SuperTrak
HORIZON3™ & VERTICAL3™
Operations and Maintenance Manual

Rev. 4, June 2026

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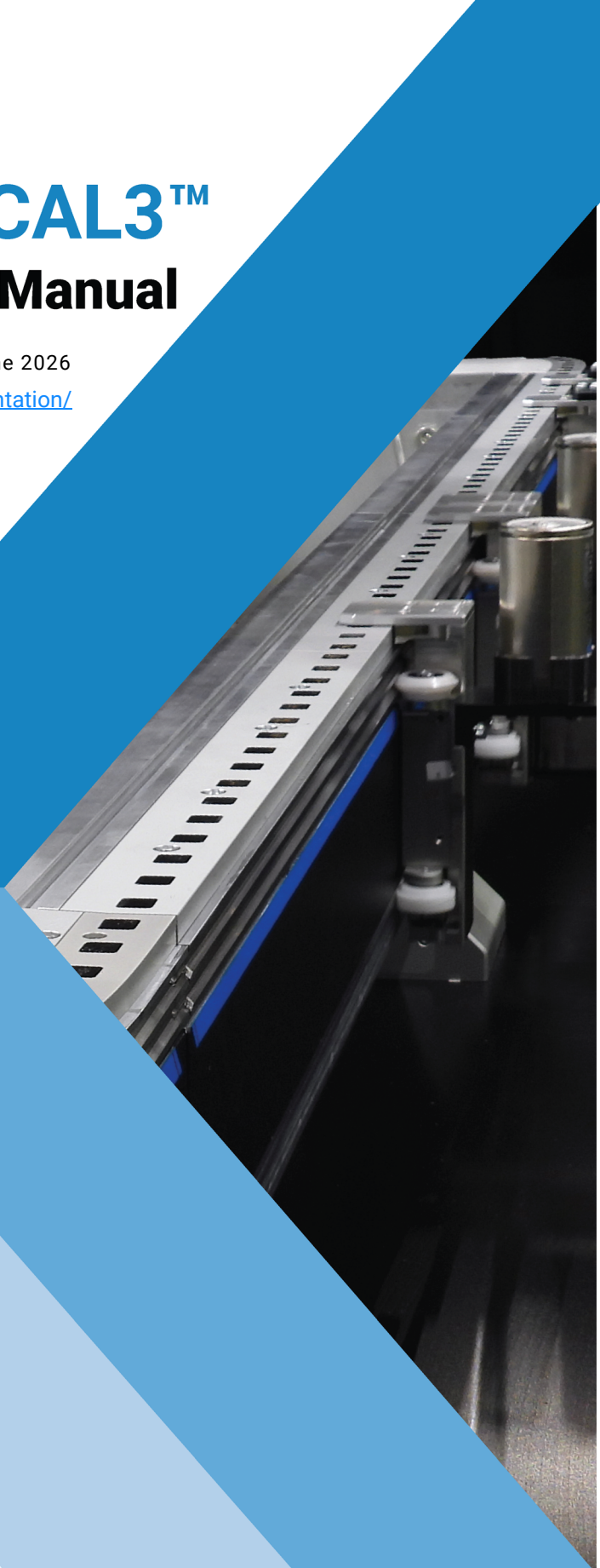

SuperTrak™ CONVEYANCE
The Foundation of World Leading Automation

Operation and Maintenance Manual

SuperTrak HORIZON3™ and VERTICAL3™ Conveyance Platform

Document Product Relevance

		Max Payload	Shuttle Pitch	Curve Configuration	This document applies
SuperTrak HORIZON3 / SuperTrak VERTICAL3		3 kg	50 mm	Ø 270 mm	✓
SuperTrak HORIZON10		10 kg	154 mm	Ø 500 mm Ø 800 mm 90°	✗
SuperTrak VERTICAL10		10 kg	154 mm	Ø 500 mm	✗
SuperTrak PHARMA8		8.5 kg	154 mm	Ø 500 mm	✗

NOTICES

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GRAPHICS

All drawings, illustrations, and photographs included in this document are provided to expand and enhance the text. These graphics are representations only and are not necessarily drawn to scale. For accurate drawings, see the *Mechanical Drawing Package* and *Electrical Design Package*.

Table of Contents

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Preface

This section provides the following SuperTrak HORIZON3™ and VERTICAL3™ documentation package information:

Documentation Package

SuperTrak CONVEYANCE™ supplies the following documentation and software for the SuperTrak:

- SuperTrak HORIZON3™ and VERTICAL3™ Design Considerations document available at https://supertrakconveyance.com/technical-documentation/
- SuperTrak HORIZON3™ and VERTICAL3™ Operation and Maintenance Manual
- SuperTrak HORIZON3™ and VERTICAL3™ Component Data Sheets at https://supertrakconveyance.com/technical-documentation/
- TrakMaster™ software (with built-in help)
- Design package, which includes:
    - Electrical drawings
    - Mechanical drawings

Official Website

The SuperTrak CONVEYANCE™ website, www.supertrakconveyance.com , provides resources such as case studies, certification information, videos, and blog posts.

Style Conventions

This document uses the following styles to indicate different types of information:

- *Italic text* indicates a document title.
- *Italic text with color* indicates hypertext reference information. For example, a web site link or a link to content within the current document.
- **Bold text** indicates a button or control that requires action during a procedure.
- `Grey Courier text` indicates on-screen messages; for example, a fault or warning message on an HMI screen.
- `Courier text` indicates software code.
- CAPITALIZED TEXT indicates an operational state; for example, ON, OFF, MANUAL mode.
- First Letter Capitalized Text indicates the name of an HMI screen, screen menu, or HMI message.
- Bulleted list indicates items where order is not relevant.
- Numbered list indicates a step-by-step procedure where order is relevant.
- Vertical line in the page's left margin indicates content that has changed since the prior revision of this document; example here to left of this paragraph.

Special Notations

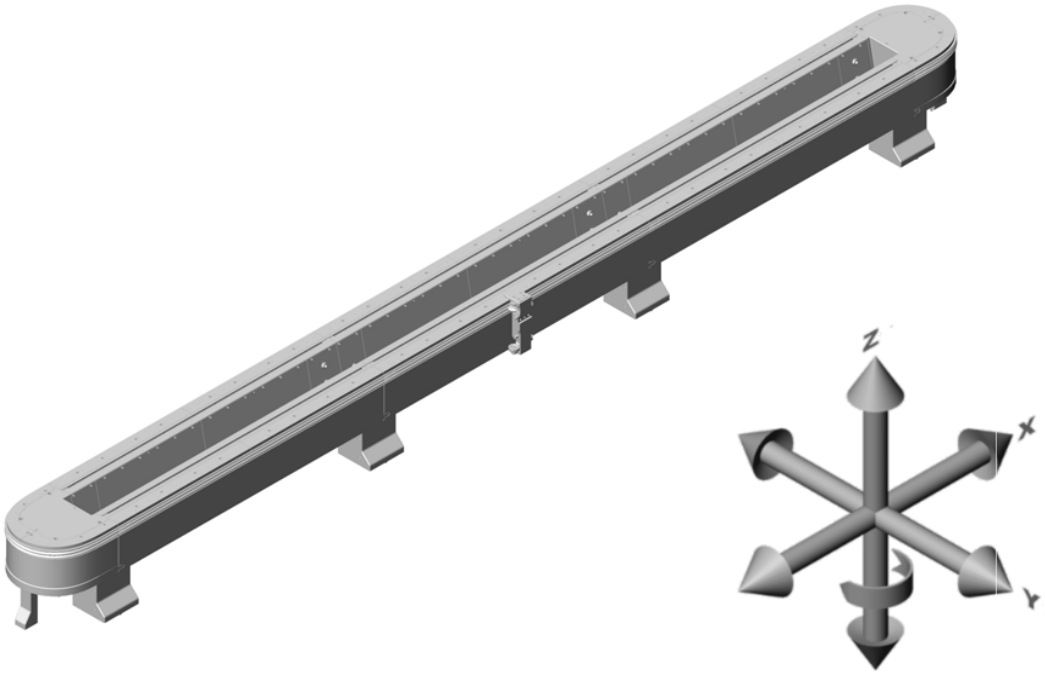
This document uses five (5) levels of notation:

⚠ DANGER	Warns that failure to comply results in death or serious injury.
⚠ WARNING	Warns that failure to comply could result in death or serious injury.
⚠ CAUTION	Warns that failure to comply could result in minor or moderate injury.
NOTICE	Warns that failure to comply may result in property damage.
	Provides additional information, emphasizes a point, or provides a tip.

Frame of Reference

- The image is for representational purposes only. It may not reflect the system you have installed.
- The direction of travel on each axis (positive or negative) varies based on configuration.

This document describes tooling movement using the following frame of reference regardless of whether the track is installed horizontally or vertically:



Directional statements such as “left” and “right” are based on the perspective of a user looking at the track or the section from the outside of the track.

Referenced Terms

This section defines terms that are used throughout this document.

Term	Description
SuperTrak *or* Track	Represents the SuperTrak HORIZON3™ and VERTICAL3™ platform.
TrakMaster	Represents the TrakMaster™ software.
Power supply*	Represents the SuperTrak power supply.
Control panel*	Represents the SuperTrak control panel which can refer to any of the following: • Combined Panel 208VAC Simatic IPC-12PWS-1PH 10241202-B-NA-SI • Combined Panel 400VAC Simatic IPC-12PWS-1PH 10241202-B-EU-SI • Logic Panel Advantech IPC 10241202-AD • Logic Panel Simatic IPC 10241202-SI • Power Panel 208VAC 12PWS-1PH 10241202-NA-1PH • Power Panel 400VAC 12PWS-1PH 10241202-EU-1PH
Curved section*	Represents a section of the SuperTrak that changes track direction.
Shuttle*	Represents the SuperTrak shuttle.
Straight section*	Generally represents a section of the SuperTrak that moves in a linear direction.
Track	Refers generally to the entire track system.
User	Represents all levels of SuperTrak users. It includes operators, maintenance personnel, and technicians.
Operator	Represents a user with basic mechanical knowledge.
Maintenance Personnel	Represents a user with knowledge about routine cleaning, and lubrication procedures. They are expected to complete adjustments that are within validated ranges.
Technician	Represents a user that specializes in a discipline such as electrical, mechanical, or programming. They are expected to complete complex SuperTrak procedures; such as, replacement procedures or adjustments that are outside of validated ranges.

See *Glossary* on page 95 for additional definitions.

* See the SuperTrak component data sheets for detailed information: https://supertrakconveyance.com/horizon3-technical-documents/

Safety Information

This section provides the following important safety information:

Read this information thoroughly and completely before operating, or maintaining the SuperTrak HORIZON3™ and VERTICAL3™ systems.

Safety and Regulatory Compliance

The SuperTrak is certified to CSA standards for Canada.

The SuperTrak is certified to UL standards for the United States of America.

For the European Economic Area, a declaration of conformity and a declaration of incorporation is provided.

For important information related to safety certification and conditions of use, see the certifications section of https://supertrakconveyance.com/horizon3-technical-documents/ .

Training

SuperTrak training packages are available on request. Contact support@supertrakconveyance.com for more information.

General Safety Rules

Everyone:

- Learn how automated equipment works.
- Understand the potential dangers of automated equipment before operating it.
- Energy sources must be shutdown, locked out, and tagged out before preventive maintenance, adjustment, or service.
- Understand and be aware of potential energy sources that exist in the SuperTrak after lockout and tagout (for example, the strong permanent magnets when shuttles are removed from the SuperTrak).
- Be aware that the magnetic field of the shuttles on the SuperTrak platform can be harmful to pacemaker wearers.
- Long hair must be tied up and kept away from SuperTrak devices to prevent entanglement.
- Do not wear loose clothing or dangling jewelry while operating or maintaining the equipment, to prevent entanglement.
- Wear the appropriate personal protective equipment (PPE) for each task.
- Stay away and do not touch any live electrical wires or circuits. Qualified technicians must wear PPE appropriate to the electrical hazard.
- Do not tamper, remove, or make safety controls ineffective.

Operators:

- Do not remove guarding, covers, or shields. Procedures that involve removing guarding, covers or shields must only be performed by a trained, qualified technician.
- Do not operate damaged equipment. Safety and protection features are impaired in damaged equipment. Turn OFF energy sources immediately. Do not use the automated equipment until a trained, qualified technician confirms it is safe to operate.

Technicians:

- Do not perform service work alone. Only attempt internal service or adjustments in the presence of a person capable of rendering first aid.
- Read the current SuperTrak HORIZON3™ and VERTICAL3™ Operation and Maintenance Manual before troubleshooting or servicing the equipment.
- Guarding, covers, or shields must not be removed, except for emergency or maintenance purposes.
- If guarding is removed, clearly communicate (for example, with signs or barriers) that the guarding is not functional.
- Guarding around moving devices that has been removed, must be replaced.
- Do not install substitute parts or make any product modifications that are not authorized by SuperTrak CONVEYANCE™ because this may introduce new hazards.

- Use insulated tools when working with electrical equipment. Make sure qualified electrical technicians wear appropriate PPE when completing live electrical work according to the hazard assessment.
- Remove electrical power before changing fuses, or use approved fuse-pullers.
- Never use jumper wires or fuse substitutes to replace fuses.
- Replace the line fuses with fuses of the same voltage, current rating, and type. Do not use repaired fuses or short-circuited fuse holders.
- Be prepared to handle electrical fires by keeping dry powder or carbon dioxide extinguishers on hand at all times.
- Verify that all fittings and connections are tight once repair work is complete.
- Do not use compressed air to clean SuperTrak devices. Use clean, lint-free cloths or a vacuum cleaner. Compressed air causes dirt and lubricants to become airborne and contaminate assembly products and tooling.

Personal Protective Equipment

At a minimum, all users are recommended to wear the following personal protective equipment (PPE) when working with or around the SuperTrak:

- Safety glasses that meet the specific standard requirements the local jurisdiction:
  - North America - ANSI Z87.1
  - Europe - EN 166 F
- Safety shoes that meet the specific standard requirements the local jurisdiction:
  - North America - ASTM F2413
  - Europe - EN ISO 20345 S1

Hazardous Energy

Any energy source that presents a risk of injury to a person working on equipment is considered a hazardous energy source. The SuperTrak contains the following hazardous energy sources:

- *Electrical* on page 14
- *Mechanical* on page 14
- *Thermal Hazards* on page 16

To prevent accidental or unauthorized start-ups, always lockout and tagout hazardous energy before completing any service or maintenance procedures. Lockout and tagout procedures control hazardous energy supplies, making the SuperTrak inoperable.

See *Lockout and Tagout* on page 17.

Electrical

⚠WARNING

Servicing an electrical panel that is still connected to its power source may cause injury or death. Remove all sources of power before servicing--refer to lockout tagout procedures. Only qualified electrical technicians should perform service on the electrical panel.

See *Hazardous Energy* on page 14 and *Lockout and Tagout* on page 17.

The control panel contains hazardous voltages. Electrical hazards may be present from damaged or broken wires, open electrical boxes, or open control panels.

The control panel is designed to be integrated with an automated machine system's main electrical panel that includes a switch for **main power disconnect**. Use the **main power disconnect** switch to turn OFF SuperTrak power but maintain buffer module (UPS) power in the control panel. Use the **SuperTrak power disconnect switch** to isolate the SuperTrak power and turn the buffer module OFF.

See *Energy Controls* on page 49.

Mechanical

⚠WARNING

Servicing mechanical components or devices while still connected to energy sources may cause injury. As required for access and service of the mechanical component, open the safety circuit or turn the **main power disconnect switch** to the OFF position and lock out and tag out the **main power disconnect switch**. Only qualified technicians should access mechanical components or devices.

Understand and be aware of stored energy sources (for example; stored electrical energy, or strong magnetic field) that exist in the SuperTrak after lockout and tagout.

See *Lockout and Tagout* on page 17.

⚠CAUTION

- The magnetic field generated by the shuttles can be harmful to pacemaker wearers. Maintain a minimum distance of 31 cm (12 in.) between the shuttle and the implant location. The permanent magnets in the shuttles have a strong magnetic field. When the shuttles are installed on the SuperTrak, the magnetic field around the shuttle is low. When a shuttle is removed from the SuperTrak, the permanent magnets are exposed and the magnetic field is very strong.
- Always install a keeper plate on the shuttle magnet when a shuttle is removed from the SuperTrak to reduce the magnetic field to a safe level.
- The magnetic field of the SuperTrak may induce magnetic materials into motion, creating potential projectiles or pinch points. Various electronic equipment and magnetic data carriers can also be affected by magnetic fields.

The SuperTrak has mechanical hazards from moving tooling components or devices. Crushing, pinching, and impact injuries can result from devices actuated by potential or kinetic energy in the form of rotational, linear force, or gravity.

The magnetic field generated by the shuttles can be harmful to pacemaker wearers. Maintain a minimum distance of 31 cm (12 in.) between the shuttle and the implant location. The permanent magnets in the shuttles have a strong magnetic field. When the shuttles are installed on the SuperTrak, the magnetic field around the shuttle is low. When a shuttle is removed from the SuperTrak, the permanent magnets are exposed and the magnetic field is very strong.

The magnetic field of the SuperTrak may induce magnetic materials into motion, creating potential projectiles or pinch points. Various electronic equipment and magnetic data carriers can also be affected by magnetic fields.

In the event of a mechanical hazard, turn the **main power disconnect switch** to the OFF position. Do not turn ON power to the SuperTrak until a qualified technician has corrected the situation.

Thermal Hazards

⚠WARNING

Allow adequate time for hot surfaces to cool before commencing work. Wear the appropriate PPE when working on or near the thermal hazard.

Use a non-contact thermometer to verify the temperature.

NOTICE

The lifespan of some SuperTrak components may be compromised when temperature-related TrakMaster configuration parameters are adjusted from the default value.

For optimum lifespan of SuperTrak platform components, do not increase the default value of the electronics temperature configuration parameter, and use caution when increasing the coil temperature configuration parameter:

- Coil Temperature Limit (°C); default=60, hard limit=90.
- Electronics Temperature Limit (°C); default=60, hard limit=70.

The SuperTrak may include thermal hazards if temperature-related TrakMaster configuration parameters are adjusted from the default value.

Thermal hazards include any excessively hot or cold point of contact. Thermal hazards can cause contact injuries to exposed skin, or create a fire hazard. Use shielding to avoid contact burns. Dissipate thermal to make sure the point of contact is at a moderate temperature before working near it.

Lockout and Tagout

DANGER Understand and be aware of stored energy sources (for example magnetism or buffer module energy) that exist in the SuperTrak after lockout and tagout.

See *Hazardous Energy* on page 14.

This lockout and tagout information is provided for general reference only. The end user is responsible for lockout tagout development and integration. Use an applicable lockout tagout procedure that complies with local requirements.

The lockout and tagout procedure must neutralize all sources of SuperTrak energy, making it inoperable and preventing accidental or unauthorized energizing of the SuperTrak.

Develop and follow an approved lockout and tagout procedure before maintenance or service or where unexpected SuperTrak startup or release of stored energy may cause injury.

Lock Prerequisites

An acceptable lock should:

- Be provided by an employer. Ensure standardization (size, shape and color) and purchase from a reputable manufacturer.
- Be able to withstand heat, cold, and humidity.
- Be strong enough that it cannot be removed with heavy force.
- Not be a combination lock.
- Have only one (1) key and are not able to be opened using any other key.

Tag Prerequisites

A tag must never be used as a substitute for a lock. A tag is a visual warning that does not provide physical protection.

A good tag should:

- Have a clear warning.
- Be easy to read (that is; legible and understandable).
- Have the identification mark of the person who applied it.
- Be secure enough to prevent accidental removal, and durable enough to withstand extreme temperatures, fumes, and caustic chemicals.
- Be secured with something similar to a nylon cable tie that is self-locking, can be attached by hand, can resist release with less than 23 kgs (50 lbs) of pressure, and cannot be reused.

Power Disconnect Locations

The control panel is designed to be integrated with a main electrical panel that includes a main power disconnect switch.

To lock out SuperTrak hazardous energy, complete one (1) of the following:

- Disconnect **main power** when the SuperTrak power must be OFF, but the SuperTrak buffer module power can be ON.
- Disconnect the **main power** and the **SuperTrak power** when SuperTrak power and buffer module power must be OFF.

Allow stored energy to discharge until the LED indicator of the buffer module is not illuminated.

The end user is responsible for lockout tagout development and integration.

See *SuperTrak HORIZON3™ and VERTICAL3™ Power Disconnect Switch* on page 49.

Label Descriptions

Labels are applied throughout the SuperTrak to warn users of possible or certain hazards. Read this section carefully and comply with the required actions, warnings, or prohibitions.

Safety Label Symbols

Safety Labels

SuperTrak CONVEYANCE™uses the following ISO symbols on labels on the track and on components.l

Symbol	Symbol Type/ Name	Description
	Mandatory action--Refer to instruction manual/booklet	Operators of the machine must familiarize themselves with the equipment by reading operational and maintenance documentation before using the machine.
		Technicians of the machine must read the service manual or similar instructional documentation before attempting to work on the machine.
	Mandatory--Lock out in de-energized state	Equipment must be locked out while in a de-energized state

Symbol	Symbol Type/ Name	Description
	Mandatory--Lock out electrical power while servicing	Ensure equipment is de-energized and secured (locked and tagged out) before servicing or maintenance
	Marking--Ground	This label is affixed next to grounded connections. The grounding conductor is the current path that enables protective devices, such as circuit breakers and fuses to operate when a fault occurs.
	Warning--General warning sign	Signifies a general warning. Warning sign surrounded by a red border frame means danger while an orange border frame means warning.
	Warning--Electricity	This symbol warns users of: • Arc flash and shock hazard. Follow ALL requirements in NFPA 70E for safe work practices and for Personal Protective Equipment. • Electrical energy. Only qualified electrical technicians should complete work in these areas. Disconnect power before opening the electrical cabinet working within. Close the electrical cabinet before turning the power ON. • Buffer module voltage present when power is OFF. Contact may cause electric shock or burn. Turn OFF and lock out buffer module output power before servicing.
	Warning--Crushing of hands	Crushing of hands hazard present from the motion of mechanical parts of equipment

Symbol	Symbol Type/ Name	Description
	Caution - Strong Magnetic Field	This label warns users of a strong magnetic field. Interaction with metallic objects may produce pinch hazards. Persons with medical implants must keep back 30 cm (12 in.).
	Prohibition-- Individuals with pacemakers	The symbol warns individuals with pacemakers or other active implanted cardiac devices to avoid areas where there might be strong electromagnetic fields that could interfere with their devices. Persons with medical implants must keep back 30 cm (12 in.).

Identification Labels

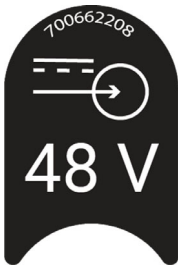
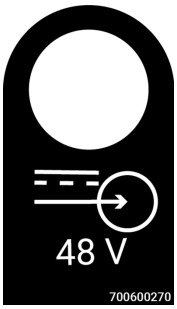
Electrical Nameplate

An electrical nameplate is located on the door of the control panel. It specifies the SuperTrak power requirements and provides the electrical drawing reference number.

Maintain correct SuperTrak power requirements. If power levels fall below or rise above the requirements specified on the identification label, the SuperTrak will not work properly and damage may occur.

Functional Labels for Port Identification

SuperTrak CONVEYANCE™uses the following labels on the track components to identify ports.l

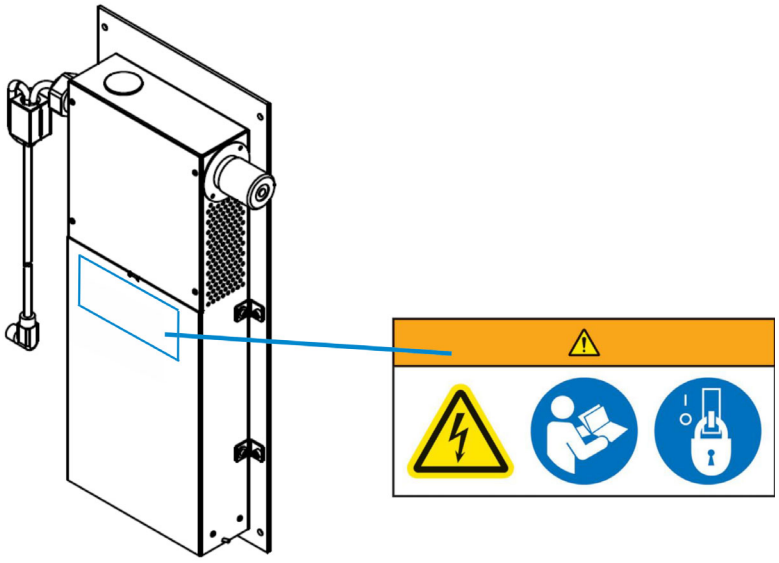
Symbol	Symbol Type/ Name	Description
 	Power input labels	Shows the ISO symbol for DC input. Label is affixed to indicate the location of the power input port and specifies the voltage. Which label shape is used depends on space available surrounding the port.
 	Coolant port labels	Shows the ISO liquid inlet/outlet symbol for optional liquid coolant. Label is affixed to indicate both the ingoing and outgoing ports for the coolant and specifies the maximum pressure rating. Which label shape is used depends on space available surrounding the port.

Label Locations

This section describes the location of the safety labels on the SuperTrak.

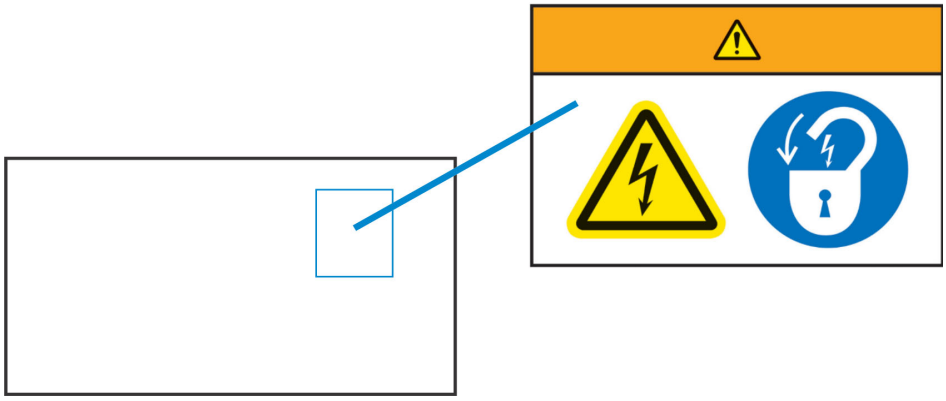
Power Supply Label

The power supply has the following label on the front top face of the supply, regardless of whether the power supply has a mounting plate. See *Safety Label Symbols* on page 19 for label symbol descriptions.



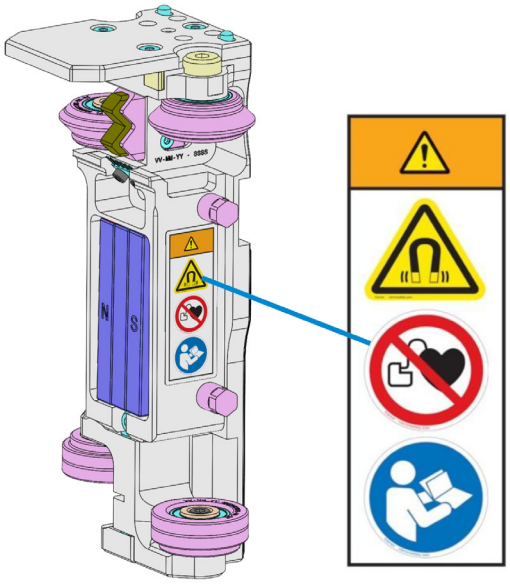
Control Panel Labels

The control panel has the following label , regardless of whether it is a power panel, logic panel, or combined panel. See *Safety Label Symbols* on page 19 for label symbol descriptions.



Shuttle Label

Shuttles have the following label. See *Safety Label Symbols* on page 19 for label symbol descriptions.



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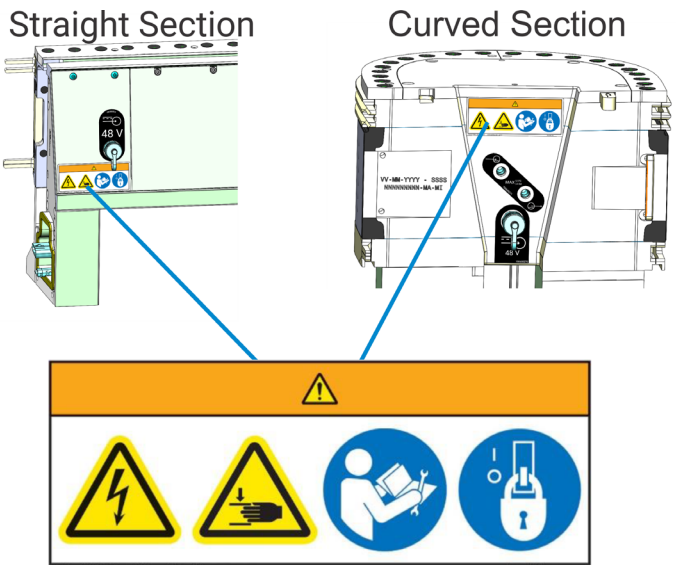
Labeling on Track Sections

Track sections have the following label. The location of the label varies depending on the type of section. See *Safety Label Symbols* on page 19 for label symbol descriptions.



System Overview

The SuperTrak HORIZON3™ and VERTICAL3™ are high-speed shuttle transport systems. They allow the direction, acceleration, speed, and position of each shuttle to be individually programmed. Integrated collision avoidance eliminates shuttle-to-shuttle contact and provides auto-queuing at process stations.

This section provides the following overview information about the SuperTrak:

Features

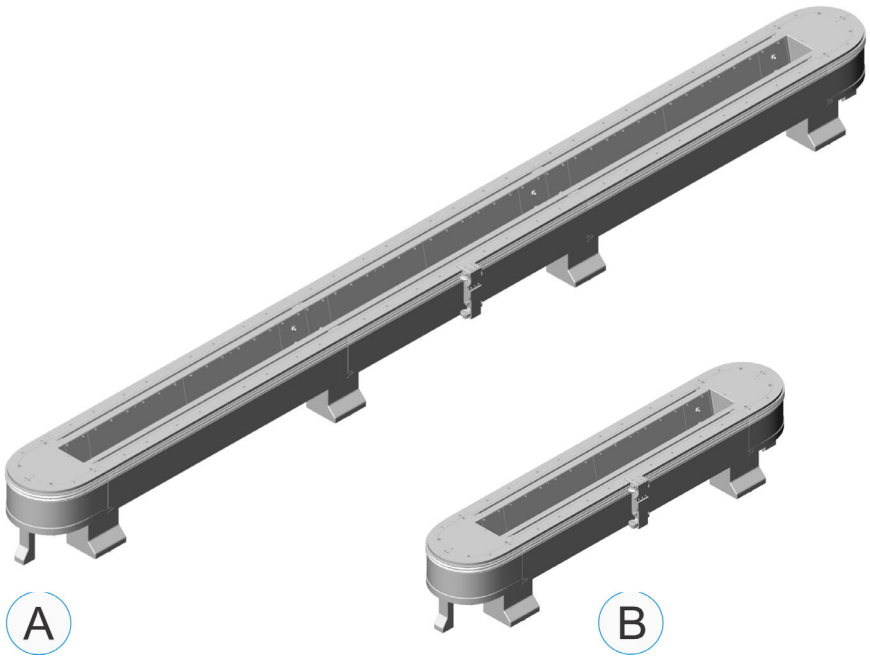
Some features of the SuperTrak include:

- Integration flexibility: works with any programmable logic controller (PLC)
- Fast indexing: maximum speed of 4 m/s (13.1 ft./s)
- Acceleration: 3G for a 1 kg (2.2 lb) payload
- Precision shuttle control: stop repeatability of ±0.01 mm (0.00039 in.) on straight sections and ±0.025 mm (0.00098 in.) on curves
- Payload of 3 kg (6.6 lb) per shuttle
- Scalable: modular system provides design flexibility
- Low maintenance: has few moving parts
- Liquid cooling: Platform sections are plumbed for liquid cooling, with inlet and outlet ports on each section. Depending on the application and environment where the system is deployed, users may opt to provide and connect a liquid cooling system of their choice.

See *System Specifications* on page 83 for a complete list of SuperTrak specifications. For specifications of platform components, see the SuperTrak HORIZON3™ and VERTICAL3™ Data Sheets at https://supertrakconveyance.com/horizon3-technical-documents/ .

SuperTrak HORIZON3™ and VERTICAL3™ Configurations

The standard SuperTrak is available in modular sections to allow for various track lengths.



Pictured above: Examples of HORIZON3™ and VERTICAL3™ system lengths:

- *A: HORIZON3™ and VERTICAL3™ three-meter system*
- B: HORIZON3™ and VERTICAL3™ one-meter system

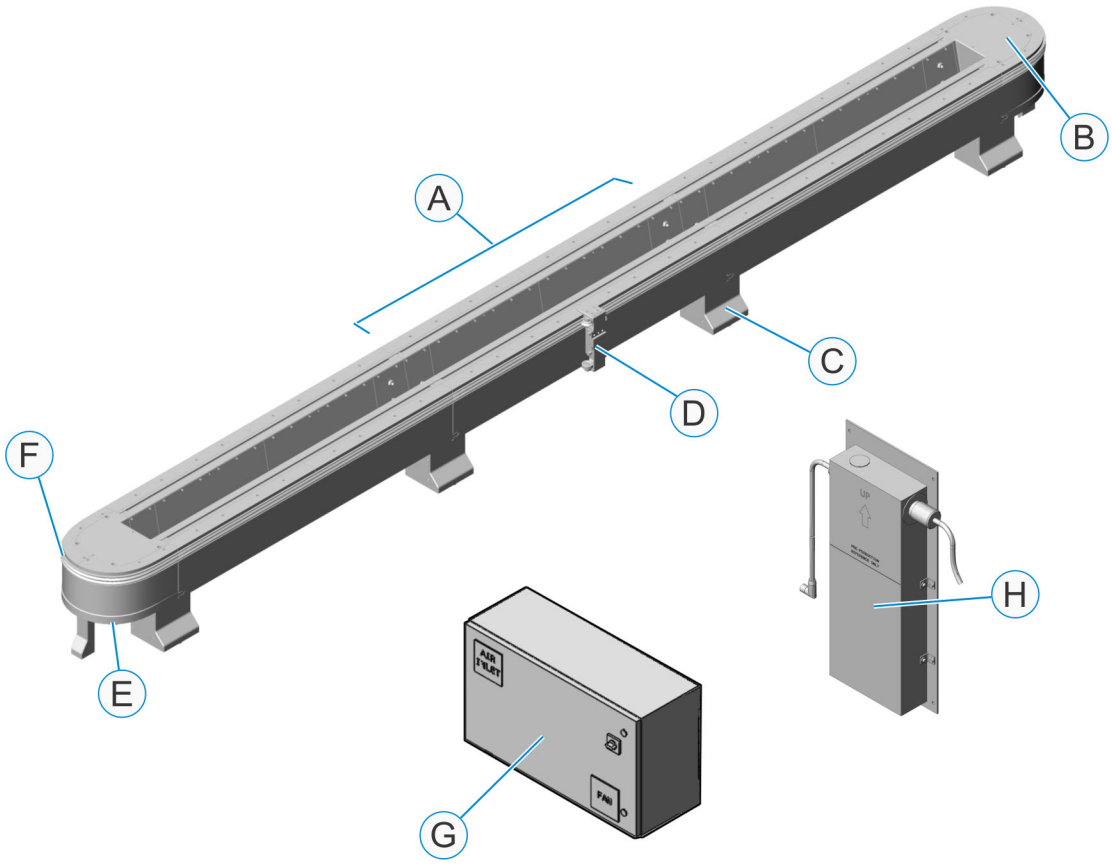
The SuperTrak can be mounted horizontally in the HORIZON3™ configuration or vertically in the VERTICAL3™ configuration.

SuperTrak HORIZON3™ and VERTICAL3™ Components

SuperTrak components are configured based on the required application. This illustration shows the components in a typical SuperTrak.

For more specific information on the platform components, see the SuperTrak GEN3™ Component Data Sheets at https://supertrakconveyance.com/technical-documentation/

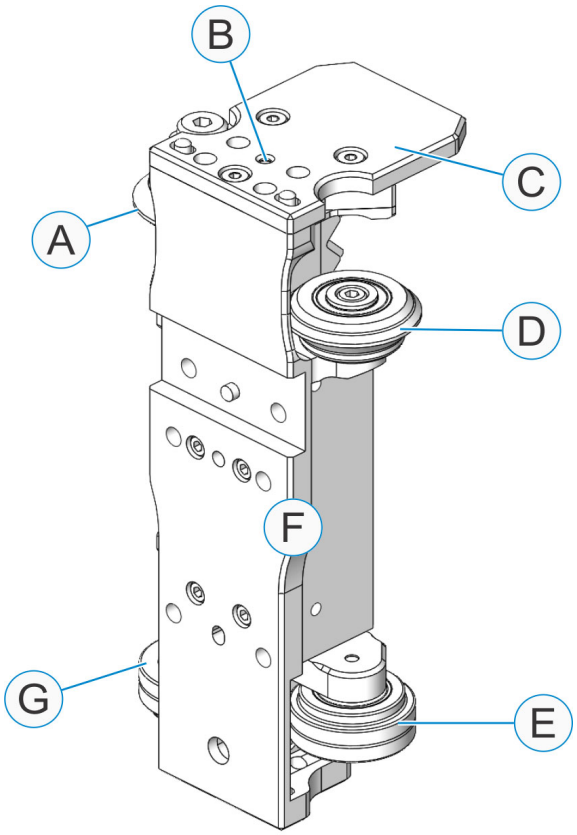
Note: components pictured below are not to scale.



A	Straight track section (1M)	E	Flat rail
B	Curved track section	F	V-rail
C	Track support leg	G	Control panel See *Control Panel* on page 35.
D	Shuttle (may also be referred to as a “pallet”) See *Shuttle* on page 28.	H	Power supply See *Power Supply* on page 37.

Shuttle

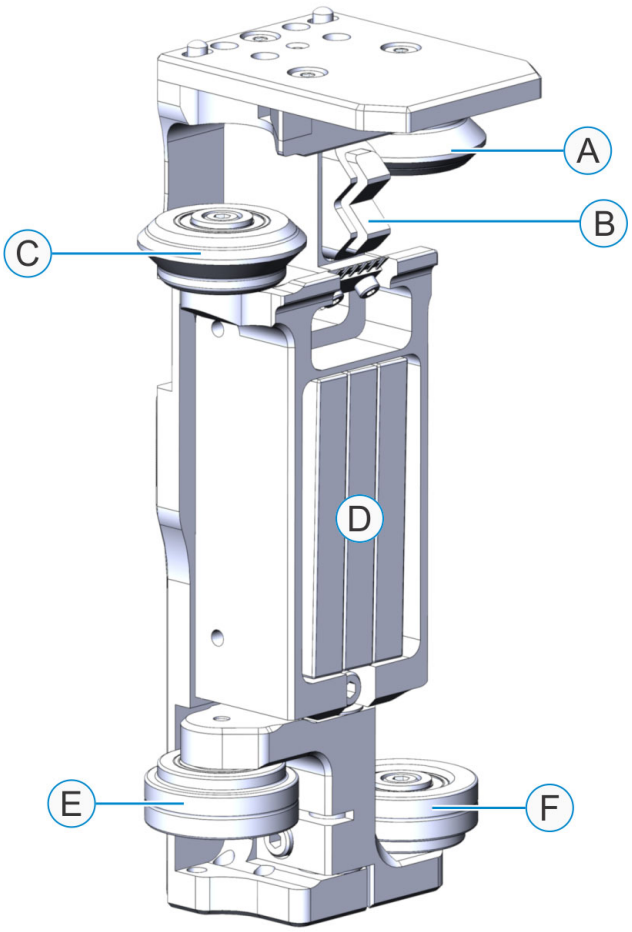
The shuttle provides a transport platform for carrying production parts along a SuperTrak. A shuttle may also be referred to as a “pallet.”



Shuttle - Front View

ID	Component Name	Description
A	Upper V-wheel	Travels on the upper groove of the V-rail of the track
B	Lubrication port	Location where lubricant is added to a shuttle’s lubrication felt
C	Encoder Bracket	Contains the high-resolution encoder strip for shuttle positioning and the shuttle ID
D	Lower V-wheel	Travels on the lower groove of the V-rail of the track
E	Upper flat rail wheel	Travels on the flat rail at the bottom of the track
F	Shuttle body	Shuttle base frame
G	Lower flat rail wheel	Travels on the flat rail at the bottom of the track

Shuttle - Back View



Shuttle - Rear View

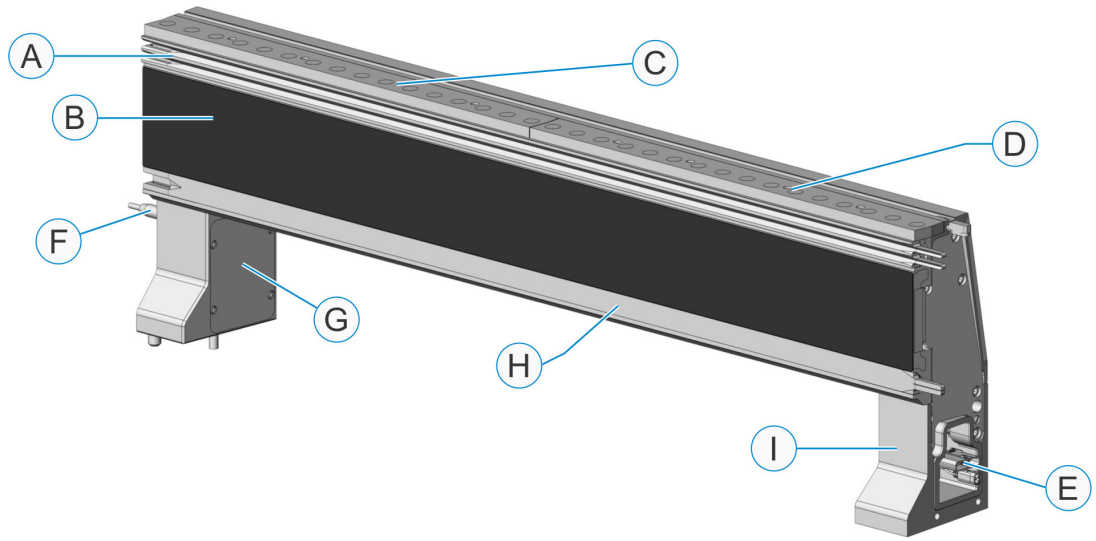
ID	Component Name	Description
A	Upper V-wheel	Travels on the upper groove of the V-rail of the track
B	Lubrication felt	Holds lubrication to apply to V-rail*
C	Lower V-wheel	Travels on the lower groove of the V-rail of the track
D	Magnet assembly	Magnets for shuttle attraction and propulsion
E	Upper flat rail wheel	Travels on the flat rail at the bottom of the track
F	Lower flat rail wheel	Travels on the flat rail at the bottom of the track

**Shuttles arrive from SuperTrak CONVEYANCE™ with felt pre-lubricated. However, lubrication will need to be reapplied periodically.* *See Lubricating the Track on page 68.*

Straight Section

Straight sections are connected in series to create a linear path for shuttles to travel on.

Straight Section - Closed

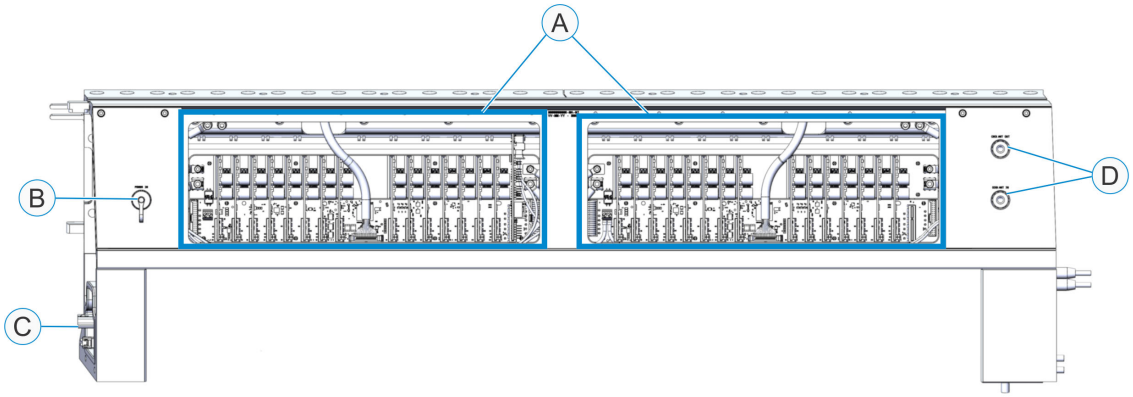


ID	Component Name	Description
A	V-rail	Provides a track for shuttle V-wheels to travel on
B	Linear motor	Produces the electromagnetic force that propels the shuttles. The linear motor includes: • 60 potted coils. • An iron core lamination assembly.
C	Left encoder assembly	Measures the shuttle position using encoder read heads
D	Right encoder assembly	
E	Track section interconnect ports	Connection ports to attach to other sections' electrical interconnects
F	Section-to-section attachment bolt/locating pin	Provides mechanical connection between sections
G	Anchor track leg	Part of the track frame; has dowel to insert into track base and removable leg cover for accessing electronic connections.
H	Flat rail	Provides a smooth surface for shuttle flat wheels to travel on.
I	Floating track leg	Part of the track frame; connects to the anchor leg of the adjoining section. Floats slightly above the mounting surface and has a removable cover for accessing electronic connections.

Straight Section - Open

Access to the electronics of straight sections is in the back (inner track side) of each section. Remove the line of fasteners along the top edge of the two wide rear panels, and then lift the panels up and out from the groove on the bottom.

Overview

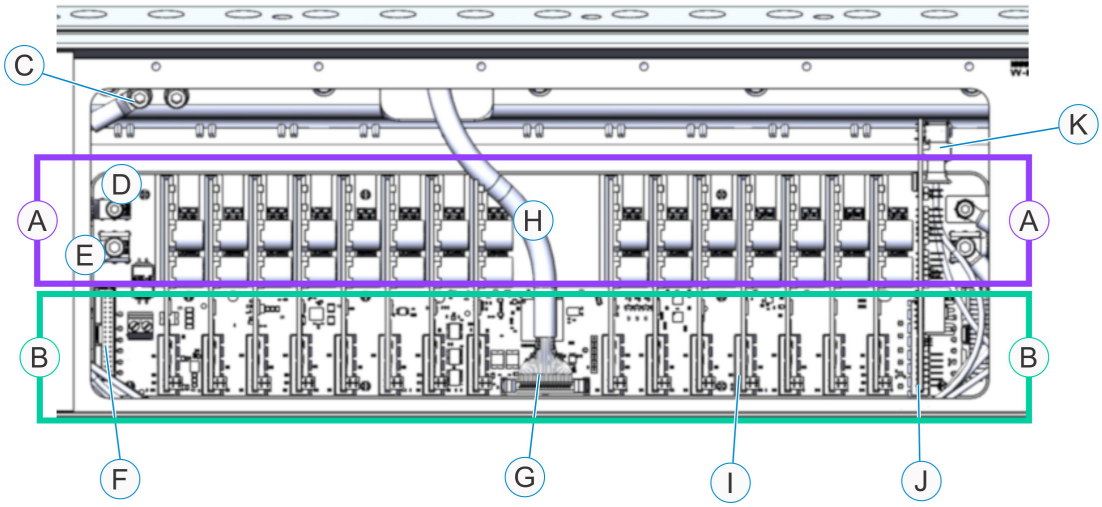


ID	Assembly Name	Description
A	Section electronics	Contains electrical and communication components. See next page for detail.
B	Power entry connection point	Connection for motor power supply.
C	Track section interconnect cables	Connection cables to attach to other sections' electrical interconnects
D	Cooling fluid ports	Inlet and outlet ports for optional liquid coolant

Straight Section - Open

Straight sections contain two electronic boards, a left and a right. Pictured below is the left board (on the right side as viewed from the outside of the track).

Electronics Detail

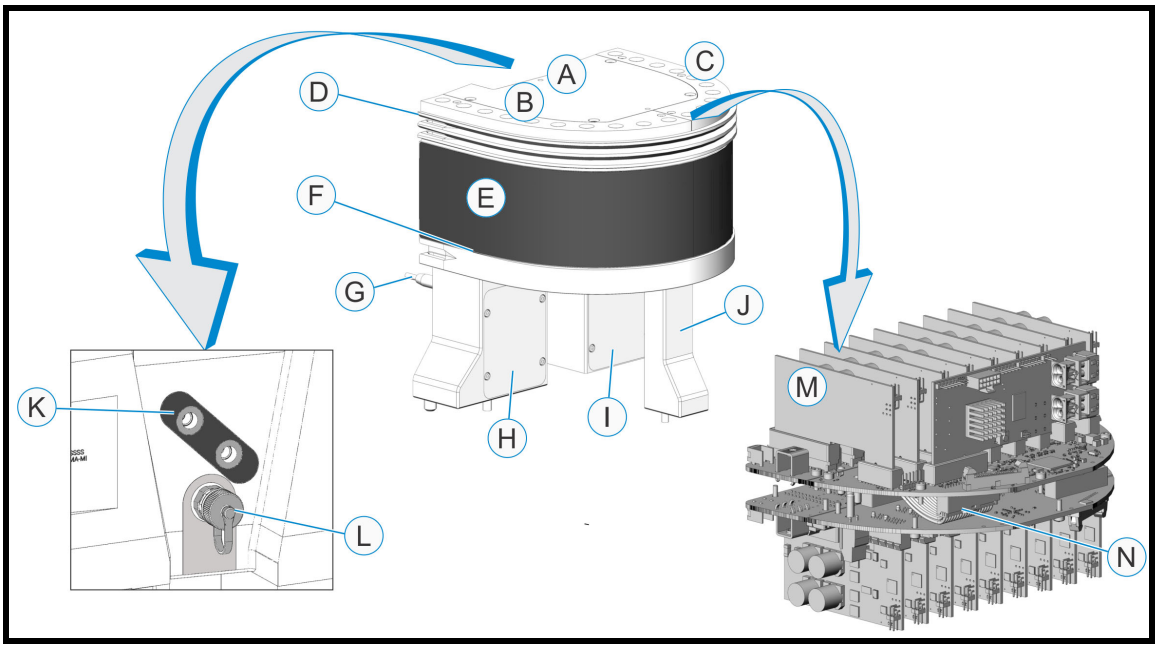


ID	Component
A	Power backplane
B	Communication backplane
C	Chassis ground
D	48V motor power
E	0V common terminal (shared between both 24V and 48V motor power)
F	Board connection port
G	Encoder connection port
H	Encoder cable
I	Coil driver
J	Gateway
K	Fiber optic connector

Curved Section (180 Deg. 300mm)

A curved section provides a 180° turning path for the shuttles to travel on between straight sections.

Overview

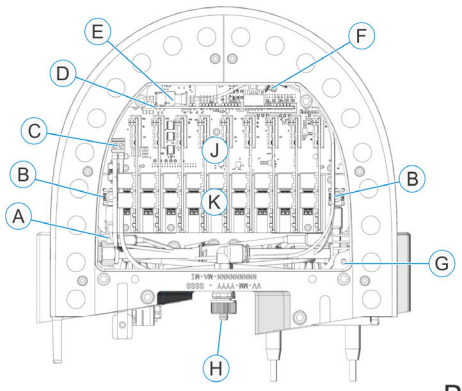


ID	Component Name	Description
A	Top cover	Provides access to the electronic boards.
B	Left encoder assembly	Measures the shuttle position using encoder read heads.
C	Right encoder assembly	
D	V-rail	Provides a track for the shuttle V-wheels to travel on.
E	Motor	Produces the electromagnetic force that propels the shuttles.
F	Flat rail	Provides a smooth surface for shuttle flat wheels to travel on.
G	Section-to-section attachment bolt/locating pin	Provides mechanical connection between sections
H	Anchor track leg	Part of the track frame; has dowel to insert into track base and removable leg cover for accessing electronic connections.
I	Floating track leg	Part of the track frame; connects to the anchor leg of the adjoining section. Floats slightly above the mounting surface and has a removable cover for accessing electronic connections.
J	Support leg	Provides an additional connection to the track base.
K	Cooling fluid ports	Inlet and outlet ports for optional liquid coolant

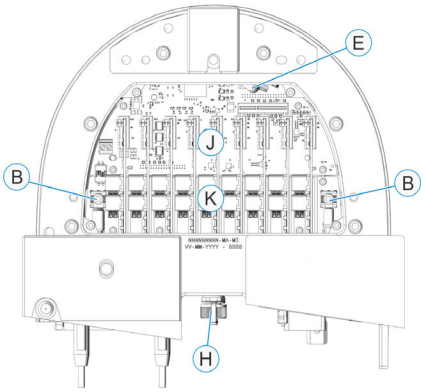
ID	Component Name	Description
L	Motor power connector	Curved section's connection for power supply
M	Internal electronics	General view of electronics inside the section. See more details in next diagram.
N	Communication cable connector	Provides connection between left and right side of the curved section.

Internal Detail

TOP VIEW



BOTTOM VIEW



ID	Component Name	ID	Component Name
A	30 amp fuse	F	Encoder connection
B	48V motor power	G	Single-point ground
C	24V digital power	H	Motor power connector
D	Gateway board	J	Communication backplane
E	Fiber optic connection	K	Power backplane

Control Panel

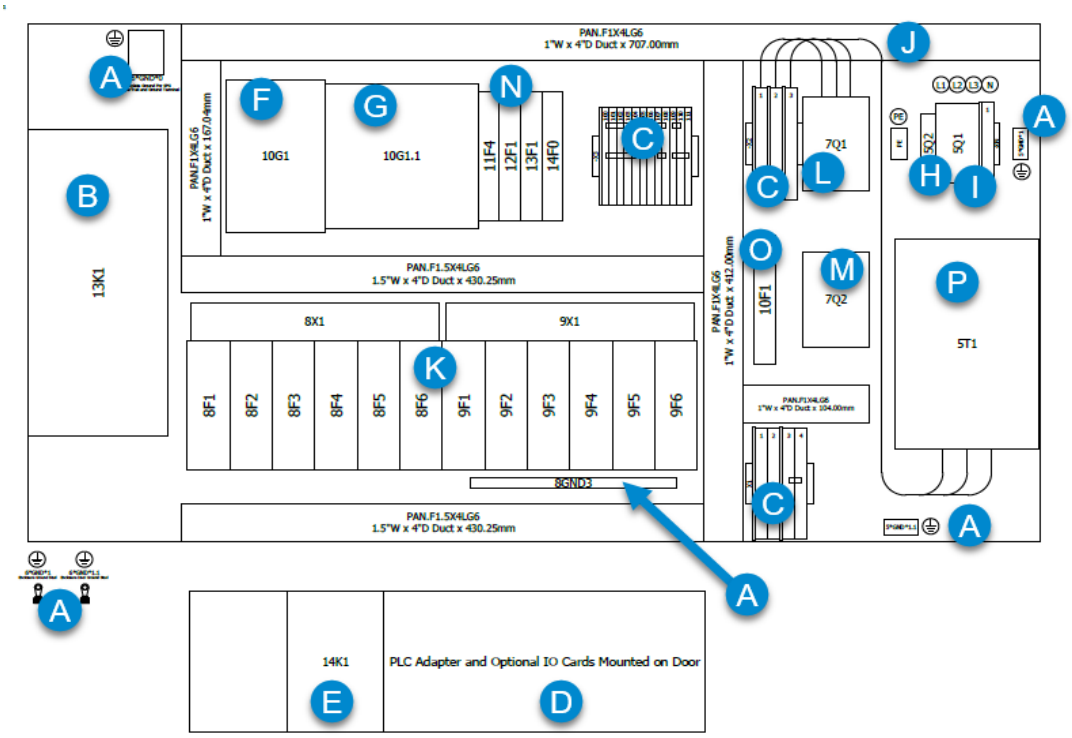
⚠WARNING Servicing an electrical panel that is still connected to its power source may cause injury or death. Remove all sources of power before servicing--refer to lockout tagout procedures. Only qualified electrical technicians should perform service on the electrical panel.

See *Hazardous Energy* on page 14 and *Lockout and Tagout* on page 17.

If a SuperTrak CONVEYANCE™ panel is not used, a line filter is required (for example, a Schaffner “FN 3256H-XX”).

The control panel provides power to the SuperTrak only. It is intended to be integrated within an automated machine that includes a machine supply circuit disconnect (a main power disconnect switch) and requires a protective earth-ground connection from the main electrical enclosure.

Diagram on following page.



Note: This diagram depicts a combined EU panel as an example.

A	Ground	I	SuperTrak power disconnect switch (3 phase)[b]
B	Controller - TrakMaster EtherNet connection	J	Single-point earth-ground connection
C	Terminals	K	Power supply breakers (space for 6 or 12 breakers)
D	PLC connection (EtherNet/IP, EtherCAT, or PROFINET)	L	Safety contactor #1
E	Bus controller	M	Safety contactor #2
F	24V power supply	N	24V circuit breaker
G	24V buffer	O	Power supply circuit
H	Buffer module disconnect[a]	P	Filter

a.Disconnects the 24V digital battery power
b.Disconnects the AC power to the SuperTrak.

Power Supply

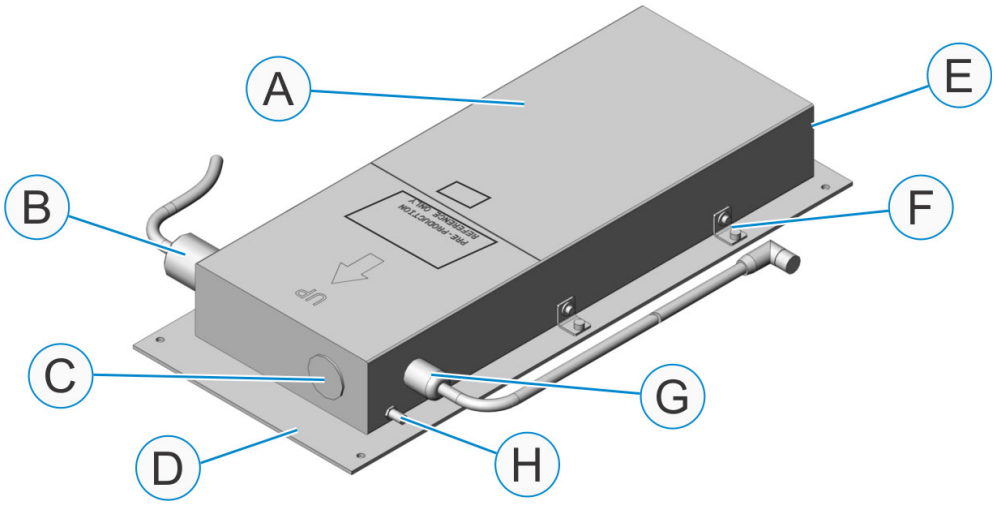
⚠WARNING Servicing an electrical panel that is still connected to its power source may cause injury or death. Remove all sources of power before servicing--refer to lockout tagout procedures. Only qualified electrical technicians should perform service on the electrical panel.

See *Hazardous Energy* on page 14 and *Lockout and Tagout* on page 17.

The power supply is an AC to DC power supply that provides 48VDC to the SuperTrak for shuttle motion. Each power supply is wired to a control panel. Alternating-current (AC) electrical power is supplied to the power supply from the control panel by a cable plug. The power supply is available with and without a mounting plate. Pictured below is the power supply with mounting plate.

The required number of power supplies varies depending on the demands of the specific SuperTrak.

Every power supply has a label affixed to it that indicates the date it was tested and the initials of the tester. This label verifies that the power supply was inspected and tested. If this label does not exist or an unauthorized replacement power supply is used, contact SuperTrak CONVEYANCE™ for the correct power supply replacement.



A	Power supply cabinet	E	Power supply filter
B	AC power input plug	F	Power supply mounting bracket
C	Alternate 48VDC power output location	G	48VDC power output location
D	Power supply mounting plate	H	Power supply OK signal

Liquid Cooling

Track sections are plumbed for liquid cooling, with inlet and outlet ports on each section. Depending on the application and environment where the system is deployed, users may opt to provide and connect a liquid cooling system of their choice.

When setting up liquid cooling, note the following requirements:

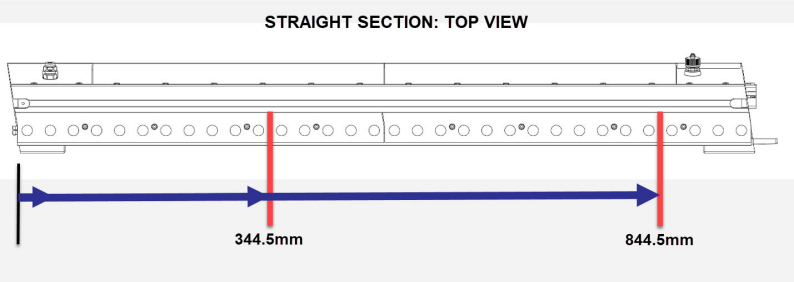
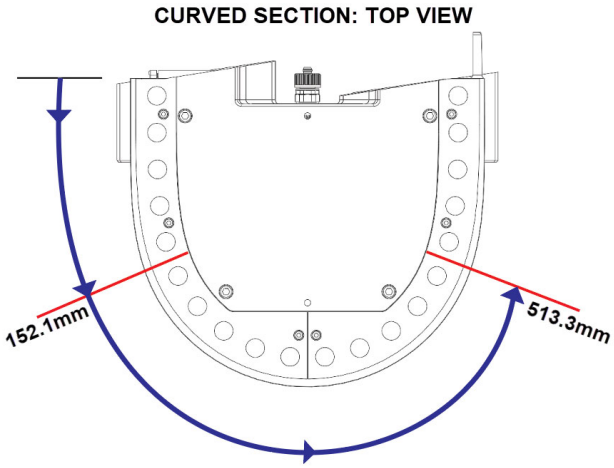
- Chiller size should appropriate for the needs of the application.
- Use water as the coolant fluid.
- To avoid formation of condensation, do not run the chiller below the ambient temperature. The maximum fluid temperature is 50°C (122°F).
- The maximum fluid pressure is 3.4 bar (50 psi).
- In the cooling system, create one loop for hot and one loop for cold. The connection should be made so that a reverse return loop is created.

Shuttle ID

Shuttles are equipped with identification tags (commonly known as "ID tags") incorporated into the encoder bracket. Each ID tag has a factory-assigned serial number that cannot be modified.

These ID tags allow the conveyor to assign a consistent ID number to each shuttle. The shuttle ID number is chosen by the integrator. Use the configuration software to define the correlation between ID tag serial numbers and shuttle IDs. For convenience, it is recommend to place a label on each shuttle to indicate its Shuttle ID.

Shuttle ID readers are incorporated into the motor encoder assemblies. Each section has two ID readers (one for each encoder assembly) as depicted in the diagrams below. **

Straight section: Internal shuttle ID readers are located at 344.5mm and 844.5mm from the left of each section. **Note: 500mm straight sections only have one internal ID reader and it is located at the 344.5mm point.	
Curved section: Internal shuttle ID readers are located at 152.1mm and 513.3mm from the left of each section	

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Installation

This section describes how to complete basic setup for the SuperTrak HORIZON3™ and VERTICAL3™ systems.

Prerequisites

The following services and components are required to successfully install the SuperTrak:

- A non-compressing installation surface (for example; a concrete floor)
- Electrical connections to the SuperTrak control panel:
  - AC incoming power from the main electrical cabinet
    - North America: 208Y120+N+PE, 40A maximum (or 20-30A on smaller systems)
    - Europe: 400Y230+N+PE, 40A maximum (or 20-30A on smaller systems)
  - Safety circuit connection (Category III dual-channel monitored 24V output to safety contactors)
  - PLC network connections (EtherNet/IP, PROFINET, or alternate)
- TrakMaster software
- Computer with Windows and network connectivity
- Ethernet cable
- Tools:
  - Set of metric hex keys
  - Mallet

Setup and Installation

This section provides the following basic information about setting up the SuperTrak and connecting the network and electronics.

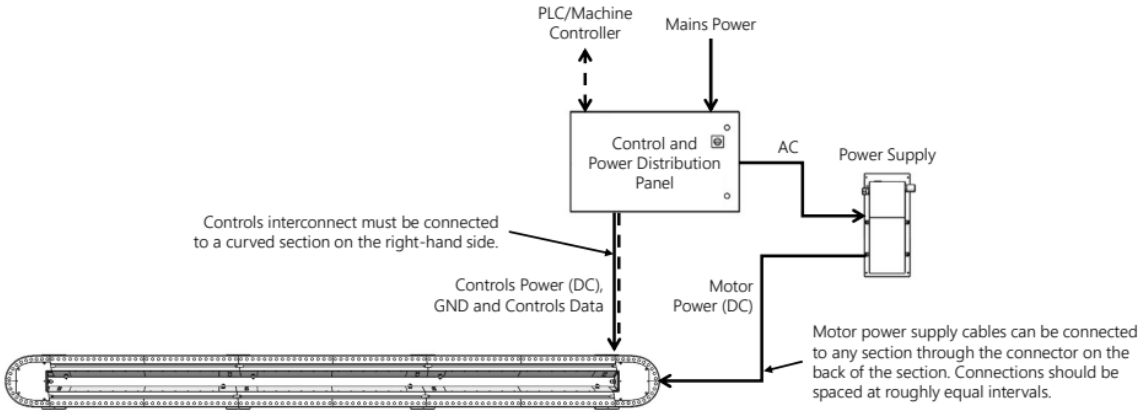
Lift a Track Section

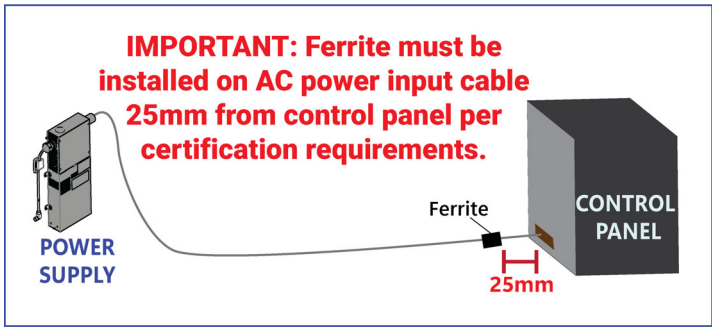
Two people are required to lift track sections. No special lifting tools or equipment is necessary. Keep the track sections level while they are being moved.

Control Panel Connection Diagram

The following diagram depicts the power and control connections between the track, power supply, and control panel for both combined panels.

Combined Logic and Power Panel Diagram





Install a Shuttle

⚠CAUTION

- The magnetic field generated by the shuttle magnets can be harmful to pacemaker wearers. Maintain a minimum distance of 31 cm (12 in.) between the shuttle and the implant location. The magnetic field may also induce magnetic materials into motion, creating potential projectiles or pinch points. Various electronic equipment and magnetic data carriers can also be affected by magnetic fields.
- Make sure the motor power is OFF when a shuttle is installed on the SuperTrak. The external safety circuit must turn the failsafe output to the control panel OFF when the guard doors are open, to disable the motor power.

NOTICE The magnetic attraction between the permanent magnets of the shuttle and the motor increases as the distance decreases. Prevent strong impact of the shuttle with the motor or damage can occur.

NOTICE Handle shuttles carefully to avoid damage to the shuttle components.

Lubrication felts on shuttles are pre-lubricated by SuperTrak CONVEYANCE™ before they are shipped. You should not need to lubricate the shuttle felts before initial setup of the system. However, if you believe that the shuttle felts are not adding lubrication to the track, or for information about adding lubrication as part of ongoing maintenance, see *Lubricating the Track* on page 82.

Placing the Shuttle on the track

To place a shuttle on the track, hold the shuttle securely with two hands. Take care to ensure that fingers do not come between the shuttle and the track. The optional shuttle removal tool (used in the illustrations below) can increase leverage and control. Following the steps below will help ensure that shuttles are placed correctly for safety and so they operate as designed on the track.

Step	Illustration
1. Remove the shuttle's magnet keeper plate. See *Shuttle Magnet Keeper Plate* on page 45 for additional information.	
2. With one hand support the weight of the shuttle from below, and with the other hand hold the middle of the shuttle body. The shuttle removal tool (pictured here) can be used to increase leverage and control.	

Step	Illustration
3. Hold the shuttle at a 45 degree angle to the track, with one of the V-wheels sitting in the v-rail.	
4. Slowly rotate the shuttle towards the track. Keep the shuttle in line with the track to avoid scraping the encoder. The force from the shuttle magnets will increase suddenly as they approach the track. Maintain control of the shuttle, do not allow the shuttle to slam onto the track.	
5. With your hand, move the shuttle back and forth along the track a short distance to ensure that the shuttle is properly seated and moving freely.	

To remove a shuttle from the track, follow the steps above in reverse.

Shuttle Accessories

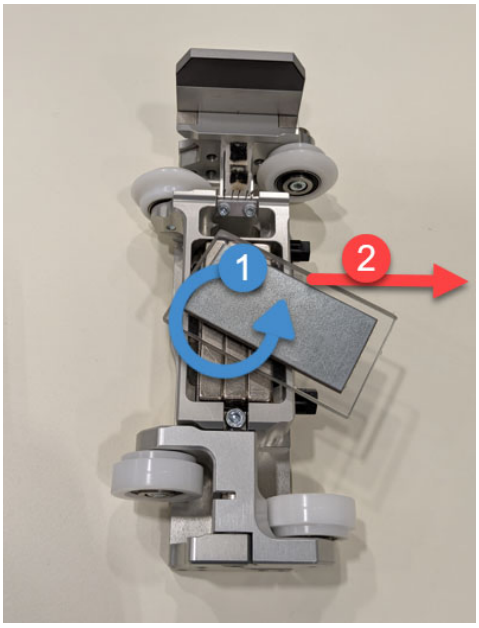
Shuttle Magnet Keeper Plate

The shuttle magnet keeper plate shields the magnetic field when the shuttle is not on the track. Whenever a shuttle is removed from the track for maintenance, the keeper plate should be re-installed.

When installing the keeper plate, its plastic side is placed against the shuttle's magnets.

Always use care to not contact the shuttle's anti-static brush when removing or replacing the magnetic keeper plate as doing so can damage the brush.

Before placing the shuttle back on the track, the keeper plate must be removed so the magnets can work properly in concert with the track.



To easily remove the plate, 1) rotate it sideways and then 2) slide it across the magnets.

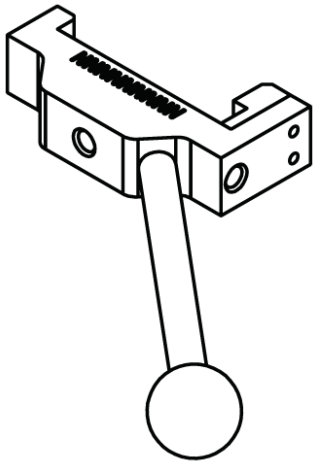
Shuttle Removal Tool (Optional)

To install or remove a shuttle safely and easily, use the optional HORIZON3™ and VERTICAL3™shuttle removal tool. It is used to remove shuttles by increasing leverage against the magnetic force holding the shuttle in place.

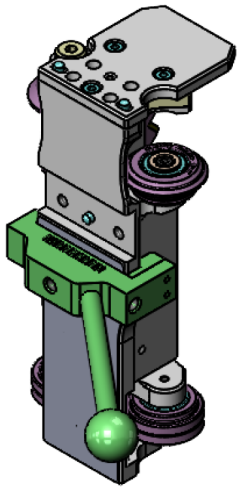
To use this tool:

1. Hook the shuttle removal tool onto the body of the shuttle as shown.
2. Place one hand under the shuttle to support its weight.
3. While holding the removal tool, remove the shuttle by tilting the shuttle to your left until the right wheels of the shuttle are no longer contacting the track, and then pull the shuttle towards you.

   When using the Shuttle Removal Tool, be sure to support the shuttle with your other hand as the removal tool will not hold the shuttle in suspension when it is not on the track.



Shuttle removal tool

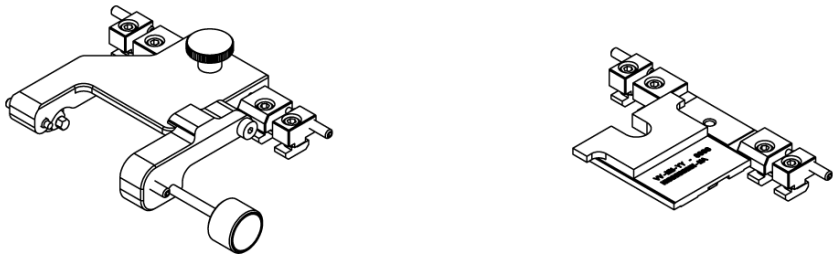


Shuttle removal tool (in green) attached to shuttle

SuperTrak CONVEYANCE™ recommends using the optionally purchased shuttle removal tool to remove and install shuttles.

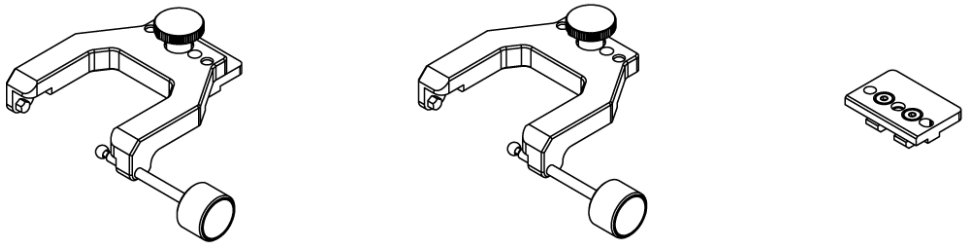
Shuttle and Station Setup Tools (Optional)

The shuttle setup tool is for adjusting the position of the encoder strip on top of the shuttle if the encoder strip has been removed and is being replaced. New shuttles are factory aligned. Alignment should not be performed unless the encoder brackets have been removed.



SHUTTLE SETUP TOOL (+ CHIP FINDER CONFIGURATION)

The station setup tool aids in alignment of station tooling by holding the shuttle in a secure and repeatable position.



STATION SETUP TOOL (+ REMOVABLE LOCATE + STATIONARY LOCATE)

Controls Setup

This section provides the following information about SuperTrak controls, and connections:

TrakMaster Software

NOTICE

The lifespan of some SuperTrak components may be compromised when temperature-related TrakMaster configuration parameters are adjusted from the default value.

- For optimum lifespan of SuperTrak platform components, do not increase the default value of the electronics temperature configuration parameter, and use caution when increasing the coil temperature configuration parameter: Coil Temperature Limit (°C); default=60, hard limit=90.
  Electronics Temperature Limit (°C); default=60, hard limit=70.

TrakMaster is a Windows-based application that monitors, configures, and is used to troubleshoot the SuperTrak. For more information on setting up TrakMaster, see *TrakMaster™ Procedures* on page 59.

Guarding

⚠ DANGER

Unguarded devices may cause injury or death. Do not start or operate the equipment with guard doors open. Lockout and tagout all energy sources before entering the guarding. Make sure that all guard panels are in place and guard doors are closed before operating the equipment. Never bypass a safety component.

See *Hazardous Energy* on page 14 and *Lockout and Tagout* on page 17.

Guarding is a protective housing that separates users from dangers; such as, moving devices. The guarding is comprised of a framework fitted with fixed guarding panels, and removable guarding panels.

Fixed Guard Panels

Fixed guard panels should not be removed.

Removable Guard Panels

Removable guard panels are available for maintenance and should only be opened by a qualified technician. A tool is required to unlock and remove a panel and to lock a panel in position. These panels are not usually equipped with a safety switch; therefore, the system should not be operated with any of these panels removed.

Energy Controls

This section describes the energy controls on the SuperTrak.

SuperTrak HORIZON3™ and VERTICAL3™ Power Disconnect Switch

⚠WARNING

Servicing an electrical panel that is still connected to its power source may cause injury or death. Remove all sources of power before servicing--refer to lockout tagout procedures. Only qualified electrical technicians should perform service on the electrical panel.

See *Hazardous Energy* on page 14 and *Lockout and Tagout* on page 17.

The SuperTrak control panel is designed to be integrated with a main electrical panel, which includes a main power disconnect switch. Use the main power disconnect switch to turn OFF system power, but maintain digital (buffer module) power in the control panel. Only use the SuperTrak power disconnect switch when replacing a SuperTrak electrical component.

The SuperTrak power disconnect switch is located on the control panel door.

Use the SuperTrak power disconnect switch when any electronic service or maintenance work is completed.

To isolate the SuperTrak power, turn the SuperTrak power disconnect switch to the OFF position. The switch is lockable in the OFF position to prevent accidental or unauthorized enabling of electrical power to the system.

See *Hazardous Energy* on page 14.

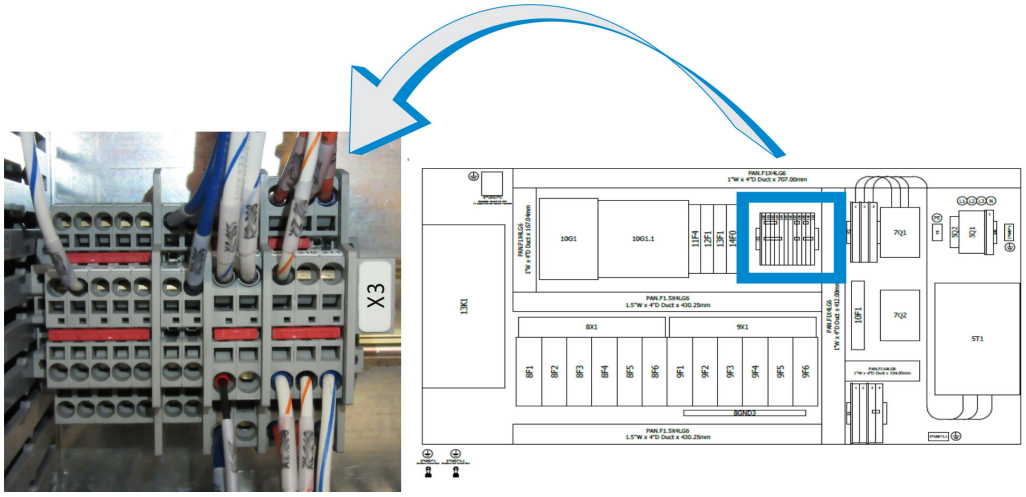
Buffer Module Power Supply

A buffer module, sometimes referred to as an uninterruptible power supply, is located inside the control panel.

The buffer module provides power to the controller and digital electronics. This maintains shuttle position information and allows network communications to continue. The buffer module does not provide motor power or cause shuttle movement.

Safety Circuit Connection

The SuperTrak is integrated with a system safety circuit in the control panel. Wire the safety circuit as illustrated:



Two stop signals work together: the immediate stop signal and the delayed stop signal. The immediate stop signal is sent immediately to instruct the track to begin a controlled stop. The delayed stop signal removes motor power from the track by opening the safety contactors. This signal is sent on a slight delay to allow the shuttles to come to a controlled stop. After the motor power has been removed, any shuttles that have not come to a complete stop will continue to decelerate through dynamic braking (shorted electromagnetic coils).

Immediate Stop Signal

To initiate a stop, the integrator's machine PLC immediately drops the *track enable* signal to low. This begins a controlled stop. The enable signal can be hardwired or (more commonly) sent through the fieldbus. This is not a safety-rated signal.

To hardwire the enable signal, remove the jumper between X3:103 and X3:104. Connect one wire to X3:104 for the signal and one wire to X3:204 for the common, as diagrammed below.

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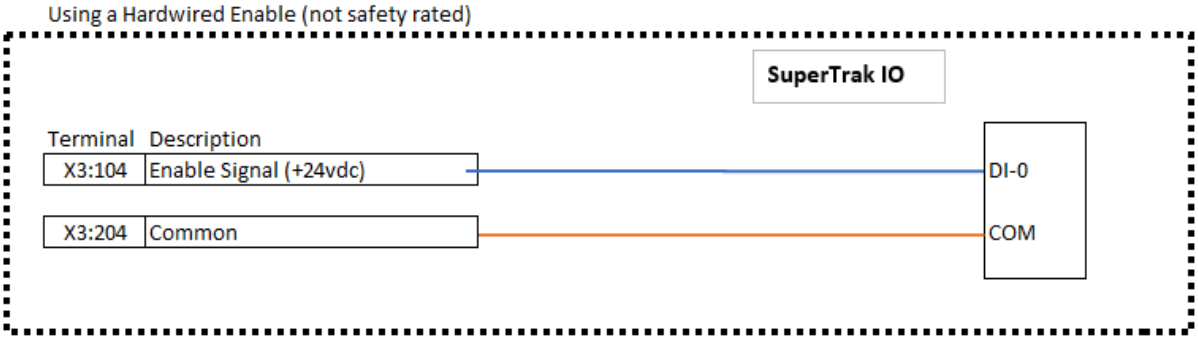
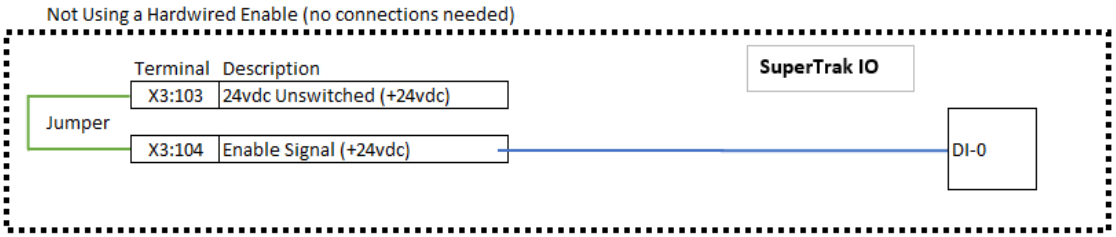


When not using the hardwired immediate stop signal, leave the pre-installed jumper between X3:103 and X3:104 as illustrated in the graphic below.



In both immediate stop signal diagrams above, X3:104 corresponds to SuperTrak Digital Input 0, which is configured in TrakMaster as "Allow Section Enable" by default. See TrakMaster Help, Digital I/O Configuration for more information.

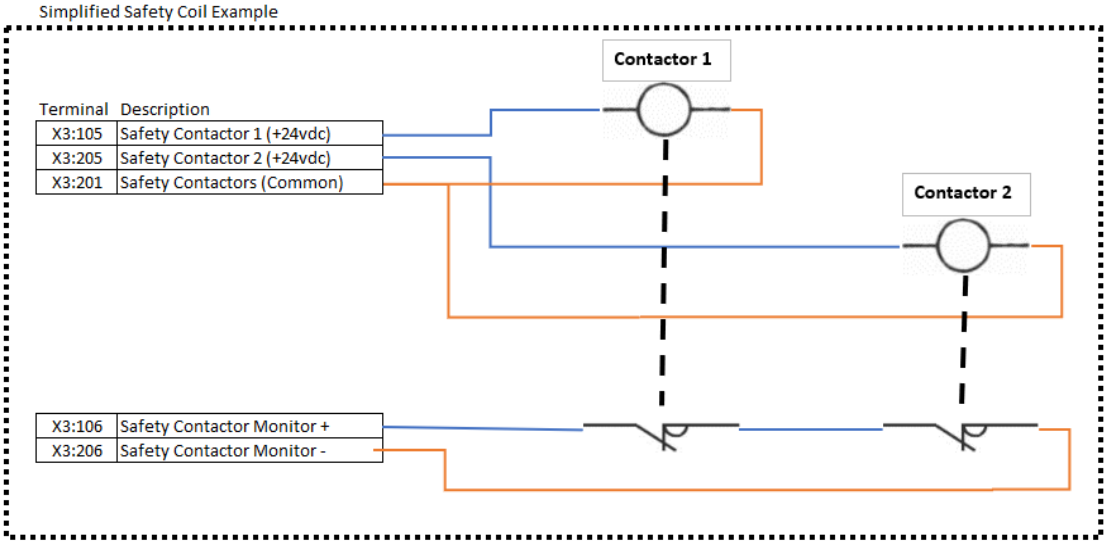
Delayed Stop Signal

After a short delay (~300ms) to allow shuttles to come to a controlled stop, open the safety contactors to remove motor power from the track via a dual-channel safety signal from a safety PLC or safety relay.

There are three connection points:

1. Channel 1, connected to X3:105 (+24V) and X3:201 (common)
2. Channel 2, connected to X3:205 (+24V) and X2:201 (common)
3. Monitoring signal, connected to X3:106 and X3:206

Simplified Safety Coil Example



Operating Procedures

This section provides the following SuperTrak HORIZON3™ and VERTICAL3™ operating procedures:

Pre-Start Inspection

During startup, shuttles may oscillate and move to find their positions. When all shuttles are located, the SuperTrak switches to normal shuttle control.

A pre-start inspection should be conducted after the track is set up initially, or any time that track sections have been moved or replaced.

	Task	Complete
1.	Verify that all users have been properly trained and instructed in safety procedures and SuperTrak operation.	
2.	Verify that upper and lower rails are clean and that the shuttles have had the proper preventive maintenance.	
3.	Inspect around the SuperTrak, to make sure there are no abnormal obstructions along the path that the shuttles travel.	
4.	Verify that all energy sources have locks and tags removed.	
5.	Verify that no one is working inside the guarding.	
6.	Verify that all guarding is correctly installed and operational.	
7.	Confirm that the designated ethernet port is used for TrakMaster to communicate with SuperTrak.	
8.	Confirm that the right and left fiber optic cables are correctly connected.	
9.	Open TrakMaster. The default IP address for the SuperTrak is 192.168.13.2. The computer must be connected to the ETH1 port on the controller computer. • Confirm the communication. • Confirm that faults and warnings do not exist. • Confirm that the latest controller software is installed (Advanced > Firmware)	
10.	Calibrate the encoders. See the TrakMaster built-in help for the calibration procedure.	
11.	Verify stable motion of a single SuperTrak shuttle: a. Install a single SuperTrak shuttle on the SuperTrak. b. Confirm that the motor power supply is ON. c. On TrakMaster, check the `Motor Power` column on the System Status/ Control screen. d. Move the shuttle around the system at a high speed (2500 mm/sec). e. Move the shuttle around the system at a low speed (100 mm/sec) to verify the coil functionality. Coil functionality is confirmed before product shipment so this is an additional verification. f. Verify that no abnormal sounds or shuttle instability is detected.	

	Task	Complete
12.	Verify stable motion of all SuperTrak shuttles: a. Turn the motor power OFF. On TrakMaster, check the `Motor Power` column on the System Status/ Control screen. b. Install all required SuperTrak shuttles on the SuperTrak. c. Verify that the number of shuttles on TrakMaster match the physical number of shuttles on the SuperTrak. d. Turn the motor power ON. e. Move the shuttles around the system at high speed (2500 mm/sec). f. Verify that no abnormal sounds or shuttle instability is detected.	

SuperTrak Behavior

The SuperTrak is typically integrated with a larger automation system. This section describes the SuperTrak power ON procedure and does not include any steps for the larger system.

Each section has two (2) power connections:

- Motor power (48VDC)
- Digital power (24V)

Motor power turns OFF with the safety circuit, but digital power remains ON.The digital power maintains feedback from the encoders, so that the SuperTrak continues to monitor the shuttle positions.

The SuperTrak digital power turns ON when the power disconnect switch is placed in the ON position. This provides power to the SuperTrak controller, encoders, and other digital electronics in the motors.

SuperTrak HORIZON3™ and VERTICAL3™ Power ON Behavior

When the system is in a safe state and cell power is ON, the system safety circuit turns the fail safe output ON to the SuperTrak control panel, which turns the SuperTrak motor power supplies ON. This must only occur when the guard doors are closed and the system is in a safe state to start operation. To avoid rapid switching of the SuperTrak power supplies, the system safety circuit must be configured with a minimum 2 second delay after the fail safe output turns OFF before it turns back ON.

When the PLC is ready to allow shuttle motion, the PLC enables the SuperTrak by turning ON defined bits on the PLC network. Shuttle movement does not occur until the PLC enables shuttle motion. The PLC can enable shuttle motion at the system level or for individual sections. The PLC must verify that all robots and tooling are clear before it enables shuttle motion.

When the PLC enables shuttle movement, the SuperTrak initializes the shuttles, returns them to their proper starting location, and then moves shuttles as required.

The system startup procedure varies, depending on whether the buffer module has timed out or not and digital power was lost:

- If digital power is not lost, all shuttle locations and data are maintained. The system continues to work from where it left off.

- If digital (buffer module) power is lost and a cold start occurs, the shuttles travel to the default target locations and the PLC decides what to do next for startup. Multiple options are available to manage system startup after a cold start, for example:
    - The PLC moves each shuttle to a shuttle ID reader location where it stops momentarily to be identified.
    - If the PLC knows that the line was purged, the shuttles can all go to the first processing station by default and the system can start running.
    - The PLC can send all shuttles to a reject station where any parts partially processed are removed and the system starts over after a cold start.
    - The SuperTrak digital electronics can be wired to the equivalent of a panel lighting circuit that does not lose power when the main disconnect is switched OFF. In this case, the SuperTrak shuttle positions and data are always maintained unless the entire plant loses power and the battery backed buffer module times out.

SuperTrak HORIZON3™ and VERTICAL3™ Power OFF Behavior

When the SuperTrak platform powers off, the process to power off depends on what caused the power interruption. A planned or intentional power off results in a controlled stop, whereas an unplanned or unexpected power off results in an uncontrolled stop.

Controlled Stops

Control stops are initiated by a mechanism such as an e-stop button, a guard door switch, or a safety controller. These mechanisms will vary from system to system and are designed and built by the system integrator.

In a controlled stop:

- A signal is triggered by the stopping mechanism, sending an immediate-off digital signal. This signal prompts an enable signal to the controller which begins decelerating shuttles to a controlled stop. This SuperTrak controller is not a safety-rated device and is not a safety feature.
- A separate delayed off digital signal (300ms delay) connects to the motor power contactors (which are safety rated). This delay allows the SuperTrak controller time to complete shuttle deceleration. (NOTE: this operation switches the AC input to the motor power supplies which prevents any further power supply but does not discharge any residual power (capacitance).

The disable delay time is set in both the system safety circuit and in the TrakMaster software (see **Section Parameters** > **Section Disable Delay Time**). When the disable delay time is correctly configured, shuttles come to a controlled stop and avoid bumping on an abrupt cell power OFF. If a disable delay time is not configured (**Section Disable Delay Time** is set to zero [0]), the SuperTrak platform shorts the coils to help decelerate the shuttles on cell power OFF, which minimizes how far the shuttles coast.

Uncontrolled Stops

Uncontrolled stops are initiated when there is a total loss of power from an unplanned event such as a power grid system failure or the opening of the SuperTrak main circuit breaker.

In an uncontrolled stop:

- Because the SuperTrak controller and other system electronics typically share a power supply, the controller is not available to regulate the shuttle deceleration. Shuttles will coast to a stop in a time frame determined by their speed and weight.
- If only the controller is powered off (but the motor power remains on), the sections of the track will respond after about 10ms by shorting coils. Shuttles will stop reasonably quickly, but this feature is not safety rated.
- If only the motor power supply is powered off (but the controller remains on), the shuttles will continue moving until the motor bus capacitance is discharged. At that point, the shuttles will coast freely. This scenario should not arise on a correctly configured system.
- No special restart sequence is required.

See *Safety Circuit Connection* on page 50 for more information.

TrakMaster™ Procedures

TrakMaster is not required to operate the SuperTrak; however, it is useful for troubleshooting and configuring the SuperTrak.

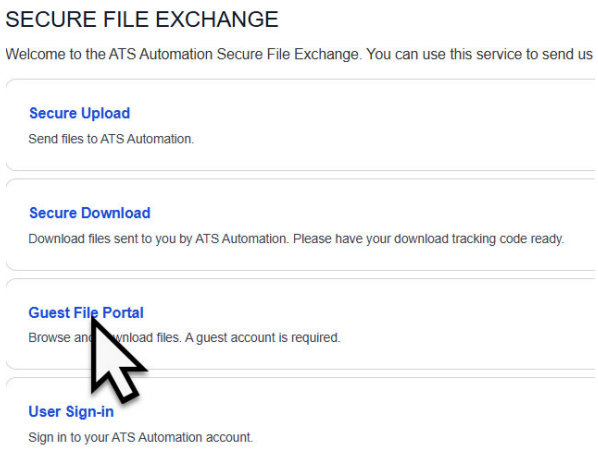
TrakMaster is a Windows-based application that monitors, configures, and is used to troubleshoot the SuperTrak.

Note: TrakMaster software is periodically updated with new releases, and screen shots shown here may not reflect the current version--however, the sequence of operation is the same.

Download TrakMaster™

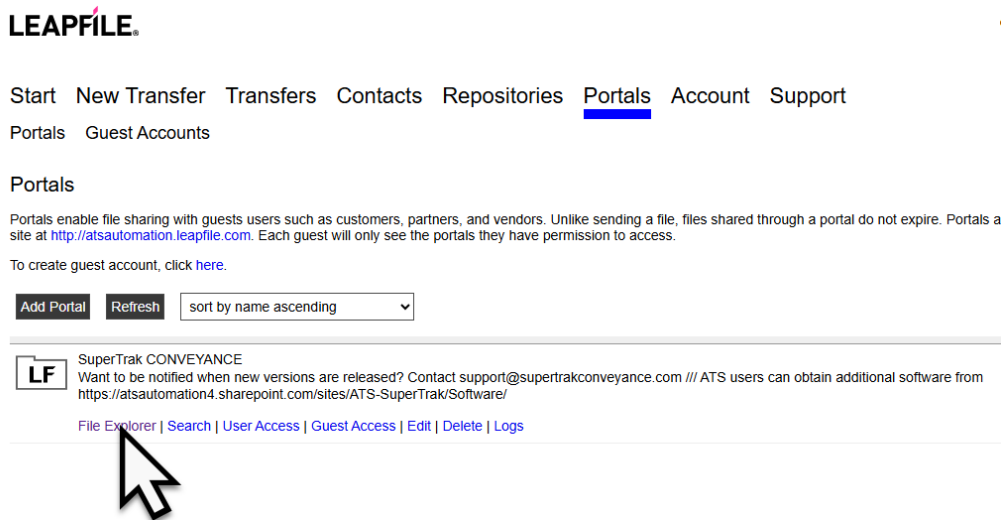
The following steps detail how to download the TrakMaster software and corresponding simulation software.

1. Email support@supertrakconveyance.com to obtain a login account.
2. Once you receive the login credentials, navigate to *http://atsautomation.leapfile.com/*.
3. Click *Guest File Portal*.

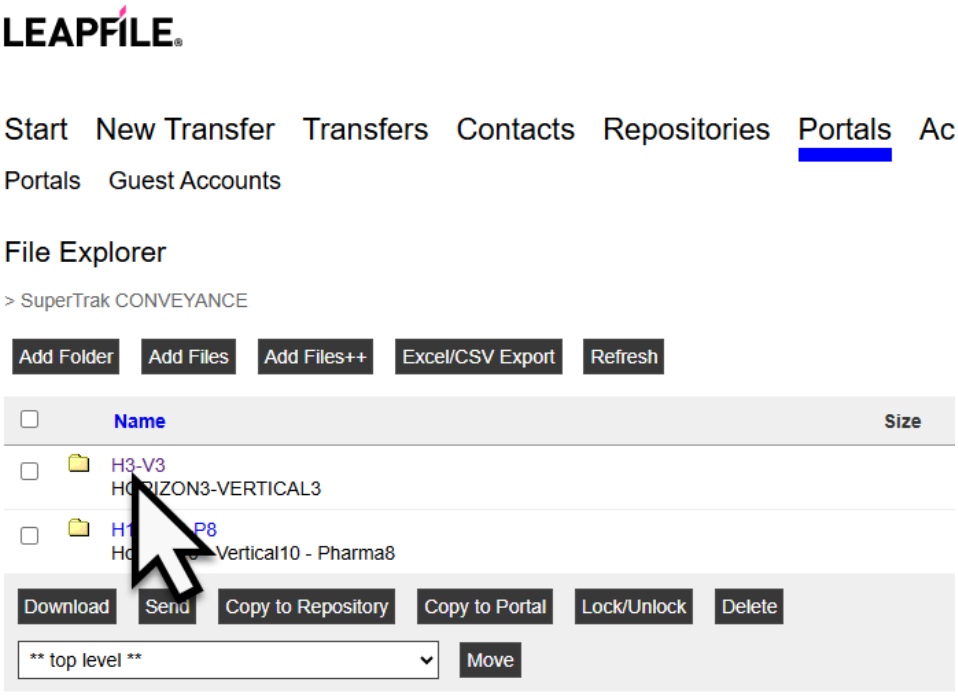


4. Enter your Login ID and Password, and then click Login.

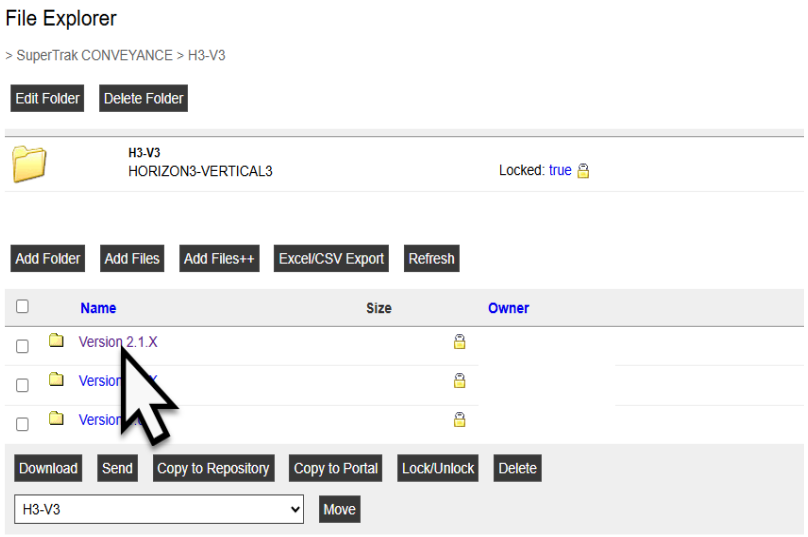
5. Under the SuperTrak CONVEYANCE™ folder, click *File Explorer*.



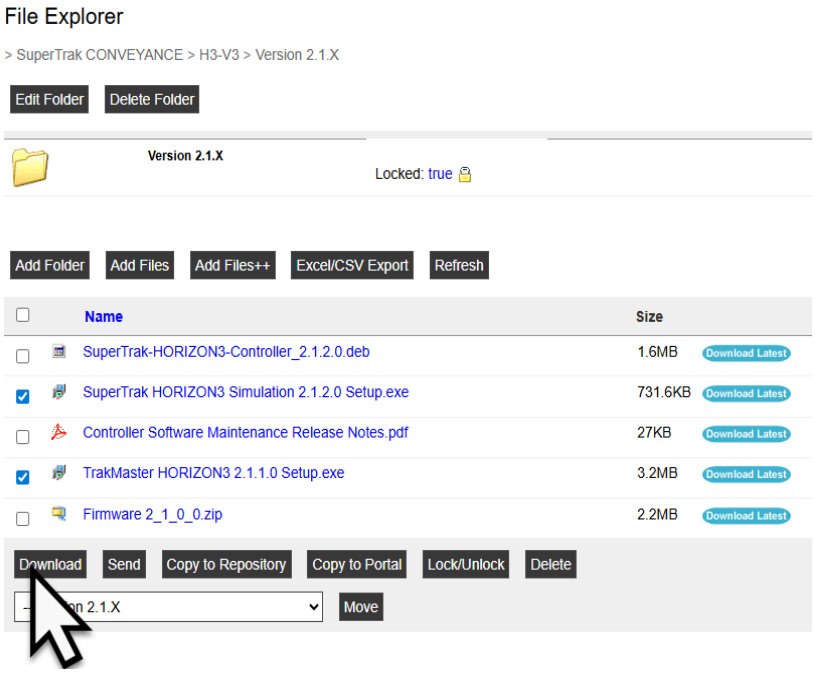
6. Click the name of the folder for the appropriate product, in this case, HORIZON3-VERTICAL3:



7. Click to open the folder of **the most recent version** of TrakMaster (unless you have a reason to download a prior version).



8. Check the boxes for TrakMaster and/or the SuperTrak Simulation and then click the Download button.



9. Locate and run the executable file(s) you downloaded to install the programs on your computer.

Access the TrakMaster Built-in Help

See the *Getting Started--Getting Started with a Physical System* section of TrakMaster help for initial SuperTrak platform connection and configuration instructions.

1. Open TrakMaster.
2. Click Help > Contents.

Monitor the SuperTrak HORIZON3™ and VERTICAL3™ Systems

It is important to be aware of the state of the SuperTrak during operation. When you are aware of how the SuperTrak correctly works, it is easier to notice when a change occurs. Some things to notice include:

- Watch all devices for smooth operation. If a device does not seem to be operating correctly, stop the SuperTrak and notify a service technician.
- Be aware of the speed at which the components function. If they appear to move slower than usual or are progressively getting slower, maintenance may be required.
- Watch for debris accumulation on the V-rail. This is an indication that the shuttles require immediate lubrication.
- Watch for debris accumulation on the lower rails. Wipe down the lower rails with a clean cloth dampened with isopropyl alcohol or equivalent.
- Watch for repeated faults and listen for shuttle noise. Inspect and repair the shuttle as required.

Maintenance

Maintenance is an important part of the continued and proper operation of the SuperTrak HORIZON3™ and VERTICAL3™ systems. Failure to perform maintenance as required, and in accordance with your ATS contract, voids the warranty. Maintain accurate and complete records regarding SuperTrak maintenance and any completed service procedures.

Some equipment requires periodic adjustment to re-establish the accuracy and desired output of the SuperTrak. The SuperTrak CONVEYANCE™ team recommends replacing defective devices rather than repairing them. Only qualified technicians should perform maintenance tasks.

Warranty excludes consumable items and wear parts, such as but not limited to fuses, filters, or lubricants, which by their nature require periodic replacement.

All technicians involved with maintaining the SuperTrak must be qualified and must read and understand the SuperTrak process and safety guidelines.

See *Safety Information* on page 11.

This section provides the following SuperTrak maintenance information:

Scheduled Maintenance

NOTICE

The scheduled maintenance tables in this section provide a recommended frequency for each maintenance task. Adjust the frequency according to your installation environment. For example; cleaning may need to be more or less frequent, depending on the environment.

This section provides SuperTrak preventive maintenance tables. See *SuperTrak HORIZON3™ and VERTICAL3™ Conveyance Platform Overview* on page 23 for diagrams and component names.

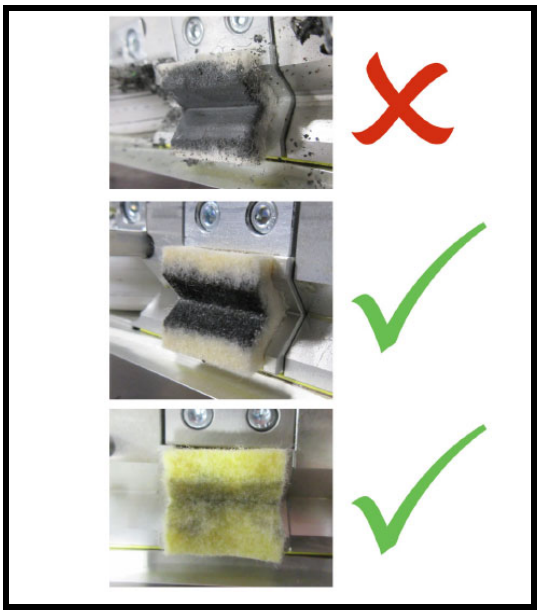
SuperTrak HORIZON3™ and VERTICAL3™ Components

Component	Frequency	Task	Description
Power supply	Monthly	Inspect	Inspect the air filter for dirt and debris. If required, replace the filter. See *Replace a Power Supply Filter* on page 89.
Track and supporting structure	Weekly	Clean	Clean off debris, using a clean, soft cloth.

SuperTrak HORIZON3™ and VERTICAL3™ Shuttles

Component	Frequency	Task(s)	Description
Shuttle	Monthly	Clean	Clean the shuttle body, including the encoder strip and the magnet assembly. Wipe off debris using a clean, soft, non-marking cloth.
Flat Wheels	Monthly	Inspect	Turn each wheel to make sure it moves freely. Replace any wheels that do not move freely. Check each flat wheel for vertical and horizontal movement. Visually inspect each flat wheel for wear or damage. Replace any badly damaged wheels. See *Replace Shuttle Wheels* on page 87.

Component	Frequency	Task(s)	Description
V Wheels	Monthly	Inspect	Turn each wheel to make sure it moves freely. Replace any wheels that do not move freely. Check wheels for vertical movement. Visually inspect wheels. If a wheel is damaged, make sure the V-rail is not damaged. See *Replace Shuttle Wheels* on page 87.
Anti-Static Brush	Monthly	Inspect	Verify that the two screws that hold the anti-static brush are tightly secured. Visually inspect the anti-static brush. Make sure that at least 90% of the bristles remain. If more than 20% of the bristles are worn away, replace the anti-static brush. See *Replace a Shuttle's Anti-Static Brush* on page 56.
Magnet Assembly	Monthly	• Inspect • Remove debris	Visually inspect for damage to magnet assembly surface. To remove metal debris, wipe it to the corner or edge of the magnet and then pull it off using a piece of adhesive tape.
Lubrication	Monthly or as determined by your application	• Inspect • Add lubricant	Add lubrication to shuttle felt when there is no evidence of lubrication on the track V-rail or when a shuttle's lubrication felt is dry to the touch. For more information about lubricating shuttles, see *Lubricating the Track* on page 82

Component	Frequency	Task(s)	Description
Shuttle lubrication felt	Monthly	Inspect	Inspect the shuttle felt. If the felt is fraying, contaminated, or worn down, it should be replaced. See *Replace a Shuttle Lubrication Felt* on page 84. Discoloration is expected and does not indicate a shuttle lubrication felt needs to be replaced. The graphic below shows comparisons of shuttle felts that do and do not need to be replaced (*images are of equivalent HORIZON10™ shuttle felts*).  The shuttle felt is spring loaded. Depress the felt and check that the M3 screw head travels the full length of the slot on the left hand side of the shuttle. If the felt does not move smoothly or spring back easily, replace the lubrication spring. See *Replace the Shuttle Lubrication Spring* on page 85.

Cleaning Procedures

This section describes SuperTrak cleaning procedures.

Clean the SuperTrak HORIZON3™ and VERTICAL3™

⚠CAUTION After cleaning the SuperTrak frame, clean up all spills and excess water immediately. Liquid on floors causes a slip hazard.

NOTICE Never use razor blades, scrapers, squeegees, brushes or any other abrasive tools to clean the SuperTrak frame. Use of these tools may cause damage.

The SuperTrak CONVEYANCE™ team does not recommend any specific brands of cleaners. Your system's processes and product requirements determine the type of cleaners you will use.

Remove Dust and Dirt

1. Wipe with a soft damp cloth to remove dust and dirt.
2. Dry with a clean soft cloth or chamois.

Remove Wet Paint, or Grease

1. Wipe with a clean soft cloth dampened with isopropyl alcohol or equivalent. (Do not use chlorine-based cleaners.)
2. Dry with a clean soft cloth or chamois.

Clean a Control Panel Air Filter

Air filters are located on the side of the control panel.

1. Carefully remove the front plastic filter support.
2. Gently peel back the sponge filter.
3. Use a vacuum to carefully remove any particulate from the filter unit.
4. Replace the filter.
5. Snap the filter cover back into position over the filter.

Clean the V-Rail

The V-rail can be cleaned when needed, but be aware that cleaning will remove necessary lubrication on the rail.

1. Wipe with a clean soft cloth dampened with isopropyl alcohol or equivalent.
2. Dry with a clean soft cloth or chamois.
3. Ensure shuttles re-lubricate the rail.

Lubricating the Track

The HORIZON3™ and VERTICAL3™ tracks are lubricated by shuttles. As shuttles move around the track, lubrication felt on the track side of the shuttle lubricates the V-rail.

Recommended Lubricant

Use an oil lubricant with a viscosity similar to ISO grade 46, SAE grade 20. The SuperTrak CONVEYANCE™ team uses a food grade NSF registered H1 machine oil .

The frequency of lubrication required for a SuperTrak depends on the length of the track, the number of shuttles on the track, ambient temperatures, and other factors. Monitor the V-rail on your track to determine how often you need to add lubrication to your shuttles. In the *Scheduled Maintenance* section of this chapter, see *SuperTrak HORIZON3™ and VERTICAL3™ Shuttles* on page 78.

Add Lubricant to the Shuttle Lubrication Felt

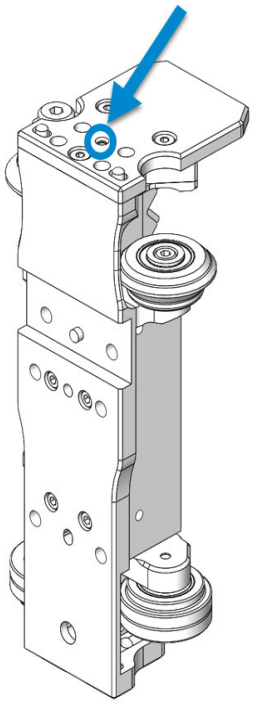
NOTICE Determine and maintain a lubrication schedule for your application, to ensure that the upper V-rail and shuttle lubrication felts do not run dry.

Use an oil lubricant with a viscosity similar to ISO grade 46, SAE grade 20. The SuperTrak CONVEYANCE™ team uses a food grade NSF registered H1 machine oil for the broadest application range.

The top of the shuttle has a lubrication port as depicted at right. When lubricant is added here, it seeps down into the lubrication felt on the track side of the shuttle, and the felt makes contact with the V-rail to spread the lubricant.

Drip approximately .5ml of lubricant into the lubrication hole at the top of the shuttle.

Note: New shuttles are pre-lubricated by The SuperTrak CONVEYANCE™ team before they are shipped.



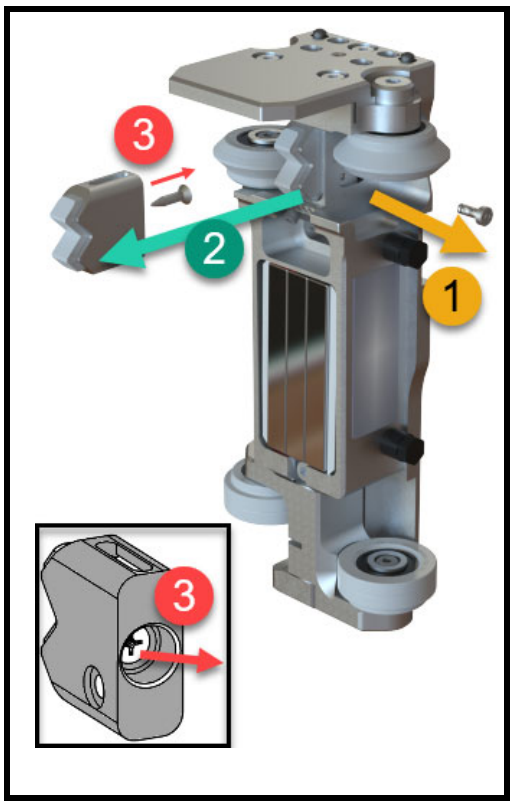
Component Replacement

Replace a Shuttle Lubrication Felt

When a shuttle's felt is too worn and frayed to be able to adequately apply lubricant to the track, it should be replaced.

To replace the shuttle lubrication felt, after removing the shuttle from the track:

1. Remove the socket head screw on the side of the shuttle located just below the upper V-wheel. Be aware that the cartridge is held against a spring that pushes it outwards. Be careful not to lose the spring unless you also intend to replace it.
2. Slide out the plastic lubrication felt holder that contains the felt.
3. Using a Phillips screwdriver, remove the screw on the back side of the felt holder.
4. Remove the used felt and insert a new felt piece.
5. Replace the Phillips screw to secure the felt.
6. Place the felt holder back into the shuttle with the spring fitting into the spring bore, and then re-attach the M3 socket head screw to secure the felt holder to the shuttle.

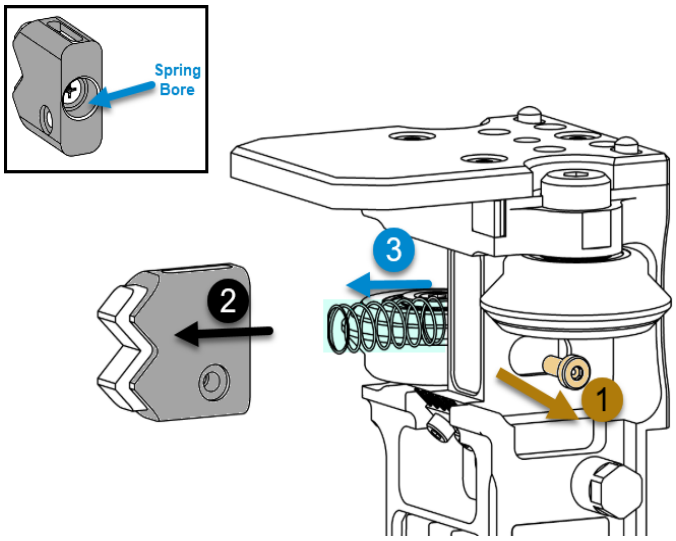


Replace the Shuttle Lubrication Spring

If a shuttle's lubrication felt is still in good condition but does not make contact with the V-rail, replace the spring under the lubrication felt holder.

To replace a spring, remove the shuttle from the track. Then:

1. Remove the M3 socket head screw on the side of the shuttle located just below the upper V-wheel.
2. Slide out the plastic lubrication felt holder that contains the felt. The spring is under this component.
3. Remove and replace the spring.
4. Place the felt holder back into the shuttle (with the spring fitting into the spring bore), and then re-secure the M3 socket head screw to secure the felt holder to the shuttle.

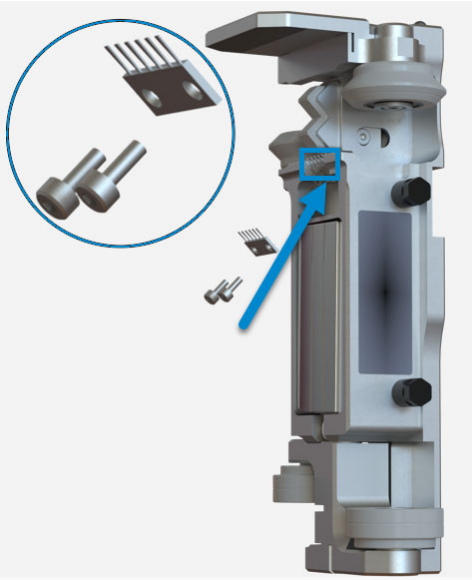


Replace a Shuttle Anti-Static Brush

The shuttle's anti-static brush discharges any built-up static energy as the shuttles travel the track. In order for these brushes to be effective, they must come in contact with the track. Eventually, the bristles on the brushes become worn and no longer touch the track. Anti-static brushes on shuttles that are worn to that point should be replaced.

To replace an anti-static brush:

1. Remove the shuttle from the track.
2. On the track side of the shuttle just below the lubrication felt, the anti-static brush is attached with two 6mm M2.5 socket head screws.
3. Remove the old brush and place a new one. The bristles should be pointed diagonally upwards towards the lubrication felt.
4. Replace the two screws that hold it in place.



Replace Shuttle Wheels

Replace Shuttle Flat Wheels

When replacing a flat wheel, it is recommended to replace both of the shuttle's flat wheels, and for maximum shuttle-to-shuttle repeatability, replace all flat wheels on all shuttles on the system at the same time.

Inspect the flat wheels. Replace the flat wheels if they are worn or damaged.

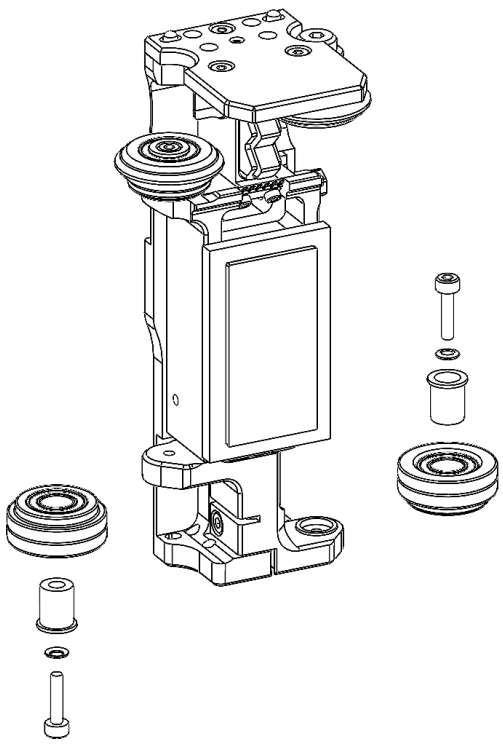
(View SuperTrak GEN3™ Component Data Sheets at https://supertrakconveyance.com/technical-documentation/ for additional information about shuttles, including typical shuttle wheel lifespan.)

Remove Shuttle Flat Wheels

1. Remove the shuttle from the SuperTrak and place the keeper plate on the magnet enclosure.

   See *Install a Shuttle* on page 43 for information about installing and removing a shuttle from the track.

2. Remove the screws and washers that secure the flat wheels in position.
3. Remove the flat wheel shafts from the flat wheels and set them aside to use for the installation of the new wheels. (Flat wheels do not come with replacement wheel shafts unlike the v-wheels.)



Install Shuttle Flat Wheels

1. Install the flat wheel shaft into the flat wheel from the wider side of the wheel as shown.
2. While holding the flat wheel in position, install a washer and screw into the flat wheel shaft, and then tighten. Repeat for the second wheel.

Replace Shuttle V-Wheels

When replacing a V-wheel, it is recommended to replace both of the shuttle's V-wheels, and for maximum shuttle-to-shuttle repeatability, replace all V-wheels on all shuttles on the system at the same time.

Inspect the v-wheels Inspect the V-wheels; replace if they are worn or damaged. and replace them if they are worn or damaged.

Shuttle V-wheel wear varies depending on the system application. It is recommended that you verify the accuracy of critical shuttle features over time, as required by the application. This allows you to compare the measurements to your process limits and recognize when replacement is necessary.

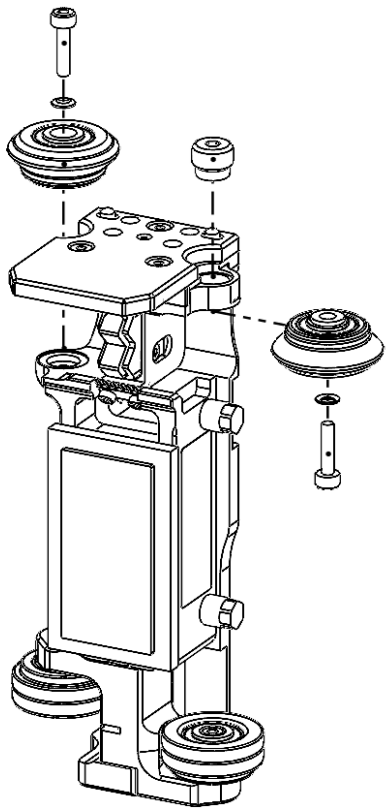
(View SuperTrak GEN3™ Component Data Sheets at https://supertrakconveyance.com/technical-documentation/ for additional information about shuttles, including typical shuttle wheel lifespan.)

Remove Shuttle V-Wheels

1. Remove the shuttle from the SuperTrak and place the keeper plate on the magnet enclosure.

   See *Install a Shuttle* on page 43 for information about installing and removing a shuttle from the track.

2. Remove the screw and washer that secures the lower V-wheel in position.
3. Use an Allen key to hold the flange nut above the upper V-wheel.



Install Shuttle V-Wheels

Note that the v-wheel assembly comes with the wheel shaft and an attached pre-selected shim. Always replace the entire v-wheel assembly.

1. Lower V-wheel: Install the lower v-wheel from above. Install a washer and screw into the v-wheel shaft, and then tighten.
2. Upper V-wheel: Install the flange nut into its pocket at the top of the shuttle, and position the upper v-wheel from below. Hold the flange nut in position with an Allen key and install a washer and screw into the v-wheel shaft, and then tighten.

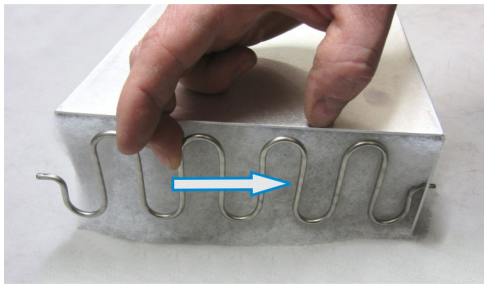
Replace a Power Supply Filter

NOTICE Be careful not to bend the power supply filter retention clip out of shape when removing it.

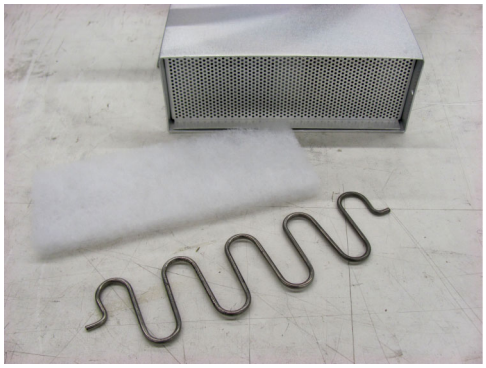
The power supply filter prevents particles from entering the power supply through the cooling fans. Particulate build-up on the power supply filter impedes air flow and may cause the power supply to overheat.

Power supply filter replacement frequency depends on the SuperTrak environment. Regularly inspect the power supply filter and replace it when it is dirty.

1. Carefully compress one end of the filter retention clip until one end releases from the power supply cabinet tab.



2. Remove the filter retention clip.
3. Remove the old filter.
4. Clean away any excess grit or dirt in and around the power supply fans.



5. Position a new filter into the base of the power supply.

   The filter is not directional, so it can be positioned with either side facing either direction.
6. Place one end of the filter retention clip into the power supply cabinet tab, and then carefully compress the filter retention clip to secure the opposite end into the cabinet tab on the opposite side.

Replace a Track Section

DANGER Completing any maintenance procedures with the SuperTrak electrically powered may result in serious injury or death. Lock out and tag out all electrical energy sources before part service or replacement.

See *Hazardous Energy* on page 34, and *Lockout and Tagout* on page 36.

NOTICE Replacing a track's head section is more complex than replacing other sections. The track's head section is the curved section that is connected to the control panel by an interconnect supplying digital power and communication. Contact the SuperTrak CONVEYANCE™ team if the section you are replacing is the track's head section so additional guidance can be provided.

See *SuperTrak HORIZON3™ and VERTICAL3™ Service* on page 97.

Replacing a section of track involves the following basic steps:

1. Identify the section to be replaced.
2. Acquire a new replacement section.
3. Disconnect the existing section from neighboring sections electrically and then mechanically.
4. Angle the existing section out from the track and then pull it out.
5. Remove the existing section.
6. Slide the replacement section into place in the track.
7. Connect the replacement section to the neighboring sections mechanically and then electrically.

These steps are detailed in more depth in the following pages.

Before Beginning

- Have the following tools available
  - Set of metric hex keys
  - Mallet
- Track sections are heavy. Two people are required to lift track sections. No special lifting tools or equipment is necessary. Keep the track sections level while they are being moved.
- Turn the SuperTrak power disconnect switch to the OFF position. Lock out and tag hazardous energy.

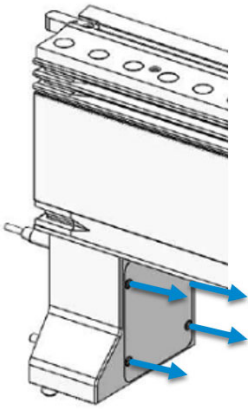
Remove the Existing Track Section

Refer to the diagrams of the Straight Section on page 30 *and Curved Section (180 Deg. 300mm)* on page 33 *as needed. Directional statements such as "left" and "right" are based on the perspective of a user looking at the track or the section from the outside of the track.*

1. Prepare the section for disconnection

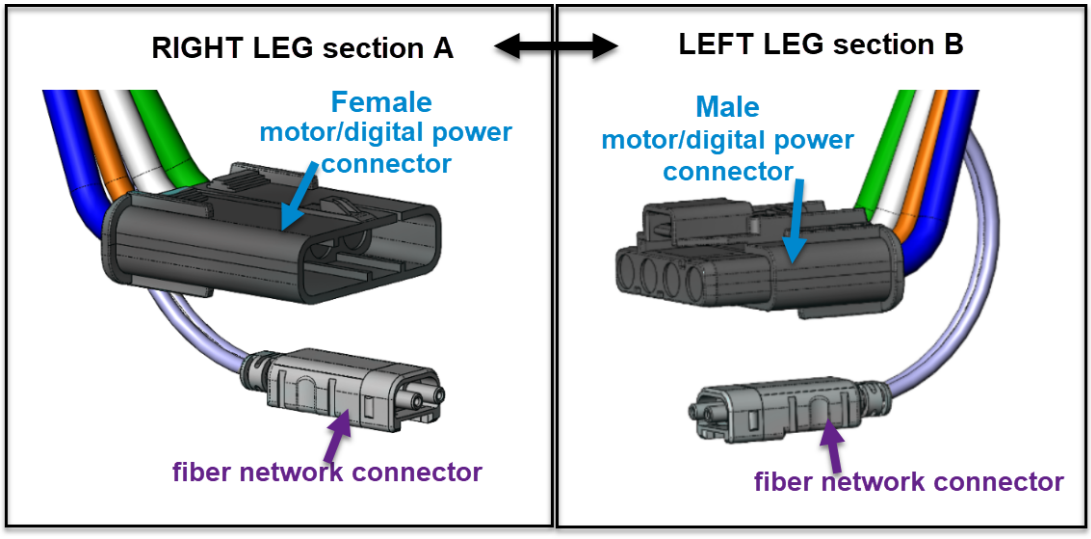
Remove the four M4 screws from the leg covers on the inside of each section leg. Remove the leg covers and set aside with screws to reinstall later.

The diagram at right shows the leg cover on the inside of the left leg, but also remove the leg cover on the inside of the section's right (other) leg and also on the adjacent legs of connecting sections.



2. Disconnect the electrical and fiber connections

Disconnect the power motor and digital power as well as the fiber network connections in the legs of the track section you are removing as well as in the adjacent legs of the connecting sections.

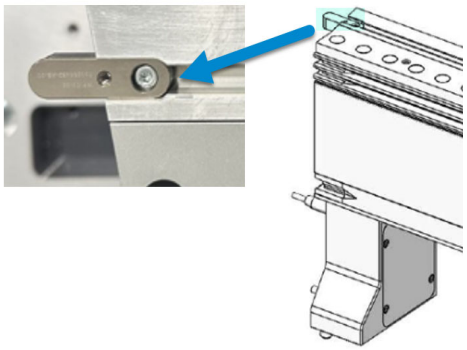


Note: The fiber network connector connects to the bulkhead in the left (anchor) legs of sections.

3. Disconnect the section mechanically

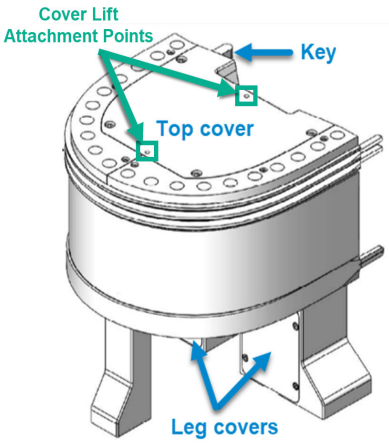
3A. In each pair of connected legs of the section you are replacing, remove the connection bolts (upper=M6, lower=M8) from the left leg of each section. Note the upper two bolts are inserted through hollow alignment pins. Leave the hollow alignment pins inserted at this point in the process.

3B. A key for alignment is located at the top of each track section above the left leg. Remove the key from the section you are replacing as well as the key from the section connected to the right. Remove the M4 screws and the keys and set them aside to reinstall later in the process.



If the section you are replacing connects to a curved section, remove the cover of the curved section to access the key. Remove the top cover by removing the four M6 bolts that secure each.

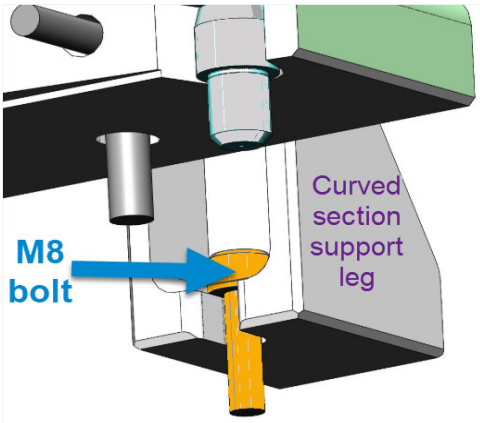
TIP: Partially thread two of the removed M6 bolts into the tapped cover lift attachment points so that the protruding parts of those bolts can be grasped for easy removal of the top cover.



3C. Now remove the hollow alignment pins that were not removed when the connecting bolts were taken out of the section legs in step 3A above.

3D. Remove the M10 anchor bolt and washer from the left (anchor) leg of the section you are replacing. This is the bolt that attaches the section to the track mounting base.

If you are replacing a curved section, the anchor leg contains an M10 bolt and washer, and the support leg contains an additional anchor bolt (M8 bolt and washer).



4. Move the existing section out from the track

Ensure all connections (mechanical and electrical) are disconnected as described above. Pull the section's right (floating) leg towards you in a direction away from the track. The fixed leg allows the floating leg to move out at an angle while the fixed leg stays in place.

Once the track is rotated out to approximately 25 degrees, slide the entire section out from the dowel pin so that none of the V-rails remain interlocked.

Be mindful of the V-rails between sections as you are pulling the floating side out as these can catch if they do not remain aligned.

Reminder: Two people are required to lift a straight section due to its weight.

Install the New Track Section

Installing a new section is essentially following the steps to remove a section but in reverse order, with a couple of exceptions. To install the new section, follow the steps listed below and refer to diagrams in the prior section as needed.

1. Prepare the section for insertion into the track

a. Remove leg covers from the new section.

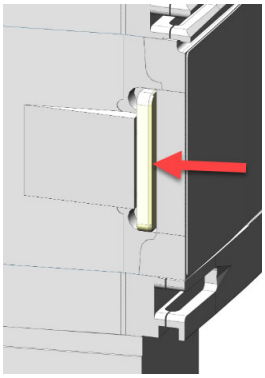
b. Remove the key at the top of the section above the left leg if it is installed on the section.

2. Move the new section into the track

a. Slide the section on the mounting base at an angle towards the section that will adjoin it to the left so the notch on the bottom of the replacement section's left (anchor) leg slides into the dowel on the mounting base. Make sure the V-rails of the adjoining sections align.

b. Remove the key at the top of the replacement section above the left leg if it is installed on the section.

Tip: The spring-loaded shunt on the left end of each section may prevent correct section alignment. When sections can't be brought to correct positioning, slide a thin flat tool (such as a putty knife) between the sections to press on the shunt perpendicularly to the front face of the motor.



3. Connect the track mechanically using alignment hardware and fasteners

a. Install both keys into the keyways on each side of the replacement section.

b. Insert the hollow alignment pins through the legs of the section and the adjoining sections' legs.

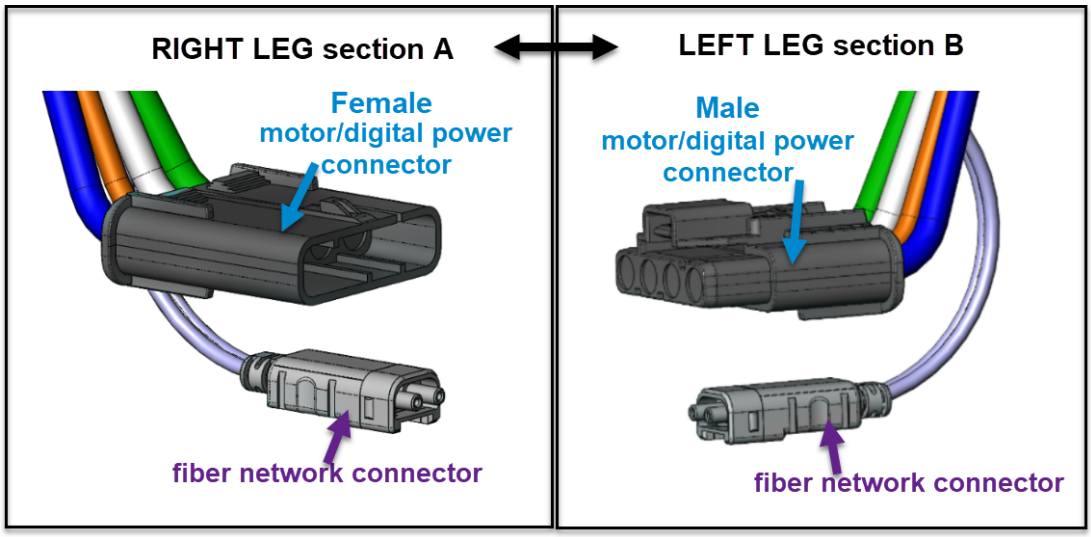
c. Place the anchor bolt(s) and washer(s) into the section's anchor leg(s) and into the mounting base, BUT DO NOT TIGHTEN.

d. Insert the four connection bolts through the legs to connect sections (the top two in each leg pair in go through the previously inserted hollow alignment pins); tighten the four bolts to mechanically connect the replacement section to its adjacent sections.

e. Go back to the anchor bolt(s) and tighten to secure the section to the mounting base.

4. Connect the electrical and fiber connections

Connect the motor/digital power between in both mechanically connected pairs of legs. Then connect the fiber network cables.



Note: The fiber network connector connects to the bulkhead in the left (anchor) legs of sections.

5. Reattach the leg plates and test the track

a. Reattach all leg plates that were removed.

b. Visually verify that the V-rails and flat rails of are aligned at where the sections join. Place a shuttle on the track and move the shuttle back and forth with your hand over the rails where the sections meet to ensure the transitions between sections are smooth.

c. After powering the track on, ensure a high-resolution calibration of the encoders is completed using TrakMaster. See *TrakMaster Help—Encoder Calibration* for more information

System Specifications

This section provides SuperTrak HORIZON3™ and VERTICAL3™ system specifications. Information in this section is for general reference and may be updated without notice. Be sure you are using the most current version of this user manual, which, along with component data sheets and design documents, can be found at https://supertrakconveyance.com/horizon3-technical-documents/ .

Performance

The SuperTrak is designed to meet the following optimal performance[1]:

Performance Description	Value
Maximum speed	4 m/s (13.1ft./s)
Acceleration	3G for a 1 kg (2.2 lb) payload
Payload	3 kg (6.6 lb) per shuttle
Stop repeatability - straight section	± 0.01 mm (0.00039 in.)
Stop repeatability - curved section	± 0.025 mm (0.001 in.)
Communication	EtherNet/IP, PROFINET, and EtherCAT[a]
Process on curve	Yes, full control
Collision avoidance	Built in
Servo update rate	1000 µs

a. Other protocols are possible. Contact ATS if other protocols are required.

[1]Performance does not include supplied product defects, operator error, operator training, or failure of services.

Environment Conditions

State	Specification	Track	Power Supply Value
Operation	Temperature (ambient)	5°C (41°F) to 55°C (131°F)	-20°C (-4°F) to 71°C (159.8°F)
	Humidity (relative)	5% to 85% non-condensing	20% to 90%
Storage	Temperature (ambient)	-25°C (-13°F) to 55°C (131°F)	-20°C (-4°F) to 75°C (167°F)
	Humidity (relative)	5% to 95% non-condensing	20% to 90%
Transport	Temperature (ambient)	-25°C (-13°F) to 70°C (158°F)	-20°C (-4°F) to 75°C (167°F)
	Humidity (relative)	Max.95% at 40°C (104°F)	20% to 90%

Electrical Specifications

Service	Specification	Value
Power supply	Mains configuration	1 phase x 200-240VAC 50/60 Hz Grounding: TN
	Degree of contamination	Pollution degree 2 environments
	Over-voltage capacity	II
	IP protection	IP20
	NEMA protection	NEMA type 1
	Maximum installation altitude	2000 m (6561.6 ft.)
	Input rating	1 phase x 200-240VAC 50/60 Hz
	Output rating	48VDC 1500W
	Circuit breaker	10 A UL489 breaker
	Terminal connection cross-section	Connect as per local requirements for 10A
Track--Straight Section	Input rating	48VDC 100A peak
	Output rating	Force of up to 150N/shuttle
	Fuses/circuit breaker	30A fuses
	Terminal connection cross-section	10 mm^2 cables terminated with a wire lug
	Permitted mounting orientations	Horizontal upright
Track--Curved Section	Input rating	48VDC 100A peak
	Output rating	Force of up to 150N/shuttle
	Fuses/circuit breaker	30A fuses
	Terminal connection cross-section	10 mm^2 cables terminated with a wire lug
	Permitted mounting orientations	Horizontal upright

Electrical Services

Service	Specification	Value
Control panel	Line voltage	208Y120VAC+PE Or 400Y230VAC+PE
	Frequency	50/60 Hz
	Phases	3 ph, 5-wire
	Short circuit current rating	5kA
	Largest load	10A
	Control voltage	24VDC (digital power supplied from the control panel) 48VDC (motor power supplied from the power supplies)
	Full load amps	30A
Buffer module (located inside the control panel)	Line voltage	24VDC
	Frequency	50/60 Hz
	Current rating	15A

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Glossary

This section contains an alphabetized list of terms and acronyms that may be used in this document.

Term	Definition
ATS	ATS Corporation, the parent company of SuperTrak CONVEYANCE™.
Buffer module	An electrical device that provides digital power (24V DC) to another device for a short time when the main source of electrical power is turned OFF. (may also be referred to as a UPS)
Bus board	A capacitor bank that filters out spikes or ripples in the electrical supply to provide smooth DC voltage. A bus board is mounted behind each linear motor.
Cell	Two (2) or more stations that are grouped together. Typically, a cell can function independently of other cells. In some cases, cells are connected by a global emergency stop.
Component	Typically, the smallest and most detailed level of the SuperTrak; for example; a single piece of tooling, a sensor, or a cylinder.
Control interface	A protocol that provides isolated bi-directional communication from the SuperTrak controller to local cell controllers. This protocol is executed over one of the supported fieldbus network.
Control panel power disconnect switch	Provides a disconnect means that the facility or integrator may use as part of a local isolation plan and/or logout-tagout protocol. Documentation may refer to it as “SuperTrak control panel power disconnect switch.”
Curved section	A portion of the track where shuttles move on an arc between straight sections. May also be referred to as an e-turn or a 180 deg. (300mm) section.
Cycle	The complete sequence of steps that a device performs to complete a task.
Cycle time	The time a device takes to complete a sequence of operations once.
Device	Two (2) or more components that are grouped together to complete a single function. A device can be controlled by software to move through a sequence of steps; for example; a conveyor or lift tooling.
Disable	Prevent a device from operating through software or by removing power.
Disconnect	To interrupt or terminate a connection.
Enable	Allow a device to operate through software or by connecting power.
Encoder	A position sensor that continuously monitors shuttle positions.
Gateway network	An ATS proprietary network, implemented using standard Ethernet cables; however, it is not Ethernet and should not be connected to Ethernet devices. It connects an array of Gateway boards to the controller.
Guarding	A protective barrier surrounding automated equipment to prevent access to moving devices and to guard users from potentially hazardous conditions.

Term	Definition
Head section	The SuperTrak track's head section is the curved section that is connected to the control panel by an interconnect supplying digital power and communication. The section designated as the head section is the digital power entry point. A track will only have one head section.
Lockout	The placement of a locking device (such as a padlock) on an energy isolating device, in accordance with an established procedure, to make sure that the energy isolating device and the equipment being controlled cannot be operated until the locking device is removed. Used in combination with tagout.
Main power disconnect switch	The disconnect provided by the systems integrator to safely disconnect power for the entire machine (including the integrated SuperTrak Control panel). This is also known as a "machine supply circuit disconnect."
Pallet	A shuttle may also be referred to as a pallet. See definition of "shuttle" below.
Payload	The total mass of the parts and tooling added to the base shuttle. (The mass of the base shuttle is not included in the payload.)
PLC	Programmable Logic Controller An electronic processor that contains the programmable code for controlling system operation, device operating sequences, fault recovery, and data processing.
Shuttle	A movable base on which parts can be placed. A shuttle can be partitioned to hold more than one part. A shuttle may also be referred to as a pallet.
Station	Two (2) or more devices that work together to complete a task. For example; a shuttle stop on a conveyor and all the devices responsible for working on the contents of the shuttle.
Straight section	A portion of the track where shuttles move in a linear direction.
System	References the automation machine that the SuperTrak is integrated with.
Tagout	The placement of a durable tag on an energy isolating device, in accordance with established procedure, to identify the person who placed a lock on the device. Equipment being controlled by the energy isolating device must not be operated until the lock and tag have been removed. Used in combination with lockout.
Target	A location on the SuperTrak that can be set as a shuttle destination. A SuperTrak can have up to 255 configured targets, each located anywhere on the system.
Thermistor (motor thermistor)	A motor thermistor is a temperature sensor that is used to monitor the temperature of the linear motor.
Track	When used in the context of specifications, the term "track" refers to the basis of the conveyor itself, including the motors and the rails (and not including the shuttles, power supply, control panel, or skirting).
TrakMaster	Software that provides configuration, programming, diagnostics and control over a supervisory data network. TrakMaster communicates over Ethernet. TrakMaster is not required to operate SuperTrak; however, it is useful for troubleshooting and configuring the device.

SuperTrak HORIZON3™ and VERTICAL3™ Service

This section describes how to contact the SuperTrak CONVEYANCE™ team for customer assistance.

Contact the SuperTrak CONVEYANCE™ Team

Please contact the SuperTrak CONVEYANCE™ team for assistance, questions or comments regarding the operation or maintenance of your equipment.

The SuperTrak CONVEYANCE™ Team

1 Natura Way

Cambridge, ON, N3C 0A4, Canada

Tel: 519-653-6500

Fax: 519-650-6538

Email: *support@supertrakconveyance.com*

Website: *www.supertrakconveyance.com*

Regular business hours are 8:30 am to 5:00 pm EST, Monday through Friday. Emergency support hours are weekends, holidays, and 5:30 pm to 8:00 am EST weekdays.

Emergency Support Tel: 519-653-3060

Return a Part to the SuperTrak CONVEYANCE™ Team for Warranty

If your spare parts inventory does not contain a replacement part for a failed SuperTrak part, you can purchase a replacement part from the SuperTrak CONVEYANCE™ team.

1. Contact the SuperTrak CONVEYANCE™ team with the following information:
   - Part number
   - Part description
   - A brief description of the failure.
2. The SuperTrak CONVEYANCE™ team will send you a RMA request form which you complete and return to product support.
3. SuperTrak CONVEYANCE™ Product Support reviews the form and determines if the part is in warranty.

4. SuperTrak CONVEYANCE™ Product Support provides you with a return material authorization (RMA) number.
5. Courier your defective part to SuperTrak CONVEYANCE™ Product Support. A tracking number is recommended. Make sure the RMA number is on the outside of the package.
6. When SuperTrak CONVEYANCE™ Product Support receives the defective part, one (1) of the following is done:
    - For parts manufactured by the SuperTrak CONVEYANCE™ team, the SuperTrak CONVEYANCE™ team directly validates the warranty by repairing or replacing the part. Proceed to step 7.
    - For purchased parts (for example; motors, or amplifiers), SuperTrak CONVEYANCE™ Product Support sends the defective part to the original manufacturer. The original manufacturer validates the warranty and repairs or replaces the part at their discretion.

    Be aware that some manufacturers require a purchase order (PO) to test returned parts. If a PO is required, SuperTrak CONVEYANCE™ Product Support will contact you for a PO before additional action is taken.
7. Depending on the original manufacturer response, SuperTrak CONVEYANCE™ Product Support contacts you with a list of options:
    - The defective part is repaired or replaced under warranty. Freight is the responsibility of the customer.
    - The defective part is not covered under warranty, but it can be repaired with a PO. SuperTrak CONVEYANCE™ Product Support provides a quote for part repair.
    - The defective part is not covered under warranty, and it can not be repaired. SuperTrak CONVEYANCE™ Product Support provides a quote for part replacement and discards the defective part unless otherwise directed.
8. When SuperTrak CONVEYANCE™ Product Support receives the replacement part from the manufacturer, SuperTrak CONVEYANCE™ Product Support sends the replacement part back to the original sender unless otherwise directed.
9. SuperTrak CONVEYANCE™ Product Support closes the RMA.

Request Service from the SuperTrak CONVEYANCE™ Team

Contact SuperTrak CONVEYANCE™ Product Support if service is required on your SuperTrak. Please have the following information available when you call:

- Company name
- Contact name
- Contact number
- Project number (if applicable): See the electrical panel, or front cover of this manual for the project number.
- Technical description of the problem
- Purchase order number

Spare Parts

Spare part information is located on the SuperTrak CONVEYANCE™ website at https://supertrakconveyance.com/stc-spare-parts/ or, for a spare parts list specific to your SuperTrak, contact us at spares@supertrakconveyance.com .

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