endura MRL
Low-rise elevator
Making cities better.

Half of the world’s population now lives in cities. And urban populations are expected to grow by another 2.8 billion people by 2050.

To meet changing resident and business demands, cities need to adopt efficient urban planning and infrastructure development. They also need to create solutions for keeping people mobile in the midst of rapid growth.

As your urban mobility leader, thyssenkrupp Elevator is reshaping the elevator industry and transforming cities. We’re constantly evolving, with new products like MULTI, the world’s first multi-directional elevator, and MAX, our predictive maintenance solution.

To help customers and cities grow, we offer endura MRL. It’s a low-rise elevator that’s been developed for you.
At thyssenkrupp Elevator, our aim is to make cities the best ever places to live: to move people safely, comfortably and efficiently, today and tomorrow.

We do this by intelligently applying existing technologies and developing next-generation solutions – working closely with you to advance an industry that moves more than 1 billion people per day, worldwide.

MAX: real-time predictive maintenance
Engineering confidence.

Choose endura MRL.

The new endura MRL combines the no-nonsense functionality of hydraulics and a truly machine room-less design — perfect for low-rise buildings. Now you can maximize building space while keeping construction coordination and costs low. Fewer moving parts and the uncomplicated design provide dependable, capable equipment that isn’t overengineered for buildings with just a few floors. And the cost to maintain the endura MRL is significantly lower than the cost of maintaining more complex low-rise MRL traction elevators.

So simplify, because why buy more than you need?
When we say machine room-less, we mean it. Everything fits in the hoistway.
Engineering simplified for everyone.
Hey architects...

Stop stressing about elevator space. The endura MRL lets you incorporate elevators into your design without worrying about a machine room, controller access or weight and capacity restrictions. The pump unit is located in the elevator pit. Since the controller is located in the elevator door jamb, you don’t have to reserve space for access to it. You truly do have more space to work with.

The endura MRL uses little electricity, has a small lifetime environmental impact and virtually eliminates the use of petroleum through the optional use of enviromax®, the industry’s first performance-improving, vegetable-based hydraulic fluid. LED lighting is standard, so you won’t have to change your lights for years. Since the cab is from thyssenkrupp Elevator, you’ll benefit from the industry’s only UL validated, 01350 CA-compliant, low-emitting interiors. That’s one less thing to worry about.

Hey building owners...

This elevator has fewer moving parts and an uncomplicated design. You'll appreciate having lower maintenance costs than a low-rise MRL traction elevator. An electronic valve makes floor leveling adjustments automatically, decreasing unexpected service visits. Battery-lowering operation is included to ensure tenants don’t get trapped in a power failure. There’s also no machine room, so you won’t spend money heating or cooling a room you can’t lease.

You have the option to use enviromax, a canola-based hydraulic fluid that’s readily biodegradable and rapidly renewable. It’s grown, harvested and processed in North America, and is 95 percent petroleum-free.

Hey contractors...

With endura MRL, installation is easy. You’ll spend less time thinking about the elevator because there’s less to build and manage. You can eliminate framing, electrical and HVAC, fireproof doors, as well as the locks and signage required for typical machine rooms or controller closets. In some cases, your hoistways may need cooling to meet temperature requirements.

You no longer have to provide disconnects and wiring chases, or assign coordination and installation tasks to partnering trades. Permanent power and a hoistway are all you need, and we do the rest.
Simply more space.

Because the endura MRL doesn’t have a machine room, you have more leasable building space. Here are some of its key components.
Fits into a tiny 8½-inch wall and is fully digital. This saves space and helps reduce elevator noise.

You no longer need to provide disconnects and wiring chases, or assign coordination and installation tasks to partnering trades. Permanent power and a hoistway are all you need to provide.

Malfunctioning doors are the leading cause of elevator service calls. This new technology improves elevator door reliability while providing a quick and smooth door operation.

The pump unit is located in the pit, and is sealed with a hardtop, plus sound-deadening material to ensure a quiet ride. It also features a new electronic valve. The valve is virtually adjustment-free, and allows for improved leveling accuracy.

Lets you shut off oil flow remotely, simplifying elevator maintenance.

endura MRL uses a holeless jack that requires no drilling.
Start planning now.

The numbers at a glance

- **Technology**: Hydraulic
- **Type**: Holeless
- **Capacity**: 2100 – 5000 lbs
- **Speed**: 80 – 150 fpm
- **Travel**: 1-stage: 12’-8”
  2-stage: 23’-2½”
  3-stage: 33’-6½”
  * with standard pit and overhead

You’ll save money with the endura MRL

We’ve done the homework so you can make an educated decision about purchasing the right low-rise elevator. Our Life Cycle Analysis and Costing research makes the long-term cost and environmental impacts of low-rise elevators transparent.

When it comes to energy, we understand the importance of using less. Based on national averages and industry operating use standards, the annual energy consumption of a traction unit is approximately $350 versus $500 for a like hydraulic unit.

<table>
<thead>
<tr>
<th>Costs</th>
<th>Machine room hydraulic</th>
<th>Traction MRL</th>
<th>endura MRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial cost</td>
<td>$76,000</td>
<td>$99,000</td>
<td>$81,000</td>
</tr>
<tr>
<td>Building costs</td>
<td>$6,700 ^1</td>
<td>$2,500 ^2</td>
<td>$0</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$101,000</td>
<td>$195,000</td>
<td>$110,000</td>
</tr>
<tr>
<td>Total</td>
<td>$183,700</td>
<td>$296,500</td>
<td>$191,000</td>
</tr>
</tbody>
</table>

Each elevator type listed above is a three-stop, 2,500 lbs capacity unit with the same interiors and settings. Total cost reflects 25 years of elevator life. Information is based on national averages and may not be reflective of your geographic location.

See endnotes on page 13.

You’ve got options and simplicity. Planning is easy.
Passenger elevators

<table>
<thead>
<tr>
<th>Capacity (lbs)</th>
<th>Hoistway A x B</th>
<th>Hoistway A x B</th>
<th>Front/ rear</th>
<th>Inside clear C x D</th>
<th>Door type</th>
<th>Door width E</th>
</tr>
</thead>
<tbody>
<tr>
<td>2100</td>
<td>7'-4&quot; x 5'-9&quot;</td>
<td>7'-8&quot; x 5'-9&quot;</td>
<td>F</td>
<td>5'-8&quot; x 4'-3&quot;</td>
<td>One-speed</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>2100</td>
<td>7'-4&quot; x 6'-8½&quot;</td>
<td>7'-8&quot; x 6'-8½&quot;</td>
<td>F/R</td>
<td>5'-8&quot; x 4'-3½&quot;</td>
<td>One-speed</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>2500</td>
<td>8'-4&quot; x 5'-9&quot;</td>
<td>8'-8&quot; x 5'-9&quot;</td>
<td>F</td>
<td>6'-8&quot; x 4'-3&quot;</td>
<td>One-speed</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>2500</td>
<td>8'-4&quot; x 6'-8½&quot;</td>
<td>8'-8&quot; x 6'-8½&quot;</td>
<td>F/R</td>
<td>6'-8&quot; x 4'-3½&quot;</td>
<td>One-speed</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>3000</td>
<td>8'-4&quot; x 6'-3&quot;</td>
<td>8'-8&quot; x 6'-3&quot;</td>
<td>F</td>
<td>6'-8&quot; x 4'-9&quot;</td>
<td>One-speed</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>3000</td>
<td>8'-4&quot; x 7'-2½&quot;</td>
<td>8'-8&quot; x 7'-2½&quot;</td>
<td>F/R</td>
<td>6'-8&quot; x 4'-9½&quot;</td>
<td>One-speed</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>3500</td>
<td>8'-4&quot; x 6'-11&quot;</td>
<td>8'-8&quot; x 6'-11&quot;</td>
<td>F</td>
<td>6'-8&quot; x 5'-5&quot;</td>
<td>One-speed</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>3500</td>
<td>8'-4&quot; x 7'-10½&quot;</td>
<td>8'-8&quot; x 7'-10½&quot;</td>
<td>F/R</td>
<td>6'-8&quot; x 5'-5½&quot;</td>
<td>One-speed</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>4000</td>
<td>9'-4&quot; x 6'-11&quot;</td>
<td>9'-8&quot; x 6'-11&quot;</td>
<td>F</td>
<td>7'-8&quot; x 5'-5&quot;</td>
<td>One-speed</td>
<td>3'-6'1/4&quot;</td>
</tr>
<tr>
<td>4000</td>
<td>9'-4&quot; x 7'-10½&quot;</td>
<td>9'-8&quot; x 7'-10½&quot;</td>
<td>F/R</td>
<td>7'-8&quot; x 5'-5½&quot;</td>
<td>One-speed</td>
<td>3'-6'1/4&quot;</td>
</tr>
</tbody>
</table>


Contact your local representative for various code or jurisdictional exceptions or alterations required.

See endnotes on page 13.
Service elevators

Two-speed side opening doors

Top view: Front opening

Top view: Front and rear opening

Service  1- and 2-Stage  3-Stage

<table>
<thead>
<tr>
<th>Capacity (lbs)</th>
<th>Hoistway</th>
<th>Hoistway</th>
<th>Front/</th>
<th>Inside clear</th>
<th>Door type</th>
<th>Door width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A x B</td>
<td>A x B</td>
<td>rear</td>
<td>C x D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4500</td>
<td>7'-4&quot; x 9'-6½&quot;</td>
<td>7'-8&quot; x 9'-6½&quot;</td>
<td>F</td>
<td>5'-8&quot; x 7'-9½&quot;</td>
<td>Two-speed</td>
<td>4'-0&quot;/4'-6&quot;</td>
</tr>
<tr>
<td>4500</td>
<td>7'-4&quot; x 10'-9½&quot;</td>
<td>7'-8&quot; x 10'-9½&quot;</td>
<td>F/R</td>
<td>5'-8&quot; x 7'-10&quot;</td>
<td>Two-speed</td>
<td>4'-0&quot;/4'-6&quot;</td>
</tr>
<tr>
<td>5000</td>
<td>7'-4&quot; x 10'-2&quot;</td>
<td>7'-8&quot; x 10'-2&quot;</td>
<td>F</td>
<td>5'-8&quot; x 8'-5&quot;</td>
<td>Two-speed</td>
<td>4'-0&quot;/4'-6&quot;</td>
</tr>
<tr>
<td>5000</td>
<td>7'-4&quot; x 11'-4½&quot;</td>
<td>7'-8&quot; x 11'-4½&quot;</td>
<td>F/R</td>
<td>5'-8&quot; x 8'-5½&quot;</td>
<td>Two-speed</td>
<td>4'-0&quot;/4'-6&quot;</td>
</tr>
<tr>
<td>5000H</td>
<td>7'-4&quot; x 10'-9&quot;</td>
<td>7'-8&quot; x 10'-9&quot;</td>
<td>F</td>
<td>5'-8&quot; x 9'-0&quot;</td>
<td>Two-speed</td>
<td>4'-0&quot;/4'-6&quot;</td>
</tr>
<tr>
<td>5000H</td>
<td>7'-4&quot; x 11'-11½&quot;</td>
<td>7'-8&quot; x 11'-11½&quot;</td>
<td>F/R</td>
<td>5'-8&quot; x 9'-0½&quot;</td>
<td>Two-speed</td>
<td>4'-0&quot;/4'-6&quot;</td>
</tr>
</tbody>
</table>

A Hoistway width  
B Hoistway depth  
C Inside clear width  
D Inside clear depth  
E Door clear width  
F Inside clear height  
G Door clear height  
H Minimum overhead  
I Minimum pit depth  
J Safety beam required per OSHA 1926.502  
K Travel  
L Max travel possible  
M Contact your local representative for various code or jurisdictional exceptions or alterations required.  
N See endnotes on page 13.
## Technical specifications

<table>
<thead>
<tr>
<th>Capacities (lbs)</th>
<th>2100, 2500, 3000, 3500, 4000, 4500, 5000, 5000H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speeds (fpm)</td>
<td>80, 100, 110, 125, 150 feet per minute</td>
</tr>
<tr>
<td>Maximum travel</td>
<td>48’-3½”; serves up to six floors with additional pit and overhead</td>
</tr>
<tr>
<td>Jack types</td>
<td>Single, Two-stage, Three-stage (telescoping)</td>
</tr>
<tr>
<td>Power characteristics</td>
<td>200–480 VAC, 3 phase, 60 hertz; (single-phase application is available as an option)</td>
</tr>
<tr>
<td>Controller</td>
<td>TAC32 (in the second landing wall jamb)</td>
</tr>
<tr>
<td>Door operator</td>
<td>Universal Door Operator (LD16)</td>
</tr>
<tr>
<td>Manual lowering</td>
<td>Standard</td>
</tr>
<tr>
<td>Battery-lowering operation</td>
<td>Standard Rescue</td>
</tr>
</tbody>
</table>

### Endura MRL controller

Our endura MRL is designed to maximize space because the controller is in the elevator entrance jamb. As a result, we require a minimum 8½-inch actual wall thickness at the floor where the controller will be located. The wall construction can be done with drywall or masonry block. For installation purposes, however, the entire wall at the controller level must be left out until the elevator frame and controller are in place.

The controller must be located at the landing directly above the lowest landing served by the elevator. If that is not possible, the location must be coordinated with your thyssenkrupp Elevator representative.

### Endnotes

Dimensional data shown above is for both seismic and nonseismic conditions and complies with current ASME A17.1 and CSA B44 Safety Code for Elevators. Local codes may vary from the national codes. Consult your thyssenkrupp Elevator representative for details.

1. Cost includes machine room construction and electrical disconnect.
2. Cost includes controller closet construction and electrical disconnect.
3. A 5’-0” min. pit is required for additional travel. Travel above 13’-8” (1-Stage) or 25’-2½” (2-Stage) or 36’-6½” (3-Stage) requires additional pit and/or overhead by adding 1” for every 1” (1-Stage) or 2” (2-Stage) or 3” (3-Stage) of additional travel. Max increase 2’-0” allowed in overhead.
4. In areas where a 7’ deep pit ladder is required, additional hoistway width or wall pocket will be required.
5. This capacity is not available with center opening doors.
6. To meet the requirements of IBC code for 84” stretchers, a 4’-0” center opening (for 4000 lbs capacity only) or 3’-6” side opening (for 3500 lbs or 4000 lbs capacity) door is required. For a 3500 lbs capacity car with front and rear doors, the doors must be in adjacent corners.
7. Dimension shown is based on suspended ceiling design. An increase in cab height will result in an increase in overhead requirements.
8. Provided and installed by others, as directed by your thyssenkrupp Elevator representative. Clear overhead is shown to the bottom of the safety beam.
9. With optional 4’-6” two-speed side opening door, hoistway width becomes 8’-2”.
10. For multiple elevators: Add 4” for a divider beam between hoistways.

Illustrations and images in this brochure may differ from the installed product. Consult your local representative for more information.
First impressions last.

Our cab and finish options let you personalize your elevator interior. Just like you want to.

Pictured above: Graystone plastic laminate applied panels with downlight ceiling. Wood floors by others.
Ceilings

Basic flat
Exposed cab top with optional recessed lighting is available in a powder coated steel finish. Ideal for service cars.

Suspended
White translucent diffusers for LED lighting are available with ceiling frames in a powder coated, aluminum or stainless steel finish.

Downlight
Metal pan downlight ceiling features LED lighting. Lights are mounted in your choice of powder coated or stainless steel ceiling panels.

Wall finishes
Elevator cab interiors are a blank slate. Create an impressive design with our wide variety of standard options. We can help you customize to tastefully complement your building’s décor.

Applied panels and plastic laminates
Options include wood, solids and pattern finishes. All are urea-formaldehyde-free. Free is good, right?

Powder coats
You can color your interior with powder coats. These are free of volatile organic compounds and have a lifetime of more than 10 years.

Metals
Simply want a polished interior? Choose one of our four metals.

Handrails

Cylindrical
1½” cylindrical handrail is a continuous metal form with ends turned toward the wall. We also offer straight endcaps in lieu of the returned ends. Comes in brushed stainless steel.

Flat bar
Metal bar handrail is available in ¼” thickness and 2”, 4” or 6” widths. Comes in brushed stainless steel.

Sills

Aluminum
Nickel silver
Our cab sill finishes allow you to match your sills to other design components inside the cab. The standard sill design is aluminum. You can upgrade to nickel silver for maximum durability.
Passengers need to quickly understand how to use your elevator. Our fixtures and cab accessories make it simple.

Whether it’s choosing LED buttons or sturdy handrails, you can easily accessorize endura MRL into a passenger-friendly ride.
Signa4 fixtures

Product details
- Satin stainless steel finish with charcoal trim
- Allows for renovation of metal finish without requiring removal of box or frame

Traditional fixtures

Product details
- Faceplates in brushed or polished stainless steel
- Position indicator displays car location with matrix of red LED-illuminated dots

Vandal-resistant fixtures

Product details
- Faceplates in brushed or polished stainless steel
- Extra level of protection in challenging environments
- Pry-resistant hall jamb symbols and buttons are mounted flush with the door frame. We hate vandalism.

Fixtures shown above are for representation only. Your project-specific application may vary.
Traditionally, hydraulic elevators have used petroleum-based fluid. This gave hydraulic elevators a negative environmental image, with risks of groundwater contamination, soil remediation and reliance on nonrenewable resources.

Our standard petroleum-based hydraulic oil is inherently and readily biodegradable and stable, contains no zinc and provides outstanding protection against rust and corrosion. We also offer enviromax, the elevator industry’s first high-performing, vegetable-based hydraulic fluid. It’s formulated from canola oil and is rapidly renewable and readily biodegradable. Its effects on the environment are minimal.

- Energy-efficient and cost-saving
- Provides excellent wear protection
- Helps maintain stable temperature
- Made in the USA
- Contains no zinc
- High lubricity and viscosity
- Contains anti-foaming and anti-corrosion agents

**Viscosity**

enviromax has a very high viscosity index. Unlike other hydraulic fluids, it optimizes performance because it operates consistently across a broad temperature range. This results in reduced energy consumption and improved performance.
But over time, component wear and tear can’t be completely avoided. Smart maintenance and service are critical for the life of your elevator. That’s where MAX comes in.

MAX prevents problems before they occur
Combining the power of cloud computing, big data and machine learning, MAX monitors your elevators in real time.

Like a 24/7 digital partner, it continuously collects data about your elevator’s components and systems, and sends it to the cloud. The data is analyzed and algorithms determine when your elevator will require maintenance from our technicians.

We call this predictive maintenance. It’s revolutionary and can reduce your elevator downtime by up to 50 percent.

MAX is like having a digital partner
MAX uses cutting-edge technology to help you avoid the frustration and inconvenience of out-of-service elevators.

We’re continually improving MAX, so you can expect its benefits to get bigger and better over time.
endura MRL and the environment.

For sustainability, passenger health and LEED points, you’re in good hands.

thyssenkrupp Elevator is the first elevator company to share what’s in our products and materials, and we’re proud to lead our industry in material transparency.

Even better, we’re the only elevator company that can help with the tough new material credits in LEED v4, which now includes elevators. endura MRL has Health Product Declarations, Cradle to Cradle Material Health Certifications and Environmental Product Declarations to help with four more LEED points on your project.

Energy-saving features come standard
endura MRL comes with energy-saving features for no extra charge, saving you money upfront and for the life of your building.

LED lights
These come standard. LEDs last up to 25 times longer than traditional lights while using 75 percent less energy. They also produce barely any heat, helping keep your cab cool.

Automatic fan and light shutoff
When endura MRL isn’t in use, the cab’s lights and fan automatically shut off. This can reduce your cab energy use by 90 percent.

enviromax
The industry’s first vegetable-based hydraulic fluid has minimal effects on the environment. Choose this to improve your elevator’s performance, leveling accuracy and ride quality.
You’ve got the support you need.

endura MRL was designed to make your life easier. But it takes some steps to plan an elevator installation.

Relax. We support you throughout your entire elevator life cycle, from design through end of life. In the meantime, you can use our online support tools.

Try our online support tools at www.thyssenkrupp elevator.com/tools

Online tools:

- Elevator Finder
  Learn which elevator is right for you.

- Elevator Specification Generator
  Get elevator specifications based on your requirements and design features.

- Create-A-Cab
  Build your cab interior with our simple configuration tool.

- Energy Calculator
  Learn your potential energy consumption and costs.

- Service Portal
  Access your service account using our portal.
Our core principles.

We deliver.
Reliable and high-quality products, services and solutions with precision and a superior cost-benefit ratio.

We innovate.
We strive to find technology and business solutions that cater to future customer needs.

We understand.
We listen, make suggestions and co-develop with our customers.

We empower our employees.
We live an innovation culture based on respect and efficient collaboration.

We are leading the way.
We act with foresight and a solution-oriented mindset to progress our customers, employees and other stakeholders.

We act as a reliable partner.
We act in an honest, authentic and responsive manner towards customers, employees and other stakeholders.

We build on strong experience.
Our expertise is based on over 40 years of engineering competence.

engineering.
tomorrow.
together.
Always
there.

Our passionate goal is to always be there to secure the reliability of mobility equipment, ensuring it provides each passenger with the safest and most comfortable travel experience, thereby helping to make cities the best-ever places to live.

| 1,100,000 | customers in 150 countries |
| 50,000+ | employees |
| 900 locations |
| 27,000+ service technicians |
| 1,100,000 elevators and escalators under maintenance |