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320-40XMT2

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J30-40XM12

Technical Guide





POCKET GUIDE J30-40XMT₂ COUNTER BALANCED ELECTRIC 3 WHEEL SIT-DOWN RIDER

Visibility

- The VISTA mast provides excellent visibility.
- The overhead guard is designed with angled cross members and a bar on edge top which provides superb vision overhead.
- Integral sideshift provides better visibility than the hang on type. It also provides less load face and allows better maneuverability.
- Open face carriage design enhances visibility.

Noise & Vibration Control

- Motors and hydraulic components are mounted on elastic mounts to reduce noise/vibration transmission into the chassis.
- SEM transistor motor controls eliminate directional contactors for significantly quieter directional changes.
- Dual independently controlled transaxles were designed using spiral bevel and helical gears for quiet, efficient power transmission.
- Low rpm motors and low noise pumps and steer control unit contribute to smooth quiet performance.
- The SEM control operates at 12 kHz, above the normal audible range, eliminating the SCR control hum.
- The optional "On Demand" steering increases energy efficiency and reduces noise levels.

Reliability

- The frame is an all welded steel construction. The application of this design concept through finite element modeling and extensive stress testing produces a balanced design with long-term durability.
- The left and right hand drive unit / transmission housings are constructed of cast iron to withstand heavy loads and absorb shock loads.
- The steering axle assembly utilizes sealed bearings to minimize dirt inclusion and maximize bearing grease retention for extended service life and reliability.
- The Hyster VISTA mast has angled /canted load rollers that resist forward and lateral forces.
- Electrical Opto-Interrupter Sensors are used to actuate hydraulic pump motor/valve control.

Style

- The smooth rounded hood, steering column, frame and counterweight give the truck an aerodynamic appearance.
- The forward cowl area and components are covered with a molded cover for protection and appearance.
- The low profile cowl and overhead guard give the truck a contemporary look and enhance the truck's versatility and performance.

Ergonomics

- A large open step is located on the left side 20" from the floor providing easy entrance and exit to and from the operator's position.
- Hyster Company's patented "MONOTROL" foot directional control mechanism provides hand free directional changes.
- Optional steer column mounted shift lever design provides hand operated directional changes.
- Hydrostatic steering provides precise and reliable control with low steer effort response.
- The steer column is adjustable with five tilt positions to comfortably match the drivers preferred wheel angle.
- Instrument panel located to the right of the steer column is easy to read, gives quick visual check of truck functions, and back lit for poor lighting conditions.
- Tilt cylinders are located under the floor plates creating an uncluttered floorboard area.
- A convenient storage box is located on the right hand side of the cowl for stowing marker pens, pencils, and other miscellaneous items.
- The hydraulic levers are located just to the right of the operators seat for quick easy actuation. The hand levers are contoured and molded for gripping and require low operating force.
- The steer motor, the hydraulic motor and the main hydraulic control valve are mounted on elastic mounts to reduce noise/vibration transmission into the chassis.

Performance / Productivity

- Full steer lock to lock requires only 5.3 turns of the hand wheel providing responsive control and maneuverability.
- Hydraulic pump motor control is provided in 3 variations to meet customer application demands. They are single speed contactor, two speed (half and full voltage) contactor, and transistor controlled hydraulics. All three variations are designed for 36 & 48 volt operation.
- A full line of 2 stage LFL, 2 stage FFL, and 3 stage FFL VISTA masts are available for this series. The VISTA mast provides smooth operation and good forward visibility contributing to enhanced operator comfort and productivity. Optional 4 stage FFL masts are available for this series through SPED.
- Main control valve features metering notches in the valve spool control surfaces allowing feathering control of the oil flow for smooth precise load placement.
- Pressure compensated flow controls are provided for tilt and auxiliary valve sections of the main hydraulic control valve. They are externally adjustable to maximize flow and speeds for tilt and auxiliary functions.
- The traction system features state-of-the-art MOSFET technology designed to control the separately excited motors (SEM) for optimum motor efficiency and performance control.
- Class H rated motors are used for optimum efficiency.

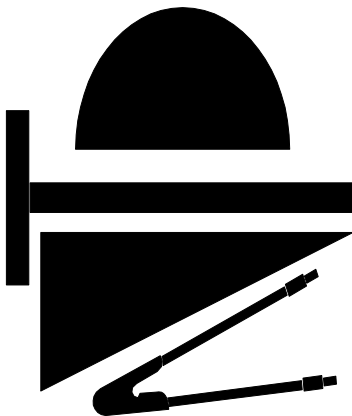
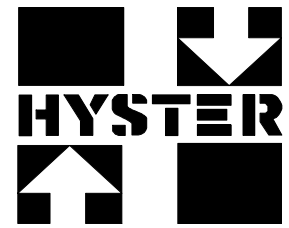
Serviceability

- The counterweight rear cover is held in place with only two screws and can be easily removed using a Phillips screwdriver. Once the access cover is removed from the counterweight, all electrical system control components, including fuses, can be inspected or serviced.
- Fully pivoting hood allows total and complete access to the truck's battery compartment for battery servicing and or inspection. The hood is held open with a dual gas cylinders for safety and convenience.
- The two-piece drop-in floor plate requires no tools for removal or installation. Cut outs are provided and act as a grab point for both the left hand and right floor plate for easy removal or installation.
- The operator can continuously monitor operating conditions such as battery charge levels, brake fluid levels, park brake, seat belt and lift interrupt. Service indicator lights and status codes in the LCD display inform the operator and service technician if maintenance is required.
- Controller adjustments are made with a hand held programmer connected to the controller without disturbing any truck wiring. Computer diagnostic capability is also available to program or change control parameters easily.
- The vertically mounted dual drive motors and the drop in floor plate make brush and motor inspection quick and easy.

Application Specific Offerings / Optional Equipment

- Full line of optional masts and heights - 2 stage LFL - 2 stage FFL – 3 stage FFL. – 4 stage FFL
- Three-spool valve is standard, fourth spool is available as an option.
- Sideshift is available as an option.
- Many optional light packages are available such as headlights, adjustable work lights, strobe and flashing lights.
- Dust protection, foundry protection are available as options.
- E and EE ratings are available for necessary application requirements.
- Tire options include non-marking, cushion, solid pneumatic and pneumatic when applicable.
- Hydraulic pump motor control is provided in 3 variations to meet customer application demands. They are single speed contactor, two speed (half and full voltage) contactor, and transistor controlled hydraulics.
- All capacities are available in both 36 and 48 volt electrical systems.

* Note: For a complete listing of optional equipment for this truck series, reference the SPED Price Pages or contact the Application Engineering Department..



Glossary of Terms

- **General and Mechanical Terminology**
- **Electrical & Control System Terminology**

The definitions found on the following pages are intended to simplify some of the technical terminology that is used throughout the Product Marketing Guide. Understanding the truck's many features and control systems is key for successful selling.

Gaining the customer's confidence is a challenge for the salesperson. Understanding the designs and features that make our product is critical for successful selling. A salesperson with the knowledge and capability to have a technical discussion, is a confidence builder for the customer. Product knowledge cannot be substituted.

General and Mechanical

Hydrostatic: All hydraulic. Basically; this is the replacement of mechanical linkages with hydraulic lines.

MFH (Maximum Fork Height): The maximum lift distance that a mast will raise the forks. Measured distance from the topside of the fork tip to the floor.

OAH (Over All Height): In this application, the OAH is referring to the measured distance from the floor to the top of the mast while the mast is fully collapsed / lowered.

FL (Free Lift): FL refers to the attainable lift from the extreme lowered position of the carriage before the stated overall collapsed height of the mast is exceeded by any standard part of the forks, mast or carriage assemblies.

LFL (Limited Free Lift): A limited / restricted amount of free lift either as standard or as optional.

FFL (Full Free Lift): The maximum amount of free lift available either as standard or as optional.

GPM (Gallons Per Minute): A unit of liquid flow measurement. In lift trucks, this measurement refers to the amount of hydraulic oil flow / output that can be generated from the trucks hydraulic pump and motor.

ANSI-(American National Standards Institute)-B-56: Standard adopted by the Industrial Truck Association (ITA), which details safety requirements for industrial trucks.

ASME-(The American Society of Mechanical Engineers) B56.1-2000: Safety standard adopted by the Industrial Truck Association (ITA), which details and regulates safety requirements for industrial trucks.

Cycle Time: The total of travel, load time, and unload time.

Gradeability: The percent (%) of grade that a truck can ascend or descend.

Transition: The maximum change in grade the trucks geometry allows before bottoming out.

OHG (Overhead Guard): The framework part of the truck that is mounted over the operator compartment to guard / protect the operator in the event of falling objects from overhead.

OAW (Over All Width): Width of the lift trucks extremities measured in direction of fork width.

OAL (Over All Length): Length from the rearmost extremity of the lift truck to the face of the fork.

OEM (Original Equipment Manufacturer): Refers to the original manufacturer of a particular make of equipment.

Electrical Terms

DC (Direct Current): Where the positive and negative polarity remains in some relative position (does not reverse). The electron movement in a direct current is always in one direction. This is characteristic of current delivered by batteries.

AH (Amp-Hour): This rating gives an indication of how much current can be supplied over a period of time. For example: a battery with a rating of 100 Amp-Hours can supply 100 Amps for 1 hour (100 x 1) or 10 Amps for 10 hours (10 x 10).

Mosfet (Metal Oxide Semiconductor Field Effect Transistor): The MOSFET is a voltage-controlled device that requires a minimal (small) input current. It is also characterized by its very high switching times that are in the nanoseconds.

SEM (Separate Excited Motors): SEM features independent control of the armature and field. Using a separately excited motor and a SEM controller eliminates the need for forward and reverse contactors and allows power to each drive motor as required by operator input for more efficiency and control.

CAN (Controller Area Network) Bus: The CAN Bus system allows multiple system controllers to be connected using a two-wire communications system. The Can Bus communication protocol provides error and fault detection to ensure proper signal and command transmission and reception. Additionally, the use of the Can Bus system considerably reduces the complexity of the wire harnesses.

Hall Effect Sensor: Hall effect devices use sensors, which measure magnetic fields. They use a magnet-mounted mechanism, which moves the magnet closer to or further from the sensor. Hall effect devices are used in applications to replace potentiometers due to their greater reliability.

MCU (Master Control Unit): A solid-state device that controls / regulates the current to multi-system controllers.

Class "H" Motor Insulation: A class rating on insulation materials has been established based on a motor's ability to withstand a specific temperature over a specific period of operation. Class "H", the highest class rating, specifies that the motor insulation must withstand an armature temperature of 356 degrees.

Electro-Opto Interrupters: Electro-Opto interrupter switches perform similar tasks as mechanical switches. They provide exceptional reliability and a minimum of maintenance since there are no moving parts to wear or break. The switches work by interrupting a beam of light with a shutter, turning the circuit on and off.

Electronic Solid State Control: A solid-state control is one, which employs solid-state devices, transistors, or Silicon Controlled Rectifiers. By switching the battery voltage on and off at a high rate (200 to 300 times per second), the motor responds to the average value of applied voltage.

Volt: A unit of electrical force. When electrons have been transferred from one body to another, there is a difference of “potential” energy between them. This difference in potential energy is measured in volts.

Ampere: A unit of flow of electricity or current. It is the rate at which electrons move through a body. It is similar to the flow of water in a pipe measured in gallons per minute.

Original Files

Engine Terms Electrical (WORD)

Engine Terms Mechanical (WORD)

Cover Page (WORD)

Pocket Guide (WORD)