

PART III

J30-40XMT₂ POWER STEERING SYSTEM

- **The steer axle assembly consists of a hydraulic rack and pinion actuator - designed for excellent durability and serviceability**



A totally enclosed rack and pinion hydrostatic power steering system is standard. The hydraulic design provides precise, reliable control while eliminating mechanical linkages and road shocks at the steering wheel.

The steer axle is one piece - forged steel and is mounted to a rack and pinion hydraulic actuator. The actuator is mounted to the rear frame reinforced support plate.

The rack and pinion actuator supports the wheel loading, thrust, and torque through large automotive type tapered roller bearings, as well as providing rotating motion for the dual tire and wheel assemblies. This design provides extended life for steering components, increased reliability and enhanced operator performance.

J30-40XMT₂ DUAL STEER WHEELS



- ▶ Provides stability
- ▶ Reduces tire wear and increases tire life
- ▶ Provides operator with a comfortable ride

The standard twin steer tires are made of special compounds to compliment the drive tires and provide acceptable load handling capacity and low energy consumption. Twin steer tires widen the rear portion of the stability triangle providing a stable feel when turning and offer significant advantages in truck ride, and maneuverability. Tire life is extended due to the dual wheels having more rubber to absorb shock on rough floors and dock plates. Tires can be quickly dismounted with the removal of 5 mounting nuts.

Two interchangeable tire types: Solid Cushion and Pneumatic Shaped Solid.

Hyster steer tire dimensions:

15x4x11.2 for Solid Cushion tires (Standard)

15x4.5x8 for Pneumatic Shaped Solid tires (Option)

Hyster drive tire dimensions:

18x7x12.1 for Solid Cushion tires (Standard)

18x7x8 for Pneumatic Shaped Solid (Option)

200/50x10 for Pneumatic Shaped Solid (Option)

SC 4000 SERIES STEERING SYSTEM



- ☞ Dual steer wheels
- ☞ Rack and Pinion Actuator

The Crown hydrostatic power steering uses a rack and pinion assembly that is also totally enclosed, however the purpose of having a totally enclosed assembly is defeated due to the optional quick disconnect pressure fittings mounted to the body. This provides opportunity for oil leaks in a system that by design, was manufactured to reduce oil leakage.

Crown has a “steering speed limit” feature. This feature regulates the drive motor’s output by the turning degree of the truck. This selection is made by the operator.

The Crown uses 15”x 5”x11.25” dual steer tires to provide traction and stability. Crown’s 1” wider steer tires are required for heavier counterweight loadings.

Crown steer tire dimensions:

15”x 5”x 11.25” standard

Non-marking smooth or lug rubber tires are available as an option.

Crown drive tire dimensions:

18”x 8”x 12.125” standard

Non-marking smooth or lug rubber tires are available as an option.

J30-40XMT₂ DASH DISPLAY

STANDARD DASH

- Six Warning LED lights
- 16 character numerical display
- Hour meter
- Warning lights
- Service maintenance monitor
- Under fault conditions, the display will show the fault code number
 - When operator leaves the truck, the display will read "TURN KEY OFF"
 - The display is adjustable



Standard Display: Six warning LED lights:

Seat belt (lit for 10 seconds after key is turned on)

Parking brake (lit when parking brake is applied and key turned on)

Low brake fluid indicator (lit when brake fluid in reservoir is low)

Service (lit when service is required. Accompanies fault code display on LCD)

Hour meter (lit when hour meter time is displayed on LCD)

Battery (lit when BDI reaches warning level)

Note: All lights are displayed for 2 seconds after key is turned on

The fault code will display only while the truck system is experiencing a problem or is disabled by the detected problem.

The standard display has only one adjustment option. The operator can disable fault codes so that they do not appear on the display.

In contrast, the premium display can be changed to:

Disable fault codes

Disable full text

Disable seat belt warning

Disable the ability to adjust the BDI and lift lockout setting

Enable checklist questions for startup maintenance

J30-40XMT₂ DASH DISPLAY

PREMIUM DASH

- An alpha-numeric display
- 2 lines with 20 characters per line
- Six warning LED lights
- Under fault conditions
- Show's fault code numbers, followed by the text explanation
- Keyless password entry
- Startup checklist



Six warning LED lights: Seat belt, park brake, low brake fluid indicator, service, hour meter and battery.

Premium Display Customer-selected Enhancements:

Keyless password entry and operator history -- A keyless password entry and record of operator history are two new features. This feature is disabled at the factory and can be activated by the customer with a laptop computer. When the key switch is turned on, the display will require the driver to key in a password before the truck will operate. The display will record the driver code number and truck hours when the driver started operating the truck. The history will be recoverable by PC. Password access can be a safety feature for novice operators. The operator password can be tied to authorization to work at specific maximum mode levels. A new operator might be given only slow mode access.

Startup Checklist -- Customer can program the display to ask up to 10 customer selected questions (up to 40 characters each)

SC 4000 SERIES BDI & DISPLAY

Standard Display (No optional display is offered)



- Meter Display
- Battery Charge Light
- 10k Light
- Hour Meter Light
- Event Code Light
- Event Code Label

-lists the events that the operator can correct without asking for service

The dash display provides several monitoring functions into one meter. The display provides a battery state of charge, a combined event and fault code light, an hour meter that indicates the total accumulated operation time and a light that indicates that the truck has reached 10,000 hours of use.

Crown has no offering for keyless password entry or operation history.

Battery charge light: When illuminated, it shows the percent of charge remaining in the battery. When flashing it warns the operator of low battery charge. **If equipped with the lift interrupt option,** it will disable the pump circuit with 10% battery charge after the flashing begins.

10K light: Indicates when lit that the unit has exceeded 10,000 hours of operation. (If applicable).

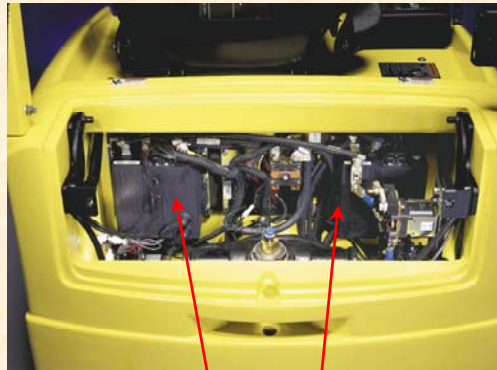
Hour meter light: with key switch off, the display provides total truck hours.

Event code: when lit it indicates that the system has detected an event that the operator can correct or provide a fault code which requires servicing.

J30-40XMT₂ ADDED PRODUCTIVITY with SEM FEATURES

- **GE GEN II (SX) transistor controllers provide:**

- Increased reliability
- Reduced noise / Quiet
- Only 1 contactor
- Improved overall performance
- Step-less acceleration without 1A bypass.



**GE GEN II
Traction Controllers**

State of the art GEN II transistor controllers ensure the highest efficiency of battery energy and provides smooth stepless acceleration and proportional regenerative braking.

The new GE GEN II transistorized controller has eliminated all of the high cycle contactors, eliminating the servicing of these consumable parts.

All of the electrical connections in the controller are soldered, eliminating possible loose connections due to improperly tightened hardware.

The control is in a self-contained “black box” component. If the black box cannot be corrected through diagnosis, simply replace it. No more changing rectifiers, capacitors, control cards, contactors and wires. (Others must replace these items on their SCR systems)

The pulse rate of the SEM transistor system is about 12,000 times per second (12KHz). This faster pulse rate is beyond the frequency range that human ears can hear, so, the system is virtually silent.

With older SCR systems, there is a constant hum as contactor switches activate and deactivate, creating clicking sounds. With SEM, this noise factor is eliminated since there is only one contactor (the line contactor) operating.

J30-40XMT₂ EASY CONTROLLER MAINTENANCE

- Control adjustments are made with a “hand-held” programmer
- Connected to the controller without disturbing any normal truck wiring



Real time diagnostics better define problems and display numerical fault codes on the dash display. Performance control settings are adjustable by a hand held device that is plugged into the traction controller without disturbing truck wiring.

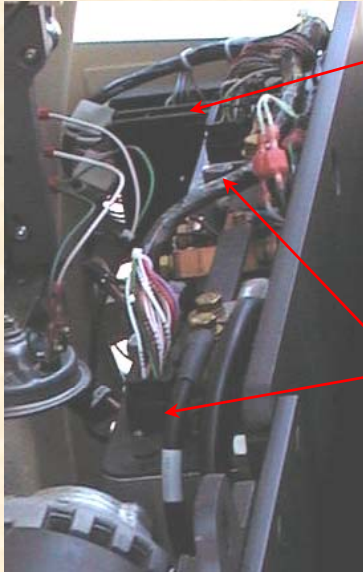
J30-40XMT₂ COMPUTER DIAGNOSTICS

- A laptop computer with a standard serial port can also be used to program or change a control in seconds



Computer diagnostic capability is also available to program or change control parameters quickly.

SC 4000 SERIES TRANSISTOR CONTROL



- Distribution Panel
 - Test points
 - Control fuses
 - Central wiring
- Handset diagnosis
 - Same as SCR
- GE GEN II SX Controllers
 - Lower current rating
 - Performance profiling (3 modes)

CROWN uses an older generation of GE GEN II SX transistor controllers with a lower current rating (less amp capacity) than Hyster. In general, a smaller controller is susceptible to overheating and may not provide sufficient torque for gradeability and driving over obstacles. Transistorized dual motor controllers regulate both drive motors. Three modes of performance can be selected, (performance profiling) to accommodate operator experience or application requirements. A Separate distribution panel located in the rear control compartment, provides test points for troubleshooting and houses control fuses and central wiring.

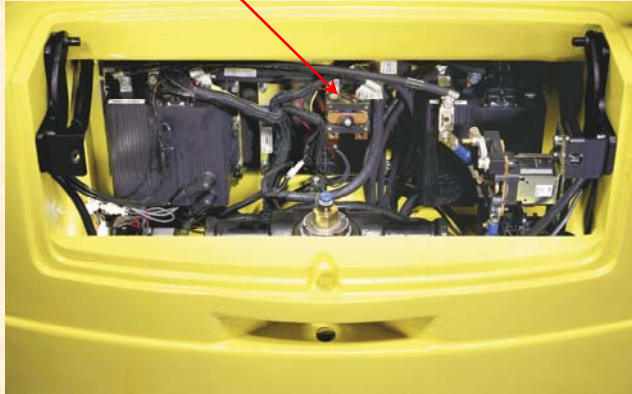
The controllers are adjusted by connecting the handset to the distribution panel located in the control compartment. The operator must take care, because the truck can still be operated when connected in this manner. An alternate method that does not allow normal truck operation is to disconnect the “Y” receptacle on the master controller and connect the handset to it. No computer diagnostic capability offered.

The same handset for diagnosing an EV100 SCR motor control systems is used with a different cable to program and access fault history for their transistor control system.

J30-40XMT₂ OPTIONAL TRANSISTOR HYDRAULIC CONTROL

GE GEN II transistor pump controller

- ☐ **Features:**
- ☐ **Controlled lift acceleration**
- ☐ **Increased system life**
- ☐ **Provides:**
- ☐ **Smooth, quiet, energy efficient operation**



The optional transistor hydraulic control system controls the motor with a GE GEN II transistor pump controller that provides smooth, quiet, energy efficient operation. The controlled acceleration feature of the transistor reduces pump and motor loading during start up for increased system life. The transistor hydraulic system is recommended for any truck with high attachment usage.*

*Sideshifters are excluded in this statement.

HYSTER VISTA® MAST

- **VISTA® mast provides excellent visibility**
- **Small lift cylinder diameter**
- **Provide superior cushioning**



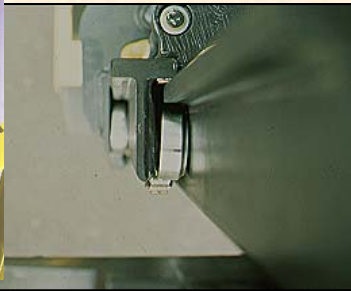
The second generation Hyster VISTA mast is a statement of efficiency. Cross members have been formed from cast steel that eliminates heat weakening of the mast caused by extensive welding. This mast provides good visibility through engineered channel nesting and hydraulic cylinder, tube and hose placement.

Hyster Company's innovative cylinder design provides smooth stage transition when lifting or lowering. The cylinders are located behind the uprights to maintain the visibility window which allows the operator a wide field of vision.

J30-40XMT₂ ANGLED LOAD ROLLERS



- Flush face channel design
- Full faced load rollers
- Ride against web and flange
- Resist side-to-side movement
- Eliminate side rollers
- Simplify maintenance



The Hyster VISTA mast channel faces are directly aligned, eliminating channel damage caused by forward movement of the face during lowering. This more compact design also reduces the trucks right angle stacking dimension.

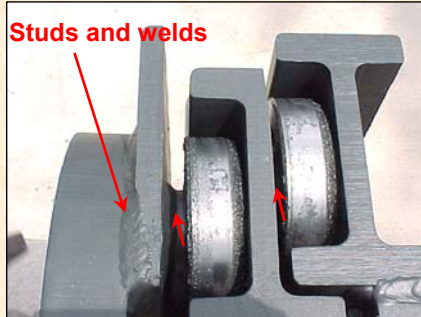
The canted roller bearings are angled against the channel web and flange. Combining this with an inverted “J” inner channel allows full face roller contact resisting side to side movement and also eliminates the need for side thrust rollers.

This design spreads the roller loading over a greater area, virtually eliminating the need for adjustment and maintenance resulting in increased roller and channel life which further enhances operator performance and productivity.

The mast trunnion mounts secure to the drive units using 2 bolts and a single half fiber bushing to make removal easy.

SC 4000 MAST

- Interlocked “I” beam design
- Canted roller
- Fabricated cross member
- Trunnion mounted



The Crown manufactured mast assembly uses a canted roller, flush face interlocked I-beam, designed in an attempt to improve visibility, truck length and lost load. Unlike the Hyster VISTA mast, this mast is not a “true” flush face design; the primary channel sticks out past the the secondary.

Crown states that mast roller bearing studs are welded on both sides of the rails for added strength. Unlike the Hyster canted roller design where the rollers are angled against the channel web and flange, the Crown mast design has unfavorable wear characteristics due to the constant bearing contact only in the cross section of the channel.

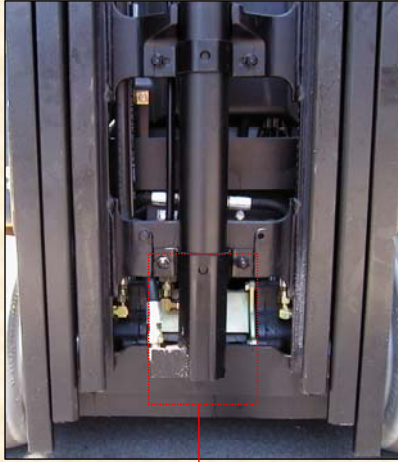
Fabricated cross members wrap around the rails to add strength and resist off center load forces.

Hoist cylinders and hosing are mounted to the sides to open up operator visibility.

The free lift cylinder utilizes a single lift chain providing the opportunity for cylinder rod damage if a slack chain condition occurs.

The mast is secured to the drive units by trunnions.

FREELIFT CYLINDER MOUNTING



Hyster cylinder has a protection plate



Crown cylinder has less protection

The Hyster free-lift cylinder has a protection plate that wraps around the lower cylinder port area. This plate provides protection against protrusion which could cause damage to the cylinder, hose or fitting. Dual lift chains eliminate the opportunity for cylinder rod damage if a slack chain condition occurs.

The Crown lower free lift cylinder is exposed providing greater damage potential.

CARRIAGE & LOAD BACK REST

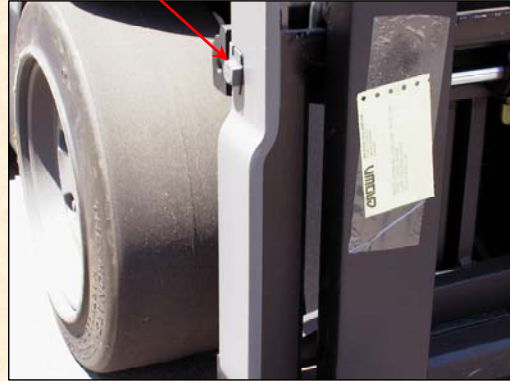
HYSTER



Carriage bolts are protected by "L" bracket and are less prone to shear off

Shear point

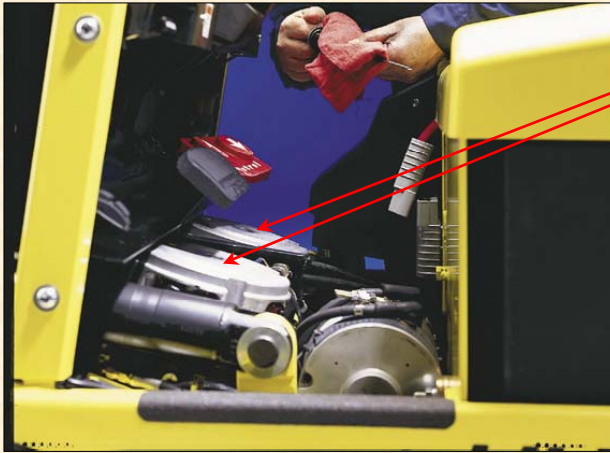
CROWN



Hyster provides a 48" load back rest extension as standard. The Hyster LBR is attached to the front of the carriage with four mounting bolts. These bolts are protected by "L" shaped angle iron which provide strength and durability. This design helps prevent the bolts from shearing off.

Crown also offers a 48" load back rest as standard. The Crown LBR is attached to the carriage from the side with four mounting bolts. This design provides less durability in the event impact occurs. Even though their LBR was designed with protective contours on each mounting leg, the mounting bolts are still susceptible to shear.

HYSTER ADDED PRODUCTIVITY with SEM FEATURES



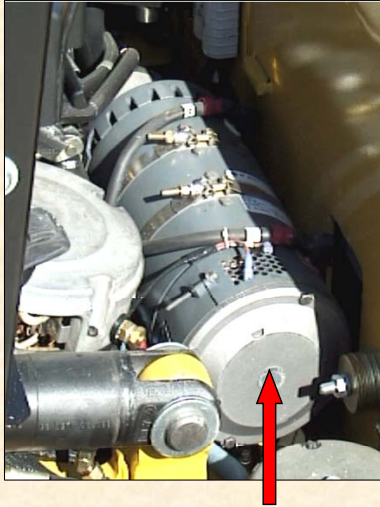
- **Dual SEM Hyster Traction Motors**
(reduction in heat in the operator compartment)

The J30-40XMT₂ utilizes Separately Excited Motor control technology designed for heavy duty work cycles. It uses motors with high starting torque and smooth, rapid acceleration. Manufactured by Hyster, the dual 8.1: diameter SEM 80 BB traction motors,, feature an additional .63" longer stack length and are individually mounted for easy servicing. Long stack drive motors reduce heat in the operator compartment through improved heat dissipation. The larger mass of these motors absorb peak loads and permit heat to be dispersed throughout a large surface area.

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. Hyster lift trucks use class "H" insulation for long life -- the highest class rating. The class "H" motor must withstand an armature temperature of 356 degrees. The motor's frame temp is normally lower than the armature temp which is measured internally. The premium class H insulation and internal cooling fans provide heat resistance and longer life.

Crown's dual 7.5" diameter traction motors (class rating not known) are designed and built in their New Knoxville, Ohio facility. These motors are also shunt wound and vertically mounted providing easy access to brushes.

HYSTER HOIST MOTOR ACCESS



Hoist Motor

- The hoist motor can be easily tilted up for motor brush inspection and replacement
- Premium hoist motors feature motor temperature and brush wear sensors

The hoist motor, located beneath the floor plates, can be easily tilted up for motor brush inspection and replacement. (The motor is held in place by two screw clamps.) The premium hoist motor brush wear indicator and motor temperature features can be used with the premium display option.

Hyster hydraulic tank capacity = 4.7 gals @ hot oil and 4.5 gals @ cold oil.
Hyster hydraulic filter = 10 micron.

Crown hydraulic tank capacity = 4.4 gals @ hot oil and 4.0 gals @ cold oil.
Crown hydraulic filter = 10 micron.

CROWN HOIST MOTOR ACCESS

- The hoist and steer motors are located in a tight space behind the battery compartment
- The motors must be lifted out of the truck to change all 4 brushes. (Easy access to two brushes, but not all four).



Servicing the hydraulic and steer motors for brush inspection becomes complicated due to the restricted space between the counterweight and battery box. When the motor brushes require replacement, the entire motor assembly must be removed. This makes what should be a 15 minute job into an hour or more. Removal of pump and motor assemblies require disconnection of hydraulic hosing where oil spillage is inevitable. Customer environments such as the pharmaceutical industry and food distribution do not tolerate oil leaks in the application.

SUMMARY

The newly designed Hyster J30-40XMT₂ provides state-of-the-art electric motor control improvements that are built to perform and last in the toughest applications. The GE GEN II transistor controllers along with SEM technology are designed for heavy duty work cycles and exceptional performance. The J30-40XMT₂ proven power and efficiency are key to it's outstanding performance in either 36 or 48 volt systems. These upgrades make this model highly competitive in performance and price.



