

U-S SAFETY TROLLEY

Product Selection Guide



SPECS & INTRODUCTION

Introduction

In the 1960's, traditional wiring methods used in the mobile electrification applications were unsafe, and the cause of numerous injuries and fatalities. The company recognized the need to bring safety to the overhead crane electrification industry and related electrical equipment by envisioning a safe, unique, and more reliable mobile electrification design: U-S Safety Trolley.

After 50 years, electrical joints in mobile electrification systems continue to be the number one cause of crane failure, high maintenance costs, and costly downtime. To reduce these threats, all four U-S Safety Trolley system solutions – SpanGuard share a unique, innovative design with an insulated, jointless continuous conductor bar which enables seamless mobile electrification to today's industrial and manufacturing sectors.

The following, all-inclusive Product Selector Guide was developed to assist end users and integrators to become familiar with all U-S Safety Trolley system components, and to understand the application that best suits their needs. However, if you require any assistance please contact us at **(570) 948-2627**. We will be happy to help you or schedule a visit with one of our local representatives.

Lastly, please keep in mind that this is a working document. U-S Safety Trolley reserves the right to update its information at any given time. To download the latest version of this guide, please visit our website or go to <http://www.spanguard.net>

We invite you to learn more about our strong commitment to developing innovative products, and how we can deliver safe, reliable power to your facility.

Thank you for choosing U-S Safety Trolley as your mobile electrification solution.

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SYSTEM SIZING

System Sizing Calculation

Calculation of motor loads can be found in NEC 610.14(E). Below are two examples of sizing the system to your crane loads:

1. For a single crane operating on its own conductor system, use the nameplate full-load ampere rating of the largest motor or group of motors for any single crane function, plus 50% of the nameplate full-load ampere rating of the next largest motor or group of motors.

Example:
 Hoist = 75A x 1 = 75A
 Bridge = 30A x .5 = 15A
 Total = 90A

2. For multiple cranes operating on the same conductor system, use the same method for a single crane for each crane. Add the results and multiply by the appropriate demand factor from Table 610.14(E).

Example:

Crane #1
 Hoist = 75A x 1 = 75A
 Bridge = 30A x .5 = 15A
 Total = 90A

Crane #2
 Hoist = 37A x 1 = 37A
 Bridge = 22A x .5 = 11A
 Total = 48A

Total for both cranes = 138A
 Demand Factor for 2 cranes = 0.95
 Total amperage required = 131.1A

TABLE 610.14(E)	
Number of Cranes or Hoists	Demand Factor
2	0.95
3	0.91
4	0.87
5	0.84
6	0.81
7	0.78

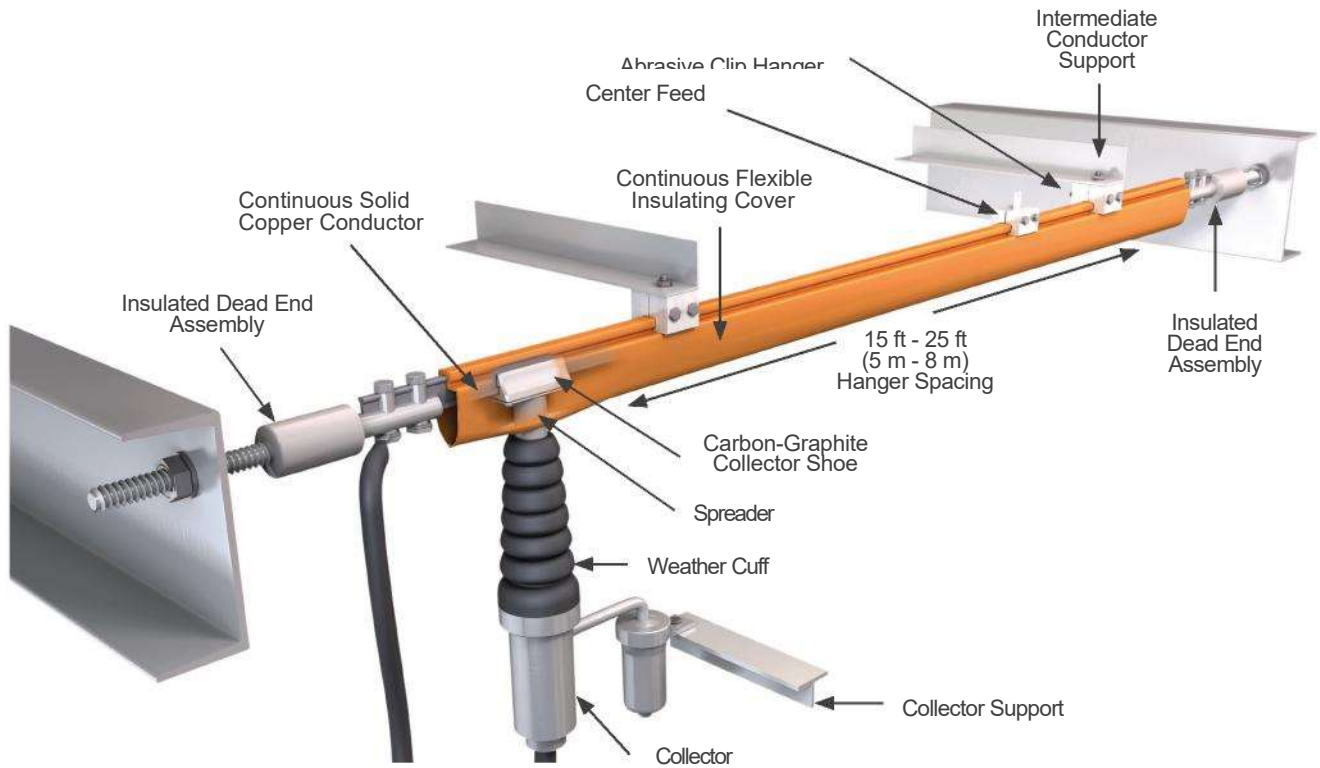
Span-Guard Duty Cycle Rating

250A System		Duty Cycle (%)			
Temp	100%	80%	60%	40%	20%
25	200	295	335	425	585
35	150	265	310	365	545
45	85	225	260	310	450
55		165	200	240	340

520A System		Duty Cycle (%)			
Temp	100%	80%	60%	40%	20%
25	330	490	585	690	960
35	240	430	500	600	855
45	125	380	425	495	740
55		280	330	400	560

These tables provide general performance data for Span-Guard systems based on various duty cycles. For any technical questions related to specific applications, please contact our application engineering department.

SYSTEM LAYOUT DRAWING



100, 200, 300 & 400 Amp Collector

Spring-loaded collectors use a carbon-graphite shoe, making them more reliable and less costly to maintain than wheel-based trolley systems. The collectors automatically compensate for vertical and horizontal misalignments between the trolley electrification bars and the crane runway.



CONDUCTOR/COVER



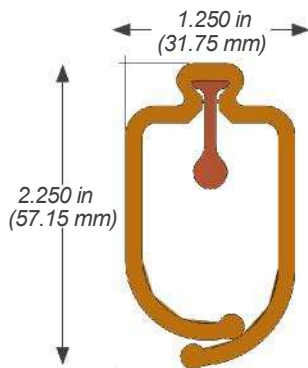
250A-SPNG-STD

Span-Guard consists of a flexible, extruded cover and copper conductor. The flexible cover acts as an insulator to prevent the end user from contact with any live conductors. Span-Guard has a range of ratings, from 250A to 520A at 600V AC/DC and can handle a wide range of temperatures. The cover and conductor can be supplied in continuous lengths up to 2000 ft (610 m) long.

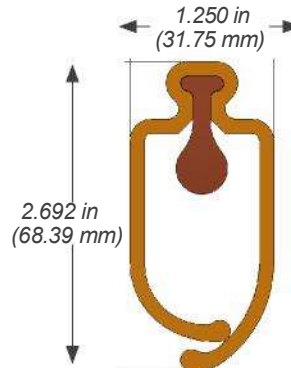
CONDUCTOR AND FLEXIBLE COVER

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
250A-SPNG-STD	250 Amp – Solid Copper with Pre-Assembled Cover	1 ft (0.3 m)	0.7 lbs (0.30 kg)
250A-SPNG-LT	250 Amp – Solid Copper with Pre-Assembled Low Temperature Cover	1 ft (0.3 m)	0.7 lbs (0.30 kg)
250A-COPPER	250 Amp – Solid Copper – Conductor Only	1 ft (0.3 m)	0.5 lbs (0.23 kg)
250A-COVER-STD	250 Amp - Standard Cover Only	1 ft (0.3 m)	0.2 lbs (0.09 kg)
250A-COVER-LT	250 Amp - Low Temperature Cover Only	1 ft (0.3 m)	0.2 lbs (0.09 kg)
520A-SPNG-STD	520 Amp – Solid Copper with Pre-Assembled Cover	1 ft (0.3 m)	1.5 lbs (0.68 kg)
520A-SPNG-LT	520 Amp – Solid Copper with Pre-Assembled Low Temperature Cover	1 ft (0.3 m)	1.5 lbs (0.68 kg)
520A-COPPER	520 Amp – Solid Copper – Conductor Only	1 ft (0.3 m)	1.1 lbs (0.50 kg)
520A-COVER-STD	520 Amp - Standard Cover Only	1 ft (0.3 m)	0.4 lbs (0.18 kg)
520A-COVER-LT	520 Amp - Low Temperature Cover Only	1 ft (0.3 m)	0.4 lbs (0.18 kg)

Low Temperature (LT) is rated from -30°F (-34°C) to 131°F (55°C). LT is also recommended where mild acids are present.



250A Conductor



520A Conductor

DEAD END ASSEMBLY/FEEDS



DE-250



DE-520

The Dead End Assembly begins and ends each run of Span-Guard. The copper conductor is inserted into the Dead End and clamped using the (2) u-bolts supplied. The Dead End Assembly allows for safe mounting and it is used for final tensioning of the system. For harsh or acidic environments, stainless steel options are available.

INSULATED DEAD END ASSEMBLY

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
DE-250	250 Amp Conductor Dead End Assembly	ea	1.5 lbs (0.68 kg)
DE-250SS	250 Amp Conductor Dead End Assembly Stainless Steel	ea	1.5 lbs (0.68 kg)
DE-520	520 Amp Conductor Dead End Assembly	ea	4.0 lbs (1.8 kg)
DE-520SS	520 Amp Conductor Dead End Assembly Stainless Steel	ea	4.0 lbs (1.8 kg)



CF-250



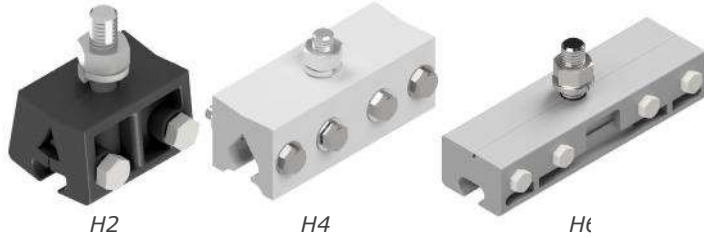
CF-520

Center Feeds provide power to each Span-Guard run and can be installed anywhere on the run. The feeds consist of a copper lug, insulated cover and shrink tube to insulate the copper stab after installation of the supply cable.

CENTER FEED

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
CF-250	250 Amp Conductor Center Feed	ea	0.6 lbs (0.27 kg)
CF-250SS	250 Amp Conductor Center Feed Stainless Steel	ea	0.6 lbs (0.27 kg)
CF-520	520 Amp Conductor Center Feed	ea	1.0 lbs (0.45 kg)
CF-520SS	520 Amp Conductor Center Feed Stainless Steel	ea	1.0 lbs (0.45 kg)

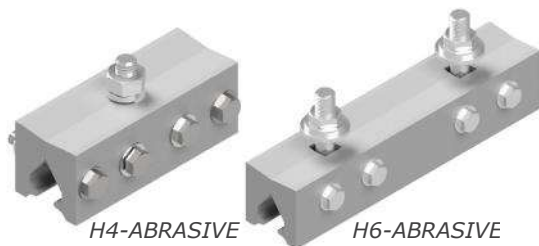
HANGERS



The insulated hangers' unique design is meant to grip but not squeeze the conductor and cover in order to allow for thermal expansion. This design eliminates the need for any expansion zones. Hangers should be utilized at every support, roughly every 15 to 25 ft (5 to 8 m). H2 and H4 hangers use a 3/8-16 bolt for mounting to supports, while the H6 uses a 1/2-13 bolt. For areas where harsh chemicals may come in contact with the system, acidic environment hangers are available.

INSULATED HANGER

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
H2	250 Amp Conductor Hanger	ea	0.3 lbs (0.14 kg)
H2SS	250 Amp Conductor Stainless Steel Hardware ! Acid Atmosphere	ea	0.3 lbs (0.14 kg)
H2SS-G ND	250 Amp Conductor Stainless Steel Hardware ! Acid Atmosphere ! Green Color	ea	0.3 lbs (0.14 kg)
H4	250 Amp Conductor Hanger	ea	0.5 lbs (0.23 kg)
H6	520 Amp Conductor Hanger	ea	0.7 lbs (0.32 kg)
H6SS	520 Amp Conductor Stainless Steel Hardware ! Acid Atmosphere	ea	0.7 lbs (0.32 kg)
H6SS-G ND	520 Amp Conductor Stainless Steel Hardware ! Acid Atmosphere (Green)	ea	0.7 lbs (0.32 kg)
WIND CLIP	250 Amp!520 Amp Wind Clip	ea	0.2 lbs (0.09 kg)



Abrasive hangers are mounted where the crane or equipment travels the most. The purpose of these hangers is to file the top of the collector shoe as it wears, to insure the collector rides smoothly along the conductor rail.

ABRASIVE HANGER

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
H4-ABRASIVE	250 Amp Conductor Abrasive Hanger	ea	0.3 lbs (0.14 kg)
H4SS-ABRASIVE	250 Amp Conductor Abrasive Hanger Stainless Steel	ea	0.3 lbs (0.14 kg)
H6-ABRASIVE	520 Amp Conductor Abrasive Hanger	ea	0.5 lbs (0.23 kg)
H6SS-ABRASIVE	520 Amp Conductor Abrasive Hanger Stainless Steel	ea	0.5 lbs (0.23 kg)
1098	Replacement clip for the H4/H4SS-ABRASIVE Hanger	ea	0.1 lbs (0.06 kg)
2045	Replacement clip for the H6/H6SS-ABRASIVE Hanger	ea	0.1 lbs (0.06 kg)

COLLECTOR AND COLLECTOR SHOES

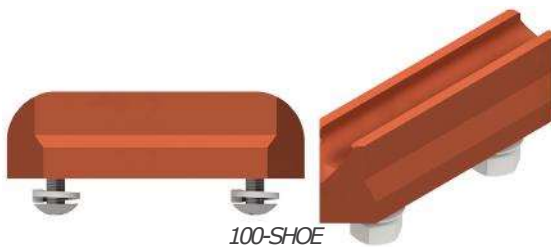


Collectors pick up power from each of the Span-Guard runs and deliver it to the moving equipment. The collectors are spring loaded and can travel 6 in (152 mm) vertically or horizontally to make up for any misalignment and easy installation. All collectors come standard with a 20 in (508 mm) cord, with custom lengths available upon request. Options for stainless steel are also available.

COLLECTOR

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
C100-WC1	100 Amp Collector – Use with 250 Amp Conductor	ea	3.0 lbs (1.4 kg)
C100SS-WC1	100 Amp Collector – Stainless Steel, Use with 250 Amp Conductor	ea	3.0 lbs (1.4 kg)
C100HSS-WC1	100 Amp Collector – Stainless Steel, Heated Collector, Use with 250 Amp Conductor	ea	3.2 lbs (1.5 kg)
C200-WC1	200 Amp Collector – Use with 250 Amp Conductor	ea	3.2 lbs (1.5 kg)
C200SS-WC1	200 Amp Collector – Stainless Steel, Use with 250 Amp Conductor	ea	3.2 lbs (1.5 kg)
C300-WC2	300 Amp Collector - Use with 520 Amp Conductor	ea	7.6 lbs (3.4 kg)
C300SS-WC2	300 Amp Collector - Stainless Steel, Use with 520 Amp Conductor	ea	7.6 lbs (3.4 kg)
C400-WC2	400 Amp Collector – Use with 520 Amp Conductor	ea	7.8 lbs (3.5 kg)
C400SS-WC2	400 Amp Collector - Stainless Steel, Use with 520 Amp Conductor	ea	7.8 lbs (3.5 kg)

For custom barrel and arm lengths, consult with the factory.



Collector Shoes come pre-installed on Span-Guard Collectors, but can also be ordered separately as replacement shoes. The shoes ride back and forth along the conductor to transfer electricity from the conductor to the equipment below. Shoes are made of copper/graphite and require no lubricant.

COLLECTOR SHOE

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
100-SHOE	100 Amp Collector Shoe - Use with 250 Amp Conductor	ea	0.25 lbs (0.11 kg)
100-SHOE-HEATED	100 Amp Collector Shoe - Heated - Use with 250 Amp Conductor	ea	0.35 lbs (0.16 kg)
200-SHOE	200 Amp Collector Shoe - Use with 250 Amp Conductor	ea	0.35 lbs (0.16 kg)
400-SHOE	300/400 Amp Collector Shoe - Use with 520 Amp Conductor	ea	0.70 lbs (0.32 kg)

SUPPORTS

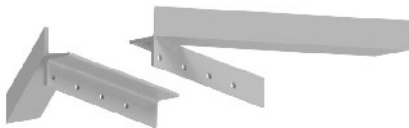


INT-SPT-250

Intermediate Supports are predrilled from the factory to accommodate proper spacing for the conductors. The supports are to be welded in place every 15 to 25 ft (5 to 8 m) for proper support of the Span-Guard system.

INTERMEDIATE CONDUCTOR SUPPORT

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
I NT-SPT-250	250 Amp Conductor Intermediate Conductor Support	ea	2.4 lbs (1.1 kg)
I NT-SPT-520	520 Amp Conductor Intermediate Conductor Support	ea	3.7 lbs (1.7 kg)



END-SPT-250

End Supports are predrilled from the factory to accommodate proper spacing for the conductors, and should be installed at both ends of a run of Span-Guard. End Supports are supplied as a pair (2 come with each order), and are welded in place.

END SUPPORT

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
END-SPT-250	250 Amp Conductor End Support	pair	25 lbs (11 kg)
END-SPT-520	520 Amp Conductor End Support	pair	40 lbs (18 kg)

DEPOSIT ITEMS

***Deposit items are for temporary use only and can be returned to the factory for a full refund.*



PULLEY

Pulleys are used for installation only and are mounted on the outer hole of each intermediate support. The pulleys help guide the Span-Guard during the installation process and are taken down once installation is complete.

****INSTALLATION CABLE PULLEY**

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
PULLEY	Span-Guard Installation Pulley	ea	3.5 lbs (1.6 kg)



HTK-1

The heating tool kit is used to splice two pieces of cover together. The two cover ends are pressed against each side of the heating element, and then vulcanized together to create one continuous piece.

****HEATING TOOL**

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
HTK-1	Heating Tool Kit	ea	2.4 lbs (1.1 kg)



GRIP

The cable grip is used to hold and grip the Span-Guard while tensioning the system.

****CABLE GRIP**

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
GRIP	Cable Grip	ea	2.6 lbs (1.2 kg)

DEPOSIT ITEMS/SYSTEM MODIFICATIONS

***Deposit items are for temporary use only and can be returned to the factory for a full refund.*



A reel is provided for easy shipment and installation.

****REEL (SHIPPING)**

CATALOG NUMBER	REEL CAPACITY		UNIT	WEIGHT
	250 Amp Conductor and Cover Length	520 Amp Conductor and Cover Length		
REEL-20 (20" Reel)	0-1200 ft (0-365 m)	0-900 ft (0-274 m)	ea	200 lbs (91 kg)
REEL-30 (30" Reel)	1201-1800 ft (366-549 m)	901-1300 ft (275-396 m)	ea	260 lbs (118 kg)



Splice joints are utilized to extend an existing runway, repairs, or to create a maintenance isolated zone. They join two pieces of conductor/cover together to form one continuous piece. Typically used where systems exceeds 2000 ft (610 m).

SPLICE JOINT

CATALOG NUMBER	PRODUCT DESCRIPTION	UNIT	WEIGHT
SJ-250	250 Amp Conductor Splice Joint	ea	1.6 lbs (0.73 kg)
SJ-500	520 Amp Conductor Splice Joint	ea	1.7 lbs (0.77 kg)
H7DEA-250	250 Amp Conductor for Isolation or Maintenance Bays	ea	2 lbs (0.90 kg)
H7DEA-520	520 Amp Conductor for Isolation or Maintenance Bays	ea	2 lbs (0.90 kg)

U-S SAFETY TROLLEY SERVICES

U-S SAFETY TROLLEY TECHNICAL SERVICES

Startup and System Certification

Our factory trained and certified technicians will inspect and validate each installation confirming our high factory standards, ensuring its ongoing reliability and compliance with facility safety requirements of CMAA (Crane Manufacturer's Association of America). Upon successful certification, the product's manufacturer's warranty will be extended by one year.

Engineering Studies

Our Professional Engineers will provide comprehensive facility electrical studies and recommend corrective actions, confirming your systems reliability and compliance with government and safety requirements. Engineering studies advocates compliance to NFPA 70E not only for work safety, but also equipment productivity. An arc flash accident can render equipment unusable and place the facility in a costly downtime mode. Basic compliance is established through conducting an Arc Flash Risk Analysis.

On-Site Installation Support

Our factory trained and certified technicians will provide comprehensive on-site installation support to ensure your project's success. On-site support aims to speed up your installation process and eliminate the learning curve associated with new products.

On-Site Product Training

Our factory trained and certified technicians will provide a comprehensive system training course curriculum confirming our high factory standards while ensuring the products ongoing reliability and compliance with facility safety requirements and teach how to safely operate and maintain U-S Safety Trolley products.

Extended Warranty

Ensure that your equipment investment is always covered. Select from an Extended Factory Warranty or Enhanced Service Plans to meet your organizational requirements.

Choice of Extended Warranty or Enhanced Service Plans	Extended Warranty 1 Year	Enhanced Service Plan 2, 4, 6, 8, 10 Years
24/7 emergency technical support hotline	X	X
Repair or replacement of defective parts throughout life of service agreement	X	X
One (1) scheduled preventative maintenance site visit every 2nd year		X
Inspection of all collectors		X
Comprehensive inspection of entire Trolley electrification system		X
Summary test reports and documentation		X
Free replacement of consumable parts at time of visit		X
Consumable parts offered at discounted rates	X	
On-site support to repair or replace damaged conductors		X
Inspection and replacement of worn abrasive clips (if applicable)		X
Retorque all end connections to manufacturers specifications		X
Cleaning of all system conductors and insulator via abrasive shoe		X

Starline, the manufacturer of U-S Safety Trolley, has been a leader in power distribution since 1924. The company's founders led the way for many new technologies in the power distribution equipment industry. Today, this family tradition of innovation continues to pave the way for safer, more innovative and more reliable electrical power distribution systems. Visit www.SpanGuard.net for your flexible power solutions.



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