless Start
- AC hoist controller
- Gated Multi-Function Control Handle
- Battery Gate Interlock Options
- Fire Extinguisher
- Trucker's Style Mast Option (2 stage FFL)
- Quad Masts
- Overhead Guard Delete Option ¹
- Rear Operator Compartment Door ²

¹ Requires dealer/customer verification confirming that the application meets ANSI/ITSDF B56.1 Section 4.5.1.4. A truck without an overhead guard cannot be used where there is risk of stacked loads falling on the driver. Contact Applications Engineering for additional details.

Note: Special Chassis mounted headlights, work light and strobe light options are available for trucks that are not fitted with an overhead guard.

² Doors are intended to protect the operator from objects that may enter the operator's compartment but they may also slow the operator's egress in emergency situations. A review of the forklift's intended environment should be conducted before selecting a door as optional equipment.

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 design specifications of ANSI B56.1 Safety Standard for Powered Industrial Trucks at the time of manufacture. Classified by Underwriters' Laboratories, Inc. as to fire 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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