

Bidder Tabulation - Bid #RFQ006770
Purchase of HIGH CAPACITY FORKLIFT
Opened October 12, 2017

Bidder Name/Address	Contact Name/#	References	Experience	Warranty	Build Sheet	Literature	Manuals	Attachments	C.C. #	Other
Mh Equipment Co	Jason Milligan jmilligan@mhequipment.com	N	N	Y	Y	Y		Y		If awarded, bidder will need to rescind their terms and conditions, need their referenecees and experience letter
Technology International Inc	tii@tii-usa.com	Y	N	Y	Y	Y		Y		If awarded, bidder needs to rescind the quote expiration of "60 days".

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Vendor #	Type	Line #	Alt.	Total	Product name	Qty	Unit price	Comment	Lead Time
749	Header			\$ 189,339.21					
749	Line	10		\$ 189,339.20	HIGH CAPACITY FORKLIFT - 21,000 lk	1	\$ 189,339.20		0
749	Line	20		\$ 0.01	FORKLIFT TRAINING	1	\$ 0.01		0
9840	Header			\$ 242,700.00					
9840	Line	10		\$ 242,700.00	HIGH CAPACITY FORKLIFT - 21,000 lk	1	\$ 242,700.00		0
9840	Line	20		\$ -	FORKLIFT TRAINING	1	\$ -		0

MH EQUIPMENT



MODEL: H210HD2

All trucks shown with optional equipment. Please refer to quotation specifications.

CUSTOMER DETAILS

CUSTOMER	City Of Columbus		
ADDRESS	1111 E Broad St, Columbus, Ohio, 43215		
SHIP-TO ADDRESS	1111 E Broad St, Columbus, Ohio, 43215		
CONTACT NAME	Mr. Rick Clay		
PHONE	(614) 645-3337		

PROPOSED BY	James O'Neill	TITLE	Material Handling Specialist
PHONE	(614) 871-1571	EMAIL	joneill@mhequipment.com

DATE	Jul 10 2017	QUOTE EXPIRATION	Sep 08 2017
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Quoted Model: H210HD2 Available Features

Over 80 years of a heritage building tough forklift trucks is brought to bear for our Customers in the Hyster® H190-280HD2/S forklifts making it the best choice for your heavy duty applications such as Lumber, Concrete, Steel Manufacturing, General Cargo, and Stevedoring.

The Hyster® H210HD2 heavy duty truck is designed to provide you with low operating costs, superior ergonomics, excellent reliability and ease of serviceability.

Right-sized engines, coupled with a load-sensing On-Demand hydraulic system, automatic throttle-up and selectable ECO modes can save you up to 25% lower fuel consumption over prior Tier 3 products, reducing your total cost of ownership when you own a Hyster® forklift truck.

Premium ComforCab II operator compartment is designed around the needs of your operator, and provides superior comfort and good all-round visibility.

A Heavy duty cooling system, tilting cab, CANbus controls, long service intervals and easy access to components ensures reliability and simplifies maintenance.

You can't predict the future, but you can be ready. The Hyster® H210HD2 is ruggedly built for maximum durability and flexibility to help you minimize downtime, optimize operational flow and maximize performance. Think Ahead. Think Hyster.

Hyster® H210HD2 High Capacity Forklift Truck (106" /2,700 mm Wheelbase) 21,000 lbs. nominal capacity @ 24" Load Center /9,525 kg @ 610 mm

Proposal Summary

Included Items	Description
Model	Hyster® H210HD2 High Capacity Forklift Truck (106" /2,700 mm Wheelbase) 21,000 lbs. nominal capacity @ 24" Load Center /9,525 kg @ 610 mm
Powertrain	Drive Axle with Oil Immersed Brakes Cummins QSB 4.5L Tier 4 Diesel Engine (159.6 hp) ZF WG161 3-Speed Powershift Transmission 3 Speeds Forward - 3 Speeds Reverse
Powertrain Options	Fuel Cap - Lockable Heavy Duty Air Intake with Precleaner Engine Block Heater - 110V Low Exhaust (Below Chassis) UL Label - Classification Type D
Powertrain Accessories	Travel Speed Limiter pre-set to 10mph (Unconditional)
Mast	Mast Tilt - 15° Forward / 10° Back 3 Stage Full Free Lift Mast - 220" (5600mm) Maximum Lift Height - 120" (3045mm) Overall Lowered Height
Carriages & Attachments	92.5" (2350mm) Pin Type Simultaneous Fork Positioning Sideshift Carriage 66" High Load Backrest
Forks	84" Long x 3.0" Thick x 8" Wide (2135mm x 75mm x 200mm) - Pin Type - Standard Taper Forks
Front End Equipment Accessories	Hydraulic Accumulator (2.5 liter) in Lift Circuit
Hydraulics	Hydraulics controlled by 3 Levers and 1 Rocker Switch - Non Clamp 4 Function (2 Auxiliary) Hydraulic Control Valve Standard Hydraulic Performance - 105cc Pump
Hoses	2 Auxiliary Function Hose Group - 3 Hoses and 1 Wire Cable Externally Mounted - Includes Selector Valve
Wheels & Tires	10.00 x 20 Pneumatic Shaped Solids Drive Tires



MH EQUIP OF OHIO NORTH
 2055 HARDY PARKWAY STREET
 GROVE CITY Ohio 43123
 Phone: (614) 871-1571



Included Items	Description
	10.00 x 20 Pneumatic Shaped Solids Steer Tires
Operator Compartment	Manual Tilt Operator Compartment for Service Access Electronic Horn 105 db(A) Open operator compartment
Directional Control	Lever Shift Direction Control - Mounted on Left Hand Side of Steering Column Steering Wheel with Integral Spinner Knob
Seat	Air Ride Full Suspension Vinyl Seat with High Backrest Seat Belt - Black - No-Cinch with ELR (Emergency Locking Retractor)
Telemetry	Hyster Tracker Wireless Monitoring with Cellular connectivity - GSM
Lights & Alarms	Audible Alarm - Reverse Direction Activated - Self-Adjusting 82-102 dB(A) Visible Alarm - Amber LED Strobe - Keyswitch Activated - Does Not Increase Truck Height 2 LED Mast Mounted Work Lights / 2 LED Front Fender Mounted Lights / 2 LED Work Lights Rear / 2 LED Stop, Tail, Back-up Lights DC/DC 24/12 Volt Converter
Warranty	12 Months / 2,000 Hours Manufacturer's Warranty
Literature & Nameplate	English Literature Pack and Labels Parts Manual - Printed - Truck Serial Number Specific
Fees & Surcharges	Freight Fees & Surcharges

Additional Items or Accessories Included

Description	Quantity
12,500 to 20,000# Units- Hyster/ Yale/ IC Dealer Prep 12,500 - 20,000#	1

Total Investment

Price H210HD2	\$189,339.20
Quoted Quantity	1
TOTAL:	\$189,339.20

Pricing in this proposal does not include Local Freight or Sales Tax. Sales Tax, as applicable, will be calculated and added in accordance with State Law. Tax exempt transactions require the appropriate Tax Exempt certificate to be on file with MH Equipment. Acceptable methods of payment are check or wire transfer. Thank you again for the opportunity to address your material handling requirements. We are committed to delivering a comprehensive, competitive material handling solution for your operation's needs, and will work diligently with you to address your costs through increased productivity and maximized efficiencies. Please advise how we can be of further assistance.



MH EQUIP OF OHIO NORTH
 2055 HARDY PARKWAY STREET
 GROVE CITY Ohio 43123
 Phone: (614) 871-1571



Proposal By:	<u>James O'Neill</u>	Accepted By:	_____
Signature:	_____	Signature:	_____
Date Signed:	_____	Date Accepted:	_____
		PO Number:	_____

Terms and Conditions

Delivery and Price: We will use all reasonable means to make shipment within the time specified, but assume no liability for loss or damage arising from late delivery nor nonfulfillment of contract by reason of fires, strikes, delays in transportation, regulations of the United States Government, or any cause unavoidable or beyond our control. -The prices quoted and the shipment specified herein are for prompt acceptance and are subject to change without notice. -The prices quoted are exclusive of any tax in force or which may be enacted by Federal, State or Local Governments. -Prices quoted are the prices prevailing at this time. -This proposal is subject to subsequent credit approval by Hyster Company. -Financing and leasing arrangements are available. The equipment covered by this Proposal may be shipped either by the Dealer named on the face hereof or by Hyster Company as agent for the Dealer. In the latter case the invoice may be issued by Hyster Company as agent for the Dealer and payment should be made to that Company for the account of the Dealer. Standard Warranty: See attached Hyster Company Form No. 2800B. Disclaimer: Except when specifically approved by Hyster, warranty work must be performed by authorized Hyster dealers. Hyster accepts no liability hereunder for consequential damages or for the negligence of others. The foregoing warranties are exclusive and there are no warranties which extend beyond the description on the face hereof. These express warranties are in lieu of all other warranties whether written, oral or implied and Hyster hereby expressly excludes any implied warranties of merchantability and fitness. Safety Devices: The proposed vehicle(s) will be equipped with certain safety devices as standard equipment unless your purchase order specifically instructs us to delete such equipment. These devices, which may be removed without rendering the vehicle(s) inoperative, include: driver's overhead guard, load backrest and, when remote elevating control is specified, operator's safety platform. Hyster Company shall not assume any liability for injuries or damage arising from or caused by the deletion, omission or removal of any safety devices from the vehicle(s). Cancellation: Cancellation of this proposal, after it has been accepted, can be made only by mutual consent in writing. Reasonable cancellation charges will be assessed by Hyster Company at its discretion. Your signature on this Proposal constitutes an order subject to the approval of our General Sales Office in Greenville, NC. This Proposal expressly limits acceptance to the terms and conditions stated hereon, and any additional or different terms and conditions proposed by you are not accepted and are hereby excluded, unless expressly assented to in writing by Hyster Company. No contract shall exist except as hereinabove provided.

Technology International Inc

RFQ006770 BIDDER GUIDE

The following information is provided by the City of Columbus to assist you in navigating the formal bid procedures. This information is not to supersede or replace any of the actual bid specifications or requirements; its sole purpose is to provide information on the process. If you have any questions regarding the process, please contact the appropriate City of Columbus representative listed on the bid solicitation (for specification questions see instructions below).

Any addenda issued by the City of Columbus will be posted on this site. The City of Columbus will send notification of addenda to Bidders that have an active login id and password with Columbus Vendor Services and are registered for the commodity code(s) associated with this solicitation.

Though the notification methods above will be utilized to notify bidders of addenda it is ultimately the Bidder's responsibility to check this site for verification of any issued addenda.

IN ORDER FOR YOUR BID TO BE CONSIDERED: (CHECK ONE BELOW)

Pricing is to be entered into the corresponding Line(s) in the body of the RFQ **AND**

Pricing is to be entered into the attachment of the RFQ. Please print, complete, and attach your completed price listing to your bid response.

The following documents must be completed and attached to your response. Complete this checklist to confirm the items required in your bid. Failure to submit the listed documents may be cause for rejection of your bid. :

Reference Pages

Subcontractor Information (if applicable)

Experience Documentation

Literature (if applicable)

Warranty

Build Sheets

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Please refer to Page 15 of the Vendor Services User Guide for guidance using the Attachment feature to attach references, literature, warranty information and any other documentation as needed.

EQUAL OPPORTUNITY CLAUSE

- (1) The contractor/vendor/bidder will not discriminate against any employee or applicant for employment because of race, sex, sexual orientation, gender identity or expression, color, religion, ancestry, national origin, age, disability, familial status or military status. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, sex, sexual orientation, gender identity or expression, color, religion, ancestry, national origin, age, disability, familial status or military status. Such action shall include, but not be limited to, the following: employment up-grading, demotion, or termination; rates of pay or other forms of compensation; and selection for training. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices summarizing the provisions of this Equal Opportunity Clause.
- (2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that the contractor is an equal opportunity employer.
- (3) It is the policy of the City of Columbus that business concerns owned and operated by M/WBEs shall have the maximum practicable opportunity to participate in the performance of contracts awarded by the city.
- (4) The contractor shall permit access to any relevant and pertinent reports and documents by the ODI director for the sole purpose of verifying compliance with this Title and ODI regulations. All such materials provided to the ODI director by the contractor shall be considered confidential.
- (5) The contractor will not obstruct or hinder the ODI director or his/her deputies, staff and assistants in the fulfillment of the duties and responsibilities imposed by Title 39 of the Columbus City Codes.
- (6) The contractor and each subcontractor will include a summary of this Equal Opportunity Clause in every subcontract. The contractor will take such action with respect to any subcontractor as is necessary as a means of enforcing the provisions of the Equal Opportunity Clause.
- (7) The contractor agrees to refrain from subcontracting any part of this contract or contract modification thereto to a contractor not holding a valid certification number as provided for in Title 39.
- (8) Failure or refusal of a contractor or subcontractor to comply with the provisions of Title 39 may result in cancellation of this contract.

ALL CONTRACTORS MUST HOLD A VALID CONTRACT COMPLIANCE CERTIFICATION NUMBER ISSUED BY THE OFFICE OF DIVERSITY AND INCLUSION.

To obtain a Contract Compliance number register at the City of Columbus Vendor Services website: <http://vendors.columbus.gov/sites/public>

1. Login to the City of Columbus Vendor Services Site and register with the city of Columbus. Once that is completed and approved by the purchasing office, log back in and do the following:
2. Select **Questionnaires** from the Common menu located on the left navigation bar.
3. Next select EBO Quest. (this is the contract compliance application)
4. Question 1 will be displayed; Answer question 1 and select **Forward**.
5. Proceed through the questionnaire answering each question and selecting **Forward** to continue. Once you have reached and answered the last question select **End** to submit.
6. Then the questionnaire will be received by the ODI Office, reviewed and process within 2 business days or less. For additional questions regarding this process, contact the Office of Diversity Inclusion at 614-645-4764.

City of Columbus Home Page: www.columbus.gov

INFORMATION FOR BIDDERS

SPECIAL CONDITIONS

Special conditions included in the specifications, if inconsistent with provisions included in "Information for Bidders", shall take precedence over any provisions in "Information for Bidders" to the extent inconsistent.

SUBMISSION OF PROPOSAL

Responses must be entered and submitted electronically in the body of the RFQ. Some RFQs require pricing lists or additional documents to be attached to the RFQ response electronically. In rare instances documents require submission via regular mail delivery. Refer to the "Proposal Information" section of the specifications for instructions for submission. Any unauthorized conditions, limitations or provisions attached to the proposal may render the bid nonresponsive and result in its rejection.

ACCEPTANCE AND REJECTION

This proposal submitted by the bidder to the City of Columbus will be accepted or rejected within a period of 180 days from bid opening date. The City reserves the right to waive technicalities, and to request a rebid on the required material. If more than one item, prices shall be quoted on the units requested. However, each item shall be considered a separate bid and the City reserves the right to award a contract on each item separately or on all items as a whole or any combination thereof. Bidders whose proposal is made on an "All or None" basis must clearly state such fact in the proposals.

Each RFQ issued by the City shall state that the RFQ may be cancelled and that any RFQ response may be rejected in whole or in part when it is for good cause and in the best interests of the City.

WITHDRAWAL OF PROPOSALS

Bidders may withdraw their RFQ response at any time prior to the time specified in the advertisement as the closing time for the receipt of bids. However, no bidder shall withdraw or cancel his response for a period of 180 calendar days after said advertised closing time for the receipt of proposals.

DEFAULT PROVISION

In case of default by the bidder or the contractor, the City of Columbus may procure the articles or services from other sources and hold the bidder or contractor responsible for any excess costs occasioned or incurred thereby.

SIGNATURE REQUIRED

By submitting this response electronically, bidder/proposer is affixing an electronic signature as defined by the Ohio Uniform Transactions Act. Said signature represents that he/she has the authority to bind the entity to the terms and conditions contained herein.

APPLICABLE LAWS

The Revised Code of the State of Ohio, the Charter of the City of Columbus, and all City ordinances insofar as they apply to the laws of competitive bidding, contracts, and purchases, are made a part hereof.

PRICING

Bidders are to quote firm or fixed prices for the duration of any contract which may be a result of this proposal unless otherwise noted in the specifications. In case of discrepancy in computing the amount of the bid, the **UNIT PRICE** quoted will govern.

Quotations are requested F.O.B. destination. If quoted F.O.B. Shipping Point include freight estimate and full value insurance cost.

CONTRACT AND BOND

The bidder to whom an award is made will be required to execute a written contract with the City of Columbus, Ohio within ten days after receiving such contract for execution, and if specified in the legal notice, furnish a good and approved bond conditioned upon the faithful performance of the same. The proposal, contract, proposal bond, (if applicable), and performance bond (if applicable) shall be in the form herein specified.

If, at any time during the continuance of the Contract, any surety shall, in the opinion of the Finance & Management Director, become irresponsible, then said Director shall have the right to require additional and sufficient surety or sureties. The Contractor shall furnish the surety or sureties to the satisfaction of the said Director, within ten (10) days after notice. In default thereof the default provision herein shall apply.

LIABILITY, INSURANCE, LICENSES AND PERMITS

Where bidders are required to enter or go onto City of Columbus property to deliver materials or perform work or services as a result of bid award, the bidder will assume full duty, obligation and expense of obtaining all necessary licenses, permits, and insurance when required. The bidder shall be liable for any damages or loss to the City occasioned by negligence of the bidder (or his agent) or any person the bidder has designated in the completion of his contract as a result of his bid.

Particular attention is directed to the statutory requirements of the State of Ohio relative to the licensing of corporation organized under the Laws of any other State.

TAXES

Federal and/or State Taxes are not to be included in prices quoted. The successful bidder will be furnished an exemption certificate if needed.

SAMPLES

Samples, when requested, must be furnished free of expense to the City and if not destroyed, will upon request be returned at the bidder's expense.

DELIVERY

Time will be of the essence for any orders placed as a result of this bid. Purchaser reserves the right to cancel such orders or any part thereof, without obligations if delivery is not made within the time(s) specified. Delivery shall be made during normal working hours and to the destination shown on the proposal.

QUALITY

Unless otherwise stated by the bidder, the RFQ response will be considered as being in strict accordance with the specifications outlined in the Bid Document.

References to a particular trade, manufacturer's catalog or model number are made for descriptive purposes to guide the bidder in interpreting the requirements of the City. They should not be construed as excluding proposals on other types of materials, equipment and supplies. However, the bidder, if awarded the contract, will be required to furnish the particular item referred to in the specifications or description unless a departure or substitution is clearly noted and described in the proposal.

CHANGES AND ADDENDA TO BID DOCUMENTS

Each change or addenda issued in relation to this bid document will be published on the City's Vendor Services website no less than five (5) working days prior to the scheduled bid opening date. In addition, to the extent possible, notice will be e-mailed to each person registered as having interest in the commodities selected for this bid. Total bid inquiry or specific item cancellations may be issued later than that time specified above.

WITHHOLDING OF INCOME TAX

All bidders are advised that in order for a contract to bind the City, each contract must contain the provisions found in Section 361.34 C.C.C. with regard to income taxes due or payable to the City of Columbus for wages, salaries and commissions paid to the contractor's employees as well as requiring those contractors to ensure that subcontractors withhold in a like manner.

CAMPAIGN CONTRIBUTIONS

Contractor hereby certifies the following: that it is familiar with Ohio Revised Code ("O.R.C.") Section 3517.13; that all applicable parties listed in Division (I)(3) or (J)(3) of O.R.C. Section 3517.13 are in full compliance with Divisions (I)(1) and (J)(1) of that Section; that it is eligible for this contract under the law and will remain in compliance with O.R.C. Section 3517.13 for the duration of this contract and for one year thereafter.

INFORMATION FOR BIDDERS (Continued)

IN THE EVENT OF A CONTRACT

1. Where applicable according to the specifications successful seller shall transfer and deliver to City goods which conform to the specifications.
2. The City shall accept from seller goods that conform to the specifications, and shall pay for the goods in accordance with the terms of an agreement, which may result from this proposal.
3. The risk of loss from any causality to the goods regardless of the cause of the casualty shall be on seller until the goods have been delivered at the address designated in the order and are approved after inspection by the City.
4. Seller warrants and represents that seller has absolute and good title to and full right to dispose of the goods, and that there are no liens, claims, or encumbrances of any kind against the goods, and at the time of delivery shall be free from any security interests or other lien or encumbrance.
5. If there is a breach by seller of the warranty against encumbrances granted by seller in an agreement, which may result from this proposal, the City shall have the option to cancel an agreement, which may result from this proposal.
6. Seller shall defend any action brought against the City so far as the action is based on a claim that the goods, or any part of the goods, furnished under an agreement which may result from this proposal constitutes an infringement of any patent of the United States or a trademark. Seller shall be notified promptly in writing of the action and be given authority, information, and assistance, at the expense of seller, for the defense of the action. Seller shall pay all damages and costs awarded in the action. In case the goods or a part thereof are held to constitute infringement and the use of the goods or part thereof is enjoined, seller shall, at the expense of the seller, either procure for the City the rights to continue using the goods, replace the goods or a part hereof with non-infringing goods of equal or better quality, modify the goods so that the goods become non-infringing while continuing to meet or exceed the original specifications, or retake the goods and refund the purchase prices and the transportation and installation costs of the goods at the option of the City.
7. Seller warrants that (1) the goods to be supplied pursuant to an agreement which result from this proposal are fit and sufficient for the purpose intended, (2) the goods are merchantable, of a good quality, and free from defects, whether patent or latent, in material or workmanship and (3) the goods sold to the City pursuant to an agreement which may result from this proposal conform to the specifications. The particular purpose of which the goods are required may be set forth in the specifications.
8. The benefit of any warranty made in an agreement which may result from this proposal by seller shall extend to the City and to the employees of the City, any employee of the City may bring an action directly against seller for damages or injuries sustained by the employee resulting from any breach of warranty by seller.
9. All goods ordered shall be subject to final inspection and approval at the facility of the City designated for delivery. Any goods, which do not conform to the order of the City, may be rejected by the City. The City may hold any goods rejected pending instructions from the seller or the City may return goods to seller at seller's expense.
10. If any tender or delivery by seller is rejected by the City for nonconformity, no notice of intention to cure can be effective unless it is received by the City agency within five (5) days after notice of rejection is sent to seller.
11. The liability of the City for either non-acceptance of conforming goods or repudiation of the agreement which might result from this proposal shall be limited to the difference between the market price at the time and place for tender of the goods and the unpaid sales price together with any incidental damages, but less expenses paid in consequence of the breach by the City.
12. An agreement which may result from this proposal shall not be modified or altered by any subsequent course of performance

- between parties or by additional terms contained in any subsequent documents unless said additional or differing terms are incorporated by contract modification authorized to be entered into by ordinance.
13. Contractor shall protect, indemnify and save the City harmless from and against any damage, cost, or liability, including reasonable attorneys' fees, resulting from claims for any or all injuries to persons or damage to property arising from intentional, willful or negligent acts or omissions of Contractor, its officers, employees, agents, or Subcontractors.
14. This Contract may not be assigned or otherwise transferred to others by the Contractor without the prior written consent of the City. If this Contract is so assigned, it shall inure to the benefit of and be binding upon any respective successors and assigns (including successive, as well as immediate, successors and assignees) of the Contractor.
15. The signatories to this Contract represent that they have the authority to bind themselves and their respective organizations to this Contract.

LOCAL CREDIT

Pursuant to City of Columbus Ordinance # 2607-2012, in determining the lowest bid for a contract the local bidder credit will not be applied.

ENVIRONMENTALLY PREFERABLE PURCHASING

In evaluating bids or offers for materials, supplies, equipment, construction and services, preference will be given to an environmentally preferable bidder who offers a product or service equal to or superior to that of a non-environmentally preferable bidder or offeror and that the environmentally preferable bid or offer does not exceed by more than 5% (up to a maximum of \$20,000) the lowest responsive and responsible and best bid from any non-environmentally preferable bid or offer. The environmentally preferable bidder will be required to demonstrate to the city agency procuring the product or service how their bid is equal to or superior to that of a non-environmentally preferable bidder. Where the bidder or offeror is local, the applicable credit for a local bidder or offeror shall be calculated first.

CERTIFICATE OF TITLE ON EQUIPMENT

If applicable to this purchase, all documents required to obtain a State of Ohio Certificate of Title **must** be delivered to:

**Fleet Management Administrator
City of Columbus/Fleet Management Div.
4211 Groves Road
Columbus, Ohio 43232**

After signature by the Fleet Management Administrator, an original title is to be delivered to the above address within three (3) days. No payment for vehicles requiring a title will be authorized by the Fleet Management Administrator until a valid title is received.

REMEDIES

All claims, counterclaims, disputes and other matters in question between the City, its agents and employees, and the Contractor arising out of or relating to this agreement or its breach will be decided in a court of competent jurisdiction within the County of Franklin, State of Ohio.

OFFERORS TERMS AND CONDITIONS

Terms and conditions, submitted with this proposal, which are contrary to City Code or Charter shall be disregarded for the purpose of any subsequent contract. The successful bidder shall be notified as to which terms and conditions, if any, have been deleted.

**CITY OF COLUMBUS/DEPARTMENT OF PUBLIC UTILITIES/
DIVISION OF ELECTRICITY
FORKLIFT
SPECIFICATIONS**

1.0 SCOPE AND CLASSIFICATION

- 1.1 **Scope:** It is the intent of the City of Columbus, Ohio to obtain formal bids to establish a contract for the immediate purchase and delivery of one (1) High Capacity Forklift Truck with 21,000 lbs. nominal capacity. This unit will be used in the loading/unloading of materials, and the transportation of items at the Division of Electricity.
- 1.2 **Classification:** The contract resulting from this bid proposal will provide for the purchase and delivery of one (1) High Capacity Forklift Truck with 21,000 lbs. nominal capacity. All offerors must document a High Capacity forklift certified reseller partnership. Bidders are required to show experience in providing this type of equipment and warranty service as detailed in these specifications.
- 1.2.1 **Bidder Experience:** The offeror must submit an outline of its experience and work history in these types of equipment and warranty service for the past five years.
- 1.2.2 **Bidder References:** The offeror shall have documented proven successful contracts from at least four customers that the offeror supports that are similar in scope, complexity, and cost to the requirements of this specification.
- 1.3 **Specification Questions:** Questions regarding this bid must be submitted on the Vendor Services portal by 11:00 am Monday, September 25, 2017. Responses will be posted on the RFQ on Vendor Services no later than Thursday, September 28, 2017 at 4:00 pm.
- 1.4 For additional information concerning this bid, including procedures on how to submit a proposal, you must go to the City of Columbus Vendor Services web site at <http://vendors.columbus.gov/sites/public> and view this bid number.

2.0 APPLICABLE STANDARDS / PUBLICATIONS

- 2.1 **ANSI / ITSDF-56.1 2005 Safety Standard for Powered Industrial Trucks:** The overhead guard on the forklift truck must meet all applicable mandatory requirements of ANSI/ITSDF-56.1 2005 Safety Standard for Powered Industrial Trucks.
- 2.2 **Industry Standards & EPA/OSHA Requirement:** The units will comply with all standards of the industry and all applicable EPA and OSHA requirements, especially those requirements for EPA noise emissions and exhaust emissions applicable to lift trucks.
- 2.3 OSHA Powered Industrial Truck requirements
- 2.4 All applicable Federal and State of Ohio laws
- 2.5 Federal Motor Vehicle Safety Standards (F.M.V.S.S)
- 2.6 **Manufacturer Names:** All manufacturers, product names, and model numbers referred to in these specifications are to establish minimum quality standards for the particular item. Unless otherwise noted suppliers are invited to bid products of any manufacturer that meet or exceed the specifications.

**CITY OF COLUMBUS/DEPARTMENT OF PUBLIC UTILITIES/
DIVISION OF ELECTRICITY
FORKLIFT
SPECIFICATIONS**

3.0 REQUIREMENTS

3.1 **General Information:**

3.1.1 **Pricing:** Bidders are requested to bid firm or fixed prices.

3.1.2 **Quantity:** One (1) High Capacity Forklift Truck with 21,000 lbs. nominal capacity.

3.1.3 **Quality Standard:** New, unused and the manufacture's most current production model. The specifications describe a minimum acceptable requirement which a bidder has to meet. However, the bidder is allowed to exceed a minimum requirement where the excess enhances the function of the unit. It is not acceptable to exceed a maximum limit.

3.2 **Bidder Requirements:** The City will use the requirements of this section to determine if each bidder meets the minimum standards to be considered a responsible bidder. **Please print, complete and attach** Reference pages and attach any supplemental pages as may be necessary to meet these requirements. **For instructions on how to attach a document to your bid, go to page 15 of the Vendor Services User Guide.**

3.2.1 **Experience Required:** Documentation shall include (at a minimum) information meeting the following criteria.

3.2.1.1 **Equipment and Warranty Capabilities:** Offerors must document, and submit in a letter attached to the bid, their capability of providing the equipment and warranty service specified herein.

3.2.1.2 **Manufacturer Relationship:** The offeror shall provide the history of their relationship with manufacturer(s) that will potentially be providing these types of equipment/parts and warranty service for the past five years, including but not limited to the following:

- a) Length of the relationship
- b) Level of the relationship
- c) A brief history of the relationship

3.2.2 **References:** The offeror shall have documented proven successful contracts from at least four customers that the offeror supports that are similar in scope, complexity, and cost to the requirements of this specification.

3.2.2.1 **Contact Information Required:** The reference contact information shall include the customer name, customer e-mail address, street address, telephone number, fax number, contact name and equipment purchase date.

3.2.2.2 **Equipment / Warranty Service Information:** A description of the equipment/parts provided and type of warranty service that was provided.

3.2.3 **Subcontractor Information Required:** If subcontractor(s) are to be used, please list names, addresses, telephone numbers and a contact person for each subcontractor. All subcontracts must have valid contract compliance certification.

3.2.3.1 **Subcontractor Contact:** Should the offeror use subcontractors, the City shall use the offeror as the primary contact point.

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3.2.4 **Specification Questions:** Questions regarding this bid including any exceptions and/or suggested changes to the requirements must be submitted on the vendor services portal by 11:00 am (local time) on Monday, September 25, 2017. Responses and any necessary addenda will be posted as an amendment to this RFQ on the City's Vendor Services portal no later than 4:00 p.m. (local time) on September 28, 2017. The City strongly encourages bidders to submit exceptions and/or changes during this stage of the process. Bidders submitting exceptions and/or changes before this date will greatly reduce the likelihood of their bid being rejected as non-responsive to the specifications. Bidders whom have not registered and created a new user on the City's portal <http://vendors.columbus.gov/sites/public> are strongly encouraged to do so. Notice of any pre-bid notes and addenda will only be sent to Bidders whom have registered at the site.

3.2.4.1 For further instructions on how to submit "Vendor Questions" through the Vendor Portal, please see Section "Add Vendor Questions" provided on page 16 of the City of Columbus Vendor Services User Guide.

3.2.4.2 The City has instructional videos to assist bidders at the portal. Tutorial videos are available to be viewed through You Tube or by clicking the following link:

https://www.youtube.com/channel/UCTIkkGNM7GHIITzoqQVNJIA/videos?shelf_id=0&view=0&sort=dd

3.3 Specification Information: One (1) Hyster H210HD2 High Capacity Forklift Truck (106" /2,700 mm Wheelbase) 21,000 lbs. nominal capacity @ 24" Load Center /9,525 kg @ 610 mm or Equal.

3.3.1.1 Powertrain:

- Drive Axle with Oil Immersed Brakes
- Cummins QSB 4.5L Tier 4 Diesel Engine (159.6 hp). ZF WG161 3-Speed
- Power-shift Transmission 3 Speeds Forward - 3 Speeds Reverse

3.3.1.2 Powertrain Options:

- Fuel Cap - Lockable
- Heavy Duty Air Intake with Pre-cleaner
- Engine Block Heater - 110V
- Low Exhaust (Below Chassis)
- UL Label - Classification Type D

3.3.1.3 Powertrain Accessories:

- Travel Speed Limiter pre-set to a permanent 10mph maximum

3.3.1.4 Mast:

- Mast Tilt - 15° Forward / 10° Back
- 3 Stage Full Free Lift Mast - 220" (5600mm) Maximum Lift Height - 120" (3045mm) Overall Lowered Height

3.3.1.5 Carriages & Attachments:

- Maximum 92.5" (2350mm) Pin Type Simultaneous Fork Positioning Side-shift Carriage

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- 66" High Load Backrest

3.3.1.6

Forks:

- Maximum 84" Long x 3.0" Thick x 8" Wide (2135mm x 75mm x 200mm) - Pin Type - Standard Taper Forks

3.3.1.7

Front End Equipment Accessories:

- Hydraulic Accumulator (2.5 liter) in Lift Circuit

3.3.1.8

Hydraulics:

- Hydraulics controlled by 3 Levers and 1 Rocker Switch - Non Clamp
- Function (2 Auxiliary) Hydraulic Control Valve
- Standard Hydraulic Performance - 105cc Pump

3.3.1.9

Hoses:

- 2 Auxiliary Function Hose Group - 3 Hoses and 1 Wire Cable Externally Mounted - Includes Selector Valve

3.3.1.10

Wheels & Tires:

- 10.00 x 20 Pneumatic Shaped Solids Drive Tires 10.00 x 20 Pneumatic Shaped Solids Steer Tires

3.3.1.11

Operator Compartment:

- Manual Tilt Operator Compartment for Service Access
- Recirculation Fan
- Single Blade Wiper on Front Windshield
- Electronic Horn 105 db(A)
- Enclosed Cabin with Heavy Duty maximum 37,500 BTU Air Conditioning

3.3.1.12

Directional Control:

- Lever Shift Direction Control - Mounted on Left Hand Side of Steering Column
- Steering Wheel with Integral Spinner Knob

3.3.1.13

Seat:

- Air Ride Full Suspension Vinyl Seat with High Backrest
- Seat Belt - Black - No-Cinch with ELR (Emergency Locking Retractor)

3.3.1.14

Telemetry:

- Hyster Tracker Wireless Monitoring with Cellular connectivity – GSM

3.3.1.15

Lights & Alarms:

- Audible Alarm - Reverse Direction Activated - Self-Adjusting 82-102 dB(A)
- Visible Alarm - Amber LED Strobe – Key switch Activated - Does Not Increase Truck Height
- 2 LED Mast Mounted Work Lights / 2 LED Front Fender Mounted Lights / 2 LED Work Lights Rear / 2
- LED Stop, Tail, Back-up Lights
- DC/DC 24/12 Volt Converter

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- 3.3.1.16 Literature & Nameplate:
- English Literature Pack and Labels
 - Parts Manual - Printed - Truck Serial Number Specific

4.0 DEMONSTRATION AND INSPECTION

- 4.1 The City of Columbus reserves the right to require a demonstration of any equipment in this bid prior to award. All costs associated with the demonstration shall be the responsibility of the bidder(s). Equipment must be available for actual use by City of Columbus operators. All demonstrations shall be concluded within five (5) working days after notification of demo request. Failure to comply may be used as a basis for rejection of the bid.

5.0 PREPARATION FOR DELIVERY:

- 5.1 **Ordering Procedure:** A written purchase order will be established by the Director of Finance and Management. The purchase order will have the delivery and invoice information.
- 5.2 **Delivery:** Delivery days after receipt of order is of considerable importance to the City and may be used in the evaluation of the bid. Please place an accurate number of days in the space provided. Failure to deliver in the days proposed may lead the City to consider the contract holder in default of the contract. The City will then begin proceedings for a defaulting vendor as allowed in this contract and in the City Code.
- 5.2.1 The successful bidder(s) assume the responsibility for the Forklift including, but not limited to, transportation and insurance for complete unit(s) while in transport and until final acceptance by the City of Columbus.
- 5.2.2 All units must be delivered with all fluid levels at the manufacturer's recommended full capacity. All manufacturer's pre-delivery service and inspections should be completed prior to delivery to the City of Columbus.
- 5.2.3 The City of Columbus shall be notified no less than 24 hours prior to actual delivery by notifying the contact person by phone. The contact information and location for delivery will be included on the Purchase Order. Delivery shall be F.O.B. destination prepaid and allowed.
- 5.4 **Title:**
- 5.4.1 All titles are to be made out to City of Columbus, 4211 Groves Road, Columbus, Ohio 43232. All documents required to obtain a State of Ohio Title must be delivered to John King at the Division of Fleet Management, 4211 Groves Road, Columbus, Ohio 43232. All forms must be properly completed. NO BLANK FORMS WILL BE ACCEPTED.
- 5.4.2 After signature by the Division of Fleet Management, an Ohio Certificate of Title shall be delivered to the City of Columbus, Division of Fleet Management within three (3) days. Fleet Management will not authorize payment for any forklift(s) until they receive a valid State of Ohio Title.

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5.5 Invoices:

5.5.1 The invoice should show the City Purchase Order number, a brief description identifying the item, and the total amount. Invoice shall be mailed to the address on the Purchase Order.

6.0 NOTES:

6.1 **Online Bidding Instructions:** Bidders are requested to quote firm or fixed prices on the corresponding line item(s) only. Within the "Comment" section of each line bidders are requested to provide the make, model and manufactured year of the unit quoted. It is understood that all parts that may not be specifically mentioned must be included to make the unit operational and complete.

6.1.1 **Alternates:** Bids will be considered on units complying with the specifications. All alternates must be detailed in an attached letter to bid. Explanations must fully state what is to be furnished. All alternates must exceed specifications. The City of Columbus reserves the right to determine whether any proposed alternates are within the specifications.

6.1.1.1 **Attachments:** For instruction on attaching documents to online quotes, please see page 15 of the "City of Columbus Vendor Services User Guide", made available through the Vendor Portal.

6.2 **Literature:** To aid in the evaluation of bids, all bidders are required to furnish with this bid current published literature and Dealer's specifications that best explains the unit offered, model and identification of the options that meet or exceed the specifications. Published literature to include pictures and complete descriptive matter.

6.3 **Manuals:** Successful bidder shall furnish two (2) sets of parts, service, maintenance, and overhaul manuals upon delivery to the City of Columbus, preferably on CD. Manuals must include unit repair manual, service/shop manual, fuel and emissions system manual, engine repair manual, electrical system wiring/diagnosis manual, and parts manuals.

6.4 **Training:** The successful bidder shall provide a minimum of four (4) hours of training regarding the features, safe operation and maintenance of the unit. The training shall take place at the Division of Electricity 3500 Indianola Ave. Columbus, Ohio 43214 on first shift, and be able to accommodate up to 20 personnel. The City of Columbus reserves the right to video record the training sessions for training/retraining its employees.

6.5 **Insurance Requirements and Workers Compensation:** Successful Bidder is required to provide the following before final execution of the contract:

6.5.1 **Liability Insurance:** The contractor shall take out and maintain during the life of the contract, such Public Liability (bodily injury and property damage) Insurance as shall protect him from claims from damages for personal injury, including accidental death, as well as from claims for property damage which may arise from operations under the contract, whether such operation be by himself or any subcontractor or by anyone directly or indirectly employed by either of them. Such insurance policy shall include the city as named insured. The Contractor shall maintain coverage of the types and in the amounts specified below. Submitting a certificate of insurance shall evidence proof of

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such insurance coverage. A contractor's "umbrella" type policy with limits specified below may be submitted for this requirement, with the City as named insured.

The amount of such insurance shall be as follows:

Bodily Injury Liability	
Each Person	\$. 1,000,000.00
Each Accident	\$. 1,000,000.00
Property Damage Liability	
Each Person	\$. 1,000,000.00
Each Accident	\$. 1,000,000.00

Such insurance shall remain in full force and effect during the life of the contract. Insurance may not be changed or cancelled unless the insured and the City are notified in writing not less than thirty days prior to such change or cancellation. If any part of the contract is sublet, the Contractor is responsible for the part sublet being adequately covered by insurance herein above described.

Contractor assumes all risk of loss and damage to the equipment provided unless loss or damage occurs at the time the operator and equipment are being operated for the purpose designated by the city and such loss or damages is caused by an act of the city or its employee which constitutes gross negligence or wanton misconduct.

6.5.2 **Worker's Compensation Insurance:** The contractor shall take out and maintain, during the life of this contract, adequate worker's compensation insurance for all his employees employed at the site of the project and, in case any work is sublet, the Contractor shall require the subcontractor similarly to provide worker's compensation insurance for the latter's employees, unless such employees are covered by the protection afforded by the Contractor.

Insurance Verification: The Contractor shall submit to the Purchasing Office proof that the required insurance and Workman's Compensation is paid and in effect. This shall be submitted with Contract number identification.

Mail To: City of Columbus/Purchasing Office
77 North Front Street, 5th Floor
Columbus, Ohio 43215

6.6 Warranty:

6.6.1 **Bidder's responsibility:** The warranty work shall be the responsibility of the successful bidder and the successful bidder shall coordinate all warranty work. Any defects shall be corrected and equipment returned to the City within ten (10) days of written (mail, e-mail, or fax) notification of the service need. Any defects shall be corrected without cost to the City of Columbus. Under no circumstances shall the "out of operation" time of the vehicle exceed ninety (90) days. Warranty work is not deemed complete until Fleet Management has accepted work as satisfactory.

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- 6.6.2 **Warranty Period:** The warranty period shall be a minimum of 12 months/2,000 hours, whichever comes first, at no additional charge. Bidders shall attach copies of warranty with the bid quote.
- 6.6.3 **Delayed Warranty:** Bidder shall submit on a separate sheet attached to the bid a procedure for delayed warranty for starting dates to cover the interval between time of delivery of the complete vehicle and the actual date that the vehicle is placed in service by the City. This delayed time period will cover inspection, operator and mechanic training, etc.
- 6.6.4 **Fully Franchised:** The manufacturer shall contract with a warranty service provider whose primary business is the sale and/or repair of the equipment proposed in this bid proposal.
- 6.6.5 **Warranty Service Logistics:** Cost of transport of equipment for warranty purposes shall be the responsibility of the successful bidder. The successful bidder will be required to pick-up the equipment and transport it to the warranty service location. At the successful bidder's discretion, the equipment may be transported to a location within Franklin or contiguous counties. For a warranty service location outside of a contiguous county, the vehicle must be transported.
- 6.7 **Packaging:** All items must be packaged in the minimum standard packing materials designed to protect against physical damage during shipment. Note that the use of environmentally friendly materials is encouraged.
- 6.8 **Communications:** During the bidding and evaluation process Offerors are strictly prohibited from communicating with any City employees or officers regarding the solicitation. Any communication from the vendor to the City should be limited to only the contact(s) listed in the RFQ and/or below. A violation of this section on the part of the Offeror may lead to disqualification.

All correspondences regarding this bid should be sent via email to
rslaughter@columbus.gov

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REFERENCES

The bidder must briefly document its capabilities and submit an outline of its experience and work history in the Forklifts for the past five years by submitting the contact information of professional references from four (4) separate contracts. References should consist of projects of a similar scope, complexity, and cost.

Business Name: See attached References Sheet and TII Proposal Tel #. _____ - _____

Address: _____

E-mail Address: _____ Fax #. _____ - _____

Contact: _____ Work performed from _____ to _____

Work Performed: _____

Business Name: _____ Tel #. _____ - _____

Address: _____

E-mail Address: _____ Fax #. _____ - _____

Contact: _____ Work performed from _____ to _____

Work Performed: _____

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Business Name: _____ Tel #. _____ - _____

Address: _____

E-mail Address: _____ Fax #. _____ - _____

Contact: _____ Work performed from _____ to _____

Work Performed: _____

Business Name: _____ Tel #. _____ - _____

Address: _____

E-mail Address: _____ Fax #. _____ - _____

Contact: _____ Work performed from _____ to _____

Work Performed: _____

References:

1. Trailer Mounted Vacuum Excavation system
Mr. Coby Shurtleff
Operations manager
Town of Windsor
301 Walnut street
Windsor, CO 80550
Tel: 970 674-5401

2. Rail gear vehicles
North County transit District
Ms. Janet Bessent
810 Mission Avenue
Oceanside CA 92054
Tel: 760-966-6592

3. Trailer mounted Chillers
Mr. Mike McGrath
Clark County School District
Maintenance Purchasing & Warehousing
1180 Military Tribute Place
Henderson, Nevada
Tel: (702) 799-5281 ext 15171

4. 1,000 gallon diesel fuel trailer
Medical University of South Carolina
Mr. Bruce Mills
Facilities manager
97 Jonathan Lucas Street, MC 190
Charleston, SC 29425
Tel: 843-792-4666

5. Amphibious Low Ground Pressure Vehicle
Connecticut Dept of Energy & Environment Protection
Mr. Carl Chu
163 Great Hill Road,
Portland, CT 06480
Tel: 860-424-3832

References

Felling Tilt Trailer – Delivered September 2015
Eddie Tucker - Fleet Coordinator
City of Alpharetta Public Works
1790 Hembree Road
Alpharetta, GA. 30009
Phone: 678-297-6249
Fax: 678-297-6201

Trailerman Gooseneck Trailer – Delivered August 2015
John T. Lowe – Procurement Officer
Kansas Department of Administration
900 SW Jackson
Topeka, KS 66612
Phone: 785-296-3126
Fax: 785-296-7240

Big Tex Dump Trailer – Delivered August 2015
Maria Sio – Purchaser
City and County of San Francisco
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102
Phone: 415-554-6212
Fax: 415-554-6717

Kubota RTV Off Road Vehicle - Delivered Nov 2015
Thomas Czeczil - Buyer
Fulton County Department of Public Works
130 Peachtree St. SW Suite 1168
Atlanta GA, 30303
Phone: 404-245-9691



Technology International, Inc.
 1349 South International Pkwy, Suite 2411
 Lake Mary, FL 32746
 Tel: (407) 359-2373
 Fax: (407) 359-2372
 E-mail: tii@tii-usa.com
 Website: www.tii-usa.com

Equipment Proposal

Description: 21,000 lb forklift
Solicitation #: RFQ006770
Attention: City of Columbus, Ohio
TII Ref: TII/OH/1017/4874
Date: 10/12/17

In response to your quote request for a forklift, Technology International, Inc. is pleased to submit the following for consideration:

ITEM NO.	QTY	DESCRIPTION/ MODEL NO.	UNIT PRICE	EXTD. PRICE
1	1	Hyster MODEL: H210HD2 See attached detailed specifications Service and warranty work to be done by local Hyster dealer.	\$242,700.00	\$242,700.00
<u>Total.....\$242,700.00</u>				

Warranty: Manufacturer’s standard warranty applies.

Delivery:

- Estimated delivery is **22-24 weeks** after receipt of order and approved submittal
- All delivery dates quoted are subject to manufacturer’s confirmation at time of order.
- Submittal data will be provided for approval after receipt of order (if applicable)
- End user to provide equipment and personnel to unload

Freight: Freight included to Columbus, Ohio 43214.

Validity: Quote is valid for 60 days.

Payment Terms: NET 30

Prompt Payment discount: 1/2 % 10 days

Technology International, Inc. Corporate data:

We are a small business and our Tax Payer Identification Number (TIN): 650342335. The price quoted does not include any sales, excise or similar taxes.

We trust that this proposal will meet your requirements and we look forward to hearing from you.

If you have any questions or need more information, please contact us by phone at 407-359-2373, fax at 407-359-2372 or email us at tii@tii-usa.com

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Michael J. Rosenberg". The signature is fluid and cursive, with a large initial "M" and a long, sweeping underline.

Michael J. Rosenberg
Business & Operations Manager
Technology International, Inc.

Specifications



MODEL: H210HD2

All trucks shown with optional equipment. Please refer to quotation specifications.

Quoted Model: H210HD2 Available Features

Over 80 years of a heritage building tough forklift trucks is brought to bear for our Customers in the Hyster® H190-280HD2/S forklifts making it the best choice for your heavy duty applications such as Lumber, Concrete, Steel Manufacturing, General Cargo, and Stevedoring. The Hyster® H210HD2 heavy duty truck is designed to provide you with low operating costs, superior ergonomics, excellent reliability and ease of serviceability. Right-sized engines, coupled with a load-sensing On-Demand hydraulic system, automatic throttle-up and selectable ECO modes can save you up to 25% lower fuel consumption over prior Tier 3 products, reducing your total cost of ownership when you own a Hyster® forklift truck. Premium ComforCab II operator compartment is designed around the needs of your operator, and provides superior comfort and good all-round visibility. A Heavy duty cooling system, tilting cab, CANbus controls, long service intervals and easy access to components ensures reliability and simplifies maintenance. You can't predict the future, but you can be ready. The Hyster® H210HD2 is ruggedly built for maximum durability and flexibility to help you minimize downtime, optimize operational flow and maximize performance. Think Ahead. Think Hyster. Hyster® H210HD2 High Capacity Forklift Truck (106" /2,700 mm Wheelbase) 21,000 lbs. nominal capacity @ 24" Load Center /9,525 kg @ 610 mm



Proposal Summary

Included Items	Description
Model	Hyster® H210HD2 High Capacity Forklift Truck (106" /2,700 mm Wheelbase) 21,000 lbs. nominal capacity @ 24" Load Center /9,525 kg @ 610 mm
Powertrain	Drive Axle with Oil Immersed Brakes Cummins QSB 4.5L Tier 4 Diesel Engine (159.6 hp) ZF WG161 3-Speed Powershift Transmission 3 Speeds Forward - 3 Speeds Reverse
Powertrain Options	Fuel Cap - Lockable Heavy Duty Air Intake with Precleaner Engine Block Heater - 110V Low Exhaust (Below Chassis) UL Label - Classification Type D Key Switch Start
Powertrain Accessories	Travel Speed Limiter pre-set to 10mph (Unconditional)
Mast	Mast Tilt - 15° Forward / 10° Back 3 Stage Full Free Lift Mast - 220" (5600mm) Maximum Lift Height - 120" (3045mm) Overall Lowered Height
Carriages & Attachments	92.5" (2350mm) Pin Type Simultaneous Fork Positioning Sideshift Carriage 66" High Load Backrest
Forks	84" Long x 3.0" Thick x 8" Wide (2135mm x 75mm x 200mm) - Pin Type - Standard Taper Forks
Front End Equipment Accessories	Hydraulic Accumulator (2.5 liter) in Lift Circuit
Hydraulics	Hydraulics controlled by 3 Levers and 1 Rocker Switch - Non Clamp 4 Function (2 Auxiliary) Hydraulic Control Valve Standard Hydraulic Performance - 105cc Pump
Hoses	2 Auxiliary Function Hose Group - 3 Hoses and 1 Wire Cable Externally Mounted - Includes Selector Valve
Wheels & Tires	10.00 x 20 Pneumatic Shaped Solids Drive Tires 10.00 x 20 Pneumatic Shaped Solids Steer Tires
Operator Compartment	Manual Tilt Operator Compartment for Service Access Recirculation Fan Single Blade Wiper on Front Windshield Electronic Horn 105 db(A) Enclosed Cabin with Heavy Duty 37,500 BTU Air Conditioning
Directional Control	Lever Shift Direction Control - Mounted on Left Hand Side of Steering Column Steering Wheel with Integral Spinner Knob
Seat	Air Ride Full Suspension Vinyl Seat with High Backrest Seat Belt - Black - No-Cinch with ELR (Emergency Locking Retractor)
Telemetry	Hyster Tracker Wireless Monitoring with Cellular connectivity - GSM
Lights & Alarms	Audible Alarm - Reverse Direction Activated - Self-Adjusting 82-102 dB(A) Visible Alarm - Amber LED Strobe - Keyswitch Activated - Does Not Increase Truck Height 4 LED Cab Mounted Work Lights / 2 LED Front Fender Mounted Lights / 2 LED Work Lights Rear / 2 LED Stop, Tail, Back-up Lights DC/DC 24/12 Volt Converter
Warranty	12 Months / 2,000 Hours Manufacturer's Warranty
Literature & Nameplate	English Literature Pack and Labels Parts Manual - Printed - Truck Serial Number Specific

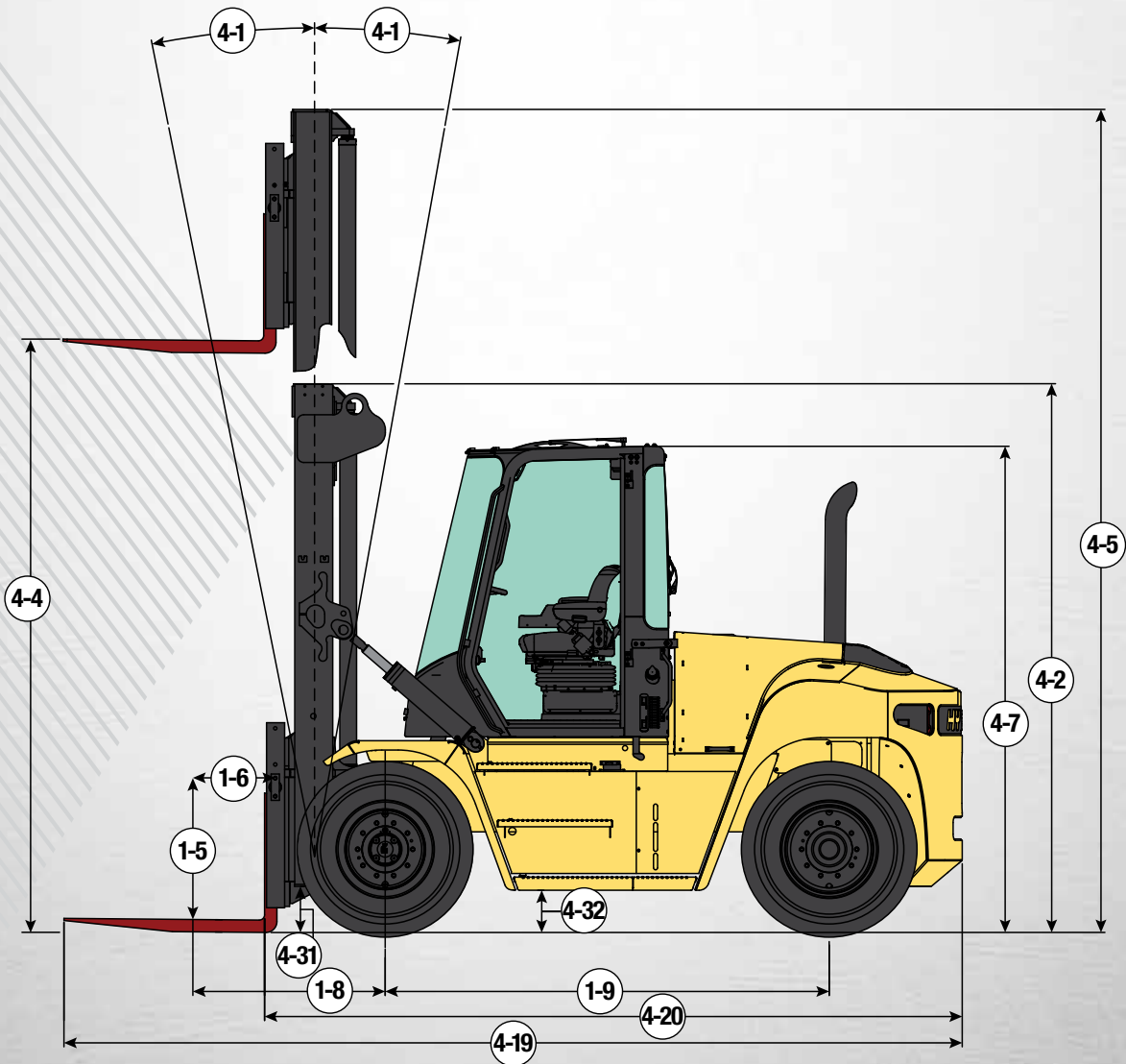
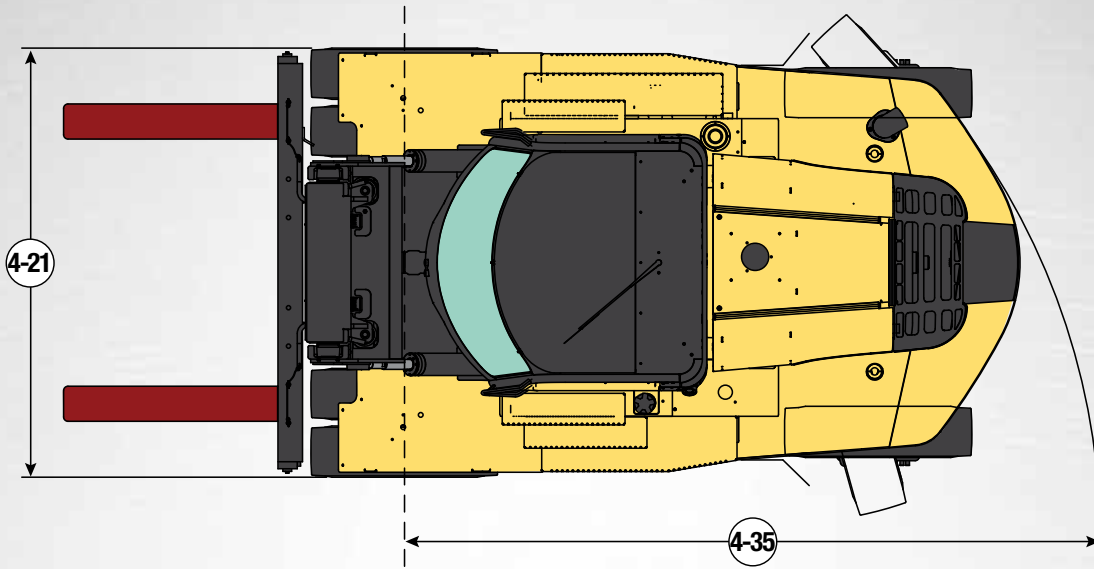
H190-280HD₂ SERIES



**STRONG PARTNERS.
TOUGH TRUCKS.™**

TECHNICAL GUIDE
Heavy-Duty Forklift Truck

H190-280HD₂ DIMENSIONS



H190-210HD₂ SPECIFICATIONS

		Units		English	Metric	English	Metric			
GENERAL	1-1	Description								
		Manufacturer		HYSTER	HYSTER	HYSTER	HYSTER			
	1-2	Model designation		H190HD ₂	H190HD ₂	H210HD ₂	H210HD ₂			
	1-5	Rated load capacity		lbs	kg	19,000	8,618			
	1-6	Load center		in	mm	24.0	610			
	1-8	Load distance		in	mm	31.0	787			
	1-9	Wheelbase		in	mm	106	2,700			
	2-1	Total truck weight without load		lbs	kg	28,589	12,968			
	2-2a	Axle loading with load		lbs	kg	43,470	19,718			
WEIGHTS	2-2b	front	lbs	kg	3,809	1,728	3,564			
		rear	lbs	kg	3,809	1,728	1,617			
	2-3a	Axle loading without load		lbs	kg	15,061	6,832			
	2-3b	front	lbs	kg	13,528	6,136	14,984			
	rear	lbs	kg	13,528	6,136	14,300	6,486			
WHEELS	3-1	Tire type		Pneumatic		Pneumatic				
	3-2	Tire size		10.00x20 16PR Bias		10.00x20 16PR Bias				
	3-3			10.00x20 16PR Bias		10.00x20 16PR Bias				
DIMENSIONS	4-1	Mast tilt, forward / back		degrees		15 / 12				
	4-2	Height of mast lowered		in	mm	133	3,353			
	4-3	Freelift (Top of Fork)		in	mm	0	0			
	4-4	Lift height (Top of Fork)		in	mm	147	3,750			
	4-5	Height of mast extended		in	mm	205	5,196			
	4-7	Height to top of operator compartment		in	mm	120	3,048			
	4-19	Overall length		in	mm	217	5,516			
	4-20	Length to load face		in	mm	169	4,296			
	4-21	Overall width over drive tires		in	mm	96	2,438			
	4-22a	Fork		in	mm	3	75			
	4-22b	thickness	in	mm	8	200	8	200		
	4-22c	width	in	mm	48	1,220	48	1,220		
	4-22c	length	in	mm	92.5	2,350	92.5	2,350		
	4-24	Carriage width		in	mm	3	75	3.0	75	
	4-25a	Fork spread, min (in-in)		in	mm	89.4	2,270	89.4	2,270	
	4-25b	Fork spread, max (out-out)		in	mm	10	248	10	254	
	4-31	Ground clearance, under mast with load		in	mm	10	248	10	248	
	4-32	Ground clearance, center of wheelbase		in	mm	183	4,647	183	4,647	
	4-33	Minimum aisle width (add load length)		in	mm	155	3,937	155	3,937	
	4-35	Outside turning radius		in	mm	36	136	36	136	
	MISC	8-7	Hydraulic tank capacity		gal	l	27	102		
		8-8	Fuel tank capacity		gal	l	27	102		
	PERFORMANCE	PERFORMANCE			WITH TIER 4 FINAL CUMMINS QSB 4.5L ENGINE					
		5-1a	Travel speed		with load	mph	km/h	19	30	19
5-1b				without load	mph	km/h	20	32	20	32
5-2a		Lifting speed		with load - 105cc	ft/min	m/s	106	0.54	106	0.54
5-2b				without load - 105cc	ft/min	m/s	116	0.59	116	0.59
5-2a		Lifting speed		with load - 120cc	ft/min	m/s	112	0.57	112	0.57
5-2b				without load - 120cc	ft/min	m/s	136	0.69	136	0.69
5-3a		Lowering speed		with load	ft/min	m/s	98	0.50	98	0.50
5-3b				without load	ft/min	m/s	94	0.48	94	0.48
5-6		Drawbar pull – Max		lbs	kN	23,800	106	23,600	105	
5-7		Gradeability – no load / rated load – 1 mph (1.6 km/h)			%	34 / 46	34 / 46	33 / 46	33 / 46	
PERFORMANCE			WITH TIER 3 CUMMINS QSB 6.7L ENGINE							
5-1a		Travel speed		with load	mph	km/h	19	30	19	30
5-1b				without load	mph	km/h	20	32	20	32
5-2a		Lifting speed		with load - 90cc	ft/min	m/s	93	0.47	93	0.47
5-2b				without load - 90cc	ft/min	m/s	100	0.51	100	0.51
5-2a		Lifting speed		with load - 120cc	ft/min	m/s	108	0.55	108	0.55
5-2b				without load - 120cc	ft/min	m/s	136	0.69	136	0.69
5-3a		Lowering speed		with load	ft/min	m/s	98	0.50	98	0.50
5-3b				without load	ft/min	m/s	94	0.48	94	0.48
5-6		Drawbar pull - Max		lbs	kN	23,000	102	24,400	109	
5-7		Gradeability no load / rated load - 1 mph (1.6 km/h)			%	34 / 50	34 / 50	33 / 46	33 / 46	

Note: Tier 3 engines are available in Latin America and Canada only. Tier 3 engines are not available in the U.S.

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H230HD₂S- H230HD₂ SPECIFICATIONS

GENERAL	Description		Units		English	Metric	English	Metric	
	1-1	Manufacturer				HYSTER	HYSTER	HYSTER	HYSTER
1-2	Model designation				H230HD ₂ S	H230HD ₂ S	H230HD ₂	H230HD ₂	
1-5	Rated load capacity		lbs	kg	23,000	10,433	23,000	10,433	
1-6	Load center		in	mm	24.0	610	24.0	610	
1-8	Load distance		in	mm	32.0	813	32.0	813	
1-9	Wheelbase		in	mm	106	2,700	114	2,900	
WEIGHTS	2-1 Total truck weight without load		lbs	kg	33,663	15,269	33,416	15,157	
	2-2a	front	lbs	kg	51,988	23,581	51,383	23,307	
		rear	lbs	kg	4,602	2,087	4,961	2,250	
	2-3a	front	lbs	kg	17,078	7,746	17,299	7,847	
		rear	lbs	kg	16,584	7,522	16,116	7,310	
WHEELS	3-1 Tire type				Pneumatic		Pneumatic		
	3-2	front			10.00x20 16PR Bias		10.00x20 16PR Bias		
		rear			10.00x20 16PR Bias		10.00x20 16PR Bias		
DIMENSIONS	4-1 Mast tilt, forward / back		degrees		15 / 12		15 / 12		
	4-2 Height of mast lowered		in	mm	143	3,628	143	3,628	
	4-3 Freelift (Top of Fork)		in	mm	0	0	0	0	
	4-4 Lift height (Top of Fork)		in	mm	148	3,761	148	3,761	
	4-5 Height of mast extended		in	mm	216	5,468	216	5,468	
	4-7 Height to top of operator compartment		in	mm	120	3,048	120	3,048	
	4-19 Overall length		in	mm	218	5,542	226	5,742	
	4-20 Length to load face		in	mm	170	4,322	178	4,522	
	4-21 Overall width over drive tires		in	mm	96	2,438	96	2,438	
	4-22a	Fork	thickness	in	mm	3	75	3	75
			width	in	mm	8	200	8	200
			length	in	mm	48	1,220	48	1,220
	4-24 Carriage width		in	mm	92.5	2,350	92.5	2,350	
	4-25a Fork spread, min (in-in)		in	mm	3.0	75	3.0	75	
	4-25b Fork spread, max (out-out)		in	mm	89.4	2,270	89.4	2,270	
	4-31 Ground clearance, under mast with load		in	mm	9	229	9	229	
	4-32 Ground clearance, center of wheelbase		in	mm	11	292	11	292	
	4-33 Minimum aisle width (add load length)		in	mm	185	4,697	192	4,879	
	4-35 Outside turning radius		in	mm	155	3,937	162	4,111	
	MISC	8-7 Hydraulic tank capacity		gal	l	36	136	36	136
8-8 Fuel tank capacity		gal	l	27	102	27	102		
PERFORMANCE	PERFORMANCE		WITH TIER 4 FINAL CUMMINS QSB 4.5L ENGINE						
	5-1a	with load	mph	km/h	19	30	19	30	
		without load	mph	km/h	20	32	20	32	
	5-2a	with load - 105cc	ft/min	m/s	79	0.40	79	0.40	
		without load - 105cc	ft/min	m/s	89	0.45	89	0.45	
	5-2a	with load - 120cc	ft/min	m/s	87	0.44	87	0.44	
		without load - 120cc	ft/min	m/s	102	0.52	102	0.52	
	5-3a	with load	ft/min	m/s	98	0.50	98	0.50	
		without load	ft/min	m/s	94	0.48	94	0.48	
	5-6 Drawbar pull – Max		lbs	kN	23,400	104	23,400	104	
	5-7 Gradeability – no load / rated load – 1 mph (1.6 km/h)		%		32 / 43	32 / 43	34 / 43	34 / 43	
	PERFORMANCE		WITH TIER 3 CUMMINS QSB 6.7L ENGINE						
	5-1a	with load	mph	km/h	19	30	19	30	
		without load	mph	km/h	20	32	20	32	
	5-2a	with load - 90cc	ft/min	m/s	71	0.36	71	0.36	
		without load - 90cc	ft/min	m/s	77	0.39	77	0.39	
	5-2a	with load - 120cc	ft/min	m/s	83	0.42	83	0.42	
		without load - 120cc	ft/min	m/s	102	0.52	102	0.52	
	5-3a	with load	ft/min	m/s	98	0.50	98	0.50	
		without load	ft/min	m/s	94	0.48	94	0.48	
5-6 Drawbar pull - Max		lbs	kN	24,300	108	24,300	108		
5-7 Gradeability no load / rated load - 1 mph (1.6 km/h)		%		32 / 40	32 / 40	34 / 40	34 / 40		

Note: Tier 3 engines are available in Latin America and Canada only. Tier 3 engines are not available in the U.S.

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H250-280HD₂ SPECIFICATIONS

	Description	Units		English	Metric	English	Metric	
GENERAL	1-1	Manufacturer		HYSTER	HYSTER	HYSTER	HYSTER	
	1-2	Model designation		H250HD ₂	H250HD ₂	H280HD ₂	H280HD ₂	
	1-5	Rated load capacity		lbs	kg	25,000	11,340	
	1-6	Load center		in	mm	24.0	610	
	1-8	Load distance		in	mm	32.0	813	
	1-9	Wheelbase		in	mm	114	2,900	
	2-1	Total truck weight without load		lbs	kg	33,801	15,332	
	2-2a	Axle loading with load	front	lbs	kg	54,292	24,626	
	2-2b		rear	lbs	kg	4,422	2,006	
WEIGHTS	2-3a	Axle loading without load	front	lbs	kg	17,258	7,828	
	2-3b		rear	lbs	kg	16,543	7,504	
	3-1	Tire type		Pneumatic		Pneumatic		
	3-2	Tire size	front	10.00x20 16PR Bias		10.00x20 16PR Bias		
WHEELS	3-3		rear	10.00x20 16PR Bias		10.00x20 16PR Bias		
	4-1	Mast tilt, forward / back		degrees		15 / 12		
DIMENSIONS	4-2	Height of mast lowered		in	mm	143	3,628	
	4-3	Freelift (Top of Fork)		in	mm	0	0	
	4-4	Lift height (Top of Fork)		in	mm	148	3,761	
	4-5	Height of mast extended		in	mm	215	5,468	
	4-7	Height to top of operator compartment		in	mm	120	3,048	
	4-19	Overall length		in	mm	226	5,742	
	4-20	Length to load face		in	mm	178	4,522	
	4-21	Overall width over drive tires		in	mm	96	2,438	
	4-22a	Fork	thickness	in	mm	3	75	
	4-22b		width	in	mm	8	200	
	4-22c		length	in	mm	48	1,220	
	4-24	Carriage width		in	mm	92.5	2,350	
	4-25a	Fork spread, min (in-in)		in	mm	3.0	75	
	4-25b	Fork spread, max (out-out)		in	mm	89.4	2,270	
	4-31	Ground clearance, under mast with load		in	mm	9	229	
	4-32	Ground clearance, center of wheelbase		in	mm	11	292	
	4-33	Minimum aisle width (add load length)		in	mm	192	4,879	
	4-35	Outside turning radius		in	mm	162	4,111	
	MISC	8-7	Hydraulic tank capacity		gal	l	36	136
		8-8	Fuel tank capacity		gal	l	27	102
	PERFORMANCE	PERFORMANCE			WITH TIER 4 FINAL CUMMINS QSB 4.5L ENGINE			
		5-1a	Travel speed	with load	mph	km/h	19	30
		5-1b		without load	mph	km/h	20	32
		5-2a	Lifting speed	with load - 105cc	ft/min	m/s	79	0.40
5-2b			without load - 105cc	ft/min	m/s	89	0.45	
5-2a		Lifting speed	with load - 120cc	ft/min	m/s	87	0.44	
5-2b			without load - 120cc	ft/min	m/s	102	0.52	
5-3a		Lowering speed	with load	ft/min	m/s	98	0.50	
5-3b			without load	ft/min	m/s	94	0.48	
5-6		Drawbar pull – Max		lbs	kN	24,300	108	
5-7		Gradeability – no load / rated load – 1 mph (1.6 km/h)		%		33 / 41	33 / 41	
PERFORMANCE			WITH TIER 3 CUMMINS QSB 6.7L ENGINE					
5-1a		Travel speed	with load	mph	km/h	19	30	
5-1b			without load	mph	km/h	20	32	
5-2a		Lifting speed	with load - 90cc	ft/min	m/s	71	0.36	
5-2b			without load - 90cc	ft/min	m/s	77	0.39	
5-2a		Lifting speed	with load - 120cc	ft/min	m/s	83	0.42	
5-2b			without load - 120cc	ft/min	m/s	102	0.52	
5-3a		Lowering speed	with load	ft/min	m/s	98	0.50	
5-3b			without load	ft/min	m/s	94	0.48	
5-6		Drawbar pull - Max		lbs	kN	22,900	102	
5-7		Gradeability no load / rated load - 1 mph (1.6 km/h)		%		33 / 38	33 / 38	

Note: Tier 3 engines are available in Latin America and Canada only. Tier 3 engines are not available in the U.S.

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.

H190-280HD₂ SPECIFICATIONS

POWERTRAINS		Units	Tier 4 Final		Tier 3	
1-3	Power type		Diesel		Diesel	
7-1	Engine Manufacturer / model		Cummins QSB 4.5L		Cummins QSB 6.7L	
7-1a	EPA Tier Compliance		Tier 4 Final		Tier 3	
7-2a	Engine power output - Rated	hp kW	160	119	155	116
7-2b	Engine power output - Peak	hp kW	164	122	155	116
7-3	Governed speed	rpm	2,300		2,300	
7-4	Number of cylinders / displacement	# / l	4 / 4.5		6 / 6.7	
7-5	Engine torque - Max	lb-ft N-m	460	624	443	600
7-5a	Turbocharger	Type	Variable Geometry, Water Cooled		Wastegate	
7-9	Alternator output	Amps	120		120	
8-0	Transmission Manufacturer / model		ZF WG-161		ZF WG-161	
8-1	Transmission type & speeds		Powershift 3F x 3R		Powershift 3F x 3R	
8.1a	Drive Axle Manufacturer / model		AxleTech PRC 485		AxleTech PRC 485	
5-10	Service brake		Oil immersed (wet) disc		Oil immersed (wet) disc	
5-11	Park brake		Spring apply, dry disc		Spring apply, dry disc	
10.4.1	DEF Tank, Capacity	gal (l)	5.0	19.0	Not Required	

H190-210HD₂ 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
148	3761	133	3353	0	0	205	5196
183	4650	150	3803	0	0	240	6096
212	5400	165	4179	0	0	270	6846
2-STAGE NO FREE-LIFT (NO FL)							
3-STAGE							
220	5590	120	3045	56	1425	277	7030
235	5990	126	3178	61	1558	293	7430
255	6490	132	3345	67	1725	313	7930
275	6990	139	3511	74	1891	332	8430

H230-280HD₂ MAST DIMENSIONS

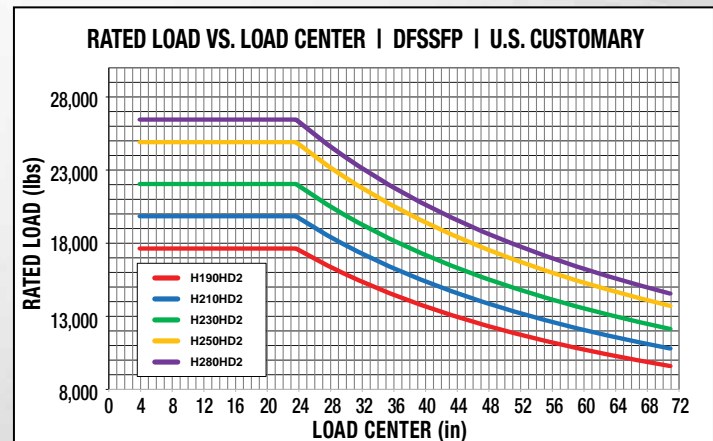
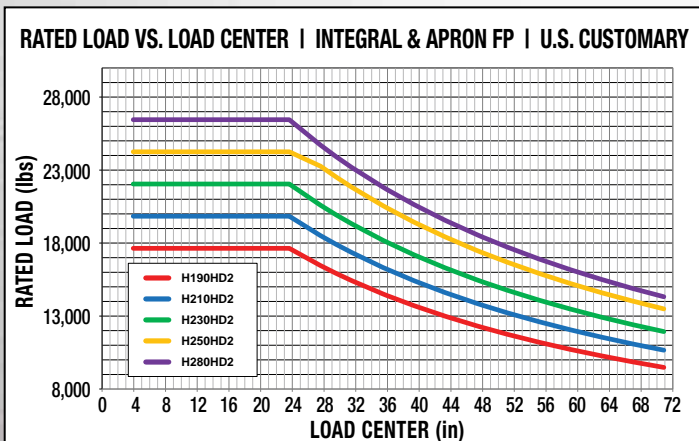
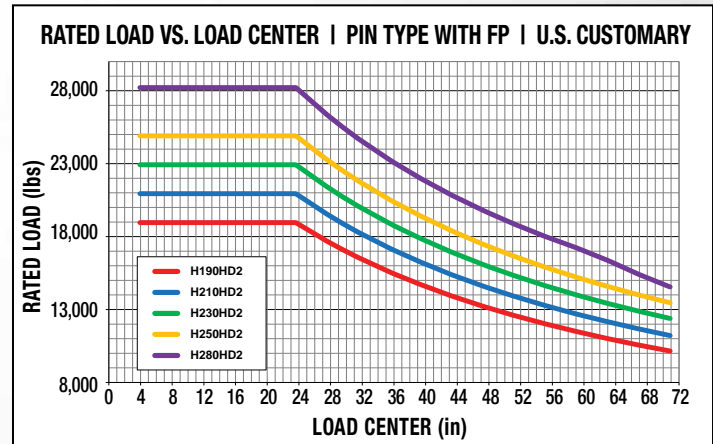
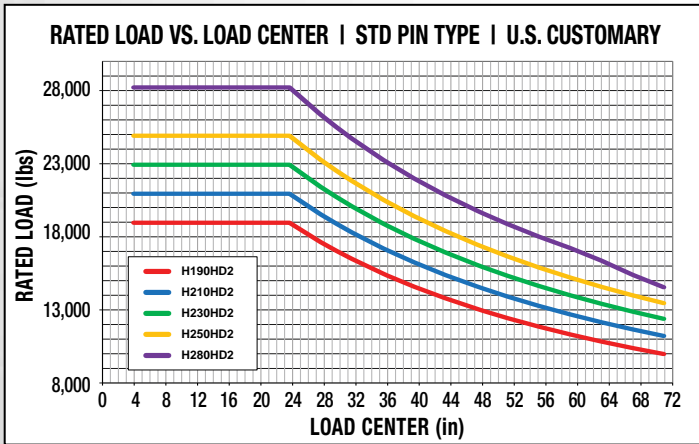
4.4 Lift height (Top of Fork)		4.2 Mast Lowered Ht.		4.3 Freelif (Top of Fork)		4.5 Overall Extended Ht.	
in	mm	in	mm	in	mm	in	mm
148	3761	143	3628	0	0	216	5468
183	4661	161	4078	0	0	251	6368
213	5411	176	4453	0	0	281	7118
244	6205	192	4853	0	0	312	7918
264	6705	202	5116	0	0	332	8420
3-STAGE							
220	5600	120	3045	56	1435	277	7030
236	6000	126	3178	61	1568	293	7430
255	6500	132	3345	68	1735	313	7930
275	7000	139	3511	74	1901	332	8430

RATED CAPACITIES

Model H190HD₂: 19,000 lbs. at 24" (8,618 kg at 610 mm) load center
 Model H210HD₂: 21,000 lbs. at 24" (9,525 kg at 610 mm) load center
 Model H230HD₂: 23,000 lbs. at 24" (10,433 kg at 610 mm) load center
 Model H230HD₂S: 23,000 lbs. at 24" (10,433 kg at 610 mm) load center
 Model H250HD₂: 25,000 lbs. at 24" (11,340 kg at 610 mm) load center
 Model H280HD₂: 28,000 lbs. at 24" (12,701 kg at 610 mm) load center

Rated capacities are for trucks equipped with:

- 2-stage mast to 212" (5400 mm) (H190-210HD₂) maximum fork height
- 92.5" (2,350 mm) (H190-280HD₂) carriage
- 48" (1,219 mm) (H190-280HD₂) long forks as required
- 2-stage mast to 213.0" (5411 mm) (230-280HD₂) maximum fork height



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

Contact your dealer for other capacity information.

STANDARD FEATURES AND OPTIONS

MASTS

Mast with C-channels provide noticeable visibility of the attachment and load. Greasable load rollers are standard.

CARRIAGES

Pin-type; integral pin-type fork positioner with simultaneous or individual fork control; pin-type integral sideshift; integral pin-type dual function sideshift fork positioner; apron style sideshift fork positioner with simultaneous or individual fork control.

Overall width: 92.5" (2,350 mm) for all H190-280HD₂ trucks

Minimum inside-to-inside fork spacing – model and attachment dependent is 3" (75 mm)

Maximum outside-to-outside fork spacing – model and attachment dependent is 89.4" (2,270 mm)

PALLET FORKS

3.0" x 8.0" x 48.0" - 96.0" (75 x 200 x 1,220 - 2,438 mm)

POLISHED AND TAPERED FORKS

3.0" x 8.0" x 48.0" - 72.0" (75 x 200 x 1,220 - 1,825 mm)

DUAL FUNCTION SIDESHIFTING FORK POSITIONER FORKS

2.75" x 8.0" x 48.0" - 96.0" (70 x 200 x 1,220 - 2,438 mm)

STANDARD ENGINE - TIER 4 FINAL

Cummins QSB 4.5L 4 cylinder diesel engine delivers rated 160hp (peak 164hp) and 460 lb-ft of maximum torque. EPA Tier 4 Final compliant engine features cooled exhaust gas recirculation (EGR) technology with selective catalytic reduction (SCR); water-cooled variable geometry turbocharger with integrated diesel exhaust fluid (DEF) delivery system. Innovative selectable performance modes offer enhanced fuel economy and optimal productivity. Hibernate idle saves fuel by lowering engine rpm when functions are not being used. Also includes:

- Variable geometry turbocharger which improves boost across a wide RPM range
- 120 amp alternator
- Viscous, on-demand cooling fan (saves fuel and reduces noise)
- Low-mount exhaust with diesel oxidation catalyst (DOC)
- Requires ultra-low sulfur diesel fuel and low-ash oil

OPTIONAL ENGINE - TIER 3 (LIMITED AVAILABILITY FOR CANADA; AVAILABLE IN NON-EPA REGULATED MARKETS):

Cummins QSB 6.7L 6-cylinder diesel engine delivers rated 155 hp (peak 155hp) and 443 lb-ft of maximum torque. EPA Tier 3 compliant. Also includes:

- Wastegate turbocharger
- 120 amp alternator
- Overhead exhaust

TRANSMISSION

- ZF WG-161 three-speed, fully reversing powershift transmission produces smooth shifting, precise inching and fast acceleration
- 3 forward and 3 reverse gears
- Powershifts with proportional valves
- Inching electronically controlled
- Cushioned clutch lock-up provides smooth shifting and dampens drive line shock loads
- Simple push button calibration
- Transmission lock-out preventing high speed directional changes
- Transmission and engine powertrain protection for excessive engine coolant temperature, low engine oil pressure, and excessive engine inlet air temperatures
- 24 Volt electrical system

ELECTRICAL SYSTEM

- Sealed Deutsch connectors
- CANbus system for easy diagnostics of engine, transmission and hydraulics

HYDRAULIC SYSTEM

On-demand load-sensing hydraulic system featuring:

- Variable displacement pump technology
- Saves fuel
- Produces less heat
- Runs quieter
- Extends life of hydraulic oil and components
- Leak-free ORFS fittings

STEERING SYSTEM

- The steer axle is a casting with transverse mounted double acting cylinders, non-adjustable tie rods, spindles, tapered roller bearings and wheel hubs. The axle is pin mounted to the frame.
- 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 bearings and sealed to prevent contamination entry or loss of grease.
- 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

- Heavy duty AxleTech PRC 485 drive axle features full floating design.
- Wheel hubs rotate on large tapered roller bearings.
- Non-adjustable tie rod ends provide maximum axle life.

BRAKES

- Oil cooled wet disc brake system greatly extends brake system life.

OPERATOR AREA

- Ergonomically designed hydraulic controls are within easy reach.
- Three steps and hand grips provide easy ingress and egress from operator compartment.
- Angled floor plate and pedals are positioned for operator comfort.
- Standard MONOTROL[®] pedal controls engine speed and truck direction, freeing operator's hands to operate steering and hydraulic controls.
- Telescopic, tilt steer column.
- Supportive mechanical full-suspension seat adjusts 8" (200 mm) for operator comfort.
- Several air suspension seat options are available.
- Steel overhead guard frame provides remarkable high-stacking visibility.
- Operator presence system 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 and that the 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.
- Optional enclosed cab features: tinted, curved tempered glass; circulation fan; heater & defroster; electric wiper and windshield washer front, rear, top; intermittent front wiper; door retainer; 3 speed fan; 12 volt auxiliary power source; dome light, with many additional options to enhance comfort and productivity.

Special attachments, equipment or accessories not listed above may be available through applications engineering for specific application requirements.

STANDARD FEATURES AND OPTIONS

STANDARD EQUIPMENT

Complete truck equipped with:

- H190-210HD₂: 147" maximum fork height 2-stage mast with 133" lowered height
- H230HD₂S-H280HD₂: 148" maximum fork height 2-stage mast with 143" lowered height
- 92.5" wide pin type carriage
- 48" long forks (3" x 8" section)
- Cummins engine (see engine section)
- Sy-Klone™ spinner type heavy duty air intake pre-cleaner
- High mount exhaust*
- Premium ZF WG-161 3 speed autoshift transmission
- AxleTech planetary drive axle with wet disc brakes
- Powertrain Protection system for engine and transmission; high temperature or low oil pressure
- On-demand load-sensing hydraulic system
- 24V electrical system with CANbus control system for engine, transmission and hydraulics
- 10.00x20-20PR bias pneumatic drive and steer tires
- MONOTROL® pedal direction control with direction change interlock system
- UL Classification D
- Mast tilt: 15° fwd/12° back
- Open operator compartment with integral overhead guard. compartment includes: seatside mini-lever hydraulic control; multifunction display panel; interior wide angle mirrors; 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
- Operator restraint system
- Operator presence system
- Electric air horn (112 dBA)
- Tilting operator compartment for service access – manual operation
- Light Kit 1: 2 LED stop/tail/back-up lights
- Non-locking fuel cap
- Operator's manual


OPTIONAL EQUIPMENT

- Tier 3 engines (for select markets only)
- Masts – various lift heights, 2-stage and 3-stage FFL
- Sideshifting carriages and fork positioners
- Various fork options and lengths
- Various mast tilt ranges
- Multifunction joystick
- Column-mounted direction control lever
- Radial and pneumatic-shaped solid tires
- Enclosed cab, with or without air conditioning
- Various inside-cabin options
- Various seat options
- 2 and 3-point high visibility seat belts
- Powered tilting operator compartment for service access
- Visible alarm / amber strobe light
- Audible backup alarm
- Various LED, halogen and high intensity discharge (HID) xenon light kits
- Lockable fuel cap
- Lockable battery disconnect switch
- Hydraulic accumulator
- Various traction speed limiters
- Empty seat engine shutdown - adjustable from 3-15 minutes (preset to 15 minutes)
- Lifting eyes
- Steer wheel lug protection
- Engine block heater



Hyster Company
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Part No. H190-280HD2/TG
6/2015 Litho in U.S.A.

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