



# Special equipment options

Lift truck solutions for challenging operational conditions

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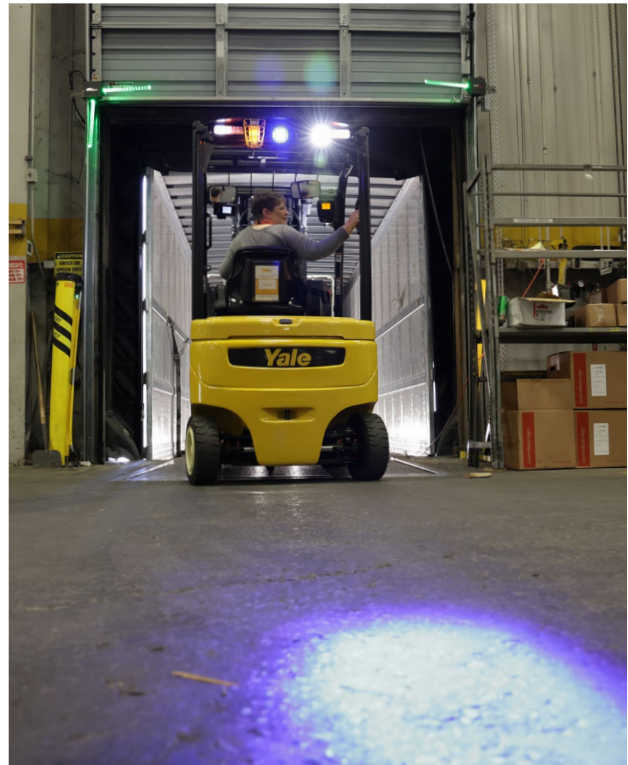
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# Built to be safe and productive

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Yale® lift trucks are engineered to meet the American National Standards Institute (ANSI) / Industrial Truck Standards Development Foundation (ITSDF) B56.1 Safety Standard for Low Lift and High Lift Trucks, the applicable Occupational Safety and Health Administration regulations (OSHA 1910.178) and other safety standards such as those issued by Underwriter Laboratories (U.L.) for industrial trucks (U.L. 558 and U.L. 583) and the Fire Safety Standard for Powered Industrial Trucks, issued by the National Fire Protection Association (NFPA 505).

All Yale lift trucks come standard with features that promote enhanced operational security and safety. In their standard configuration, Yale trucks enable properly trained operators to utilize these industrial tools in a safe and productive manner.



## TYPICAL FEATURES (TRUCK DEPENDENT)

- Parking brakes
- Operator-controlled horns
- Fall protection and prevention devices
- Load backrests
- Operator presence systems
- Operator restraint systems
- Selectable performance modes
- Overhead guards
- Speed reduction in turns
- Three point entry/exit

## Customer driven - application specific

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While operators in typical applications will appreciate the standard Yale features that promote enhanced operational security, safety and productivity, not all applications in which lift trucks operate are the same. Unlike automobiles, which generally operate under common conditions and follow consistent rules of the road, lift trucks often operate in highly varied working environments and applications, each of which presents unique challenges. These unique challenges drive customers to insist on application-specific lift truck solutions. For your application-specific needs, consider Yale's special equipment options, and work with your Yale® Dealer to determine which specific options meet your operational requirements.



## Changing operational conditions

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Facilities may need to adjust to meet changing conditions, which can result in irregular traffic patterns, flow and conditions. If your facility has experienced any of the following operational changes, you may want to consider Yale special equipment options. Just like standard Yale truck features, Yale special equipment options meet applicable safety standards (see subsequent pages for details on Yale special equipment options).

### WHEN TO CONSIDER THESE OPTIONS

- Increase in pedestrian traffic
- Increase in vehicle traffic
- Increase in noise level
- Increase in lift heights
- Reduction of visibility, blind intersections
- Reduction of dock, aisle space
- Change in racking type or configuration
- Change in facility layout or nature of operation
- Change or degradation of surface conditions
- Change in type of lift truck utilized

# Special equipment options by product class

CATEGORY	CLASS 1	CLASS 2	CLASS 3	CLASS 4,5
<b>ALARMS, LIGHTING, MIRRORS AND VISUAL AIDS</b>				
Audible alarms	•	•	•	•
Pedestrian awareness lighting	•	•	•	•
Operator lighting	•	•	•	•
Mirrors	•	•		•
Camera systems	•	•		•
<b>OPERATOR RESTRAINTS AND PROTECTION</b>				
Fall protection		•		
Tether boom extension		•		
Retractable lanyard		•		
Rear guard door	•	•		
Rear post	•	•		
High visibility seat belt	•			•
Seat belt extension	•			•
Load backrest extension kits	•	•	•	•
Overhead guard wire mesh screen	•			•
Rain top	•	•		•
Operator cabs	•			•
Bumper skirts			•	
<b>OTHER SPECIAL EQUIPMENT</b>				
Telematics (Yale Vision)	•	•	•	•
Operator assist systems	•	•	•	•
Fire safety standards and ratings	•	•	•	•
Fire extinguisher	•	•	•	•
Engine shutdown systems				•
Paper application kit				•
Direct store delivery (DSD) package			•	
Food grade lubricants	•	•	•	•
Side-load battery retainer interlock	•			
Traction speed limit	•	•	•	•
Rear handle with horn button	•			•

*This list does not include all Yale special equipment options and may be subject to change without notice. Please contact your Yale Dealer for more information. Yale special equipment applies to trucks with a maximum lifting capacity of 19,000 lbs. To learn more about special equipment available for higher capacity trucks, contact your Yale Dealer.*



# Alarms, lighting and other visual aids

## AUDIBLE ALARMS

Yale trucks are designed to provide excellent visibility and come standard with an operator-controlled horn. In their typical configuration, Yale trucks allow properly trained operators to effectively see pedestrians and other equipment operators, and intelligently warn them of the truck's presence with the horn.

In certain operating conditions, the use of additional audible alarms may help enhance truck proximity awareness. In other applications, the use of audible alarms may not be effective, or may even be counterproductive.

Many types of audible alarms are available. Your Yale Dealer can help you choose voltage/decibel configurations to fit your application. When installed according to the provided instructions, these alarms maintain the U.L. classification of your truck.



## AUDIBLE ALARM CONSIDERATIONS

- The sound of the audible alarm should be readily distinguishable from all other audible devices in the area (machine shut-down alarms, fire alarms, work stop/start indicators, etc.)
- The sound produced must be loud enough to be heard over other ambient noise
- Multiple devices in the same area or echoing can create confusion or indifference
- Audible devices contribute to employee noise exposure
- Constant exposure can be fatiguing to operators and workers
- Pedestrians and operators can become accustomed to the sound of the device, and may ignore it
- Pedestrians and operators can become dependent on the device, and therefore be less likely to either look in the direction of travel or look out for moving equipment or pedestrians
- Audible devices can be annoying and are sometimes deactivated
- Audible devices may be objectionable to nearby residents
- Hearing protection makes it more difficult to hear audible devices and determine the direction and distance from which the sound is coming



### PEDESTRIAN AWARENESS LIGHTING

Based on facility layout, lighting conditions and each facility's unique operational rules, pedestrian awareness lighting options may help customers achieve optimum truck visibility and aid in pedestrian safety.

Pedestrian awareness lighting, such as strobe lights, provide a flashing light on top of the truck and may alert pedestrians of the truck's presence. Red zone lights project a red beam of light from the overhead guard onto the floor, presenting a visual reminder for pedestrians to walk or work outside of the curtain area. Blue or red LED spotlights cast a light in front of or behind the truck's directional path, assisting with truck awareness around corners or in congested spaces with poor visibility.



Before purchasing and installing any light option, carefully review the information listed under "Lighting considerations" on page 8.



## OPERATOR LIGHTING

In dimly lit storage and travel areas, additional lighting options may help increase operator visibility and productivity. OSHA's safety requirements relating to the use of lift trucks require auxiliary directional lighting where lighting is low: "Where general lighting is less than 2 lumens per square foot, auxiliary directional lighting shall be provided on the truck." OSHA 1910.178(h)(2).

Operator lighting such as rear work lights offer additional lighting while unloading trucks or moving in dark areas.

Dome/compartments lights brighten the operator compartment as needed, and may help with visibility of controls, paperwork and other accessories. Work lights/lamps illuminate poorly lit areas and are often used for outdoor nighttime operation.

A variety of additional light kits such as brake, tail, back-up lights and turn signals are also available. When installed according to provided instructions, Yale pedestrian awareness and operator lighting options allow you to maintain your Yale truck's U.L. classification. Additionally, Yale U.L. recognized work lights and headlights are designed to resist the damaging effects of weather and corrosion, and are protected from shock and vibration.

Specific to Yale end rider models, LED platform and trailer lights are available. Platform lights can help increase pedestrian and operator awareness of the platform perimeter in low light or congested areas. Trailer lights help improve visibility in dark trailers or aisles, aiding operators in accurately picking and placing loads in trailers.

## LIGHTING CONSIDERATIONS

- Light placement must be considered based on truck usage and environment; low overhead clearances may not permit light installation on top of the overhead guard
- Lights placed where they shine or reflect into operator's eyes must be shielded, however, shielding may also limit pedestrian visibility
- Selected light color should differ from lights on stationary or background equipment; the presence of emergency equipment should also be considered during selection process
- Take floor coloring into account when selecting light colors for LED pedestrian awareness light options, as floor coloring can have a significant impact on the effectiveness of LED lights
- Pedestrians and operators can become dependent on lights, and be less likely to look in the direction of travel, or look out for moving equipment and pedestrians
- Workplace lighting conditions (daylight, indoor brightness, dim light, etc.) and the potential for wet or reflective surfaces should be considered when selecting light types:
  - Well-lit areas may necessitate bright or intense strobe lights
  - Very bright indoor areas or daylight outdoor use may make lights ineffective
  - Wet surfaces may significantly limit the effectiveness of lights
- Pedestrians and operators may become accustomed to or ignore auxiliary lights, particularly when multiple lights are in operation
- Inconsistent utilization of light kits can create confusion or indifference
- Blue LED lights have been classified by some entities as falling within risk group 2 of EN 62471; persons should avoid looking directly into blue LED lights to minimize the potential for eye injury





## MIRRORS

Yale trucks are designed in their standard configuration to provide operators with excellent visibility in the direction of travel, an OSHA requirement. Operators are normally able to see pedestrians, other equipment operators and objects without mirrors.

In certain applications, mirrors may aid operators in viewing the sides of the truck, the tail swing area, or other areas not in their direct view when properly positioned, adjusted and maintained. Mirrors on lift trucks are not driving mirrors, and must not be used as driving mirrors when operating in forward or reverse. Operators must always look in the direction of travel to avoid property damage or personal injury, as the view provided by mirrors is not as complete or effective as physically looking in the direction of travel.

Flat or convex mirrors are available in a selection of shapes and sizes, including round, rectangular and wide-width. Yale mirror options include a universal mounting bracket to help achieve a proper fit on the round or rectangular tubing of overhead guards.

## CAMERAS

In certain operating conditions, camera systems may help enhance range of visibility in specific areas and allow for more efficient retrieval and put away of loads. Additionally, dependent on the nature of the application, they may help operators maneuver and/or clear the rear and tail-swing areas when changing direction.

## MIRROR CONSIDERATIONS

- May decrease operator vigilance or attentiveness
- The field of vision offered by mirrors represents a small portion of what an operator would see with direct vision
- Can distort image and impact depth perception
- Mirror placement and light reflection may cause potential impairment of visibility
- Truck vibration may cause blurred image
- Overall effectiveness can be dependent on environmental factors (i.e. temperature, moisture, light, mirror cleanliness, etc.)

Camera systems, which can be positioned at the rear of the truck, may enhance operator range of visibility in certain areas and provide assistance when driving in reverse. However, if used as an operator's sole point of visual reference, camera systems can also limit range of visibility and impair the operator's depth perception. Camera systems must not be used as a substitute for the operator turning and looking in the direction of travel.

Fork/carriage camera systems provide a fork level view of the pallet opening, enabling operators to more precisely retrieve product at high lift heights. Not only can this type of camera system increase productivity, it can also improve product handling and reduce the potential for rack and pallet damage.



# Operator restraints and protection

TABLE 1 PERSONAL FALL PROTECTION SYSTEM CONFIGURATIONS (POUNDS)

FALL PREVENTION/PREVENTION DEVICE	OPERATOR WEIGHT (LB)			
	< 311*	311 - 400	> 400*	
Full body harness	•	•	•	Contact truck manufacturer
Energy absorber - max total length (6ft.)	•			
Self-retracting lanyard		•	•	
Maximum arresting force permitted (lb)	1,800	1,800	1,800	

\* Truck capacity shall be reduced by the operator's weight in excess of 220 lb

See your Yale Dealer to learn more about available fall protection systems and options, and the individual components of the various fall protection systems based on operator weight, operator ease of use and comfort, and your application's specific materials handling needs.

## FALL PROTECTION

Industry regulations require that elevated platform equipment, such as Yale order pickers and Yale very narrow aisle turret trucks, are fitted with fall protection systems. Yale order pickers come standard with a full body harness and energy absorbing tether, and very narrow aisle turret trucks with a retractable tether with full body harness.

OSHA updated its fall protection requirements in 2017, and ANSI/ITSDF B56.1 updated its requirements to match OSHA with the 2018 update. The table below, found in B56.1a-2018 section 4.17.2, provides personal fall protection system configurations.

## TETHER BOOM EXTENSION

A 30" (760 mm) tether boom extension is available to replace the standard tether, attaching on top of the overhead guard. Overall extended height is increased by 2" (50 mm) when adding this option.

## RETRACTABLE LANYARD

A retractable lanyard is available to attach to the standard tether.

## REAR GUARD DOOR

The open back design of Yale stand-up lift trucks facilitates the normal demands of a typical work environment, in which operators get on and off the truck multiple times each shift. The open back is also designed to meet the ANSI/ITSDF B56.1 industry safety standard by allowing unimpeded, easy egress from the truck in the event of a tip-over or off-dock accident. In the case of an emergency, such as lateral tip-over or the unit going off a dock, the standard open rear back facilitates an unobstructed exit from the truck. Based on extensive research and testing, the industry standard best practice and advice is to leave the truck rapidly in this type of situation, rather than riding the impact out.

The presence of a rear guard door may slow the egress of the operator from the compartment. However, the optional rear guard has been designed to permit egress as quickly as possible during normal operation or in the event of an accident.

In some facilities, there may be a heightened risk of objects (such as horizontal bar stock) intruding into the operator compartment. In these situations, a rear guard door option is available for Yale stand-up lift trucks. The rear guard door is not intended to keep the operator's legs and feet within the compartment, but instead to protect the operator from serious injury resulting from objects intruding into the lower part of the compartment.

Operators of stand-up lift trucks equipped with rear guard doors should be instructed to step off or jump clear of the truck in the event of a tip over, or in the event of an off-dock accident in which the unit is traveling forks-leading.

You should assess your workplace environment and evaluate whether potential intrusion hazards warrant the selection of a rear guard door for your stand-up lift trucks, compared with the risks posed by a delay in exiting a unit equipped with a rear guard in the event of a tip over or off-dock accident.



#### REAR GUARD DOOR CONSIDERATIONS

- Potential pinch point creation
- Egress restriction
- Effectiveness of foreign object intrusion
- Heat build-up in operator compartment
- Unintended uses and consequences to having the rear guard
- Aisle width requirements and/or operating clearances



#### REAR POST

Yale stand-up lift trucks come standard with a rear post and a heightened frame in the backrest area, which are intended to provide reasonable protection to the operator in standard warehouse shelving configurations.

In some warehouse environments, adding an additional rear post should be thoroughly investigated by your safety officer. The safety officer should take into consideration potential hazards including, but not limited to, possible pinch/contact points (such as potential for contact with the operator's head and pinch or shear point for the operator's arm), effectiveness of under-ride prevention and visibility reduction/limitations.



Make sure to consult with a racking specialist to determine the appropriate racking system for your warehouse.



#### HIGH VISIBILITY SEAT BELT

To help confirm operator seat belt usage from a distance and aid in proper operator supervision, the Yale high visibility seat belt may be a good option.

Yale also offers an interlocked option of the high visibility seat belt which disables truck travel if the seat belt is not latched. A sequencing interlocked version is also offered, which requires a step-by-step start-up procedure to prevent the seat belt from being latched prior to the operator sitting in the seat (out-of-sequence operation disables truck travel).

#### SEAT BELT EXTENSION

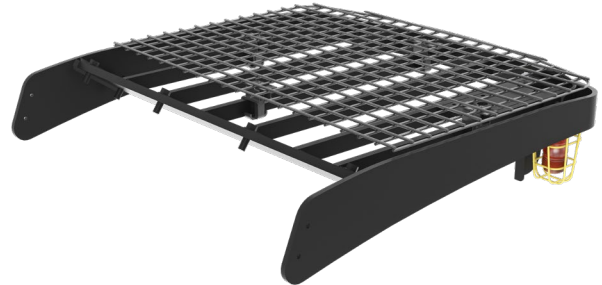
Operators must be provided with and properly utilize the appropriate seat belt for their size. A variety of extended length seat belts and seat belt extensions are available for larger operators of sit-down counterbalanced lift trucks.

#### LOAD BACKREST EXTENSION KITS

Load backrest extension kits are available for most Yale lift trucks. The load backrest extension must be high enough, with openings small enough, to prevent parts of the load from falling backward.

#### OVERHEAD GUARD WIRE MESH SCREEN

A top mesh screen will provide reasonable protection from certain sizes of falling objects. The specific customer site must identify details of the potential hazard to determine if the wire mesh screen will provide the expected protection. Openings are 1.75" x 1.75" (45 mm x 45 mm), with an increase in overall height of 1.50" (38 mm). Other types of guards, such as Lexan™, are available as well.



#### RAIN TOP

Rain tops are intended for outdoor use on counterbalanced ICE trucks to improve operator comfort. In deciding whether to install a rain top, your safety officer should consider possible factors including but not limited to, restricted visibility, aging, cleaning and maintenance.



#### OPERATOR CAB

In certain applications, an enclosed operator cab is desired to protect operators from exterior elements. Yale cabs feature tempered glass, emergency exit via window removal and additional sound-proofing to reduce noise levels at the operator's ear.

## OPERATOR SHIELD

A transparent Lexan shield can be fitted in place of the standard wire mesh on Yale stand-up trucks and order selectors. The height of the shield varies depending on truck model and mast height. This option is not available with Cooler/Freezer Package.

## BUMPER SKIRTS

Yale offers bumper skirts for its Class III pallet trucks, which vary by truck type and application requirements. These are intended to help minimize contact with the bumper edge, drive tires and/or caster wheels. Bumper skirts are not suited for all applications and may reduce the gradeability of pallet truck operation.

# Other special equipment

## TELEMATICS

Telematics can not only help enhance operator and truck security, but aid in optimized fleet utilization and productivity. Yale Vision offers a scalable telematics solution that can be installed on new or existing materials handling equipment.

In addition to limiting truck access to trained and authorized operators, Yale Vision can track training updates, provide impact monitoring and alerts, and incident data for route optimization. It also requires the completion of OSHA pre-shift checklists before the truck will operate.

## OPERATOR ASSIST SYSTEMS

Certain applications may have high volumes of pedestrian or mobile equipment, and/or complex operational rules and traffic patterns. Depending on the application, the use of operator assist systems may help enhance truck, pedestrian and other mobile equipment proximity awareness.

Yale offers a suite of operator assist systems designed to reinforce proper lift truck operation and support operator awareness, tailored to the unique challenges of specific applications. This technology can limit truck performance based on equipment status, location and operating conditions, while keeping control of the truck in the hands of your properly trained lift truck operator.



Depending on truck configuration and customer/application needs, the available options include advanced dynamic stability, traction control, hydraulic control, overload control, object detection and proximity detection.

## FIRE SAFETY STANDARDS AND RATINGS

NFPA 505, UL 558 and 583, OSHA 1910.178 and ANSI / ITSDF B56.1 set forth fire safety requirements relating to lift trucks. These standards require that trucks used in applications which are designated as hazardous environments must meet certain requirements. Yale offers Type E, EE, G, GS, LP, LPS, D and DS rated trucks to help meet requirements of specific applications. Local authorities should be contacted to help define the lift truck rating types required for specific hazardous applications. Where hazardous applications are identified, an appropriately rated lift truck must be used.



If a different type rating is required for a particular hazardous environment (such as a Type EX truck), contact your Yale Dealer for more information.



## FIRE EXTINGUISHER

OSHA does not require that lift trucks are equipped with a fire extinguisher as standard equipment. However, depending on the application and potential situational hazards, OSHA may have requirements for fire protection in specific locations. Yale offers a lightweight yet powerful fire extinguisher. Brackets allow for convenient mounting on the lift truck.



## DIRECT STORE DELIVERY (DSD) PACKAGE

As the direct store delivery distribution model continues to grow, more pallet trucks are being used to deliver product from the trailer to the store, which can in some cases lead to lift gate incidents and costly product and truck damage.

The Yale DSD package for walkie pallet truck is designed to offer complete visibility to the lift truck and load during transition from the trailer to the end of the lift gate. This provides operators with greater confidence and precision, which may help reduce the chance of lift gate incidents.



## PAPER APPLICATION KIT

Lift trucks working in the paper industry or other similar applications can be exposed to heavy dust, organic debris, or loose flammable material and debris, such as recycled paper, wood chips or fibers and cotton. These types of environments can lead to accumulation of dust and debris within the engine compartment.

Yale offers a paper application kit for trucks used in these types of applications. The kit is intended to reduce the accumulation of paper or other debris in the engine compartment and to help keep debris away from the hottest portions of the engine. By doing so, the kit helps lessen the potential for ignition of the dust or debris, as long as the truck and components of the paper application kit are properly maintained and regularly cleaned.

## FOOD GRADE LUBRICANTS

Lift trucks working around consumable products run the risk of lubricant exposure and contamination of food and beverage products. Yale food-grade lubricants are formulated for safe use around consumable products (NSF H1 registered based on FDA pre-approved ingredients), are USDA inspection-ready, non-toxic and colorless and tasteless. They decompose into carbon dioxide and water, therefore reducing risk of contamination.

## TRACTION SPEED LIMIT

Controlling the speed of lift truck travel may be desirable or a requirement in certain applications. To control and set lower maximum travel speeds, Yale offers several traction speed limit options for specific lift truck models.

### SIDE-LOAD BATTERY RETAINER INTERLOCK

When battery gates are not properly installed, batteries can become loose and disengage. The Yale side-load battery retainer interlock system prevents traction when the battery gate is not properly installed. The interlock feature is fitted to both sides of the truck, and will not allow traction unless the interlock switches sense closed side gates.

### REAR HANDLE WITH HORN BUTTON

In some applications, lift trucks are driven in reverse just as often as they are driven forward. If desired, the Yale rear drive handle with horn button can be fitted to the right rear overhead guard leg of the truck, providing a convenient and comfortable hand hold when operators are frequently driving and looking in reverse. The horn button is also located on the handle, allowing the operator to activate it easily with the right thumb.

### ENGINE SHUTDOWN SYSTEM

Certain high-production or high temperature applications can cause undesired maintenance needs. The Yale engine shutdown system alerts operators to system conditions that could cause engine or system damage if left unattended, and can shut down the engine if the problem persists. By offering an early warning, this option can help achieve an informed and controlled shutdown, thereby avoiding a potential emergency.



To learn about additional special equipment options or what options might be right for your operation, please contact your local [Yale® Dealer](#).


# About Yale

Yale Lift Truck Technologies leverages over a century of material handling experience and substantial investment in innovation to bring the most advanced technology-driven lift truck solutions to market. The company offers a full line of award-winning lift trucks, including reach trucks, order pickers, turret trucks, pallet jacks and trucks, pallet stackers, tow tractors and counterbalanced forklifts, as well as powerful operator assist solutions, proven robotics and a wide range of power sources to help customers adapt to today's demanding supply chain. Yale and its independent Dealer network support these solutions with comprehensive after-sales service, parts, financing and training.



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Trucks may be shown with optional equipment and/or features not available in all regions. Truck performance may be affected by the condition of the vehicle, how it is equipped and the application. Specifications are subject to change without notice. Consult your Yale® Dealer if any of the information shown is critical to your application.

CERTIFICATION: Yale lift trucks meet the design and construction requirements of B56.1-1969, per OSHA Section 1910.178(a)(2), and also comply with the B56.1 revision in effect at time of manufacture. Classified by Underwriters' Laboratories, Inc.

<sup>1</sup> 2020 Zebra Warehouse Vision Study. 2

## MATERIALS HANDLING FOR:

Third-party logistics (3PL)

Auto parts distribution

Beverage

Cold & frozen foods

Food distribution

Food processing

Furniture & furnishings

Government

Health & pharma

Home centers & durables

Retail & e-commerce