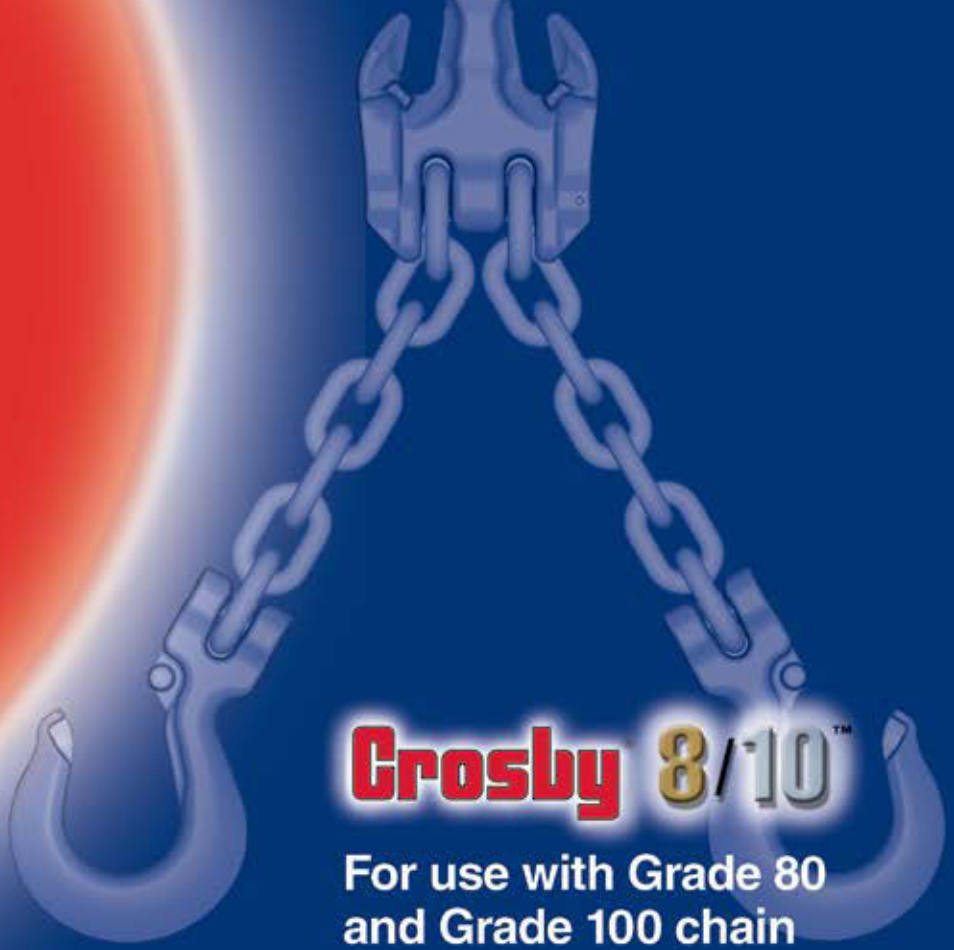
CROSBY ELIMINATOR®

From the Crosby® group

Two Fittings Multiple Possibilities



Crosby 8/10™

For use with Grade 80 and Grade 100 chain

Crosby Products Distributed by:

English Imperial

Crosby ELIMINATOR®

Taking the Best and Making it Better!

The **Crosby ELIMINATOR®** is a Grade 100 alloy steel chain sling fitting designed for overhead lifting. The **Crosby ELIMINATOR®** combines selected features and functionality of a master link, connecting link, grab hook and adjuster legs to provide you one fitting that is suitable for applications that require an adjustable length chain sling.

The **Crosby ELIMINATOR®** can also be used with Grade 80 alloy steel chain and fittings.

NOTE: When doing so, the sling must be rated at Grade 80 working load limits.

Table of Contents

Crosby ELIMINATOR®

Innovative Design

The Crosby **ELIMINATOR®** is the result of extensive designing and testing by Crosby's engineering department. Utilizing the capabilities of our state-of-the-art ProENGINEER® software, our engineers were able to model and perform stress analysis of anticipated loading conditions to optimize the product design.

- Chain shorteners are "built-in", eliminating the need for additional legs of chain and components.
- Chain shortener pockets are designed to provide 100% efficiency of chain strength when adjusting the sling's length.
- Traditional adjustable slings must be de-rated 20%; this isn't necessary with the Crosby **ELIMINATOR®**.
- The Crosby **ELIMINATOR®** is a two-piece system for maximum flexibility and compatibility.
- Equipped with Crosby RFID techology for enhanced inspection processing.

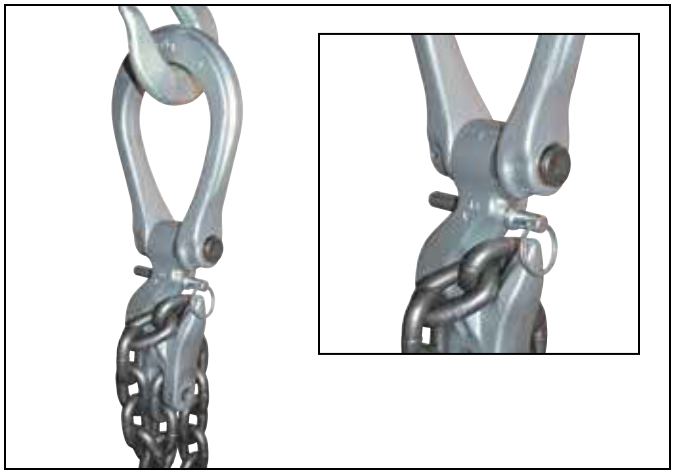
Adjusted A-1361
*Crosby **ELIMINATOR®***

Adjusted A-1362
*Crosby **ELIMINATOR®***

The Crosby **ELIMINATOR®** can be used "as-is", or your authorized Crosby distributor can assemble it onto a larger master link to accommodate larger crane hooks.

Crosby ELIMINATOR® attached to A-1342 master link for use with multiple leg slings or for use with large hooks

Engineered to accommodate optional latch pin that can be inserted to keep the shortened chain legs in place under slack conditions.



Platinum color quickly identifies the Crosby **ELIMINATOR®** as a Spectrum 10 component with Grade 100 Working Load Limits.

Crosby ELIMINATOR®

Fewer Components

As the name implies, the primary advantage of the Crosby **ELIMINATOR®** system over traditional adjustable length chain slings is that it has eliminated many of the required fittings, thus reducing the complexity of the sling. The following photos and table provide you the potential reduction of fittings you can expect.

Traditional chain sling rigging

*Crosby **ELIMINATOR®** rigging*

Potential Chain Fitting Reduction Table			
Number of Legs	Adjustable Sling Type		% Reduction
	Traditional	Crosby ELIMINATOR®	
1	5	2	60%
2	9	3	67%
3	13	6	54%
4	17	7	59%

Lighter Weight

By eliminating chain and components, the weight of the Crosby **ELIMINATOR®** system has been reduced by up to 15% when compared to traditional chain slings.

- A traditional 3/8" x 10' AQOS (four leg sling with chain shortener) weighs 25.6 pounds (less chain). A Crosby **ELIMINATOR®** quad leg sling with master link and sling hooks (EQOS) 3/8" x 10' weighs 22 pounds, 14% lighter than the "traditional" method.
- This weight difference becomes even more pronounced if comparing a Crosby **ELIMINATOR®** sling with a traditional Grade 80 adjustable sling.

Easier To Inspect

With far fewer components, slings fabricated utilizing the Crosby **ELIMINATOR®** system can be more easily inspected for potential "removal from service" conditions specified in ASME B30.9 and ASME B30.10.

- Less crowding of the master link makes it easier to examine all surfaces of all components for signs of wear.
- Fewer components allow a Crosby **ELIMINATOR®** sling to be inspected faster than traditional adjustable slings.

Contains Patented Crosby QUIC-CHECK® Markings

The A-1361 (Single leg) and the A-1362 (Double leg) Crosby **ELIMINATOR®** fittings incorporate markings forged into the bail which address the following Crosby **QUIC-CHECK®** feature:

Deformation Indicators – Two strategically placed marks, one on each side of the bail, which allow for a **QUIC-CHECK®** measurement to determine if the bail dimensions have changed, thus indicating abuse or overload.

QUIC-CHECK®

To check, use a measuring device (i.e., tape measure) to measure the distance between the marks. The marks should align to either an inch or half-inch increment on the measuring device. If the measurement does not meet this criteria, the Crosby **ELIMINATOR®** should be inspected further for possible damage.

Crosby ELIMINATOR®

Crosby 8/10™ Fatigue Rated® "QT" QUENCHED & TEMPERED® QUIC-CHECK® Q®

Uses Standard Crosby Grade 8/10™ Bottom Fittings

Although the Crosby **ELIMINATOR®** has changed the configuration of the upper portion of the sling, you can still utilize the Crosby 8/10™ fittings on the bottom of the sling (see page 6).

In addition, Crosby Grade 8 (80) fittings can also be used on the bottom of a Crosby **ELIMINATOR®** sling system. When using Grade 80 components on a Crosby **ELIMINATOR®** system, the sling must be rated at Grade 80 working load limits.

All the Quality You Expect from Crosby

The performance properties you have come to expect from other Crosby forged products are available with all Crosby 8/10™ chain fittings, as well as the new Crosby **ELIMINATOR®**.

- Working Load Limit (meets industry standards)
- Ductility (allows product to deform when overloaded)
- Toughness (resistance to crack initiation and growth at all temperatures)
- Fatigue (ability to withstand repeated applications of the load)

The Crosby **ELIMINATOR®** fittings, as well as all other Crosby Grade 8/10™ chain fittings, are fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.

In addition, all Crosby fittings contain a Product Identification Code (PIC). The PIC is used to maintain material control from the steel mill, to receipt at our plant, to verification, and throughout the manufacturing process.

A-1361
Crosby ELIMINATOR®
Single Assembly

A-1362
Crosby ELIMINATOR®
Double Assembly

A-1337
LOK-A-LOY®

A-1338
Cradle Grab Hook

A-1339
Clevis Sling Hook

S-1316
SHUR-LOC®
Eye Hook

S-1317
SHUR-LOC®
Clevis Sling Hook

A-1358
Clevis Grab Hook

A-1359
Clevis Foundry Hook

Crosby ELIMINATOR®

Standard Industry Chain Sling Terminology

The Crosby **ELIMINATOR**® uses standard industry terminology to make changeover to the system easier.

Adjustable chain slings utilizing the Crosby **ELIMINATOR**® fittings retain standard sling abbreviations. Simply adding the letter "E" to the standard sling type means the sling has been assembled with the Crosby **ELIMINATOR**®.

No more confusion or uncertainty over "Style A", "Style B", "Style 1", or "Style 2" adjustable slings. These style designations aren't needed with the Crosby **ELIMINATOR**® (see below).

The slings shown here are standard assemblies that can be made from "Proof Tested" Crosby Components and Alloy Chain supplied by your authorized Crosby distributor. Assemblies must include chain sling identification tag.

TYPE ESOS

TYPE ESOG

TYPE ESOL

TYPE ESOF

Type	Description	Type	Description
ESOS	Crosby ELIMINATOR® Single Chain Sling with Sling Hook	ESOL	Crosby ELIMINATOR® Single Chain with SHUR-LOC® Hook
ESOG	Crosby ELIMINATOR® Single Chain Sling with Grab Hook	ESOF	Crosby ELIMINATOR® Single Chain with Foundry Hook

TYPE EDOS

TYPE EDOG

TYPE EDOL

TYPE EDOF

Type	Description	Type	Description
EDOS	Crosby ELIMINATOR® Double Chain Sling with Sling Hooks	EDOL	Crosby ELIMINATOR® Double Chain with SHUR-LOC® Hooks
EDOG	Crosby ELIMINATOR® Double Chain Sling with Grab Hooks	EDOF	Crosby ELIMINATOR® Double Chain with Foundry Hooks

TYPE ETOS

TYPE ETOG

TYPE ETOL

TYPE ETOF

TYPE EQOS

TYPE EQOG

TYPE EQOL

TYPE EQOF

Type	Description	Type	Description
ETOS	Crosby ELIMINATOR® Triple Chain Sling with Master Link and Sling Hooks	EQOS	Crosby ELIMINATOR® Quad Chain Sling with Master Link and Sling Hooks
ETOG	Crosby ELIMINATOR® Triple Chain Sling with Master Link and Grab Hooks	EQOG	Crosby ELIMINATOR® Quad Chain Sling with Master Link and Grab Hooks
ETOL	Crosby ELIMINATOR® Triple Chain Sling with Master Link and SHUR-LOC® Hooks	EQOL	Crosby ELIMINATOR® Quad Chain Sling with Master Link and SHUR-LOC® Hooks
ETOF	Crosby ELIMINATOR® Triple Chain Sling with Master Link and Foundry Hooks	EQOF	Crosby ELIMINATOR® Quad Chain Sling with Master Link and Foundry Hooks

To Order Your Crosby ELIMINATOR® Grade 100 Alloy Chain Sling

Follow these simple steps to order a sling assembly:

1. Determine the maximum load to be lifted by the sling assembly.
2. Choose the type of sling assembly suited for the shape of the load and the size of the sling assembly for the load to be lifted. The decision must take into account the angle of the sling legs in multileg slings.
3. Determine the overall reach from bearing point of master link to bearing point on hook. (see Fig. 1)
4. Contact your Authorized Crosby Distributor.

Each sling shall be marked to show: Name or trademark of manufacturer, grade, nominal chain size, number of legs, rated load for the type(s) of hitch(es) used and angle upon which it is based (reach).

Fig. 1

When using chain slings in choker applications, the Working Load Limit must be reduced by 20%. Crosby recommends a minimum angle of choke of 120 degrees.

Consult Crosby when planning to use an angle of choke of less than 120 degrees. If Crosby A-1338 cradle grab hooks are used at a minimum angle of choke of 120 degrees, the full sling rated WLL can be utilized.

In shortening applications, a 20% reduction of the Working Load Limit is required except when using the Crosby A-1338 cradle grab hook, S-1311 chain shortener link or the Crosby **ELIMINATOR®** Shortener Link. They can be used without any reduction to the Working Load Limit.

SEE APPLICATION AND WARNING INFORMATION

See Pages 9-13

Table 4
Grade 100 (Spectrum 10®) Alloy Chain Working Load Limit — 4 to 1 Design Factor

Spectrum 10® Alloy Chain Size		90°	60°	45°	30°	60°	45°	30°
(in.)	(mm)	Single Leg	Double Leg / Single Basket			Triple and Quad Leg / Double Basket		
—	6	3200	5500	4500	3200	8300	6800	4800
1/4 (9/32)	7	4300	7400	6100	4300	11200	9100	6400
5/16	8	5700	9900	8100	5700	14800	12100	8500
3/8	10	8800	15200	12400	8800	22900	18700	13200
1/2	13	15000	26000	21200	15000	39000	31800	22500
5/8	16	22600	39100	32000	22600	58700	47900	33900
3/4	20	35300	61100	49900	35300	91700	74900	52950
7/8	22	42700	74000	60400	42700	110900	90600	64000
1	26	59700	103400	84400	59700	155100	12600	89550
1-1/4	32	90400	156600	127800	90400	234900	191700	135600

For choker hitch with minimum of 120 degrees angle of choke, WLL must be reduced by 20%, except when using the Crosby A-1338 Cradle Grab Hook.

Table 5
Grade 80 (Spectrum 8®) Alloy Chain Working Load Limit — 4 to 1 Design Factor

Spectrum 8® Alloy Chain Size		90°	60°	45°	30°	60°	45°	30°
(in.)	(mm)	Single Leg	Double Leg / Single Basket			Triple and Quad Leg / Double Basket		
—	6	2500	4330	3540	2500	6500	5300	3750
1/4 (9/32)	7	3500	6100	4900	3500	9100	7400	5200
5/16	8	4500	7800	6400	4500	11700	9500	6800
3/8	10	7100	12300	10000	7100	18400	15100	10600
1/2	13	12000	20800	17000	12000	31200	25500	18000
5/8	16	18100	31300	25600	18100	47000	38400	27100
3/4	20	28300	49000	40000	28300	73500	60000	42400
7/8	22	34200	59200	48400	34200	88900	72500	51300
1	26	47700	82600	67400	47700	123900	101200	71500
1-1/4	32	72300	125200	102200	72300	187800	153400	108400

For choker hitch with minimum of 120 degrees angle of choke, WLL must be reduced by 20%, except when using the Crosby A-1338 Cradle Grab Hook.

Crosby 8/10™ Grade 100 Chain Sling Components

SINGLE LEG SLING

Spectrum 10 Chain Size (in.)	Spectrum 10 Chain Size (mm)	Grade 100 Chain Stock No.	Master Link A-1342N + Stock No.	Master Link Assembly A-1345N Stock No.	Master Link A-342 Stock No.	Master Link A-345 Stock No.	LOK-A-LOY® A-1337 Stock No.	Chain Coupler S-1325A Stock No.	Chain Shortener Link S-1311N Stock No.	SHUR-LOC® Clevis Hook S-1317 Stock No.	SHUR-LOC® Eye Hook S-1316 Stock No.	Clevis Sling Hook A-1339 * Stock No.	Eye Sling Hook S-1327 * Stock No.	Cradle Grab Hook A-1338* Stock No.	Clevis Grab Hook A-1358* Stock No.	Eye Grab Hook A-1328 Stock No.	Clevis Foundry Hook A-1359 Stock No.	Eye Foundry Hook A-1329 Stock No.	Chain Choker A-1355 Stock No.
1/4 (9/32)	7	273710	1011403 X1	—	1014266	1014766	1015104	1098500	1017806	1029000	1022914	1048991	1025866	1049417	1049610	1026169	1049907	1026280	1015204
5/16	8	273729	1011412 X2	—	1014266 1014280 1014285	—	1015113	1098504	1017815	1029009	1022914	1049000	1025866	1049426	1049629	1026169	1049911	1026280	1015204
3/8	10	273738	1011421 X3	—	1014285 1014319	—	1015122	1098508	1017824	1029018	1022923	1049009	1025875	1049435	1049638	1026187	1049916	1026289	1015213
1/2	13	273747	1011430 X4	—	1014319 1014331	—	1015136	1098512	1017833	1029027	1022932	1049018	1025884	1049444	1049647	1026196	1049925	1026297	1015222
5/8	16	273756	1011449 X5	—	1014331 1014348	—	1015145	1098516	1017842	1029036	1022941	1049027	1025893	1049453	1049656	1026205	1049934	1026306	1015231

* Available with latch attached.

DOUBLE LEG SLING

Spectrum 10 Chain Size (in.)	Spectrum 10 Chain Size (mm)	Grade 100 Chain Stock No.	Master Link A-1342N + Stock No.	Master Link Assembly A-1345N Stock No.	Master Link A-342 Stock No.	Master Link A-345 Stock No.	LOK-A-LOY® A-1337 Stock No.	Chain Coupler S-1325A Stock No.	Chain Shortener Link S-1311N Stock No.	SHUR-LOC® Clevis Hook S-1317 Stock No.	SHUR-LOC® Eye Hook S-1316 Stock No.	Clevis Sling Hook A-1339 * Stock No.	Eye Sling Hook S-1327 * Stock No.	Cradle Grab Hook A-1338 Stock No.	Clevis Grab Hook A-1358 Stock No.	Eye Grab Hook A-1328 Stock No.	Clevis Foundry Hook A-1359 Stock No.	Eye Foundry Hook A-1329 Stock No.	Chain Choker A-1355 Stock No.
1/4 (9/32)	7	273710	1011403 X1	—	1014266	—	1015104	1098500	1017806	1029000	1022914	1048991	1025866	1049417	1049610	1026169	1049907	1026280	1015204
5/16	8	273729	1011412 X2	—	1014266 1014280 1014285	—	1015113	1098504	1017815	1029009	1022914	1049000	1025866	1049426	1049629	1026169	1049911	1026280	1015204
3/8	10	273738	1011421 X3	—	1014285 1014319	—	1015122	1098508	1017824	1029018	1022923	1049009	1025875	1049435	1049638	1026187	1049916	1026289	1015213
1/2	13	273747	1011430 X4	—	1014319 1014331	—	1015136	1098512	1017833	1029027	1022932	1049018	1025884	1049444	1049647	1026196	1049925	1026297	1015222
5/8	16	273756	1011449 X5	—	1014331 1014348	—	1015145	1098516	1017842	1029036	1022941	1049027	1025893	1049453	1049656	1026205	1049934	1026306	1015231

TRIPLE AND QUAD LEG SLINGS

Spectrum 10 Chain Size (in.)	Spectrum 10 Chain Size (mm)	Grade 100 Chain Stock No.	Master Link A-1342N Stock No.**	Master Link Assembly A-1345N Stock No.	Master Link A-342 Stock No.	Master Link A-345 Stock No.	LOK-A-LOY® A-1337 Stock No.	Chain Coupler S-1325A Stock No.	Chain Shortener Link S-1311N Stock No.	SHUR-LOC® Clevis Hook S-1317 Stock No.	SHUR-LOC® Eye Hook S-1316 Stock No.	Clevis Sling Hook A-1339 * Stock No.	Eye Sling Hook S-1327 * Stock No.	Cradle Grab Hook A-1338 Stock No.	Clevis Grab Hook A-1358 Stock No.	Eye Grab Hook A-1328 Stock No.	Clevis Foundry Hook A-1359 Stock No.	Eye Foundry Hook A-1329 Stock No.	Chain Choker A-1355 Stock No.
1/4 (9/32)	7	273710	—	1011510	—	1014739	1015104	1098500	1017806	1029000	1022914	1048991	1025866	1049417	1049610	1026169	1049907	1026280	1015204
5/16	8	273729	—	1011510	—	1014742	1015113	1098504	1017815	1029009	1022914	1049000	1025866	1049426	1049629	1026169	1049911	1026280	1015204
3/8	10	273738	—	1011529	—	1014766	1015122	1098508	1017824	1029018	1022923	1049009	1025875	1049435	1049638	1026187	1049916	1026289	1015213
1/2	13	273747	—	1011538	—	1014779	1015136	1098512	1017833	1029027	1022932	1049018	1025884	1049444	1049647	1026196	1049925	1026297	1015222
5/8	16	273756	—	1011547	—	1014807	1015145	1098516	1017842	1029036	1022941	1049027	1025893	1049453	1049656	1026205	1049934	1026306	1015231

* Available with latch attached. ** Required for triple and quad leg slings when using ELIMINATOR® fittings.
+ A-1342N is not a required fitting, but can be used to suspend Crosby ELIMINATOR® fitting from oversized crane hooks where applicable.

Crosby ELIMINATOR® Fittings

Fatigue Rated® | "QT" Quenched & Tempered® | QUIC-CHECK® | Crosby 8/10™

SEE APPLICATION AND WARNING INFORMATION

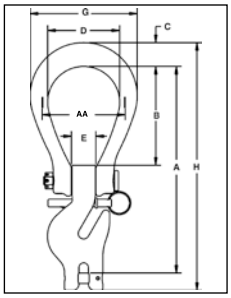
Para Español: www.thecrosbygroup.com *See Pages 9-13*

A-1361

The Crosby ELIMINATOR® combines selected features and functionality of a master link, connecting link, grab hook and adjuster legs to provide you with one fitting that is suitable for applications that require an adjustable length chain sling.

- Forged Alloy Steel – Quenched and Tempered.
- Innovative two piece design allows for maximum flexibility.
- Individually Proof Tested with certification.
- The Crosby **ELIMINATOR®**, if properly installed and locked, can be used for personnel lifting applications and meets the intent of OSHA Rule 1926.550 (g) (4) (iv) (B).
- Suitable for use with Grade 100 and Grade 80 chain.
- Engineered to accommodate optional locking pins that can be inserted to "lock" the shortened chain legs into place.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Use the A-1361 and A-1362 in combination to make 3 leg chain slings.
- "Look for the Platinum Color – Crosby Grade 100 Alloy Products."
- All sizes are **RFID EQUIPPED**.

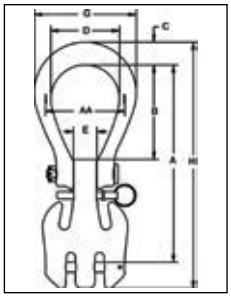
A-1362



Crosby ELIMINATOR® A-1361 Single Hook

Chain Size (in.)	Chain Size (mm)	Frame Size	Working Load Limit (lbs.)*	A-1361 Stock No.	L-1361 Stock No.	Weight Each (lbs.)	Dimensions (in.) A	B	C	D	E	G	H	AA
1/4	7	2	4300	1049797	1049802	3.9	8.20	3.88	.90	3.00	.94	4.40	9.78	3.50
5/16	8	2	5700	1049804	1049809	3.9	8.18	3.88	.90	3.00	.94	4.40	9.78	3.50
3/8	10	3	8800	1049813	1049818	6.5	10.05	4.81	1.16	3.50	1.13	5.20	12.06	4.00
1/2	13	4	15000	1049822	1049827	13.5	12.88	6.00	1.63	4.13	1.31	6.39	15.57	5.00
5/8	16	5	22600	1049831	1049836	24.1	15.26	6.88	1.96	4.75	1.63	7.41	18.58	6.00

* Proof tested at 2.5 times the Working Load Limit. Minimum Ultimate Load is 4 times the Working Load Limit.



Crosby ELIMINATOR® A-1362 Double Hook

Chain Size (in.)	Chain Size (mm)	Frame Size	Working Load Limit (lbs.)*	A-1362 Stock No.	L-1362 Stock No.	Weight Each (lbs.)	Dimensions (in.) A	B	C	D	E	G	H	AA
1/4	7	2	8600	1049859	1049913	4.7	8.20	3.88	.90	3.00	.94	4.40	10.10	3.50
5/16	8	2	11400	1049868	1049922	4.7	8.18	3.88	.90	3.00	.94	4.40	10.10	3.50
3/8	10	3	17600	1049877	1049931	8.1	10.05	4.81	1.16	3.50	1.13	5.20	12.56	4.00
1/2	13	4	30000	1049886	1049940	17.3	12.88	6.00	1.63	4.13	1.31	6.39	16.25	5.00
5/8	16	5	45200	1049895	1049949	31.5	15.26	6.88	1.96	4.75	1.63	7.41	19.33	6.00

* Proof tested at 2 times the Working Load Limit. Minimum Ultimate Load is 4 times the Working Load Limit.

Using Crosby ELIMINATOR® in 3 Leg Slings

Spectrum 10® Chain Size (in.)	Spectrum 10® Chain Size (mm)	Master Link A-342 Stock No.	Master Link A-1342 Stock No.	Crosby ELIMINATOR® Single A-1361 Stock No.	Crosby ELIMINATOR® Double A-1362 Stock No.
1/4 (9/32)	7	1014285	1011412	1049797	1049859
5/16	8	1014319	1011421	1049804	1049868
3/8	10	1014331	1011430	1049813	1049877
1/2	13	1014348	1011449	1049822	1049886
5/8	16	1014365	1011458	1049831	1049895

Use one of either A-342 or A-1342 master link.
Use one of each when making three leg sling.

Using Crosby ELIMINATOR® in 4 Leg Slings

Spectrum 10® Chain Size (in.)	Spectrum 10® Chain Size (mm)	Master Link A-342 Stock No.	Master Link A-1342 Stock No.	Crosby ELIMINATOR® Single A-1361 Stock No.	Crosby ELIMINATOR® Double A-1362 Stock No.
1/4 (9/32)	7	1014285	1011412	–	1049859
5/16	8	1014319	1011421	–	1049868
3/8	10	1014331	1011430	–	1049877
1/2	13	1014348	1011449	–	1049886
5/8	16	1014365	1011458	–	1049895

Use one of either A-342 or A-1342 master link.
Use two A-1362 fittings when making quad leg sling.

Crosby ELIMINATOR® Fittings

Crosby ELIMINATOR® Components

A-1360B Bail

Chain Size		Frame Size	A-1360B Stock No.	Weight Each (lbs.)	Dimensions (in.)				S-4103 Replacement Hinge Pin Kit Stock No.
(in.)	(mm)				Inside Length	Inside Width	Jaw Width	Deformation Indicator	
1/4 - 5/16	7 - 8	2	1049626	2.1	3.88	3.00	.94	3.50	1092916
3/8	10	3	1049635	3.7	4.81	3.50	1.13	4.00	1092925
1/2	13	4	1049644	7.4	6.00	4.13	1.31	5.00	1092934
5/8	16	5	1049653	13.0	6.88	4.75	1.63	6.00	1092943

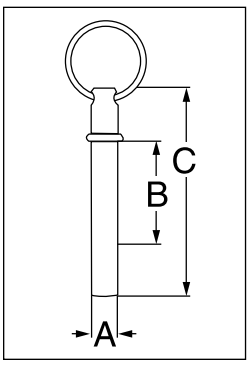
A-1360S Single Hook (shown with optional S-4104 Latch Pin)

Chain Size		Frame Size	Working Load Limit (lbs.)*	A-1360S Stock No.	L-1360S Stock No.	Weight Each (lbs.)	S-4100 Replacement Load Pin Kit Stock No.
(in.)	(mm)						
1/4	7	2	4300	1049671	1049790	1.8	1091801
5/16	8	2	5700	1049680	1049799	1.8	1091810
3/8	10	3	8800	1049699	1049808	2.8	1091829
1/2	13	4	15000	1049706	1049817	6.1	1091838
5/8	16	5	22600	1049715	1049826	11.1	1091847

A-1360D Double Hook (shown with optional S-4104 Latch Pin)

Chain Size		Frame Size	Working Load Limit (lbs.)*	A-1360D Stock No.	L-1360D Stock No.	Weight Each (lbs.)	S-4102 Replacement Load Pin Kit Stock No.
(in.)	(mm)						
1/4	7	2	8600	1049733	1049838	2.6	1092713
5/16	8	2	11400	1049742	1049847	2.6	1092722
3/8	10	3	17600	1049751	1049856	4.4	1092731
1/2	13	4	30000	1049760	1049865	9.9	1092740
5/8	16	5	45200	1049779	1049874	18.5	1092759

* Ultimate Load is 4 times the Working Load Limit.



S-4104N Latch Pin

- The new style S-4104N latch pin is colored yellow zinc.
- The old style S-4104 latch pin is colored silver zinc.

Chain Size		Frame Size	S-4104N Stock No.	Weight Each (lbs.)	Dimensions (in.)		
(in.)	(mm)				A	B	C
1/4 - 5/16	7 - 8	2	1092983	.06	.313	1.36	2.58
3/8	10	3	1092992	.10	.313	1.62	3.08
1/2	13	4	1093001	.12	.313	1.83	3.83
5/8	16	5	1093010	.15	.313	2.21	4.59

ALLOY STEEL CHAIN SLINGS AND CROSBY ELIMINATOR®

Warning, Selection, Use and Maintenance Information

⚠ WARNING

- **Loads may disengage from sling if proper rigging procedures and inspection are not followed.**
- **A falling load may cause serious injury or death.**
- **Inspect sling for damage before each use.**
- **Do not attempt to use sling above rated load and angle upon which it is based.**
- **Consult sling load chart for capacity reduction due to sling angle or type of hitch used.**
- **Read and understand these instructions before using sling.**

Important Safety Information Read and Follow

These warnings and instructions are applicable to alloy chain slings produced from Crosby Grade 8 (80) and Grade 10 (100) chain and components.

- Only alloy chain, grade 80 (Crosby Spectrum 8®), or grade 100 (Crosby Spectrum 10®), should be used for overhead lifting applications.
- Working Load Limit (WLL) is the maximum load in pounds which should ever be applied to chain, when the chain is new or in "as new" condition, and when the load is uniformly applied in direct tension to a straight length of chain.
- Working Load Limit (WLL) is the maximum working load for a specific minimum sling angle, measured from the horizontal plane. The minimum sling angle and Working Load Limit is identified on the sling.
- The Working Load Limit or Design factor may be affected by wear, misuse, overloading, corrosion, deformation, intentional alterations, sharp corner cutting action and other use conditions.
- Shock loading and extraordinary conditions must be taken into account when selecting alloy chain slings.
- See OSHA Regulation for Slings 1910.184, ANSI/ASME B30.9-"SLINGS", ANSI/ASME B30.10-"HOOKS", and ANSI/ASME B30.26 "RIGGING HARDWARE" for additional information.

ASME B30.9 requires a designated person inspect each new sling and attachments prior to initial use, as well as the user or other designated person perform a visual inspection on a sling each day it is used. In addition, a periodic inspection shall be performed by a designated person at least annually, and shall maintain a record of the last inspection. For further inspection information, see Chain Inspection section of this document, or refer to ASME B30.9-1.9.

CAUSE FOR REMOVAL FROM SERVICE

A sling shall be removed from service if any of the following are visible on chain or attachments:

- Wear, nicks, cracks, breaks, gouges, stretch, bend, weld splatter, discoloration from excessive temperature, and throat openings of hooks.
- Chain links and attachments that do not hinge freely to adjacent links.
- Latches on hooks, if present, that do not hinge freely, seat properly or show evidence of permanent distortion.
- Excessive pitting or corrosion
- Missing or illegible sling identification
- Makeshift fasteners, hooks, or links formed from bolts, rods, etc.
- Mechanical coupling links in the body of the chain
- Other damage that would cause a doubt as to the strength of the chain.

OPERATING PRACTICES

- The weight of the load must be known, calculated, estimated or measured. The loading on the slings will depend on where the center of gravity is located.
- Select sling having suitable characteristics for the type of load, hitch and environment.
- Slings shall not be loaded in excess of the rated capacity.
- Consideration shall be given to the sling load angle which affects rated capacity. (See load chart Table 4 for Grade 100 (SPECTRUM 10®) and Table 5 for Grade 80 (SPECTRUM 8®).
- Never rig a sling with an angle less than 30 degrees to horizontal.
- Slings in a basket hitch should have the load balanced to prevent slippage.
- The sling shall be hitched in a manner providing control of the load.
- Never side load, back load, or tip load a hook.
- Always make sure the hook supports the load. The latch must never support the load.
- Read and understand Crosby hook and hook latch Warnings and Application Instructions.
- For two legged slings with angles greater than 90 degrees, use an intermediate link such as a master link or bolt type shackle to collect the legs of the slings. The intermediate link can be placed over the hook to provide an in-line load on the hook. This approach must also be used when using slings with three or more legs.
- When using chain slings in choker applications, the Working Load Limit must be reduced by 20%. Crosby recommends a minimum angle of choke of 120 degrees (see Figure 1). Consult the manufacturer when planning to use an angle of choke less than 120 degrees. If Crosby A-1338 Cradle Grab hooks are used at the minimum angle of choke of 120 degrees, the full sling rated WLL can be utilized.

Figure 1

- In shortening applications, a 20% reduction of the Working Load Limit is required except when using the Crosby A-1338 Cradle Grab Hooks, S-1311 Chain Shortener Link, the A-1355 chain choker hook in conjunction with the S-1325 chain coupler link, or the Crosby ELIMINATOR® shortener link. They can be used without any reduction to the Working Load Limit.
- Slings should always be protected from being damaged by sharp corners.
- Slings should not be dragged on the floor or over abrasive surface.
- Chain sling links should not be twisted or kinked.
- Slings should not be pulled from under loads if the load is nesting on the sling.
- Slings that appear to be damaged should not be used

- unless inspected and accepted by designated person.
- Personnel, including portions of the human body, should be kept from between the sling and the load, and from between the sling and the crane hook or hoist hook.
- Personnel shall stand clear of the suspended load.
- Personnel shall not ride the sling.
- Shock loading should be avoided.
- Twisting or kinking the legs (branches) should be avoided.
- During lifting, with or without the load, personnel should be alert for possible snagging.
- When using a basket hitch, the legs of the sling should contain or support the load from the sides, above the center of gravity, so that the load remains under control.
- Sling shall be long enough so that the rated capacity of the sling is adequate when the angle of the legs (branches) is taken into consideration. (See Table 4 for Grade 100 Chain and Table 5 for Grade 80 Chain).

General Usage

It must be recognized that certain factors in the usage of chain and attachments can be abusive and lessen the load that the chain or attachments can withstand. Some examples are twisting of the chain; disfigurement; deterioration by straining, usage, weathering and corrosion; rapid application of load or jerking; applying excessive loads; sharp corner cutting action and non-symmetrical loading effects.

Environmental Effects

- Excessive high or low temperatures or exposure to chemically active environments such as acid or corrosive liquids or fumes can reduce the performance of the chain and components.
- Extreme temperature will reduce the performance of alloy steel chain slings.
- Normal operating temperature is –40°F to 400°F (-40°C to 204°C).
- Reference temperature exposure chart to determine reduction of WLL due to operating at, and after exposure to, elevated temperatures (see Table 1 for Grade 80 Chain and Table 2 for Grade 100 chain).
- Chemically active environments can have detrimental affects on the performance of chain. The effects can be both visible loss of material and undetectable material degradation causing significant loss of strength.

Special Surface Coating/Plating/Galvanizing

- Chain should not be subjected to galvanizing, or any plating process. If it is suspected the chain has been exposed to chemically active environment, remove from service.

Table 1
Use of Crosby Grade 80 Chain At Elevated Temperatures

Temperature of Chain		Temporary Reduction of Rated Load at Elevated Temperature	Permanent Reduction of Rated Load After Exposure to Temperature**
(F°)	(C°)		
Below 400	Below 204	None	None
400	204	10%	None
500	260	15%	None
600	316	20%	5%
700	371	30%	10%
800	427	40%	15%
900	482	50%	20%
1000	538	60%	25%
Over 1000	Over 538	OSHA 1910.184 requires all slings exposed to temperatures over 1000° F to be removed from service.	

* Crosby does not recommend the use of Alloy Chain at temperatures above 800° F.
** When chain is used at room temperature after being heated to temperatures shown in the first column.

Table 2
Use of Crosby Grade 100 Chain At Elevated Tempertures

Temperature		Temporary Reduction of Rated Load at Elevated Temperature*	Permanent Reduction of Rated Load After Exposure to Temperature**
(F°)	(C°)		
Below 400	Below 204	None	None
400	204	15%	None
500	260	25%	5%
600	316	30%	15%
700	371	40%	20%
800	427	50%	25%
900	482	60%	30%
1000	538	70%	35%
Over 1000	Over 538	OSHA 1910.184 requires all slings exposed to temperatures over 1000 F to be removed from service.	

* Crosby does not recommend the use of Alloy Chain at temperatures above 800° F.
** When chain is used at room temperature after being heated to temperatures shown in the first column.

CHAIN INSPECTION

INSPECTION AND REMOVAL FROM SERVICE PER ASME B30.9

Refer to ASME B30.9-1.9 for further information

Frequent Inspection

a. A visual inspection for damage shall be performed by the user or designated person each day the sling is used.
b. Conditions such as those listed in ASME B30.9-1.9.4 Removal Criteria, or any other condition that may result in a hazard, shall cause the sling to be removed from service. Slings shall not be returned to service until approved by a qualified person.
c. Written records are not required for frequent inspections.

Periodic Inspection

a. A complete inspection for damage of sling shall be periodically performed by a designated person. Each link and component shall be examined individually, taking care to expose and examine all surfaces including the inner link surface. The sling shall be examined for conditions such as those listed in ASME B30.9-1.9.4 Removal Criteria, and a determination made as to whether they constitute a hazard.
b. Periodic Inspection Frequency: Periodic inspection intervals shall not exceed one year. The frequency of periodic inspections should be based on:
   1. Frequency of sling use
   2. Severity of service conditions
   3. Nature of lifts being made
   4. Experience gained on the service life of slings used in similar circumstances.

   Guidelines for the interval are:
   1. Normal Service – yearly
   2. Severe Service – monthly to quarterly
   3. Special Service – as recommended by a qualified person
c. Written records of the most recent periodic inspection shall be maintained, and shall include the condition of the sling.

Removal Criteria

An alloy sling chain shall be removed from service if conditions such as the following are present:

a. Missing or illegible sling identification.
b. Cracks or breaks
c. Excessive wear, nicks, or gouges. Minimum thickness on chain link shall not be below the values listed in Table 3.
d. Stretched chain links or components.
e. Bent, twisted, or deformed chain links or components

f. Evidence of heat damage.
g. Excessive pitting or corrosion.
h. Lack of ability of chain or components to hinge (articulate) freely.
i. Weld spatter.
j. For hooks, removal criteria as stated in ASME B30.10
k. Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Repair

a. Slings shall be repaired only by the sling manufacturer or a qualified person.
b. A repaired sling shall be marked to identify the repairing agency per ASME B30.9 Section 9-1.7.
c. Chain and components used for sling repair shall comply with the provisions of ASME B30.9.
d. Repair of hooks shall comply with ASME B30.10.
e. Cracked, broken or bent chain links or components other than hooks shall not be repaired; they shall be replaced.
f. Mechanical coupling links shall not be used within the body of an alloy chain sling to connect two pieces of chain.
g. Modifications or alterations to the sling or components shall be considered as repairs and shall conform to all other provisions of ASME B30.9.
h. All repairs shall comply with the proof test requirements of ASME B30.9 Section 9-1.6.

Table 3
Minimum Allowable Chain Link Thickness at Any Point

Nominal Chain Size		Minimum Thickness	
(in.)	(mm)	(in.)	(mm)
7/32	5.5	0.189	4.80
9/32	7	0.239	6.07
5/16	8	0.273	6.93
3/8	10	0.342	8.69
1/2	13	0.443	11.26
5/8	16	0.546	13.87
3/4	20	0.687	17.45
7/8	22	0.750	19.05
1	26	0.887	22.53
1-1/4	32	1.091	27.71
Refer to ASME B30.9			

Table 4
Grade 100 (Spectrum 10®) Alloy Chain Working Load Limit – 4 to 1 Design Factor

Spectrum 10® Alloy Chain Size		90°	60°	45°	30°	60°	45°	30°
(in.)	(mm)	Single Leg	Double Leg / Single Basket			Triple and Quad Leg / Double Basket		
—	6	3200	5500	4500	3200	8300	6800	4800
1/4 (9/32)	7	4300	7400	6100	4300	11200	9100	6400
5/16	8	5700	9900	8100	5700	14800	12100	8500
3/8	10	8800	15200	12400	8800	22900	18700	13200
1/2	13	15000	26000	21200	15000	39000	31800	22500
5/8	16	22600	39100	32000	22600	58700	47900	33900
3/4	20	35300	61100	49900	35300	91700	74900	52950
7/8	22	42700	74000	60400	42700	110900	90600	64000
1	26	59700	103400	84400	59700	155100	12600	89550
1-1/4	32	90400	156600	127800	90400	234900	191700	135600

For choker hitch with minimum of 120 degrees angle of choke, WLL must be reduced by 20%, except when using the Crosby A-1338 Cradle Grab Hook.

Table 5
Grade 80 (Spectrum 8®) Alloy Chain Working Load Limit – 4 to 1 Design Factor

Spectrum 10® Alloy Chain Size		90°	60°	45°	30°	60°	45°	30°
(in.)	(mm)	Single Leg	Double Leg / Single Basket			Triple and Quad Leg / Double Basket		
—	6	2500	3600	3000	2500	6500	5300	3750
1/4 (9/32)	7	3500	6100	4900	3500	9100	7400	5200
5/16	8	4500	7800	6400	4500	11700	9500	6800
3/8	10	7100	12300	10000	7100	18400	15100	10600
1/2	13	12000	20800	17000	12000	31200	25500	18000
5/8	16	18100	31300	25600	18100	47000	38400	27100
3/4	20	28300	49000	40000	28300	73500	60000	42400
7/8	22	34200	59200	48400	34200	88900	72500	51300
1	26	47700	82600	67400	47700	123900	101200	71500
1-1/4	32	72300	125200	102200	72300	187800	153400	108400

For choker hitch with minimum of 120 degrees angle of choke, WLL must be reduced by 20%, except when using the Crosby A-1338 Cradle Grab Hook.

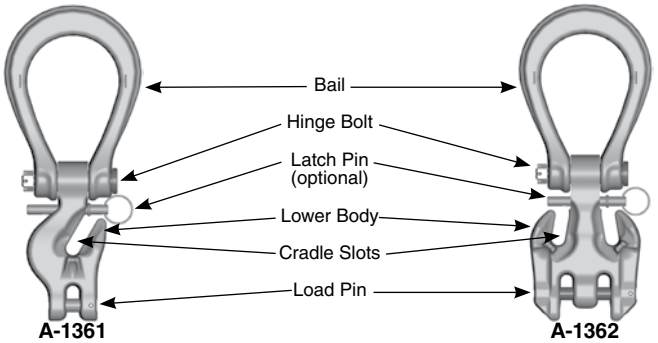
Crosby ELIMINATOR®
Warning and Application Instructions

⚠ WARNING

- **Failure to read, understand, and follow these instructions may cause death or serious injury.**
- **Read and understand these instructions before using the Crosby ELIMINATOR®.**
- **Incorrectly rigging or terminating exerts additional force or loading, which the Crosby ELIMINATOR® is not designed to accommodate.**

Crosby® ELIMINATOR® Definitions

The **Crosby ELIMINATOR®** consists of a bail, hinge pin, latch pin, and lower body with cradle slot/slots.



The **Crosby ELIMINATOR®** incorporates markings forged into the product which address a **QUIC-CHECK®** feature:

QUIC-CHECK®

Deformation Indicators – Two strategically placed marks on each leg of the bail, which allows for a **QUIC-CHECK®** measurement to determine if the bail opening has changed, thus indicating abuse or overload. To check, use a measuring device (i.e. tape measure) to measure the distance between the marks. The marks should align to either an inch or half-inch increment on the measuring device. If the measurement does not meet criteria, the **Crosby ELIMINATOR®** bail should be inspected further for possible damage.

Important Safety Information Read and Follow

- A visual periodic inspection for cracks, nicks wear, gouges and deformation as part of a comprehensive documented inspection program, should be conducted by trained personnel in compliance with ANSI B30.9.
- Remove from service any **Crosby ELIMINATOR®** components with a crack, nick, or gouge. The bail and body of a **Crosby ELIMINATOR®** with nick or gouge shall be repaired by a qualified person. The qualified person shall repair by grinding longitudinally following the contour of the forging, provided that the reduced dimension is within the limits shown in (Fig. A).

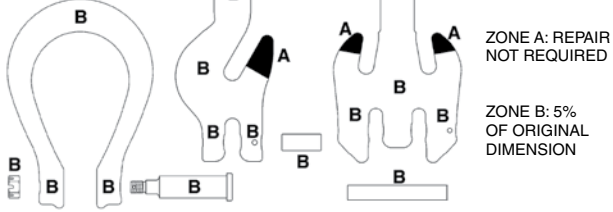


Figure A

- Never repair, alter, rework, or reshape a **Crosby ELIMINATOR®** by welding, heating, burning, or bending.
- **Crosby ELIMINATOR®** combination master link and chain shortener shall not be used in a manner other than that for which it is intended.
- The sling may be shortened by use of the cradle slot/slots (see Fig. C).
- In shortening applications, the **Crosby ELIMINATOR®** can be used without any reduction to the Working Load Limit.
- Never terminate (i.e. place a load bearing chain sling hook), or reeve load bearing chain through **Crosby ELIMINATOR®** bail. (see Fig. B)
- Never exceed the rated capacity shown on sling's identification tag.
- Attach lifting device to ensure free fit of **Crosby ELIMINATOR®** bail (see Fig. D). Never allow lifting device to apply forces on side of bail (see Fig. E), as this condition will damage and reduce the capacity of the **Crosby ELIMINATOR®.**
- The **Crosby ELIMINATOR®** is intended for tension or pull. Side loading must be avoided, as it exerts additional force or loading which the product is not designed to accommodate. (see Fig. F).

Figure B

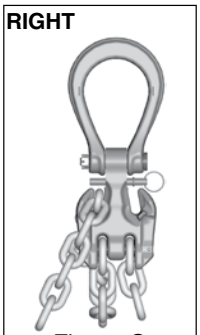


Figure C

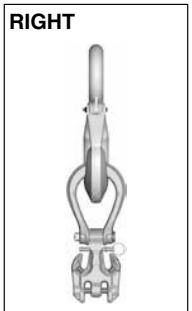


Figure D

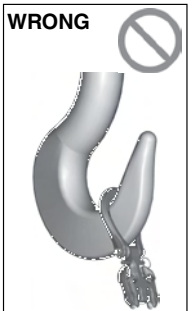


Figure E

Figure F

- Never use a **Crosby ELIMINATOR®** where the bail shows signs of deformation or overloading (see Table 1).
- Read and understand the other sections of the ALLOY STEEL CHAIN SLINGS Warning, Selection, Use & Maintenance Information.

TABLE 1
Crosby ELIMINATOR® Bail Dimensions

Chain Size (in.)	Chain Size (mm)	Frame I.D. Code	Inside Length (in.)	Inside Width (in.)	Jaw Width (in.)	QUIC-CHECK® Dim (in.)
1/4 - 5/16	7 - 8	2	3.88	3.00	.94	3.50
3/8	10	3	4.81	3.50	1.13	4.00
1/2	13	4	6.00	4.13	1.31	5.00
5/8	16	5	6.88	4.75	1.63	6.00

- A **Crosby ELIMINATOR®** under load shall be allowed to self-align itself about the hinge pin.
- The use of a latch may be mandatory by regulations or safety codes; e.g. OSHA, MSHA, ANSI/ASME B30.10 and B30.9.
- If Crosby latch pin is present, it should fit and function properly, and show no signs of distortion or bending.
- Always make sure the chain is seated in the cradle slot, and the cradle supports the load. The latch pin must never support the load.
- Latch pins are not intended to be an anti-fouling device.
- Use only genuine Crosby repair and latch pins parts.

A-1361 Single Leg Crosby® ELIMINATOR®

- The A-1361 single leg **Crosby ELIMINATOR®** is designed to support a single leg vertical load. The cradle slot may be used to make a loop in the leg (see Fig. G). However, the Working Load Limit is still limited to the single leg values shown in Table 4 (Grade 100) and Table 5 (Grade 80).
- To produce a single basket hitch and achieve the full Working Load Limit, use only one length of chain with both ends terminated into the load pins of two A-1361 single leg **Crosby ELIMINATOR®** fittings (see Fig. H). Basket may be shortened with cradle slot.
- Never exceed the single leg Working Load Limit shown in Table 4 (Grade 100) and Table 5 (Grade 80) for an individual A-1361 **Crosby ELIMINATOR®** fitting.

Figure G

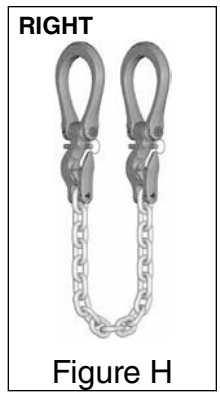


Figure H

A-1362 Double Leg Crosby ELIMINATOR®

- The A-1362 double leg **Crosby ELIMINATOR®** is designed to support symmetrically loaded double leg slings at 60, 45, and 30 degree horizontal angles. The cradle slots may be used to make loops in the legs (see Fig. J). However, the Working Load Limit is limited to the double leg values shown in Table 4 (Grade 100) and Table 5 (Grade 80).
- To produce a single basket hitch, and achieve the full Working Load Limit, use only one length of chain with both ends terminated into the load pin (see Fig. K). Basket may be shortened with the cradle slot or slots.
- To produce a double basket hitch and achieve the full Working Load Limit, two A-1362 double leg **Crosby ELIMINATOR®** fittings must be used, with both being terminated at their load pin (see Fig. L).
- Never exceed the double leg / single basket Working Load Limit on an individual A-1362 **Crosby ELIMINATOR®** fitting.

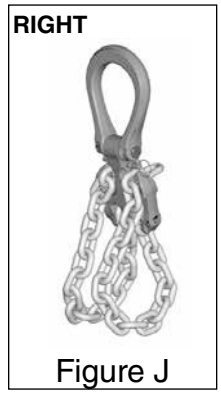


Figure J

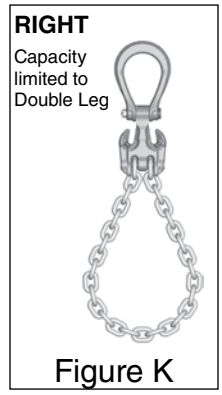


Figure K

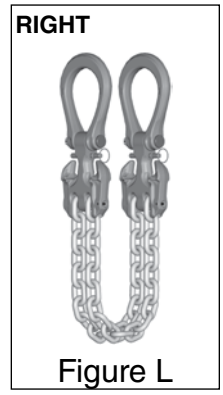


Figure L

the Crosby® group

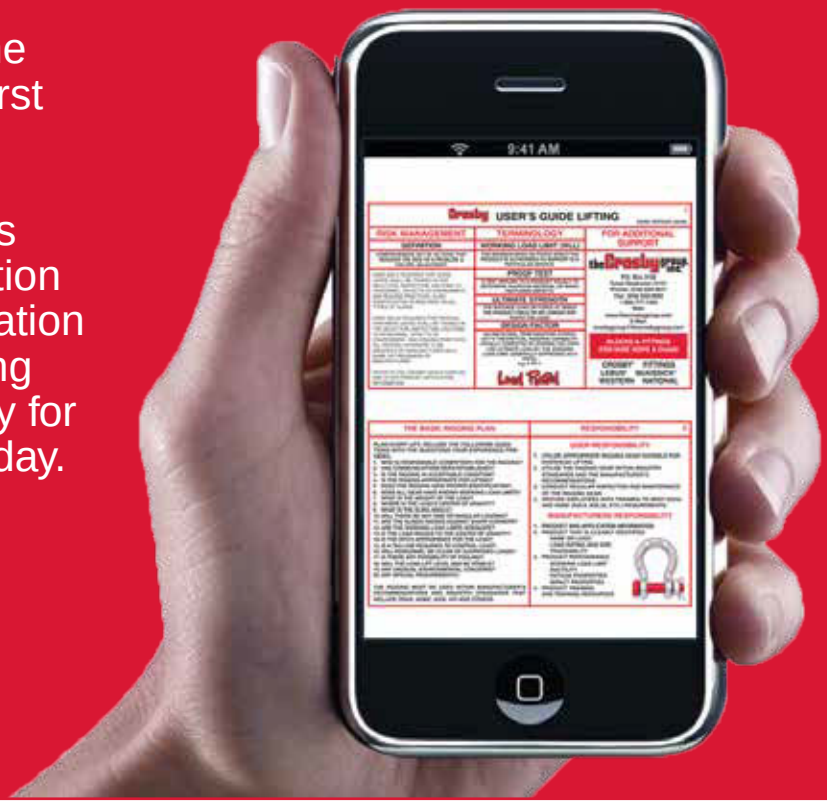
ap·peal \ə-’pēl\ n [ME *appel*, fr. AF *apel*, fr. *apeler*]
1: to be especially attractive, pleasing, interesting, or enjoyable: The Crosby Group appeals to me...

The Crosby appeal...

“One of many value added features that helps make Crosby so appealing is our ongoing commitment to utilize the latest technology in order to provide the information required to ensure the proper application of our products.”

We are pleased to introduce the User’s Guide Lifting App, the first of many.

Our most popular rigging tool is now mobile. Featuring information on the proper selection, application and inspection of Crosby rigging hardware, the new app is ready for download at the App Store® today.



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