

Competitive Review

A Comparison of the Hyster J30-40XMT₂ vs. The Competition

This section compares the Hyster J30-40XMT₂ to the competition. It will evaluate competitive models on the following product attributes:

- Increased Productivity
- Increased Operator Comfort
- Reduced Maintenance Costs
- Serviceability
- Reliability

Photographs of Hyster and competitor models are included in the competitive analysis. Each one of these product attributes will be thoroughly discussed –feature by feature-- in a chart format. Also, the benefit of the Hyster J30-40XMT₂ truck's features in comparison to the competitors' models will be pictorially displayed. These benefits are illustrated by four symbols:

Benefit Types	Symbol
Increased Productivity	
Increased Operator Comfort	
Reduced Maintenance Costs	
Serviceability	
Reliability	

Note: Throughout the competitive presentation you will see this yellow check mark



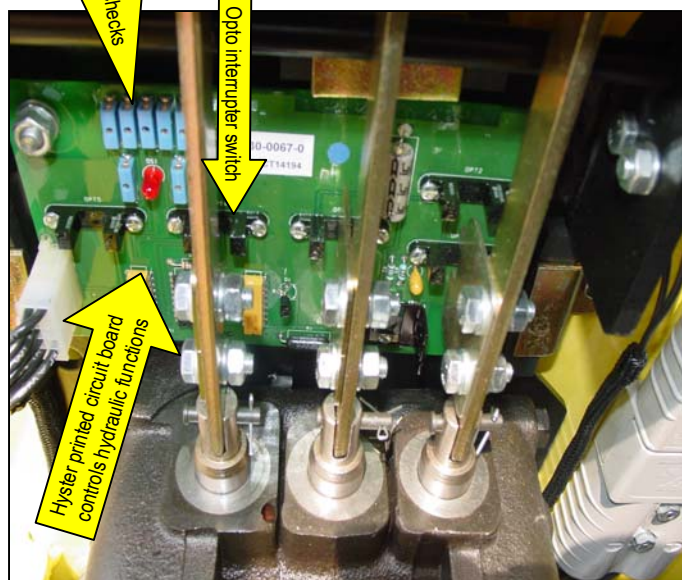
which indicates the Hyster Advantage over the competition for a particular feature.

Competitive Review

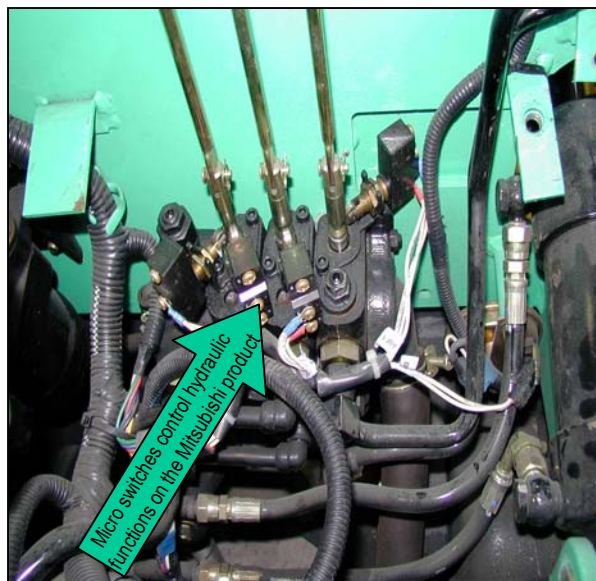


HYSTER J30-40XMT2 VS MITSUBISHI FB16KT

REDUCED MAINTENANCE COSTS



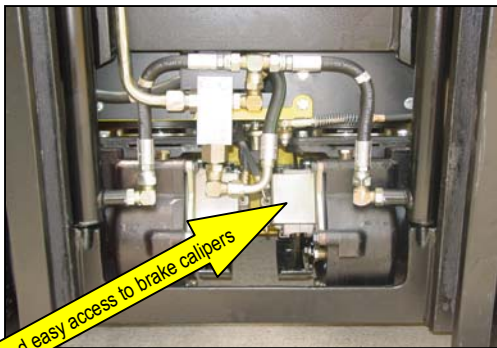
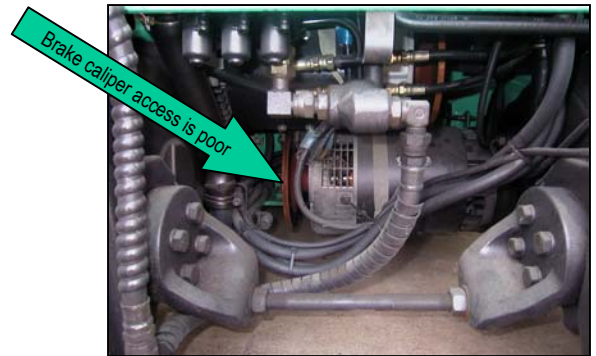
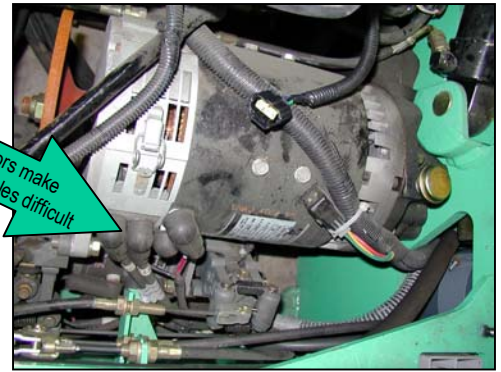
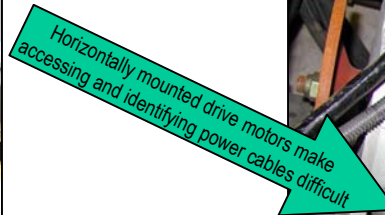
Hyster Hydraulic Control Board



Mitsubishi micro switches

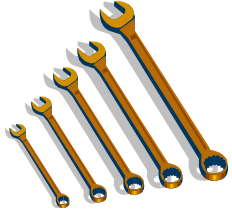
FEATURE	HYSTER	MITSUBISHI	BENEFIT
 Hydraulic Control Valve Arrangement	The Hyster hydraulic control valve is shock mounted to the front plate of the frame and is covered with two plastic covers. The upper and lower valve covers prevent dirt and other contaminants from making contact with the hydraulic circuit board and valve spools.	The Mitsubishi hydraulic control valve is mounted to the frame under the floor plates. The cutout for the connecting linkages allows dirt and other contaminants to fall on the valve spools and the micro switches causing premature wear and component failure.	
 Opto Sensor Switches	The Hyster hydraulic control valve functions are controlled electronically by opto sensor switches on the hydraulic circuit board. These light sensor switches have no wearable parts and require no adjustments.	The Mitsubishi hydraulic control valve functions are controlled electrically by micro switches. Micro switches have more wearable parts and require additional adjustments.	The Hyster control valve features a state-of-the-art printed circuit board for reliable control of hydraulic functions. The control valve is covered with a two piece plastic cover for component protection.

SERVICEABILITY



Hyster Power Cables and Brake Discs

Mitsubishi Power Cables and Brake Discs

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Drive Unit Motor Power Cable Routing	The Hyster drive unit motor power cables are neatly routed and easily accessed and identified by removing the drop in floor plates (no tools required). Notice how clean and uncluttered the Hyster motor compartment is compared to the Mitsubishi.	The Mitsubishi drive motor power cables are accessed once the floor plates are removed (requires tools). Notice the power cables for the bottom drive motor are buried underneath the top motor and the parking brake linkages, making bottom motor power cable access difficult.	
Dual Disc Service and Parking Brake	The Hyster disc service and parking brake assemblies are mounted individually to each transaxle (drive unit) housing. Service access to the brake discs requires no cover removal or getting underneath the truck.	The Mitsubishi disc service and parking brake assemblies are mounted to the drive motor shaft. Service access to the bottom drive motor brake disc requires the service technician to block up, and be underneath the truck.	Drive unit motor power cables are neatly routed, and easily identified and accessed. Disc brake access requires no tools, no cover or panel removal and does not require the technician to be underneath the truck.

ERGONOMICS / OPERATOR COMFORT INCREASED PRODUCTIVITY



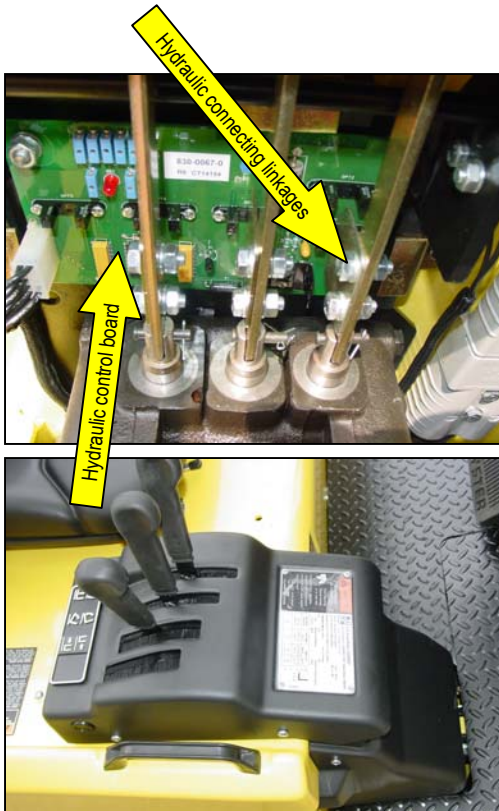
Hyster Control Valve Handles



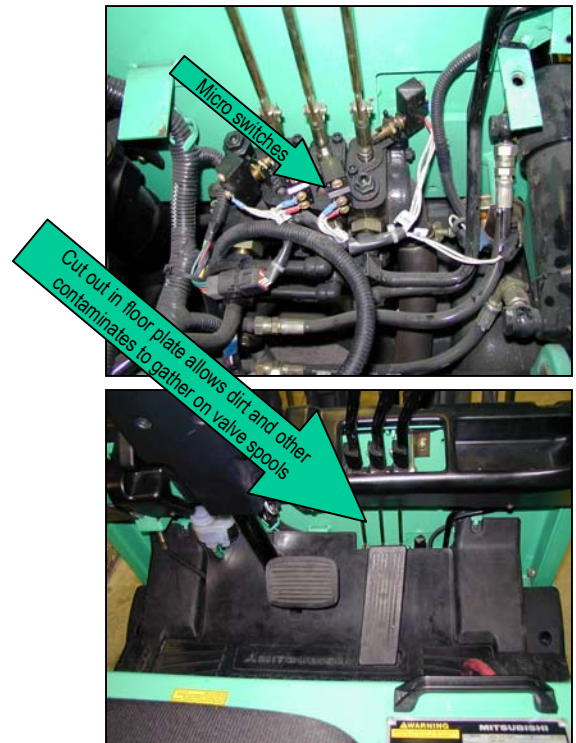
Mitsubishi Control Valve Handles

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Seat Side Hydraulics	The Hyster Control valve levers are located just to the right of the operator's seat for convenience and ease of use, requiring no reaching out or leaning over to activate control valve levers.	The Mitsubishi control valve levers are cowl mounted and require reaching out and leaning over to activate control levers.	  Hyster Company's seat side hydraulics with ergonomically contoured and positioned rubber coated hand levers provide substantial ergonomic benefits resulting in reduced operator shoulder, arm and hand fatigue. These features contribute to increased operator comfort and a more productive operator.
Soft touch, Sure Grip, Rubber Coated Hand Levers	The Hyster control valve levers are rubber coated with a soft touch, sure grip rubber coating for increased operator comfort and ease of use.	The Mitsubishi control valve levers are not rubber coated. The hand levers have a textured hard rubber knob pressed on the end of the hand lever shaft.	
Ergonomically Contoured and Positioned Hand Levers	The Hyster control valve hand levers are ergonomically contoured and positioned within the operator's "comfort zone".	The Mitsubishi control valve hand levers are not ergonomically shaped and positioned. The hand levers are the typical cowl mounted design and have questionable "operator comfort zone" placement.	

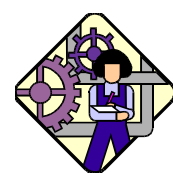
RELIABILITY



Hyster hydraulic control board and connecting linkages



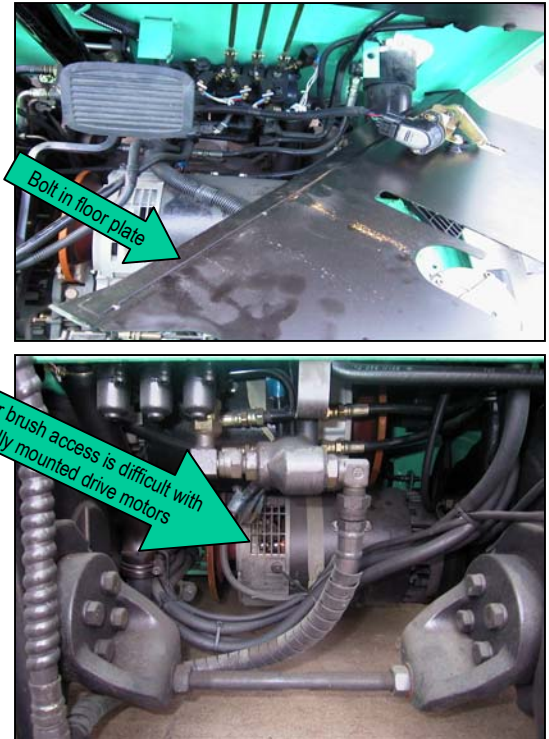
Mitsubishi micro switches and connecting linkages

FEATURE	HYSTER	MITSUBISHI	BENEFIT
 Hydraulic Control Board	The Hyster designed control valve features a hydraulic control board (printed circuit board) to control hydraulic functions. The hydraulic control board features optical sensors that relay the control function signals electronically.	The Mitsubishi designed control valve features micro switches which control the hydraulic functions. Micro switches relay control valve functions electrically. Micro switches wear quicker and require adjustments.	 The Hyster hydraulic control board is a solid state device using electrical sensors in lieu of micro switches to activate operator hydraulic inputs. The valve spools and connecting linkages are protected with covers and are located where physical damage is minute.
 Control Valve Connecting Linkages	With the Hyster control valve located on the front plate and protected with ABS plastic covers, the valve spools and connecting linkages are less susceptible to physical damage and exposure to contaminants.	With the Mitsubishi control valve mounted under the floor plates, the exposed connecting linkages are susceptible to physical damage by work boots. The floor plate cutout permits contaminants to gather on the valve spools.	

REDUCED MAINTENANCE COSTS

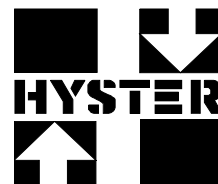


Hyster drop in floor plates and Drive motor brush access



Mitsubishi bolted upper floor plate and unprotected disc brake

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Drop In Floor Plates	The Hyster two-piece drop in floor plate requires no tools for removal or installation; simply lift up and pull out one side at the time. Additionally, there are no switches to disconnect.	The Mitsubishi two-piece floor plate requires tools for removal and installation. Once the lower floor plate is removed, the upper floor plate must be unbolted and the accelerator switch disconnected before being removed.	
Drive Unit Motor Brush Access	Drive motor brush inspection access on the J30-40XMT ₂ is easily accessed by simply removing the two drop in floor plate. The motors are vertically mounted, brush access cutouts are provided in the frame and cowl assembly further simplifying this job.	Drive motor brush inspection access on the FB16KT requires the truck to be on blocks or over a pit. The drive motors can not be serviced without both floor plates being removed (upper floor plate is bolted in) and the technician being under the truck. Truck downtime is extensive as compared to the Hyster.	The Hyster two-piece drop in floor plate require no disconnecting of switches or the need for any tools; which saves time. Drive motor brush access is easier and quicker on the Hyster product reducing maintenance costs.



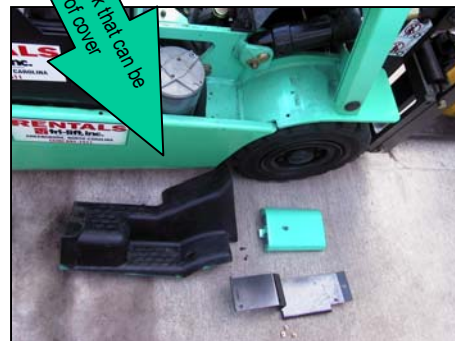
SERVICEABILITY

With drop in floor plates removed complete motor access is achieved

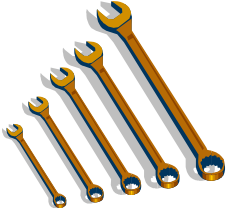


Hyster power steering and hoist motor access with floor plates removed

There is not a single motor on the FB16KT truck that can be accessed without unbolting some kind of cover



Mitsubishi power steering and hoist motor access with floor plates removed

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Power Steering Motor Access	Hyster power steering motor access consists of removing the drop in floor plates. Once the floor plates are removed, access to the power steering motor is achieved.	Mitsubishi power steering motor access is a four step process: 1)Remove the floor plates(requires one size wrench), (2) remove the trim panel(requires another size wrench), (3)Remove step panel (Philips screw driver), (4) Remove motor access shield.	 The hyster motor compartment layout design allows power steering motor and hoist motor access by simply removing the drop in floor plates. Serviceability to the power steering and hoist motors is quicker and easier on the Hyster product.
Hoist Motor Access	Hyster hoist motor access consists of removing the drop-in floor plates. Once the floor plates are removed, access to the hoist motor is achieved.	Mitsubishi hoist motor access consists of raising the battery compartment cover and removing the hoist motor access shield; which requires the removal of two bolts.	

ERGONOMICS / OPERATOR COMFORT INCREASED PRODUCTIVITY

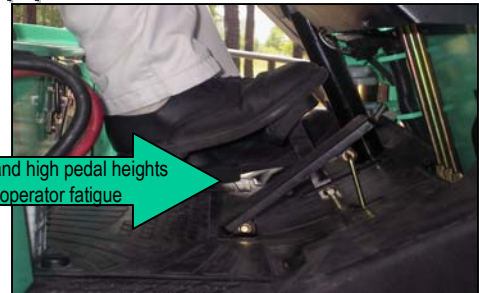


Innovative Hyster design allows right foot or left foot braking



Ergonomically positioned foot controls (Optional accelerator shown).

Hyster service brake and accelerator pedal



Crude angles and high pedal heights increase operator fatigue



Mitsubishi service brake and accelerator pedal

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Service Brake Pedal	The Hyster service brake pedal is ergonomically shaped and positioned (approximate 43° angle) allowing the use of either the left or right foot for braking; which ever the operator finds most comfortable. Low pedal height (3.25" off floor plate) provides low effort pedal activation.	The Mitsubishi service brake pedal lacks ergonomic consideration. The brake pedal is over six inches off the floor plate and is at an approximate 60° angle. With the pedal and floorboard layout, left foot brake activation is not a practical option.	  Hyster's ergonomic approach to pedal shape and positioning reduces the use of the large leg muscle groups and provides the operator with a choice between left foot and right foot braking; both of which enhance operator comfort and contribute to a more productive operator.
Accelerator Pedal	The Hyster accelerator pedal is also ergonomically shaped and positioned. At a approximate 18° angle and only 2.5" off the floor plate the accelerator requires low effort activation. This design also enables the operator to pivot the left foot activating the brake pedal without the use of large leg muscle groups.	The Mitsubishi accelerator pedal also lacks ergonomic shape and positioning. The accelerator pedal is close to five inches off the floor plate and at an approximate 47° angle. This pedal nor the brake pedal are comfortable and require the use of large leg muscle groups.	

RELIABILITY



Canted load roller design



Canted load roller design



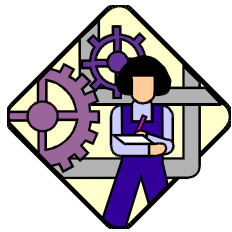
Premium cast cross-members provide exceptional strength with minimal welding on mast channels



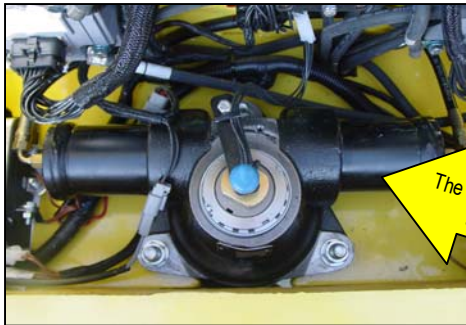
Mitsubishi uses cast cross-members and fabricated braces to support the mast assembly. This design requires more welding on mast channels

Hyster Vista mast

Mitsubishi mast

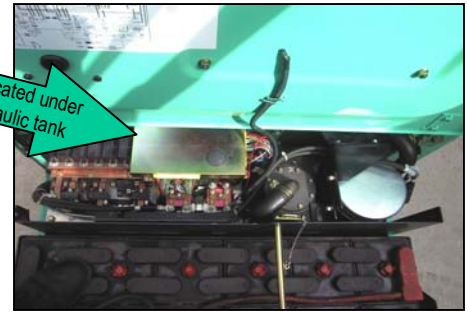
FEATURE	HYSTER	MITSUBISHI	BENEFIT
Canted Load Roller Bearings	The VISTA mast features canted load roller bearings allowing full face contact with the inner mast channel. Loading is evenly distributed on the roller bearing over a greater area which contributes to increased bearing and mast channel life.	The Mitsubishi mast features canted load roller bearings allowing full face contact with the inner mast channel. Loading is evenly distributed on the roller bearing over a greater area which contributes to increased bearing and mast channel life.	 The Vista mast features canted load roller bearings and cast steel wrap around cross members for precision construction and maximum strength for enhanced reliability. Minimal structural support welding is required reducing heat weakening of the mast channels.
Cast Steel Cross members	The Vista mast structural support features wrap around cast steel cross members for maximum strength and precise channel alignment. The placement of the cross members are located on the mast channels in such a way requiring minimal welding for maximum strength.	The Mitsubishi mast structural support features wrap around cast metal cross members along with fabricated brackets to provide required support. The additional brackets and castings require much more welding. Extensive welding on the mast channel causes heat weakening of the metal.	

INCREASED PRODUCTIVITY, INCREASED OPERATOR COMFORT



The totally enclosed hydrostatic steer actuator is easily accessed

Hydrostatic steer actuator is located under electrical controllers and hydraulic tank



Twin steer wheel axle design

Twin steer wheel axle design



Hyster twin steer tires and steering actuator

Mitsubishi twin steer tires and steer actuator

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Hydrostatic Power Steering	The hydrostatic power steering system features an enclosed rack and pinion steer actuator, and is designed to give precise and reliable control. Hydrostatic steering systems replace mechanical linkages and connections with hydraulic lines for a more precise steer response with fewer parts and adjustments.	The hydrostatic power steering system features an enclosed rack and pinion steer actuator, and is designed to give precise and reliable control. Hydrostatic steering systems replace mechanical linkages and connections with hydraulic lines for a more precise steer response with fewer parts and adjustments.	 Hydrostatic power steering provides smooth and precise steer response for quick, confident load handling. The twin steer wheels provide a smooth ride and stable feel, especially when turning, enhancing maneuverability for a more productive operator.
Twin Steer Tires	The twin steer tires widens the rear portion of the stability triangle providing a more stable feel when turning. Twin wheel steering provides a smooth ride by having more rubber to absorb shock loads from uneven floor surfaces or dock plates.	The twin steer tires widens the rear portion of the stability triangle providing a more stable feel when turning. Twin wheel steering provides a smooth ride by having more rubber to absorb shock loads from uneven floor surfaces or dock plates.	

INCREASED PRODUCTIVITY



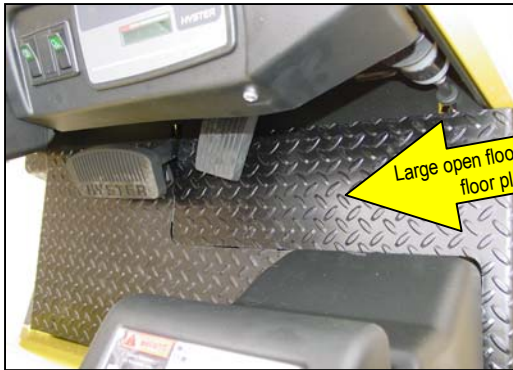
Hyster GE GEN III Transistor Controllers



Mitsubishi TR4000 SX Transistor Controller

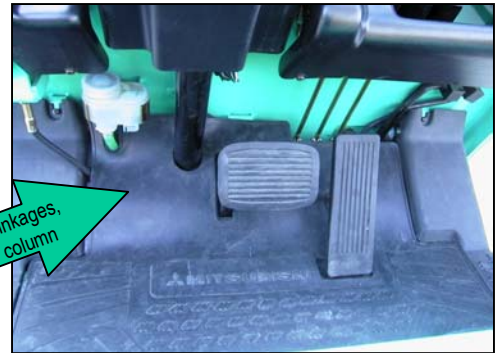
FEATURE	HYSTER	MITSUBISHI	BENEFIT
GE GEN III Transistor Controllers	The J30-40XMT ₂ traction system features GE GEN III Transistor Controls. This technically advanced traction system provides the highest efficiency of battery energy, real time diagnostics (reduced downtime / increased up time) and provides smooth / controllable acceleration and deceleration.	The Mitsubishi electrical system features their own designed TR4000 SX transistor controller. The TR4000 SX transistor controller, per their literature, provides better serviceability and more efficient, reliable traction system than traditional controllers.	 The SEM and GEN III controls combine to provide a high level of productivity by electronically controlling field weakening and providing the highest level of battery energy efficiency for a more productive work cycle. The Mitsubishi controllers are proprietary parts, which are typically more expensive.
SEM (Separate Excited Motor) Technology	The J30-40XMT ₂ traction control system features SEM Technology. Separately excited motor technology provides built in regenerative braking, and electronic field control (field weakening) resulting in fewer parts, more controllable traction system and longer shift life.	The Mitsubishi traction control system features SEM Technology. Separately excited motor technology provides built-in regenerative braking, and electronic field control (field weakening) resulting in fewer parts, more controllable traction system and longer shift life.	

INCREASED PRODUCTIVITY, INCREASED OPERATOR COMFORT



Large open floorboard area with diamond plated floor plates for enhanced footing

Floorboard area is cluttered with linkages, parking brake cable, and steer column



Standard Monotrol directional pedal shown



Hyster floorboard area layout and standard accelerator pedal options

Mitsubishi floorboard area layout

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Operator Compartment Floorboard Area	The Hyster operator compartment floorboard area is open and uncluttered. There are no uneven floor surfaces, no steer column, or cables and linkages to interfere with operator foot room and maneuverability.	The Mitsubishi operator compartment floorboard area is cluttered with steer the column shaft, parking brake cable, and brake fluid reservoir. The Mitsubishi floorboard area measures larger than Hyster; however, useable floorboard space is questionable.	 The wide open floorboard area of the J30-40XMT2 is ergonomically designed allowing the operator to get in the most comfortable productive position. The Monotrol pedal provides the means for hands-free directional changes allowing better maneuverability, and increased productivity potential.
Monotrol Accelerator Pedal	The Hyster Monotrol pedal is a unique pedal that features a combination of accelerator pedal and directional control mechanism all in one. The Monotrol pedal allows hands free directional changes for enhanced maneuverability and quicker directional changes.	The Mitsubishi Foot Directional Control pedal is a \$450.00 price book option. Unlike the Hyster "Monotrol Pedal" which is standard. The Hyster optional hand directional control is a no charge price book option.	

INCREASED OPERATOR COMFORT



Standard non-suspension vinyl seat



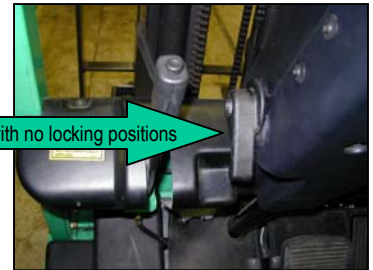
Tilt steering wheel with 5 locking positions

Hyster standard operator's seat and
Tilt steering column

Premium suspension cloth seat shown



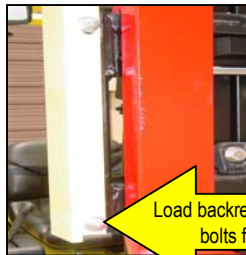
Tilt steering wheel with no locking positions



Mitsubishi tilt steering column
and operator's seat

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Operator Seat	The Hyster seat is available in either non-suspension or semi-suspension configurations and can be covered in vinyl or cloth. All seats are equipped with retractable seat belts, and hip restraints. The premium (semi-suspension) seat features adjustable lumbar support depending on individual operator physique.	The Mitsubishi operator seat is available in a 2 piece non-suspension or suspension seat (cloth only). The seat features a molded seat-back lip for support, retractable seat belts and a rubber coated hip restraints. There is, however, no adjustable lumbar support.	 Both trucks feature tilting steering columns to accommodate various size operators in achieving a comfortable position. The Hyster truck features a choice of seats and a choice of seat coverings. The Hyster premium seat provides adjustable lumbar support to accommodate individual physiques.
Tilt Steer Column	The Hyster tilt steer column features a hand activated release mechanism. The steer column pivots to five lockable positions to accommodate any size operator. The spring tension on the steer column provides smooth controllable tilt rotation.	The Mitsubishi tilt steering column features a hand activated release mechanism that by loosening allows the steer column to pivot and by tightening secures the steer column to desired position. The steer column pivots fully forward and rearward with no set locking positions.	

INCREASED PRODUCTIVITY, REDUCED MAINTENANCE COSTS

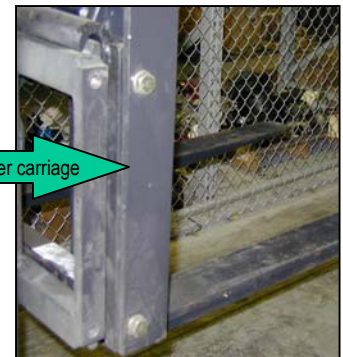


Load backrest design protects mounting bolts from being sheared off



Integral sideshifter carriage design provides exceptional visibility and reduces lost load thickness

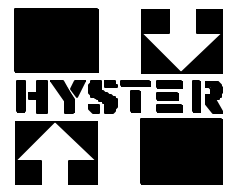
Typical hang / hook on sideshifter carriage



Hyster load backrest and integral sideshifter

Mitsubishi load backrest and hang-on sideshifter

FEATURE	HYSTER	MITSUBISHI	BENEFIT
Load Backrest	The Hyster load backrest (LBR) is designed to mount to the side of the mast carriage. The design of the LBR protects the mounting bolts to prevent shearing off.	The Mitsubishi LBR is also mounted to the side of the mast carriage. However, this design does not protect the mounting hardware from shearing off, contributing to truck down time and increased maintenance costs.	
Integral Sideshifter	The Hyster J30-40XMT₂ features an integral sideshift carriage. This design reduces lost load thickness which increases capacity loads and improves turning radius for enhanced maneuverability. This design also has fewer parts and improved serviceability as compared to hang-on sideshifters.	The Mitsubishi FB16KT features a hang-on sideshift. The hang-on type sideshifters have more wearable parts, increased load thickness for reduced capacity loads and reduced maneuverability capabilities as compared to integral sideshifters.	The Hyster integral sideshifter increases truck capacity and enhances maneuverability as compared to hang-on sideshifters for improved productivity levels. Quick, easy servicing combined with fewer wearable parts reduces maintenance costs and increases reliability.



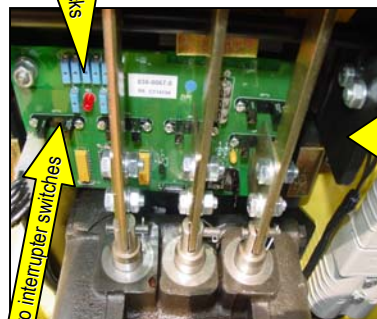
COMPETITIVE REVIEW



HYSTER J30-40XMT2 VS TOYOTA 5FBE

REDUCED MAINTENANCE COSTS

Test points for quick diagnostic checks



Opto interrupter switches

Hyster's printed circuit board controls hydraulic functions



Hyster Hydraulic Control Board



Micro switches control hydraulic function activation on the Toyota product



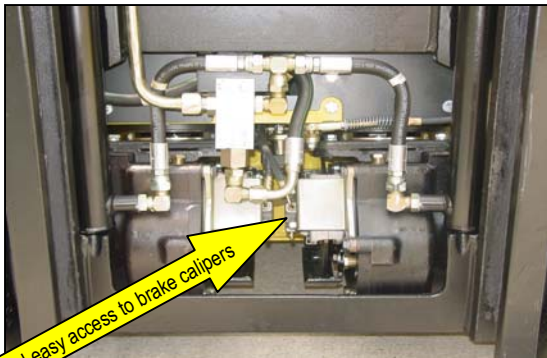
Toyota micro switches

FEATURE	HYSTER	TOYOTA	BENEFIT
Hydraulic Control Valve Arrangement	The Hyster hydraulic control valve is shock mounted to the front plate of the frame and is covered with two plastic covers. The upper and lower valve covers prevent dirt and other contaminants from making contact with the hydraulic circuit board and valve spools.	The Toyota hydraulic control valve is mounted to the frame under the floor plates. The cutout for the connecting linkages allows dirt and other contaminants to fall on the valve spools causing premature wear and component failure.	 The Hyster control valve features a state-of-the-art printed circuit board for reliable control of hydraulic functions. The control valve is covered with a two piece plastic cover for component protection.
Opto Sensor Switches	The Hyster hydraulic control valve functions are controlled electronically by opto sensor switches on the hydraulic circuit board. These light sensor switches have no wearable parts and require no adjustments.	The Toyota hydraulic control valve functions are controlled electrically by micro switches. Micro switches have more wearable parts and require additional adjustments.	

SERVICEABILITY

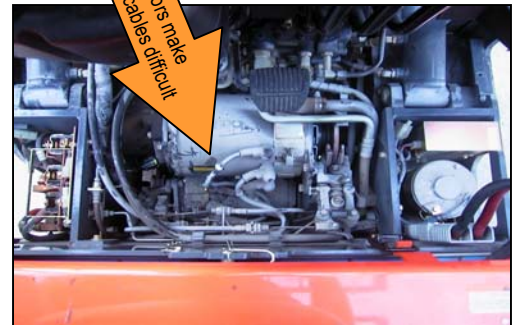


Vertically mounted drive motors and neatly routed power cables



Quick and easy access to brake calipers

Hyster Power Cables and Brake Discs



Horizontally mounted drive motors make accessing and identifying power cables difficult



Brake caliper access is poor

Toyota Power Cables and Brake Discs

FEATURE	HYSTER	TOYOTA	BENEFIT
Drive Unit Motor Power Cable Routing	The Hyster drive unit motor power cables are neatly routed and easily accessed and identified by removing the drop in floor plates (no tools required). Notice how clean and uncluttered the Hyster motor compartment is compared to the Toyota.	The Toyota drive motor power cables are accessed once the floor plates are removed (requires tools). Notice the power cables for the bottom drive motor are buried underneath the top motor and the parking brake linkages, making bottom motor power cables difficult to access and identify.	
Dual Disc Service and Parking Brake	The Hyster disc service and parking brake assemblies are mounted individually to each transaxle (drive unit) housing. Service access to the brake discs requires no cover removal or getting underneath the truck.	The Toyota disc service and parking brake assemblies are mounted to the drive motor shafts. Service access to the bottom drive motor brake disc is much more difficult than Hyster's, and can possibly require the technician to be underneath the truck.	Drive unit motor power cables are neatly routed, and easily identified and accessed. Disc brake access requires no tools, no cover or panel removal and does not require the technician to be underneath the truck.

ERGONOMICS / OPERATOR COMFORT



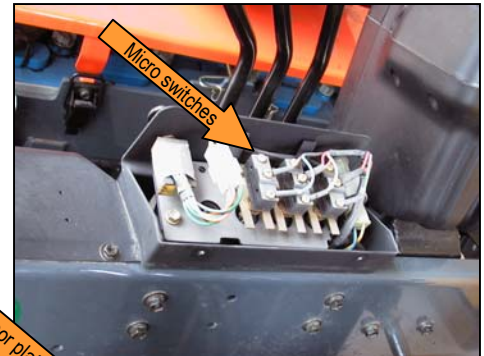
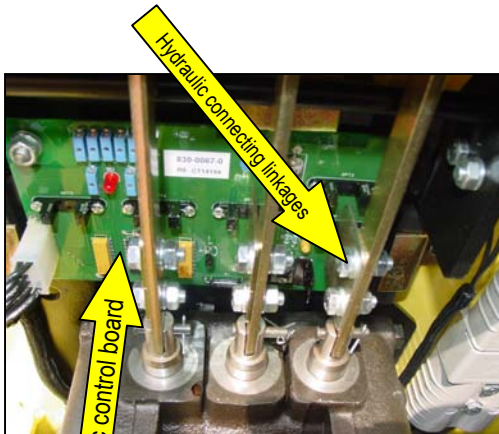
Hyster Control Valve Handles



Toyota Control Valve Handles

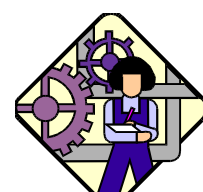
FEATURE	HYSTER	TOYOTA	BENEFIT
✓ Seat Side Hydraulics	The Hyster Control valve levers are located just to the right of the operator's seat for convenience and ease of use, requiring no reaching out or leaning over to activate control valve levers.	The Toyota control valve levers are cowl mounted and require reaching out and leaning over to activate control levers.	  Hyster Company's seat side hydraulics with ergonomically contoured and positioned rubber coated hand levers provide substantial ergonomic benefits resulting in reduced operator shoulder, arm and hand fatigue. These features contribute to increased operator comfort and a more productive operator.
✓ Soft touch, Sure Grip, Rubber Coated Hand Levers	The Hyster control valve levers are rubber coated with a soft touch, sure grip rubber coating for increased operator comfort and ease of use.	The Toyota control valve levers are not rubber coated. The hand levers have a textured hard rubber knob pressed on the end of the hand lever shaft.	
✓ Ergonomically Contoured and Positioned Hand Levers	The Hyster control valve hand levers are ergonomically contoured and positioned within the operator's "comfort zone".	The Toyota control valve hand levers are not ergonomically shaped and positioned. The Hand levers are the typical cowl mounted design and have questionable "operator comfort zone" placement.	

RELIABILITY



Hyster hydraulic control board and connecting linkages

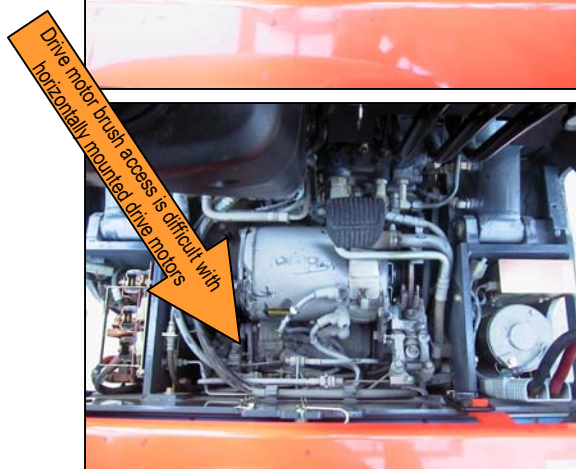
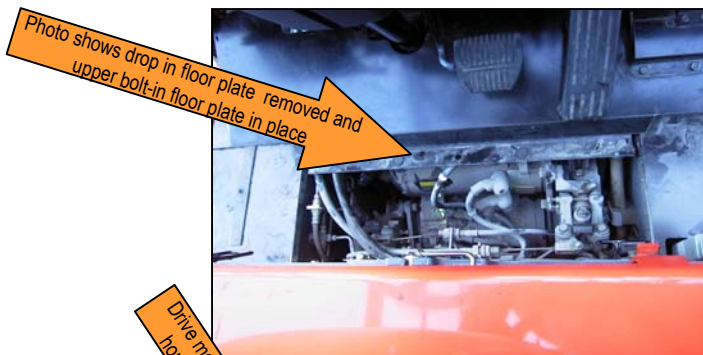
Toyota micro switches and connecting linkages

FEATURE	HYSTER	TOYOTA	BENEFIT
 Hydraulic Control Board	The Hyster designed control valve features a hydraulic control board (printed circuit board) to control hydraulic functions. The hydraulic control board features optical sensors that relay the control function signals electronically.	The Toyota designed control valve features micro switches which control the hydraulic functions. Micro switches relay control valve functions electrically. Micro switches wear quicker and require adjustments.	 The Hyster hydraulic control board is a solid state device using electrical sensors in lieu of micro switches to activate operator hydraulic inputs.
 Control Valve Connecting Linkages	With the Hyster control valve located on the front plate and protected with ABS plastic covers, the valve spools and connecting linkages are less susceptible to physical damage and exposure to contaminants.	With the Toyota control valve mounted under the floor plates, the exposed connecting linkages are susceptible to physical damage by work boots. The floor plate cutout permits contaminants to gather on the valve spools.	The valve spools and connecting linkages are protected with covers and are located to protect against physical damage.

REDUCED MAINTENANCE COSTS



Hyster drop in floor plates and drive unit motor brush access



Toyota bolted upper floor plate and drive unit motor brush access

FEATURE	HYSTER	TOYOTA	BENEFIT
Drop In Floor Plates	The Hyster two piece drop in floor plate requires no tools for removal or installation; simply lift up and pull out one side at the time. Additionally, there are no switches to disconnect.	The Toyota two-piece floor plate requires tools for removal and installation. Once the lower floor plate is removed, the upper floor plate must be unbolted and the accelerator switch disconnected before being removed.	 The Hyster two-piece drop in floor plates require no disconnecting of switches or the need for any tools, which saves time. Drive motor brush access is easier and quicker on the Hyster product, reducing maintenance costs.
Drive Unit Motor Brush Access	Drive motor inspection access on the J30-40XMT ₂ is easily accessed by simply removing the two drop in floor plates. The motors are vertically mounted. Brush access cutouts are provided in the frame and cowl assembly further simplifying this job.	Drive motor brush inspection access on the 5FBE requires the truck be up on blocks or over a pit. The drive motors can not be serviced without both floor plates being removed (upper floor plate bolted in) and the technician being under the truck. Truck down time is extensive as compared to the Hyster product.	

SERVICEABILITY

With drop in floor plates removed complete motor access is achieved



Hyster power steering and hoist motor access with floor plates removed

There is not a single motor on the 5BE truck that can be accessed without unbolting some kind of cover



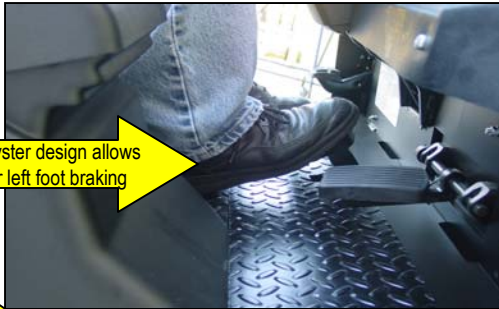
Toyota power steering and hoist motor access (floor plates not shown)



FEATURE	HYSTER	TOYOTA	BENEFIT
Power Steering Motor Access	Hyster power steering motor access consists of removing the drop in floor plates. Once the floor plates are removed, access to the power steering motor is achieved.	Toyota power steering motor access is a four step process: 1) Remove the floor plates (requires one size wrench, two screws), (2) Remove the upper side cover (another two screws), (3) Remove access cover (drop in), (4) Remove lower side cover (another two screws).	 The Hyster motor compartment layout design allows power steering motor and hoist motor access by simply removing the drop in floor plates.
Hoist Motor Access	Hyster hoist motor access consists of removing the drop in floor plates. Once the floor plates are removed, access to the hoist motor is achieved.	Toyota hoist motor access consists of raising the battery compartment cover, removing the hoist motor access shield which requires the removal of two bolts.	Serviceability to the motor compartment is quicker and easier on the Hyster product.

ERGONOMICS / OPERATOR COMFORT

INCREASED PRODUCTIVITY



Innovative Hyster design allows right foot or left foot braking

Ergonomically positioned foot controls (Optional accelerator shown).



Hyster service brake and accelerator pedal



Crude angles and high pedal heights increase operator fatigue



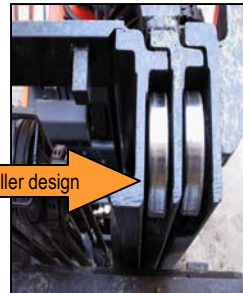
Toyota service brake and accelerator pedal

FEATURE	HYSTER	TOYOTA	BENEFIT
Service Brake Pedal	The Hyster service brake pedal is ergonomically shaped and positioned (approximate 43° angle) allowing the use of either the left or right foot for braking; depending on which the operator finds most comfortable. Low pedal height (3.25" off floorplate) provides low effort activation.	The Toyota service brake pedal lacks ergonomic consideration. The brake pedal is over six inches off the floor plate and is at an approximate 70° angle. With the pedal and floorboard layout, left foot brake activation is not a practical option.	  Hyster's ergonomic approach to pedal shape and positioning reduces the use of the large leg muscle groups and provides the operator with a choice between left foot and right foot braking; both of which enhance operator comfort and contribute to increased productivity levels.
Accelerator Pedal	The Hyster accelerator pedal is also ergonomically shaped and positioned (approximate 18° angle and only 2.5" off the floor plate) to require low effort activation. This design also enables the ability to pivot the left foot about the floor plate and activate brake pedal without the use of large leg muscle groups.	The Toyota accelerator pedal also lacks ergonomic shape and positioning. The accelerator pedal is over three inches off the floor plate and at an approximate 42° angle. Neither this pedal nor the brake pedal are comfortable and both require the use of large leg muscle groups.	

RELIABILITY



Canted load roller design



Straight load roller design



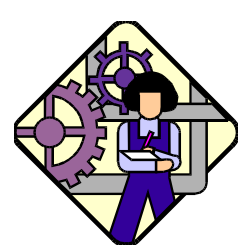
Premium cast cross-members provide exceptional strength with minimal welding on mast channels

Toyota uses cast cross-members and fabricated braces to support the mast assembly. This design requires more welding on mast channels



Hyster Vista mast

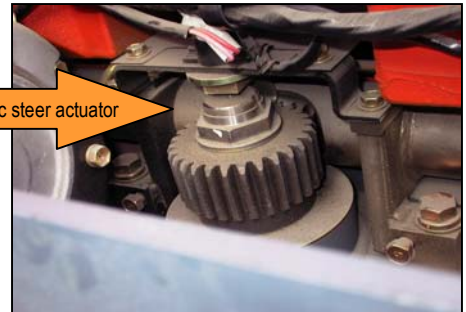
Toyota mast

FEATURE	HYSTER	TOYOTA	BENEFIT
Canted Load Roller Bearings	The VISTA mast features canted load roller bearings allowing full face contact with the inner mast channel. Loading is evenly distributed on the roller bearing over a greater area which contributes to increased bearing and mast channel life.	The Toyota mast features straight load roller bearings which are shimmed to slide against the extrusions that are formed into the channels for side thrust support. This sliding effect has a tendency to mill the extrusion - especially with off-center loads.	 The Vista mast features canted load roller bearings. Cast steel wrap around cross members provide precision construction and maximum strength for enhanced reliability. Minimal structural support welding is required as well, reducing heat weakening of the mast channels.
Cast Steel Cross Members	The Vista mast structural support features wrap around cast steel cross members for maximum strength and precise channel alignment. The placement of the cross members are located on the mast channels in such a way requiring minimal welding for maximum strength.	The Toyota mast structural support features wrap around cast metal cross members along with fabricated brackets to provide required support. However, the additional brackets and castings require much more welding. Extensive welding on the mast channels can cause heat weakening of the metal.	

INCREASED PRODUCTIVITY / INCREASED OPERATOR COMFORT



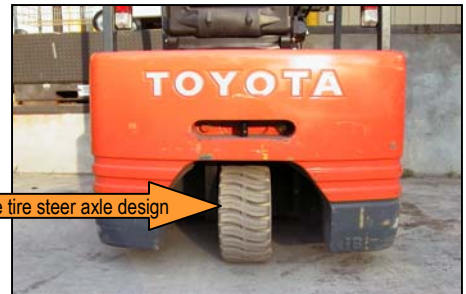
Totally enclosed hydrostatic steer actuator



Open gear mesh Enclosed hydrostatic steer actuator



Twin steer wheel axle design



Single tire steer axle design

Hyster steering actuator and twin steer tires

Toyota steer actuator and single steer tire

FEATURE	HYSTER	TOYOTA	BENEFIT
Hydrostatic Power Steering	The hydrostatic power steering system features an enclosed rack and pinion steer actuator, and is designed to give precise and reliable control. Hydrostatic steering systems replace mechanical linkages and connections with hydraulic lines for a more precise steer response with fewer parts and fewer adjustments.	The hydrostatic power steering system features a semi-enclosed rack and pinion steer actuator with an external driven gear. The exposed steer gear and open steer actuator has the potential for contaminants to enter the actuator leading to expensive repairs and down time.	 Hydrostatic power steering provides smooth and precise steer response for quick, confident load handling. The twin steer wheels provide a smoother ride and stable feel, especially when turning, enhancing maneuverability for a more productive operator.
Twin Steer Tires	The twin steer tires widens the rear portion of the stability triangle providing a more stable feel when turning. Twin wheel steering provides a smooth ride by having more rubber to absorb shock loads from uneven floor surfaces or dock plates.	The Toyota features a single tire drive axle which does not provide the stabilized feel of the twin steer axle, especially when turning. The single tire axle has a rougher ride than twin steer axles. Single tire drive axles also have more tire wear than twin tire axles.	

INCREASED PRODUCTIVITY

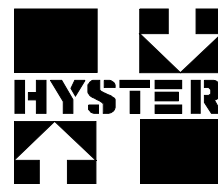


Hyster GE GEN III Transistor Controllers



Toyota Electrical system (floor plate already removed and not shown in above picture)

FEATURE	HYSTER	TOYOTA	BENEFIT
GE GEN III Transistor Controllers	The J30-40XMT ₂ traction system features GE GEN III Transistor Controls. This technically advanced traction system provides the highest efficiency of battery energy, real time diagnostics (reduced downtime / increased up time) and provides smooth / controllable directional changes.	The older technology used in the Toyota 5FBE electrical system features series wound drive motors and directional contactors. This electrical system has more serviceable parts and is less energy efficient. The Micro-processor used is a Toyota design which reflects proprietary parts expense.	 The SEM and GEN III controls combine to provide a high level of productivity by electronically controlling field weakening and providing the highest level of battery energy efficiency for a more productive work cycle. The transistor controls have no serviceable parts resulting in less down-time and more up-time for higher productivity levels.
SEM (Separately Excited Motor) Technology	The J30-40XMT ₂ traction control system features SEM Technology. Separately excited motor technology provides built in regenerative braking, and electronic field control (field weakening) resulting in fewer parts, more controllable traction system and longer shift life.	The Toyota 5FBE does not feature the SEM (separately excited motor) traction system. The 5FBE uses an older technology consisting of series wound motors and contactors which require frequent adjustments and is far less efficient.	

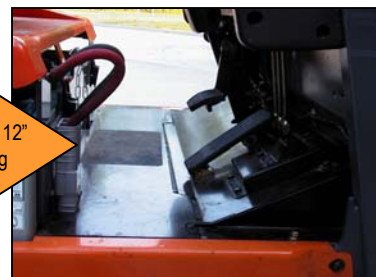


INCREASED PRODUCTIVITY / INCREASED OPERATOR COMFORT



Large open floor plates with diamond plated floor plates for enhanced footing

Large floorboard area. Only a 8" x 12" non-slip adhesive mat for footing



Standard Monotrol directional pedal shown



Hyster floorboard area layout and standard accelerator pedal options

Toyota floorboard area layout

FEATURE	HYSTER	TOYOTA	BENEFIT
Operator Compartment Floorboard Area	The Hyster operator compartment floorboard area is open and uncluttered. There are no uneven floor surfaces, no steer column, or cables and linkages to interfere with operator foot room and maneuverability. The floor plate is made of a diamond plate metal for quick, sure footing when entering or exiting the truck.	The 5FBE features a large open floor board area. There are no uneven floor surface areas or cables to contend with. However, there is only a 8" x 12" non-slip adhesive grid paper in the center of the floor plate. It's location questions the effectiveness aiding the operator when entering and exiting the truck. Freezer or wet applications worsens the situation.	 The wide open floorboard area of the J30-40XMT2 is ergonomically designed allowing the operator to get in the most comfortable productive position. The Monotrol pedal provides the means for hands free directional changes allowing better maneuverability and quicker directional changes, increasing productivity. Diamond plated floor plates provide quick, sure footing when entering or exiting the operator compartment.
Monotrol Accelerator Pedal	The Hyster Monotrol pedal is a unique pedal that features a combination of accelerator pedal and directional control mechanism all in one. The Monotrol pedal allows hands free directional changes for enhanced maneuverability and quicker directional changes.	The Toyota EZ directional control pedal is a \$240.00 price book option. Unlike the Hyster "Monotrol" pedal which is standard. The Hyster optional hand directional control is a no charge price book option.	

INCREASED OPERATOR COMFORT



Standard non-suspension vinyl seat



Tilt steering wheel with 5 locking positions

Hyster operator's seat and tilt steering column



Typical Toyota wing back vinyl seat

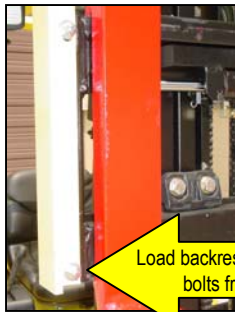


Tilt steering wheel with no locking positions

Toyota operator's seat and tilt steering column

FEATURE	HYSTER	TOYOTA	BENEFIT
Operator Seat	The Hyster seat is available in either non-suspension or semi-suspension configurations and can be covered in vinyl or cloth. All seats are equipped with retractable seat belts, and hip restraints. The premium (semi-suspension) seat features adjustable lumbar support.	The Toyota operator seat is a wing-back design. These seats are not equipped with hip restraints. The wing back type seat reduces shoulder rotation hampering reverse driving. The seats are equipped with adjustable lumbar support and are offered in a non-suspension and semi-suspension design.	 Both trucks feature tilting steering columns to accommodate various size operators in achieving a comfortable position. The Hyster truck features a choice of seats and a choice of seat coverings. The Hyster seats are equipped with hip restraints for comfort and protection.
Tilt Steer Column	The Hyster tilt steer column features a hand activated release mechanism. The steer column pivots to five lockable positions to accommodate any size operator. The spring tension on the steer column provides smooth controllable tilt rotation.	The Toyota tilt steering column features a hand activated release mechanism that by loosening allows the steer column to pivot and by tightening secures the steer column to desired position. The steer column pivots fully forward and rearward with no set locking positions.	

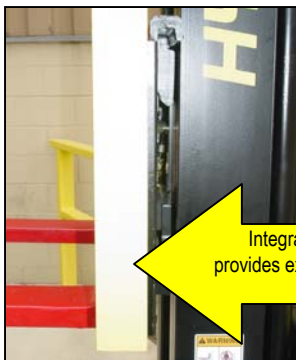
INCREASED PRODUCTIVITY / REDUCED MAINTENANCE COSTS



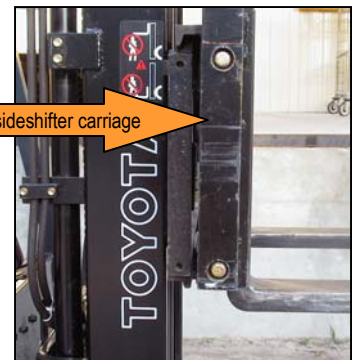
Load backrest design protects mounting bolts from being sheared off



Load backrest mounting bolts are countersunk to prevent shearing off



Integral sideshift carriage design provides exceptional visibility and reduces lost load thickness



Typical hang / hook on sideshift carriage

Hyster load backrest and integral sideshifter

Toyota load backrest and hang-on sideshifter

FEATURE	HYSTER	TOYOTA	BENEFIT
Load Backrest	The Hyster load backrest (LBR) is designed to mount to the side of the mast carriage. The design of the LBR protects the mounting bolts to prevent them from being sheared off.	The Toyota LBR is also mounted to the side of the mast carriage. With the counterbored LBR carriage, the mounting bolts are protected from being sheared off.	
Integral Sideshifter	The Hyster J30-40XMT₂ features an integral sideshift carriage. This design reduces lost load thickness which increases capacity loads and improves turning radius for enhanced maneuverability. This design also has fewer parts and improved serviceability as compared to hang-on sideshifters.	The Toyota 5FBE features a hang-on sideshift. The hang-on type sideshifters have more wearable parts, increased load thickness for reduced capacity loads and reduced maneuverability capabilities as compared to integral sideshifters.	The Hyster integral sideshifter increases truck capacity and enhances maneuverability as compared to hang-on sideshifters for improved productivity levels. Quick, easy servicing combined with fewer wearable parts reduces maintenance costs and increases reliability.

Original Files

Competitive Review Cover Page (WORD)