HYSTER

STRONG PARTNERS.
TOUGH TRUCKS.™

H190-280HD$_2$ SERIES TECHNICAL GUIDE

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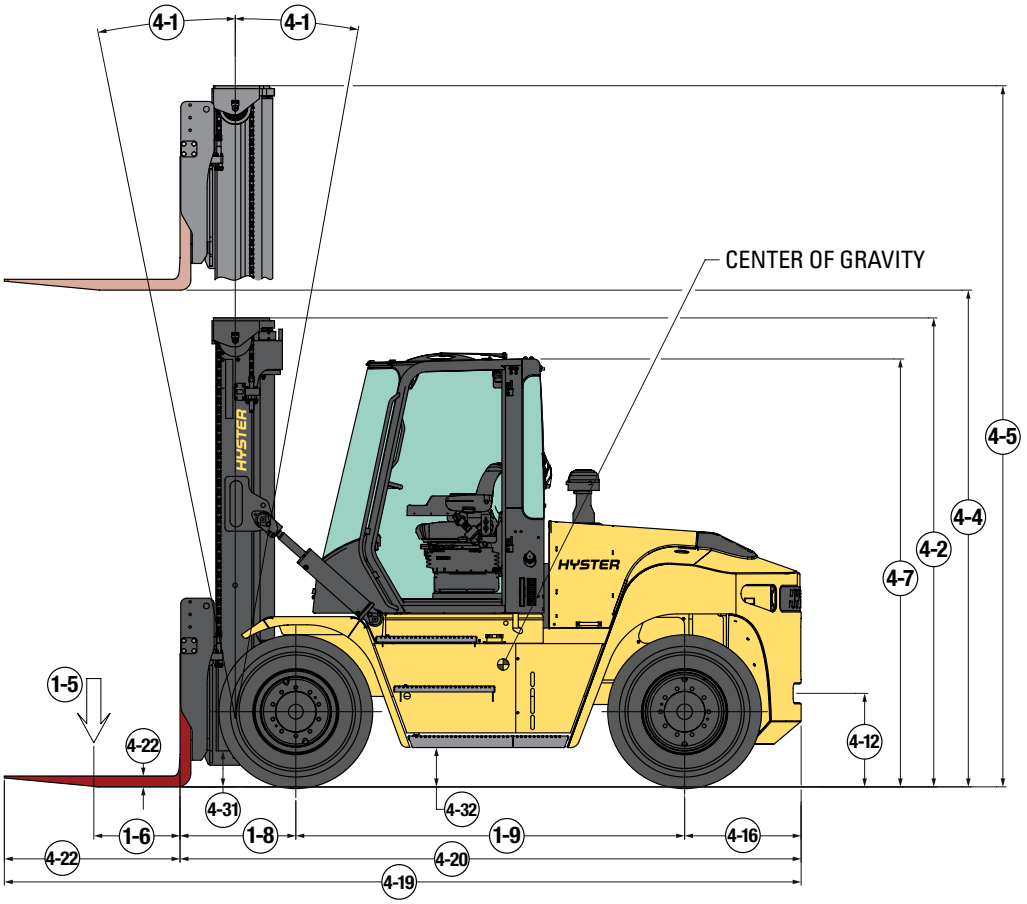
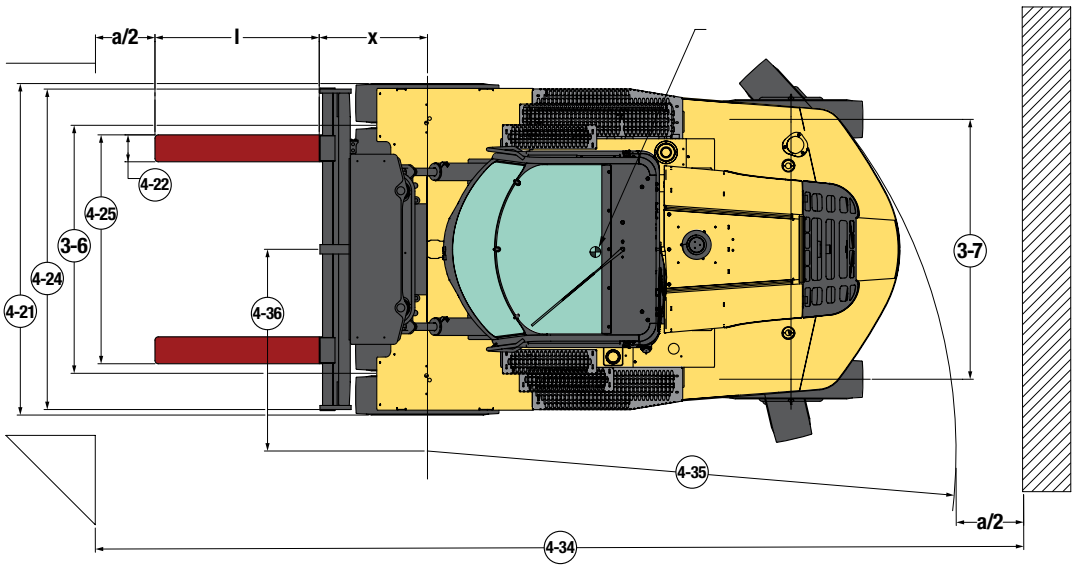
DIMENSIONS



= Center of gravity of unladen truck



H190HD$_2$ / H210HD$_2$ SPECIFICATIONS

GENERAL	1-1	Manufacturer				HYSTER				HYSTER				
	1-2	Model designation				H190HD$_2$				H210HD$_2$				
	1-3	Powertrain / drivetrain				Diesel				Diesel				
	1-4	Operator type				Seated				Seated				
	1-5	Rated capacity / rated load	Q	lbs	kg	19,000		8,618		21,000		9,526		
	1-6	Load center distance	c_1	in	mm	24		610		24		610		
	1-8	Load distance	x	in	mm	31.7		804		31.7		804		
	1-9	Wheelbase	y	in	mm	106		2,700		106		2,700		
WT.	2-1	Service weight		lbs	kg	28,136		12,762		29,448		13,357		
	2-2	Axle loading with load, front / rear		lbs	kg	43,493	19,728	3,643	1,653	46,378	21,037	4,070	1,846	
	2-3	Axle loading without load, front / rear		lbs	kg	14,545	6,598	13,592	6,165	14,383	6,524	15,064	6,833	
WHEELS	3-1	Tire type				Pneumatic				Pneumatic				
	3-2	Tire size, front				10.00-20 16PR				10.00-20 16PR				
	3-3	Tire size, rear				10.00-20 16PR				10.00-20 16PR				
	3-5	Wheels, number front / rear (x = driven wheels)				x4 / 2				x4 / 2				
	3-6	Tread, front	b_{10}	in	mm	72.5		1,842		72.5		1,842		
	3-7	Tread, rear	b_{11}	in	mm	76.0		1,930		76.0		1,930		
DIMENSIONS	4-1	Mast tilt, forward / backward	α/β	deg	deg	15° / 12°				15° / 12°				
	4-2	Height, mast lowered	h_1	in	mm	129		3,257		129		3,257		
	4-3	Free lift (top of forks)	h_2	in	mm	0		0		0		0		
	4-4	Lift (top of forks)	h_3	in	mm	147		3,750		147		3,750		
	4-5	Height, mast extended	h_4	in	mm	201		5,094		201		5,094		
	4-7	Height of overhead guard (open cab)	h_6	in	mm	118.9		3,021		118.9		3,021		
	4-7-1	Height of overhead guard (closed cab)	h_6	in	mm	120.4		3,057		120.4		3,057		
	4-7-2	Height of overhead guard (closed cab w/ air cond.)	h_6	in	mm	121.7		3,090		121.7		3,090		
	4-7-3	Height of overhead guard (closed cab w/ strobe light)	h_6	in	mm	125.6		3,189		125.6		3,189		
	4-7-4	Height of overhead guard (closed cab w/ work lights)	h_6	in	mm	127.9		3,248		127.9		3,248		
	4-7-5	Height of overhead guard (closed cab w/ air cond. & strobe light)	h_6	in	mm	128.5		3,263		128.5		3,263		
	4-8	Seat height to seat point index	h_7	in	mm	72.6		1,844		72.6		1,844		
	4-19	Overall length	l_1	in	mm	217.8		5,533		217.8		5,533		
	4-20	Length to face of forks	l_2	in	mm	169.8		4,313		169.8		4,313		
	4-21	Overall width	b_2	in	mm	97		2,464		97		2,464		
	4-22	Fork dimensions ISO 2331	s/e/l	in	mm	3 / 8 / 48		75 / 200 / 1,220		3 / 8 / 48		75 / 200 / 1,220		
	4-23	Fork carriage type				Standard pin type carriage				Standard pin type carriage				
	4-24	Fork carriage width	b_3	in	mm	94.3		2,396		94.3		2,396		
	4-25-1	Distance between fork-arms, minimum (in-in)	b_5	in	mm	2.8		70		2.8		70		
	4-25-2	Distance over fork-arms, maximum (out-out)	b_5	in	mm	91.3		2,320		91.3		2,320		
	4-30	Sideshift	b_8	in	mm	0		0		0		0		
	4-31	Ground clearance, without load, below mast	m_1	in	mm	9.8		250		9.8		250		
	4-32	Ground clearance, center of wheelbase	m_2	in	mm	10.7		273		10.7		273		
	4-34	Min. aisle width, (add load length and clearance)	Ast	in	mm	186		4,730		186		4,730		
	4-35	Outside turning radius	W_a	in	mm	154.6		3,926		154.6		3,926		
PERFORMANCE		**PERFORMANCE**				**CUMMINS QSB 4.5 TIER 4F ENGINE**								
	5-1	Travel speed, with / without load **(1)**		mph	km/h	18.5	30	19.3	31	18.5	30	19.3	31	
	5-1-1	Travel speed, with load locked / without load		mph	km/h	On request		On request		On request		On request		
	5-2	Lifting speed, with / without load 90cc pump		ft/min	m/s	89	0.45	89	0.45	89	0.45	89	0.45	
	5-2-1	Lifting speed, with / without load 111cc pump		ft/min	m/s	124	0.63	132	0.67	124	0.63	132	0.67	
	5-3	Lowering speed with / without load		ft/min	m/s	98	0.50	94	0.48	98	0.50	94	0.48	
	5-5	Drawbar pull - 1 mph | 1.6 km/h, with / without load		lbs.	kN	21,700	101	22,400	102	21,500	101	22,300	102	
	5-6	Drawbar pull - stall, with / without load		lbs.	kN	24,300	112	25,000	114	24,100	112	24,900	114	
	5-7	Gradeability - 1 mph | 1.6 km/h, with / without load		%	%	51	51	33	33	49	49	32	32	
	5-8	Gradeability - stall, with / without load		%	%	51	51	33	33	51	51	32	32	
		PERFORMANCE				**CUMMINS QSB 6.7 TIER 3 ENGINE**								
	5-1	Travel speed, with / without load **(1)**		mph	km/h	18.5	30	19.3	31	18.5	30	19.3	31	
	5-1-1	Travel speed, with load locked / without load		mph	km/h	On request		On request		On request		On request		
	5-2	Lifting speed, with / without load 90cc pump		ft/min	m/s	89	0.45	89	0.45	89	0.45	89	0.45	
	5-2-1	Lifting speed, with / without load 111cc pump		ft/min	m/s	118	0.60	132	0.67	118	0.6	132	0.67	
	5-3	Lowering speed with / without load		ft/min	m/s	98	0.50	94	0.48	98	0.50	94	0.48	
	5-5	Drawbar pull - 1 mph | 1.6 km/h, with / without load		lbs.	kN	20,500	96	21,100	97	20,400	95	21,200	97	
	5-6	Drawbar pull - stall, with / without load		lbs.	kN	22,800	106	23,600	108	22,700	106	23,500	107	
	5-7	Gradeability - 1 mph | 1.6 km/h, with / without load		%	%	51	51	33	33	46	46	32	32	
	5-8	Gradeability - stall, with / without load		%	%	51	51	33	33	51	51	32	32	

H230HDS$_2$ / H230HD$_2$ SPECIFICATIONS

GENERAL	1-1	Manufacturer				HYSTER				HYSTER				
	1-2	Model designation				H230HD$_2$S				H230HD$_2$				
	1-3	Powertrain / drivetrain				Diesel				Diesel				
	1-4	Operator type				Seated				Seated				
	1-5	Rated capacity / rated load	Q	lbs	kg	23,000		10,433		23,000		10,433		
	1-6	Load center distance	c_1	in	mm	24		610		24		610		
	1-8	Load distance	x	in	mm	31.7		804		31.7		804		
	1-9	Wheelbase	y	in	mm	106		2,700		114		2,900		
WT.	2-1	Service weight		lbs	kg	31,591		14,329		30,739		13,943		
	2-2	Axle loading with load, front / rear		lbs	kg	49,994	22,677	4,596	2,085	49,486	22,446	4,253	1,929	
	2-3	Axle loading without load, front / rear		lbs	kg	14,953	6,783	16,638	7,547	15,275	6,929	15,465	7,015	
WHEELS	3-1	Tire type				Pneumatic				Pneumatic				
	3-2	Tire size, front				10.00-20 16PR				10.00-20 16PR				
	3-3	Tire size, rear				10.00-20 16PR				10.00-20 16PR				
	3-5	Wheels, number front / rear (x = driven wheels)				x4 / 2				x4 / 2				
	3-6	Tread, front	b_{10}	in	mm	72.5		1,842		72.5		1,842		
	3-7	Tread, rear	b_{11}	in	mm	76.0		1,930		76.0		1,930		
DIMENSIONS	4-1	Mast tilt, forward / backward	α/β	deg	deg	15° / 12°				15° / 12°				
	4-2	Height, mast lowered	h_1	in	mm	138		3,507		138		3,507		
	4-3	Free lift (top of forks)	h_2	in	mm	0		0		0		0		
	4-4	Lift (top of forks)	h_3	in	mm	147		3,750		147		3,750		
	4-5	Height, mast extended	h_4	in	mm	211		5,344		211		5,344		
	4-7	Height of overhead guard (open cab)	h_6	in	mm	118.9		3,021		118.9		3,021		
	4-7-1	Height of overhead guard (closed cab)	h_6	in	mm	120.4		3,057		120.4		3,057		
	4-7-2	Height of overhead guard (closed cab w/ air cond.)	h_6	in	mm	121.7		3,090		121.7		3,090		
	4-7-3	Height of overhead guard (closed cab w/ strobe light)	h_6	in	mm	125.6		3,189		125.6		3,189		
	4-7-4	Height of overhead guard (closed cab w/ work lights)	h_6	in	mm	127.9		3,248		127.9		3,248		
	4-7-5	Height of overhead guard (closed cab w/ air cond. & strobe light)	h_6	in	mm	128.5		3,263		128.5		3,263		
	4-8	Seat height to seat point index	h_7	in	mm	72.6		1,844		72.6		1,844		
	4-19	Overall length	l_1	in	mm	217.8		5,533		225.7		5,733		
	4-20	Length to face of forks	l_2	in	mm	169.8		4,313		177.7		4,513		
	4-21	Overall width	b_2	in	mm	97		2,464		97		2,464		
	4-22	Fork dimensions ISO 2331	s/e/l	in	mm	3 / 8 / 48		75 / 200 / 1,220		3 / 8 / 48		75 / 200 / 1,220		
	4-23	Fork carriage type				Standard pin type carriage				Standard pin type carriage				
	4-24	Fork carriage width	b_3	in	mm	94.3		2,396		94.3		2,396		
	4-25-1	Distance between fork-arms, minimum (in-in)	b_5	in	mm	2.8		70		2.8		70		
	4-25-2	Distance over fork-arms, maximum (out-out)	b_5	in	mm	91.3		2,320		91.3		2,320		
	4-30	Sideshift	b_8	in	mm	0		0		0		0		
	4-31	Ground clearance, without load, below mast	m_1	in	mm	9.8		250		9.8		250		
	4-32	Ground clearance, center of wheelbase	m_2	in	mm	10.7		273		10.7		273		
	4-34	Min. aisle width (add load length and clearance)	Ast	in	mm	186.2		4,730		193.5		4,915		
	4-35	Outside turning radius	W_a	in	mm	154.6		3,926		161.9		4,111		
PERFORMANCE		**PERFORMANCE**				**CUMMINS QSB4.5 TIER 4F ENGINE**								
	5-1	Travel speed, with / without load **(1)**		mph	km/h	18.5	30	19.3	31	18.5	30	19.3	31	
	5-1-1	Travel speed, with load locked / without load		mph	km/h	On request		On request		On request		On request		
	5-2	Lifting speed, with / without load 90cc pump		ft/min	m/s	79	0.40	79	0.40	79	0.40	79	0.40	
	5-2-1	Lifting speed, with / without load 111cc pump		ft/min	m/s	98	0.50	106	0.54	98	0.50	106	0.54	
	5-3	Lowering speed with / without load		ft/min	m/s	98	0.50	94	0.48	98	0.50	94	0.48	
	5-5	Drawbar pull - 1 mph | 1.6 km/h, with / without load		lbs.	kN	21,400	100	22,200	102	21,400	100	22,300	102	
	5-6	Drawbar pull - stall, with / without load		lbs.	kN	24,000	112	24,800	114	24,000	112	24,900	114	
	5-7	Gradeability - 1 mph | 1.6 km/h, with / without load		%	%	44	44	31	31	45	45	33	33	
	5-8	Gradeability - stall, with / without load		%	%	51	51	31	31	52	52	33	33	
		PERFORMANCE				**CUMMINS QSB6.7 TIER 3 ENGINE**								
	5-1	Travel speed, with / without load **(1)**		mph	km/h	18.5	30	19.3	31	18.5	30	19.3	31	
	5-1-1	Travel speed, with load locked / without load		mph	km/h	On request		On request		On request		On request		
	5-2	Lifting speed, with / without load 90cc pump		ft/min	m/s	79	0.40	79	0.40	79	0.4	79	0.4	
	5-2-1	Lifting speed, with / without load 111cc pump		ft/min	m/s	93	0.47	106	0.54	93	0.47	106	0.54	
	5-3	Lowering speed with / without load		ft/min	m/s	98	0.50	94	0.48	98	0.50	94	0.48	
	5-5	Drawbar pull - 1 mph | 1.6 km/h, with / without load		lbs.	kN	20,200	95	21,100	97	20,200	95	21,100	97	
	5-6	Drawbar pull - stall, with / without load		lbs.	kN	22,500	105	23,400	107	22,600	105	23,400	107	
	5-7	Gradeability - 1 mph | 1.6 km/h, with / without load		%	%	42	42	31	31	42	42	33	33	
	5-8	Gradeability - stall, with / without load		%	%	47	47	31	31	48	48	33	33	

H250HD$_2$ / H280HD$_2$ SPECIFICATIONS

GENERAL	1-1	Manufacturer				HYSTER				HYSTER				
	1-2	Model designation				H250HD$_2$				H280HD$_2$				
	1-3	Powertrain / drivetrain				Diesel				Diesel				
	1-4	Operator type				Seated				Seated				
	1-5	Rated capacity / rated load	Q	lbs	kg	25,000		11,340		28,000		12,701		
	1-6	Load center distance	c_1	in	mm	24		610		24		610		
	1-8	Load distance	x	in	mm	31.7		804		31.7		804		
	1-9	Wheelbase	y	in	mm	114		2,900		114		2,900		
WT.	2-1	Service weight		lbs	kg	31,743		14,398		33,506		15,198		
	2-2	Axle loading with load, front / rear		lbs	kg	52,350	23,746	4,393	1,993	56,610	25,678	4,896	2,221	
	2-3	Axle loading without load, front / rear		lbs	kg	15,163	6,878	16,580	7,520	14,961	6,786	18,545	8,412	
WHEELS	3-1	Tire type				Pneumatic				Pneumatic				
	3-2	Tire size, front				10.00-20 16PR				10.00-20 16PR				
	3-3	Tire size, rear				10.00-20 16PR				10.00-20 16PR				
	3-5	Wheels, number front / rear (x = driven wheels)				x4 / 2				x4 / 2				
	3-6	Tread, front	b_{10}	in	mm	72.5		1,842		72.5		1,842		
	3-7	Tread, rear	b_{11}	in	mm	76.0		1,930		76.0		1,930		
DIMENSIONS	4-1	Mast tilt, forward / backward	α/β	deg	deg	15° / 12°				15° / 12°				
	4-2	Height, mast lowered	h_1	in	mm	138		3,507		138		3,507		
	4-3	Free lift (top of forks)	h_2	in	mm	0		0		0		0		
	4-4	Lift (top of forks)	h_3	in	mm	147		3,750		147		3,750		
	4-5	Height, mast extended	h_4	in	mm	211		5,344		211		5,344		
	4-7	Height of overhead guard (open cab)	h_6	in	mm	118.9		3,021		119		3,021		
	4-7-1	Height of overhead guard (closed cab)	h_6	in	mm	120.4		3,057		120.4		3,057		
	4-7-2	Height of overhead guard (closed cab w/ air cond.)	h_6	in	mm	121.7		3,090		121.7		3,090		
	4-7-3	Height of overhead guard (closed cab w/ strobe light)	h_6	in	mm	125.6		3,189		125.6		3,189		
	4-7-4	Height of overhead guard (closed cab w/ work lights)	h_6	in	mm	127.9		3,248		127.9		3,248		
	4-7-5	Height of overhead guard (closed cab w/ air cond. & strobe light)	h_6	in	mm	128.5		3,263		128.5		3,263		
	4-8	Seat height to seat point index	h_7	in	mm	72.6		1,844		72.6		1,844		
	4-19	Overall length	l_1	in	mm	225.7		5,733		225.7		5,733		
	4-20	Length to face of forks	l_2	in	mm	177.7		4,513		177.7		4,513		
	4-21	Overall width	b_2	in	mm	97		2,464		97		2,464		
	4-22	Fork dimensions ISO 2331	s/e/l	in	mm	3 / 8 / 48		75 / 200 / 1,220		3 / 8 / 48		75 / 200 / 1,220		
	4-23	Fork carriage type				Standard pin type carriage				Standard pin type carriage				
	4-24	Fork carriage width	b_3	in	mm	94.3		2,396		94.3		2,396		
	4-25-1	Distance between fork-arms, minimum (in-in)	b_5	in	mm	2.8		70		2.8		70		
	4-25-2	Distance over fork-arms, maximum (out-out)	b_5	in	mm	91.3		2,320		91.3		2,320		
	4-30	Sideshift	b_8	in	mm	0		0		0		0		
	4-31	Ground clearance, without load, below mast	m_1	in	mm	9.8		250		9.8		250		
	4-32	Ground clearance, center of wheelbase	m_2	in	mm	10.7		273		10.7		273		
	4-34	Min. aisle width (add load length and clearance)	Ast	in	mm	193.5		4,915		193.5		4,915		
	4-35	Outside turning radius	W_a	in	mm	161.9		4,111		161.9		4,111		
PERFORMANCE		**PERFORMANCE**				**CUMMINS QSB4.5 TIER 4F ENGINE**								
	5-1	Travel speed, with / without load **(1)**		mph	km/h	18.5	30	19.3	31	18.5	30	19.3	31	
	5-1-1	Travel speed, with load locked / without load		mph	km/h	On request		On request		On request		On request		
	5-2	Lifting speed, with / without load 90cc pump		ft/min	m/s	79	0.40	79	0.40	79	0.40	79	0.40	
	5-2-1	Lifting speed, with / without load 111cc pump		ft/min	m/s	98	0.50	106	0.54	98	0.50	106	0.54	
	5-3	Lowering speed with / without load		ft/min	m/s	98	0.50	94	0.48	98	0.50	94	0.48	
	5-5	Drawbar pull - 1 mph | 1.6 km/h, with / without load		lbs.	kN	21,300	100	22,300	102	21,100	100	22,200	102	
	5-6	Drawbar pull - stall, with / without load		lbs.	kN	23,900	112	24,900	114	23,700	111	24,800	113	
	5-7	Gradeability - 1 mph | 1.6 km/h, with / without load		%	%	43	43	30	30	39	39	36	36	
	5-8	Gradeability - stall, with / without load		%	%	49	49	30	30	44	44	36	36	
		PERFORMANCE				**CUMMINS QSB6.7 TIER 3 ENGINE**								
	5-1	Travel speed, with / without load **(1)**		mph	km/h	18.5	30	19.3	31	18.5	30	19.3	31	
	5-1-1	Travel speed, with load locked / without load		mph	km/h	On request		On request		On request		On request		
	5-2	Lifting speed, with / without load 90cc pump		ft/min	m/s	79	0.40	79	0.40	79	0.40	79	0.40	
	5-2-1	Lifting speed, with / without load 111cc pump		ft/min	m/s	93	0.47	106	0.54	93	0.47	106	0.54	
	5-3	Lowering speed with / without load		ft/min	m/s	98	0.50	94	0.48	98	0.50	94	0.48	
	5-5	Drawbar pull - 1 mph | 1.6 km/h, with / without load		lbs.	kN	20,100	95	21,100	97	19,900	94	21,000	97	
	5-6	Drawbar pull - stall, with / without load		lbs.	kN	22,500	105	23,400	107	22,300	105	23,300	107	
	5-7	Gradeability - 1 mph | 1.6 km/h, with / without load		%	%	41	41	30	30	36	36	36	36	
	5-8	Gradeability - stall, with / without load		%	%	46	46	30	30	41	41	36	36	

POWERTRAINS

GENERAL	1-1	Manufacturer				HYSTER			
	1-2	Model designation				$H190\text{-}280HD_2$			
	1-3	Powertrain / drivetrain				Diesel			

ENGINE	7-1	Engine manufacturer / model				Cummins / QSB 6.7		Cummins / QSB 4.5	
	7-1a	EPA / CE compliance				Tier 3 / Stage IIIA		Tier 4F / Stage IV	
	7-2	Engine power output according to ISO 1585		hp	kW	156 @ 2300	116 @ 2300	160 @ 2300	119 @ 2300
	7-2-1	Engine power output - Peak		hp	kW	156 @ 2300	116 @ 2300	164 @ 2300	122 @ 2300
	7-3	Governed speed		rpm	1/min	2,300		2,300	
	7-3-1	Engine torque @rpm (1/min)		lb-ft	N-m	440 @ 1500	597 @ 1,500	460 @ 1500	624 @ 1,500
	7-4	Number of cylinders / displacement		# / in^3	# / cm^3	6 / 409	6 / 6,700	4 / 272	4 / 4,500
		Turbocharger		Type		Wastegate		Variable geometry, water cooled	
	7-8	Alternator output		Amps		120		120	
	7-9	Electrical system voltage		V		24		24	
	7-10	Battery voltage, rated capacity		V / Ah		24 / 102		24 / 102	

DRIVE	8-1	Drive control / Transmission		Type / #	Powershift Transmission	
	8-2	Transmission manufacturer / type		Type / #	ZF / WG161	
	8-4	Transmission speeds forward / backward		#	3 / 3	
	8-5	Coupling		Type	Torque Converter	
	8-6	Wheel drive / drive axle manufacturer / type		Type / #	Kessler / D61	
	8-11	Service brake		Type	Oil immersed (wet) disc	
	8-12	Parking brake		Type	Spring applied, dry disc on drive axle	

MISC	10-1	Operating pressure for attachments		psi	l	3,263	22.5	3,263	22.5
	10-2	Oil volume for attachments		gal/min	l/min	26.4	100	26.4	100
	10-3	Hydraulic tank capacity		gal	l	35.7	135	35.7	135
	10-4	Fuel tank capacity (H190HD2, H210HD2, H230HD2S)		gal	l	27.5	104	27.5	104
	10-4	Fuel tank capacity (H230HD2, H250HD2, H280HD2)		gal	l	36.2	137	36.2	137
	10-4-1	DEF tank capacity		gal	l	NA	NA	5	19
	10-5	Steering design				Hydraulic power steering		Hydraulic power steering	
	10-6	Number of steering rotation				4.5		4.5	

NOTES:

Specifications are affected by the condition of the vehicle and how it is equipped, as well as the nature and condition of the operating area. Inform your dealer of the nature and condition of the intended operating area when purchasing your Hyster® truck.

(1) Travel speed laden/unladen limited at 15.5 mph / 25 km/h as factory default

(2) T4 engine based on low mount exhaust.

All capacities are according to EN1459.
All specifications and capacities are valid for trucks equipped with a Hyster® container handling spreader for handling ISO containers.

CE **Safety:** This truck conforms to the current EU and ANSI requirements.

NOTICE:

Care must be exercised when handling elevated loads. Operators must be trained and must read, understand and follow the instructions contained in the Operating Manual.

All values are nominal values and they are subject to tolerances. For further information, please contact the manufacturer.

Hyster products are subject to change without notice.

Lift trucks illustrated may feature optional equipment. Values may vary with alternative configurations.

CERTIFICATION: Hyster lift trucks meet the design and construction requirements of B56.1-1969, per OSHA Section 1910.178(a)(2), and also comply with the 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.

NOTE: Specifications, unless otherwise listed, are for a standard truck without optional equipment.

Specification data is based on VDI 2198.

RATED CAPACITY LBS: H190-210HD$_2$ @ 24 IN LOAD CENTER

	4-4 Lift height TOF		4-4 Lift height BOF		4-2 Overall lowered height		4-5 Overall extended height		Mast min roller lap (retracted) (variable lap) 'l_max'		Mast roller lap (extended) (variable lap) 'l_max'		Mast weight		Standard Pin Type carriage				Apron Pin Type carriage				QD DFSSFP Carriage			
															H190HD$_2$		H210HD$_2$		H190HD$_2$		H210HD$_2$		H190HD$_2$		H210HD$_2$	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg
2 STAGE NFL	127	3,250	125	3,175	119	3007	180	4,594	98	2,488	35.5	900	4,140	1,878	19,000	8,620	21,000	9,530	19,000	8,620	21,000	9,530	18,500	8,390	20,500	9,300
	137	3,500	134	3,425	124	3132	190	4,844	103	2,613	35.5	900	4,264	1,934	19,000	8,620	21,000	9,530	19,000	8,620	21,000	9,530	18,500	8,390	20,500	9,300
	147	3,750	144	3,675	129	3257	200	5,094	108	2,738	35.5	900	4,387	1,990	19,000	8,620	21,000	9,530	19,000	8,620	21,000	9,530	18,500	8,390	20,500	9,300
	157	4,000	154	3,925	134	3382	210	5,344	113	2,863	35.5	900	4,513	2,047	19,000	8,620	21,000	9,530	19,000	8,620	21,000	9,530	18,500	8,390	20,500	9,300
	177	4,500	174	4,425	143	3632	230	5,844	123	3,113	35.5	900	4,760	2,159	19,000	8,620	21,000	9,530	19,000	8,620	21,000	9,530	18,500	8,390	20,500	9,300
	187	4,750	184	4,675	148	3758	239	6,094	128	3,238	35.5	900	4,956	2,248	19,000	8,620	21,000	9,530	19,000	8,620	21,000	9,530	18,500	8,390	20,500	9,300
	196	5,000	193	4,925	153	3882	249	6,344	132	3,363	35.5	900	5,079	2,304	19,000	8,620	21,000	9,530	19,000	8,620	21,000	9,530	18,500	8,390	20,500	9,300
	216	5,500	213	5,425	163	4132	269	6,844	142	3,613	35.5	900	5,560	2,522	18,340	8,320	20,600	9,320	18,600	8,220	20,500	9,320	18,300	8,300	20,200	9,160

Capacities are calculated using 48" x 3" x 8" forks

RATED CAPACITY LBS: H230 @ 24 IN LOAD CENTER

	4-4 Lift height TOF		4-4 Lift height BOF		4-2 Overall lowered height		4-5 Overall extended height		Mast min roller lap (retracted) (variable lap) 'l_max'		Mast roller lap (extended) (variable lap) 'l_max'		Mast weight		Standard Pin Type carriage				Apron Pin Type carriage				QD DFSSFP Carriage			
															H230HD$_2$S		H230HD$_2$		H230HD$_2$S		H230HD$_2$		H230HD$_2$S		H230HD$_2$	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg
2 STAGE NFL	108	2,750	105	2,675	119	3,007	171	4,344	98	2,488	45	1,150	4,209	1,909	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	118	3,000	115	2,925	124	3,132	181	4,594	103	2,613	45	1,150	4,339	1,968	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	127	3,250	125	3,175	129	3,257	191	4,844	108	2,738	45	1,150	4,464	2,025	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	137	3,500	134	3,425	134	3,382	201	5,094	113	2,863	45	1,150	4,597	2,085	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	147	3,750	144	3,675	139	3,507	211	5,344	118	2,988	45	1,150	4,727	2,144	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	157	4,000	154	3,925	143	3,632	221	5,594	123	3,113	45	1,150	4,850	2,200	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	177	4,500	174	4,425	153	3,882	240	6,094	133	3,363	45	1,150	5,179	2,349	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	187	4,750	184	4,675	158	4,007	250	6,344	138	3,488	45	1,150	5,309	2,408	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	196	5,000	193	4,925	163	4,132	260	6,594	143	3,613	45	1,150	5,670	2,572	23,000	10,430	23,000	10,430	23,000	10,430	23,000	10,430	22,500	10,200	22,500	10,200
	216	5,500	213	5,425	173	4,382	280	7,094	153	3,863	45	1,150	5,926	2,688	22,600	10,250	22,600	10,250	22,600	10,250	22,600	10,250	22,200	9,980	22,200	10,070
	236	6,000	233	5,925	183	4,632	299	7,594	162	4,113	45	1,150	6,184	2,805	22,300	10,110	22,200	10,070	22,200	10,070	22,100	10,020	21,000	9,530	21,700	9,840
	246	6,250	243	6,175	188	4,757	309	7,844	167	4,238	45	1,150	6,314	2,864	22,100	10,020	22,000	9,980	21,900	9,930	21,900	9,930	18,800	8,530	20,100	9,120
	255	6,500	252	6,425	193	4,882	319	8,094	172	4,363	45	1,150	6,444	2,923	21,900	9,930	21,800	9,900	21,700	9,840	21,700	9,840	16,800	7,620	18,100	8,210
	275	7,000	272	6,925	202	5,132	339	8,594	182	4,613	45	1,150	6,700	3,039	21,400	9,700	21,400	9,700	21,200	9,610	21,100	9,570	13,200	5,990	14,400	6,530

Capacities are calculated using 48" x 3" x 8" forks

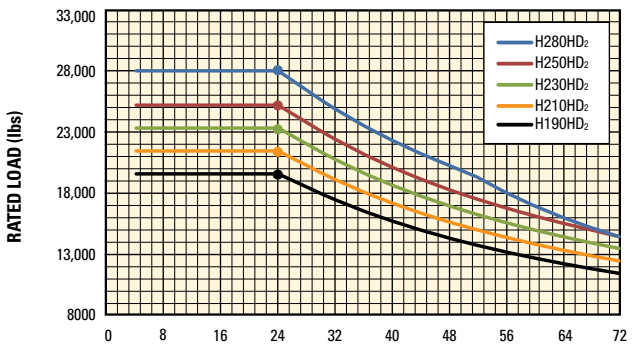
RATED CAPACITY LBS: H250-280HD$_2$ @ 24 IN LOAD CENTER

	4-4 Lift height TOF		4-4 Lift height BOF		4-2 Overall lowered height		4-5 Overall extended height		Mast min roller lap (retracted) (variable lap) 'l_max'		Mast roller lap (extended) (variable lap) 'l_max'		Mast weight		Standard Pin Type carriage				Apron Pin Type carriage				QD DFSSFP Carriage			
															H250HD$_2$		H280HD$_2$		H250HD$_2$		H280HD$_2$		H250HD$_2$		H280HD$_2$	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg
2 STAGE NFL	108	2,750	105	2,675	119	3,007	172	4,344	98	2,488	45	1,150	4,209	1,909	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,500	12,500
	118	3,000	115	2,925	124	3,132	181	4,594	103	2,613	45	1,150	4,339	1,968	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,500	12,500
	127	3,250	125	3,175	129	3,257	191	4,844	108	2,738	45	1,150	4,464	2,025	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,500	12,500
	137	3,500	134	3,425	134	3,382	201	5,094	113	2,863	45	1,150	4,597	2,085	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,500	12,500
	147	3,750	144	3,675	139	3,507	211	5,344	118	2,988	45	1,150	4,727	2,144	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,500	12,500
	157	4,000	154	3,925	143	3,632	221	5,594	123	3,113	45	1,150	4,850	2,200	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,500	12,500
	177	4,500	174	4,425	153	3,882	240	6,094	133	3,363	45	1,150	5,179	2,349	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,500	12,500
	187	4,750	184	4,675	158	4,007	250	6,344	138	3,488	45	1,150	5,309	2,408	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,500	12,500
	196	5,000	193	4,925	163	4,132	260	6,594	143	3,613	45	1,150	5,670	2,572	25,000	11,340	28,000	12,700	25,000	11,340	28,000	12,700	24,500	11,100	27,600	12,500
	216	5,500	213	5,425	173	4,382	280	7,094	153	3,863	45	1,150	5,926	2,688	24,600	11,160	27,600	12,500	24,600	11,160	27,500	12,500	24,100	10,930	27,000	12,250
	236	6,000	233	5,925	183	4,632	299	7,594	162	4,113	45	1,150	6,184	2,805	24,200	10,980	27,200	12,300	24,100	10,930	27,100	12,300	22,400	10,160	22,300	10,120
	246	6,250	243	6,175	188	4,757	309	7,844	167	4,238	45	1,150	6,314	2,864	24,000	10,890	27,000	12,250	23,900	10,840	26,800	12,150	22,100	10,020	19,900	9,030
	255	6,500	252	6,425	193	4,882	319	8,094	172	4,363	45	1,150	6,444	2,923	23,800	10,800	26,700	12,100	23,600	10,700	26,600	12,070	18,100	8,210	17,700	8,030
	275	7,000	272	6,925	203	5,132	339	8,594	182	4,613	45	1,150	6,700	3,039	23,300	10,570	26,200	11,900	23,100	10,500	26,000	11,800	14,400	6,530	14,000	6,350

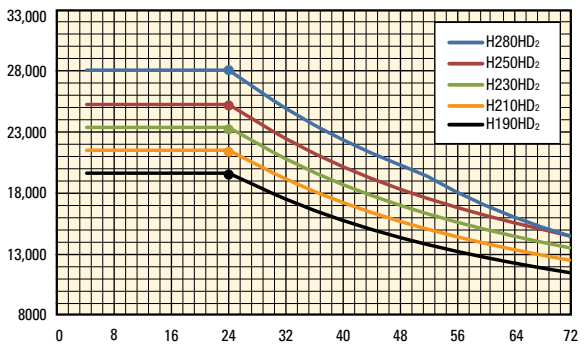
Capacities are calculated using 48" x 3" x 8" forks

CAPACITY RATINGS

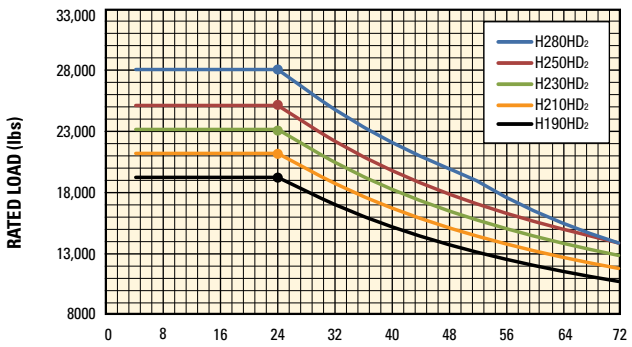
RATED LOAD VS. LOAD CENTER | STD PIN TYPE | U.S. CUSTOMARY



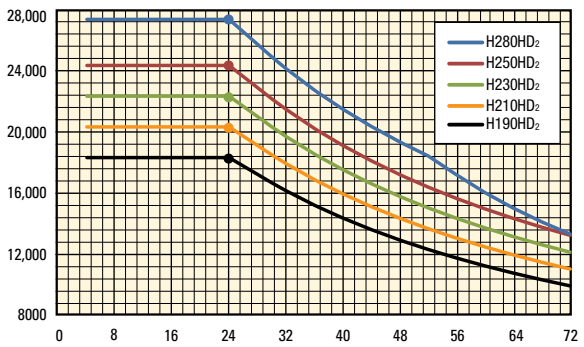
RATED LOAD VS. LOAD CENTER | PIN TYPE WITH FP | U.S. CUSTOMARY



RATED LOAD VS. LOAD CENTER | INTEGRAL & APRON FP | U.S. CUSTOMARY



RATED LOAD VS. LOAD CENTER | DFSSFP | U.S. CUSTOMARY



Conversion Factor: 1.0" = 25.4 mm 1 lb = 0.45 kg Capacities are calculated using 48" x 3" x 8" forks Contact your dealer for other capacity information.

FEATURES AND OPTIONS

PERFORMANCE	STD	OPT
Cummins QSB 4.5L diesel engine rated 159.6 hp Tier 4F /119 kW Stage IV*	X	
Cummins QSB 6.7L diesel engine rated 155.6 hp Tier 3 / 116 kW Stage IIIA*	X	
Tier 4 / Stage IV compliant*	X	
Tier 3 / Stage III compliant*	X	
Variable geometry turbocharger, water cooled*	X	
Wastegate turbocharger*	X	
Hibernate Idle	X	
On-demand cooling fan*	X	
120 amp alternator	X	
Powertrain protection system	X	
Heavy duty air intake	X	
Heavy duty air intake (raised)		X
Low mount exhaust (below chassis)*	X	
High mount exhaust		X
ZF Transmission WG161 3-speeds forward / 3-speeds reverse auto-shifting	X	
Kessler D61 drive axle with wet disc brakes	X	
LIFT	**STD**	**OPT**
90cc Dual Pump Hydraulic System	X	
111cc Dual Pump Hydraulic System		X
On-Demand Load Sensing Hydraulic System	X	
Automatic Throttle-up when lifting (in neutral or inching)	X	
Variable lap mast for low roller forces*	X	
2 stage Non Free Lift mast	X	
2 Stage Full Free Lift mast		X
3 Stage Full Free Lift mast		X

Mast tilt - 5° Forward / 6° Back		X
Mast tilt - 5° Forward / 12° Back		X
Mast tilt - 15° Forward / 10° Back		X
Mast tilt - 15° Forward / 12° Back	X	
Mast tilt - 20.5° Forward / 7° Back		X
Hydraulic Accumulator		X
Pressure Compensated Lowering		X
Hydraulic system temperature protection		X
DRIVE	**STD**	**OPT**
Traction speed limiter - loaded (adjustable)		X
Travel Speed Limiter pre-set to 10 mph / 16 km/h		X
Travel Speed Limiter pre-set to 12 mph / 20 km/h		X
10.00 - 20 16PR Pneumatic Bias Ply drive and steer tires	X	
10.00 - R20 Michelin XZM Radial drive and steer tires		X
10.00 - R20 Trelleborg Radial drive and steer tires		X
10.00 - 20 Pneumatic Shaped Solid drive and steer tires		X
Spare wheels and tires		X
HANDLING	**STD**	**OPT**
Mast Tilt Indicator - Mechanical		X
94.5" (2400mm) Pin type carriage with mechanical fork locks	X	
94.5" (2400mm) Pin type carriage with simultaneous and independent fork positioner		X
94.5" (2400mm) Pin type apron-style sideshift carriage (with mechanical fork locks, similar to Pin type carriage)		X
94.5" (2400mm) Pin type apron style sideshift carriage with simultaneous fork positioner (Only for 3-stage mast)		X

FEATURES AND OPTIONS

94.5" (2400mm) Pin type apron-style sideshift carriage with simultaneous and independent fork position		X
94.5" (2400 mm) QD Hook type dual function sideshift carriage with simultaneous and independent fork positioner		X
94.5" (2400 mm) QD Hook type dual function sideshift carriage with simultaneous fork positioner and 2 auxiliary functions		X
98" (2500mm) High load backrest (for lumber applications)		X
66" (1687mm) High load backrest (for 3-stage mast)		X
69" (1760mm) High load backrest		X
79" (2010mm) High load backrest		X
Pin type forks (various sizes)		X
Pin type forks for lumber applications		X
Hook type quick disconnect DFSSFP forks (various sizes)		X
ERGONOMICS	**STD**	**OPT**
Open module operator compartment (without doors & screens)	X	
Full steel cab operator compartment		X
Powered tilt operator compartment for service		X
Manual tilt operator compartment for service	X	
Isolated mounting for low noise and vibration	X	
Operator presence system	X	
Mechanical suspension seat	X	
Deluxe air suspension seat		X
Low backrest seat	X	
High backrest seat		X
Cloth seat cover		X
Vinyl seat cover	X	
Seat heating		X
2-point high visibility seatbelt	X	
3-point high visibility seatbelt		X
Floor mat	X	
Coat hook	X	
Front, top and rear wipers	X	
"H"-pattern front wiper		X
"I"-pattern front wiper	X	
Front and rear window defrosters	X	
Laminated glass operator compartment front window		X
Tinted operator compartment windows (all)		X
Tinted operator compartment top window		X
Rain top		X
Lexan top window		X
Plexiglass shield in front of front window		X
Wire mesh installed on top of operator compartment		X
Vertical steel bar front window guard		X
Operator shield wire mesh		X
Multifunction display panel	X	
Mini-lever and rocker switch hydraulic control (integrated in arm rest)	X	
Seat-side joystick hydraulic control		X
Steering wheel without spinner knob	X	
Steering wheel with spinner knob		X
Directional control lever		X
Hyster Monotrol pedal directional control	X	
Directional control switch (integrated in arm rest)		X
Self-setting park brake		X
Manual park brake	X	
Interior wide angle mirrors	X	
Heater with 3 speed fan	X	
Diesel fueled cabin heater		X
Telescoping & tilting steering column	X	
DC/DC converter 24 volt/12 volt with socket	X	
DC/DC converter 24 volt/12 volt 2nd 12 volt socket		X
Heavy duty air conditioning		X
Reading light		X
Sun shades on top and rear		X

Trainer seat		X
Recirculation fan		X
Additional operator fan		X
Accessory mounting post		X
Rear locking console in cab		X
Heated top window		X
Radio preparation set-up (wiring, two speakers and antenna)		X
VISIBILITY	**STD**	**OPT**
Exterior mirrors mounted to cab		X
Rear view camera system		X
Halogen work lights		X
High Performance LED work lights		X
Two head lights mounted on front fenders		X
Four work lights mounted on the outer mast		X
Four cabin mounted work lights		X
Two rearward work lights mounted on the cabin		X
LED stop/tail/brake lights	X	
Turn signals, hazard & marker lights (LED)		X
OPERATION	**STD**	**OPT**
Electric air horn 105 dBA	X	
Visible alarm – Amber strobe light, key switch activated		X
Audible alarm – Reverse direction activated 82–102 dB(A), self-adjusting		X
Forward / reverse motion alarm		X
Seatbelt interlock for engine start		X
Hydraulic load weighing system		X
Tire pressure monitoring system		X
Lockable battery disconnect switch		X
Battery jump start connector (NATO plug)		X
"Empty seat" engine shutdown		X
Key switch start	X	
Key switch start with interlock		X
Electric circuit breakers		X
Non-lockable fuel cap	X	
Lockable fuel cap		X
Diesel fuel inlet strainer in filler neck		X
Hyster Tracker wireless asset management system	X	
Hyster Tracker wireless asset management - Access / Verification		X
Hyster Tracker wireless asset management - Monitoring		X
Auto greasing system for basic truck & outer mast (H230HD, H250HD & H280HD only)		X
24 volt electrical system	X	
Engine block heater 110 & 240 volt		X
Steer wheel lug nut protection		X
Front mud flaps		X
Rear mud flaps		X
Lifting eyes - 2 front and 2 rear		X
Wire mesh belly pan		X
Wire mesh and plates belly pan		X
SUPPLEMENTAL	**STD**	**OPT**
Literature package	X	
Operator's manual	X	
CE certification		X
U.L. Label - Standard Construction	X	
Warranty: 12 Months / 2,000 Hours Parts manufacturer's warranty	X	

**Standard or optional in selected markets. Other options available through Special Products Engineering Department (SPED). Contact your local Hyster® dealer for details.*

FRONT END EQUIPMENT

RANGE OF 2 STAGE NFL MASTS

RANGE OF PIN TYPE AND HOOK TYPE FORKS

94.3" PIN TYPE STANDARD CARRIAGE

98.5″ PIN TYPE APRON STYLE SIDESHIFT CARRIAGE WITH SIMULTANEOUS AND INDEPENDENT FORK POSITIONER (FOR LUMBER APPLICATIONS)

94.3″ PIN TYPE CARRIAGE WITH SIMULTANEOUS AND INDEPENDENT FORK POSITIONER

94.3″ PIN TYPE APRON STYLE SIDESHIFT CARRIAGE

94.3″ QD HOOK TYPE DUAL FUNCTION SIDESHIFT WITH SIMULTANEOUS AND INDEPENDENT FORK POSITIONER

Hyster Company
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Greenville, North Carolina
27835-7006
Part No. H190-280HD2/TG
1/2019 Litho in U.S.A.

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