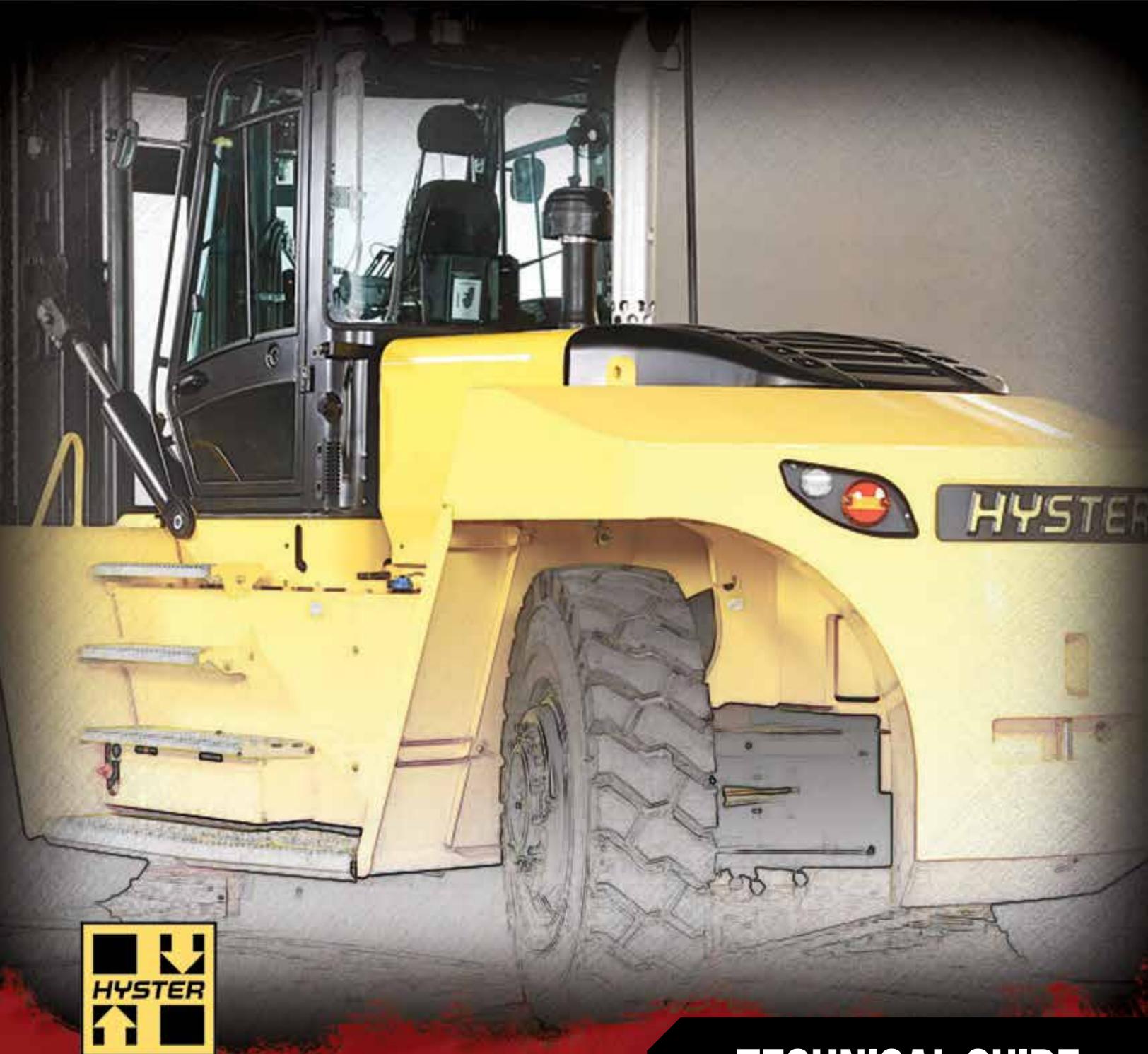


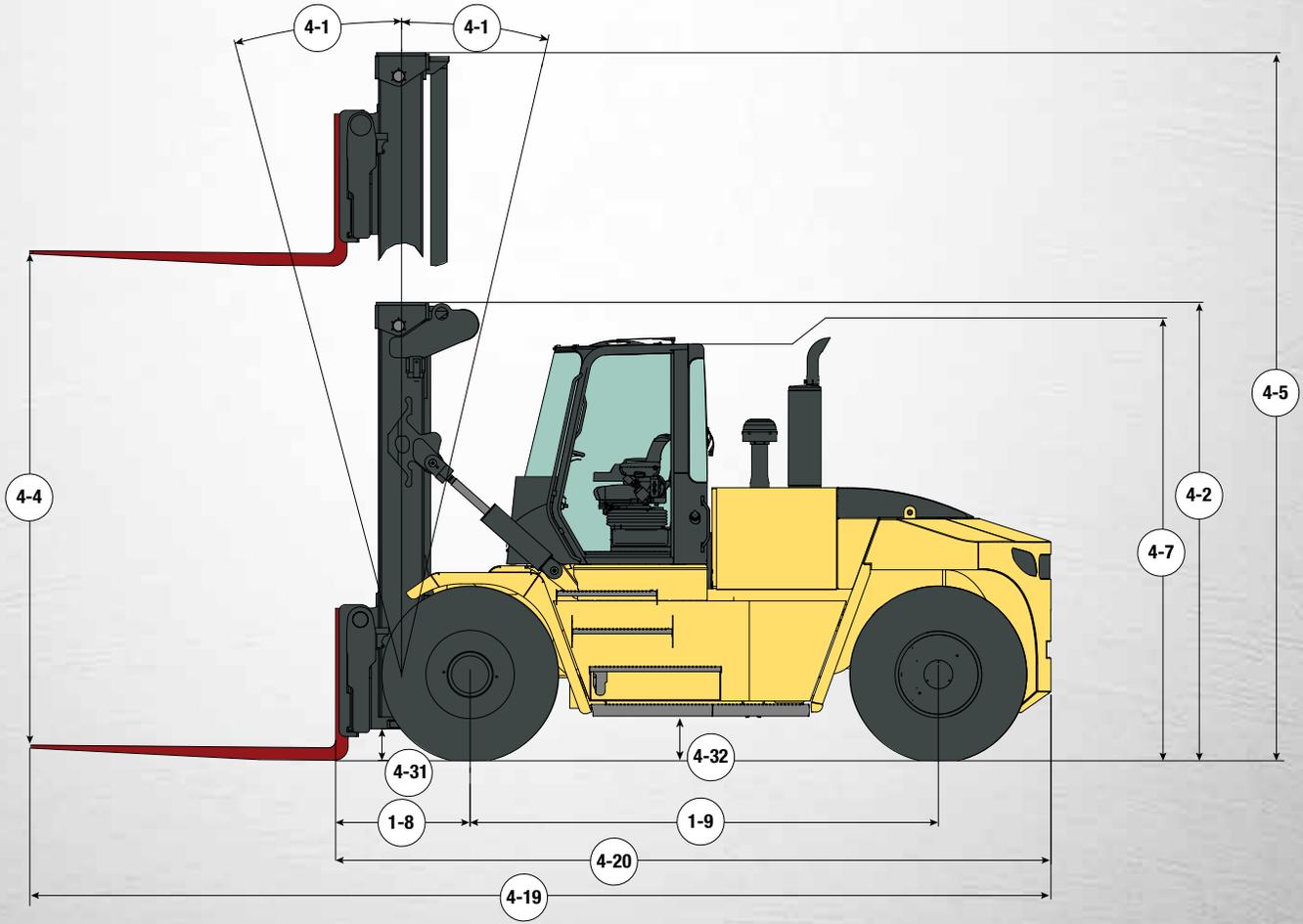
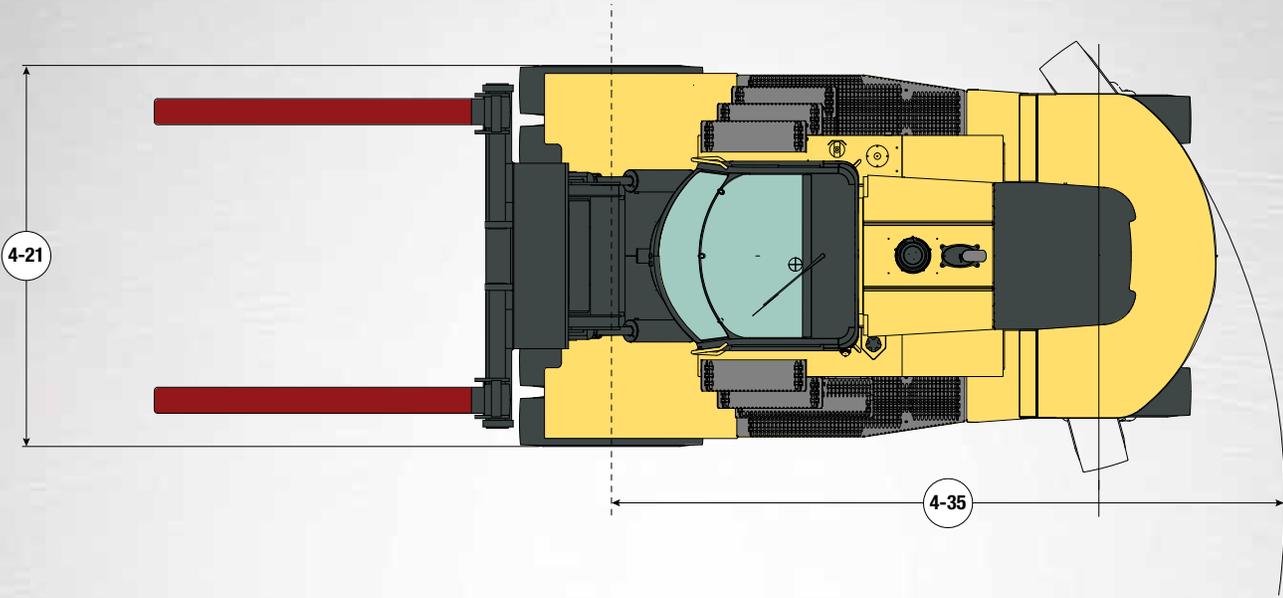
H400-450HD/S SERIES



**STRONG PARTNERS.
TOUGH TRUCKS.™**

TECHNICAL GUIDE
High Capacity Forklift Truck

H400-450HD/S DIMENSIONS



H400-450HDS SPECIFICATIONS

		Description	Units		English	Metric	English	Metric	
GENERAL	1-1	Manufacturer			HYSTER	HYSTER	HYSTER	HYSTER	
	1-2	Model designation			H400HDS	H400HDS	H450HDS	H450HDS	
	1-5	Rated load capacity	lbs.	kg	40,000	18,144	45,000	20,412	
	1-6	Load center	in	mm	36	914	36	914	
	1-8	Load distance	in	mm	42	1,069	42	1,069	
	1-9	Wheelbase	in	mm	138	3,500	138	3,500	
	WEIGHTS	2-1	Total truck weight without load	lbs.	kg	61,963	28,106	66,416	30,126
2-2a		Axle loading with load	front	lbs.	kg	93,835	42,563	102,127	46,324
2-2b			rear	lbs.	kg	8,128	3,687	9,290	4,214
2-3a		Axle loading without load	front	lbs.	kg	31,317	14,205	32,322	14,661
2-3b			rear	lbs.	kg	30,646	13,901	34,094	15,465
WHEELS	3-1	Tire type			Pneumatic		Pneumatic		
	3-2	Tire size	front			14.00 x 24		14.00 x 24	
	3-3		rear			14.00 x 24		14.00 x 24	
DIMENSIONS	4-1	Mast tilt, forward / back	degrees		10 / 12		10 / 12		
	4-2	Height of mast lowered	in	mm	163	4,142	167	4,230	
	4-3	Freelift (Top of Fork) w/o LBR	in	mm	0	0	0	0	
	4-4	Lift height (Top of Fork)	in	mm	183	4,650	183	4,650	
	4-5	Height of mast extended w/o LBR	in	mm	253	6,417	256	6,505	
	4-7	Height to top of operator compartment	in	mm	133	3,372	133	3,372	
	4-19	Overall length	in	mm	312	7,927	311	7,910	
	4-20	Length to load face	in	mm	216	5,487	215	5,470	
	4-21	Overall width over drive tires	in	mm	115	2,923	115	2,923	
	4-22a	Fork	thickness	in	mm	3.94	100	3.94	100
	4-22b		width	in	mm	7.9	200	9.8	250
	4-22c		length	in	mm	96	2,440	96	2,440
	4-24	Carriage width	in	mm	105	2,672	115	2,940	
	4-25a	Fork spread, min (in-in)	in	mm	41	1,048	43	1,097	
	4-25b	Fork spread, max (out-out)	in	mm	94	2,393	107	2,712	
	4-31	Ground clearance, under mast with load	in	mm	12	307	11	278	
	4-32	Ground clearance, center of wheelbase	in	mm	15	374	15	374	
	4-33	Aisle width (Right angle stack) add load length + clearance	in	mm	417	10,594	417	10,594	
	4-35	Outside turning radius	in	mm	191	4,863	191	4,863	
	8-7	Hydraulic tank capacity	gal	L	54	203	54	203	
	8-8	Fuel tank capacity	gal	L	80	304	80	304	
	PERFORMANCE (TIER 4)	PERFORMANCE				WITH TIER 4 FINAL CUMMINS QSB 6.7L ENGINE			
5-1a		Travel speed	with load	mph	km/h	16	25	16	25
5-1b			without load	mph	km/h	16	25	16	25
5-2a		Lifting speed	with load	ft/min	m/s	59	0.30	49	0.25
5-2b			without load	ft/min	m/s	65	0.33	55	0.28
5-3a		Lowering speed	with load	ft/min	m/s	98	0.50	98	0.50
5-3b			without load	ft/min	m/s	98	0.50	98	0.50
5-7		Gradeability – no load / rated load – 1 mph (1.6 km/h)			%	38 / 33		34 / 32	
PERFORMANCE (TIER 3)	PERFORMANCE				WITH TIER 3 CUMMINS QSB 6.7L ENGINE				
	5-1a	Travel speed	with load	mph	km/h	16	25	16	25
	5-1b		without load	mph	km/h	16	25	16	25
	5-2a	Lifting speed	with load	ft/min	m/s	59	0.30	49	0.25
	5-2b		without load	ft/min	m/s	65	0.33	55	0.28
	5-3a	Lowering speed	with load	ft/min	m/s	98	0.50	98	0.50
	5-3b		without load	ft/min	m/s	98	0.50	98	0.50
	5-7	Gradeability – no load / rated load – 1 mph (1.6 km/h)			%	38 / 33		34 / 32	

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. Performance specifications are for a truck equipped as described under Standard Equipment on this Technical Guide. Performance specifications are affected by the condition of the vehicle and how it is equipped, as well as by the nature, condition of the operating area, proper service and maintenance of the vehicle. If these specifications are critical, the proposed application should be discussed with your dealer.

H400-450HD SPECIFICATIONS

	Description		Units		English	Metric	English	Metric
	GENERAL							
1-1	Manufacturer				HYSTER	HYSTER	HYSTER	HYSTER
1-2	Model designation				H400HD	H400HD	H450HD	H450HD
1-5	Rated load capacity		lbs.	kg	40,000	18,144	45,000	20,412
1-6	Load center		in	mm	36	914	36	914
1-8	Load distance		in	mm	43	1,086	43	1,086
1-9	Wheelbase		in	mm	148	3,750	148	3,750
WEIGHTS	2-1 Total truck weight without load		lbs.	kg	59,399	26,943	63,833	28,954
2-2a	Axle loading with load	front	lbs.	kg	91,615	41,556	100,268	45,481
2-2b		rear	lbs.	kg	7,785	3,531	8,565	3,885
2-3a	Axle loading without load	front	lbs.	kg	30,598	13,879	32,117	14,568
2-3b		rear	lbs.	kg	28,801	13,064	31,718	14,387
WHEELS	3-1 Tire type				Pneumatic		Pneumatic	
3-2	Tire size	front			14.00 x 24		14.00 x 24	
3-3		rear			14.00 x 24		14.00 x 24	
DIMENSIONS	4-1 Mast tilt, forward / back		degrees		10 / 12		10 / 12	
4-2	Height of mast lowered		in	mm	163	4,142	167	4,230
4-3	Freelift (Top of Fork) w/o LBR		in	mm	0	0	0	0
4-4	Lift height (Top of Fork)		in	mm	183	4,650	183	4,650
4-5	Height of mast extended w/o LBR		in	mm	253	6,417	256	6,505
4-7	Height to top of operator compartment		in	mm	133	3,372	133	3,372
4-19	Overall length		in	mm	322	8,177	321	8,160
4-20	Length to load face		in	mm	226	5,737	225	5,720
4-21	Overall width over drive tires		in	mm	115	2,923	115	2,923
4-22a	Fork	thickness	in	mm	3.94	100	3.94	100
4-22b		width	in	mm	7.9	200	9.8	250
4-22c		length	in	mm	96	2,440	96	2,440
4-24	Carriage width		in	mm	105	2,672	115	2,940
4-25a	Fork spread, min (in-in)		in	mm	41	1,048	43	1,097
4-25b	Fork spread, max (out-out)		in	mm	94	2,393	107	2,712
4-31	Ground clearance, under mast with load		in	mm	12	307	11	278
4-32	Ground clearance, center of wheelbase		in	mm	15	374	15	374
4-33	Aisle width (Right angle stack) add load length + clearance		in	mm	418	10,611	418	10,611
4-35	Outside turning radius		in	mm	204	5,173	204	5,173
8-7	Hydraulic tank capacity		gal	L	54	203	54	203
8-8	Fuel tank capacity		gal	L	80	304	80	304
PERFORMANCE (TIER 4)	PERFORMANCE				WITH TIER 4 FINAL CUMMINS QSB 6.7L ENGINE			
5-1a	Travel speed	with load	mph	km/h	16	25	16	25
5-1b		without load	mph	km/h	16	25	16	25
5-2a	Lifting speed	with load	ft/min	m/s	89	0.45	75	0.38
5-2b		without load	ft/min	m/s	98	0.50	83	0.42
5-3a	Lowering speed	with load	ft/min	m/s	98	0.50	98	0.50
5-3b		without load	ft/min	m/s	98	0.50	98	0.50
5-7	Gradeability – no load / rated load – 1 mph (1.6 km/h)		%		39 / 34		35 / 33	
PERFORMANCE (TIER 3)	PERFORMANCE				WITH TIER 3 CUMMINS QSB 6.7L ENGINE			
5-1a	Travel speed	with load	mph	km/h	16	25	16	25
5-1b		without load	mph	km/h	16	25	16	25
5-2a	Lifting speed	with load	ft/min	m/s	89	0.45	75	0.38
5-2b		without load	ft/min	m/s	98	0.50	83	0.42
5-3a	Lowering speed	with load	ft/min	m/s	98	0.50	98	0.50
5-3b		without load	ft/min	m/s	98	0.50	98	0.50
5-7	Gradeability – no load / rated load – 1 mph (1.6 km/h)		%		39 / 34		35 / 33	

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. Performance specifications are for a truck equipped as described under Standard Equipment on this Technical Guide. Performance specifications are affected by the condition of the vehicle and how it is equipped, as well as by the nature, condition of the operating area, proper service and maintenance of the vehicle. If these specifications are critical, the proposed application should be discussed with your dealer.

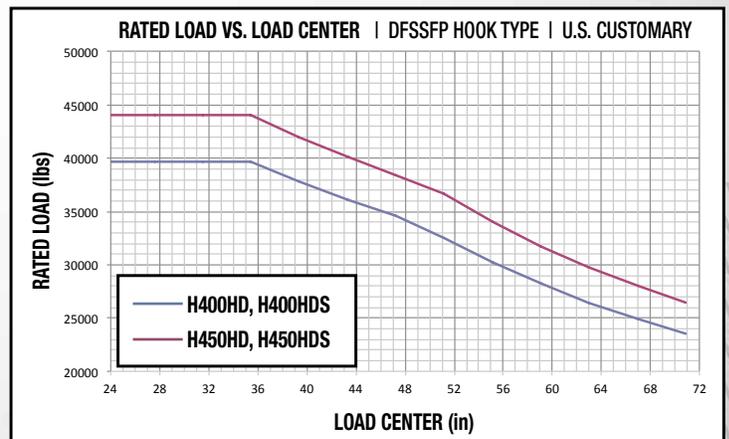
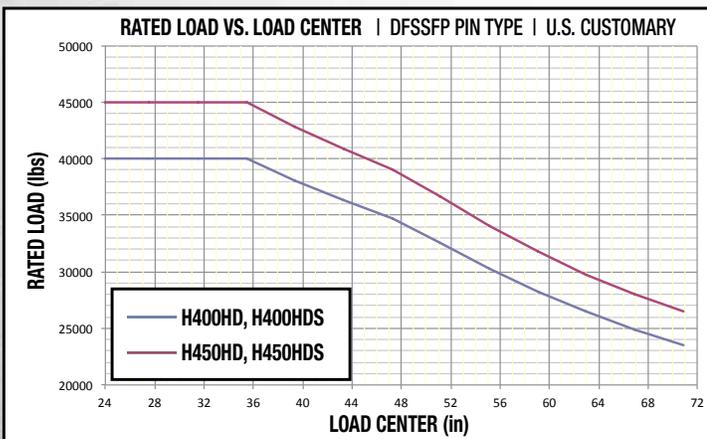
H400-450HD/S SPECIFICATIONS

POWERTRAINS		Units	Tier 4 Final		Tier 3	
1-3	Power type		Diesel		Diesel	
7-1	Engine Manufacturer / model		Cummins QSB 6.7L		Cummins QSB 6.7L	
7-2a	Engine power output - Rated	hp kW	220	164	220	164
7-2b	Engine power output - Peak	hp kW	230	168	230	168
7-3	Governed speed	rpm	2,000		2,000	
7-4	Number of cylinders / displacement	# / l	6 / 6.7		6 / 6.7	
7-5	Engine torque - Max	lb-ft N-m	700	949	700	949
7-5a	Turbocharger	Type	Water-Cooled Variable Geometry		Water-Cooled Variable Geometry	
7-9	Alternator output	Amps	120		120	
7-10a	Drive Axle Manufacturer / Model		AxleTech		AxleTech	
8-0	Transmission Manufacturer / model		ZF WG 211 5-speed		ZF WG 211 5-speed	
8-1	Drive control / Transmission: Number of speeds forward/reverse		Powershift 5F x 3R		Powershift 5F x 3R	
8-6	Battery voltage, rated capacity	V / CCA	2 x 12 / 900		2 x 12 / 900	
5-10	Service brake		Oil immersed (wet) disc		Oil immersed (wet) disc	
5-11	Park brake		Dry Disc on Drive Axle		Dry Disc on Drive Axle	
10-4	DEF Tank Capacity	gal (l)	10	38	N/A	N/A

H400HD/S MAST DIMENSIONS							
4-4 Lift height (Top of Fork)		4-2 Mast Lowered Ht.		4-3 Freelif (Top of Fork)		4-5 Overall Extended Ht.	
in	mm	in	mm	in	mm	in	mm
2-STAGE ONLY							
147	3750	145	3692	0	0	217	5517
183	4650	163	4142	0	0	253	6417
212	5400	179	4517	0	0	282	7167
244	6200	194	4917	0	0	314	7967
263	6700	203	5167	0	0	333	8467
275	7000	209	5317	0	0	345	8767

H450HD/S MAST DIMENSIONS							
4-4 Lift height (Top of Fork)		4-2 Mast Lowered Ht.		4-3 Freelif (Top of Fork)		4-5 Overall Extended Ht.	
in	mm	in	mm	in	mm	in	mm
2-STAGE ONLY							
147	3750	149	3780	0	0	221	5605
183	4650	167	4230	0	0	256	6505
212	5400	181	4605	0	0	286	7255
244	6200	197	5005	0	0	317	8055
263	6700	207	5255	0	0	337	8555
275	7000	214	5405	0	0	349	8855

RATED CAPACITIES



Model H400HDS: 40,000 lbs. at 36" (18,144 kg at 914mm) load center
 Model H450HDS: 45,000 lbs. at 36" (20,412 kg at 914mm) load center
 Model H400HD: 40,000 lbs. at 36" (18,144 kg at 914mm) load center
 Model H450HD: 45,000 lbs. at 36" (20,412 kg at 914mm) load center

Conversion Factor: 1.0" = 25.4 mm
 1 lb = 0.45 kg

Rated capacities are for trucks equipped with:

- 2-stage (lower mast) to 147" (3750 mm) maximum fork height
- 105" (2672 mm) carriage width (H400HD/S)
- 115" (2940 mm) carriage width (H450HD/S)
- 96" (2440 mm) long forks

Contact your dealer for other capacity information.

STANDARD FEATURES AND OPTIONS

MASTS

Masts with nested channels provide excellent visibility of the attachment and load. Mast channels, rollers, stub shafts and chain anchors are reinforced to provide good torsional rigidity.

CARRIAGES

Two dual function sideshift fork positioner (DFSSFP) carriage options are available: hook type and pin type.

FORKS

Two kinds of forks are offered:

1. PIN TYPE - STANDARD PROFILE available in:

- H400HD/S 96" long x 3.9" x 7.8"
(2440mm x 100mm x 200mm)
84" long x 3.9" x 7.8"
(2135mm x 100mm x 200mm)
- H450HD/S 96" long x 3.9" x 9.8"
(2440mm x 100mm x 250mm)
84" long x 3.9" x 7.8"
(2135mm x 100mm x 200mm)

2. HOOK TYPE (FOR USE WITH DFSSFP) available in:

- H400HD/S 96" long x 3.9" x 7.8"
(2440mm x 100mm x 200mm)
- H450HD/S 96" long x 3.9" x 9.8"
(2440mm x 100mm x 250mm)

ENGINE – TIER 4 FINAL

Cummins QSB 6.7L 6-cylinder diesel engine delivers 230 hp and 700 lb-ft of maximum torque. EPA Tier 4 Final engine features cooled exhaust gas recirculation (EGR) technology with selective catalytic reduction (SCR); water-cooled variable geometry turbocharger with an integrated diesel exhaust fluid (DEF) delivery system. Innovative selectable ECO performance modes offer excellent fuel economy and maximum productivity. Requires ultra-low sulphur diesel fuel and low ash oil.

Also includes:

- 120 amp alternator.
- Viscous, on-demand cooling fan that saves fuel and reduces noise.
- Overhead exhaust with diesel oxidation catalyst and a diluter to reduce exhaust temperatures.
- Automatic throttle-up.
- Heavy duty spinner type Sy-Klone pre-cleaner center, stacked for ease of service.

ENGINE – TIER 3

Cummins QSB 6.7L 6-cylinder diesel engine delivers 230 peak hp and 700 lb-ft of maximum torque. EPA Tier 3 engine features an integrated muffler. Can be used in markets where ultra-low sulphur diesel fuel and low ash oil is not available. Also includes:

- 120 amp alternator.
- Automatic throttle-up.

TRANSMISSION

- ZF WG 211 5-speed powershift transmission provides smooth shifting, precise inching and quick acceleration.
- 5 forward and 3 reverse gears.
- Electronically controlled inching.
- Cushioned clutch lock-up provides smooth shifting and dampens drive line shift shocks.
- Simple push button calibration.
- Transmission lock-out prevents high-speed directional changes.
- Transmission and engine powertrain protection for excessive engine coolant temperature, low engine oil pressure, and excessive engine inlet air temperatures.

ELECTRICAL SYSTEM

- Sealed Deutsch connectors.
- CANbus system for easy diagnostics of engine, transmission and hydraulics.
- 24V electrical system with 900 CCA batteries.

HYDRAULIC SYSTEM

Hyster on-demand load-sensing hydraulic system introduces an efficient way to meet hydraulic load demands:

- Based on Variable Displacement Pump (VDP) technology.
- Pump is only active when oil is needed.
- Less heat is produced, helping oil and filters last longer. Hoses, seals, and components also wear less and last longer.
- Engine runs quieter and at lower speeds, extending life of major components.
- Up to 10% fuel savings from on-demand hydraulics.
- Leak free O-ring face seal (ORFS) fittings standard throughout the truck.
- Capable of more oil displacement even at low engine speeds.

STEERING SYSTEM

- The steer axle is characterized by transverse mounted double acting cylinders, 2 non-adjustable tie rods, 2 spindles, tapered roller bearings and 2 wheel hubs.
- Designed for high loads and long life, the one piece axle frame carries the axle loads and provides mounting for the spindles and cylinder.
- Axle spindles are supported by tapered roller wheel bearings and sealed to prevent loss of grease. This ensures that oil bearings are always lubricated and enhances overall durability of the axle spindles.
- Eight high-strength bolts secure the steer cylinder providing large wheel angles and excellent maneuverability. Excessive external force on the frame is avoided using this design.
- No steering linkage adjustments are required. Lubricating fittings on spindle and tie rod pins are the only regular maintenance points.
- Load sensed steering provides low steering effort and good performance at all engine speeds.

DRIVE AXLE

Rugged drive axle features full-floating design. Wheel hubs rotate on large tapered roller bearings.

BRAKES

The oil-cooled wet disc brake system greatly extends brake system life.

OPERATOR AREA

- Ergonomically designed hydraulic controls and direction control lever are within easy reach.
- Three steps and hand grips provide easy access to operator compartment.
- Angled floor plate and pedals are positioned for operator comfort.
- Telescopic, tilt steer column.
- Supportive mechanical full-suspension seat adjusts 8 inches (200 mm) for operator comfort.
- Several air suspension seat options are available.
- Steel overhead guard frame provides excellent high stacking visibility.
- Operator Presence System (OPS) with complete hydraulic lock out requires the operator to be in the normal operating position before any travel or movement of the mast, tilt, carriage, and attachment can be initiated. Travel or movement of the mast, tilt, carriage, and attachment is locked out when the operator leaves the seat for more than 2-3 seconds.
- Optional light groups aid visibility in low-lighted areas. Light kits featuring innovative High Intensity Discharge (HID) – Xenon, Halogen and Light Emitting Diode (LED) technology are available to choose from.
- Optional ComforCab II features:
 - tinted, curved glass
 - circulation fan
 - heater and defroster
 - electric wiper and windshield washer (front, rear, top)
 - intermittent front wiper
 - door retainer
 - 3-speed fan
 - 12-volt auxiliary power source
 - dome light
 - additional options to enhance comfort and productivity

STANDARD FEATURES AND OPTIONS

STANDARD EQUIPMENT

- 147" (3750mm) max. fork height 2-stage mast with 141" overall lowered height (H400HD/S)
- 147" (3750mm) max. fork height 2-stage mast with 147" overall lowered height (H450HD/S)
- 105" (2672mm) wide pin type dual function sideshift fork positioner (H400HD/S)
- 115" (2940mm) wide pin type dual function sideshift fork positioner (H450HD/S)
- 96" long x 3.9" x 7.8" (2440mm x 100mm x 200mm) forks (H400HD/S)
- 96" long x 3.9" x 9.8" (2440mm x 100mm x 250mm) forks (H450HD/S)
- Cummins QSB 6.7L Tier 4 Final engine with cooled EGR and SCR
- Wet disc brakes
- Sy-Klone spinner type heavy duty air intake pre-cleaner
- Premium ZF WG 211 5-speed autoshift transmission
- AxleTech heavy duty planetary drive axles
- Powertrain protection system for engine and transmission; high temp. or low oil pressure
- On-demand load-sensing hydraulic system featuring VDP technology
- 5-function hydraulic control valve with 3 levers, 2 switches
- CANbus electrical control system for engine, transmission and hydraulics
- 14.00 x 24 - 28PR bias ply treaded load pneumatic drive and steer tires
- Directional control lever with direction change interlock system
- Mast tilt: 10° forward / 12° back
- Lockable battery disconnect switch
- 120 amp alternator
- Open operator compartment with integral overhead guard, includes:
 - seatside mini-lever hydraulic control
 - multifunction display panel
 - telescoping & tilting steering column
 - floor mat
 - isolated mounting for low noise and vibration
 - 24-12V DC converter
 - full-suspension vinyl seat with integrated, adjustable armrest and seat belt
 - exterior wide angle mirrors, mounted to handrails
- Operator restraint system
- Operator presence system
- Electronic horn - 105 dB(A)
- Visible alarm / amber strobe light
- Audible backup alarm
- 24V electrical system
- Tilting operator compartment for service access - manual operation
- Light Kit #1– Front: No lights
Rear: 2 LED stop / tail / back-up lights
- Steering wheel with spinner knob

- Steer wheel nut protection
- Non-locking fuel cap
- Literature package: operator's manual, service manual, parts manual
- 12 months / 2,000 hours manufacturer's warranty

OPTIONAL EQUIPMENT

- Cummins QSB 6.7L Tier 3 engine rated at 220 hp (230 hp peak) with variable geometry turbocharger*
- Various 2-stage lift masts available
- Hook type dual function sideshift fork positioner carriages
- Various hydraulic valve control groups
- Multifunction joystick control
- MONOTROL® pedal direction control with direction change interlock system
- Various mast tilt options
- Radial and pneumatic shaped solid tires
- Enclosed cab options:
 - air conditioning
 - trainer seat
 - 24-12V DC converter, 2nd outlet
 - front (single blade), top & rear wipers
 - recirculation fan
 - accessory mounting post
- Front and rear mud flaps
- Multiple seat options
- 2 or 3 point high-visibility seat belt
- Powered tilting operator compartment for service access
- Various HID and halogen light kits available
- Hydraulic accumulator
- Lifting eyes
- Engine block heater (110V)
- Traction speed limiter
- Empty seat engine shutdown
- Belly pans

Other options available through Special Products Engineering Development (SPED). Contact Hyster Company for details.

** Available in non-regulated markets as standard powertrain. Available as an option in EPA regulated markets in limited quantities.*



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Part No. H400-450HDS/TG
8/2014 Litho in U.S.A.

Visit us online at www.hyster.com or call us at 1-800-HYSTER-1.

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