



STRONG PARTNERS. TOUGH TRUCKS.™

H400-500HD-EC

EMPTY CONTAINER HANDLER



Hyster® H400-500HD-EC Features and Equipment

Since 1997, Hyster Company has been a leader in the empty container handling industry. To remain a top competitor, Hyster® is now offering four new models and two wheel bases. The models in our empty handler family are: H400HD-EC5/6, H440HDS-EC6/7, H450HD-EC6/7 and the H500HD-EC6/7. These models are the new pace setters in the empty container handling industry.

A maximum performance machine can only be manufactured by using the best of the best. That is why Hyster has teamed up with other top performers, such as Cummins, Spicer Off-Highway, Parker, and Elme. Together, they have produced a machine that is unmatched in the empty container industry.

When you enter into the cab of the H400HD-H500HD-EC and close the door, this is your space. The ComforCab II™ offered on this series is the same proven cab fitted on the all other “HD” models offered by Hyster. The ergonomic design of the cab and controls reduces operator fatigue and delivers improved productivity.

Frame

- One piece welded construction, made from high strength steel
 - Reduction in frame stress, while handling greater dynamic container loads
 - Tested by two methods - FEA and strain strain gauge
- Bolted on components
- Two chassis are available - 157.5" (4000mm) and 177" (4496mm) wheel bases

Operator's Cabin

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- Cab is mounted to the rear of the chassis for optimum visibility when stacking 6 high 9'6" and 7 high 8' 6" containers
- Cab tilts to the rear for ease of serviceability actuated manually (standard) or powered
- Cab is designed to exceed all applicable regulations
- Enhanced visibility via large glassed area
- Overhead guard has strategically arranged flat bars to enable the operator to easily view over head with no visual obstructions
- Ergonomically designed console houses the instrumentation and electronics offering the operator a “soft touch”
- Location of multi-function display panel allows easy reading of all gauges and instruments which monitor the truck's performance
- High capacity heater system and multiple vents provide excellent heating and cooling when combined with the factory installed air-conditioning system
- Filtered operator's compartment enables the operator to work in a fresh air environment
- Operator compartment features a spacious environment with a 7-way adjustable suspension seat with integrated armrest and low effort controls, 4-way adjustable steering wheel, and power assisted steering and brakes
- Wide angle side view mirrors for excellent rearward visibility
- Cab positioned on large anti-vibration mounts to reduce shock, noise and vibration
- Rubber floor mats provide a soft feel for the operator
- Doors are single piece steel frame with tempered glass
- Handrails are provided for (3) point access and egress
- Noise in cab is a low 72db(A)



Hyster® H400-500HD-EC Features and Equipment



- Has large sump pump and an externally mounted spin-on filter

Steering System

- Hydrostatic for precise control
 - Priority control valve for steer axle allows on demand steering
- Danfoss OSPC500 dynamic load sensing device provides low effort steering
- Steering wheel is infinitely adjustable
- Steer axle is a welded sandwich construction with a transverse mounted double acting cylinder, non adjustable tie rods, and incorporates taper roller bearings
- Steer axle is mounted to the chassis via robust pin and no rubber isolators
- Regular lubrication is only required on the spindle and tie rods at 500-hour intervals

Drive Axle

- Axle Tech PRC-1756
- Wide drive axle increases the overall lateral stability
- Wet disc wheel speed brakes
 - Eliminate occasional brake noise
 - Eliminate roll-back
 - Increases torque rating of the wheel end gears by 10% over shaft speed design
- 14.17" diameter wet disc brakes, ensure compliance with ISO and ANSI standards
- Spring applied, hydraulically released dry disc park brake
- Increased drive axle capacity
- Axle magnets to reduce oil pollution
- Separate oil cooler is used in conjunction with oil temperature sensors on each side to provide early indication of excessive oil temperatures

Wet Brake System

- Fully hydraulic actuated for low effort control
- Oil-cooled disc brakes via separate cooler
- Hydraulic fluid filtered as it returns to the tank
- Dry disc park brake is located on the drive shaft

Engine

- Cummins QSB6.7 tier III, turbo charged with a charged air cooler
- 6 cylinders, 6.7 liters, and 230 hp at 1800rpm
- Less complex engine with fewer parts
- Lower RPM helps reduce noise
- Bosch, mechanical fuel system with a rotary fuel pump
- 2 valve cylinder head
- An engine grid heater is automatically activated when starting in temperatures of 10 degrees or less
- 500 hour oil and filter maintenance
- Engine diagnostics are provided to assist in serviceability
- Engine protection system activated by:
 - Coolant temperature
 - Air intake temperature
 - Oil pressure

Transmission

- Dana Spicer Off-Highway (S.O.H) power shift
- TE-17 rated for 215-270 hp engine
- 3-speed forward and 3 speed reverse
 - Soft shift for down shifting and reversal
 - Inching by solenoid clutch
 - Auto-shift
 - "Userlink" diagnostic software available through aftermarket
 - APC 200 controller
- Torque converter with 2.29:1 stall ratio matches engine to transmission for exceptional traction
- Separate hydraulic system from the main truck

Hyster® H400-500HD-EC Features and Equipment

Controls and Instruments

- Multi-function display console located to the right of the operator
- Warning lights, gauges, and LCD located on display, provides machine status
- Warning light cluster is mounted in the steering column and will illuminate to inform operator to view the display console
- Switches are mounted on the right armrest and console
- Standard lever or optional joystick is available

Hydraulic System

- Routing of hydraulic plumbing has been simplified for ease of service and to reduce heat build up and chaffing
- "Leak Free" O-ring Face Seal fittings are used throughout
- Tandem pump (main pump) contains a section for the lift system and a separate section for the steering, tilt, and auxiliary systems
- Proportional control valve provide fine tune metering of functions
- Main control valve features:
 - Metering notches in spool allow control of oil flow during hoist and tilt functions provide load protection
- Hoist accumulator is standard

Tilt Control Valve

- Anti-cavitation tilt control valves are plumbed at the tilt cylinder ports to keep upright from moving forward while engine is not running, improve upright control during forward tilting, and blocks the flow of hydraulic oil to all tilt cylinder ports, while eliminating

fluid transfer between cylinders

Hydraulic Tank

- 105 gallon tank, with 80 usable gallons, bolted to the right side on frame
- Oil level can easily be checked by 2 ways:
 - Dipstick located on top of the hydraulic filter head
 - Sight glass mounted on the side of the tank
- Both steering and main hydraulic system oil is filtered as it returns to the tank
- Tank breather has a filter outside of operator compartment to prevent fumes

Hydraulic Filter

- Replaceable filter located in hydraulic tank
 - 10-micron paper element
 - By-pass relief valve to provide oil flow in event of clogged filter
 - All oil added to system passes through filter

Electrical System

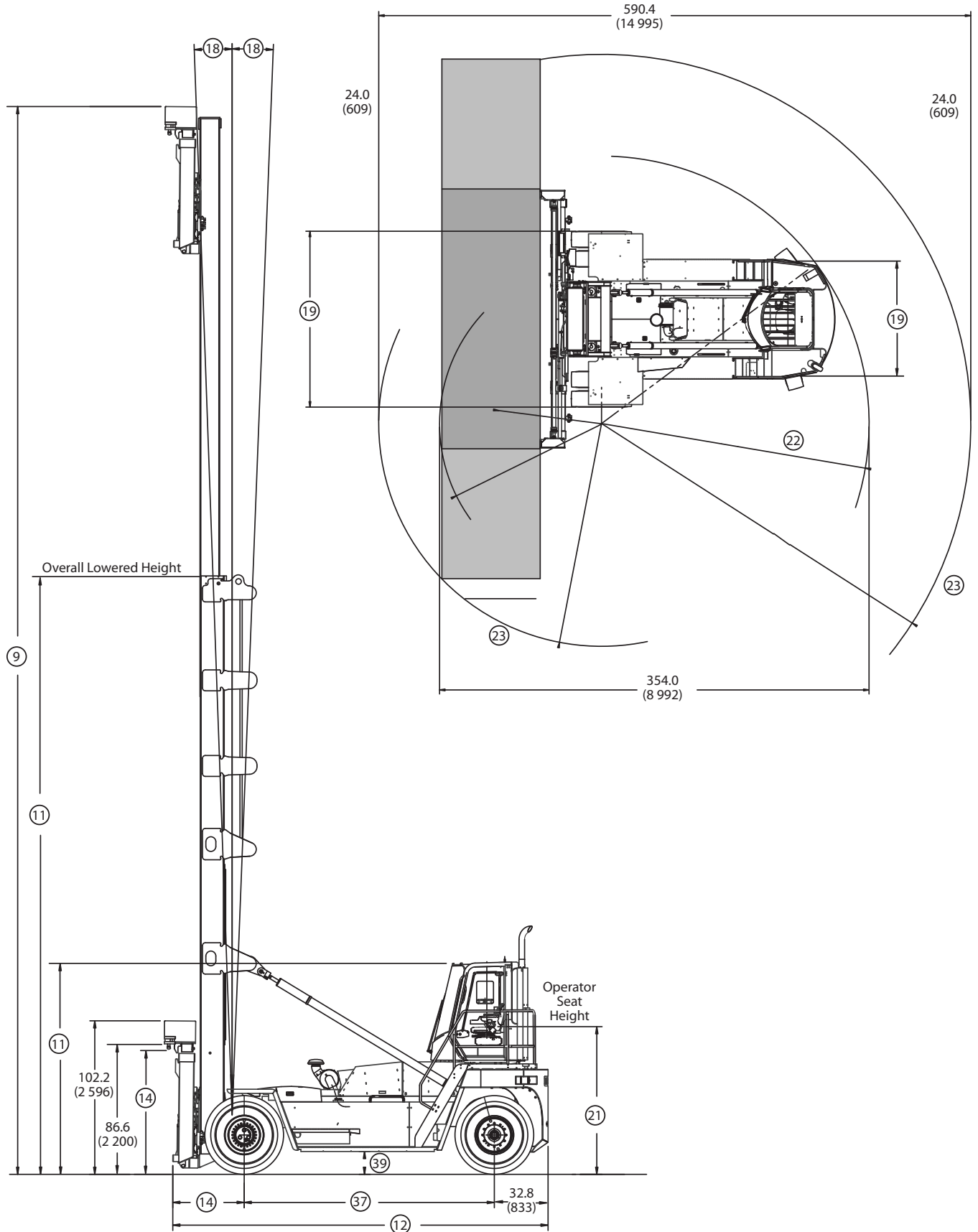
- Sealed water tight Deutsch connectors are used through out
- Wires are single colored and numbered every inch for ease of tracing
- 70 amp Delco alternator, 24V system
- Wired to meet UL 558 requirements
- (2) 12V 900A cold cranking amp batteries

Spreader

- ELME 586 spreader is a dedicated, low-mounted, telescopic beam that affords operators excellent visibility for consistent stacking of 9'6", 20'-40' container.
- This empty container handler series can handle any size container that meets the container industry ISO standards as well as US domestic containers
- Exclusive ELME design of nested extension beams ensure maximum resistance to vertical and lateral forces and also maximizes forward visibility at elevated heights. A pair of wide-beam work lights facilitate better visibility in low light.
- ELME 586 spreader features solenoid valves for all hydraulic functions: extension, retraction, locking and unlocking
- Specially shaped 'bumpers' guide the spreader heads into a container's corner castings, facilitating easier seating for both hydraulically operated vertical twistlocks
- The combined capabilities of sideshift, 48.0" in total movement, and mechanical pile slope reduce the handling of containers for quicker, more precise placement of empty containers
- To help ensure proper positioning of twistlocks prior to turning, 3 indicator lights monitor the "locked", "unlocked" and "seated" position of both twistlocks
- Optional ELME 582 double horizontal twist locks



Hyster® H400-500HD-EC Lift Truck Specifications



Hyster® H400-450HD-EC5/6 Lift Truck Specifications

GENERAL	1	Manufacturer		Hyster Company	Hyster Company
	2	Model		H400HD-EC5	H450HDS-EC6
	3	Capacity, RL w/ 372" mast, attachment, stacking 5 high	lb. (kg)	15,400 (6 985)	----
		Capacity, RL w/ 424" mast, attachment, stacking 6 high	lb. (kg)	----	15,400 (6 985)
	4	Distance, face of mast to load center of attachment	in. (mm)	67.6 (1 717)	67.6 (1 717)
	5	Power type		Cummins Turbo Diesel	Cummins Turbo Diesel
	6	Fuel capacity	gal. (liters)	86 (325)	86 (325)
	7	Tire type, front / rear	drive / steer	Pneumatic	Pneumatic
	8	Wheels, front / rear (X=driven)	drive / steer	4X / 2	4X / 2
DIMENSIONS	9	Mast height, VISTA 2-stage (LFL), extended - top of attachment	in. (mm)	641 (16 281)	743 (18 872)
	10	Attachment, distance from ground @ twistlocks, min/max	in. (mm)	87.9 (2 232) / 633.4 (16 088)	87.9 (2 232) / 735.4 (18 679)
	11	Height, standard mast lowered / top of cab	in. (mm)	372 (9 448) / 150 (3 810)	424 (10 790) / 150 (3 810)
	12	Overall length of truck	in. (mm)	250 (6 329)	250 (6 329)
	13	Distance, centerline drive axle to center of load – 8' containers	in. (mm)	103 (2 616)	103 (2 616)
	14	Load face length, (centerline of drive axle to face of attachment)	in. (mm)	55 (1 397)	55 (1 397)
	15	Width of attachment, retracted / extended *	in. (mm)	238.3 (6 053) / 479.7 (12 185)	238.3 (6 053) / 479.7 (12 185)
	17	Side shift, movement one direction / total movement	in. (mm)	23.6 (600) / 47.2 (1 200)	23.6 (600) / 47.2 (1 200)
	18	Mast tilt angle, forward / backward	Degrees	4 / 4	4 / 4
	19	Overall width, drive / steer axle	in. (mm)	162 (4 115) / 111.9 (2 842)	162 (4 115) / 111.9 (2 842)
	20	Operator's cab position		Mid-High Rear	Mid-High Rear
	21	Height of operator's seat	in. (mm)	96 (2 458)	96 (2 458)
	22	Turning radius, inner / outer	in. (mm)	91 (2 311) / 335 (8 504)	91 (2 311) / 335 (8 504)
	23	Aisle for 90 degree stacking, 20' / 40'	in. (mm)	367 (9 322) / 535 (13 589)	367 (9 322) / 535 (13 589)
PERFORMANCE †	25	Travel speed, maximum - forward with RL	mph (km/h)	16 (25.7)	16 (25.7)
	26	Lift speed, standard mast NL / RL	ft/min (m/s)	110 (.56) / 102 (.52)	110 (.56) / 102 (.52)
	27	Lowering speed, standard mast NL / RL	ft/min (m/s)	93 (.47) / 97 (.49)	93 (.47) / 97 (.49)
	28	Drawbar pull, 3-speed auto-shift @ 0 / 1.0 mph - RL	lbs-f (kN•m)	SEE CHART	SEE CHART
	29	Gradeability, maximum, @0 mph - RL	%	SEE CHART	SEE CHART
	30	Gradeability, continuously @ 1.0 mph - RL	%	SEE CHART	SEE CHART
	31	Attachment telescoping time, extending / retracting	seconds	6.7	6.7
WEIGHT	32	Total approximate weight, unladen	lb. (kg)	72,756 (33 001)	74,569 (33 824)
	33	Attachment total weight	lb. (kg)	12,346 (5 600)	12,346 (5 600)
	34	Axle loading, drive / steer NL	lb. (kg)	49,112 (22 277) / 23,645 (10 725)	51,239 (23 246) / 23,329 (10 582)
	35	Axle loading, drive / steer RL	lb. (kg)	74,622 (33 848) / 13,570 (6 155)	76,747 (34 812) / 13,254 (6 012)
WHEELS & TIRES	36	Tires, size, drive / steer	in.	14 x 24 - 24 Ply Bias	14 x 24 - 24 Ply Bias
	37	Wheelbase	in. (mm)	157.5 (4 000)	157.5 (4 000)
	38	Tread, center of wheels, drive / steer	in. (mm)	147 (3 734) / 99 (2 515)	147 (3 734) / 99 (2 515)
	39	Ground clearance, center wheelbase / lowest point RL	in. (mm)	14.0 (356) / 11.8 (300)	14.0 (356) / 11.8 (300)
	40	Service brakes, type	in. (mm)	Wet Disc Brakes	Wet Disc Brakes
	41	Service brakes, type - line / actuation		Hydraulic	Hydraulic
	42	Parking brake, type - line / actuation		Spring Applied / Hydraulic Release	Spring Applied / Hydraulic Release
	43	Steering system, rear steer wheels		Hydrostatic	Hydrostatic
POWER UNIT & TRANSMISSION	44	Power unit, internal combustion engine		SEE CHART	SEE CHART
	45	Power unit, horsepower rating @ governed rpm	hp @ rpm	SEE CHART	SEE CHART
	46	Power unit, peak torque @ engine rated speed	ft.lbs. @ rpm	SEE CHART	SEE CHART
	47	Power unit, number of cylinders / displacement	cu.in. (l)	SEE CHART	SEE CHART
	48	Power unit, fuel consumption (average)	gal/hr (l/hr)	3.7 (14)	3.7 (14)
	49	Battery, voltage / cold cranking amps	V / Amps	24V / 900CCA	24V / 900CCA
	50	Drive axle		Planetary Reduction	Planetary Reduction
	51	Clutch, type		Torque Converter	Torque Converter
	52	Gear change type (Automatic - Powershift)		Column-Mounted Lever	Column-Mounted Lever
	53	Number of gears, forward / reverse		3 / 3	3 / 3
	54	Transmission type		Auto-Powershift	Auto-Powershift

* **CERTIFICATION:** These Hyster lift trucks meet design specifications of Part II ANSI B56.1-1969, as required by OSHA Section 1910.178(a)(2) and also comply with Part III ANSI B56.1-revision in effect at time of manufacture. Certification of compliance with the applicable ANSI standards appears on the lift truck.

† **NOTE:** Performance specifications/ratings are for truck equipped as described under Standard Equipment in this Technical Guide. Performance specifications are affected by the condition of the vehicle and how it is equipped, as well as by the nature and condition of the operating area. Specifications are subject to change and you should discuss the proposed application with your authorized Hyster Dealer.

Hyster® H450-500HD-EC6 Lift Truck Specifications

GENERAL	1	Manufacturer		Hyster Company	Hyster Company
	2	Model		H450HD-EC6	H500HD-EC6
	3	Capacity, RL w/ 372" mast, attachment, stacking 5 high	lb. (kg)	----	----
	3	Capacity, RL w/ 424" mast, attachment, stacking 6 high	lb. (kg)	19,000 (8 618)	20,000 (9 072)
	4	Distance, face of mast to load center of attachment	in. (mm)	67.6 (1 717)	67.6 (1 717)
	5	Power type		Cummins Turbo Diesel	Cummins Turbo Diesel
	6	Fuel capacity	gal. (liters)	86 (325)	86 (325)
	7	Tire type, front / rear	drive / steer	Pneumatic	Pneumatic
DIMENSIONS	8	Wheels, front / rear (X=driven)	drive / steer	4X / 2	4X / 2
	9	Mast height, VISTA 2-stage (LFL), extended - top of attachment	in. (mm)	743 (18 872)	743 (18 872)
	10	Attachment, distance from ground @ twistlocks, min/max	in. (mm)	87.9 (2 232) / 735.4 (18 679)	87.9 (2 232) / 745.4 (18 933)
	11	Height, standard mast lowered / top of cab	in. (mm)	424 (10 770) / 150 (3 810)	424 (10 770) / 150 (3 810)
	12	Overall length of truck	in. (mm)	270 (6 856)	270 (6 856)
	13	Distance, centerline drive axle to center of load - 8' containers	in. (mm)	103 (2 616)	103 (2 616)
	14	Load face length, (centerline of drive axle to face of attachment)	in. (mm)	55 (1 397)	55 (1 397)
	15	Width of attachment, retracted / extended *	in. (mm)	238.3 (6 053) / 479.7 (12 185)	238.3 (6 053) / 479.7 (12 185)
	17	Side shift, movement one direction / total movement	in. (mm)	23.6 (600) / 47.2 (1 200)	23.6 (600) / 47.2 (1 200)
	18	Mast tilt angle, forward / backward	Degrees	4 / 4	4 / 4
	19	Overall width, drive / steer axle	in. (mm)	162 (4 115) / 111.9 (2 842)	162 (4 115) / 111.9 (2 842)
	20	Operator's cab position		Mid-High Rear	Mid-High Rear
	21	Height of operator's seat	in. (mm)	96 (2 438)	96 (2 438)
PERFORMANCE †	22	Turning radius, inner / outer	in. (mm)	92 (2 337) / 353 (8 966)	92 (2 337) / 353 (8 966)
	23	Aisle for 90 degree stacking, 20' / 40'	in. (mm)	386 (9 804) / 535 (13 589)	386 (9 804) / 535 (13 589)
	25	Travel speed, maximum - forward with RL	mph (km/h)	16 (25.7)	16 (25.7)
	26	Lift speed, standard mast NL / RL	ft/min (m/s)	108 (.55) / 102 (.52)	108 (.55) / 102 (.52)
	27	Lowering speed, standard mast NL / RL	ft/min (m/s)	102 (.52) / 108 (.55)	102 (.52) / 108 (.55)
	28	Drawbar pull, 3-speed auto-shift @ 0 / 1.0 mph - RL	lbs-f (kN•m)	SEE CHART	SEE CHART
WEIGHT	29	Gradeability, maximum, @0 mph - RL	%	SEE CHART	SEE CHART
	30	Gradeability, continuously @ 1.0 mph - RL	%	SEE CHART	SEE CHART
	31	Attachment telescoping time, extending / retracting	seconds	6.7	6.7
WHEELS & TIRES	32	Total approximate weight, unladen	lb. (kg)	74,223 (33 667)	79,470 (36 047)
	33	Attachment total weight	lb. (kg)	12,346 (5 600)	12,346 (5 600)
	34	Axle loading, drive / steer NL	lb. (kg)	50,514 (22 913) / 23,973 (10 874)	52,080 (23 953) / 28,717 (13 026)
	35	Axle loading, drive / steer RL	lb. (kg)	80,826 (36 662) / 18,790 (8 523)	83,445 (3 785) / 17,207 (7 805)
POWER UNIT & TRANSMISSION	36	Tires, size, drive / steer	in.	14 x 24 - 24 Ply Bias	14 x 24 - 24 Ply Bias
	37	Wheelbase	in. (mm)	177 (4 496)	177 (4 496)
	38	Tread, center of wheels, drive / steer	in. (mm)	147 (3 734) / 99 (2 515)	147 (3 734) / 99 (2 515)
	39	Ground clearance, center wheelbase / lowest point NL	in. (mm)	14 (356) / 11.8 (300)	14 (356) / 11.8 (300)
	40	Service brakes, type	in. (mm)	Wet Disc Brakes	Wet Disc Brakes
	41	Service brakes, type - line / actuation		Hydraulic	Hydraulic
	42	Parking brake, type - line / actuation		Spring Applied / Hydraulic Release	Spring Applied / Hydraulic Release
	43	Steering system, rear steer wheels		Hydrostatic	Hydrostatic
POWER UNIT & TRANSMISSION	44	Power unit, internal combustion engine		SEE CHART	SEE CHART
	45	Power unit, horsepower rating @ governed rpm	hp @ rpm	SEE CHART	SEE CHART
	46	Power unit, peak torque @ engine rated speed	ft.lbs. @ rpm	SEE CHART	SEE CHART
	47	Power unit, number of cylinders / displacement	cu.in. (l)	SEE CHART	SEE CHART
	48	Power unit, fuel consumption (average)	gal/hr (l/hr)	3.7 (14)	3.7 (14)
	49	Battery, voltage / cold cranking amps	V / Amps	24V / 900CCA	24V / 900CCA
	50	Drive axle		Planetary Reduction	Planetary Reduction
	51	Clutch, type		Torque Converter	Torque Converter
	52	Gear change type (Automatic - Powershift)		Column-Mounted Lever	Column-Mounted Lever
	53	Number of gears, forward / reverse		3 / 3	3 / 3
	54	Transmission type		Auto-Powershift	Auto-Powershift

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Tier IV

Cummins QSB 6.7L 230hp

Models	Max. drawbar pull with load lbs. (kN)	Drawbar pull at 1mph (1.6km/h) with load lbs. (kN)	Gradeability max. with load	Gradeability at 1mph (1.6km/h) with load	Engine output in accordance with ISO 1585 hp(kw)	Torque ft/lb (N.m)	Number of cylinders/ displacement No./cc(ci)
H400HD-EC	40450 (180)	31700 (141)	37%	50%	220 (164)	700 (949)	6/6700 (409)
H450HD-EC	36650 (163)	29200 (130)	34%	44%	220 (164)	700 (949)	6/6700 (409)
H450HDS-EC	40450 (180)	31700 (141)	37%	50%	220 (164)	700 (949)	6/6700 (409)
H500HD-EC	36650 (163)	30350 (135)	27%	35%	220 (164)	700 (949)	6/6700 (409)

Tier III

Cummins QSB 6.7L 230hp



Models	Max. drawbar pull with load lbs. (kN)	Drawbar pull at 1mph (1.6km/h) with load lbs. (kN)	Gradeability max. with load	Gradeability at 1mph (1.6km/h) with load	Engine output in accordance with ISO 1585 hp(kw)	Torque ft/lb (N.m)	Number of cylinders/ displacement No./cc(ci)
H400HD-EC	40450 (180)	31700 (141)	37%	50%	220 (164)	700 (949)	6/6700 (409)
H450HD-EC	36650 (163)	29200 (130)	34%	44%	220 (164)	700 (949)	6/6700 (409)
H450HDS-EC	40450 (180)	31700 (141)	37%	50%	220 (164)	700 (949)	6/6700 (409)
H500HD-EC	36650 (163)	30350 (135)	27%	35%	220 (164)	700 (949)	6/6700 (409)



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