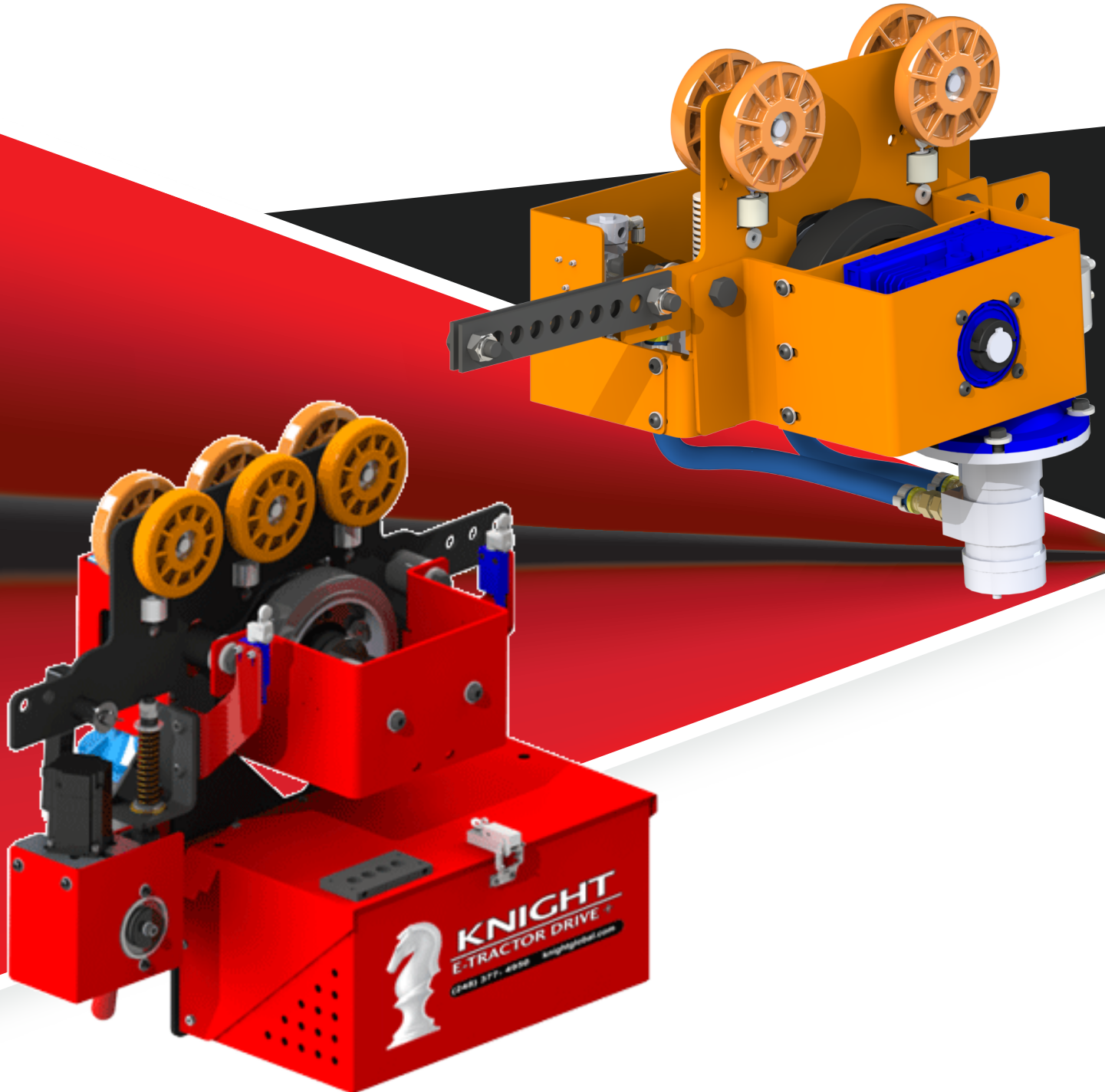




KNIGHT

GLOBAL



Electric / Pneumatic / Servo
Tractor Series

rev.20230814

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Knight Global | Warranty Information

Knight warrants that its products and parts shall meet all applicable specifications, performance requirements, and be free from defects in material and workmanship for one year, (Servo Systems for two years, Pneumatic Lift Tables for 5 years), from the date of invoice, unless otherwise noted. One exclusion would include any purchased components not manufactured by Knight and their specific individual warranties. Paint defects, scratches and marring from shipping are also excluded.

This warranty shall not cover the failure or defective operation caused by inadequate training provided by customer regarding the operation and / or maintenance of the tool, misuse, negligence, misadjustment, or any alteration not approved by Knight. Knight's obligation is limited to the replacement or repair of Knight's products at a location designated by Knight. Buyer is responsible for all associated internal removal and reinstallation costs as well as freight charges to and from Knight Industries. Knight's maximum liability shall not in any case exceed the contract price for the products claimed to be defective.

Any field modification made to Knight Products or Systems without the written authorization by Knight Global shall void Knight's warranty obligation.

Knight warrants the Servo Hoist, Arms, and Tractors to be free from defects in material or workmanship for a period of two years or 6000 hours use from the date of shipment.

Knight Distributors/ Agents are not authorized to circumvent or change any of these terms and or conditions of this warranty unless prior approval is received in writing by Knight Global Management. Verbal statements made by Knight Distributors/ Agents do not constitute warranties.

On a design and build job, the customer is the owner of the equipment once they authorize shipment. The purchased equipment can not be returned for reimbursement or credit.

DISCLAIMERS: OTHER THAN AS SET FORTH HEREIN, NO OTHER EXPRESSED WARRANTIES, AND NO IMPLIED WARRANTIES, ORAL AND WRITTEN, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE BY KNIGHT GLOBAL WITH RESPECT TO ITS PRODUCTS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

KNIGHT GLOBAL SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR ANY INCIDENTAL, SPECIAL AND/OR CONSEQUENTIAL DAMAGES WHATSOEVER, WHETHER OR NOT FORESEEABLE, INCLUDING BUT NOT LIMITED TO DAMAGES FOR LOST PROFITS AND ALL SUCH INCIDENTAL, SPECIAL AND/OR CONSEQUENTIAL DAMAGES ARE HEREBY ALSO SPECIFICALLY DISCLAIMED.

KNIGHT GLOBAL WILL NOT BE LIABLE FOR ANY LOSS, INJURY OR DAMAGE TO PERSONS OR PROPERTY, NOR FOR DAMAGES OF ANY KIND RESULTING FROM FAILURE OR DEFECTIVE OPERATION OF ANY MATERIALS OR EQUIPMENT FURNISHED HEREUNDER.

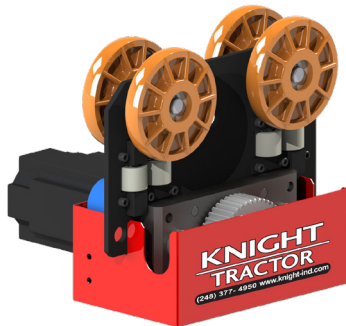
We are committed to
Total Customer Satisfaction
 through
QUALITY, RELIABILITY and
EMPLOYEE INVOLVEMENT.

Overview

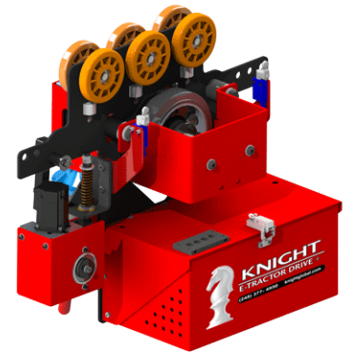
Knight Tractor Systems

Knight Global's Tractor Series accurately locates and moves loads in the "X" and "Y" directions with precision and reliability. Tractors are devices designed primarily to push, pull, lift and position a load that is suspended from a trolley on an overhead rail system. Knight Tractors significantly reduce the push pull forces as well as the energy to sustain movements.

Knight Servo Tractors incorporate (IAD) Intelligent Assist Device Servo Technology, giving them unlimited programmability for all your specific application needs. Servo Hoist Tractors accurately locates, transfers and lifts loads in the "X", "Y" and "Z" Directions. Knight's Electric Tractors are equipped with Knight's VFD (Variable Frequency Drive) Tractor Drive that provides operators with complete control while locating loads.



Servo Series



Electric Series



Pneumatic Series

Features and Benefits:

- CE Compliant **
- Electric and Pneumatic Configurations.
- Integrated Load Trolleys.
- Tows fixtures, bridges and loads.
- Assists operator in pushing, pulling and positioning loads.
- Various Towing Capacities and Speeds.
- Programmable (Electric and Servo Only).

Options and Accessories:

- Optional Control Pendants.
- Optional Remote Control (Electric and Servo Only).
- Lube-Free Motor (TRA5500 Series Only).
- Various Accessories.

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

Tractor Series

The tractor series is offered in various capacities and speeds to accommodate your specific applicational needs.

Model	Max. Capacity (lbs)	Max. Speed (ft/min/sec)
TRA1501	Up to 300 lbs.	3.5 ft/sec.
TRA1500	Up to 300 lbs.	3.5 ft/sec.
TRA2500	Up to 750 lbs.	4 ft/sec.
TRA5500	Up to 2,000 lbs.	1.9 ft/sec.
KET3000	Up to 3,000 lbs.	Variable
KST	Up to 4,000 lbs.	261 ft/min.
KSHXZ	Up to 1,000 lbs.	174 ft/min.
KSHXY	Up to 1,000 lbs.	174 ft/min.
KSHXYZ	Up to 1,000 lbs.	174 ft/min.
KSHXXYZ	Up to 1,000 lbs.	174 ft/min.

Pneumatic Series

Knight TRA1501 Mini Air Tractor Series

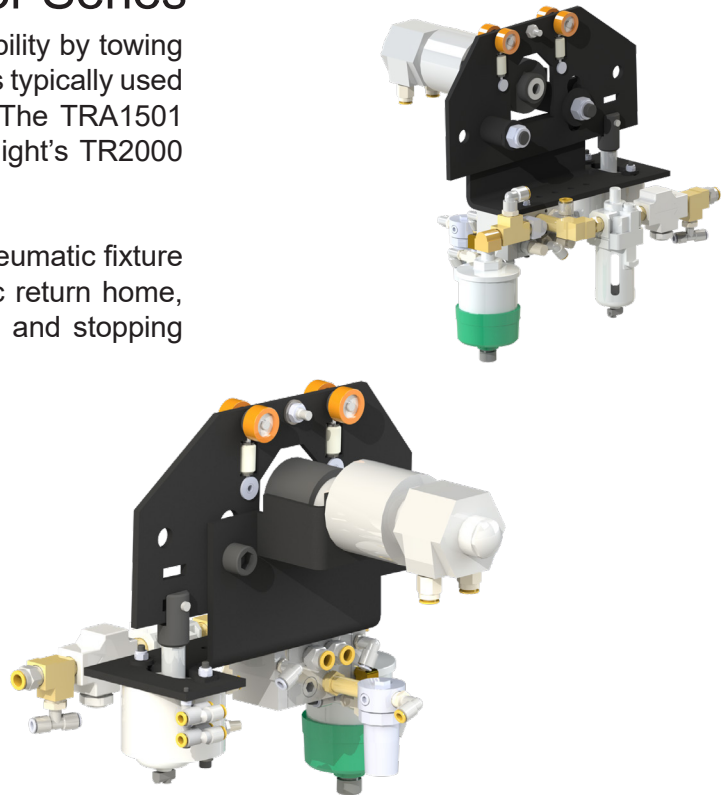
Knight Global's TRA1501 Mini Air Tractor provides mobility by towing bridges, fixtures and loads. The TRA1501 Mini Tractor is typically used to assist an operator to push, pull or position loads. The TRA1501 Tractor is designed to be used in conjunction with Knight's TR2000 aluminum workstation crane systems.

Knight Pneumatic Tractors can be integrated with a pneumatic fixture allowing for multiple configurations such as: automatic return home, conveying of a load to the next position, and starting and stopping limits with the use of air logic.

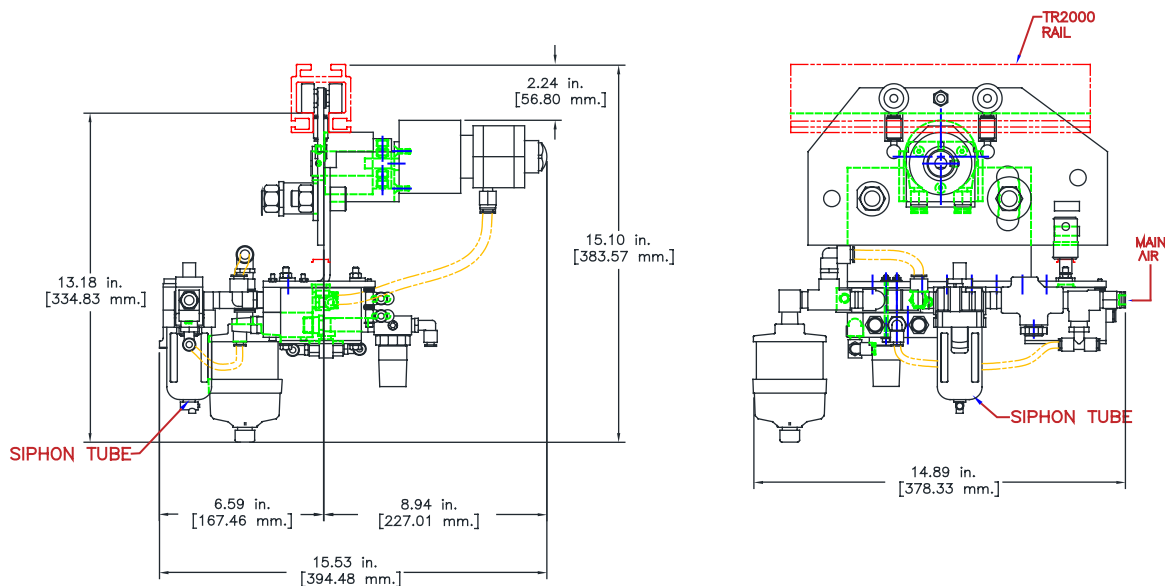
Features

- CE Compliant **
- Travels inside **TR2000 Series Rail**.
- Maximum Speed: **3.5 ft./sec. [2.4mph]**.
- Maximum Towing Capacity:
Up to **300 lbs. [136kg]**.
- Maximum Air Consumption: **27 cfm.**
- MCBF: **>250,000 (>5,000,000 Linear ft.)**.
- Integrated Load Trolley.
- Product Weight: **22.7 lbs. [10.30kg]**.

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

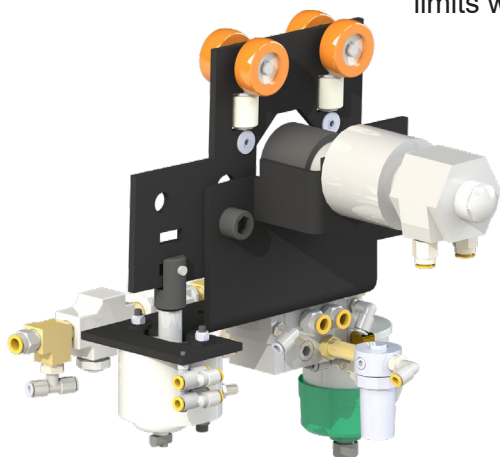
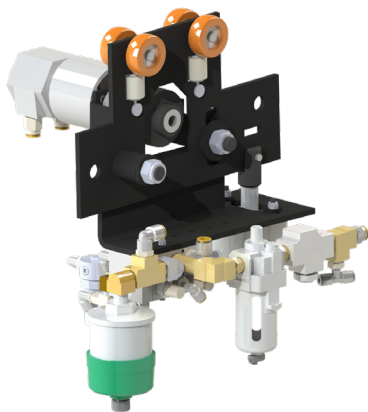


TRA1501 SERIES SPECIFICATIONS



Note: Tractor must coast to a complete stop prior to it being engaged in the opposite direction. Failure to do so will damage the tractor and void the manufacture's warranty.

Pneumatic Series



Knight TRA1500 Mini Air Tractor Series

Knight Global's TRA1500 Mini Air Tractor provides mobility by towing bridges, fixtures and loads. The TRA1500 Mini Tractor is typically used to assist an operator to push, pull or position loads. The TRA1500 Tractor is designed to be used in conjunction with Knight's RAD4110 aluminum workstation crane systems.

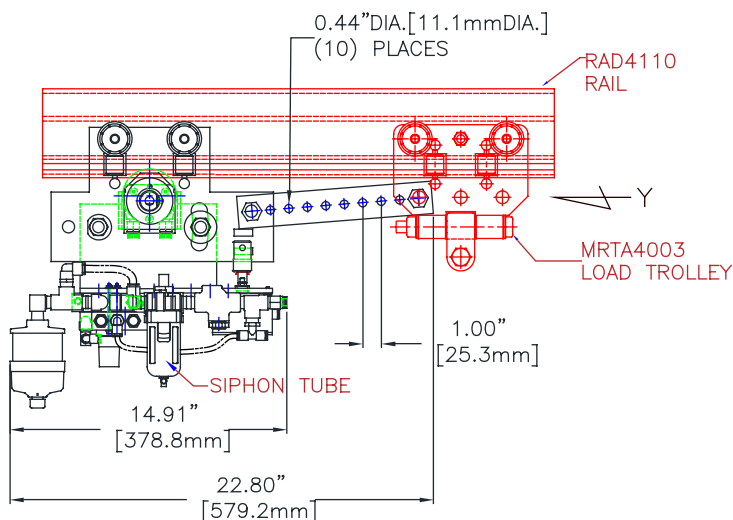
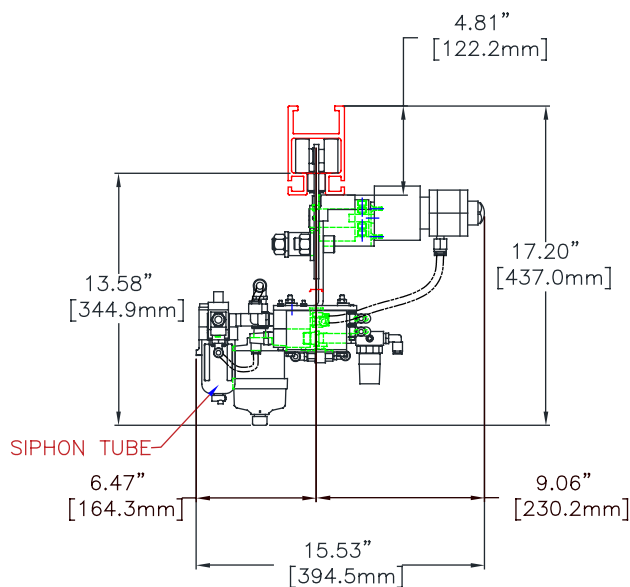
Knight Pneumatic Tractors can be integrated with a pneumatic fixture allowing for multiple configurations such as: automatic return home, conveying of a load to the next position, and starting and stopping limits with the use of air logic.

Features

- CE Compliant **
- Travels Inside **RAD4110 Series Rail**.
- Maximum Speed: **3.5 ft./sec. [2.4mph]**.
- Maximum Towing Capacity:
Up to **300 lbs. [136kg]**.
- Maximum Air Consumption: **27 cfm**.
- MCBF: **>250,000 (>5,000,000 Linear ft.)**.
- Integrated Load Trolley.
- Product Weight: **22.9 lbs. [10.39kg]**.

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

TRA1500 SERIES SPECIFICATIONS

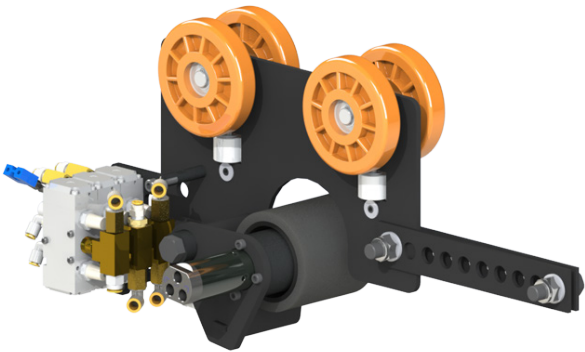


Note: Tractor must coast to a complete stop prior to it being engaged in the opposite direction. Failure to do so will damage the tractor and void the manufacture's warranty.

Pneumatic Series

Knight TRA2500 Lube-Free Motor Series

Knight Global's TRA2500 Series Lube-Free Motor provides mobility by towing bridges, fixtures and heavier loads. The TRA2500 is equipped with a Lube-Free Motor that requires less maintenance and will have a longer expected service life and is typically used to assist an operator to push, pull or position loads. Knight's Lube-Free Motors are available on the TRA2500 and TRA5500 Series Air Tractors only. It is designed to be used in conjunction with Knight's RAD4110, RAD6110, and RAD7510 workstation crane systems.



TRA2500-7510 (Shown)

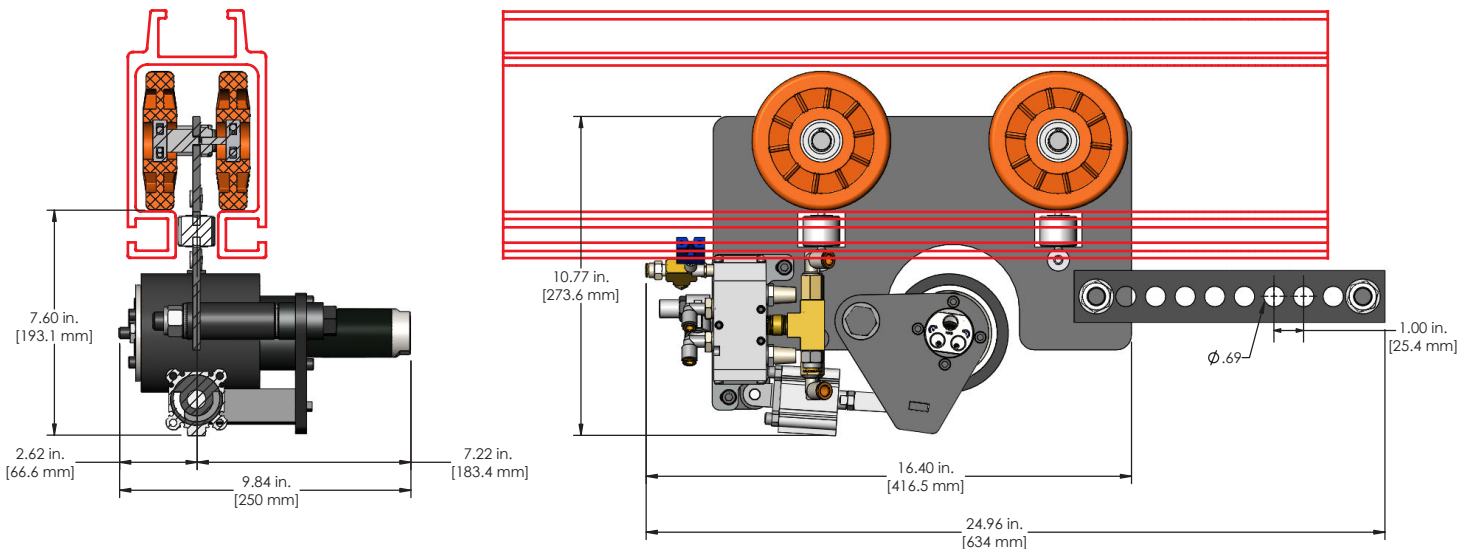
Features and Options

- CE Compliant **
- Maximum Speed: 4 ft./sec. [2.72mph].
- Maximum Towing Capacity:
Up to 750 lbs. [340kg].
- Maximum Air Consumption: 52 cfm.
- MCBF: >750,000 (>75,000,000 Linear ft.).
- Integrated Load Trolley.
- Lube-Free Motor.
- Optional Control Pendants sold separately.
 - TRA2001 (Hanging).
 - TRA2002 (Fixture Mounted).

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

Model	Rail Series	Product Weight
TRA2500-4110	RAD4110	25.2 lbs. [11.43kg]
TRA2500-6110	RAD6110	29.6 lbs. [13.43kg]
TRA2500-7510	RAD7510	33.1 lbs. [15.01kg]

TRA2500 SERIES SPECIFICATIONS



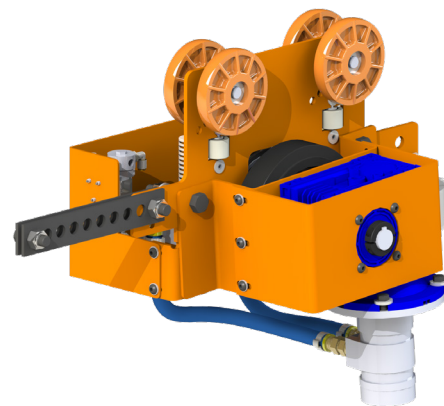
TRA2500-7510 (Shown)

Note: Tractor must coast to a complete stop prior to it being engaged in the opposite direction. Failure to do so will damage the tractor and void the manufacture's warranty.

Pneumatic Series

Knight TRA5500 Lube-Free Motor Series

Knight Global's TRA5500 Series Lube-Free Motor provides mobility by towing bridges, fixtures and heavier loads. The TRA5500 is equipped with a Lube-Free Motor that requires less maintenance and will have a longer expected service life and is typically used to assist an operator to push, pull or position loads. Knight's Lube-Free Motors are available on the TRA5500 and TRA2500 Series Air Tractors only. The TRA5500 Tractor Series is designed to be used in conjunction with Knight's RAD4110, RAD7510, RSD5500 and RSD5700 workstation crane systems.



TRA5500-4110 (Shown)

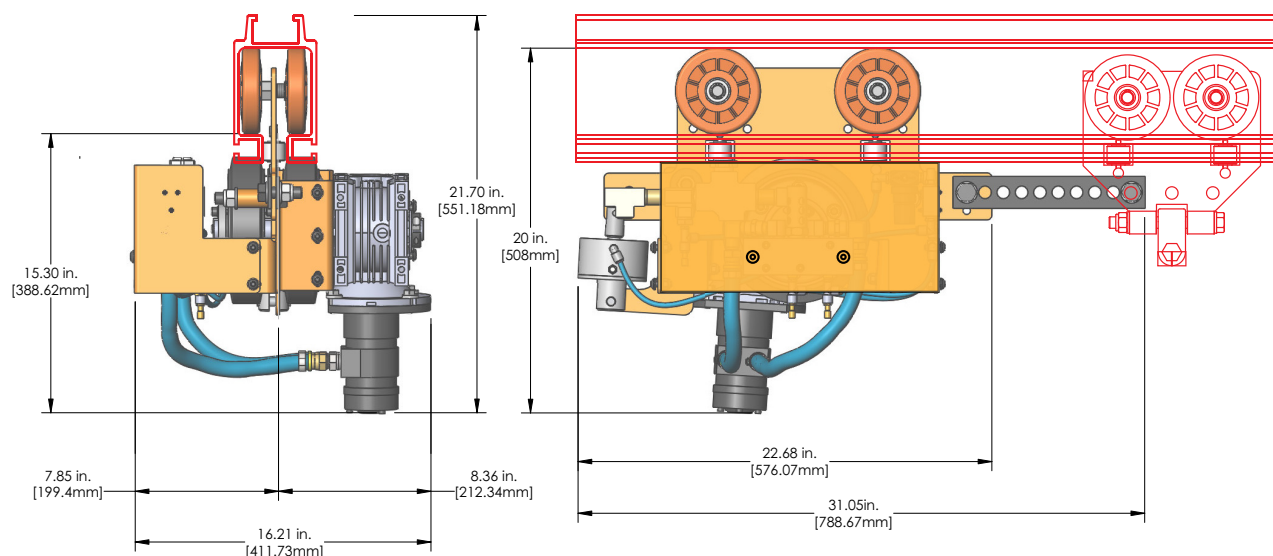
Features and Options

- CE Compliant **
- Maximum Speed: **1.9 ft./sec. [1.3mph]**.
- Maximum Towing Capacity:
Up to **2,000 lbs. [908kg]**.
- Maximum Air Consumption: **52 cfm.**
- MCBF: **>500,000 (>10,000,000 Linear ft.)**.
- Integrated Load Trolley.
- Lube-Free Motor.
- Optional Control Pendants sold separately.
 - TRA2001 (Hanging).
 - TRA2002 (Fixture Mounted).

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

Model	Rail Series	Product Weight
TRA5500-4110	RAD4110	86.8 lbs. [39.37kg]
TRA5500-7110	RAD7510	92.5 lbs. [41.96kg]
TRA5500-5500	RSD5500 / RSD5700	91.2 lbs. [41.37kg]

TRA5500 SERIES SPECIFICATIONS



TRA5500-7510 (Shown)

Note: Tractor must coast to a complete stop prior to it being engaged in the opposite direction. Failure to do so will damage the tractor and void the manufacture's warranty.

Pneumatic Tractor Accessories



TRA5005 Bridge Tow Bar Assembly

Knight Global's TRA5005 Bridge Tow Bar Assemblies are used in conjunction with the TRA5500 Air Tractor to stop the bridge from skewing while the Air Tractor is pushing/pulling a bridge or runway. The TRA5005-6110 runs in Knight's RAD6110 aluminum rail while the TRA5005-7510 runs in Knight's RAD7510 aluminum rail. Both tow bars can tow Knight's RAD4110, RAD6110, or RAD7510 bridges.

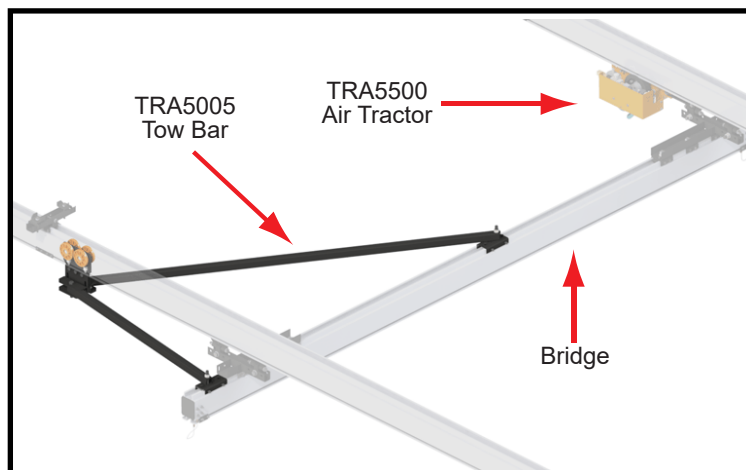
Features

- TRA5005-6110: Runs in RAD6110 Series Rail.
- TRA5005-7510: Runs in RAD7510 Series Rail.
- Can be configured for dual or tri-runway systems.
- Trolleys are included.
- Easy Assembly and Installation
- Adjustable Spans

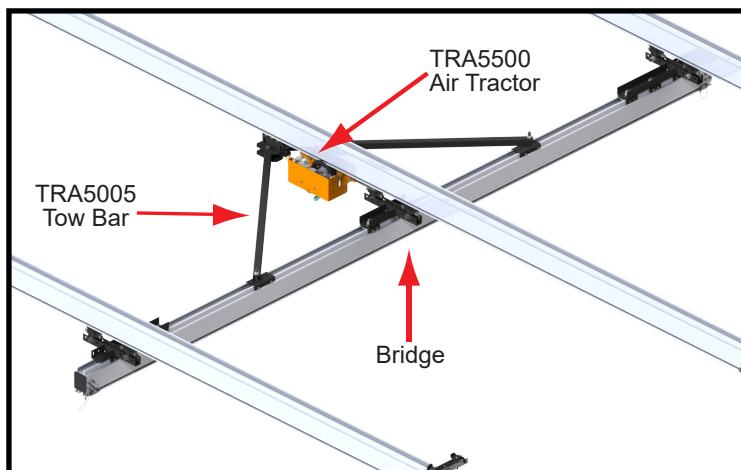


CONFIGURATIONS

Dual Runway



Tri-Runway



Electric Series

Knight KET3000 Electric (VFD) Variable Frequency Drive Tractor Series

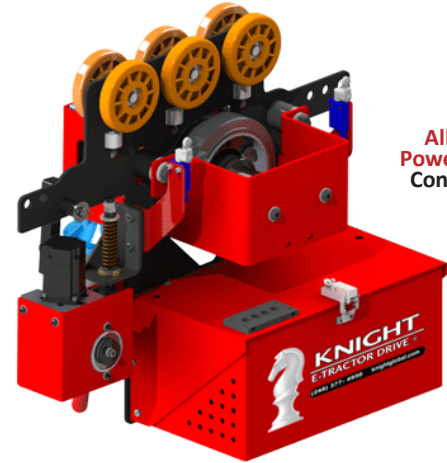
The Electric Variable Frequency Drive (VFD) Tractors are equipped with Knight's proven tractor mechanics using a worm gear reducer that is reliable and maintenance-free. They provide a way to easily tow fixtures, bridges, and heavy loads in manufacturing environments, giving the operator complete control of positioning.

Different configurations are available depending on the type of Knight rail you are using. The VFD Electric Tractor can also be configured to run on different manufactures' rail systems.

Features

- CE Compliant **
- Maximum Speed: **180 ft./min. [1.3mph]**.
- Maximum Towing Capacity: **3,000 lbs. [1,360kg]**.
- Integrated Load Trolley.
- Dual Rubber Wheels.
- **Clutch Drive Wheel Engagement 24VD:**
 - Drive Wheel is always engaged with rail (Over Center Clamp can disengage tractor if required).
- **Pneumatic Drive Wheel Engagement:**
 - Drive wheel engages rail when a forward or reverse command is received.
- **All-Electric Power and Free Drive Wheel Engagement:**
 - Drive wheel engages rail when a forward or reverse command is received.
 - When the VFD is not receiving a command, it is free to move along the rail.
- Programmable speeds, acceleration, and deceleration rates.
- Standard Inverter Motor: **1/2 HP, 230VAC**.
- Standard VFD controller: **240VAC**, Single Phase, for variable speeds on board.
- Over Travel Limits (ramps sold separately).
- Product Weight: **Varies by model**.
- **(2) Year Warranty**.

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



All-Electric
Power and Free
Configuration

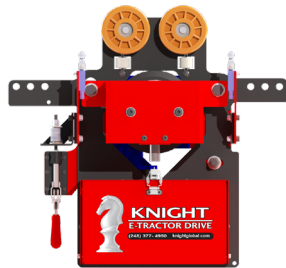
Benefits

- Provides easy towing fixtures, bridges, and heavy loads.
- Ergonomically assist the operators when controlling the position of loads.
- Programmable control for start and stop.
- The Dual Rubber Drive Wheels provide positive traction between the tractor and the rail.
- Knight's proven tractor is designed with a worm gear reducer, which is highly reliable and maintenance free.
- VFD tractors have a modular assembly for ease of installation.
- Produced with off-the-shelf electrical components.

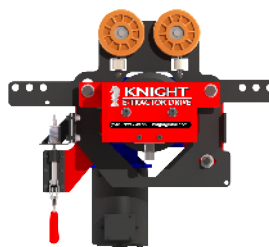
KET3000 SERIES OPTIONS

- End of Travel Shocks
- Pendant Cables with tether
- Tow Bars
- KCA1020 Two-Speed Pendant with Run-Stop Button.
- Wireless Pendant controls package.
- Over Travel Limits Ramps
- Optional Custom Tractors:
 - Non Standard Rail
 - Nema 12 enclosure
 - Complete fixture integration
- Combined with Knight Engineering, VFD Tractors can provide:
 - Return to Home function
 - Wireless capabilities
 - Custom interface
 - Coordinated dual interface for large spans
 - Coordinated with hoist
 - Interface with other hoists
 - Remote programming ports

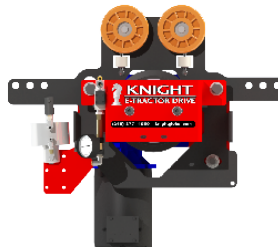
KET3000 Configurations



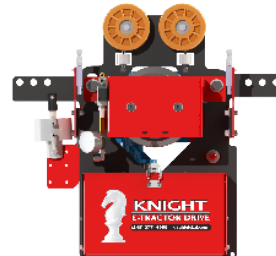
**Controls Onboard
Clutch Drive
Configuration**



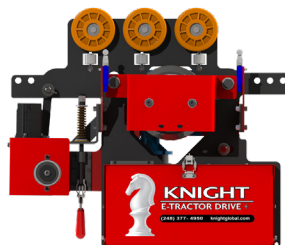
**Mechanical Only
Clutch Drive
Configuration**



**Mechanical Only
Pneumatic Engagement
Configuration**

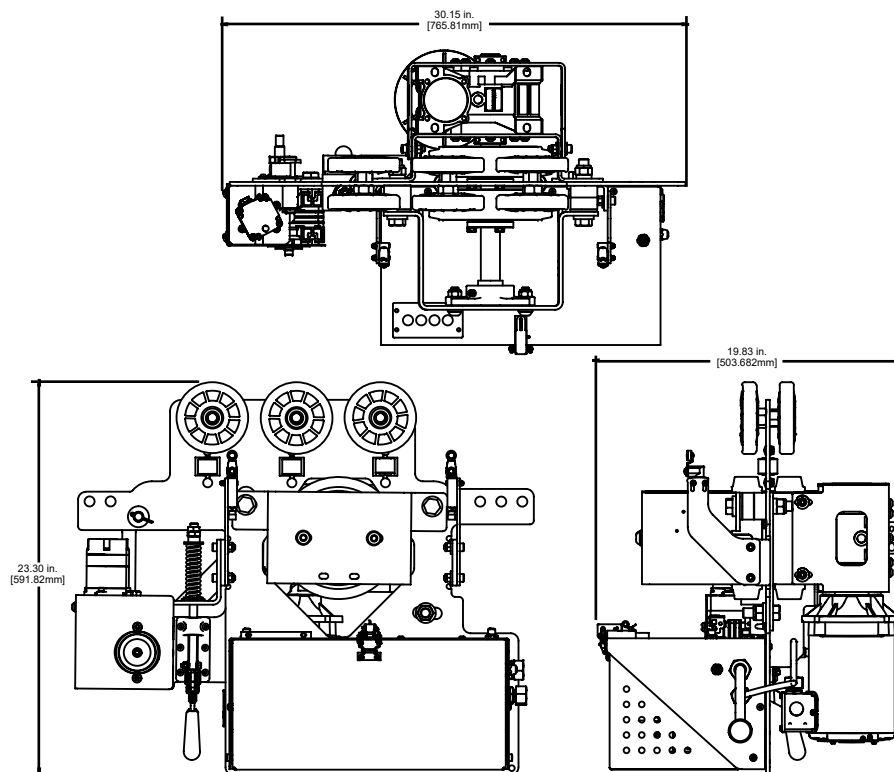


**Controls Onboard
Pneumatic Engagement
Configuration**



**All-Electric
Power and Free
Configuration**

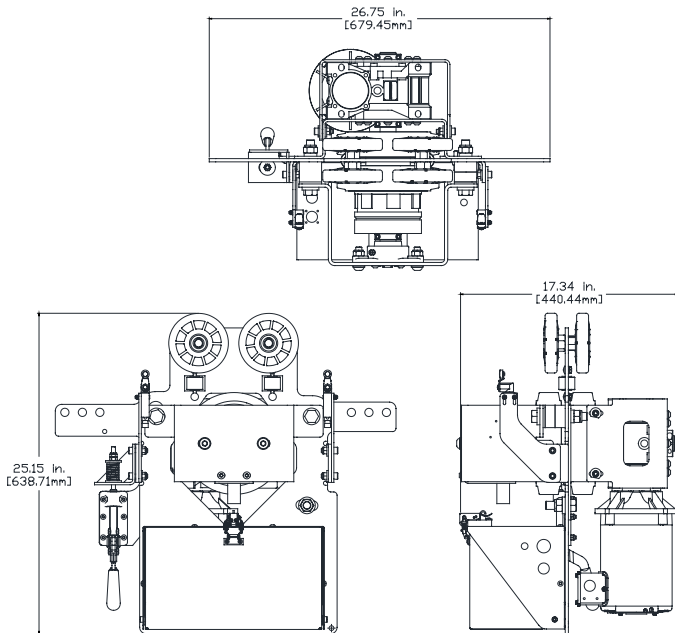
KET3709EC-000 Knight 7510 Series VFD Tractor All-Electric Power and Free



KET3000 Configurations (Cont.)

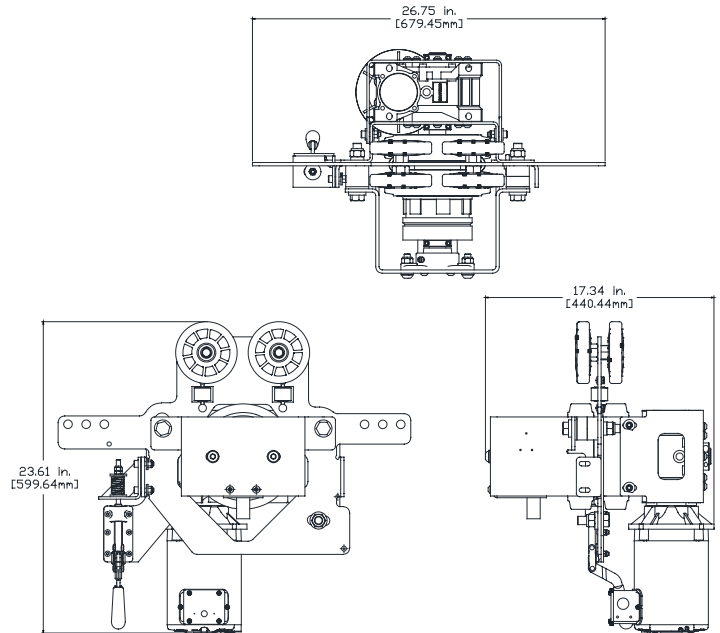
KET3709CC-000

Knight 7510 Series VFD Tractor
Clutch Drive with Onboard Controls



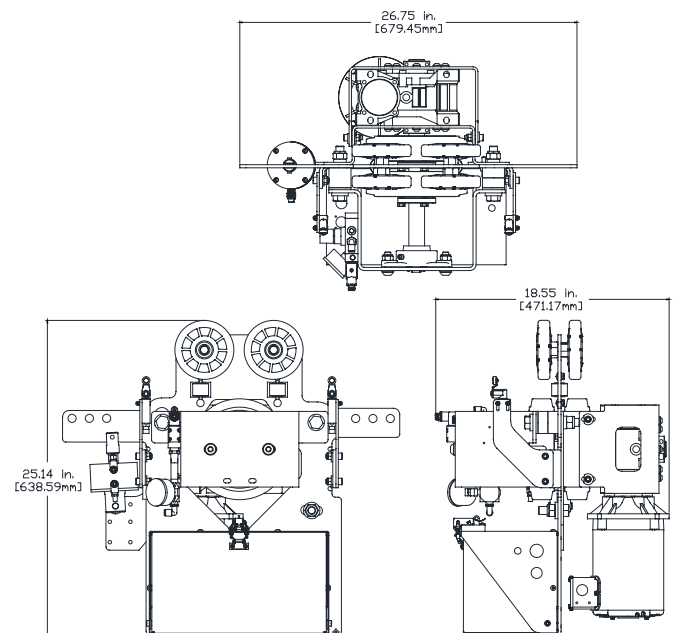
KET3709CM-000

Knight 7510 Series VFD Tractor
Clutch Drive, Mechanical Only



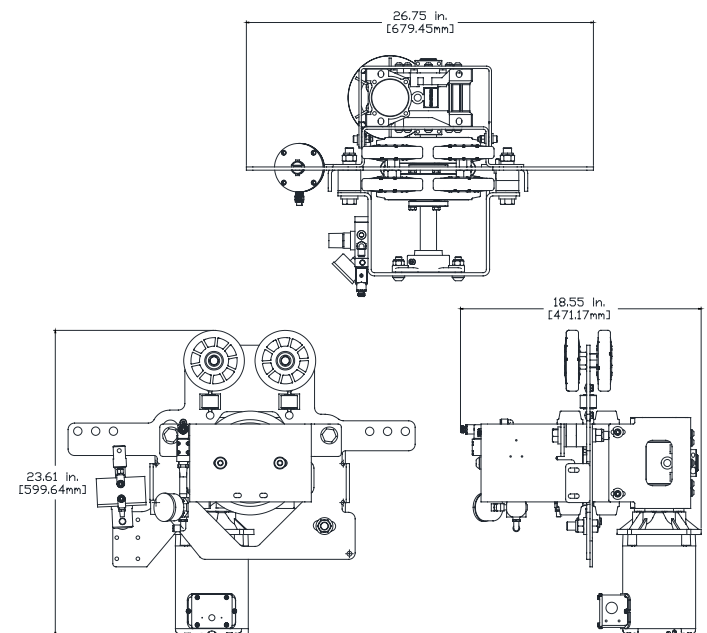
KET3709PC-000

Knight 7510 Series VFD Tractor
Pneumatic Engagement with Onboard Controls



KET3709PM-000

Knight 7510 Series VFD Tractor
Pneumatic Engagement, Mechanical Only

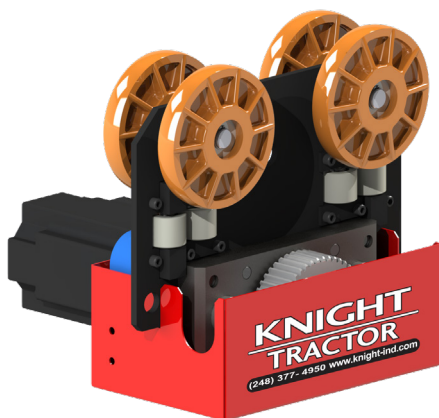


NOTE: Above dimensions vary by VFD Tractor configuration.

KET3000 Series Accessories

8-Pin Micro-Switch Cable  <ul style="list-style-type: none"> • 8-Pin Micro DC Single Key. • PVC Grey. • TPE. • Male-In-Line/ Female Connectors. • 22 AWG, 4A, 300V Cord. • Available with straight or right angle connector ends. 	KCA1001 Electrical Disconnect Enclosure Stand  <ul style="list-style-type: none"> • Floor Mounted. • Air Prep option for the back side. • Various enclosures mount to stand. • Custom finishes are available. • Foot Print: 30x21x62. 	EBA1003 3KVA Electrical Disconnect Enclosure  <ul style="list-style-type: none"> • Disconnect box housing a step down transformer for power to the KET3000. • Enclosure Size: 21 in. X 20 in. X 10 in. 	KCA1019 Fused Disconnect Assembly  <ul style="list-style-type: none"> • Provides disconnect for power to the KET3000.
ETA1018 Tow Bar Assembly  <ul style="list-style-type: none"> • Connects the KET3000 to a carriage trolley. • Can be used trolley to trolley. 	ETA1059 Tow Bar Assembly  <ul style="list-style-type: none"> • Connects the KET3000 to a Knight End Truck. 	MRAA7171-24 / MRAA7171-36 Limit Ramp Assembly  <ul style="list-style-type: none"> • Used to limit movement of the KET3000 within a predetermined work area. • (2) required. • Available in 24" or 36" options. 	KCA1045 Pendant Cable Kit  <ul style="list-style-type: none"> • Tethers VFD tractor to Knight Pendant Handle to relieve stress on communications cable (5m).
KCA1020 2-Speed Pendant with Run-Stop  <ul style="list-style-type: none"> • Dual Speed Pendant handle to enable and control forward and reverse motion of the KET3000. 	KCA1004 / KCA1005 / KCA1006 Wireless Control Unit  <ul style="list-style-type: none"> • Allows for wireless control of the KET3000 and additional components. • Available in 4 button, 6 button, and 8 button configurations. 	MRAA7002 Mid Rail Shock (for RAD7510 rail)  <ul style="list-style-type: none"> • Shock absorber located mid-rail to halt KET3000 tractor movement. 	MRAA4805 End Cap Shock (for RAD7510 rail)  <ul style="list-style-type: none"> • Shock absorber located at the end of the rail to protect the KET3000.

Servo Series



Knight KST4000 Servo Rack & Pinion Tractor

Knight Global's KST4000 Series Rack and Pinion Servo Tractors is a stand alone tractor that is designed to push, tow and position loads that are suspended from a trolley on an overhead rail system. Tractors significantly reduce the push/ pull forces as well as the energy to sustain movements.

Knight's KST4000 Series Servo Tractors have Knight's (IAD) Intelligent Assist Device Servo Technology incorporated into their design allowing them to provide controlled transfers of workloads with speed and precision. Rack and Pinion Tractors can be programmed to automatically or manually move and stop the runway (X Axis) or bridge (Y Axis) at intended locations with repeatable accuracy; thus eliminating unnecessary motions. (Knight Servo Tractors can also be programmed for line speed synchronization).

The KST4000 Servo Tractor offers a continuous contact non-slip rack and pinion design. This continuous non-slip design allows for a more accurate positioning of the load. Movement of the Servo Tractor is controlled by input sensors that have an electrical signal that interprets the different weight or forces applied to it from the operator.

Mechanical Features

- CE Compliant. **
- Variable Maximum Travel Speed:
 - Up to **261 ft. per min. [79mpm]**.
- Maximum Towing Capacity:
 - Up to **4,000 lbs. [1,814.37kg]**.
- Non-Slip Rack and Pinion Drive System.
- Clutch (**24 VDC**).
- Power and Free Drive Wheel.
- Absolute Positioning.

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

Electrical Features

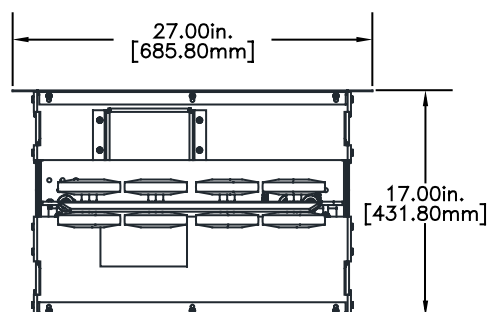
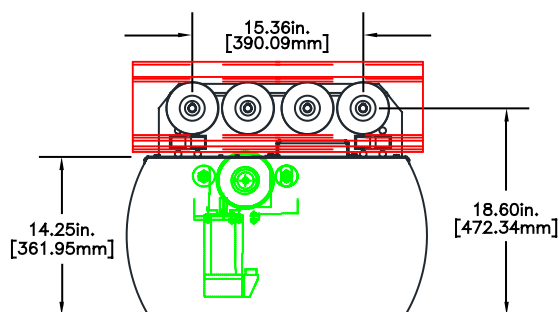
- Industry Standard **24 VDC, 2 AMP** power is available for custom tooling such as: Clamps, Vacuum Cups, Switches, Proximity Limits, Lights, etc.
- H5 Rated (Continuous Duty Cycle).
- **240VAC**, Single Phase, **50/60 Hz**.
- I/O Capabilities.
- LED Status Indicators.
- LED Fault Diagnostics.
- Illuminated Run/ Stop Button.
- Optional Control Handle Pendant.

Software Features

- Programming and Diagnostic Communication Ports.
- Virtual Travel Limits.
- Speed Reduction Zones.

KST4000 SERIES SPECIFICATIONS

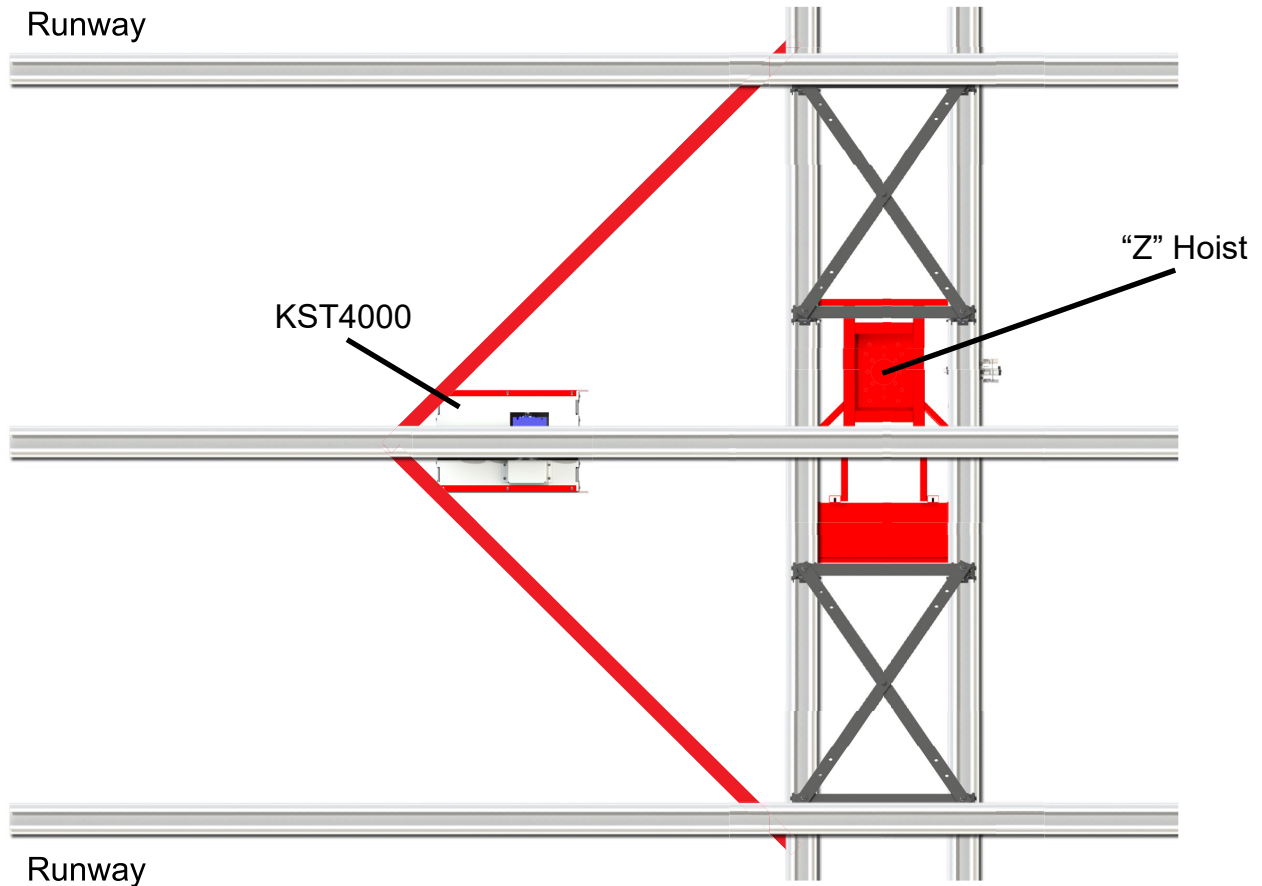
Model	Towing Capacity lbs. [kg]	Travel Speed fpm. [mpm]	Voltage/Phase
KST4000	4,000 lbs. [1,814.37kg]	261.8 fpm. [79mpm]	240 / 1 Phase
KST4000	4,000 lbs. [1,814.37kg]	174.53 fpm. [53.2mpm]	240 / 1 Phase



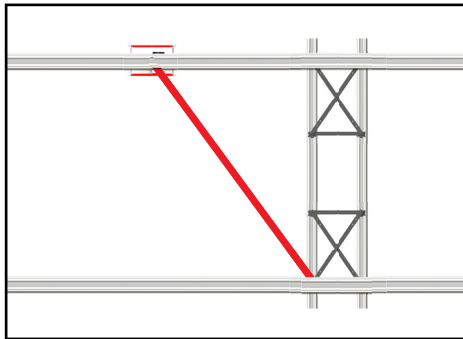
Servo Series

KST4000 Series Configurations

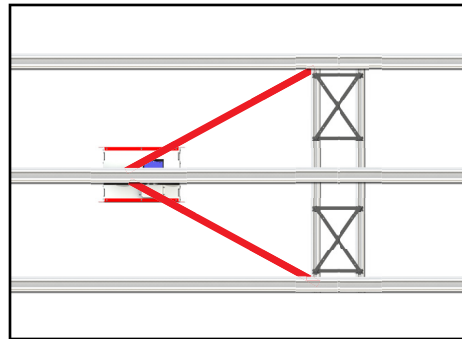
KST4000 Bridge Configurations



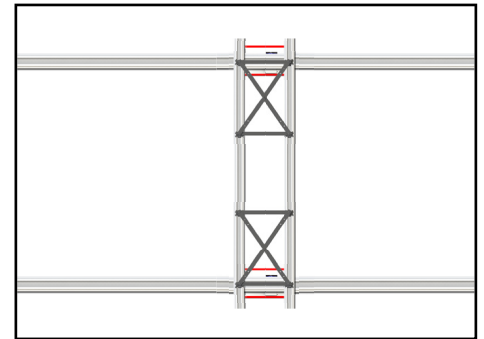
5-10 ft. Bridge



10-15 ft. Bridge



10-30 ft. Bridge



NOTE: All Knight Global Tractor configurations are dependant on the total weight of the systems.
All Tractor systems require the use of Rigid End Trucks.

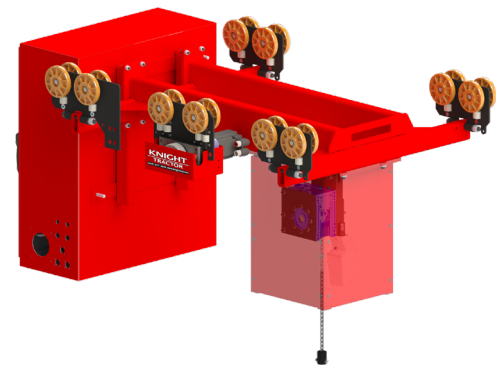
Servo Series

Knight KSHXZ Servo “X” Tractor with “Z” Hoist Control Series

Knight Global's KSHXZ Servo “X” Tractor with “Z” Controls are designed to accurately locate, push, tow, lift and position loads from an overhead rail system. The KSHXZ Series facilitates a (2) two axis, (1) one tractor combo configuration. Tractors significantly reduce the push/ pull forces as well as the energy to sustain movements. Knight's KSHXZ Series Servo Tractors have Knight's (IAD) Intelligent Assist Device Servo Technology incorporated into their design allowing them to provide controlled transfers of workloads with speed and precision.

Knight Global's Servo “X” with “Z” Control Tractors can be programmed to automatically or manually move and stop the runway (X Axis) at intended locations with repeatable accuracy while lifting loads (Z Axis) at the same time; thus eliminating unnecessary operator motions. Knight Servo Tractors can be programmed for assembly line speed synchronization.

The KSHXZ Servo Tractor offers a continuous contact non-slip rack and pinion design. This continuous non-slip design allows for a more accurate positioning of the load. Movement of the Servo Tractor is controlled by input sensors that have an electrical signal that interprets the different weight or forces applied to it from the operator.



Mechanical Features

- CE Compliant. **
- Axis Direction: “X” and “Z”.
- Variable Maximum Speed:
 - Up to **174 ft. per min. [53.2mpm]**.
- Maximum Towing Capacity:
 - Up to **4,000 lbs. [1,814.37kg]**.
- Maximum Lifting Capacity:
 - Up to **1,000 lbs. [453.59kg]**.
- Non-Slip Rack and Pinion Drive System.
- Clutch (**24 VDC**).
- Power and Free Drive Wheel.
- Absolute Positioning.
- Safety Rating of **125%**.
- Fail Safe Brake.
- Knight's Patented Chain, for longer life.
- Chain Lengths, Unlimited (**18 ft.** Standard).
- Sealed Worm Style Gearbox.
- **H5 Rated** (Continuous Duty Cycle).

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

Electrical Features

- Industry Standard **24 VDC, 2 AMP** power is available for custom tooling such as: Clamps, Vacuum Cups, Switches, Proximity Limits, Lights, etc.
- **H5 Rated** (Continuous Duty Cycle).
- **240VAC**, Single Phase, **50/60 Hz**.
- Load Sensing, Pay Load and Handle Load.
- I/O Capabilities
 - (**16**) Inputs/ (**8**) Outputs
 - (**8**) Inputs/ (**4**) Outputs are free for interface controls.
- LED Status Indicators, Green and Blue Lighted Push buttons.
- LED Fault Indicators, Illuminated Run/ Stop Button, Twist to Release.
- Optional Remote Pendant or Wireless Remote Control.

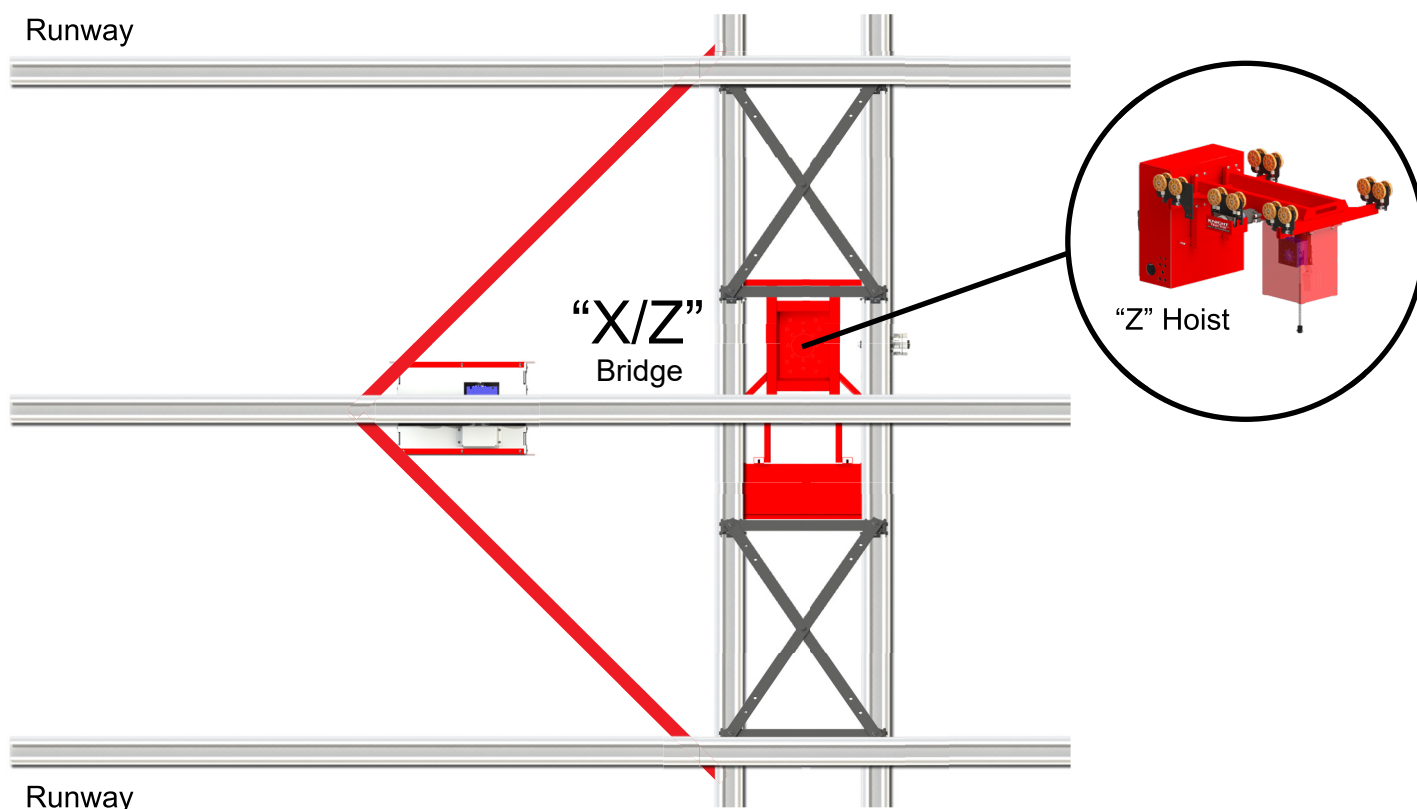
Software Features

- Programming and Diagnostic Communication Ports.
- Virtual Travel Limits.
- Speed Reduction Zones.
- Impact Limiting.
- Active Dampening.
- Standard Float Mode.
- Programmable Overload Capability.

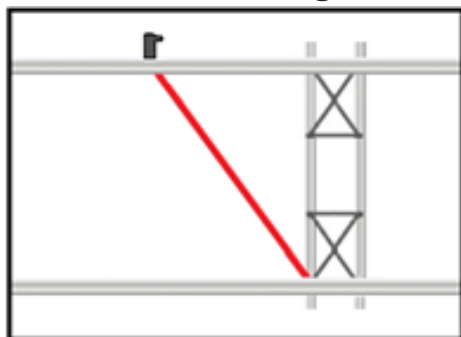
KSHXZ SERIES SPECIFICATIONS

Model	Hoist Capacity lbs. [kg]	Towing Capacity lbs. [kg]	Hoist Lift Speed ft./min. [m/min]	Tractor Travel Speed ft./min. [m/min]	Voltage/Phase
KSHXZ250S-2401	250 lbs. [113 kg]	4,000 lbs. [1,814 kg]	197 ft/min. [60 m/min]	174 ft/min. [53 m/min]	240 / 1 Phase
KSHXZ350S-2401	350 lbs. [159 kg]	4,000 lbs. [1,814 kg]	241 ft/min. [74 m/min]	174 ft/min. [53 m/min]	240 / 1 Phase
KSHXZ500S-2401	500 lbs. [227 kg]	4,000 lbs. [1,814 kg]	98 ft/min. [30 m/min]	174 ft/min. [53 m/min]	240 / 1 Phase
KSHXZ750S-2401	750 lbs. [340 kg]	4,000 lbs. [1,814 kg]	123 ft/min. [38 m/min]	174 ft/min. [53 m/min]	240 / 1 Phase
KSHXZ1000S-2401	1,000 lbs. [454 kg]	4,000 lbs. [1,814 kg]	82 ft/min. [25 m/min]	174 ft/min. [53 m/min]	240 / 1 Phase

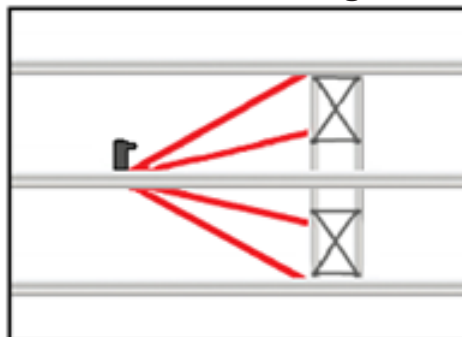
KSHXZ Bridge Configurations



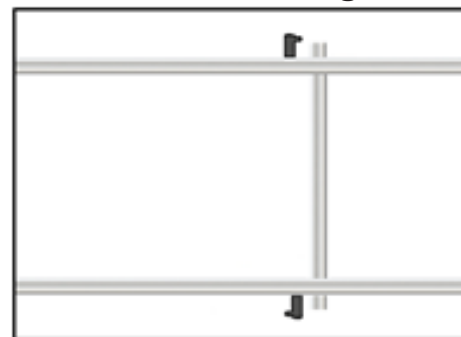
5-10 ft. Bridge



10-15 ft. Bridge

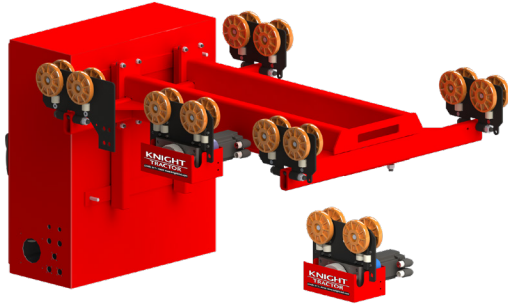


10-30 ft. Bridge



NOTE: All Knight Global Tractor configurations are dependant on the total weight of the systems.
All Tractor systems require the use of Rigid End Trucks.

Servo Series



Knight KSHXY Servo "X/Y" Tractor

Knight Global's KSHXY Servo "X/Y" Tractors are designed to accurately locate, push, tow, lift and position loads from an overhead rail system. The KSHXY Series facilitates a (2) two axis, (2) two tractor combo configuration. Tractors significantly reduce the push/ pull forces as well as the energy to sustain movements. Knight's KSHXY Series Servo Tractors have Knight's (IAD) Intelligent Assist Device Servo Technology incorporated into their design allowing them to provide controlled transfers of workloads with speed and precision.

Knight Global's Servo "X/Y" Tractors can be programmed to automatically or manually move and stop the bridge (Y Axis) at intended locations with repeatable accuracy; thus eliminating unnecessary operator motions. Knight Servo Tractors can be programmed for assembly line speed synchronization.

The KSHXY Servo Tractor offers a continuous contact non-slip rack and pinion design. This continuous non-slip design allows for a more accurate positioning of the load. Movement of the Servo Tractor is controlled by input sensors that have an electrical signal that interprets the different weight or forces applied to it from the operator.

Mechanical Features

- CE Compliant. **
- Axis Direction: "X/Y".
- Variable Maximum Speed:
 - Up to **174 ft. per min. [53.2mpm]**.
- Maximum Towing Capacity:
 - Up to **4,000 lbs. [1,814.37kg]**.
- Maximum Lifting Capacity:
 - Up to **1,000 lbs. [453.59kg]**.
- Non-Slip Rack and Pinion Drive System.
- Clutch (**24 VDC**).
- Power and Free Drive Wheel.
- Absolute Positioning.
- Safety Rating of **125%**.
- Fail Safe Brake.
- Knight's Patented Chain, for longer life.
- Chain Lengths, Unlimited (**18 ft.** Standard).
- Sealed Worm Style Gearbox.
- **H5** Rated (Continuous Duty Cycle).

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

Electrical Features

- Industry Standard **24 VDC, 2 AMP** power is available for custom tooling such as: Clamps, Vacuum Cups, Switches, Proximity Limits, Lights, etc.
- **H5** Rated (Continuous Duty Cycle).
- **240VAC**, Single Phase, **50/60 Hz**.
- Load Sensing, Pay Load and Handle Load.
- I/O Capabilities
 - (**16**) Inputs/ (**8**) Outputs
 - (**8**) Inputs/ (**4**) Outputs are free for interface controls.
- LED Status Indicators, Green and Blue Lighted Push buttons.
- LED Fault Indicators, Illuminated Run/ Stop Button, Twist to Release.
- Optional Remote Pendant or Wireless Remote Control.

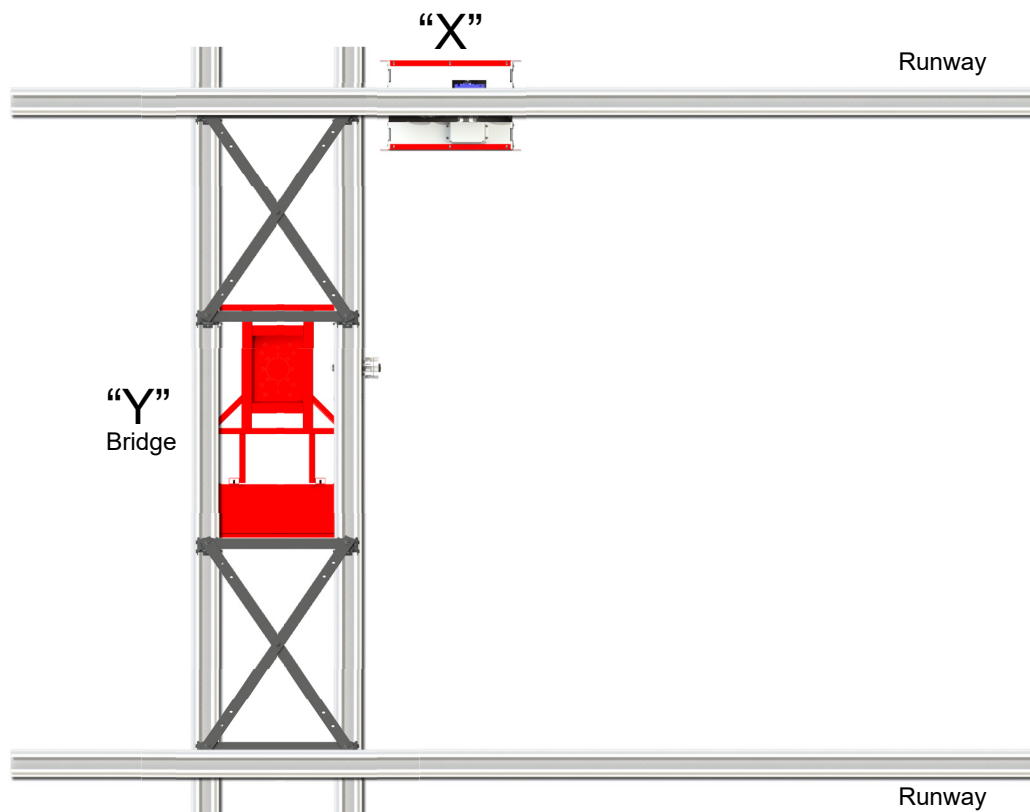
Software Features

- Programming and Diagnostic Communication Ports.
- Virtual Travel Limits.
- Speed Reduction Zones.
- Impact Limiting.
- Active Dampening.
- Standard Float Mode.
- Programmable Overload Capability.

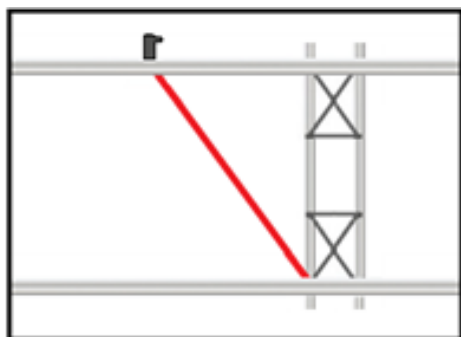
KSHXY SERIES SPECIFICATIONS

Model	Hoist Capacity lbs. [kg]	Towing Capacity lbs. [kg]	Hoist Lift Speed fpm. [mpm]	Tractor Travel Speed fpm. [mpm]	Voltage/Phase
KSHXY250	250 lbs. [113.40kg]	4,000 lbs. [1,814.37kg]	196.85 fpm. [60.0mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXY350	350 lbs. [158.75kg]	4,000 lbs. [1,814.37kg]	241.00 fpm. [73.5mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXY750	750 lbs. [340.19kg]	4,000 lbs. [1,814.37kg]	123.03 fpm. [37.5mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXY1000	1,000 lbs. [453.59kg]	4,000 lbs. [1,814.37kg]	82.02 fpm. [25.0mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase

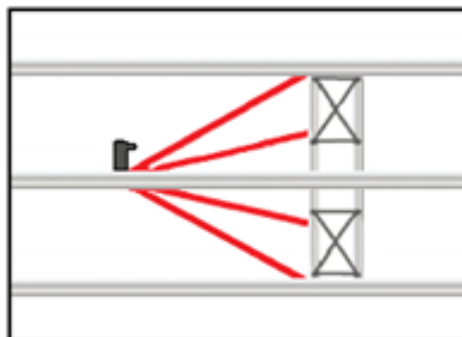
KSHXY Bridge Configurations



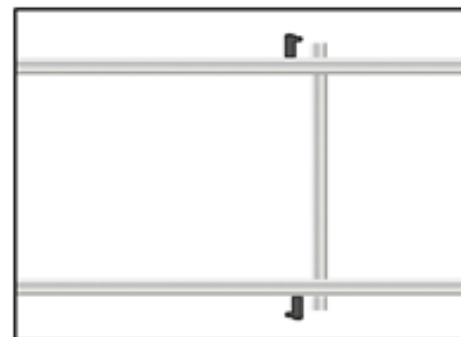
5-10 ft. Bridge



10-15 ft. Bridge



10-30 ft. Bridge



NOTE: All Knight Global Tractor configurations are dependant on the total weight of the systems.
All Tractor systems require the use of Rigid End Trucks.

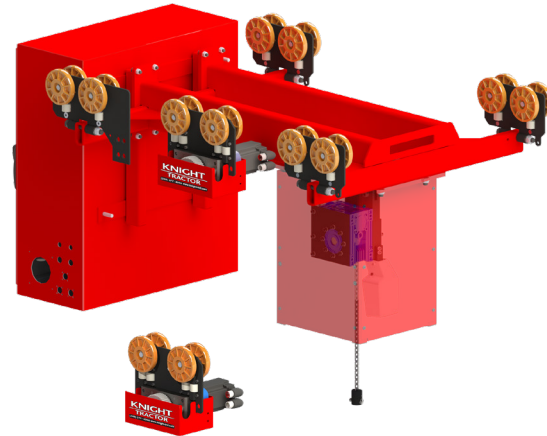
Servo Series

Knight KSHXYZ Servo “X/Y” Tractors with “Z” Hoist Control Series

Knight Global's KSHXYZ Servo “X/Y” Tractor with “Z” Controls are designed to accurately locate, push, tow, lift and position loads from an overhead rail system. The KSHXYZ Series facilitates a (3) three axis, (2) two tractor combo configuration. Tractors significantly reduce the push/ pull forces as well as the energy to sustain movements. Knight's KSHXYZ Series Servo Tractors have Knight's (IAD) Intelligent Assist Device Servo Technology incorporated into their design allowing them to provide controlled transfers of workloads with speed and precision.

Knight's Servo “X/Y” with “Z” Control Tractors can be programmed to automatically or manually move and stop the runway (X Axis) or bridge (Y Axis) at intended locations with repeatable accuracy while lifting loads (Z Axis) at the same time; thus eliminating unnecessary operator motions. Knight Servo Tractors can be programmed for assembly line speed synchronization.

The KSHXYZ Servo Tractor offers a continuous contact non-slip rack and pinion design. This continuous non-slip design allows for a more accurate positioning of the load. Movement of the Servo Tractor is controlled by input sensors that have an electrical signal that interprets the different weight or forces applied to it from the operator.



Mechanical Features

- CE Compliant. **
- Axis Direction: “X”, “Y” and “Z”.
- Variable Maximum Speed:
 - Up to **174 ft. per min.** [53.2mpm].
- Maximum Towing Capacity:
 - Up to **4,000 lbs.** [1,814.37kg].
- Maximum Lifting Capacity:
 - Up to **1,000 lbs.** [453.59kg].
- Non-Slip Rack and Pinion Drive System.
- Clutch (**24 VDC**).
- Power and Free Drive Wheel.
- Absolute Positioning.
- Safety Rating of **125%**.
- Fail Safe Brake.
- Knight's Patented Chain, for longer life.
- Chain Lengths, Unlimited (**18 ft.** Standard).
- Sealed Worm Style Gearbox.
- **H5 Rated** (Continuous Duty Cycle).

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

Electrical Features

- Industry Standard **24 VDC, 2 AMP** power is available for custom tooling such as: Clamps, Vacuum Cups, Switches, Proximity Limits, Lights, etc.
- **H5 Rated** (Continuous Duty Cycle).
- **240VAC**, Single Phase, **50/60 Hz**.
- Load Sensing, Pay Load and Handle Load.
- I/O Capabilities
 - (**16**) Inputs/ (**8**) Outputs
 - (**8**) Inputs/ (**4**) Outputs are free for interface controls.
- LED Status Indicators, Green and Blue Lighted Push buttons.
- LED Fault Indicators, Illuminated Run/ Stop Button, Twist to Release.
- Optional Remote Pendant or Wireless Remote Control.

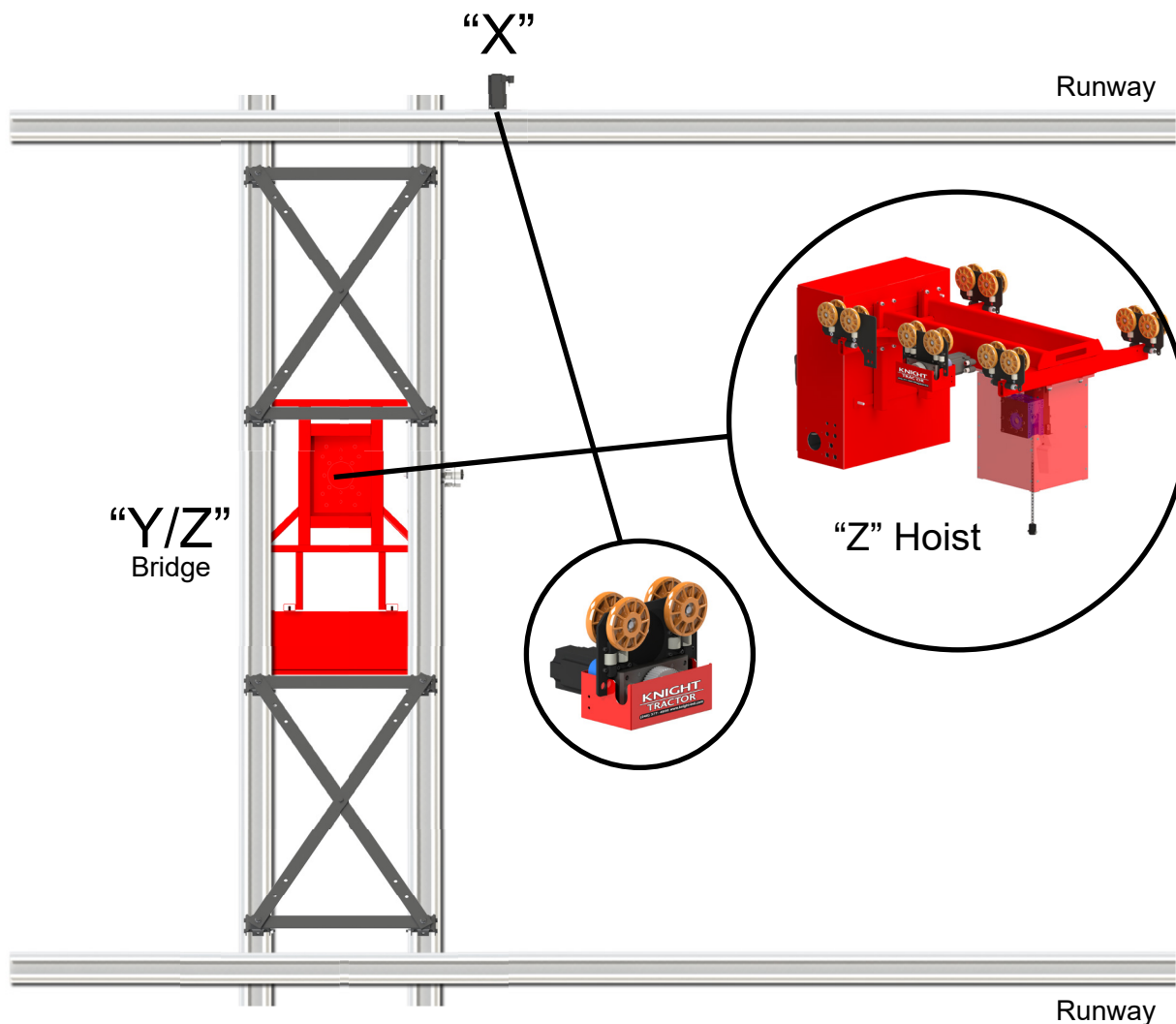
Software Features

- Programming and Diagnostic Communication Ports.
- Virtual Travel Limits.
- Speed Reduction Zones.
- Impact Limiting.
- Active Dampening.
- Standard Float Mode.
- Programmable Overload Capability.

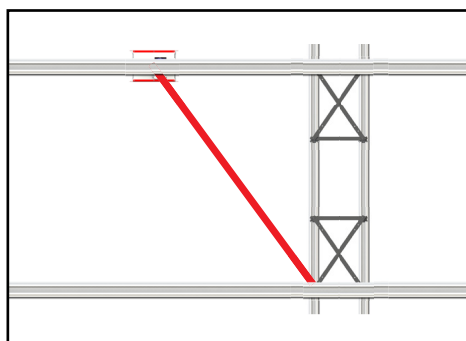
Servo Series

KSHXYZ SERIES SPECIFICATIONS

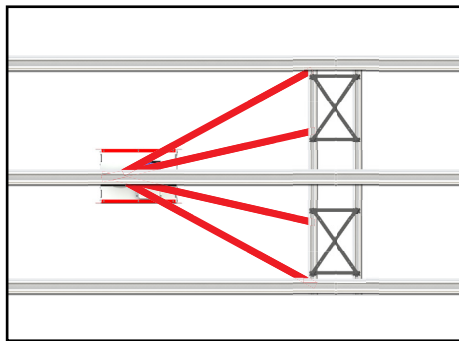
Model	Hoist Capacity lbs. [kg]	Towing Capacity lbs. [kg]	Hoist Lift Speed fpm. [mpm]	Tractor Travel Speed fpm. [mpm]	Voltage/Phase
KSHXYZ250	250 lbs. [113.40kg]	4,000 lbs. [1,814.37kg]	196.85 fpm. [60.0mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXYZ350	350 lbs. [158.75kg]	4,000 lbs. [1,814.37kg]	241.00 fpm. [73.5mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXYZ750	750 lbs. [340.19kg]	4,000 lbs. [1,814.37kg]	123.03 fpm. [37.5mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXYZ1000	1,000 lbs. [453.59kg]	4,000 lbs. [1,814.37kg]	82.02 fpm. [25.0mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase



5-10 ft. Bridge



10-15 ft. Bridge



NOTE: All Knight Global Tractor configurations are dependant on the total weight of the systems.

All Tractor systems require the use of Rigid End Trucks.

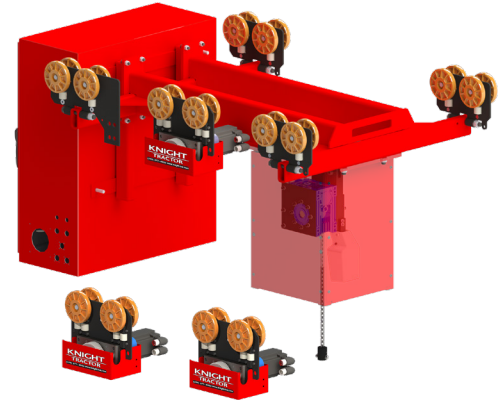
Servo Series

Knight KSHXXYZ Servo “XX/Y” Tractors with “Z” Hoist Control Series

Knight Global's KSHXXYZ Servo “XX/Y” Tractor with “Z” controls are designed to accurately locate, push, tow, lift and position loads from an overhead rail system. The KSHXXYZ Series facilitates a (3) three axis, (3) three tractor combo configuration. Tractors significantly reduce the push/ pull forces as well as the energy to sustain movements. Knight's KSHXXYZ Series Servo Tractors have Knight's (IAD) Intelligent Assist Device Servo Technology incorporated into their design allowing them to provide controlled transfers of workloads with speed and precision.

Knight's Servo “XX/Y” with “Z” Control Tractors can be programmed to automatically or manually move and stop a dual runway (X Axis) or bridge (Y Axis) at intended locations with repeatable accuracy while lifting loads (Z Axis) at the same time; thus eliminating unnecessary operator motions. Knight Servo Tractors can be programmed for assembly line speed synchronization.

The KSHXXYZ Servo Tractor offers a continuous contact non-slip rack and pinion design. This continuous non-slip design allows for a more accurate positioning of the load. Movement of the Servo Tractor is controlled by input sensors that have an electrical signal that interprets the different weight or forces applied to it from the operator.



Mechanical Features

- CE Compliant. **
- Axis Direction: “X/X”, “Y” and “Z”.
- Variable Maximum Speed:
 - Up to **174 ft. per min. [53.2mpm]**.
- Maximum Towing Capacity:
 - Up to **4,000 lbs. [1,814.37kg]**.
- Maximum Lifting Capacity:
 - Up to **1,000 lbs. [453.59kg]**.
- Non-Slip Rack and Pinion Drive System.
- Clutch (**24 VDC**).
- Power and Free Drive Wheel.
- Absolute Positioning.
- Safety Rating of **125%**.
- Fail Safe Brake.
- Knight's Patented Chain, for longer life.
- Chain Lengths, Unlimited (**18 ft.** Standard).
- Sealed Worm Style Gearbox.
- **H5 Rated (Continuous Duty Cycle)**.

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

Electrical Features

- Industry Standard **24 VDC, 2 AMP** power is available for custom tooling such as: Clamps, Vacuum Cups, Switches, Proximity Limits, Lights, etc.
- **H5 Rated (Continuous Duty Cycle)**.
- **240VAC**, Single Phase, **50/60 Hz**.
- Load Sensing, Pay Load and Handle Load.
- I/O Capabilities
 - (**16**) Inputs/ (**8**) Outputs
 - (**8**) Inputs/ (**4**) Outputs are free for interface controls.
- LED Status Indicators, Green and Blue Lighted Push buttons.
- LED Fault Indicators, Illuminated Run/ Stop Button, Twist to Release.
- Optional Remote Pendant or Wireless Remote Control.

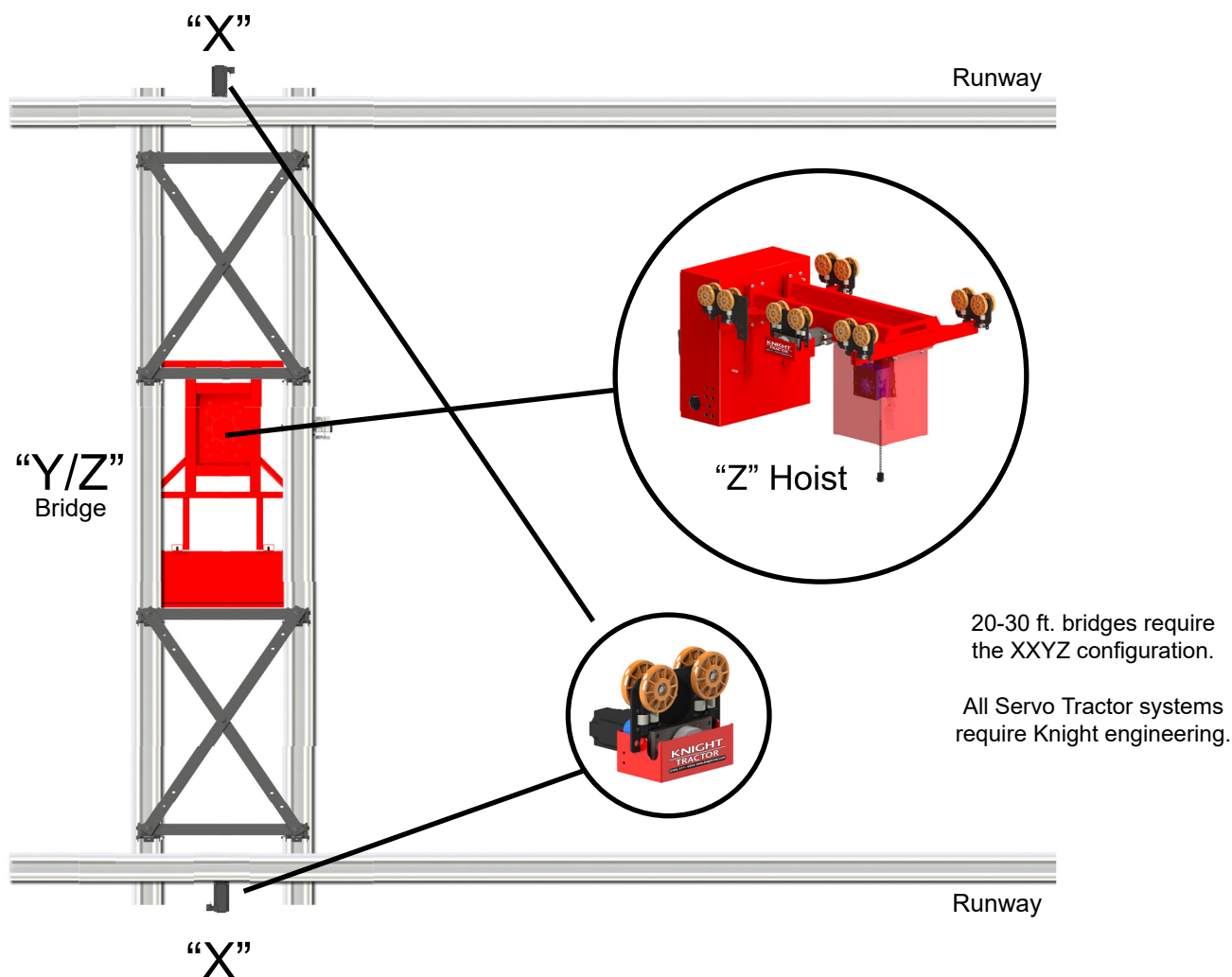
Software Features

- Programming and Diagnostic Communication Ports.
- Virtual Travel Limits.
- Speed Reduction Zones.
- Impact Limiting.
- Active Dampening.
- Standard Float Mode.
- Programmable Overload Capability.

Servo Series

KSHXXYZ SERIES SPECIFICATIONS

Model	Hoist Capacity lbs. [kg]	Towing Capacity lbs. [kg]	Hoist Lift Speed fpm. [mpm]	Tractor Travel Speed fpm. [mpm]	Voltage/Phase
KSHXXYZ250	250 lbs. [113.40kg]	4,000 lbs. [1,814.37kg]	196.85 fpm. [60.0mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXXYZ350	350 lbs. [158.75kg]	4,000 lbs. [1,814.37kg]	241.00 fpm. [73.5mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXXYZ750	750 lbs. [340.19kg]	4,000 lbs. [1,814.37kg]	123.03 fpm. [37.5mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase
KSHXXYZ1000	1,000 lbs. [453.59kg]	4,000 lbs. [1,814.37kg]	82.02 fpm. [25.0mpm]	174.53 fpm. [53.2mpm]	240 / 1 Phase


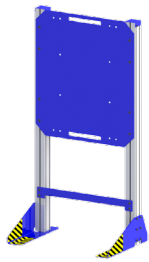






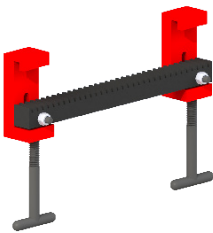
NOTE: All Knight Global Tractor configurations are dependant on the total weight of the systems.
All Tractor systems require the use of Rigid End Trucks.

Servo Series Accessories

<p>KDSA1010 / KDSA1011 Servo Hoist Chain Replacement Kit</p>  <ul style="list-style-type: none"> • Servo Hoist Models: KSH250S-500S / KSH350S-1000S Series. • For Standard SDS Hoists, Speed Hoists, and D-Series Hoists. • Chain Length: 18 ft. [548.6cm] / 12 ft. [365.7cm]. • KDSA1010- 4mm Chains • KDSA1011- 5mm Chains 	<p>BPA2020 Hook with Bail and Locking Gate</p>  <ul style="list-style-type: none"> • Max. Capacity: Up to 2,000 lbs. [907kg]. • Suitable for infrequent, non-continuous rotation Under load. • Open bend keeps the load inline with the chain and allows for ease of engaging and disengaging the load. 	<p>KSAD1022 Swivel Hook with Eye</p>  <ul style="list-style-type: none"> • Max. Capacity: Up to 3,200 lbs. [1,451kg]. • Positive Lock Latch is Self-Locking when hook is loaded. • Rated for both Wire Rope and use with Grade 80/100 Chain.
<p>KSAA1001 / KSAA1002 Quick Connect / Disconnect</p>  <ul style="list-style-type: none"> • Max. Load Capacity: Up to 2,000 lbs. [907kg]. • EBA1183 - 16mm to 7/8 in. adapter. • EBA1265- 20mm to 1.25 in. adapter. 	<p>KSAA1004 Shackle</p>  <ul style="list-style-type: none"> • Secures fixtures or loads in-line with chain. • Maximum Capacity: Up to 1,000 lbs. [453kg]. 	<p>KSAA1007 Swivel Hook Shackle</p>  <ul style="list-style-type: none"> • Secures fixtures or loads in-line with chain. • Max. Capacity: Up to 1,000 lbs. [454kg]. • Larger Connection Opening.
<p>KCA1040 Electrical Coil Cable</p>  <ul style="list-style-type: none"> • Electrical Coiled Cables are made exclusively for Knight Global. • Connects a Servo Hoist to a load monitoring module by wrapping itself around the Servo chain. • Various lengths available. 	<p>KCA1041 Straight Cable</p>  <ul style="list-style-type: none"> • Electrical Straight Cables are made exclusively for Knight Global. • Connects a separate control handle pendant to Servo Hoists. • Various lengths available. 	<p>4-Pin Micro-Switch Cable</p>  <ul style="list-style-type: none"> • 4-Pin Micro DC Single Key. • PVC Yellow. • Male-In-Line/ Female Connectors. • 22 AWG, 4A, 300V Cord. • Available with straight or right angle connector ends.

Servo Series Accessories

8-Pin Micro-Switch Cable	KCA1001 Electrical Disconnect Enclosure Stand	KCA1018 3KVA Electrical Disconnect Enclosure	KCA1055 5KVA Electrical Disconnect Enclosure
 <ul style="list-style-type: none"> • 8-Pin Micro DC Single Key. • PVC Grey. • TPE. • Male-In-Line/ Female Connectors. • 22 AWG, 4A, 300V Cord. • Available with straight or right angle connector ends. 	 <ul style="list-style-type: none"> • Floor Mounted. • Air Prep option for the back side. • Various enclosures mount to stand. • Custom finishes are available. • Foot Print: 30x21x62. 	 <ul style="list-style-type: none"> • Used with: KSH250S, 350S, 500S, 750S and 1000S Servo Hoists. • 480VAC - 240VAC, FLA 6.25. • 15A Primary Fusing. • 15A Secondary Fusing. • Enclosure Size: 21 in. X 20 in. X 10 in. 	 <ul style="list-style-type: none"> • Used with: KSHXY, KSHXZ, KSHTCDM and KSHXYZ Servo Tractors and Hoists. • 480VAC - 240VAC, FLA 10.4. • 25A Primary Fusing. • 25A Secondary Fusing. • Enclosure Size: 30 in. X 25 in. X 15 in.

KCA1056 Dual 5KVA Electrical Disconnect Enclosure	EBA1289 7.5KVA Electrical Disconnect Enclosure	ETA1045 Gear Rack Installation Clamp
 <ul style="list-style-type: none"> • Used with: KSH250S, 350S, 500S, 750S and 1000S Servo Hoists. • 480VAC - 240VAC, FLA 6.25. • 25A Primary Fusing. • (2) 25A Secondary Fusing. • Enclosure Size: 21 in. X 20 in. X 10 in. 	 <ul style="list-style-type: none"> • Used with: KSHXXYZ and KSHXYZR Servo Tractor Systems. • 480VAC - 240VAC, FLA 10.4. • 25A Primary Fusing. • 25A Secondary Fusing. • (2) Flange disconnect - (1) 480VAC, (1) 240VAC. 	 <ul style="list-style-type: none"> • Assists with the installation of the linear gear rack by holding the rack in position, tight to the bottom of the rail. • Also can be used as a gauge to splice two pieces of rack together.