

# EXODUS MACHINES



**MX447L . 101,500 LBS . 300HP**

**MX447HDR . 111,000 LBS . 300HP**

**MX457R . 130,000 LBS . 325HP**

## COMPANY PHILOSOPHY & PRODUCT DEVELOPMENT

When Exodus Machines was established, we knew we wanted to create a company where we could build the best machines that our customers could imagine. To achieve this we knew we would need to have a direct connection with our customers and dealers. This connection allows us to get valuable feedback and funnel new ideas to our product development team.

We started with a clean sheet and then spent hundreds of hours interviewing people that live with these machines every day—machine operators, maintenance personnel, owners and General Managers. We asked them to dream a little and tell us what they would want if they could really have it all. They told us they wanted more from their material handlers and from the companies that build and support them. That drove us to push even harder and to raise the standard to a higher level. So we found the best people, used the most advanced technology and put all of our energy into building a world class material handler that's backed by a company designed to fit the specific needs of our customers.

### DESIGN INTENT

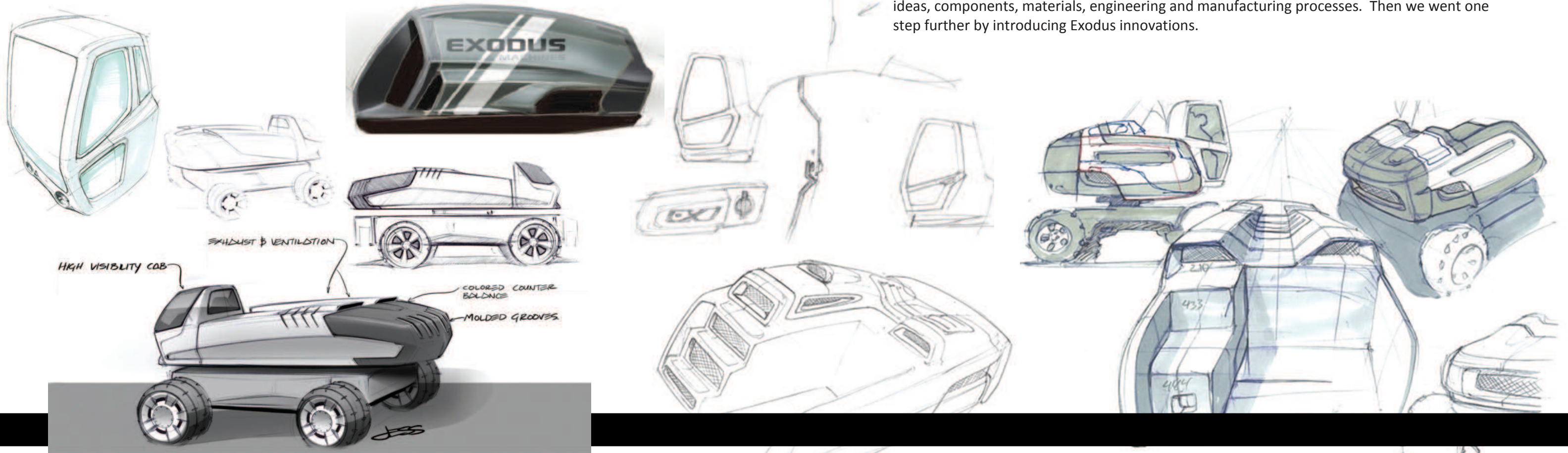
We are determined to build the best machines available anywhere in the world and to build them in America. We know that means we must make reliability, durability, productivity, ease of maintenance, operator comfort, low cost of ownership and safety our priorities.

### PURPOSE BUILT

Everything about our machine is designed to do one thing well—move material. We engineered and designed this material handler from the ground up. Our engineers and supplier-partners have created a mechanical symphony where all the components and systems work together to enhance the capabilities of the machine.

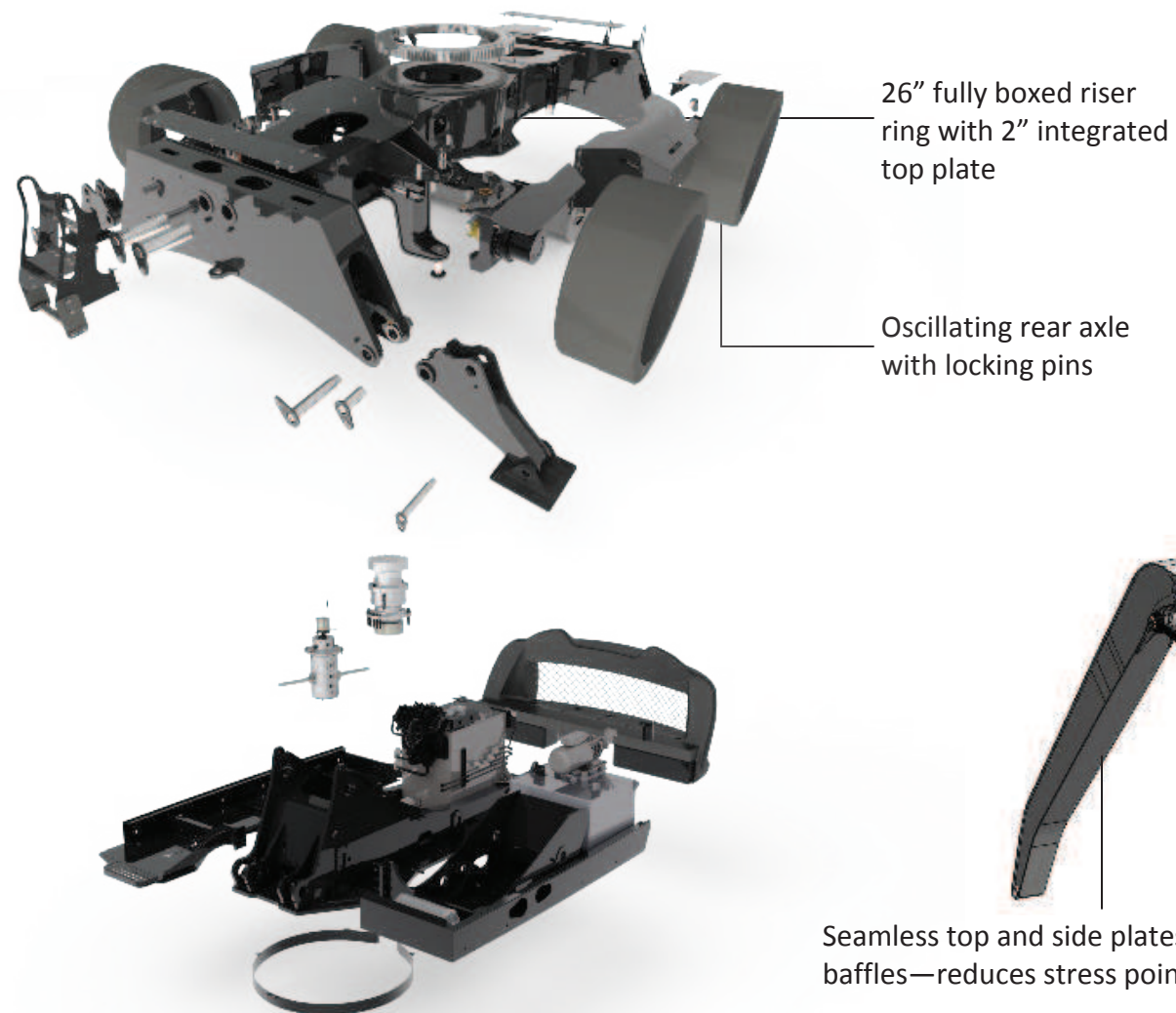
### DESIGN PHILOSOPHY

We didn't want owners to have to choose between one great attribute and another. "No Compromise" became our mantra as we looked inside and outside the industry for the best ideas, components, materials, engineering and manufacturing processes. Then we went one step further by introducing Exodus innovations.

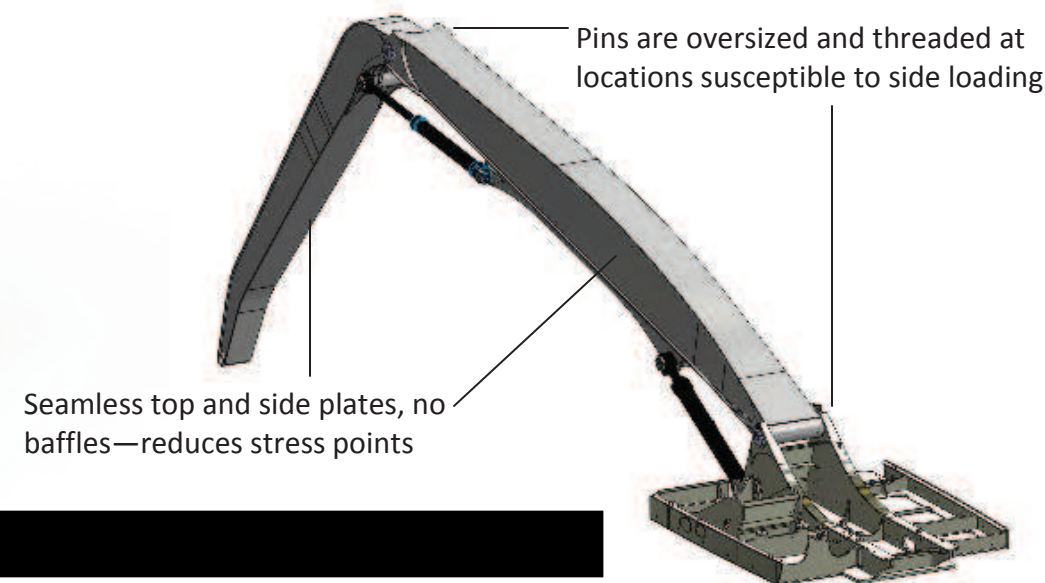


**STRUCTURAL STRENGTH**

We knew it was important to have a rock-solid foundation for our material handler, so we selected engineers with decades of experience and a track record of excellence. We combined their knowledge with a highly skilled fabrication team that is 100% dedicated to producing top quality products. The result is a truly premium structure. With the unique opportunity to build a machine from the ground up, our engineers were able to design a structure with continuous welds, extensive chamfering and beveling to reduce stress concentrations. To minimize stress points they designed the boom and stick with no baffles and we build them with single piece top and side plates. They went beyond industry standards by using oversized pins and bushings. Throughout the process, we backed up our design with extensive Finite Element Analysis (FEA) and strain gauge testing to ensure long-



Steering components are enclosed and protected in the lower structure



**POWERTRAIN**

We chose world class large displacement engines because they delivered everything we wanted: more power, longer life, and excellent fuel efficiency. The larger displacement engine combined with our high efficiency hydraulics allows the engine to run at a lower duty cycle, which gives it a longer life and better fuel efficiency than a smaller displacement engine with similar horsepower. We also incorporated a three stage air filter and an oversized engine cooling system (rated for a 350hp engine) with a variable pitch, auto-reverse cooling fan.

We eliminated the mechanical components in the drive system and replaced them with four independent planetary wheel drives. This resolves any issue of having exposed components under the lower structure. Our proprietary hydraulic drive system offers true all wheel drive with limited slip differential and smooth, seamless shifting from creep to full speed.



# MX447/457

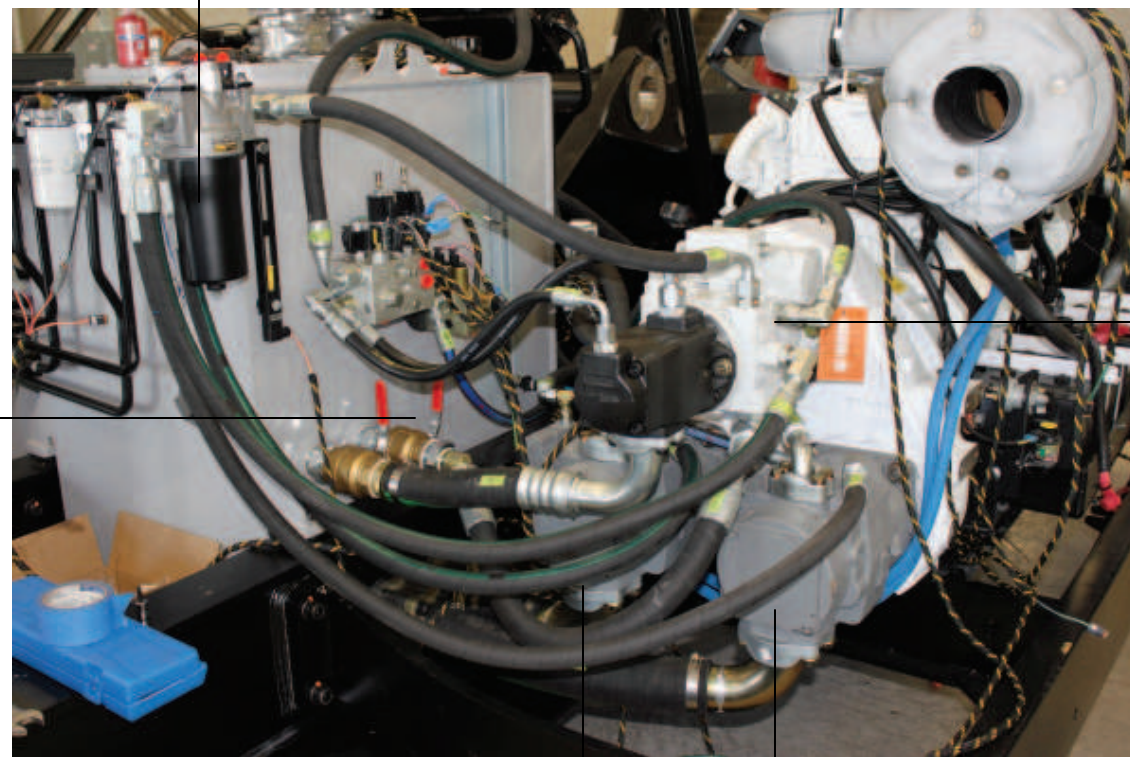
## HYDRAULICS

Our hydraulic system features durable, high quality components including Bosch Rexroth pumps and Parker valves. The IQAN computer system allows us to perform updates and diagnostics remotely via modem. Our proprietary swing controller and electro/hydraulic pilot controls ensure that our material handler has quick response and smooth operation.

Even with so much focus on durability, serviceability and smooth hydraulic functions, we still surpassed the industry standard when it comes to efficiency. Our exclusive combined use of pre-compensation (stops needless oil flow) with post-compensation (allows oil share between functions), a dedicated closed loop swing pump, and regeneration on the boom cylinders are some of the things that give our machine a significant advantage in fuel efficiency and productivity.

The high-capacity hydraulic cooling system keeps the fluid between 140 to 160 degrees. Hydraulic fluid is more efficient at the cooler temperature and components last longer.

2 micron kidney-loop filter



Shut off valves

Bosch Rexroth main pumps



Bosch Rexroth closed loop swing pump



Highly accessible upper and lower main valves make repairs easier.

## OPERATOR'S CAB

Our one-of-a-kind cab has been built with the operator's safety, convenience and comfort in mind. Our patented\* ground access feature was designed to allow the safest entry and exit possible. The puncture-resistant, tinted safety glass and polycarbonate skylight are standard, and fully ballistic safety glass is available as an option for the ultimate in safety. Filtered and pressurized air within the cabin create a healthy and comfortable environment for the operator.

For convenience there are two 12VDC outlets, multiple storage compartments, and a high capacity HVAC system. The customizable electric over hydraulic controls give each operator the ability to maximize their productivity no matter their experience level.

Once our safety and convenience goals were met, we knew we had to make a cab that was comfortable. Our premium seat has air suspension and extensive adjustability. For comfort, our cab is taller, wider and deeper than a typical cab. We made the cab quiet by using 2 ply glass and an insulated cab shell. Finally, we added an AM/FM/CD/MP3 audio system.



## SERVICE

With the combined efforts of your our unmatched dealer network and the Exodus service team, we'll work to get you up and running quickly. We also offer you the unique ability to directly contact our engineers and hydraulic experts who designed our material handler.

With our intelligent diagnostic system you can see the problem instantly in plain English right from the screen in the machine. There's no need to wait for someone with a laptop to decipher codes. In many cases we can connect to your machine via modem and diagnose it immediately. We can send program updates to your machine via the modem as well.



## PARTS

Owning an American-made machine means minimal delays in getting parts. Most of our supplier base is within the USA so they can react quickly and help us to serve you better. Our dealer network has commonly used parts in inventory and our warehouse in Superior, Wisconsin has everything else. Combine this with same day shipping from the factory and you can be assured that we will serve your needs quickly and efficiently.

## WARRANTY

We are confident in our material handler and want you to be as well. We include a warranty that covers the machine for 1 year with unlimited hours. We have extended warranty options available for up to 4 years/7000 hours for full machine coverage or for powertrain and hydraulics.

**MAINTENANCE**

Our machine is designed for easier and less frequent maintenance. We spread common sense logic throughout the entire machine to make it easier to understand. Our engineers have spent time working on machines too, not just designing them.

Ease of maintenance inspired many of the machine’s features. The IQAN system tells you what your machine needs, when it needs it. This system ensures that maintenance is done at the optimal time—not too early and not too late—and nothing gets missed.

The auto lube system is standard on all Exodus machines. The system only sends grease to the sections of the machine that are actively being used. The onboard toolbox is convenient for specialty tools and helps keep them organized. Finally, all primary maintenance points are located under a single access panel.

We also installed variable-displacement cooling fans that automatically reverse air flow to clean debris from the radiators so you don’t have to clean them manually as often.



**COST OF OWNERSHIP**

Low cost of ownership was a top priority throughout the entire design process of our material handler. The combination of using high quality components and engineering them to run in the most efficient way possible leads to a long life. Combining that with lower parts pricing, a highly efficient hydraulics system, and an efficient engine, we are confident that our material handler will cost less to run than any other machine on the market.

**PEOPLE**

We are accessible, knowledgeable and dedicated to doing the right thing. From our engineers to our service personnel to our president, we are committed to Exodus and we value our customers above all else. Here are some of the people that make up our growing team.



Bruce Bacon—President, Kevin Boreen—CEO, Greg Bacon—VP of Sls, Srvc & Mktg, Jim Campbell—VP of Mfg



Ian Lewandowski  
Regional Business Mgr.



Chris Fodor  
Regional Business Mgr.



Terry Sturgell  
Regional Business Mgr.



Michael Condron  
Regional Business Mgr.



Don Stamp  
Regional Business Mgr.



Adam Bennis  
Director of Engineering



Ben Anderson  
Mgr. Engineered Systems



Roche Lally  
Mgr. Structural Eng



Ross Christenson  
Dir. of Product Development



Preston Fleck  
Manufacturing Engineer



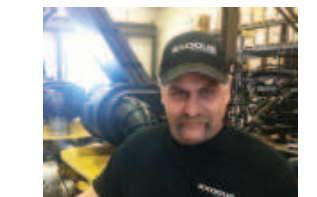
Marisa Ring  
Parts



Jerome Slama  
Service Manager



Scott Van Aernum  
Field Service Engineer



Randy Johnson  
Field Service Engineer



Wayne Johnstad  
Assembly Manager



Tony Larson  
Dir. of Finance/HR/IT



Justin Bacon  
Buyer



Kathy Arseneau  
Buyer



Edd Leis  
Business Analyst/IT



Stefanie Black  
Administrative Assistant

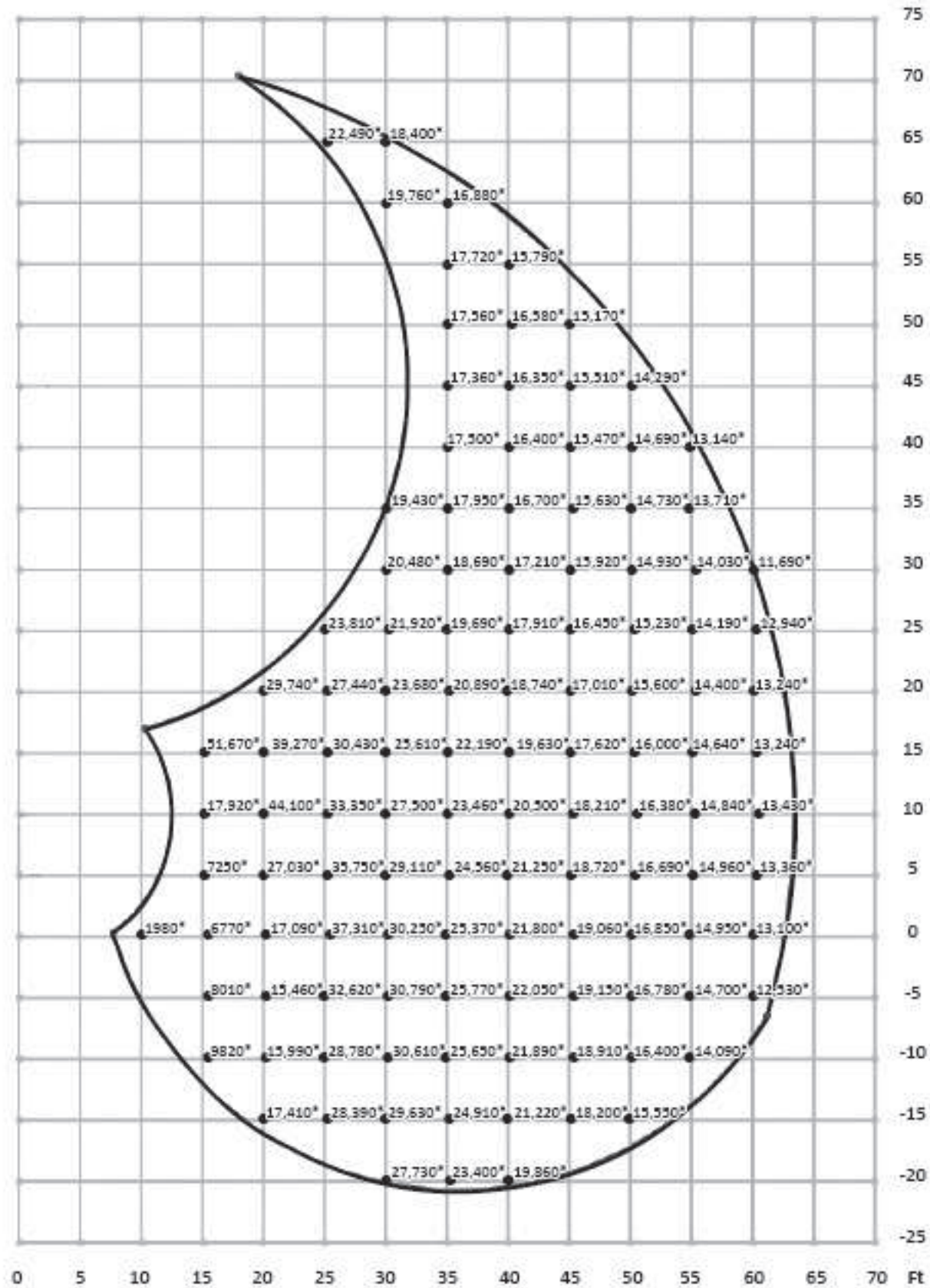




# MX457R

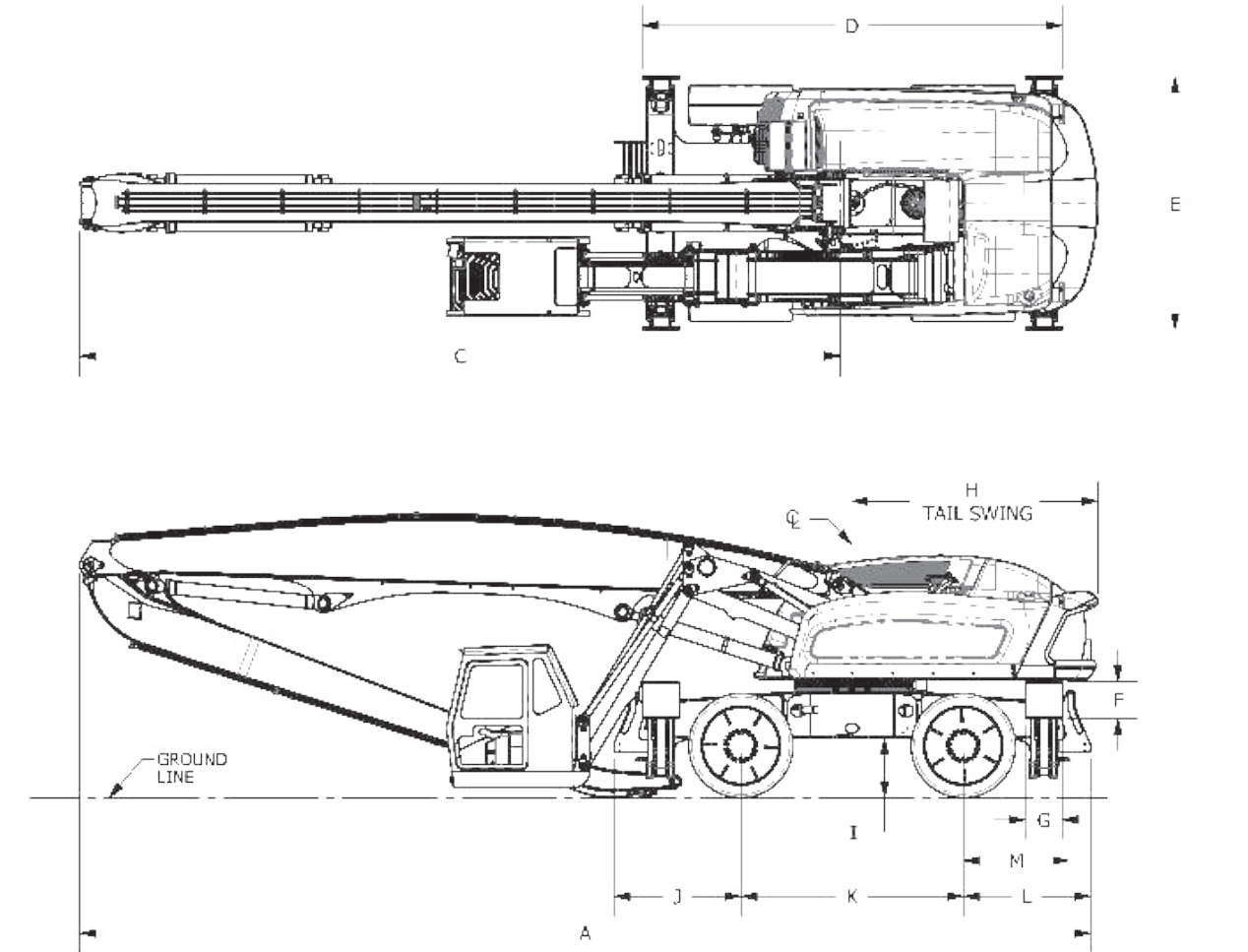
## LIFT CHART

Max. Vertical Reach 70' 5"  
 Max. Horizontal Reach 63' 5"  
 Below Grade 20' 9"  
 Main Boom 35' 5"  
 Secondary Boom 29' 6"

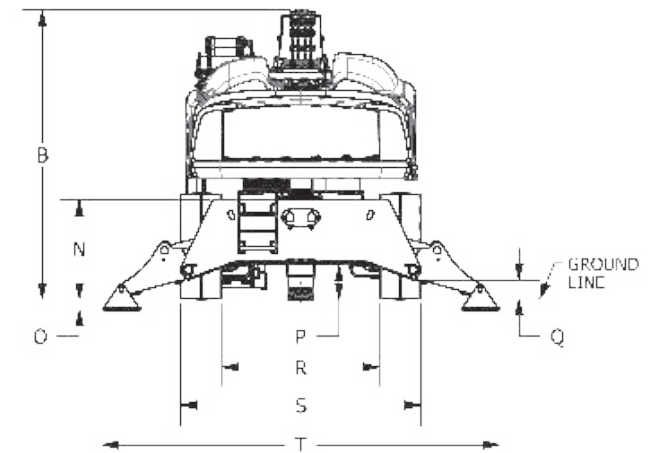


# EXODUS MACHINES

## DIMENSIONS



DIMENSION	MX447 HDR	MX447 L	MX457 R
A	47'-2 3/4"	43'-6 1/2"	47'-8 1/2"
B	11'-7 1/4"	11'-7"	13'-5 1/4"
C	35'-5 1/4"	31'-8 1/2"	35'-11"
D	19'-7"	19'-7"	19'-10"
E	11'-2"	11'-2"	11'-11"
F	1'-6"	1'-6"	1'-9"
G	1'-6"	1'-6"	1'-9"
H	10'-9 1/2"	10'-9 1/2"	11'-7 1/2"
I	2'-10 1/4"	2'-10 1/4"	2'-9 3/4"
J	6'	6'	6'
K	10'-6"	10'-6"	10'-6"
L	6'	6'	6'
M	4'-11 3/4"	4'-11 3/4"	4'-11 3/4"
N	4'-8"	4'-8"	4'-7 1/2"
O	5 1/2"	5 1/2"	6"
P	1'-7 1/2"	1'-7 1/2"	1'-7 1/4"
Q	1'-3/4"	1'-3/4"	10 3/4"
R	6'-10 3/4"	6'-10 3/4"	7'-3 1/4"
S	10'-10 3/4"	10'-10 3/4"	11'-2 1/4"
T	17'-2"	17'-2"	18'-5"



The lift capacities are stated in pounds without attachment and on firm level ground with outriggers down. Indicated loads comply with ISO 10567 and do not exceed 75% of static tipping load or 87% of hydraulic lifting force. Values apply to 360 degree rotation.

# MX447/457



Operating Weight	
447L	101,500 lbs
447HDR	111,000 lbs
457 R	130,000 lbs

Structural	
Manufacturer	Exodus
General Description	Purpose built for heavy material handling and designed to hold up under extreme conditions
Steel type	High strength/low alloy steel
Pins and bushings	Oversized (when compared to SAE standards), nuts on all pins with side-load
Main & Secondary Booms	Single piece top and side plates with no baffles. Chamfered continuous welds. Below boom cylinder pinning points.

Engine	
Manufacturer	Caterpillar
General Description	ACERT C9 8.8L 6 cylinder Tier III emissions 300 HP@2000 RPM (447) 325 HP @2000 RPM (457)
Cooling System	Oversized system (rated for 350hp) with dedicated engine air tunnel and side by side engine radiator & charge cooler with variable pitch auto reversing fan.
Air Filter	Pre-cleaner plus two-stage filter. High mounted (above engine) to avoid debris.
Fuel Capacity	110 Gallons

Hydraulic system	
Controls	Electro/hydraulic pilot controls
Control Valves	VOAC load-sense with post compensation (allows oil share) and pre-compensation (allows lower pressure functions to operate without going over relief).
Main pumps	Two Bosch Rexroth 75gpm (447), 84 gpm (457) tied together to supply 150gpm (447), 167 gpm (457) to main functions at 4800psi.
Swing	Closed loop system with regenerative hydraulic braking. 41gpm (447), 52 gpm (457) Bosch Rexroth pump at 5000 psi with large capacity direct drive swing motor. 52" (447), 64" (457) ring gear.
Other pumps	Vane pump with 6gpm for hydraulic cooling fan. 26gpm piston pump for the generator (when equipped).
Cylinders	Induction hardened, with electronic cushions. Load holding valves on cylinders for main and secondary booms.
Tank	135 gallons, 20% expansion. Fillable only through 5 micron filter with either quick connect for power fill or hand pump (equipped). Shut off valves on all pump suction lines.
Filters	Parker & Donaldson filters - Two main return filters are 5 micron absolute and are integrated with tank. 2-micron kidney loop filter running at 10gpm. Three 10-micron case drain filters for main pumps, swing motor, fan motor, generator motor and drive motors.
Cooling	Variable speed auto reversing fan. Dedicated cooling tunnel. Normal operating range is a low 140 - 160 degrees. Auto-cooling circuit turns on when machine is at idle (when necessary).
Warm-up	Optional in-tank heating element. Optional hydraulic warm-up system runs engine at 1100 rpm and operates hydraulic warm-up circuit until hydraulic fluid reaches 60 degrees.

Electrical System	
Wiring	Circuit breakers. Deutsch plugs. Color coded plus each wire's specific function is printed on the wire. Three steel sealed enclosures with easy access 1)lower 2)upper main 3)cab.
Voltage	24 V DC
Batteries	Two 12 V
Lighting	Three lights are mounted to lower side of cab, 2 mounted to the secondary boom. Three service lights in the engine and hydraulic compartments. Xenon optional.

Undercarriage	
Drive	Four independent wheel drives with planetary gear boxes. All components are protected inside the box of the lower structure. True 4WD for superior traction. No tire scrub thanks to the limited slip hydraulic differential.
Steering	Joystick steering control. Components are protected inside the box of the lower structure.
Turning Radius	21' inside
Rear Axle	Oscillating with lock-out feature
Travel Speed	Two mode system features creeper mode for travel up to 3mph and standard mode for travel up to 7.5mph. Shift on the fly between creeper mode and standard mode.
Braking	Four wheel independent hydraulic braking plus park brake. Stopping distance from 7.5mph to zero is 9 feet
Outriggers	One button operation for all outriggers plus individual controls. Guarded cylinders with load-holding valves.
Tires & Wheels	Four 20.5" x 59" tires on 447. Four 23.5" x 59" tires on 457. Wheel/tire rebuild program.

Auto - Lube	
	Upper and lower auto-lube sends grease based on frequency of movement. Blockage and low reservoir notification are built in. Most points have a manual grease zerk as well. Reservoir estimated to run about 400 hours between fills.

Operator Cab	
Construction	Steel tube frame with steel shell and floor.
Heat & AC	High capacity heat and AC units. Integrated controller in IQAN system.
Seat	Premium seat with air suspension. Adjustable joystick/armrest position, seat height, recline, fore/aft.
Convenience	Two 12 VDC outlets, cup holder, storage compartments.
Glass	Tinted two-ply puncture resistant safety glass. Polycarbonate glass is optional.
Lift range	Patented* ground access cab over the sides and up to 18' 8" at eye level on 447. Ground access over the sides, front and rear and up to 23' 6" at eye level on the 457.
Safety	Fire extinguisher, safety belt, automatic boom & stick slow-down when in close to the cab (adjustable). Load holding valves on cylinders. Manual cab lowering valve in cab. Stop the machine and lower the cab via text message in extreme emergencies.
Audio	AM/FM/CD/MP3 audio system

IQAN	
Communication	Connect to the factory through the modem. All reminders and notification can be sent via text message. Programmed for Exodus by Exodus engineers. Easy to navigate.
Maintenance	Air filters and all hydraulic filters have sensors to determine when they need to be replaced. All other reminders are based on time intervals.
Diagnostics	From the screen all electronic inputs and outputs can be viewed to verify that they are working correctly. Logs engine fault codes, hydraulic pressure spikes and IQAN diagnostic fault codes.
Remote Machine Monitor	Send a text message to the machine to check things like fuel level, hydraulic temp, engine temp, loads, loads per hour and next service intervals.
Adjustable	Main machine functions' max speeds are adjustable. For emergencies and diagnostics safety functions can be overridden and alarms can be silenced so the machine can keep running.

# EXODUS MACHINES



**ONE EXODUS DRIVE . SUPERIOR . WISCONSIN . 54880  
715.395.6060 WWW.EXODUSMACHINESINC.COM**

**PRODUCT SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.  
FEATURED MACHINES MAY INCLUDE OPTIONAL EQUIPMENT.  
PRODUCTS AND SERVICES LISTED MAY BE TRADEMARKS OR TRADE NAMES OF EXODUS MACHINES INC. IN  
THE U.S.A. AND OTHER COUNTRIES.**