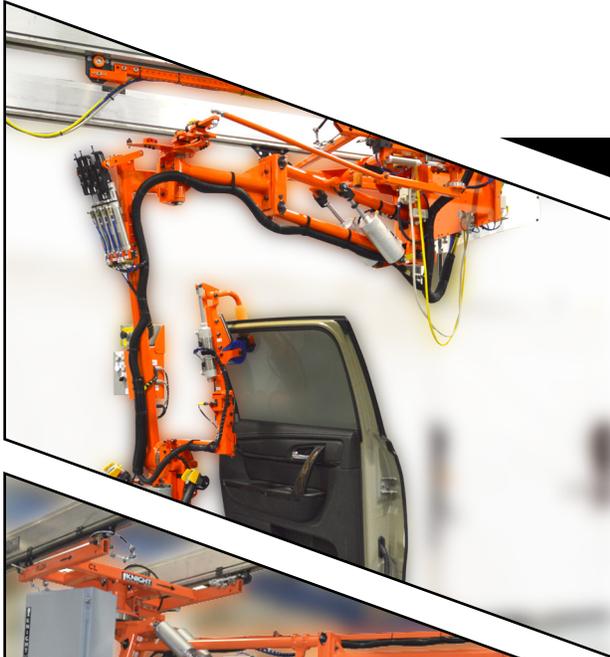




KNIGHT™

GLOBAL

Ergonomic Material Handling Equipment



Product Catalog



Knight Global headquarters and facilities is located in Auburn Hills, Michigan. Our turn key ergonomic material handling solutions combine standard and proven product designs with custom development.

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- Experience:** Designing and building ergonomic material handling equipment since 1984.
- Design:** FEA, Microstation, EPLAN, Rockwell RSLogix. State-of-the Art 2D and 3D design software: Includes CATIA, Unigraphics NX, SolidWorks, AutoCAD, FactoryCAD.
- Build:** Full CNC, Laser / Plasma / Waterjet Cutting, Robotic Welding Technologies, 3D Printing Technology, Paint and Powdercoating Booth.
- Controls:** Design and build electrical and pneumatic systems in-house for each application.
- Service:** Stand alone department. Fully trained field service technicians on call 24/7 nationally and internationally.

- Quality Assurance:** Duty cycle/destructive testing capabilities to conform with industry requirements.
 - Ford Q1, ISO9001-2015, ISO14001-2015, CE
- Customer Support:** National/ International Distributors
- Sales Team:** Internal and External Sales Force.
- Support Staff:** Project Management, I.T., Standards, Coordination, Documents/Manuals and Marketing.



We are committed to **Total Customer Satisfaction** through **QUALITY, RELIABILITY** and **EMPLOYEE INVOLVEMENT**.

Servo Systems

Knight Global Servo Hoist Systems are Intelligent Assist Devices (IAD) that provide controlled transfers of workloads with speed, precision, quality and unmatched reliability. The Servos various programmability allows for imparting precision into the applications process.

Knight Servo Hoists enable the operator to precisely locate and/or float a load in the "Z" direction using programmable limits.

Features

- CE Compliant **
- Redundant chain design for safe operation:
 - Load Chain: Carries the load.
 - Safety Chain: Rides along for redundancy.
- Safety Rating of 125%
- Standard 24 VDC, 2.5 AMPS
- H5 Rated (Continuous Duty Cycle)
- 240 VAC, Single Phase 50/60 Hz
- Illuminated Run/Stop Button
- Programmable Overload Capability
- Fail Safe Braking
- Load Sensing, Pay Load and Handle Load
- Standard Float Mode
- Worm Style Gearbox
- Programming/ Diagnostic Communication Ports
- STO - Safe Torque Off.
- Enhanced User Interface (UI).
- Ethernet Connection.
- I/O Capabilities
 - (4) Analog Inputs/ (4) Analog Outputs
 - (20) Inputs/ (12) Outputs
 - (12) Inputs/ (8) Outputs are free for interface controls.
- LED Status Indicators
- LED Fault Diagnostics
- Virtual Travel Limits
- Active Dampening
- Impact Limiting

** CE compliance is not a standard feature on Knight Global Servo Systems. Please contact us for more details.



Intelligent Assist Devices (IADs) are computer controlled, servo driven tools that enable production workers to lift, move and position payloads quickly, accurately, and with ergonomic safety.

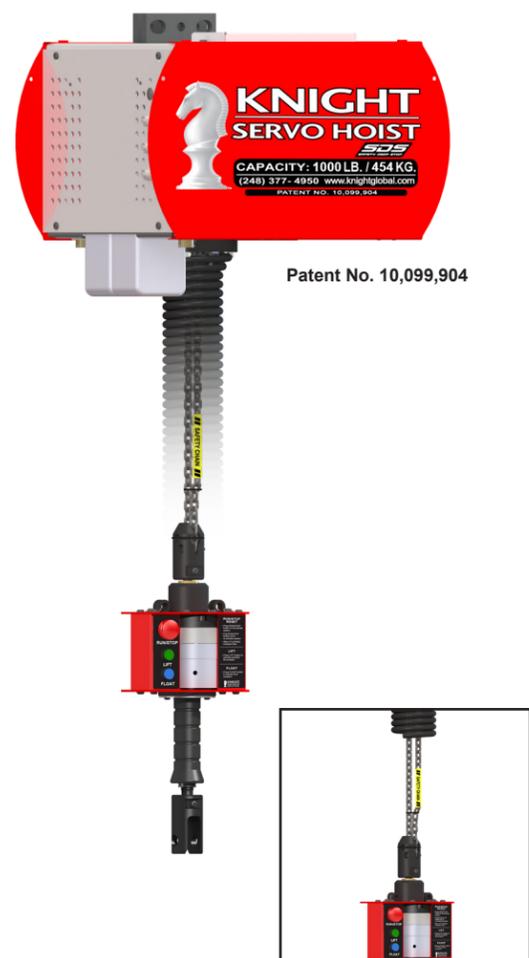
Ergonomic Safety Advantages

Knight Servo Systems are fully programmable allowing the application to be constantly monitored. Limits can be set to prevent the operator from accidentally dropping the load or from crashing the load into the nest when lowering to the set down position.

- Servo handles are load sensor based and do not require the pressing of buttons allowing for the operator to be 100% focused on moving or manipulating the part.
- Sensing will not allow for non-programmed loads to be raised or manipulated.
- Virtual limits can be programmed to prevent any crashes of loads moved into undesirable areas.
- Motion detection ability is available to stop if an operator moves into the path of a Servo Tractor.
- Programmable speeds and limits, to better assist the operator when manipulating a load.



Knight Global Servo Systems are environmentally friendly by only consuming as much power as (2) 100watt light bulbs per day and operating on 240VAC.



Safety Chain Single Motor

Knight Global's KSHS Series includes the patented "Safety Drop Stop" "SDS" feature, which makes it the safest intelligent hoist in the world. It is equipped redundant chains, one carrying the load, and the second travels along for safety.

The Standard hoist has a lifting capacity of up to 1000 lbs. [453kg] and hoist speeds of up to 241 fpm [73.5mpm].



KSH SDS Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,000 lbs. [453kg]	up to 241 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.



D-Series Servo Hoist

Knight Global's new D-Series Servo Hoist comes equipped with all the features of the patented "Safety Drop Stop" Servo Hoist minus the I/O for an significantly reduced cost. Introducing a dynamic servo hoist solution that is the safest, most intelligent and now, the most economical hoist in the world.

This new dynamic servo hoist is equipped with all the same programming features and benefits as the current servo hoist systems, minus any I/O. This new version of the servo hoist allows Knight Global to be more competitive with the lower end Intelligent Assist Devices (IAD's) in the industry without sacrificing safety or intelligent features.

D-Series SDS Servo Hoist

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 150 lbs. [68kg]	up to 241 fpm

Twin Chain Servo Hoists



Knight Global's Twin Chain Single Motor and Dual Motor Servo Hoists incorporate all the features and benefits of a standard servo hoist into a Twin Chain hoist configuration. The Twin Chains help to control and balance unwieldy or long parts. The two chains are mechanically linked together and can provide spans of up to 36 in. [914mm] in a single enclosure.

Each motor is electronically synced together with an option of a (LMM) Load Monitoring Module with OCI or a (LMM) with Pass Through Interface. Custom configurations are available.

KSHTC SDS Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 700 lbs. [317kg]	up to 196 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

KSHDM SDS Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 2,000 lbs. [907kg]	up to 123 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

Articulating Servo Arms

As an extension of an operator's natural movements, Knight Global's Servo Arm technology greatly improves safety, productivity and quality. Servo Arms are available in various overhead and floor mounted configurations.

Knight's KSHCA Overhead Carriage Mounted and KSHFA Floor Mounted Articulating Arm Series allows for an overhead varied reach within a work cell.



KSHFA



KSHCA

KSHFA Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,500 lbs. [680kg]	up to 98 fpm

KSHCA Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,500 lbs. [680kg]	up to 98 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

Features

- CE Compliant **
- Safety Rating of 125%
- Speeds: Up to 241 ft. per min. [73.5mpm].
- Overhead and Pedestal Mounted Configurations available.
- Maximum Lifting Capacity: Up to 1,500 lbs. [680kg] Reeved.
- Maximum Reach: Up To 48 in. [1,219mm]. (Boom & End Effector length not Included)
- Floor Mounted Pedestal Heights: 8 ft. [2.4m] - 10 ft. [3.0m].
- Chain Lengths: 12 ft. [365cm] - 20 ft. [609cm].
- Heavy Duty Roller Chain Available.
- Fail Safe Brake.
- Sealed Worm Style Gearbox.
- H5 Rated (Continuous Duty Cycle).
- Industry Standard 24 VDC, 2 AMP power.
- Illuminated Run/ Stop Button.
- 240 VAC, Single Phase 50/60 Hz..
- Load Sensing.
- I/O Capabilities.
- LED Status Indicators, Green and Blue Lighted Push buttons.
- LED Fault Indicators, Illuminated Run/ Stop Button.
- Programming and Diagnostic Communication Ports.
- Virtual Travel Limits.
- Speed Reduction Zones.
- Impact Limiting.
- Active Dampening.
- Standard Float Mode.
- Programmable Overload Capability.

** CE compliance is not a standard feature on Knight Global Servo Systems. Please contact us for more details.

Ergonomic Safety Advantages

Knight Servo Arms incorporate Servo Hoist Intelligent Assist Device (IAD) technology into various arm configurations to provide controlled transfers of workloads. The programmability features of the Servo Arm assist your natural movements, by combining safety and ergonomics; it makes heavy loads feel weightless.

Extension Servo Arms*

Extension Arms enable an operator with a non-linear reach and the capabilities to reach outside the area directly below a rail system. Extension Arms may be mounted to a single bridge, overhead carriage or floor mounted pedestal.

Knight's KSHEA Overhead Carriage Mounted and KSHAEA Floor Mounted Extension Arm Series allows for an overhead extended non-linear reach within a specified work cell. Extension arms may also be mounted to a single bridge.

*Now available with the "SDS" Feature.



KSHAEA

KSHAEA Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 500 lbs. [226kg]	up to 241 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

KSHEA Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 500 lbs. [226kg]	up to 241 fpm

Note: KSHEA overhead carriages are sold separately. Contact a Knight representative for more information.



KSHEA



KSHAEB

Extension Boom Servo Arms

Vertical Arms assist and enable an operator to reach underneath and overhead work areas with minimal effects of inertia with heavy loads in a confined work cell.

Knight Global's Overhead Carriage and Floor Mounted Vertical Arm Series creates a stable lifting platform, eliminating the yarding and swinging of chain or cable.

KSHAEB Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,000 lbs. [453kg]	up to 241 fpm

KSHEB Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,000 lbs. [453kg]	up to 241 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

KSHEB

Vertical Servo Arms

Vertical Arms assist and enable an operator to reach underneath and overhead work areas with minimal effects of inertia with heavy loads in a confined work cell.

Knight Global's Overhead Carriage and Floor Mounted Vertical Arm Series creates a stable lifting platform, eliminating the yarding and swinging of chain or cable.



KSHVAA Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,000 lbs. [453kg]	up to 241 fpm

KSHVA Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,000 lbs. [453kg]	up to 241 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

Note: Shown KSHVA/ KSHVAA overhead carriage and extension arm segments are sold separately. Contact a Knight representative for more information.

Vertical Servo Roller Arms

The roller chain series arm allows for more stroke of the arm, versus the standard chain because the servo is offset to the backside of the arm. The roller chain is a more robust option to the link chain and provides a smoother transition across the sprocket.

Knight Global's Overhead Carriage and Floor Mounted Vertical Arm Series creates a stable lifting platform, eliminating the yarding and swinging of chain or cable.



KSHVAAR Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,000 lbs. [453kg]	up to 131 fpm

KSHVAR Series

Max. Capacity(lbs/kg)	Max. Hoist Speed(fpm)
up to 1,000 lbs. [453kg]	up to 131 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

Note: Shown KSHVAR/ KSHVAAR overhead carriage and extension arm segments are sold separately. Contact a Knight representative for more information.

Servo Control Series

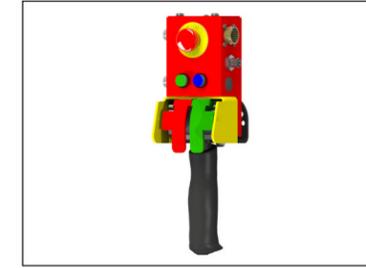
To view our full line of Servo Controls visit us at knightglobal.com



Inline Trigger

The latest in design that includes our patented load cells with integral amplifier. The actuation trigger prevents the system from unintentional movements and provides more response.

Model# KLCA1000 (Shown)



Remote Two Speed w/ OCI

Equipped with the same features as the Inline handles. Available in single or two speed configurations with Operator Controlled Interface (OCI).

Model# KCA1033 (Shown)



Two Speed Pendant

Non-programmable, electrically powered pendant that allows for (2) speed operation by compressing thumb levers.

Model# KCA1030 (Shown)



Two Speed Pendant w/ Trigger

Non-programmable, electrically powered pendant that allows for (2) speed operation by compressing thumb levers and additional trigger button.

Model# EPDTA9600 (Shown)



Analog LMM / OCI

Fully programmable Load Monitoring Module (LMM) with Operator Controlled Interface (OCI). Mounted inline, and is used when an inline control handle is not a practical solution.

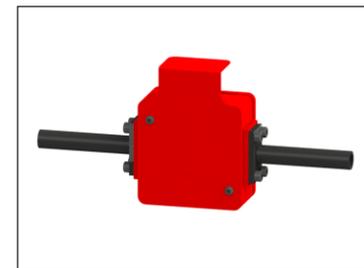
Model# KLCA1002 (Shown)



Analog LMM / Pass-Through

Fully programmable Load Monitoring Module (LMM) with Pass Through is a fully programmable analog style load monitoring module.

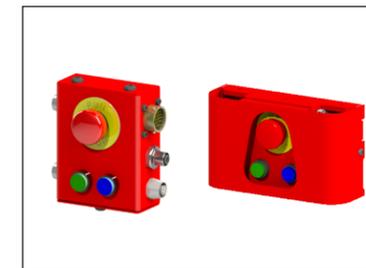
Model# KLCA1004 (Shown)



Load Cell Fixture Handle

A fully programmable load sensing handle remotely mounted inline, and is used when an inline control handle is not a practical solution.

Model# KCA1071 (Shown)



Fixture Mounted OCI

A fixture mounted operator controlled interface (OCI) with illuminated buttons and a run-stop button switch. Side and rear cable attachment models available.

Model# KLCA1015 & EBA1226 (Shown)



Wireless Remote Control

The Wireless Remote by En-range FLEX® is used to control Knight Servo Systems where wireless control is preferred. 4, 6, and 8 button configurations available.

Model# KCA1004 & KCA1006 (Shown)

Servo Accessories

To view our full line of Servo Accessories visit us at knightglobal.com



Precision Chain Wear Gauge
Used to measure the wear on Knight Servo Hoists 4mm/5mm galvanized chain.

Model# KSAA1003 (Shown)



Shackle
Shackle secures fixtures and loads in-line with the Servo System chain. Used primarily for in-line handle applications.

Model# KSAA1004 (Shown)



Quick Connect/ Disconnect
Allows for quick connections and disconnections of fixtures or end effectors. Easily disengages by the simple pull of the release pin.

Model# KSAA1001 (Shown)



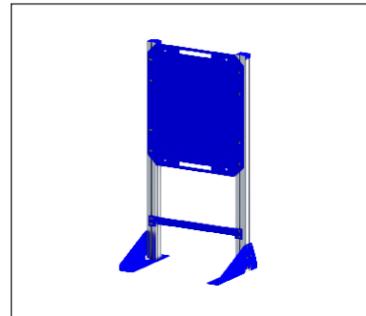
Replacement Chain
Replacement chain kits are electro galvanized blue chromated 4mm Steel Grade (80), Heat Treated Carburized chain.

Model# EBA1171 (Shown)



Replacement Roller Chain
Replacement roller series double strand ANSI 50-2 roller chain that creates a more ergonomic operation condition.

Model# EBD1547 (Shown)



Electrical Disconnect Enclosure Stand
Enclosure Stand is for the mounting of the disconnect enclosures at a ergonomic positioned height. Heights are adjustable.

Model# KCA1001 (Shown)



Electrical Disconnect Enclosures (3 KVA)
Converts 480VAC to 230VAC for powering the servo hoists. Enclosure provides a means to lock out the system.

Model# KCA1018 (Shown)



Electrical Disconnect Enclosures (Dual)
Converts 480VAC to 230VAC for powering the servo hoists. Set up for a dual output for two servo systems.

Model# KCA1056 (Shown)



Electric Coil Cable
19-pin cable provides communication from the (OCI) operator control interface module on the floor level, to the servo controls up on the rail.

Model# KCA1040 (Shown)

Servo System Applications

To view more Servo System Applications visit us at knightglobal.com



Large Truck Hood Install

Vacuum operated front hood fixture mounted on a custom Knight KSHCA Series Servo Hoist Articulating Arm. Knight Servo Arm assists in the lift and installation of truck hood.



Powertrain Lift Assist

Automated Knight KSH XYZ Servo Hoist and Tractor System that lifts and transfers the entire powertrain assembly from one work cell to another.



Large Tire Install

Nesting style fixture mounted from a Knight Servo Arm. Pneumatic rollers allow for the operator to power rotate tire to the lugs on vehicle.



Large Roll Transfer

Vertical KSHVAR Roller Servo Hoist Arm using a clamp style end effector that clamps, lifts and transfers large roll material within the work cell.



Front Hood Open

Vacuum style end effector operated by a programmable PLC system that controls the Air Balancer and Electric VFD Tractor that automatically attaches and raises the hood to operating level.



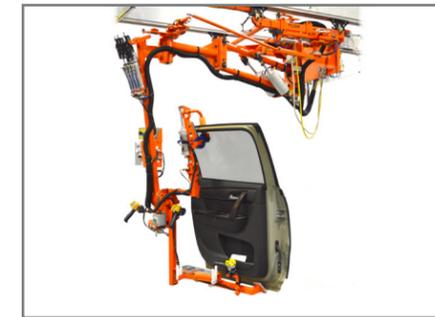
Large Pin Install Assist

Vertical KSHVAR XYZ Roller Servo Hoist Arm using a hydraulic clamp style end effector that clamps, lifts 500 lbs. machinery pins and transfers into 300 degree hardening ovens.



Instrument Panel Install

Servo operated clamp style end effector mounted on a vertical KSHVAR Roller Servo Arm that assists the operator in installing the IP unit into the vehicle.



Doors-On Install

Servo Actuator, clamp style end effector operated by a programmable PLC system that controls the precise position and angle of the door for installation onto the vehicle.



Engine Transfer

Hook style end effector operated by a XYZ Servo Hoist and Tractor system. System assists operator in moving the large engine from the line conveyor to the dunnage.

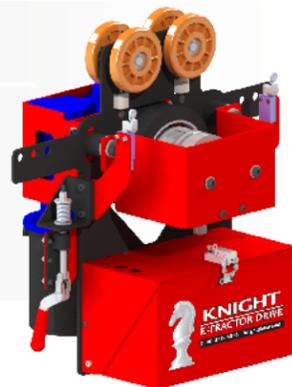
Tractors

Tractors are devices designed primarily to push, pull, lift and position a load that is suspended from a trolley on an overhead rail system. Tractors significantly overcome ergonomically unfavorable push/pull forces. Available in electric and pneumatic configurations.

Electric Tractors

VFD (Variable Frequency Drive) Tractors provide the operator with complete control via the ability to program acceleration and deceleration speeds. The VFD Electric Tractor can also be configured to run on different Knight rail as well as different manufactures rail systems.

The Knight VFD Electric Tractor has a modular assembly design that allows easy installation and set-up. They are equipped with Knight's proven pneumatic tractor mechanics using a worm gear reducer that is reliable and maintenance free.



Features

- Integrated Load Trolley
- 1/2 HP, 240 VAC, Single Phase Inverter Motor.
- Dual rubber drive wheels that ride on bottom of rail.
- Clutch Drive Wheel Engagement 24VD:
 - Drive wheel is always engaged with rail.
- Pneumatic Drive Wheel Engagement:
 - Drive wheel engages rail when forward or reverse command is received.
- Programmable acceleration and deceleration speeds.
- Capability of disengaging wheels to allow for free wheeling. (Pneumatic Model)

Options

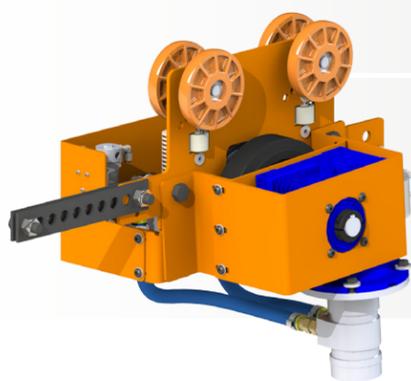
- Complete fixture integration.
- Pendant cables with tether.
- Mid-rail and end of rail shock absorbers.
- Programmable return to home position function.
- Over travel limits.
- Configuration with Non-Knight Rail.
- Return to Home.
- Pneumatic engage cylinder for disengaging tractor from the rail.
- Wireless control.
- Custom interface.

KET Series

Max. Tow Capacity(lbs/kg)	Max. Tow Speed(fpm)
up to 3,000 lbs. [1,360kg]	up to 180 fpm

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

Pneumatic Tractors



Knight's Pneumatic Tractors provide mobility by towing bridges, fixtures and heavier loads. They typically are used to assist an operator to push, pull, or position loads.

Pneumatic Tractors can be integrated with a pneumatic fixture allowing for multiple control configurations such as: automatic return home, conveying of a load to the next position, starting and stopping limits with the use of air logic, etc. Pneumatic Tractors are available in multiple configurations and have maximum towing capacities of up to 2,000 lbs. [907kg].

TRA Series

Max. Tow Capacity(lbs/kg)	Max. Tow Speed(fps)
up to 2,000 lbs. [907kg]	up to 1.9 fps

TRA Mini Series

Max. Tow Capacity(lbs/kg)	Max. Tow Speed(fps)
up to 300 lbs. [136kg]	up to 3.5 fps

* Listed capacities and speeds vary by configuration. For more detailed information, please contact a Knight representative.

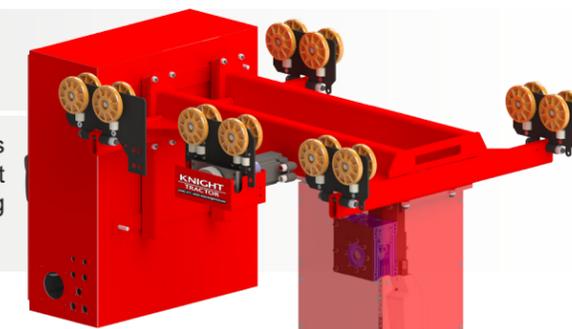


Lube-Free Tractors

Lube-Free Pneumatic Tractors require less maintenance and have a longer expected service life. Available on Knight's TRA Series Only.

Servo Tractor Systems

The Servo Tractor Hoist Series accurately locates, transfers and lifts loads in the X, Y and Z directions. Servo Tractors have Knight Global's Intelligent Assist Device (IAD) Servo Technology incorporated into their design allowing them to provide controlled transfers of workloads with speed and precision.



Servo Tractors

The Servo Tractor offers a continuous contact non-slip rack and pinion design that moves the runway (X Axis) or bridge (Y Axis) in either direction. This continuous contact non-slip design allows for absolute positioning of a load.

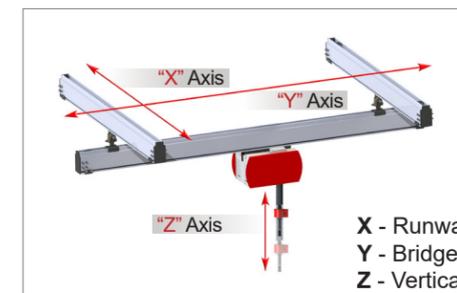
Servo Tractors are programmed to automatically or manually move and stop the runway (X Axis) or bridge (Y Axis) at the intended locations; which will eliminate unnecessary motion. The Servo Tractor will maintain the programmed positioning of the load. The need to return to home position is not required after cycling power.

Input Sensors

Input sensors have an electrical signal that interprets the different weights or forces applied to it from an operator; which controls the movement of the Servo Tractor in the X (runway), Y (bridge) or Z (vertical) axis. Input sensors also coordinate the motion on the system by the movement of the hoist chain.

Features

- Safety Rating of 125%
- Standard 24 VDC
- H5 Rated (Continuous Duty Cycle)
- 480 VAC, Three Phase 50/60 Hz
- Illuminated Run/Stop Button
- Power and Free Drive Wheel
- Programmable Overload Capability
- Fail Safe Braking
- Load Sensing, Pay Load and Handle Load
- Standard Float Mode
- Planetary Gearbox
- Programming/ Diagnostic Communication Ports
- I/O Capabilities (16 In / 8 Out)
- LED Status Indicators
- LED Fault Diagnostics
- Virtual Travel Limits
- Speed Reduction Zones
- Active Dampening
- Impact Limiting



KSHXZ/ or XY Series (Two Axis, One Tractor Combo)

Model	Max Tractor Capacity(lbs)	Max Tractor Hoist Capacity(lbs)	Max Tractor Speed(fpm)	Max Hoist Lift Speed(fpm)	Axis(X/Y/Z)
KSHXZ/XY250	4,000 lbs.	250 lbs.	174.53 fpm	196.85 fpm	X / Z or X / Y
KSHXZ/XY350	4,000 lbs.	350 lbs.	174.53 fpm	241.00 fpm	X / Z or X / Y
KSHXZ/XY750	4,000 lbs.	750 lbs.	174.53 fpm	123.03 fpm	X / Z or X / Y
KSHXZ/XY1000	4,000 lbs.	1,000 lbs.	174.53 fpm	82.02 fpm	X / Z or X / Y

* Max. tractor hoist capacity (lbs) and max. hoist lift speed (fpm) does not apply on KSHXY Series systems.

KSHXYZ Series (Three Axis, Two Tractor Combo)

Model	Max Tractor Capacity(lbs)	Max Tractor Hoist Capacity(lbs)	Max Tractor Speed(fpm)	Max Hoist Lift Speed(fpm)	Axis(X/Y/Z)
KSHXYZ250	4,000 lbs.	250 lbs.	174.53 fpm	196.85 fpm	X / Y / Z
KSHXYZ350	4,000 lbs.	350 lbs.	174.53 fpm	241.00 fpm	X / Y / Z
KSHXYZ750	4,000 lbs.	750 lbs.	174.53 fpm	123.03 fpm	X / Y / Z
KSHXYZ1000	4,000 lbs.	1,000 lbs.	174.53 fpm	82.02 fpm	X / Y / Z

KSHXXYZ Series (Three Axis, Three Tractor Combo)

Model	Max Tractor Capacity(lbs)	Max Tractor Hoist Capacity(lbs)	Max Tractor Speed(fpm)	Max Hoist Lift Speed(fpm)	Axis(X/Y/Z)
KSHXXYZ250	4,000 lbs.	250 lbs.	174.53 fpm	196.85 fpm	X / X / Y / Z
KSHXXYZ350	4,000 lbs.	350 lbs.	174.53 fpm	241.00 fpm	X / X / Y / Z
KSHXXYZ750	4,000 lbs.	750 lbs.	174.53 fpm	123.03 fpm	X / X / Y / Z
KSHXXYZ1000	4,000 lbs.	1,000 lbs.	174.53 fpm	82.02 fpm	X / X / Y / Z

* Listed servo tractor series specifications and configurations are considered standard systems. Each tractor configuration will be designed specifically to your application. For more detailed information please contact a Knight representative.

Our Knight Global Servo design team will analyze your system requirements in detail and custom design a servo tractor system that fits your specific application needs.

For more detailed information on Knight Global Servo Tractor System features and options, please visit knightglobal.com.

Balancers

Knight Pneumatic Balancers are designed to assist in transferring loads ergonomically using a variety of Up/Down pendants or Balance "Float" Control options. Pneumatic Balancers provide superior control over standard air hoists when it comes to locating and positioning loads.

Cable/Chain Balancers

Cable Pneumatic Balancers are commonly used when lower weight parts are required to be floated into position. Chain Pneumatic Balancers are recommended when balancing weights in excess of 350 lbs. (*See note below) or when high cycle times are required. Knight balancers have a maximum balancing capacity of up to 700 lbs. [318kg] and travels of up to 110 in. [2794mm].

Features

- CE Compliant **
- Hands-Free Operation
- Standard "Float" Mode
- Internal Centrifugal Retract Control.
- Requires Non-Lubricated Clean/Dry Air.
- Multiple configurations.

** CE compliance is not a standard feature on Knight Global Pneumatic Balancers. Please contact us for more details.

Options

- Redundant chain design for safe operation.
- Optional External Retract Controls.
- Optional High Relieving and Feathertouch Controls.
- Optional Up/Down Controls.
- Multiple Suspension Kits available.

KBA Cable Series

Model	Max. Balance Capacity(lbs/kg)	Max Travel(in./mm)
KBA150-076	150 lbs. [68kg]	76 in. [1930mm]
KBA225-073	225 lbs. [102kg]	73 in. [1854mm]
KBA225-110	225 lbs. [102kg]	110 in. [2794mm]
KBA350-073	350 lbs. [159kg]	73 in. [1854mm]
KBA500-080	500 lbs. [227kg]	80 in. [2032mm]
KBA700-054	700 lbs. [318kg]	54 in. [1371mm]

KBCS "SDS" Chain Series

Model	Max. Balance Capacity(lbs/kg)	Max Travel(in./mm)
KBC250S-054	250 lbs. [113kg]	54 in. [1371mm]
KBC500S-084	500 lbs. [227kg]	84 in. [2133mm]
KBC700S-052	700 lbs. [318kg]	52 in. [1320mm]

KBC Chain Series

Model	Max. Balance Capacity(lbs/kg)	Max Travel(in./mm)
KBC150-070	150 lbs. [68kg]	70 in. [1778mm]
KBC200-110	200 lbs. [91kg]	110 in. [2794mm]
KBC225-067	225 lbs. [102kg]	67 in. [1701mm]
KBC350-067	350 lbs. [159kg]	67 in. [1701mm]
KBC500-080	500 lbs. [227kg]	80 in. [2032mm]
KBC700-052	700 lbs. [318kg]	52 in. [1320mm]

*Note: Knight recommends the use of chain instead of cable (Except in Reeved Applications) when balancing weights in excess of 350 lbs. [159kg] and / or high cycle times are encountered. The use of cable under these conditions has a greater tendency to fray or "birdcage" requiring a more specific PM program. Knight Pneumatic Balancers do not require the use of lubricated air.



Balancer Hook

Knight KBA Cable Series Balancers come equipped with a 1 ton capacity Crosby/Bullard® Golden Gate size 2 Pin-Lok Hook with self closing gate and 360° rotational capabilities.



Chain Shackle

Knight KBC Chain Series Balancers come equipped with a Knight 2 ton capacity Shackle.



Tandem Pneumatic Balancer

Tandem Cable or Chain Pneumatic Balancers were designed to provide the weight capacities of a reeved pneumatic balancer application yet incorporate the extended travels of a single cable or chain pneumatic balancer.

Tandem Cable and Chain Pneumatic Balancers double the load capacity of a single balancer without sacrificing vertical travel.



NOTE:

For better performance, Knight Global offers the KSH Series Servo Hoists. These electrically operated servo motor hoists impart precision and control into your process. (See page 1)

TKBA Cable Series

Model	Max. Balance Capacity(lbs/kg)	Max Travel(in./mm)
TKBA700-073	700 lbs. [318kg]	73 in. [1854mm]
TKBA1000-080	1,000 lbs. [453kg]	80 in. [2032mm]
TKBA1400-054	1,400 lbs. [635kg]	54 in. [1371mm]

TKBC Chain Series

Model	Max. Balance Capacity(lbs/kg)	Max Travel(in./mm)
TKBC700-067	700 lbs. [318kg]	67 in. [1701mm]
TKBC1000-080	1,000 lbs. [453kg]	80 in. [2032mm]
TKBC1400-052	1,400 lbs. [635kg]	52 in. [1320mm]

* Listed balance capacities and travels vary by configuration. For more detailed information, please contact a Knight representative.

Reeved Pneumatic Balancer

A Reeved Pneumatic Balancer increases the mechanical advantage of balancing a product. The pneumatic balancer reeve and pulley offers a second suspension point which gives greater stability to the load. Reeving an pneumatic balancer doubles the balancing capacity.

RKBA Cable Series

Model	Max. Balance Capacity(lbs/kg)	Max Travel(in./mm)
RKBA450-036	450 lbs. [204kg]	36 in. [914mm]
RKBA450-055	450 lbs. [204kg]	55 in. [1397mm]
RKBA700-036	700 lbs. [318kg]	36 in. [914mm]
RKBA1000-040	1,000 lbs. [453kg]	40 in. [1016mm]
RKBA1400-027	1,400 lbs. [635kg]	27 in. [685mm]

RKBC Chain Series

Model	Max. Balance Capacity(lbs/kg)	Max Travel(in./mm)
RKBC400-055	400 lbs. [181kg]	55 in. [1397mm]
RKBC450-033	450 lbs. [204kg]	33 in. [838mm]
RKBC700-033	700 lbs. [318kg]	33 in. [838mm]
RKBA1000-040	1,000 lbs. [453kg]	40 in. [1016mm]
RKBA1400-026	1,400 lbs. [635kg]	27 in. [685mm]

* Listed balance capacities and travels vary by configuration. For more detailed information, please contact a Knight representative.



Balancer Controls

To view our full line of Balancer Controls visit us at knightglobal.com



Up/Down Pendant

Variable speed control for loading and unloading varying weights. The most common used control for balancers. Available in straight or coiled hose.

Model# BCS3017 (Shown)



Tandem Up/Down Pendant

Variable speed control used on Tandem Balancers for loading and unloading varying weights. Available in straight or coiled hose.

Model# BCS3330 (Shown)



High Relieving Single Balancer

Supports a constant weight at zero gravity. Used for near capacity or applications greater than 150 lbs. Available in straight or coiled hose.

Model# BCS2090 (Shown)



Feather Touch Balance

Used for light weight applications. Control is activated by an up/down movement of the control handle. Available in straight or coiled hose.

Model# BCS2214 (Shown)



Single Balance

Supports a constant weight at zero gravity. Recommended for applications less than 150 lbs. [68kg]

Model# BCS2018 (Shown)



Dual Balance

Supports two different weights at zero gravity. Used in applications where the part weight does not change. Available in straight or coiled hose.

Model# BCS2215 (Shown)

Balancer Accessories

To view our full line of Balancer Accessories visit us at knightglobal.com



Balancer Limit Switch

Provides the ability to set upper and lower limits. Eliminates unnecessary movements.

Model# BPA2224 (Shown)



External Retract Control

Hydraulic shocks provide continuous resistance to spool travel. Prevents spool from accelerating if a load is lost.

Model# BPA2089 (Shown)



Balancer Trolleys

Load Trolleys attach the air balancer to various types of aluminum rail systems.

Model# MRTA7706 (Shown)



Balancer Trolleys (W-Beam/S-Beam)

Load Trolleys attach the air balancer to various types of I-beam rail systems.

Model# RTA2014 (Shown)



Reeved Cable Balancer Pulley

Doubles the overall balancing capacity of a Reeved Cable Air Balancer.

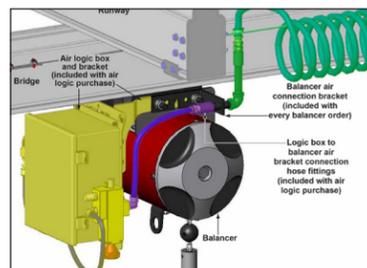
Model# BPA2065 (Shown)



Reeved Chain Balancer Pulley

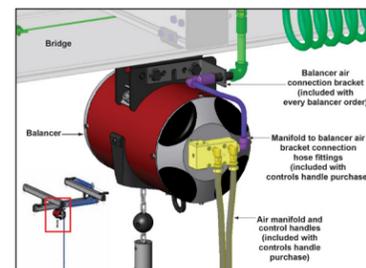
Doubles the overall balancing capacity of a Reeved Chain Air Balancer.

Model# BPA2066 (Shown)



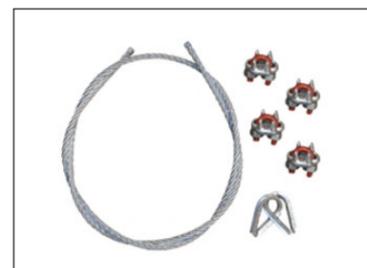
Air Connection with Balancer Logic Box

Air logic box, bracket and logic box to balancer air bracket connection hose fittings. Balancer air connection bracket is included with every balancer purchase.



Air Connection with Balancer Manifold

Air Manifold and Manifold to balancer air connection hose fittings are included with every controls handle purchase.



Balancer Safety Cable Kit

Safety Cable Kits prevent Air Balancers or fixtures from separating or falling from overhead structures or rail.

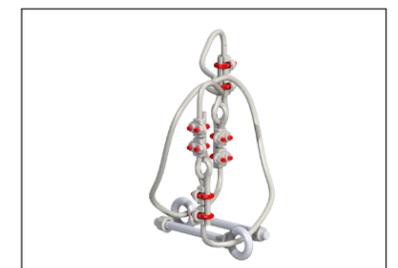
Model# RWA4133 (Shown)



Nycro-Press Safety Cable Kit

Nycro-Press Safety Cable Kits prevent Air Balancers or fixtures from separating or falling from overhead structures or rail.

Model# CAMIRWA4133 (Shown)



Eye Bolt Safety Cable Kit

Eye-Bolt Safety Cable Kits prevent Air Balancers or fixtures from separating or falling from overhead structures or rail.

Model# FDA4133 (Shown)

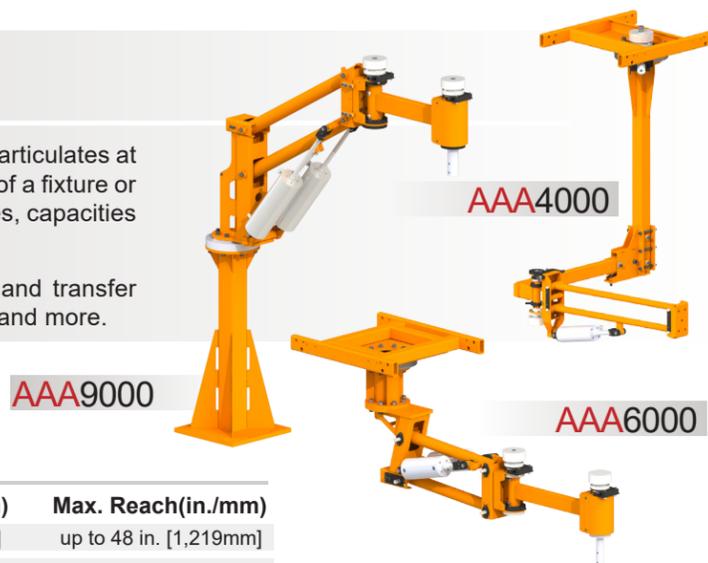
Lift Assists

Knight Global designs tools in accordance with our manufacturing partners. Our engineers work in unison with our customers, creating system layouts which conform to the specifications of each individual facility. We create tools and adjust existing technology to fit the needs of our manufacturing clients. We specialize in custom lift assists and lifting devices for all of your ergonomic situations.

Standard Arms

Knight Pneumatic arms use a parallelogram structure that articulates at the vertical planes. This design allows vertical positioning of a fixture or end effector. Knight Global offers a wide range of arm types, capacities and configurations to handle many types of end tooling.

Pneumatic arms are used to lift, rotate, balance, move and transfer product to and from conveyors, dunnage, assembly lines and more.



Pneumatic Series

Model	Max. Capacity(lbs/kg)	Max. Travel(in./mm)	Max. Reach(in./mm)
AAA4000	80 lbs. [36kg]	up to 48 in. [1,219mm]	up to 48 in. [1,219mm]
AAA6000	430 lbs. [195kg]	up to 48 in. [1,219mm]	up to 48 in. [1,219mm]
AAA9000	600 lbs. [272kg]	up to 60 in. [1,524mm]	up to 48 in. [1,219mm]

* Listed capacities, travels and reaches vary by configuration. Listed specifications rated at 100 psi (with the exception of AAA4000, capacity rated at 60 psi). For more detailed information, please contact a Knight representative or visit knightglobal.com.

* Pictured overhead carriages sold separately.

Features

- Available in Light Duty, Medium Duty or Heavy Duty.
- Travels inside Knight's RAD7510 / 6110 / 4110 Series Rail.
- Lifts, rotates, balances, and manipulates product with minimal effort.
- Variety of Control Configurations.
- Overhead Carriage Sizes: 24 in. [609mm] or 36 in. [914mm].

Benefits

- Overhead Mounted, Pedestal Mounted or Linear Rail Mounted (AAA4000).
- Reduces Operator Fatigue.
- Arm travels on the "X", "Y", "Z" Axis.
- Fixed or 360° Rotation.
- Optional Pivot Brake.
- Optional Parking Brake.
- Optional Clutch Brake.

Note: All pneumatic arms require engineering. Contact a Knight Global representative for more information.

Arm Accessories



Parking Brake
Model# ASA9510



Clutch Bearing Brake
Model# ASA9522



Arm Stop Assembly
Model# AAA4005

Lower Mass Arms

By eliminating the arm bearing and mounting plate, we help to reduce the weight of the overall system. The Lower Mass Arms provide an overall range of motion less than 84° degrees.

The Lower Mass Arms can use a tie-bar and optional locking and latching end pivot mechanisms to improve precision for pick-up and set down.

Knight Lower Mass Arms have a maximum capacity of up to 350 lbs. [158kg], a maximum travel distance of up to 24 in. [609mm] with a maximum reach that varies upon the application.



Lower Mass Arm Series

Max. Lifting Capacity(lbs/kg)	Max. Travel(in./mm)	Max. Reach(in./mm)
up to 350 lbs. [158kg]	up to 24 in. [609mm]	Application Specific

* Listed capacities and travels vary by configuration. Listed specifications are rated at 80 psi. For more detailed information, please contact a Knight representative or visit knightglobal.com.

Extension Arms

Knight Extension Arms enable the operator to extend beyond the working limits of an overhead rail system within a workstation. A Knight Pneumatic Balancer mounts to the extension arm allowing for a controlled lifting and lowering of loads. KEAA Series Single or Dual Bridge Extension Arms expand the working area of a typical pneumatic hoist. They allow for a 360° rotation of the extension arm and have a (4) four position adjustable reach in 10° UP/DOWN increment adjustments to avoid clearance issues.



Extension Series

Max. Balance Capacity(lbs/kg)	Max. Travel(in./mm)	Max. Reach(in./mm)
up to 700 lbs. [317kg]	up to 110 in. [2,794mm]	up to 45 in. [1,143mm]

* Listed capacities, travels and reaches vary by configuration. Listed specifications rated at 100 psi. For more detailed information, please contact a Knight representative or visit knightglobal.com.

* Pictured overhead carriages and trolleys sold separately.



Vertical Mast Arms



Vertical Mast Arms are typically used in applications that require extensive up/down travel. Vertical Arms improve ergonomics by eliminating the need for an operator to bend or reach for the control handles when positioning the part in a specified location. Allows for end tooling to be mounted to a rigid vertical mast. Vertical travel is achieved with a Knight Pneumatic Balancer or a chain hoist. Vertical Mast Arm handles are in a fixed ergonomic position on the mast. Available with a round mast for direct loads only or a square THK mast for offset/cantilevered loads.

Vertical Series

Max. Capacity(lbs/kg)	Max. Travel(in.)
Application Specific	Determined by Balancer

* Listed capacities, torques and travels vary by configuration. Listed specifications rated at 100 psi. For more detailed information, please contact a Knight representative or visit knightglobal.com.
* Pictured overhead carriages sold separately.

Servo Arms

Expands the extension of an operator's natural movements, Knight Global Servo Arm technology greatly improves the precision of an arm type application. Servo Arms are available in various Articulating, Extension and Vertical configurations. Servo arms are available in a Overhead Carriage Mounted or Floor Mounted configurations that allows for an overhead varied reach within a work cell.



Servo Series

Model	Max Capacity(lbs/kg)	Max Hoist Speed(fpm)
KSHCA Series (Overhead Mounted Articulating)	up to 1,500 lbs. [680kg]	up to 98 fpm
KSHFA Series (Floor Mounted Articulating)	up to 1,500 lbs. [680kg]	up to 98 fpm
KSHEA Series (Overhead Mounted Extension)	up to 500 lbs. [226kg]	up to 241 fpm
KSHAEA Series (Floor Mounted Extension)	up to 500 lbs. [226kg]	up to 241 fpm
KSHVA Series (Overhead Mounted Vertical)	up to 1,000 lbs. [453kg]	up to 241 fpm
KSHVAA Series (Floor Mounted Vertical)	up to 1,000 lbs. [453kg]	up to 241 fpm
KSHVAR Series (Overhead Mounted Vertical)	up to 1,000 lbs. [453kg]	up to 131 fpm
KSHVAAR Series (Floor Mounted Vertical)	up to 1,000 lbs. [453kg]	up to 131 fpm

* Listed capacities, travels and reaches vary by configuration. For more detailed information, please contact a Knight representative or visit knightglobal.com.



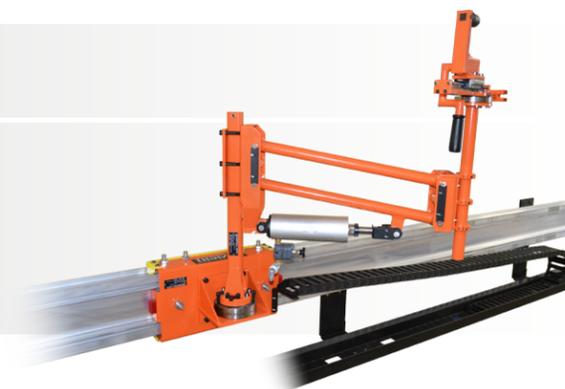
For more detailed information on Knight Global Servo Arms, please see (Page 3) or visit knightglobal.com.

Linear Rail Tooling Arm

Linear Rail Mounted Tooling Arms allow for tooling to be mounted on a wall, in a pit or run on the floor. Tooling arm travels on Knight's RAD6500 and LRD9500 Series engineered aluminum rail.

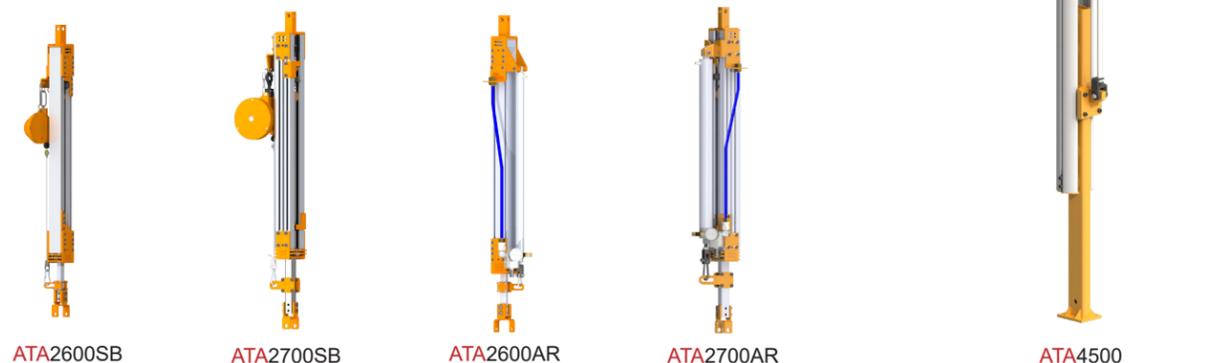
Compared to traditional products, Knight's Linear Tool Arms are easier to install, are more ergonomically friendly and have greater side loading capabilities.

* For more detailed application usage and specification information, please contact your local Knight Global representative or visit knightglobal.com.



Torque Tubes

Torque Tubes are designed to absorb torque reaction from fastening devices and balance the tool. Custom travel distances, heights and tool holders are available. They are available in pneumatic and spring balancer configurations. Each Torque Tube includes a standard fixed tool holder, adjustable travel stops and a modular body design to mount accessories.



Torque Tube Series

Model	Max. Capacity(lbs/kg)	Max. Torque(ft. lbs)
ATA2600SB	up to 12 lbs. [5.44kg]	up to 150 ft. lbs.
ATA2700SB	up to 35 lbs. [15.8kg]	up to 300 ft. lbs.
ATA2600AR	up to 35 lbs. [16kg]	up to 150 ft. lbs.
ATA2700AR	up to 135 lbs. [61kg]	up to 300 ft. lbs.
ATA4500	up to 500 lbs. [227kg]	up to 853 ft. lbs.

* Listed capacities, torques and travels vary by configuration. Listed specifications rated at 60 psi. For more detailed information, please contact a Knight representative or visit knightglobal.com.

Tool Holders



Adjustable Clamp
Model# ASA9500 (Small)
ASA9501 (Large)

360° Rotating Clamp
Model# ASA9518

End Effectors

Knight designs and manufactures an assortment of custom End Effectors. We specialize in custom lift assists and lifting devices for all of your ergonomic situations. We'll assist you on choosing the correct lift assist system which is best suited for your application by using our detailed analysis of your material handling needs.

End Effectors are classified into five category styles: Clamp, Hook, Magnet, Nest and Vacuum. Our designers will analyze your material handling needs and determine which end effector style will be best suited for your application.



Bite Line Clamp Fixture

Bite line clamp style fixture with 45° rotating feature. Transfers seat to the assembly station.

Every End Effector is unique and custom designed to fit your specific application needs.

End Effector Styles

To view all the End Effector Styles visit us at knightglobal.com



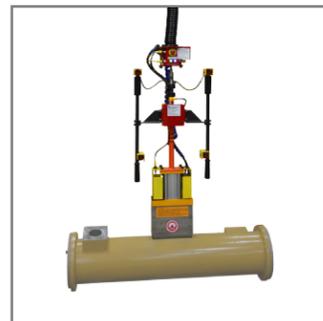
O.D. Clamp Fixture

Outside diameter clamp style fixture with rotating feature. Transfers roll from rewind table to dunnage.



Scissor Hook Fixture

Scissor hook style fixture that is suspended by a Knight Pneumatic Balancer. Transfers engine block from assembly line to the inspection workstation.



Magnetic Fixture

Magnetic style fixture operated by a Knight Servo System. Transfers large oil pipe from the dunnage to oil pipe testing area.



Multiple Vacuum Fixture

Multiple vacuum cup style end effector suspended by a Knight Pneumatic Balancer. Transfers the windshield from dunnage to the vehicle.



Hybrid Battery Install

KSH Servo Hoist and pneumatically clamping end effector. Knight End effector positions large tray for hybrid battery cell pack installation.



Front Cab Lift Assist

Custom Knight Front Cab End Effector that securely assists in the lifting of the large front cab assembly.



Transformer Lift Assist

Clamp style end effector mounted on a vertical mast arm. End effector clamps the transformer unit and assists in moving it from one conveyor to another work cell.



I.D. Clamp Fixture

Inside diameter clamp style fixture suspended by a Knight Pneumatic Balancer. Transfer large core pipe from mold machine to transfer cart.



Dual J-Hook Fixture

Dual J-hook style fixture operated by a Knight Servo System. Transfers engine from assembly line to the vehicle for installation.



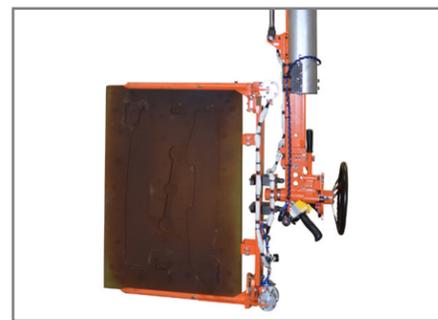
Nesting Clamp Fixture

Nesting clamp style fixture suspended by a Knight Pneumatic Balancer. Transfers the hood from dunnage to the vehicle for installation.



I.D. Core Fixture

Inside diameter core style fixture operated by a Knight Servo System. Transfers roll material from dunnage to the unwind wheel station.



Foundry Mold Transfer

Rotating clamping end effector suspended from a Knight ATA4500 Heavy Duty Vertical Torque Arm. Fixture removes mold from furnace oven and transfers it to the dunnage rack for cooling.



Canister Lift Assist

3-Cup vacuum end effector suspended from a Knight KBA Series Pneumatic Balancer. Fixture assists in the loading and unloading of the weapon into the container.



Wheel Assembly Install

Nesting and manual clamp end effector mounted on an ATA4000 vertical mast arm. Fixture assists operator in picking up wheel assembly and rotates tire for install.

End Effector Applications

To view more End Effector Applications visit us at knightglobal.com



Trans Case Lift Assist

Clamp style end effector mounted on a custom vertical mast. End effector lifts and rotates trans case for a different set-down position on the line.



Doors-On Install

Doors-on lift assist using a custom clamping fixture mounted to a Knight AAA6000 Articulating Pneumatic Arm. Arms assists in the installation of the front door.



Wire Harness Load

Clamp style fixture mounted on a vertical mast arm that loads, opens and spreads the wire harness bag inside the vehicle cab.

Control Handles

Knight Global offer's seven types of control handles with various configurations. The control handle series are designed to ensure an ergonomically correct hand position for the operator. Control handle levers are marked according to customer specifications and can be customized to fit each applications need.

Levers can be customized with stamped callouts for identification and ease of use. Callouts are available in different languages. Angled levers are used for optimum ergonomics. Up (Green) and Down (Red) levers are standard colors. Custom colors can be applied according to customer specification. Control Handle Trigger levers can be mounted on the back of the handle for optimum ergonomics or as an additional button.



Pneumatic Control Handles

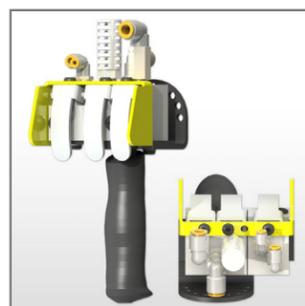
To view all the Control Handle styles visit us at knightglobal.com



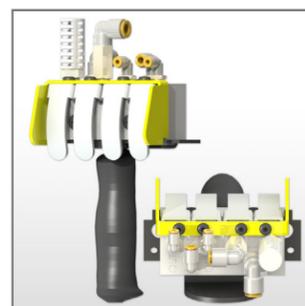
One (1) Button
Model# BPA9400 (Shown)



Two (2) Button
Model# BPA9100 (Shown)



Three (3) Button
Model# BPA9430 (Shown)



Four (4) Button
Model# BPA9310 (Shown)

Electric Control Handles



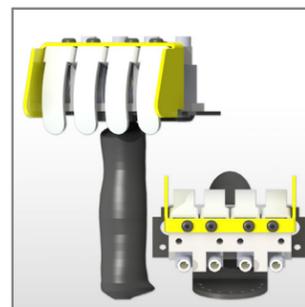
One (1) Button
Model# EPA9500 (Shown)



Two (2) Button
Model# EPA9600 (Shown)



Three (3) Button
Model# EPA9650 (Shown)



Four (4) Button
Model# EPA9660 (Shown)

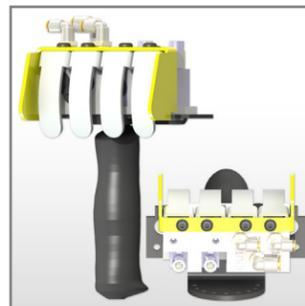
Electric/ Pneumatic Control Handles



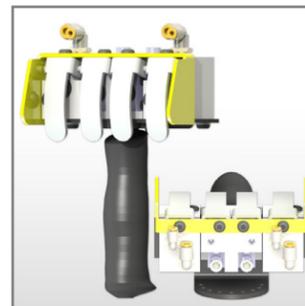
Two (2) Button
Model# EPPA9450 (Shown)



Three (3) Button
Model# EPPA9460 (Shown)



Four (4) Button
Model# EPPA9160 (Shown)



Four (4) Button
Model# EPPA9464 (Shown)

Pneumatic Control Handles with Trigger Levers



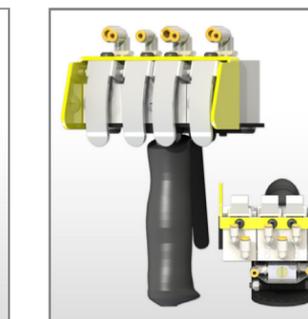
One (1) Button
Model# BPTA9400 (Shown)



Two (2) Button
Model# BPTA9100 (Shown)



Three (3) Button
Model# BPTA9410 (Shown)



Four (4) Button
Model# BPTA9414 (Shown)

Electric Control Handles with Trigger Levers



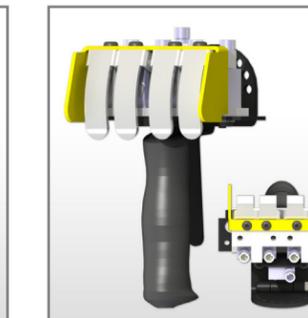
One (1) Button
Model# EPTA9500 (Shown)



Two (2) Button
Model# EPTA9600 (Shown)



Three (3) Button
Model# EPTA9560 (Shown)



Four (4) Button
Model# EPTA9660 (Shown)

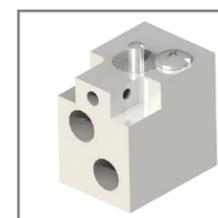
Standard Collar Mounts



Standard Collar Mounts allow Control Handles to be mounted in a fixed rotational position and are equipped with hole patterns that allow for the 360° rotation of the control handle around a vertical axis.

Model	Inner Diamter(I.D.)
BPD1119	0.88 in. [22.2mm] I.D.
BPD1120	1.00 in. [25.4mm] I.D.
BPD1121	1.25 in. [31.7mm] I.D.

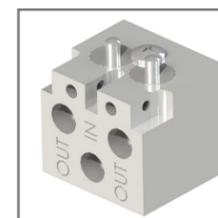
Valve Block Replacement Kits



BPA9111 Valve Block Assembly
Knight's BPA9111 Pneumatic Valve Block Assembly has 3-Way valves used for sending common pilot signals.

- Each BPA9111 Valve Block replacement kit Includes:
(1) Plunger Assembly #CS-2993, (1) 6mm x 10mm FHPH and (1) tube of lubricant, (1) 6mm x 10mm B.H.C.S., (1) Nylon Ball.

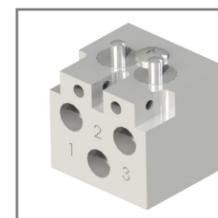
Replacement Kit# BPA2139



BPA9001 Valve Block Assembly
Knight's BPA9001 Pneumatic Valve Block Assembly has 3-Way valves used for sending common pilot signals.

- Each BPA9001 Valve Block replacement kit Includes:
(2) Plunger Assembly #CS-2993, (1) 6mm x 10mm FHPH and (1) tube of lubricant, (2) 6mm x 10mm B.H.C.S., (2) Nylon Ball.

Replacement Kit# BPA2141



BPA9050 Valve Block Assembly
Knight's BPA9050 Pneumatic Valve Block Assembly has 2-Way valves used for only a single acting air balancer or lift assist used for UP/ DOWN movement.

- Each BPA9050 Valve Block replacement kit Includes:
(2) Plunger Assembly #CS-2992, (1) 6mm x 10mm FHPH and (1) tube of lubricant, (2) 6mm x 10mm B.H.C.S., (2) Nylon Ball.

Replacement Kit# BPA2140

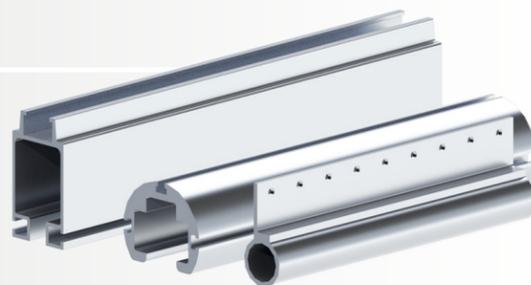
Workstation Cranes/ Rails

Knight Global Rail Systems form the foundation of your material handling system. Whether you choose our Lightweight, High Performance Aluminum Rail or Power Rail, you can be confident you have the highest quality and safest product available. Knight's enclosed track design reduces dirt and grime buildup on the running surface which improves long term performance.

Aluminum Rail

Knights' lightweight aluminum enclosed track rail is the ideal solution; whether your load is located directly under the system or cantilevered off to the side.

Knight offers (14) fourteen series of aluminum rail that is available in multiple configurations. The lightweight rail eases installation and reduces overhead loads. Each aluminum rail series load capacity varies by size and length of the hanger spans.



Aluminum Enclosed Track Rail Series

The enclosed track rail series is extruded from high strength aluminum alloy that allows for the trolley to travel inside the rail. The enclosed track series is offered in four (4) sizes:

Model	Size(in./mm)	Max Capacity(lbs/kg)	Deflection Ratio
RAD7510	8 in. [203mm]	3,000 lbs. [1,360kg]	1:350 *
RAD6110	6 in. [152mm]	1,600 lbs. [725kg]	1:350 *
RAD4110	4 in. [101mm]	1,100 lbs. [499kg]	1:350 *
TR2000	2 in. [51mm]	500 lbs. [250kg]	1:350 *

* Knight Global rail deflection ratios are predetermined. For more detailed information on size, capacities and lengths, contact your local Knight Global representative or visit knightglobal.com.



Backer Rail Series

The backer rail series is an enclosed track design that is extruded from a lightweight high strength aluminum alloy with a extruded aluminum backer to reduce rail deflection under heavy loads. The rigid rail series is available with an 6" or 8" aluminum backer.

Model	Backer(in. /mm)	Max Capacity(+ %)	Deflection Ratio
RAA4439	8 in. [203mm]	+ 60%	1:350 *
RAA4438	6 in. [152mm]	+ 50%	1:350 *

Note: With the addition of the backer on the RAD7510 series rail, the load capacity increases by the above percentage over the maximum RAD7510 capacity of 3,000 lbs. [1,360kg]. Knight Global rail deflection ratios are predetermined. For more detailed information on size, capacities and lengths, contact your local Knight Global representative or visit knightglobal.com.

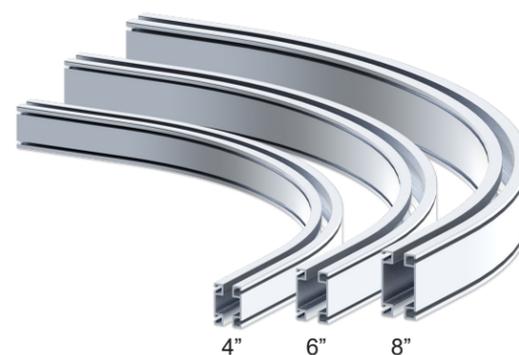
* Knight Global follows material handling industry standards in determining the capacity and safety factor ratings for enclosed track overhead workstation crane systems. Every rail component (e.g. rail, hangers, trolleys, etc.) is individually tested to establish its ultimate failure point. From this number, a safe working load is then assigned to the component. Each rail span length is then tested to determine the maximum single point load required to achieve a predetermined deflection based on a 1:350 ratio (1" of deflection for each 350" of length) or a 1:450 ratio (1" of deflection for each 450" of length). Each rail or rail system is then assigned its capacity and safety factor rating. For more information on the recommended rated capacities, please contact your local Knight representative or visit knightglobal.com.

Curved Rail Series

The curved rail series has a curved radius enclosed track design that is extruded from a lightweight high strength aluminum alloy. Its curved design allows loads to travel around corners and stationary objects. Curved rail is available in overhead mounted configurations.

Size(in./mm)	Max Capacity(lbs/kg)	Min/Max Radius(ft)	Deflection Ratio
8 in. [203mm]	3,000 lbs. [1,360kg]	5 ft. - 8 ft.	1:350 *
6 in. [152mm]	1,600 lbs. [725kg]	4 ft. - 8 ft.	1:350 *
4 in. [101mm]	1,100 lbs. [499kg]	3 ft. - 8 ft.	1:350 *

* Knight Global rail deflection ratios are predetermined. For more detailed information on size, capacities and lengths, contact your local Knight Global representative or visit knightglobal.com.

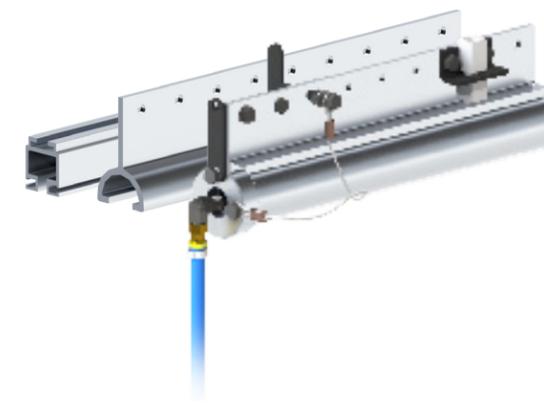


Tool Rail Series

HAD Series rail is easily installed on C-Channel or angle iron structures. The HAD3000 series chambered rail can be used as a fluid power distribution system for water, air, oil and other non-caustic fluids. The TR2000 series offers the greatest weight capacity and can mount to anything; even on the side of larger rail. It allows for festooning trolleys and utilities to be attached.

Model	Size(in./mm)	Max Capacity(lbs/kg)	Deflection Ratio
HAD3500 (Half)	2 in. [51mm]	Application Specific	1:350 *
HAD3000 (Round)	2 in. [51mm]	Application Specific	1:350 *
TR2000 (Square)	2 in. [51mm]	550 lbs. [250kg]	1:350 *

* Knight Global rail deflection ratios are predetermined. For more detailed information on size, capacities and lengths, contact your local Knight Global representative or visit knightglobal.com.



Engineered Round Rail Series

Engineered round rail series is for low friction vertical or horizontal linear movements. It is capable of handling direct or offset loads as well as high torque applications. Round rail is designed to be more ergonomically friendly when compared to traditional linear motion products.

Model	Size(in./mm)	Max Capacity(lbs/kg)
RAD6500	6 in. [152mm]	Application Specific
RAD4700	4 in. [101mm]	Application Specific

* Knight Global rail deflection ratios are predetermined. For more detailed information on size, capacities and lengths, contact your local Knight Global representative or visit knightglobal.com.



Engineered Linear Rail Series

LRD Series Engineered linear rail is for floor mounted or wall mounted low friction horizontal movements. Capable of handling direct or offset loads. Linear rail is a lower maintenance alternative to hardened ground rail and bearing blocks. The LRD Series binding is significantly reduced due to its flexible tolerances. The linear rail is mounted in horizontal configurations.

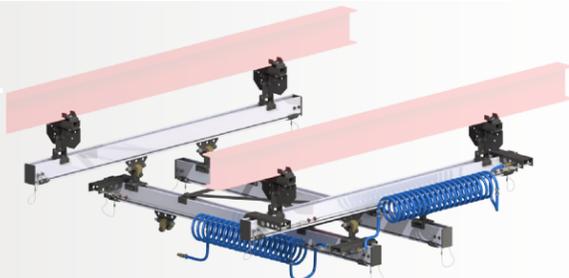
Model	Size(in./mm)	Max Capacity(lbs/kg)
LRD9500	9 in. [228mm]	Application Specific

* Knight Global rail deflection ratios are predetermined. For more detailed information on size, capacities and lengths, contact your local Knight Global representative or visit knightglobal.com.

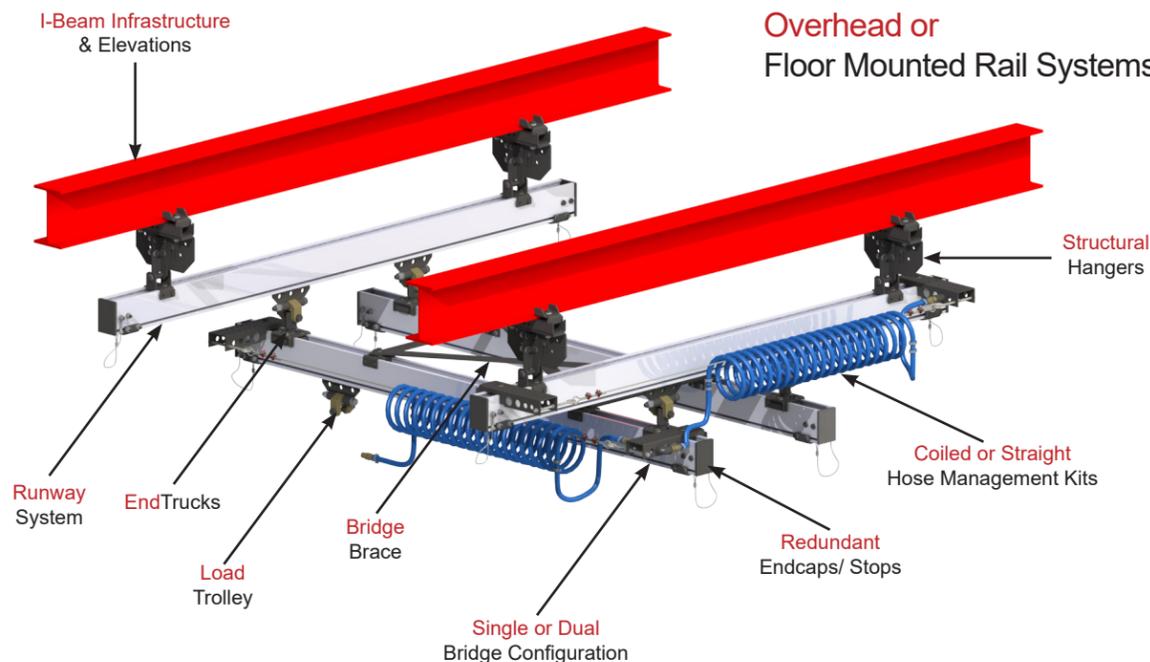


Rail Systems

Knight suspension rail systems include an enclosed trolley track that resists dirt build-up for a smoother, quieter operation. A Knight representative will assist you in selecting, developing and designing your rail system. Overhead and Floor Mounted Rail Suspension Systems are available in single or dual bridge configurations.



Overhead or Floor Mounted Rail Systems



Rail Systems are designed to provide a safe, efficient solution to your ergonomic challenges. A wide range of options are available to meet all your specific engineering and application requirements.



Structural Hangers

Structural hangers are used to suspend Knight's rail series from overhead steel I-beam infrastructures and elevations.



Endtrucks

End Trucks carry the bridge along the runways of a rail system. Available in a variety of different configurations.



Load Trolleys

Load trolleys transfer loads along the horizontal axis and suspends Knight air balancers and fixtures.



Redundant End Caps

Combination of an end cap and a mid-rail stop that prevents load trolleys or end trucks from exiting the rail.



Splice Kits

Splice kits join runways or monorails together.



Bridge Braces

Adjustable bridge braces are used to secure parallel rails at specific distances.



Hose Management Kits

Hose management kits supply air to pneumatic balancers, tractors, tooling or fixtures.

Floor Mounted Post Systems

Knight Global's Floor Mounted Rail System Posts utilize engineered Lindapters® to quickly and securely attach the heavy duty posts to W-Beams.

* Beams can also be pre-drilled for a bolted together system.

Model	Max Capacity(lbs)	Bridge Type	Rail Type
FMRS1400	Application Specific	Single/ Dual	RAD4110
FMRS1700	Application Specific	Single/ Dual	RAD7510
FMRS2700	Application Specific	Single/ Dual	RAD7510

* For more detailed information on rail systems, capacities, bridge types and rail types, contact your local Knight Global representative or visit knightglobal.com.



Floor Mounted Post System

Aluminum Floor Mounted Post System

Knight's Aluminum Floor Mounted Post Systems are an easy to assemble lightweight alternative to the traditional steel four post system. The channels in the extruded aluminum posts can be used to mount torque monitors, tool holders, keyboards, television screens, tables and more. The systems are available as a traditional 4-Post system or as an "expandable" system.

Model	Max Capacity(lbs)	Bridge Type	Rail Type
AFMRS1000	3,000 lbs. [1,360 kg]	Single/ Dual	RAD7510
AFMRS2000	3,000 lbs. [1,360 kg]	Single/ Dual	RAD7510 / 6110 / 4110

* For more detailed information on rail systems, capacities, bridge types and rail types, contact your local Knight Global representative or visit knightglobal.com.



Aluminum Floor Mounted Post Systems



Two/ Three Post Cantilevered System



Dual Cantilevered System

Cantilevered Rail System

Knight's Cantilevered Rail Systems are designed to eliminate the need for a four post floor structure system. It provides an alternative to workstations with minimal floor space.

A wide range of options are available with each system to meet all your specific engineering and application requirements. A Knight Representative will assist you in selecting and developing alternatives when designing your rail system.

Additional columns and runway backers can be added to the two post system to achieve greater load capacities and minimize system deflection.

Model	Max Capacity(lbs)	Bridge Type	Rail Type
CMRS1000	Application Specific	Single/ Dual	RAD7510

* For more detailed information on rail systems, capacities, bridge types and rail types, contact your local Knight Global representative or visit knightglobal.com.

Cantilevered Workstation

Knight's Cantilevered Workstation is the perfect light weight aluminum solution for work spaces and assembly stations. The WSA1000 rail design allows for custom designed accessory mounts to be attached and positioned into various locations.

Knight's WSA1000 is custom designed to your application. The WSA1000 is available in various configurations.

The Cantilevered Workstation can be installed on the back side of a conveyor and allow secure tools to be within operators reach to fasten bolts/nuts.

It can also be used to mount torque monitors, keyboards, television screens, tables or whatever the customer deems necessary.



Adjustable Height Accessory Mounts



Steel Column Mounts



* Pictured computer monitor, keyboard, accessory mounts and bridge rail not included.

Cantilevered Workstation

Model	Max Capacity(lbs)	Max. Under Rail Heights(ft/m)	Max. Boom Lengths(ft/m)
WSA1000	Application Specific	up to 16 ft. [4.87m]	up to 16 ft. [4.87m]

* For more detailed information on the cantilevered workstation capacities, accessories and custom options, contact your local Knight Global representative or visit knightglobal.com.

Rail Accessories

To view our full line of Rail Accessories visit us at knightglobal.com



Redundant End Caps
Combination of an end cap and a mid-rail stop that prevents load trolleys or end trucks from exiting the rail.



End Caps with Shock
Dampens the impact of a load trolley striking the end cap.



End Trucks
End Trucks carry the bridge along the runways of a rail system. Available in a variety of different configurations.



Same Plane End Truck
Designed to elevate bridge to the same height as the runway. System stack-up heights can be reduced by as much as 11.5 inches.



Single or Dual Bridge Rigid End Truck
Eliminates bridge skew for applications that will require added stability.



Rigid Hanger
I-beam flange hanger used for kick-up loads such as arms or offset loads. Adjustable up to 1.5 inches vertically in 1/4 in. increments.



C-Channel Bolt-on Hanger
Non-adjustable hanger used for cantilevered or direct loads.



Rod and Ball Hanger
Used for direct loads such as hoists or balancers. Fits I-beam flange widths 2-11 inches. Recommended for light duty use only.



Inspection Gate
Allows for removal, insertion and inspection of a trolley or end truck without having to remove it from the end of the rail system.



Telescoping Rail
Extends the reach beyond the working limits of a bridge.

Jib Cranes

Jib Cranes offer a large tool coverage area with a single rotating rail on a floor mounted pedestal. Knight cranes are ideal for short transfer applications and are designed to move effortlessly while still carrying large loads. Jib cranes allow for maximum hoist height on low head room applications or when the overhead working space cannot accommodate a rail system. Jib Cranes' two component design makes installation and set-up simple.

Jib Cranes have Timken® Tapered Roller bearings that provide a smooth 360° rotation. Max. boom lengths are available up to 15 ft. [4.5m] with max. under rail clearance heights of up to 15 ft. [4.5m]. Jib Crane booms can be extended by adding a telescoping rail.



Jib Crane Series

Model	Max. Capacity(lbs/kg)	Max. Under Rail Heights(ft/m)	Max. Boom Lengths(ft/m)
MJBA2000	up to 30 lbs. [13kg]	up to 6 ft. [1.8m]	up to 5 ft. [1.5m]
MJBA2050	up to 50 lbs. [23kg]	up to 12 ft. [3.7m]	up to 10 ft. [3m]
MJBA2100	up to 140 lbs. [63kg]	up to 15 ft. [4.5m]	up to 15 ft. [4.5m]
MJBA2200	up to 745 lbs. [337kg]	up to 15 ft. [4.5m]	up to 15 ft. [4.5m]
MJBA2300	up to 1,150 lbs. [522kg]	up to 15 ft. [4.5m]	up to 15 ft. [4.5m]
MJBA2600	up to 1,150 lbs. [522kg]	up to 15 ft. [4.5m]	up to 15 ft. [4.5m]
MJBA3000	up to 2,000 lbs. [907kg]	up to 15 ft. [4.5m]	up to 15 ft. [4.5m]

* For more detailed information on jib crane capacities, heights and lengths, contact your local Knight Global representative or visit www.knight-ind.com.

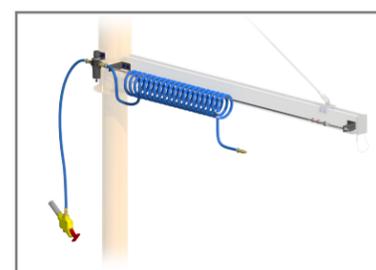
Rail Accessories

To view our full line of Rail Accessories visit us at knightglobal.com

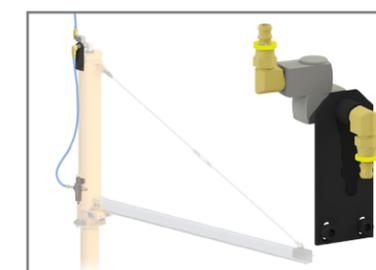


Jib Crane Accessories

To view our full line of Jib Crane Accessories visit us at knightglobal.com



Hose Management
Supplies air to the tooling. Includes the brackets, fittings, regulator, air lock-out and messenger cable. Available for coiled and straight hose systems (Hose sold separately).
Model# JSA9135 (Shown)



360° Rotate Air Fitting Assembly
Allows for the 360° continuous rotation of the air supply line.
Model# JSA9137 (Shown)



MJBA3000 Rail Mount Kit
Attaches underneath the I or S-Beam of a Knight Jib Crane. Allows for a Knight low friction load trolley to move the load on the rail.
Model# MRHS40821 (Shown)

Tables, Accumulators and Carts

Knight Lift Tables incorporate the use of pneumatic control technologies, which makes table operation cleaner, simplifies spare parts inventories and reduces general maintenance. Our exclusive Knight Global air bag design offers high durability and resistance to wear.

Lift Tables are available in a variety of configurations to accommodate every applications needs. All lift tables come equipped with hydraulic steel fittings and a Continental "Flexagrip" hose/ fitting system. Stainless steel braided hydraulic hosing for increased durability is optional. Polished chrome shafts are used at all slide and pivot points to minimize the wear and prolong component life.

Maintenance Lock-Out Bar design that physically locks out the lift table are standard on all Knight Global Lift Tables. All tables are inspected and tested before they leave our facility.



The air bags used in Knight Global lift table products under normal conditions and cycle time have a life expectancy of approximately one million cycles or five years; whichever comes first. Knight strongly recommends that the air bags be replaced at these intervals. However, this may vary depending on plant conditions. Knight Global recommends complete quarterly maintenance inspections of the air bag actuated tables.

Knight warrants that its lift table products shall meet all applicable specifications, performance requirements, and be free from defects in material and workmanship for five years from the date of invoice, unless otherwise noted.

Note: Table, Shuttles and Carts are available with a variety of accessories, safety features and equipment. Optional Safety Equipment including but not limited to; perimeter fence guarding, bellows skirting, safety mats, audible signals, light signals, toe guards, special control guarding, etc. are not included unless otherwise stated in the product descriptions. Please check with your state, local or plant safety for requirements. Please contact your local Knight Global representative or visit knightglobal.com (Tables, Shuttles and Carts) for more detailed information. Knight Global will be happy to quote any and all safety equipment needed to meet your requirements.

Lift Table Series

To view our full line of Lift Tables visit us at knightglobal.com



Standard Lift

Lift table raises loads to the proper ergonomic height for the operator. Lifting capacity up to 6,000 lbs. [2,721kg].



Lift and Rotate

Rotate table raises loads to the proper ergonomic height and provides up to 360° of rotation. Lifting capacity up to 6,000 lbs. [2,721kg].



Standard Tilt

By tilting container forward, the table positions dunnage for easy loading or unloading. Lifting capacity up to 6,000 lbs. [2,721kg].



Lift and Tilt

Lift and Tilt table will raise loads to ergonomic heights and provides a tilting table top. Lifting capacity up to 6,000 lbs. [2,721kg].

Lift Table Series (Cont.)

To view our full line of Lift Tables visit us at knightglobal.com



Low Profile Lift and Rotate

The low profile design lowers the table top to 8.5 in. [215mm] off the floor. Lifting capacity up to 6,000 lbs. [2,721kg].



Slide and Tilt

Slide action prevents the table from entering the operators work space. Lifting capacity up to 6,000 lbs. [2,721kg].



Cart Lift

Cart lift systems position the cart and content in an ideal ergonomic position so workers are more productive. They are equipped with cart to table interlock systems.



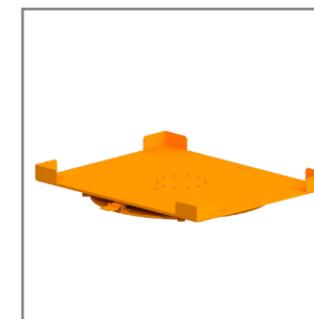
Stationary/ Portable Cart Lift

Fork-free lift that raises smaller carts to operator working level. Rear wheels allow operator to easily transfer the cart lift to multiple locations.



Double Scissor Lift

When extra lift is needed to raise loads to a higher and safe ergonomic height. Capacity up to 2,000 lbs. [907kg].



Turntables

Supplies loads continuously to an assembly station with one, two or four position configurations. Capacity up to 6,000 lbs. [2,721kg].



Portable Lift Table

Custom portable lift table is mounted to a cart for mobile use. Deck size and lift height will be customized to your application. Capacities vary by application.



Load Sensor Lift

Maintains loads at a safe ergonomic working height during varying weight load exchanges. Capacity up to 4,500 lbs. [2,041kg].



Standard Lift

Lift table raises loads to the proper ergonomic height for the operator. Lifting capacity up to 6,000 lbs. [2,721kg].



Lift and Rotate

Rotate table raises loads to the proper ergonomic height and provides up to 360° of rotation. Lifting capacity up to 6,000 lbs. [2,721kg].



Standard Tilt

By tilting container forward, the table positions dunnage for easy loading or unloading. Lifting capacity up to 6,000 lbs. [2,721kg].



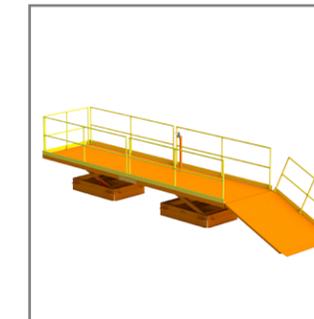
Lift and Tilt

Lift and Tilt table will raise loads to ergonomic heights and provides a tilting table top. Lifting capacity up to 6,000 lbs. [2,721kg].



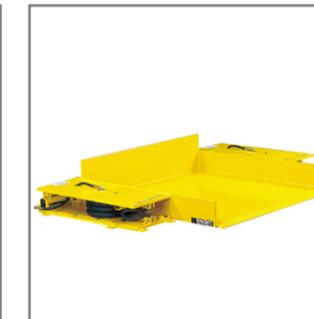
Air/ Hydraulic/ Electric Lift and Rotate

Air or electric operated for the applications that need the rigid actuation that hydraulic provides.



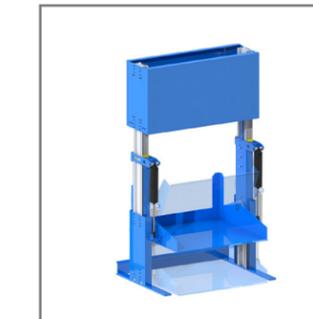
Platform Lift

Platform lifts the position of the operator in an ergonomic manner within a workstation. Pneumatic or hydraulic lifts available. Capacity up to 2,000 lbs. [907kg].



Zero Loader

Designed for ground level loading, lifting and tilting with a pallet jack when fork truck access is limited. Capacity up to 4,000 lbs. [1,814kg].

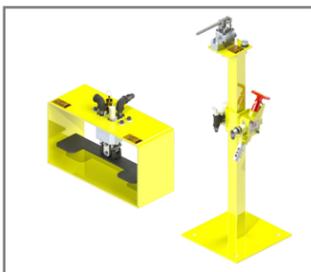


Zero Lift/ Tilt Loaders

Combines the convenience of ground level loading with the footprint of a standard lift table. Capacity up to 4,000 lbs. [1,814kg].

Table Accessories

To view our full line of Tables Accessories visit us at knightglobal.com



Hand and Foot Controls
Table controls are available in a pedestal mounted or floor mounted configuration.



Bellows Skirting
Protective covering that serves as a barrier for the operator. Skirting keeps debris from entering the table.



Motion Stabilizer
Stabilizes loads traveling upward/downward in a smooth, consistent manner. Typically used for loads that are greater than 4,000 lbs. [1,814kg]



Steel Riser
The steel reinforced construction ensures a safe, sturdy mounting base. Standard and custom risers are available.

Accumulators/ Conveyors/ Custom

Accumulators and Conveyors present customer product and allow the operator to continuously work without the need to stop for customer product reload. Knight accumulators and conveyors are custom designed to your specific application.

Knight Accumulators and Conveyors are available with Lift, Tilt, Lift and Rotate or Lift and Tilt features. They have an adjustable gravity feed with manual actuations to completely automate systems. Available in Pneumatic only, Pneumatic and Electric or an Electric only operated system. Optional docking system for fork-free incentive tugger carts.

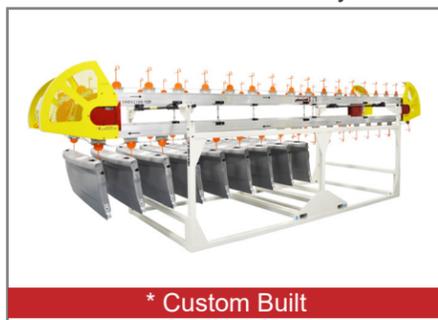


To view our full line of Conveyors and Accumulators visit us at knightglobal.com



Powered Accumulators

Powered Accumulators transfer parts between two workstations and offer an accumulation of parts. They are designed to your specific application needs. Loading capacity up to 50 lbs. per ft. [22kg].



Gravity Over Under

The Gravity Over-Under is an efficient way to transfer parts between areas for assembly applications. No power source is required making it a very cost effective and maintenance free system.



Powered Conveyors

Powered or Gravity Conveyors transfer parts between two workstations. They can be used in many types of material handling applications. They are designed to your specific needs.

Carts/ Smart Carts

Knight Global Carts are designed to be customized to handle a wide variety of material handling needs. Each cart is tailored to the customer's specific application. Knight Carts are also designed to be integratable with Knight Lift Tables.

Carts are the ideal choice for transporting, lifting and/ or rotating products to an ergonomically correct position when portability is required. Knight Global Cart Systems are available in manual and electric (Smart Cart) operated configurations.



Smart Carts are custom designed to the customer's specific application. The Smart Cart is ideal when an off the shelf cart will not work with your application. We can also design and build a custom end effector for your Smart Cart application.

Carts/ Smart Cart Series

To view our full line of Carts visit us at knightglobal.com



Custom Carts

Designed per application. Open or fully enclosed with vinyl covers or solid doors. Available in a variety of configurations such as: Static Carts, Rotational Carts, Tilt Carts, Transfer Carts, Corral Carts and more.



Forkless Tugger Carts

Forkless cart systems allow you to link the carts together and tow several carts at once. The carts brake automatically disengages when the tongue comes down. Manually operated foot brake also included with cart.



Push Carts

Forkless carts are available in either push or tugger configurations. Can be configured with a rotational or static top. Capacity up to 1,500 lbs. [680kg].



Dunnage Rack Carts

Dunnage Racks are custom designed to store and transfer parts. Every rack is custom designed to your application. Multiple options and sizes are available.



Controlled Drain Carts

Controlled drain cart and nestings are used in the assembly or disassembly of transmissions and other components. Carts are designed to your application with or without a wet cart self contained oil drainage storage system.



"SDS" Smart Carts

The Smart Cart is ideal when portable powered manipulation is required for an application. Options include various end effectors such as I.D. roll grippers, clamps, suction cups, etc. Equipped with the "SDS" feature.



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