



Hyster J30-40XN/XNT Invitation to Compare

Customer Day 2 Agenda

- 1. Dealer Introduction – 5 minutes**
- 2. Hyster Master of Ceremonies Introductory Comments – 10 minutes**
 - a. Hyster Personnel Introductions
 - b. ITC Purpose and Intent
 - c. Packet Review
 - d. Scoring Methodology
 - e. 3-Wheel Electric Lift Truck Features, Advantages and Benefits
 - Ideal for dock, transportation or racking applications.
 - Generally lighter in weight than an internal combustion engine powered lift truck, which reduces the potential for damage to trailer floors.
 - Highly maneuverable due to its tight turning radius allowing it to work in less space. The result is more space can be dedicated to warehouse storage.
 - Low overall truck height for easy operator access and egress, and truck trailer and container entry / exit.
 - Lower cost-per-operating-hour than a truck powered by an internal combustion engine.
 - Longer life span due to fewer moving parts especially with AC motor driven lift trucks.
 - Zero emissions.
 - f. ITC Topic Flow
 - Front end equipment
 - Ergonomics
 - Cost of Ownership
 - Ramp Operations
 - J-XNT – J-XN Comparison and Contrast

3. Front End Equipment – 15 minutes

- **Let's start with the work or business end of the truck—the mast.**

We will be looking at two different mast roller designs.

Hyster Mast rollers are canted 3° to provide full face contact of the roller with the web and flange of the mast channel eliminating the need for external side thrust rollers. Unlike straight load rollers used by other manufacturers that require additional side thrust rollers, this design decreases the possibility of premature roller failure or channel extrusion formation caused by uneven wear.

The Hyster canted roller design also insures lateral stability when loads are raised high and side shifting needs to be a part of product positioning.

There are also differences with mast designs with respect to connecting tie bars and cross members.

Hyster continues to use cast steel in the mast design based on testing for twisting and stress points lifting and side shifting rated loads. Cast steel can be distributed in those affected areas supporting loads and holding tolerances extending roller and rail life while a fabricated/welded stock design can bend or change over time.

A free lift cylinder guard bracket located at the base of the free lift cylinder provides protection for the flow control fitting and is used through out our product line.

- **Moving to the carriage-again two design differences.**

Hyster carriages are equipped with 6-rollers standard, pre-lubed and sealed, full radius, angled load rollers that resist forward and lateral forces (same principle as the mast). This gives good load support during lifting and lowering and simplifies the design by eliminating the need for additional side thrust rollers.

At least four load rollers are in constant contact with the inner mast channel at all lift heights.

Competitor's trucks with the straight faced roller design use 4 rollers standard with side thrust rollers required to resist forward and lateral forces. The 6-roller carriage can be added as an option.

- **Side shifting options** are offered on all trucks. The differences would be Integral Side Shifter that would be integrated or built into the carriage and a separate hang on type side shifter. The advantage with an Integral design is less lost load retaining capacity as apposed to the hang on design moving the load out and loosing capacity. Hyster uses an Integral Side Shift standard while Toyota and Crown both offer it as an option. As an example it's easier to lift a box closer to your body then holding it out in front of you.

Capacity's very in these trucks all using a TSU 189" due to the lost load center created by using hang on side shifters and the Crown trucks stacked rail system.

All of these trucks have a basic capacity of 4000 lbs.

Toyota rates there truck at 3450 lbs with S/S @ 189"

Crown rates there truck at lbs with S/S @ 190"

Hyster rates there truck at 3600 lbs with S/S @ 187"

4. Ergonomics – 15 minutes

Ergonomics – is the study of designing equipment and devices that fit the human body, its movement and its cognitive ability.

The study of efficiency in working environments

Since 1957 Hyster Company has worked with the Dryfus Group in the development of Human Engineering.

Let's talk about the operator's compartment. This is where the operator spends 8 hours a day. It is designed to accommodate the 5% Hispanic Female & the 95% Nordic Male. Look at the location of the steering wheel, seat and hydraulic controls. This is done to improve productivity and reduce operator fatigue.

OSHA requires a positive 3 point entry system.

Hyster offers a 3 point entry system – large grab handle, hip restraint and serrated foot step. We curve the front leg of the OHG provides increased shoulder clearance for easy of entry and exit.

Seat is canted 3 degrees to the right for a more natural operating position. Offerings are Full Suspension Seat, Semi-Suspension Seat, Non-Suspension Seat & Swivel Seat 5 degrees left & 12 degrees right

Full Suspension is adjustable from 90 to 300 lb operators

All seats have a 6" for / aft adjustment in ½" increments. The backrest is adjustable for a comfortable operating position on the full & semi-suspension seat.

Infinitely adjustable Steering Column in a 26 degree arch with a tilt memory. A 12" Steering Wheel provides more knee room and 4 turns lock to lock for efficiency, maneuverability and control.

Optional Tilt / Telescopic steering column allows for the right fit for any operator.

Monotrol Pedal provides a smoother control of travel speed and direction. Monotrol improves operator efficiency and productivity.

Seat Side Hydraulics are positioned for maximum comfort and thumb actuated directional control switch located in the lift function handle. Optional Mini-levers

offer precise fingertip control with an adjustable cushioned armrest. Directional control is positioned for thumb actuation, with horn and safety battery disconnect. A rear drive handle provides an excellent hand hold when driving in reverse and horn button for use when approaching cross-aisles and pedestrian traffic areas. An uncluttered angled floor area with 1" thick floor mat provides greater operator comfort. Large brake pedal for either actuated by either foot. Raise accelerator pedal reduces leg fatigue.

When operator leaves the seat brakes are automatically applied.

Dash storage area provides for **STUFF** that operators require performing their daily activities. Heads Up Multifunctional Display offers greater visibility and a large LCD screen with indicator icons for at a glance system status. There are four programmable performance modes so management can tailor truck performance for new hires or experienced operator.

OHG bars are put on edge rather than the flats to provide greater visibility.

Crown does not offer a grab handle but round overhead guard leg, hip restrain and dimpled foot step.

Full suspension seat

7" for / aft adjustment and tilting backrest

12" steering wheel

Infinitely adjust steering column

Directional control is steering column mounted

Seat side hydraulics

Do not offer mini-levers but optional arm rest

Large uncluttered floor board

Rubber floor mat

Optional Storage tray seat deck mounted

Electronic operated park brake

Crown dash display with 3 performance modes

P1-Productivity

P2- Efficiency

P3-Novice

No rear drive handle

Toyota offers a two point entry system with a dual grab handle on OHG and dimpled step to access the operator's compartment. . No hip restraint but operators grab the seat back wing to climb into the cockpit.

Four seat offerings are standard is the non-suspension seat, with optional semi and full suspension seat and swivel seat.

6" for / aft adjustment

14" steering wheel

Adjustable steering column with memory

Directional control is steering column mounted

Column mounted Hydraulics

Optional mini-levers with adjustable armrest

Hand Operated Park Brake

Optional rear drive handle with horn has an exposed wire

Smallest floorboard with thin rubber floor mat

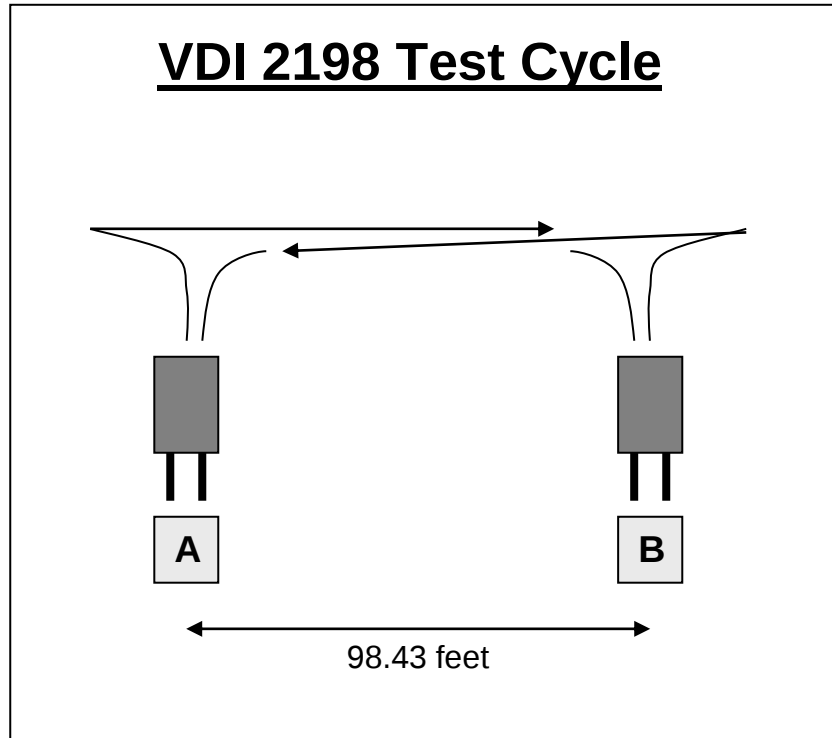
Operators convenience group is pen/pencil holder, cup holder and hood integrated paper clip

Operator digital dash display is mounted to the steering column with three preset and one custom operator modes.

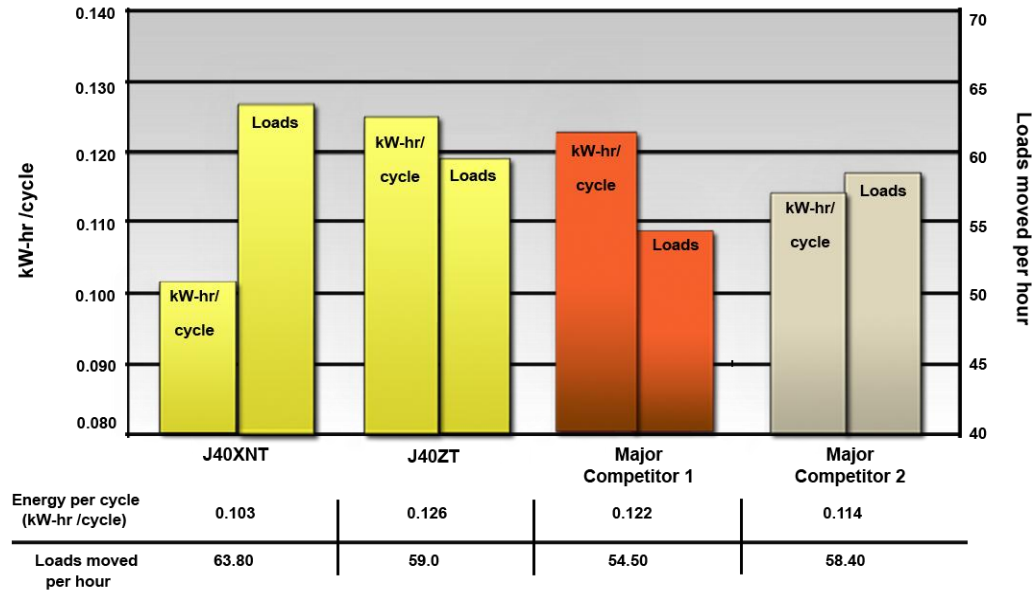
5. Total Cost of Ownership – 15 minutes

- During the next several minutes I will focus on the concept of total cost of ownership, or TCO. To that end I will compare the Crown, Hyster and Toyota 3-wheel electric trucks relative to their anticipated costs of ownership over a typical 2,000 hour or 12-month use cycle. I will also contrast the product design differences between uprights, and the electrical, brake and hydraulic systems, and the impact each one can have on the TCO.
- TCO is generally defined as the total cost to acquire, install, use, maintain, change, and dispose of a lift truck over its useful life. As with many other things in life the 80/20 Rule applies to lift truck TCO. On average only 20% of the cost of ownership of a lift truck involves acquisition, installation, and disposal while approximately 80% of the TCO involves use and maintenance. During the next few minutes I will focus on the factors that drive 80% of ownership costs.
- Since 1975 Hyster Company has operated the 45-acre Counterbalanced Development Center, or the CBDC, in Portland, Oregon where its 250 engineers design, test and evaluate both Hyster and competitor sit-down electric products. One of the many evaluation methods used at the CBDC is the VDI 2198 test. VDI 2198 is an International Standards Organization test used by almost all lift truck manufacturers to document the performance characteristics of their respective products.
- **(Display VDI test course poster).** This illustration describes the test course. Essentially,
 - The truck travels from Point A to Point B, a distance of 98.43 feet.
 - It turns 90° and advances forward twice the load center distance.
 - Stops and returns the mast to vertical.
 - Lifts the load 6.56 ft, lowers it and backward tilts the mast.
 - Turns back and advances to Point A.
 - Turns 90° and advances forward twice the load center distance.
 - Stops and returns the mast to vertical.

- Lifts the load 6.56 ft, lowers and backward tilts mast.
- Repeats the cycle 60 times in 60 minutes.

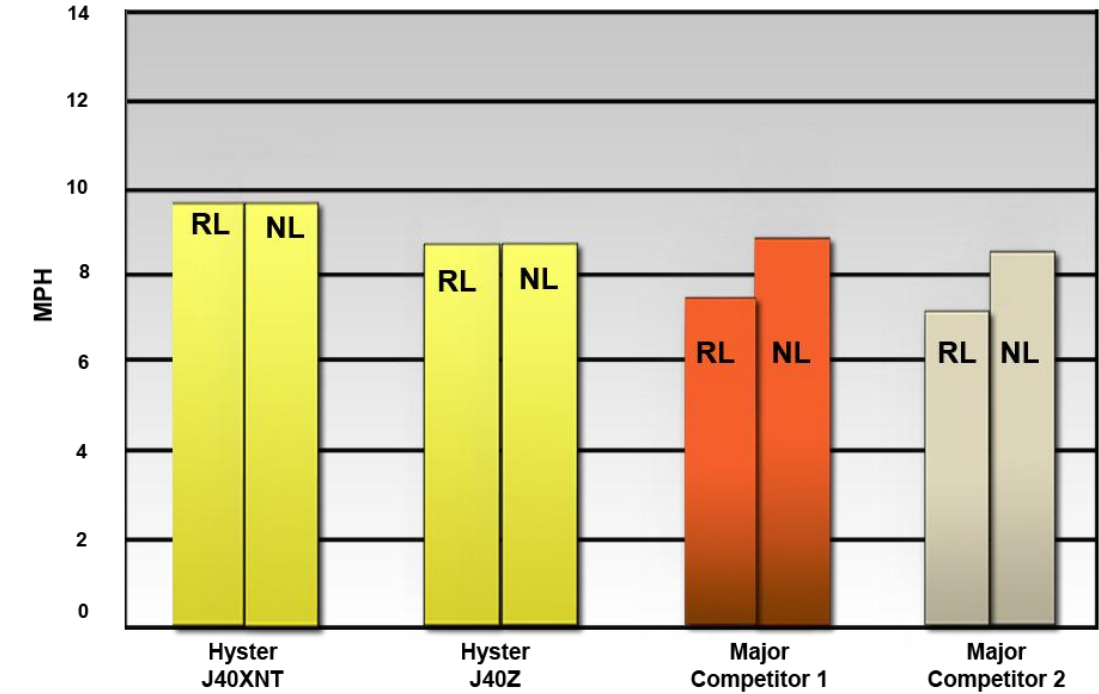


- When tested on the VDI 2198 course each truck's energy consumption, and travel and lift/lower speeds were as follows.
- ***(Display energy consumption, travel and lift/lower charts in that order.)***



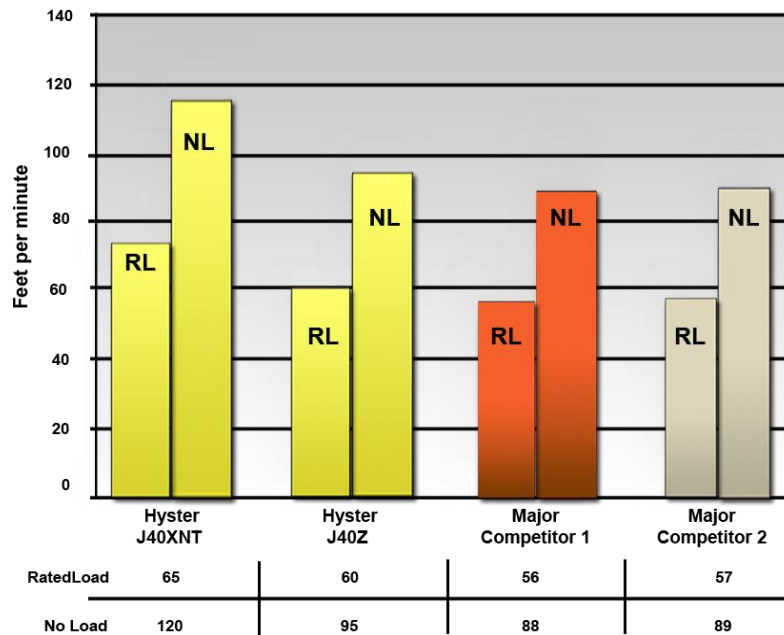
- As illustrated the J40XNT was able to move 63.80 loads in one hour while consuming slightly more than 6.18 kilowatts of energy. By comparison the Toyota and Crown moved 54.50 and 58.40 loads in one hour will consuming 7.32, and 6.84 KW-hr, respectively. Using a typical cost of electricity of .12 cents per KW-hr over 2,000 operating hours the J40XNT would cost \$1,483 to operate compared to \$1,757 for the Toyota and \$1,642 for the Crown while moving an average of 5.1 more loads an hour.
- (Display travel speed and lift/lower charts).** The following two charts display the travel and lift/lower speeds calculated for each truck during the VDI test. As you can see the J40XT had both faster travel and lift/lower speeds than Toyota or Crown. These differences account for the loads moved per hour however the energy consumption differences are a function of the fact the Hyster J40XNT does not need a separate steering motor like the Toyota and Crown. With one less motor the J40XNT is more energy efficient.

36V Travel Speeds



Rated Load	9.8	8.8	7.5	7.4
No Load	9.8	8.8	8.9	8.5

36v Lift Speeds



- Lift truck maintenance is the second variable contributing to the 80% total cost of ownership. It can have a greater impact than any other cost component over 2,000 operating hours.
- **(Display PMCS Chart.)** The following Preventative Maintenance Checks and Services chart includes all the maintenance functions required by Crown, Hyster and Toyota over 2,000 operating hours as outlined in their respective Owners and Operators Manuals. To simplify the maintenance cost calculation I applied .25 labor hours at \$65.00 per hour to each maintenance function regardless of degree of difficulty, and utilized published OEM parts prices for the parts and lubricants required for each service. As you can see the overall lower maintenance costs of the J40XNT are a function of its 500-hour service interval in contrast to the Crown and Toyota 250-hour interval.
- One reason Hyster is able to stipulate a 500-hour service interval is its incorporation of various components that have proven through extensive field testing to have a high Mean Time Between Failure. As a result of their greater reliability they warrant the 500-hour service interval. These components include

- Heavy duty mast rollers more able to withstand the stresses related to lift and lower cycles. **(Hand Out).**
 - A greater mast cross section area, which is built to handle 4,000 pound loads to the full extension of the upright even when equipped with an integral sideshift attachment. **(Hand Out).**
 - The use of hydraulic o-ring face seals rather than 37 degree flare fittings, which must be periodically inspected and tightened to prevent oil leaks. **(Photo Art & Hand Out.)**
 - IP 66 rated electrical connectors that are impervious to dust and moisture reducing the chance of electrical problems. **(Hand Out.)**
 - A wet disc service brake system that requires no maintenance with friction discs that can be expected to last in excess of 5,000 hours.
 - Hall-effect sensors that have no internal electrical contacts making them one of the longest living components in the lift truck. These sensors are used instead of potentiometers in the hydraulic control levers and key switches, which are high-operating cycle components. **(Hand Out.)**
- In summary the costs associated with use and maintenance of the Crown, Hyster and Toyota can vary by application. When tested under controlled conditions and serviced according to each manufacturer's recommendation the Hyster J40XNT cost \$_____ over 2,000 hours to operate while the Crown SC 4500 and Toyota 7FBEU totals reached \$_____, and \$_____, respectively.
 - Thank you, I will now turn the ITC back to _____, who will cover ramp operations.

6. Ramp Operations – 15 minutes

7. J-XN – J-XNT Comparison & Contrast – 15 minutes

(Set Up)

- Hyster Trucks are repositioned with rear counterweights facing the crowd and each pointing inward towards center with approximately 6' between them. The competitive trucks are removed during this positioning. (4 operators are needed for this transition)
- Video presentation is set on display with Turn Radius illustration frozen.

(Presenter)

- *As mentioned at the top of this presentation, Hyster EXCLUSIVELY offers a 4-Wheel option on this chassis called the **XN Model**. These are available in the same 3000, 3500, and 4000 lb. capacity units and still give you incredible maneuverability in the tightest locations.*

*Combined with the benefits of its 3-Wheel “sibling”, like low ground clearance, easy on & off, and maneuverability in tight areas, this 4- Wheel **XN Model** offers a comparable turn radius by featuring a special ZERO TURN RADIUS (ZTR) steer axle.*

*THE BENEFITS of the **XN Model** are a combination of maneuverability AND REDUCED TRUCK LEAN in turns allowing for superior travel over uneven surfaces like dock plates going into trailers, expansion joints, speed bumps, railroad tracks, or even potholes in your parking lot.*

*This **XN Model** is EXCLUSIVE to Hyster and provides an option which tailors our equipment to your exact application and operating environment.*

(Turn Radius Specs)

- *As seen in the video display illustration, the turn radius of these models is similar. XNT 3-Wheeler (OTR 62.1”) vs. XN 4-Wheeler (OTR 65.2”)*

8. Summary & Conclusion – 5 minutes