

KEY SPECIFICATION COMPARISON

The following section compares critical truck specifications between major lift truck manufactures around the world. The specifications compared are features that are a part of the standard truck configurations among all manufacturers. Some of the Key Specifications compared are listed below:

General Information: Wheelbase, Fork size and spread,
Load and Steer wheel sizes, Capacity

Power: 24 volt / 36 volt electrical system

Performance Data: Maximum Fork Height (MFH) with rated
capacity, Traction Speeds – Loaded and
Unloaded, Gradeability, Turning Radius

Mast Assembly: Maximum Fork Height, Over All Height (OAH)

3000# PREMIUM COUNTERBALANCED ORDERPICKER COMPETITIVE SPECIFICATION

TECHNICAL SPECIFICATIONS				
Manufacturer		HYSTER	CATERPILLAR	CROWN
Model		R30XM2	NOR30P	SP 3020-30
Capacity	lb. (kg)	3000 (1 360)	3,000 (1 360)	3,000 (1 360)
DIMENSIONS:				
Load center	in. (mm)	24 (610)	24 (610)	24 (610)
Operator type	in. (mm)	Stand	Stand	Stand
Voltage		24	24	24
Tire type	load/drive	Poly / Poly	Poly / Poly	Poly / Poly
Wheels, front/rear	(X = drive)	4 / 1X	4 / 1X	4 / 1X
3-Stage mast (MFH)	in. (mm)	240.0 (6 096)	240.0 (6 100)	240.0 (6 096)
Height, standard mast lowered	in. (mm)	105.0 (2 667)	147.0 (3 730)	107.0 (2 718)
Height, standard mast extended	in. (mm)	326.0 (8 280)	326.0 (8 280)	328.0 (8 331)
Forks, L x W x T	in. (mm)	42 (1 067) / 4 (102) / 1.8 (44)	42 (1 067) / 4 (102) / 1.5 (38)	36 (914) x 4 (102) x 2 (51)
Fork spread, outside-to-outside (min/max)	in. (mm)	21.0 (533) / 28.0 (711)	24.0 (610) / 28.0 (710)	24.0 (610) / 28.0 (711)
Platform Height	in. (mm)	89.4 (2270)	80.5 (2045)	87.0 (2210)
Headlength to face of forks, 3-stage	in. (mm)	75.3 (1 913)	72.0 (1 830)	75.6 (1 920)
Base width	in. (mm)	41.3 (1 049) / 48.0 (1 219)	40.0 (1 015)	42.0 (1 067)
Operator platform width	in. (mm)	41.0 (1041)	39.0 (990)	42.0 (1 067)
Turning radius, minimum outside	in. (mm)	67.0 (1 720)	72.0 (1 830)	68.0 (1 727)
PERFORMANCE:				
Travel speed , standard truck, NL/RL	mph	6.0 / 5.5	6.1 / 6.0	6.0 / 5.3
Lift speed, 3-stage FFL mast NL/RL	ft/min	65.0 / 46.0	58.0 / 36.0	71.0 / 43.0
Lowering, 3-stage FFL mast NL/RL	ft/min	68.0 / 68.0	69.0 / 80.0	80.0 / 75.0
WEIGHT:				
Weight, total approx. without battery	lb. (kg)	4,850 (2 204)	Information Not Available	6,072 (2 760)

TECHNICAL SPECIFICATIONS				
Manufacturer		HYSTER	CATERPILLAR	CROWN
Model		R30XM2	NOR30P	SP 3020-30
Capacity	lb. (kg)	3000 (1 360)	3,000 (1 360)	3,000 (1 360)
WHEELS & TIRES:				
Front load wheel size (tandem articulated)	in. (mm)	5.0 (127) x 3.0 (76)	6.0 (152) x 3.6 (92)	2.8 (71) x 6.0 (152)
Drive tire/steer tire size	in. (mm)	12.0 (305) x 5.5 (140)	12.0 (305) x 5.0 (127)	13.0 (330) x 5.5 (140)
Wheelbase	in. (mm)	57.0 (1 449)	60.0 (1 525)	51.0 (1 295)
Ground clearance, no load, ctr whlbase	in. (mm)	2.0 (51)	2.0 (51)	2.0 (51)
Brakes, method of control, service/pkg	in. (mm)	Spring Applied / Electric Release	Spring Applied / Hydraulic Release	Spring Applied / Electric Release
Brakes, method of operation, service/parking	in. (mm)	Foot	Foot	Foot
BATTERY:				
Battery type		Lead-acid	Lead-acid	Lead-acid
Battery - ampere hours (max)	AH	1125	Information Not Available	1085
Battery minimum weight, min/max	lb. (kg)	1600 (726) / 2000 (907)	1600 (730) / 2000 (907)	1,520 (690) / Max. not listed
Battery compartment	in. (mm)	39 x 14.6 x 31.5	36.75 x 14.50 x 30.88	36.25 x 14.25 x 31
STANDARD FEATURES:				
Electric power steering		Standard	Standard	Standard
Steering type		Return-to-Center steering	Multi-turn steering	Multi-turn steering
Lift speeds		Variable	Variable	Two-speed
Mast guard		VISTA™ wire mesh screen	Wire mesh screen	Glass windshield
Lights & fans		Standard	Standard	Optional
Battery state of charge w/lift interrupt		Standard	Standard	Standard
Motor control		Transistor	Transistor	GE EVT-100 FL transistor
CANbus technology		Standard	Information Not Available	Not Offered
Continuous height sensing		Standard	Optional	Not Offered
New Wire Guidance System for 6.25 or 5.25 kHz frequencies		Optional	Optional	Optional
Upgradeable from 24V to 36V		Optional	Optional	Not Offered

TECHNICAL SPECIFICATIONS					
Manufacturer		HYSTER	RAYMOND	TOYOTA	YALE
Model		R30XM2	EASI OPC30TT	6BPU15	OS 030BE
Capacity	lb. (kg)	3000 (1 360)	3000 (1 360)	3000 (1 360)	3,000 (1 360)
DIMENSIONS:					
Load center	in. (mm)	24 (610)	24 (610)	24 (610)	24 (610)
Operator type	in. (mm)	Stand	Stand	Stand	Stand
Voltage		24	24	24	24
Tire type	load/drive	Poly / Poly	Poly / Poly	Poly / Poly	Poly / Poly
Wheels, front/rear	(X = drive)	4 / 1X	4 / 1X	4 / 1X	4 / 1X
3-Stage mast (MFH)	in. (mm)	240.0 (6 096)	240.0 (6 096)	204 (5 182)	240.0 (6 096)
Height, standard mast lowered	in. (mm)	105.0 (2 667)	107.0 (2 718)	95 (2 413)	105.0 (2 667)
Height, standard mast extended	in. (mm)	326.0 (8 280)	325.0 (8 255)	289 (7 340)	326.0 (8 280)
Forks, L x W x T	in. (mm)	42 (1 067) x 4 (102) x1.8 (44)	42 (1 067) / 4 (102) / 1.5 (38)	42 (1 067) / 4 (102) / 1.5 (38)	42 (1 067) x 4 (102) x1.75 (44)
Fork spread, outside-to-outside (min/max)	in. (mm)	21.0 (553) / 28.0 (711)	24.0 (610) / 28.0 (711)	24.0 (610) / 28.0 (711)	21.0 (553) / 28.0 (711)
Platform Height	in. (mm)	89.4 (2270)	78.5 (1 994)	78.5 (1 994)	89.4 (2270)
Headlength to face of forks, 3-stage	in. (mm)	75.3 (1 913)	74 (1880)	73.0 (1 854)	74.0 (1 880)
Base width	in. (mm)	41.3 (1 049) / 48.0 (1 219)	40.0 (1 016)	40.0 (1 016)	40.75 (1 035) / 48.25 (1 225)
Operator platform width	in. (mm)	41.0 (1041)	39.0 (991)	39.0 (991)	41.0 (1 041)
Turning radius, minimum outside	in. (mm)	67.7 (1 720)	72.0 (1 829)	72.0 (1 829)	67.70 (1 720)
PERFORMANCE:					
Travel speed , standard truck, NL/RL	mph	6.0 / 5.5	5.5 / 5.5	5.7 / 5.5	6.0 / 5.5
Lift speed, 3-stage FFL mast NL/RL	ft/min	65.0 / 46.0	45.0 / 33.0	56.0 / 36.0	65.0 / 46.0
Lowering,3-stage FFL mast NL/RL	ft/min	68.0 / 68.0	40.0 / 40.0	70.0 / 80.0	68.0 / 68.0
WEIGHT:					
Weight, total approx. without battery	lb. (kg)	4,850 (2 204)	5350 (2 427)	Information Not Available	4850 (2 204)

TECHNICAL SPECIFICATIONS				
Manufacturer	HYSTER	RAYMOND	TOYOTA	YALE
Model	R30XM2	EASI OPC30TT	6BPU15	OS 030BE
Capacity lb. (kg)	3000 (1 360)	3000 (1 360)	3000 (1 360)	3,000 (1 360)
WHEELS & TIRES:				
Front load wheel size (tandem articulated) in. (mm)	5.0 (127) x 3.0 (76)	6.0 (152) x 3.625 (92)	6.0 (152) x 3.625 (92)	5.0 (127) x 3.0 (76)
Drive tire/steer tire size in. (mm)	12.0 (305) x 5.5 (140)	12.0 (305) x 5.0 (127)	12.0 (305) x 5.0 (127)	12.0 (305) x 5.5 (140)
Wheelbase in. (mm)	57.0 (1 449)	60.0 (1 524)	60.0 (1 524)	57.0 (1 449)
Ground clearance, no load, ctr whlbase in. (mm)	2.0 (51)	2.0 (51)	2.0 (51)	2.0 (51)
Brakes, method of control, service/pkg in. (mm)	Spring Applied / Electric Release	Spring Applied / Electric Release	Spring Applied / Hydraulic Release	Spring Applied / Electric Release
Brakes, method of operation, service/parking in. (mm)	Foot	Foot	Foot	Foot
BATTERY:				
Battery type	Lead-acid	Lead-acid	Lead-acid	Lead-acid
Battery - ampere hours (max) AH	1125	1085	1085	1125
Battery minimum weight, min/max lb. (kg)	1600 (726) / 2000 (907)	920 (418) / 2000 (907)	920 (418) / 2000 (907)	1600 (726) /
Battery compartment in. (mm)	35.4 x 14.6 x 30.8	31.0 x 13.0 x 30.88*	36.75 x 14.5 x 32.25	38.8 x 14.35 x 30.8
STANDARD FEATURES:				
Electric power steering	Standard	Standard	Standard	Standard
Steering type	Return-to-Center steering	Multi-turn steering	Multi-turn steering	Multi-turn steering
Lift speeds	Variable	Variable	Variable	Variable
Mast guard	Wire mesh screen	Wire mesh screen	Wire mesh screen	Safety glass windshield
Lights & fans	Standard	Optional	Optional	Standard
Battery state of charge w/lift interrupt	Standard	Standard	Standard	Standard
Motor control	Transistor	Transistor	Transistor	Transistor
CANbus technology	Standard	Standard (Proprietary)	Information Not Available	Standard
Continuous height sensing	Standard	Optional	Information Not Available	Standard
New Wire Guidance System for 6.25 or 5.25 kHz frequencies	Optional	Optional	Optional	Optional
Upgradeable from 24V to 36V	Optional	Optional	Information Not Available	Optional

*Max. size without Hi-Pro option

Competitive Review

A Comparison of the Hyster R30XM₂ vs. The Competition

This section compares the Hyster R30XM₂ to the competition. It will evaluate competitive models on the following product attributes:

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

Photographs of the Hyster R30XM₂ 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 R30XM₂ 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	

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



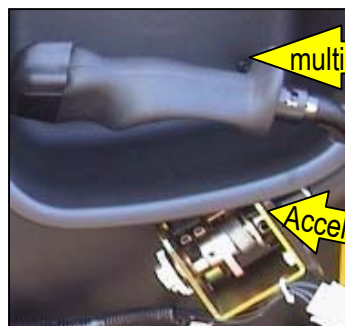
HYSTER R30XM₂

VS



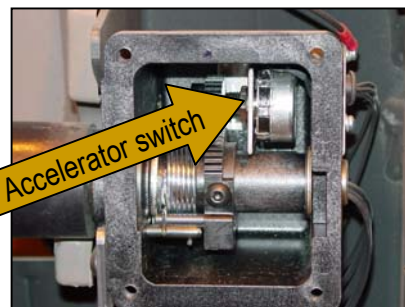
CROWN SP3020-30

REDUCED MAINTENANCE COSTS, RELIABILITY

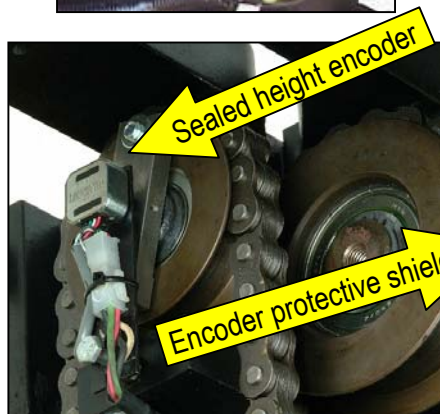


multi-function control handle

Accelerator switch



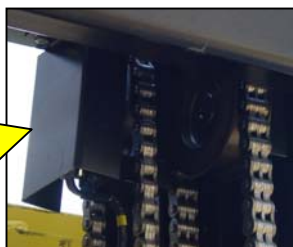
Accelerator switch



Sealed height encoder

Encoder protective shield

Protective encoder shield

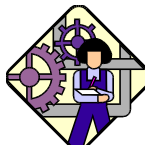


Mechanical height switches

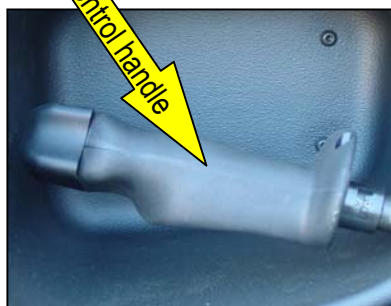


Hyster accelerator switch and Hyster mast height encoder

Crown accelerator switch and Crown height sensing switches

FEATURE	HYSTER	CROWN	BENEFIT
Accelerator Switch	The accelerator switch used on the R30XM ₂ is a Hall effect sensor. Hall effect sensors are sealed to protect against moisture and other contaminants. Hall effect sensors have no wearable electrical parts and require no adjustments, which make them very reliable.	The Crown SP3020-30 features a potentiometer that is used as the accelerator switch. Potentiometers require adjustments, are less reliable and are prone to wear and contamination from moisture and vibration.	  The state-of-the art electrical devices used on the Hyster R30XM₂ are more reliable and require less maintenance and service requirements compared to the Crown SP3020-30 order picker.
Height Sensing	The Height encoder found on the Hyster R30XM ₂ monitors the operator platform height by counting the number of mast chain pulley rotations, which is a direct relationship to platform height. The height encoder requires no adjustments.	The Crown SP3020-30 order picker features mechanical switches that control platform height. As compared to the height encoder, mechanical switches have more wearable parts, require more adjustments and are more susceptible to physical damage than the height encoder.	

OPERATOR COMFORT / INCREASED PRODUCTIVITY



multi-function control handle



Twist grip type control handle



Adjustable console push button



Hyster multi-function control handle and adjustable console



No adjustable console

Crown accelerator handle. Crown does not offer an adjustable console

FEATURE	HYSTER	CROWN	BENEFIT
Multi-function Control Handle	The multi-function control handle found on the R30XM ₂ has a palm rest and is scalloped at the bottom of the handle for hand comfort and positioning. The handle also pivots to allow three different angled positions depending on operator preference.	The Crown does not feature a multi-function control handle. The twist grip accelerator is uncomfortable and requires more effort to activate, contributing to wrist and hand fatigue. The accelerator grip is fixed and is non-adjustable.	
Adjustable Console	The R30XM ₂ order picker features an optional adjustable console that has a full six inches of vertical travel. The adjustable console is an industry first, and is unique in that it allows a comfortable operator stance for various sizes of operators.	The Crown SP3020-30 does not offer an adjustable console.	Innovative designs such as the adjustable console and the adjustable multi-function control handle reduce operator fatigue, enhance operator comfort while contributing to higher productivity levels.

SERVICEABILITY, REDUCED MAINTENANCE COSTS



Hyster's 3-phase brushless steer motor

Motor compartment access with doors open and top cover raised



Motor compartment access with cover removed and doors open



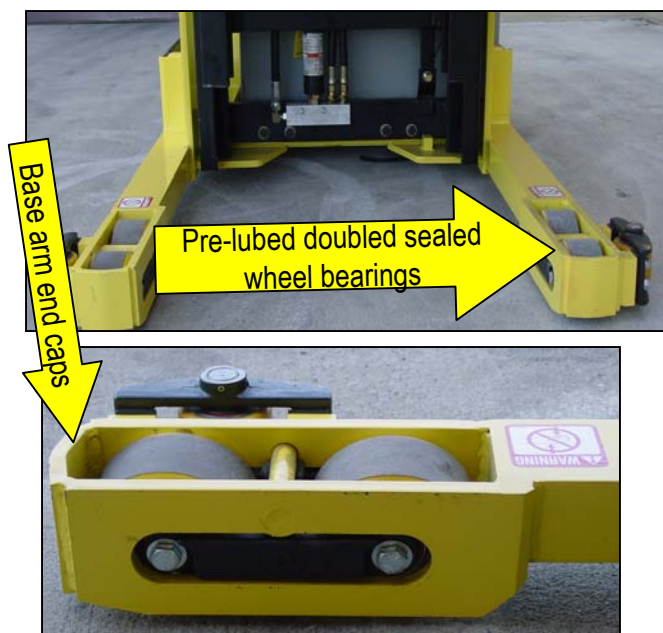
Power steering motor requires brush maintenance

Hyster motor compartment access and brushless power steering motor

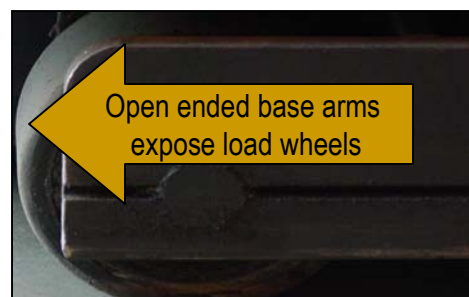
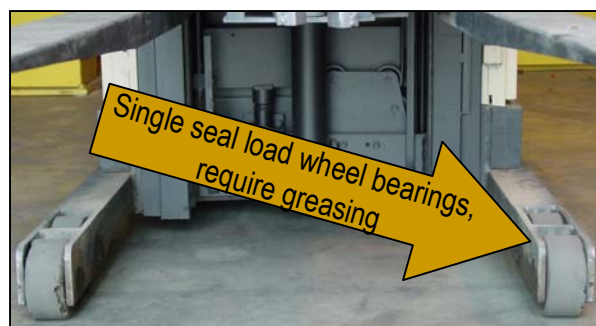
Crown motor compartment access and power steering motor

FEATURE	HYSTER	CROWN	BENEFIT
Motor Compartment Access	The Hyster R30XM ₂ motor compartment is accessed by simply removing two thumb screws (no tools required). The metal hinged doors swing open to provide adequate access to all motors. The motor compartment top cover lifts off and is easily removed by loosening 4 spring-loaded quarter-turn fasteners.	The Crown SP3020-30 motor compartment is accessed by removing two screws (tools required). Two hinged doors swing open and provide adequate access to all motors. The top cover of the motor compartment lifts up and down easily providing good access to the battery.	 The Hyster dual hinged metal doors provide protection with quick and easy access to the motor compartment. The Hyster order pickers feature a 3 phase brushless steer motor, which enhances reliability and reduces maintenance costs.
Steer Motor	The steer motor found on the Hyster R30XM ₂ is a three-phase brushless design. Being a brushless motor, there is no service or maintenance requirements. The gearbox is integral to the motor itself for improved durability.	The steer motor found on the Crown SP3020-30 order picker is a standard DC motor. This is not a brushless motor and requires servicing and periodic brush adjustments and replacement.	

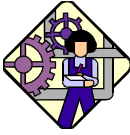
REDUCED MAINTENANCE COSTS, RELIABILITY



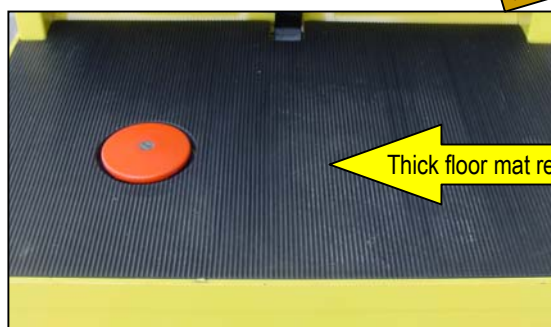
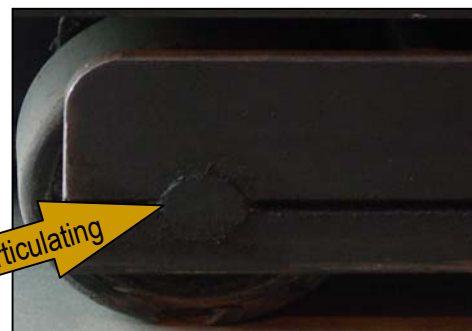
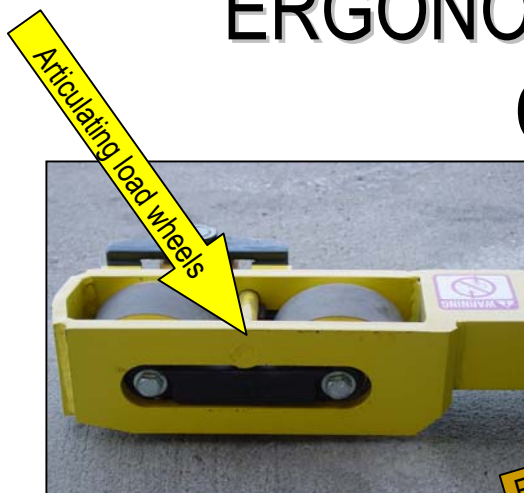
Hyster load wheels and base arm end caps



Crown load wheels and base arm end caps

FEATURE	HYSTER	CROWN	BENEFIT
Load Wheel Bearings	The load wheel bearings used on the Hyster R30XM ₂ are a pre-lubed double sealed bearing. Pre-lubed double sealed bearings are greased when manufactured and sealed to keep lubricants in and contamination out. Basically a maintenance free wheel bearing.	The Crown SP3020-30 does not utilize pre-lubed double sealed wheel bearings. The load wheels must be greased during maintenance PM's (preventative maintenance) checks. Non sealed bearings are much more susceptible to contamination.	  The R30XM₂ order picker with double sealed, pre lubricated wheel bearings eliminate bearing greasing and protect the wheel bearings from moisture, dirt and other contamination. The protective load wheel end-caps protect the load wheels from physical damage. These innovative designs reduce maintenance costs and improve reliability.
Load Wheel Endcaps	The Hyster order picker basearms feature protective load wheel end-caps. The end-caps help protect the load wheels from damage.	The Crown SP3020-30 basearms do not feature load wheel end-caps. Without the end-caps, the load wheels are left exposed and are prone to damage, especially with the platform raised.	

ERGONOMICS / OPERATOR COMFORT

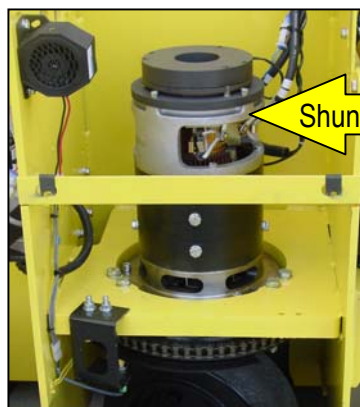


Hyster articulating load wheel and anti-slip floor mat

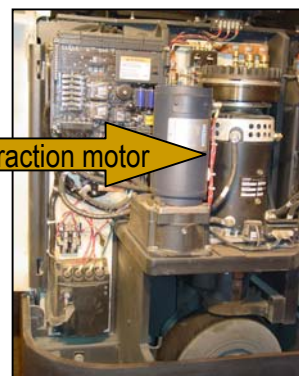
Crown fixed load wheel and anti-slip floor mat

FEATURE	HYSTER	CROWN	BENEFIT
Articulating Load Wheels	The Hyster R30XM ₂ features articulating load wheels. Articulating load wheels provide a smoother ride than typical fixed mounted load wheels, especially on uneven or rough floor surfaces and expansion joints.	The Crown SP3020-30 does not offer articulating load wheels. The fixed load wheel design found on the SP3020-30 does not "float" like the articulating load wheel design; resulting in a rougher ride.	
Operator Compartment Floor mat	The Hyster R30XM ₂ operator compartment features a full 1 inch thick rubber floor mat. This thick rubber cushioned floor mat has a ribbed texture to not only provide a cushioning effect but also acts as an anti-slip mat.	The Crown SP 3020-30 features a .750 thick rubber floor mat. The floor mat is textured like the Hyster floor mat to provide a cushioning effect and act as an anti-slip mat. However, the Hyster floor mat provides .250 inches more cushion than the Crown floor mat.	

REDUCED MAINTENANCE COSTS



Shunt Wound traction motor



Series Wound traction motor

Large number of Platform to chassis interface cables



Hyster traction motor and MCU
(Master Control Unit)



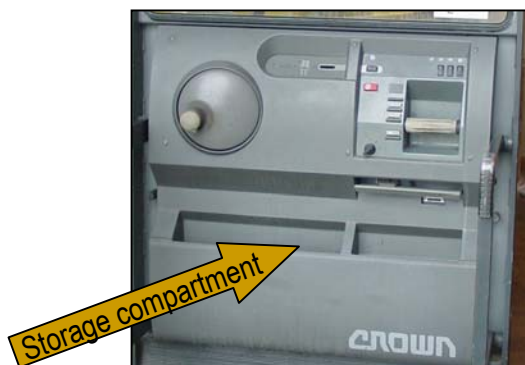
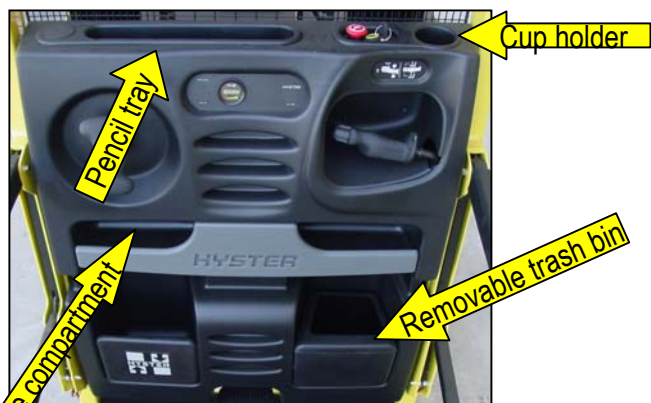
CANbus system simplifies
the electrical system A single
8 conductor wire only



Crown control system and traction motor.
Crown chassis to platform cabling

FEATURE	HYSTER	CROWN	BENEFIT
SEM Traction Motor	The R30XM ₂ features SEM (Separately Excited Motor) technology. The SEM traction system provides regenerative braking which increases motor brush life and battery life. Auto braking, another feature of SEM, reduces brake wear.	The Crown SP3020-30 order picker does not feature a SEM traction system. The series wound drive motor and non-SEM traction system require more maintenance and do not prolong battery life.	 The combination of SEM and CANbus technology enhance product reliability and performance while simplifying the electrical system and reducing service and maintenance costs.
CANbus Communication System	The R30XM ₂ features a CANbus communication system. This system reduces the number of wires and wire connections required to interface the platform to the tractor (chassis). This feature simplifies the electrical system and reduces maintenance requirements.	The SP3020-30 does not feature a CANbus communication system. The SP3020-30 carries three times the number of over the mast electrical conductors as the R30XM ₂ , resulting in a more complex electrical system; contributing to expensive service and maintenance costs.	

OPERATOR COMFORT, INCREASED PRODUCTIVITY

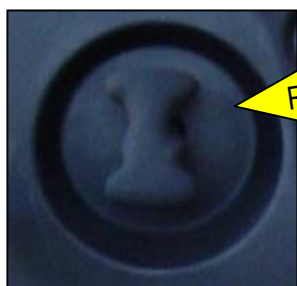


Hyster operator compartment cover and light and fan package

Crown operator compartment cover and light and fan package

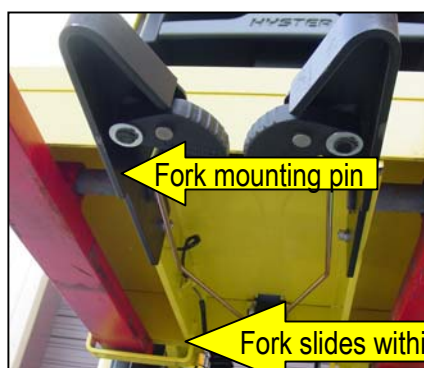
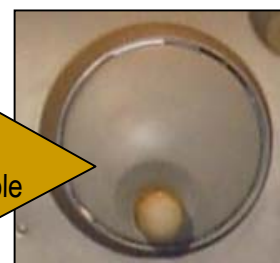
FEATURE	HYSTER	CROWN	BENEFIT
Storage Amenities	There are several storage pockets found within the Hyster R30XM ₂ operator compartment. The storage pockets are large enough for a clip board or a hand held scanner. Also featured is a removable trash bin which requires no tools to remove or install.	The Crown SP3020-30 operator compartment provides two storage bins. They are large enough for a clip board or scanner, however, there is no cup holder or removable trash bin provided.	 
Operator compartment light and fan package	The Hyster R30XM ₂ features a dual light and fan package as standard equipment. The standard light and fan package contains a dome light, a fixed spot light and a two speed fan. Two additional work lights are available as a standard price book option.	The Crown SP3020-30 order picker does not provide a light and fan package as standard equipment. In fact, the light and fan package that Crown offers is a \$425.00 price book option and must be ordered as a complete package. (Includes dome light, 2 work lights).	The Hyster R30XM ₂ features many operator amenities. Designs like the spacious storage compartments, pencil tray, removable trash bin and light and fan package enhance operator comfort and contribute to a more productive operator.

INCREASED PRODUCTIVITY



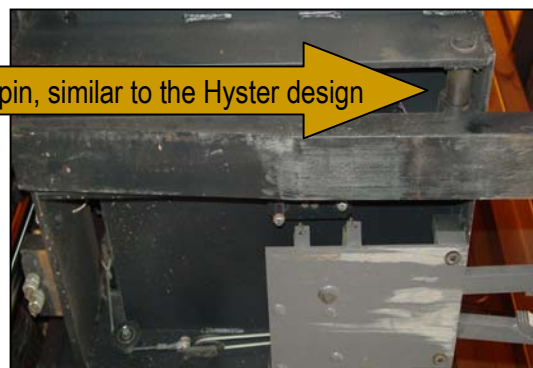
Return To Center steering

Multi-turn steer system
Return to center steering not available



Fork mounting pin

Fork slides within fork pocket



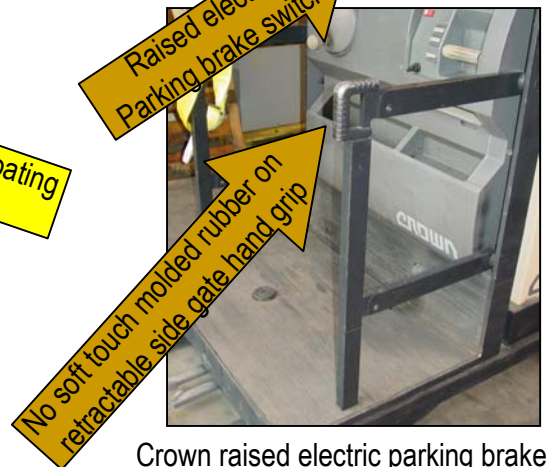
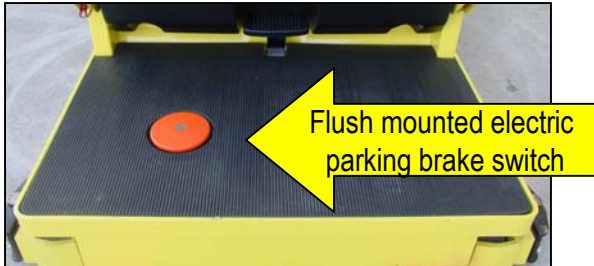
Fork pin, similar to the Hyster design

Hyster RTC (Return To Center)
steering and fork adjustment

Crown multi-turn steering and fork
adjustment

FEATURE	HYSTER	CROWN	BENEFIT
Return To Center (RTC) Steering	The Hyster R30XM ₂ features Return To Center steering as the standard steer option. RTC steering is recommended for rail guided and wire guided applications, and applications where fork end travel is the primary means of travel. Multi-turn steering is available as a no charge price book option	The Crown SP3020-30 does not offer a return to center steering option.	 Hyster Company provides the customer with two optional steering systems to accommodate their specific applications for a more productive operation. Fork adjustments require no tools and no mounting hardware removal or installation, which saves time, contributing to increased productivity potential.
Fork Adjustment	Fork adjustment on the Hyster order picker is quick and easy. To move the forks to different positions simply lift up on the fork tip and slide the fork into the desired position. There are no tools required and no removal and installation of mounting hardware.	The Crown fork adjustments is very similar to the Hyster fork adjustment design. To slide the forks to another position simply lift up on the fork tips and slide into position. No tools required.	

OPERATOR COMFORT, INCREASED PRODUCTIVITY



Hyster flush mounted electric parking brake switch and retractable side gates

Crown raised electric parking brake switch and retractable side gates

FEATURE	HYSTER	CROWN	BENEFIT
Flush Mount Electric Foot Switch	The flush mounted electric foot switch reduces foot fatigue and requires no extra lifting of the leg to activate. The switch is also located within the operator's natural stance, regardless if driving fork first or tractor (chassis) end first.	The Crown electric foot switch is a pedal design. The raised foot switch pedal requires the operator to lift and depress the pedal each time to travel between picks; which contributes to operator leg and foot fatigue.	 The ergonomic designs like the flush mounted electric foot switch and rubber coated side gate assembly hand grips found on the Hyster R30XM2 contribute to operator comfort and enhances productivity potential.
Rubber Coated Retractable Sidegates	The R30XM2 retractable side gate handles are coated with a soft touch, sure grip rubber coating. The rubber coating is pleasing to the touch while providing a good hand grip.	The Crown retractable side gates do not feature a rubber coated hand grip for raising and lowering. The side gates do not provide soft touch - sure grip rubber coating	

COMPETITIVE REVIEW



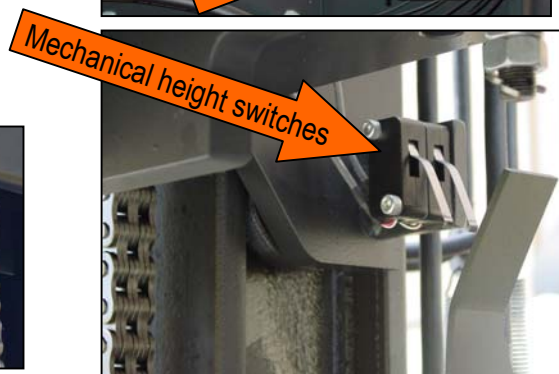
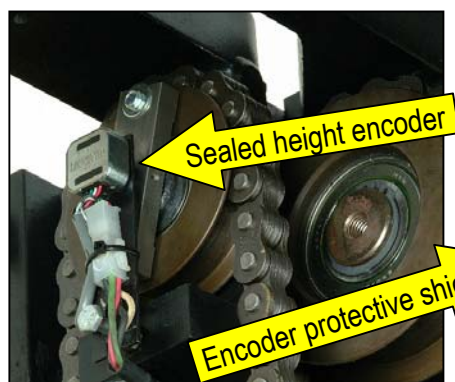
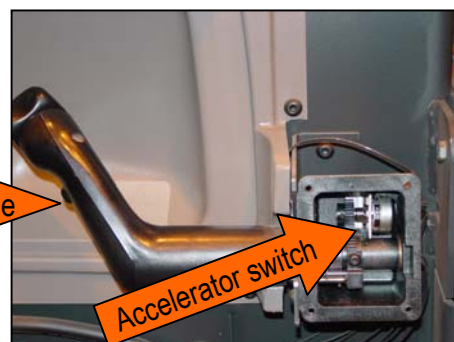
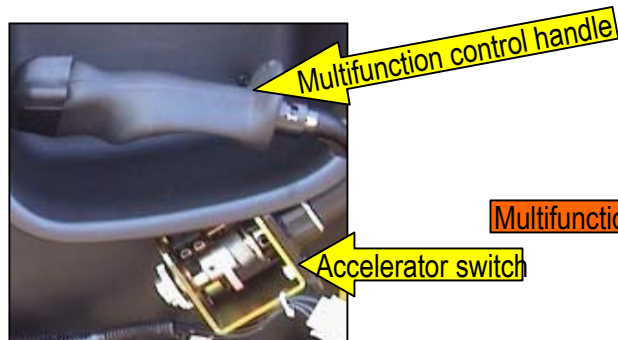
HYSTER R30XM₂

VS



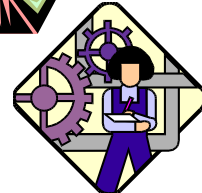
RAYMOND OPC30TT

REDUCED MAINTENANCE COSTS, RELIABILITY



Hyster multifunctional control handle and mast height encoder

Raymond multifunctional control handle and mechanical mast height switches

FEATURE	HYSTER	RAYMOND	BENEFIT
Accelerator Switch	The R30XM ₂ accelerator switch is a hall effect sensor. Hall effect sensors are sealed to protect against moisture and other contamination. Hall effect sensors have no wearable electrical parts and require no adjustments.	The Raymond OPC030TT accelerator switch is a potentiometer. Potentiometers have more wearable parts and require more adjustments as compared to Hall effect sensors. Potentiometers are also more prone to vibration and moisture contamination.	  The state-of-the-art electrical devices used on the Hyster R30XM₂ are more reliable and require less maintenance and service requirements as compared to the Raymond OPC030TT order picker.
Height Sensing	The Height encoder found on the Hyster R30XM ₂ monitors the operator platform height by counting the number of mast chain pulley rotations; which is a direct relationship to platform height. The height encoder requires no adjustments. The height encoder is used on standard and freezer construction trucks.	The OPC030TT order picker features mechanical switches (standard) that control platform height. Compared to the height encoder, mechanical switches have more wearable parts, require more adjustments and are more susceptible to physical damage than the encoder. Raymond offers an optional flow sensor for mast height measurement in lieu of mechanical switches.	

OPERATOR COMFORT / INCREASED PRODUCTIVITY

Multi-function control handle



Multi-function control handle



Adjustable console push butt



Hyster multi-function control handle and adjustable console

No adjustable console



Raymond multifunction control handle and operator console

FEATURE	HYSTER	RAYMOND	BENEFIT
Multi-function Control Handle	The multi-function control handle found on the R30XM ₂ has a palm rest and is scalloped at the bottom of the handle for hand comfort and positioning. The handle also pivots to allow three different angled positions depending on operator preference.	The Raymond OPC030TT also features a multi-function control handle. However, the control handle design does not feature a palm rest and is not adjustable. In addition, the hand is not in its natural position when gripping the control handle as compared to the R30XM ₂ hand grip.	
Adjustable Console	The R30XM ₂ order picker features an (optional) adjustable console that has a full six inches of vertical travel. The adjustable console is an industry first, and is unique in that it allows a comfortable operator stance for various size operators.	The Raymond OPC030TT does not offer an adjustable console.	Innovative designs such as the adjustable console and the adjustable multi-function control handle reduce operator fatigue, enhance operator comfort while contributing to higher productivity levels.

REDUCED MAINTENANCE COSTS, RELIABILITY



Access doors provide component protection and quick access

Motor compartment access with rear cover removed



Hyster's 3-phase brushless steer motor

Power steering motor requires brush maintenance

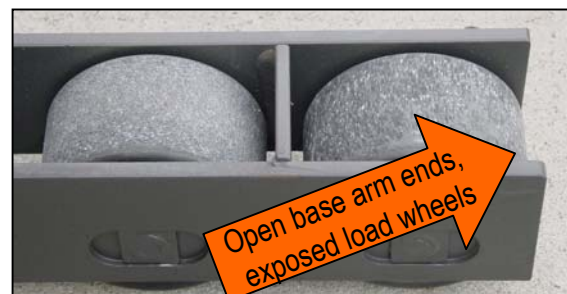
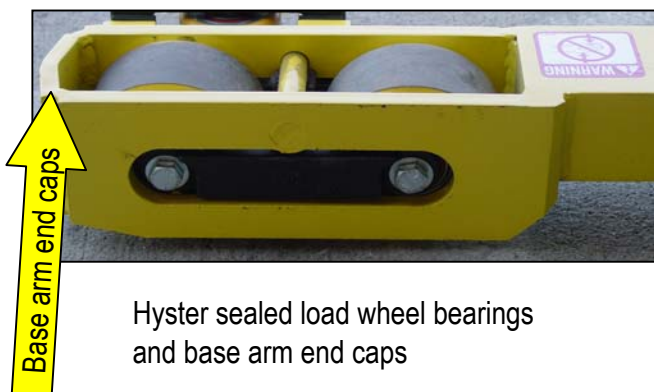


Hyster service compartment and

Raymond service compartment and

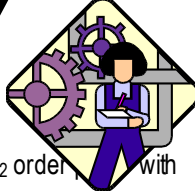
FEATURE	HYSTER	RAYMOND	BENEFIT
Steer Motor	The Hyster R30XM ₂ features a three-phase brushless steer motor. Utilizing a brushless steer motor enhances reliability and requires no servicing, which reduces maintenance costs.	The Raymond OPC030TT uses a typical DC steer motor. With the standard DC motor design, brush servicing and replacement is inevitable. Compared to the Hyster product, the Raymond steer motor is less reliable and more expensive to maintain.	  The Hyster motor
Motor Compartment Access	The Hyster motor compartment features dual hinged metal doors that provide protection and quick, easy access to the motor compartment. The Hyster R30XM ₂ features a plastic top motor compartment cover and is easily removed by 4 spring loaded quarter-turn fasteners.	The Raymond OPC030TT motor compartment is accessed by lifting off the rear cover (no tools required). The rear cover is made of a non breakable plastic, and when removed, good motor compartment access is achieved.	The Raymond motor compartment features dual hinged metal doors that provide protection and quick, easy access to the motor compartment. The Raymond OPC030TT featuring a 3 phase brushless steer motor, enhances reliability while reducing maintenance costs.

REDUCED MAINTENANCE COSTS, RELIABILITY

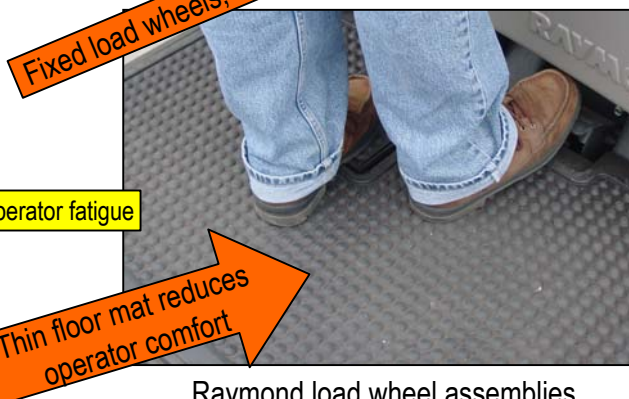
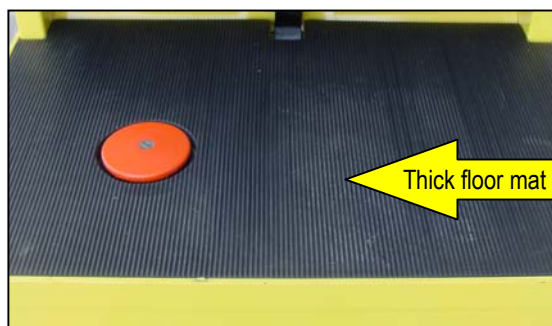
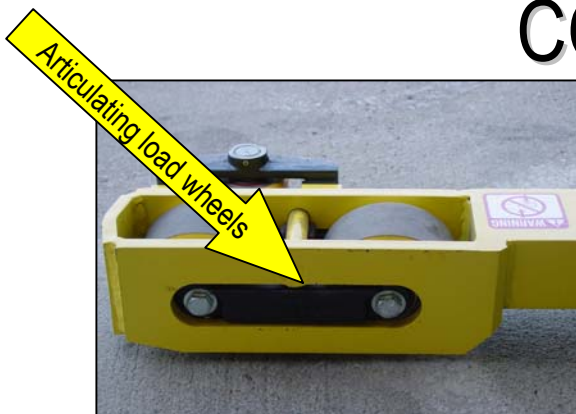


Hyster sealed load wheel bearings and base arm end caps

Raymond load wheel bearings and base arm end caps

FEATURE	HYSTER	RAYMOND	BENEFIT
Seald Load Wheel Bearings	The load wheel bearings used on the Hyster R30XM ₂ are a pre-lubed double sealed bearing. Pre-lubed double sealed bearings are greased when manufactured and sealed to keep lubricants in and contamination out. Basically, this produces a maintenance free wheel bearing.	The Raymond OPC030TT does not utilize pre-lubed double sealed wheel bearings. The load wheels must be inspected / greased during maintenance PM's (preventative maintenance) checks. Non sealed bearings are much more susceptible to contamination.	  The R30XM₂ order with double sealed, pre lubricated wheel bearings eliminate bearing greasing and protect the wheel bearings from moisture, dirt and other contamination. The protective load wheel end-caps protect the load wheels from damage. These innovative designs reduce maintenance costs and improve reliability.
Load Wheel Endcaps	The Hyster R30XM ₂ basearms feature protective load wheel end-caps. The end-caps help protect the load wheels from damage.	The Raymond OPC030TT basearms do not feature load wheel end-caps. Without the end-caps, the load wheels are left exposed and are prone to damage, especially with the platform raised.	

ERGONOMICS / OPERATOR COMFORT

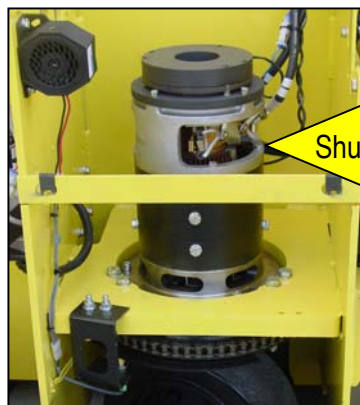


Hyster articulating load wheel assemblies and floor mat

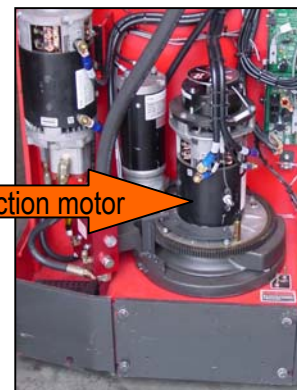
Raymond load wheel assemblies and floor mat

FEATURE	HYSTER	RAYMOND	BENEFIT
Articulating Load Wheels	The Hyster R30XM ₂ features articulating load wheels. Articulating load wheels provide a smoother ride than typical fixed mounted load wheels, especially on uneven or rough floor surfaces and expansion joints.	The Raymond OPC030TT does not offer articulating load wheels. The fixed load wheel design found on the OPC030TT does not "float" like the articulating load wheel design; resulting in a rougher ride.	 The innovative articulating load wheel design, combined with a full one inch anti-slip rubber floor mat, contribute to a smooth and comfortable ride while reducing operator fatigue.
Operator Compartment Floor mat	The Hyster R30XM ₂ operator compartment features a full 1 inch thick rubber floor mat. This thick rubber cushioned floor mat has a ribbed texture to not only provide a cushioning effect but also acts as an anti-slip mat.	The Raymond features a .5 inch thick rubber floor mat. The floor mat is textured with dimples to provide a cushioning effect and act as an anti-slip mat. However, the Hyster floor mat provides twice the cushion as does the Raymond.	

REDUCED MAINTENANCE COSTS



Shunt Wound traction motor



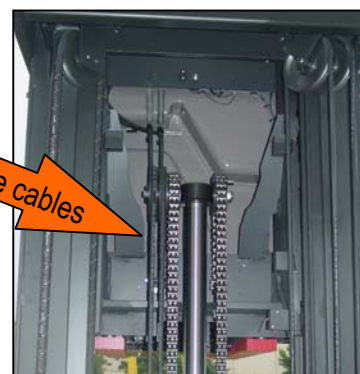
Shunt Wound traction motor



CANbus system simplifies the electrical system only a Single 8 conductor cable required

Hyster traction motor and electrical cables

Platform to chassis interface cables



Raymond traction motor and electrical cables

FEATURE	HYSTER	RAYMOND	BENEFIT
SEM Traction Motor	The R30XM ₂ features SEM (Separately Excited Motor) technology. The SEM traction system provides regenerative braking which increases motor brush life and battery life. Auto braking, another feature of SEM reduces brake wear.	The Raymond OPC030TT order picker also features a SEM traction Motor. The Raymond OPC030TT shares the same tractive benefits as the Hyster traction system.	 The combination of SEM and CANbus technology used on the Hyster R30XM₂ features a much less complex electrical system compared to the Raymond system. Plus the Hyster electrical system does not reflect proprietary costs or specialized handsets to trouble shoot.
CANbus Communication System	The R30XM ₂ features a CANbus communication system. This system reduces the number of wires and wire connections required to interface the platform to the tractor (chassis). This feature simplifies the electrical system and reduces maintenance requirements.	The OPC030TT order picker features Raymond's own designed electrical system. However Raymond's CANbus version requires two 6 conductor over the mast electrical cables as compared to Hyster's R30XM ₂ single 8 conductor over the mast electrical cable.	

OPERATOR COMFORT, INCREASED PRODUCTIVITY



Pencil tray

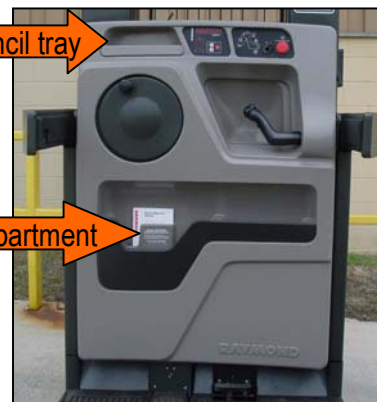
Cup holder

Removable trash bin

Storage compartment



Hyster operator compartment cover and light and fan package



Pencil tray

Storage compartment

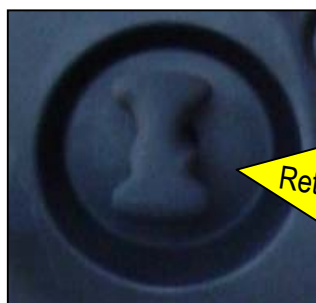


Light and fan package

Raymond operator compartment cover and light and fan package

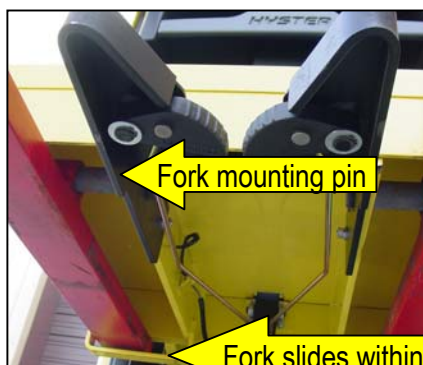
FEATURE	HYSTER	RAYMOND	BENEFIT
Storage Amenities	There are several storage pockets found within the Hyster R30XM ₂ operator compartment. The storage pockets are large enough for a clip board or a hand held scanner. Also featured is a removable trash bin which requires no tools to remove or install.	The Raymond OPC030TT operator compartment provides two storage bins. They are large enough for a clip board or scanner, however, there is no cup holder or removable trash bin provided.	
Operator compartment light and fan package	The Hyster R30XM ₂ features a dual light and fan package as standard equipment. The standard light and fan package contains a dome light, a fixed spot light and a two speed fan. Two additional work lights are available as a standard price book option.	The Raymond OPC030TT does not provide a light and fan package as standard equipment. The light and fan package is a \$375.00 price book option. The light and fan package contains a fan, work light and dome light.	The Hyster R30XM ₂ features many operator amenities. Designs like the spacious storage compartments, pencil tray, removable trash bin and light and fan package enhance operator comfort and contribute to a more productive operator.

INCREASED PRODUCTIVITY



Return To Center steering

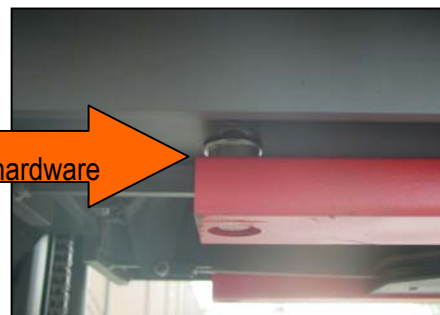
Multi-turn steer system
Return to center steering not available



Fork mounting pin

Fork slides within fork pocket

Fork mounting hardware

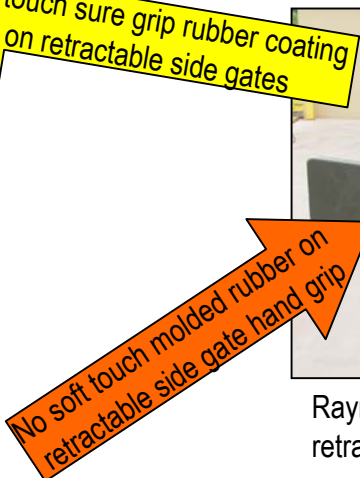
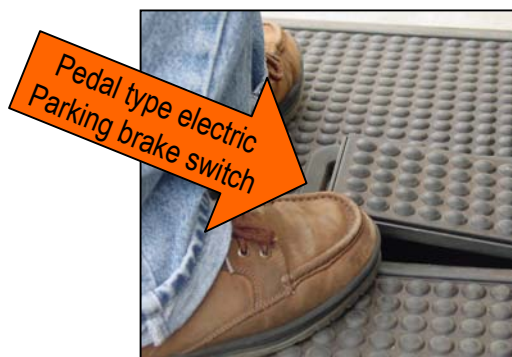
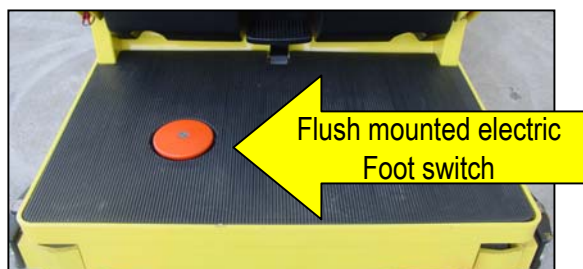


Hyster's RTC steering and fork adjustment

Raymond's multi-turn steering and fork adjustment

FEATURE	HYSTER	RAYMOND	BENEFIT
Return To Center Steer	The Hyster R30XM ₂ features RTC (Return To Center) steer as the standard steer option. RTC steer is recommended for rail guided and wire guided applications, and applications where fork end first is the primary means of travel. Multi-turn steer is available as a no charge price book option.	The Raymond OPC030TT does not offer a return to center steering.	 Hyster Company provides the customer with two optional steering systems to accommodate their specific applications for a more productive operation. Fork adjustment requires no tools and no mounting hardware removal or installation, which saves time, contributing to a more productive operator.
Fork Adjustment	Fork adjustment on the Hyster order picker is quick and easy. To move the forks to different positions simply lift up on the fork tip and slide the fork into the desired position. There are no tools required and no removal and installation of mounting hardware.	To adjust the forks on the Raymond OPC030TT, tools for removing and installing fork mounting hardware are needed. Fork adjustment requires removing mounting hardware, sliding the forks while aligning the mounting holes. The weight of the forks makes it difficult for one person to slide and align the forks at the same time.	

OPERATOR COMFORT



Hyster electric parking brake switch and retractable side gates

Raymond electric parking brake switch and retractable side gates

FEATURE	HYSTER	RAYMOND	BENEFIT
Flush Mount Electric Foot Switch	The flush mounted electric parking brake switch reduces foot fatigue and requires no extra lifting of the leg to activate. The switch is also located within the operator's natural stance, regardless if driving fork first or tractor (chassis) end first.	The Raymond electric foot brake switch is a pedal design. The raised foot switch pedal requires the operator to lift and depress the pedal each time to travel between picks; which contributes to operator leg and foot fatigue.	 The ergonomic designs, like the flush mounted foot switch and rubber coated side gate assembly hand grips found on the Hyster R30XM₂ contribute to operator comfort and enhances productivity potential.
Rubber Coated Retractable Sidegates	The R30XM ₂ retractable side gate handles are coated with a soft touch, sure grip rubber coating. The rubber coating is pleasing to the touch while providing a good hand grip.	The Raymond retractable side gates do not feature a rubber coated hand grip for raising and lowering. The side gates are padded on the inside and have a gas assist cylinder to help control raising and lowering.	

COMPARATIVE EVALUATION



HYSTER R30XM₂

VS



RAYMOND OPC30TT



CROWN SP 3020-30

Order Picker Comparative Evaluation

Truck Model					
Test Parameter	Hyster R30XM ₂	(24v)	Raymond EASI OPC030TT	(24v)	Crown SP3020-30
Energy Consumption	4.3 amp hours/cycle		5.4 amp hours/cycle		4.6 amp hours/cycle
Travel Speeds					
<i>Empty Forward</i>					
Travel Speed	6.0 mph		6.08 mph		6.05 mph
Current Draw	97 amps		100.7 amps		80 amps
<i>Loaded Forward</i>					
Travel Speed	5.50 mph		5.81 mph		5.22 mph
Current Draw	129 amps		164 amps		92 amps
<i>Empty Reverse</i>					
Travel Speed	6.03 mph		5.51 mph		5.82 mph
Current Draw	92 amps		97.3 amps		74 amps
<i>Loaded Reverse</i>					
Travel Speed	5.61 mph		5.57 mph		5.08 mph
Current Draw	124 amps		118.7 amps		88 amps
Acceleration					
<i>Empty</i>					
0-25 feet	Fwd	4.84 sec	3.84 sec		5.17 sec
	Rev	4.76 sec	4.93 sec		5.23 sec
0-50 feet	Fwd	7.10 sec	7.68 sec		8.22 sec
	Rev	7.07 sec	7.80 sec		8.32 sec
0-75 feet	Fwd	10.23 sec	10.21 sec		11.44 sec
	Rev	10.24 sec	10.77 sec		11.26 sec
0-100 feet	Fwd	12.76 sec	12.74 sec		14.11 sec
	Rev	12.69sec	13.73 sec		14.36 sec
<i>Loaded</i>					
0-25 feet	Fwd	4.88 sec	5.75 sec		5.59 sec
	Rev	4.71 sec	5.91 sec		5.47 sec
0-50 feet	Fwd	8.23 sec	9.05 sec		9.14 sec
	Rev	8.05 sec	8.91 sec		9.21 sec
0-75 feet	Fwd	11.41 sec	11.85 sec		12.77 sec
	Rev	11.57 sec	11.93 sec		12.76 sec
0-100 feet	Fwd	14.4 sec	14.48 sec		15.95 sec
	Rev	13.95 sec	14.44 sec		16.15 sec

Order Picker Comparative Evaluation

Truck Model			
Test Parameter	Hyster (24v) R30XM ₂	Raymond (24v) EASI OPC030TT	Crown (24v) SP3020-30
Hoist Performance			
Lift Speed Empty	65.03 fpm	56.31 fpm	63.35 fpm
Current Draw	240 amps	235 amps	284 amps
Lift Speed Loaded	45.46 fpm	34.23 fpm	42.36 fpm
Current Draw	402 amps	404 amps	452 amps
Lowering speed			
Empty	68.0 fpm	74.76 fpm	80.10 fpm
Loaded	68.0 fpm	85.21 fpm	78.47 fpm
Sound Test			
@ Ear			
Lift Loaded	74-65 dBA	60-57 dBA	65-69 dBA
Lift Unloaded	68-56 dBA	65-56 dBA	72-58 dBA
Travel Loaded	67-72 dBA	74-76 dBA	63-65 dBA
Travel Unloaded	69-71 dBA	66-68 dBA	66-67 dBA

The previous two pages represent comparative data between the Hyster R30XM₂ and the competition. The tests were performed by the WPDC (Warehouse Product Development Center) Engineers in Greenville, N.C. using units that represent the very latest models by both Raymond and Crown. As can be seen from the test data results, the Hyster R30XM₂ performs head to head with both the Raymond OPC30TT and the Crown SP3020-30 order pickers. In most cases, the R30XM₂ out performed the competition, and used the least amount of energy consumption (battery discharge). The test data speaks for itself, as does the R30XM₂.

Note: The data highlighted in yellow represents a Hyster R30XM₂ advantage.

Original Files

Key Spec Cover Page (WORD) || Competitive Review Cover Page (WORD)

Large Chassis Comparison (XLS) || Comparative Chart (XLS)

Crown vs Hyster (PPT)

Hyster vs Raymond Cover (PPT) || Hyster vs Raymond (PPT)