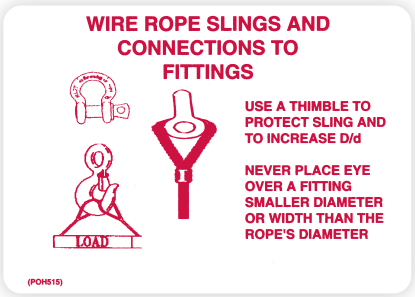
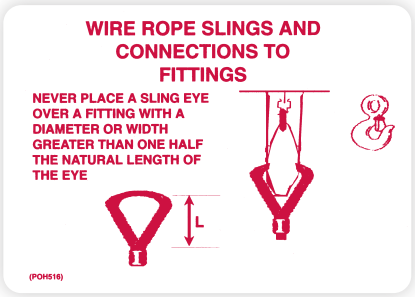
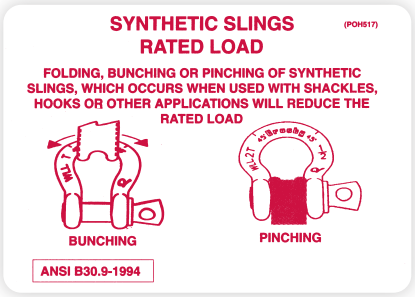
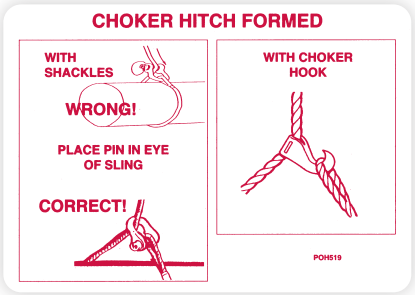
SHACKLES

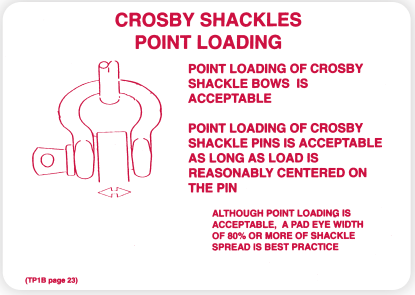
The Crosby Group, Inc.

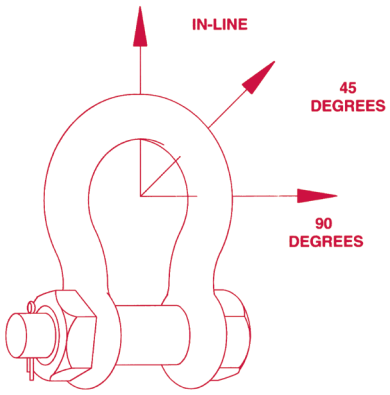










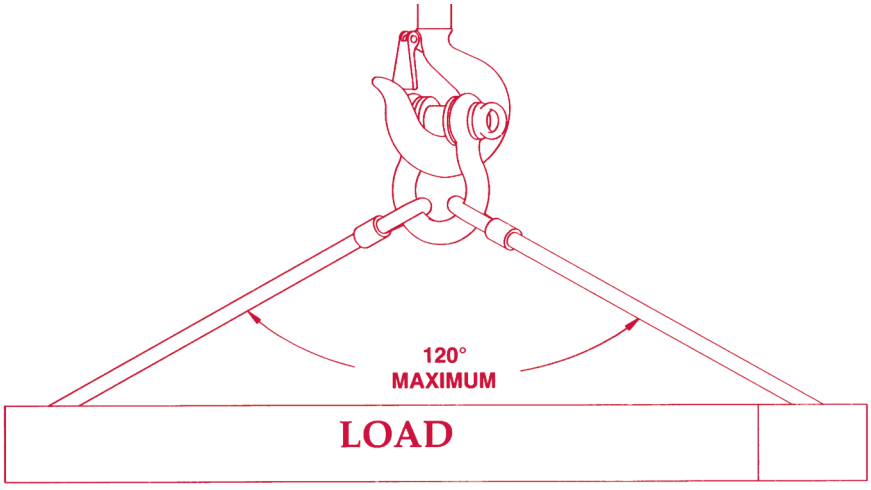


- Angle loads must be applied in the plane of the bow.

Side Loading Reduction Chart For Screw Pin and Bolt Type Shackles Only†	
Angle of Side Load from Vertical In-Line of Shackle	**Adjusted Working Load Limit**
0° In-Line *	100% of Rated Working Load Limit
45° from In-Line *	70% of Rated Working Load Limit
90° from In-Line *	50% of Rated Working Load Limit

* In-Line load is applied perpendicular to pin.

† DO NOT SIDE LOAD ROUND PIN SHACKLES



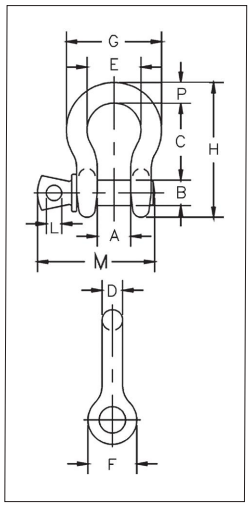
- Never Exceed 120° included angle.
- Use Bolt Type and Screw Pin Shackles ONLY.
- Shackles symmetrically loaded with two legs slings having a maximum included angle of 120° can be utilized to full Working Load Limit.

ROUND PIN SHACKLES

Crosby®

G-209/S-209

- Meets performance requirements of Grade 6 shackles.
- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certifications. Proof testing and certification available when requested at the time of order, charges will apply.
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- All 209 and 210 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg. at -4° F (-20° C) upon special request.
- Meets or exceeds all requirements of ASME B30.26.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and ABS Guide for Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- G-209 Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271G, Type IVA, Grade A, Class 2, except for those provisions required of the contractor.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-209 / S-209 Screw Pin Anchor Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (lb)	Dimensions (in)											Tolerance (+ / - in)	
		G-209	S-209		A	B	C	D	E	F	G	H	L	M	P	C	A
3/16	0.33	1018357	–	.06	.38	.25	.88	.19	.60	.56	.98	1.47	.16	1.14	.19	.06	.06
1/4	0.5	1018375	1018384	.10	.47	.31	1.13	.25	.78	.62	1.28	1.84	.19	1.43	.25	.06	.06
5/16	0.75	1018393	1018400	.18	.53	.38	1.21	.31	.84	.75	1.46	2.09	.22	1.71	.31	.06	.06
3/8	1	1018419	1018428	.31	.66	.44	1.45	.38	1.03	.92	1.79	2.50	.25	2.06	.38	.13	.06
7/16	1.5	1018437	1018446	.38	.75	.50	1.69	.44	1.16	1.06	2.04	2.91	.31	2.37	.44	.13	.06
1/2	2	1018455	1018464	.72	.81	.62	1.88	.50	1.31	1.18	2.31	3.28	.38	2.69	.50	.13	.06
5/8	3.25	1018473	1018482	1.37	1.06	.75	2.38	.62	1.69	1.50	2.93	4.19	.44	3.34	.69	.13	.06
3/4	4.75	1018491	1018507	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06
7/8	6.5	1018516	1018525	3.62	1.44	1.00	3.31	.88	2.28	2.10	4.04	5.83	.50	4.50	.97	.25	.06
1	8.5	1018534	1018543	5.03	1.69	1.12	3.76	1.00	2.69	2.38	4.69	6.56	.56	5.13	1.06	.25	.06
1-1/8	9.5	1018552	1018561	7.41	1.81	1.25	4.27	1.16	2.91	2.68	5.15	7.47	.63	5.97	1.25	.25	.06
1-1/4	12	1018570	1018589	9.50	2.03	1.38	4.69	1.29	3.26	3.00	5.76	8.26	.69	6.50	1.38	.25	.06
1-3/8	13.5	1018598	1018605	13.53	2.25	1.53	5.22	1.42	3.62	3.31	6.38	9.16	.75	6.93	1.50	.25	.13
1-1/2	17	1018614	1018623	17.20	2.38	1.63	5.76	1.53	3.88	3.62	6.94	10.00	.81	7.43	1.62	.25	.13
1-3/4	25	1018632	1018641	27.78	2.88	2.00	7.00	1.84	5.00	4.19	8.80	12.34	1.00	9.19	2.25	.25	.13
2	35	1018650	1018669	45.00	3.25	2.25	7.75	2.08	5.75	4.81	10.15	13.68	1.13	10.36	2.40	.25	.13
2-1/2	55	1018678	1018687	85.75	4.12	2.75	10.51	2.72	7.25	5.81	12.75	17.92	1.38	13.17	3.13	.25	.25

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

Load Rated Fatigue Rated TA TYPE APPROVED QUIC-CHECK® Q&T QUENCHED & TEMPERED MAXTOUGH® CE

APPLICATION AND WARNING INFORMATION SECTION 17

ALLOY SCREW PIN SHACKLES

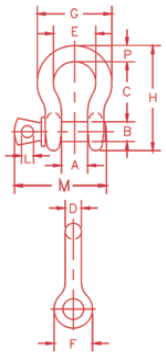
The Crosby Group, Inc.

SEE APPLICATION AND WARNING INFORMATION
In Crosby Catalog
Para Español: www.thecrosbygroup.com

G-209A

Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271F Type IVA, Grade B, Class 2, except for those provisions required of the contractor. For additional information, see Crosby Catalog.

- Capacities 2 thru 21 metric tons. Meets performance requirements of Grade 8 shackles.
- Forged Alloy Steel – Quenched and Tempered, with alloy pins.
- Working Load Limit permanently shown on every shackle.
- Hot Dip Galvanized.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification. Charges for proof testing and certification available when requested at the time of order.
- Approved for use at -40 degree C (-40 degree F) to 204 degree C (400 degree F).
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including impact properties and material traceability, not addressed by ASME B30.26.



Load Rated® "QT" QUENCHED & TEMPERED® QUIC-CHECK® CE

G-209A Alloy Screw Pin Shackles

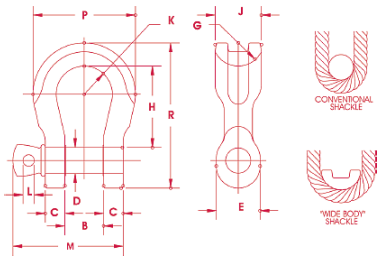
Nominal Size (in.)	Working Load Limit (t)*	G-209A Stock No.	Weight Each (lbs.)	Dimensions (in.)											Tolerance +/-	
				A	B	C	D	E	F	G	H	L	M	P	C	A
3/8	2	1017450	.31	.66	.44	1.44	.38	1.03	.91	1.78	2.49	.25	2.03	.38	.13	.06
7/16	2-2/3	1017472	.38	.75	.50	1.69	.44	1.16	1.06	2.03	2.91	.31	2.38	.44	.13	.06
1/2	3-1/3	1017494	.63	.81	.63	1.88	.50	1.31	1.19	2.31	3.28	.38	2.69	.50	.13	.06
5/8	5	1017516	1.38	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	.44	3.34	.69	.13	.06
3/4	7	1017538	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06
7/8	9-1/2	1017560	3.61	1.44	1.00	3.31	.88	2.28	2.09	4.03	5.83	.50	4.50	.97	.25	.06
1	12-1/2	1017582	5.32	1.69	1.13	3.75	1.00	2.69	2.38	4.69	6.56	.56	5.07	1.06	.25	.06
1-1/8	15	1017604	7.25	1.81	1.25	4.25	1.16	2.91	2.69	5.16	7.47	.63	5.59	1.25	.25	.06
1-1/4	18	1017626	9.88	2.03	1.38	4.69	1.29	3.25	3.00	5.75	8.25	.69	6.16	1.38	.25	.06
1-3/8	21	1017648	13.25	2.25	1.50	5.25	1.42	3.63	3.31	6.38	9.16	.75	6.84	1.50	.25	.13

* Maximum Proof Load is 2 times the Working Load Limit (metric tons) and 2.2 times the Working Load Limit (short tons). Minimum Ultimate Strength is 4.5 times the Working Load Limit for metric tonnes, and 5 times the Working Load Limit for short tons. For Working Load Limit reduction due to side loading applications, see Crosby Catalog.

G-2169

S-2169

- Capacities of 7, 12.5 and 18 metric tons.
- Quenched and Tempered for maximum strength.
- Forged Alloy Steel.
- Available in galvanized and self colored finish.
- Individually proof tested and magnetic particle inspected. Crosby certification available at time of order.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Look for the Red Pin®… the mark of genuine Crosby quality.



"QT" QUENCHED & TEMPERED® Load Rated®

G-2169 / S-2169 Alloy Screw Pin "Wide Body" Shackles

Working Load Limit (t)*	G-2169 Stock No.	S-2169 Stock No.	Weight Each (lbs.)	Dimensions (in.)												
				B +/- .25	C	D +/- .02	E	G	H	J	K	L	M	P	R	
7	1021655	1021664	3.5	1.25	.69	.88	1.82	1.25	3.56	1.60	1.25	.50	3.97	4.10	5.87	
12.5	1021673	1021682	8.8	1.69	.92	1.13	2.38	1.37	4.63	2.13	1.63	.56	5.13	5.51	7.63	
18	1021691	1021699	13	2.03	1.16	1.38	2.69	1.50	5.81	2.50	2.00	.69	6.25	6.76	9.38	

* Ultimate Load is 5 times the Working Load Limit. Proof Load is 2 times the Working Load Limit.

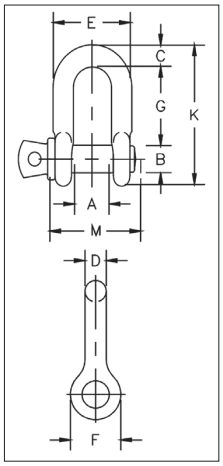
SCREW PIN SHACKLES

SHACKLES

1

G-210 / S-210

- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certifications. Proof testing and certification available when requested at the time of order, charges will apply.
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- All 209 and 210 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg. at -4° F (-20° C) upon special request.
- Meets or exceeds all requirements of ASME B30.26.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and ABS Guide for Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- G-210 Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271G, Type IVB, Grade A, Class 2, except for those provisions required of the contractor.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-210 / S-210 Screw Pin Chain Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (lb)	Dimensions (in)										Tolerance (+ / - in)	
		G-210	S-210		A	B	C	D	E	F	G	K	L	M	G	A
1/4	0.5	1019150	1019169	.11	.47	.31	.25	.25	.97	.62	.97	1.59	.19	1.43	.06	.06
5/16	0.75	1019178	1019187	.17	.53	.38	.31	.31	1.15	.75	1.07	1.91	.22	1.71	.06	.06
3/8	1	1019196	1019203	.28	.66	.44	.38	.38	1.42	.92	1.28	2.31	.25	2.02	.13	.06
7/16	1.5	1019212	1019221	.43	.75	.50	.44	.44	1.63	1.06	1.48	2.67	.31	2.37	.13	.06
1/2	2	1019230	1019249	.59	.81	.63	.50	.50	1.81	1.18	1.66	3.03	.38	2.69	.13	.06
5/8	3.25	1019258	1019267	1.25	1.06	.75	.63	.63	2.32	1.50	2.04	3.76	.44	3.34	.13	.06
3/4	4.75	1019276	1019285	2.63	1.25	.88	.81	.75	2.75	1.81	2.40	4.53	.50	3.97	.25	.06
7/8	6.5	1019294	1019301	3.16	1.44	1.00	.97	.88	3.20	2.10	2.86	5.33	.50	4.50	.25	.06
1	8.5	1019310	1019329	4.75	1.69	1.13	1.00	1.00	3.69	2.38	3.24	5.94	.56	5.13	.25	.06
1-1/8	9.5	1019338	1019347	6.75	1.81	1.25	1.25	1.13	4.07	2.69	3.61	6.78	.63	5.71	.25	.06
1-1/4	12	1019356	1019365	9.06	2.03	1.38	1.38	1.25	4.53	3.00	3.97	7.50	.69	6.25	.25	.13
1-3/8	13.5	1019374	1019383	11.63	2.25	1.50	1.50	1.38	5.01	3.31	4.43	8.28	.75	6.53	.25	.13
1-1/2	17	1019392	1019409	15.95	2.38	1.63	1.62	1.50	5.38	3.62	4.87	9.05	.81	7.33	.25	.13
1-3/4	25	1019418	1019427	26.75	2.88	2.00	2.12	1.75	6.38	4.19	5.78	10.97	1.00	9.06	.25	.13
2	35	1019436	1019445	42.31	3.25	2.25	2.36	2.10	7.25	5.00	6.77	12.74	1.13	10.35	.25	.13
2-1/2	55	1019454	1019463	71.75	4.12	2.75	2.63	2.63	9.38	5.68	8.07	14.85	1.38	13.00	.25	.25

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

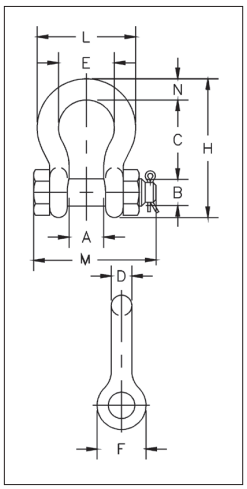
Load Rated · Fatigue Rated · TA TYPE APPROVED · QUIC-CHECK® · Q&T QUENCHED & TEMPERED · MAXTOUGH® · CE

APPLICATION AND WARNING INFORMATION SECTION 17

BOLT TYPE SHACKLES

Crosby®

G-2130 / S-2130



- Working Load Limit and Grade 6 permanently shown on every shackle.
- Forged, Quenched & Tempered, with alloy bolts.
- Hot-dip galvanized (G) or self colored (S). 85, 120, and 150-metric ton shackles are all hot-dip galvanized bows and the bolts are Dimetcoted® and painted red.
- Sizes 3/8 and below are mechanically galvanized.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit (1/3t - 55t).
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- Meets or exceeds all requirements of ASME B30.26.
- Shackles 85 metric tons and larger are individually proof tested to 2.0 times the working load limit.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules ABS Guide for Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- 3.1 Certification as standard available for charpy and statistical proof test from 3.25t up to 25 tons to DNV 2.7-1 and EN13889.
- Crosby 3.25t through 25t G-2130OC anchor shackles are type approved to DNV Certification Notes 2.7-1-Offshore Containers. These Crosby shackles are statistical proof and impact tested to 31 ft-lb (42 Joules) min. avg. at -4° F (-20° C). The tests are conducted by Crosby and 3.1 test certification is available upon request.
- All other 2130 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg at -4° F (-20° C) when requested at time of order.
- Meets the performance requirements of Federal Specification RR-C-271G, Type IVA, Grade A, Class 3, except for those provisions required of the contractor.
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-2130 / S-2130 Bolt Type Anchor Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.			Weight Each (lb)	Dimensions (in)										Tolerance (+ / - in)	
		G-2130	S-2130	G-2130OC		A	B	C	D	E	F	H	L	M	N	C	A
3/16	0.33 ‡	1019464	-	-	.06	.38	.25	.88	.19	.60	.56	1.47	.98	1.29	.19	.06	.06
1/4	0.5	1019466	-	-	.11	.47	.31	1.13	.25	.78	.61	1.84	1.28	1.56	.25	.06	.06
5/16	0.75	1019468	-	-	.22	.53	.38	1.22	.31	.84	.75	2.09	1.47	1.82	.31	.06	.06
3/8	1	1019470	-	-	.33	.66	.44	1.44	.38	1.03	.91	2.49	1.78	2.17	.38	.13	.06
7/16	1.5	1019471	-	-	.49	.75	.50	1.69	.44	1.16	1.06	2.91	2.03	2.51	.44	.13	.06
1/2	2	1019472	1019481	-	.79	.81	.64	1.88	.50	1.31	1.19	3.28	2.31	2.80	.50	.13	.06
5/8	3.25	1019490	1019506	1262013	1.68	1.06	.77	2.38	.63	1.69	1.50	4.19	2.94	3.56	.69	.13	.06
3/4	4.75	1019515	1019524	1262022	2.72	1.25	.89	2.81	.75	2.00	1.81	4.97	3.50	4.15	.81	.25	.06
7/8	6.5	1019533	1019542	1262031	3.95	1.44	1.02	3.31	.88	2.28	2.09	5.83	4.03	4.82	.97	.25	.06
1	8.5	1019551	1019560	1262040	5.66	1.69	1.15	3.75	1.00	2.69	2.38	6.56	4.69	5.39	1.06	.25	.06
1-1/8	9.5	1019579	1019588	1262059	8.27	1.81	1.25	4.25	1.13	2.91	2.69	7.47	5.16	5.90	1.25	.25	.06
1-1/4	12	1019597	1019604	1262068	11.71	2.03	1.40	4.69	1.29	3.25	3.00	8.25	5.75	6.69	1.38	.25	.06
1-3/8	13.5	1019613	1019622	1262077	15.83	2.25	1.53	5.25	1.42	3.63	3.31	9.16	6.38	7.21	1.50	.25	.13
1-1/2	17	1019631	1019640	1262086	19.00	2.38	1.66	5.75	1.53	3.88	3.63	10.00	6.88	7.73	1.62	.25	.13
1-3/4	25	1019659	1019668	1262095	33.91	2.88	2.04	7.00	1.84	5.00	4.19	12.34	8.80	9.68	2.25	.25	.13
2	35	1019677	1019686	-	52.25	3.25	2.30	7.75	2.08	5.75	4.81	13.68	10.15	10.81	2.40	.25	.13
2-1/2	55	1019695	1019702	-	98.25	4.13	2.80	10.50	2.71	7.25	5.69	17.90	12.75	13.58	3.13	.25	.25
3	† 85	1019711	-	-	154	5.00	3.30	13.00	3.12	7.88	6.50	21.50	14.62	15.13	3.62	.25	.25
3-1/2	† 120 ‡	1019739	-	-	265	5.25	3.76	14.63	3.62	9.00	8.00	24.88	17.02	17.00	4.38	.25	.25
4	† 150 ‡	1019757	-	-	338	5.50	4.26	14.50	4.00	10.00	9.00	25.68	18.00	17.75	4.56	.25	.25

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications..
† Individually Proof Tested with certification. ‡ Furnished with eye bolts for handling.

Load Rated | Fatigue Rated | TA TYPE APPROVED | QUIC-CHECK® | Q&T | MAXTOUGH® | CE

APPLICATION AND WARNING INFORMATION SECTION 17

SEE APPLICATION INFORMATION
On Page 92 of the General Catalog
Para Español: www.thecrosbygroup.com

BOLT TYPE SHACKLES

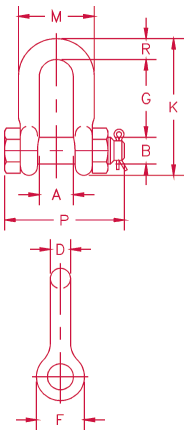
The Crosby Group, Inc.

G-2150 / S-2150

Bolt Type chain shackles with thin hex head bolt - nut with cotter pin. Meets the performance requirements of Federal Specification RR-C-271F Type IVB, Grade A, Class 3,except for those provisions required of the contractor. For additional information, see Crosby Catalog.

SEE APPLICATION AND WARNING INFORMATION
In Crosby Catalog
Para Español: www.thecrosbygroup.com

- Capacities 1/2 thru 85 metric tons, grade 6.
- Working Load Limit and grade “6” permanently shown on every shackle.
- Forged — Quenched and Tempered, with alloy bolts.
- Hot Dip galvanized or self colored. (85, 120, and 150-metric ton shackles are all hot dip galvanized bows and the bolts are Dimetcoted® and painted red)
- Fatigue rated (1/2t - 55t).
- Shackles 25t and larger are **RFID EQUIPPED**.
- Approved for use at -40 degree C (-40 degree F) to 204 degree C (400 degree F).
- Meets or exceeds all requirements of ASME B30.26.
- Sizes 1/2 - 25t meet the performance requirements of EN13889:2003.



- Shackles 55 metric tons and smaller can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification when requested at time of order.
- Type Approval certification in accordance with ABS 2007 Steel Vessel Rules 1-11-17.7 and ABS Guide for Certification on Cranes available. Certificates available when requested at time of order and may include additional charges.
- All 2150 shackles can meet charpy requirements of 42 joules (31 ft-Lbs) avg at -20 degree C (-4 degree F) upon special request.
- Look for the Red Pin®… the mark of genuine Crosby quality.

Load Rated® Fatigue Rated® TA TYPE APPROVED QUIC-CHECK® QT QUENCHED & TEMPERED® MAXTOUGH® RFID EQUIPPED Crosby CE

G-2150 / S-2150 Bolt Type Chain Shackles

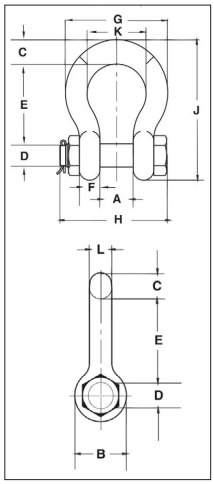
Nominal Size (in.)	Working Load Limit (t)*	Stock No.		Weight Each (lbs.)	Dimensions (in.)									Tolerance + / -	
		G-2150	S-2150		A	B	D	F	G	K	M	P	R	G	A
1/4	1/2	1019768	–	.13	.47	.31	.25	.62	.91	1.59	.97	1.56	.25	.06	.06
5/16	3/4	1019770	–	.23	.53	.38	.31	.75	1.07	1.91	1.15	1.82	.31	.06	.06
3/8	1	1019772	–	.33	.66	.44	.38	.92	1.28	2.31	1.42	2.17	.38	.13	.06
7/16	1-1/2	1019774	–	.49	.75	.50	.44	1.06	1.48	2.67	1.63	2.51	.44	.13	.06
1/2	2	1019775	1019784	.75	.81	.64	.50	1.18	1.66	3.03	1.81	2.80	.50	.13	.06
5/8	3-1/4	1019793	1019800	1.47	1.06	.77	.63	1.50	2.04	3.76	2.32	3.56	.63	.13	.06
3/4	4-3/4	1019819	1019828	2.52	1.25	.89	.75	1.81	2.40	4.53	2.75	4.15	.81	.25	.06
7/8	6-1/2	1019837	1019846	3.85	1.44	1.02	.88	2.10	2.86	5.33	3.20	4.82	.97	.25	.06
1	8-1/2	1019855	1019864	5.55	1.69	1.15	1.00	2.38	3.24	5.94	3.69	5.39	1.00	.25	.06
1-1/8	9-1/2	1019873	1019882	7.60	1.81	1.25	1.13	2.68	3.61	6.78	4.07	5.90	1.25	.25	.06
1-1/4	12	1019891	1019908	10.81	2.03	1.40	1.25	3.00	3.97	7.50	4.53	6.69	1.38	.25	.06
1-3/8	13-1/2	1019917	1019926	13.75	2.25	1.53	1.38	3.31	4.43	8.28	5.01	7.21	1.50	.25	.13
1-1/2	17	1019935	1019944	18.50	2.38	1.66	1.50	3.62	4.87	9.05	5.38	7.73	1.62	.25	.13
1-3/4	25	1019953	1019962	31.40	2.88	2.04	1.75	4.19	5.82	10.97	6.38	9.33	2.12	.25	.13
2	35	1019971	1019980	46.75	3.25	2.30	2.10	5.00	6.82	12.74	7.25	10.41	2.36	.25	.13
2-1/2	55	1019999	1020004	85.00	4.12	2.80	2.63	5.68	8.07	14.85	9.38	13.58	2.63	.25	.25
3	† 85	1020013	–	124.25	5.00	3.25	3.00	6.50	8.56	16.87	11.00	15.13	3.50	.25	.25

* **NOTE:** Maximum Proof Load is 2.0 times the Working Load Limit. Minimum Ultimate Strength is 6 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Crosby Catalog. † Individually Proof Tested with certification. ‡ Furnished in Anchor style only and furnished with Round Head Bolts with welded handles.

ALLOY BOLT TYPE SHACKLES

Crosby®

G-2140 / S-2140



- Quenched & Tempered.
- Alloy bows, alloy bolts.
- Forged alloy steel 2 through 250 metric tons. Cast alloy steel 400 metric tons.
- Meets performance requirements of Grade 8 shackles.
- Working Load Limit is permanently shown on every shackle.
- 30, 40, 55, and 85 metric ton shackle bows are available galvanized (G) or self colored (S) with bolts that are galvanized and painted red.
- Size 3/8 inch is mechanically galvanized.
- 120, 150, 175 metric ton shackle bows are hot-dip galvanized; bolts are Dimetcoted and painted red.
- 200, 250, 300, 400 metric ton shackle bows are Dimetcoted; bolts are Dimetcoted and painted red.
- Sizes 1-1/2 and larger are RFID equipped.
- Approved for use at -40° C (-40° F) to 204° C (400° F).
- Shackles are Quenched & Tempered and can meet DNV impact requirements of 42 Joules (31 ft-lb) at -20° C (-4° F).
- Crosby COLD TUFF® shackles that meet the additional requirements of DNV rules for certification of lifting applications - loose gear are available.
- Shackles 200 metric tons and larger are provided as follows:
  - Serialized bolt and bow
  - Material certification (chemical)
  - Magnetic particle inspected.
  - Certification must be requested at time of order.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. 2140 shackles meet other critical performance requirements including impact properties and material traceability, not addressed by ASME B30.26.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and 2016 ABS Guide for Certification of Lifting Appliances. Certificates are available when requested at time of order and may include additional charges.
- G-2140 meets the performance requirements of Federal Specification RR-C-271G, Type IVA, Grade B, Class 3, except for those provisions required of the contractor. For additional information, see Warnings & Applications.
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-2140 / S-2140 Alloy Bolt Type Anchor Shackles

Nominal Shackle Size (in)	Working Load Limit (t)	Stock No.			Weight Each (lb)	Dimensions (in)													Tolerance (+ / - in)		
		G-2140	S-2140	G-2140 OC		A	B	C	D	E	F	G	H	J	K	L	M	N	A	D	E
3/8	2	1021015	-	-	0.33	0.66	0.91	0.38	0.44	1.44	0.38	1.78	2.17	2.49	1.03	0.38	-	-	0.06	0.01	0.13
7/16	2.67	1021020	-	-	0.49	0.75	1.06	0.44	0.50	1.69	0.41	2.03	2.51	2.91	1.16	0.44	-	-	0.06	0.01	0.13
1/2	3.33	1021029	-	-	0.79	0.81	1.19	0.50	0.64	1.88	0.46	2.31	2.80	3.28	1.31	0.50	-	-	0.06	0.02	0.13
5/8	5	1021038	-	-	1.68	1.06	1.50	0.69	0.77	2.38	0.58	2.94	3.56	4.19	1.69	0.63	-	-	0.06	0.02	0.13
3/4	7	1021047	-	-	2.72	1.25	1.81	0.81	0.89	2.81	0.69	3.50	4.15	4.97	2.00	0.75	-	-	0.06	0.02	0.25
7/8	9.5	1021056	-	-	3.95	1.44	2.09	0.97	1.02	3.31	0.81	4.03	4.82	5.83	2.28	0.88	-	-	0.06	0.02	0.25
1	12.5	1021065	-	-	5.66	1.69	2.38	1.06	1.15	3.75	0.92	4.69	5.39	6.56	2.69	1.00	-	-	0.06	0.02	0.25
1-1/8	15	1021074	-	-	8.27	1.81	2.69	1.25	1.25	4.25	1.04	5.16	5.90	7.47	2.91	1.13	-	-	0.06	0.02	0.25
1-1/4	18	1021083	-	-	11.7	2.03	3.00	1.38	1.40	4.69	1.16	5.75	6.69	8.25	3.25	1.29	-	-	0.06	0.03	0.25
1-3/8	21	1021092	-	-	15.8	2.25	3.31	1.50	1.53	5.25	1.28	6.38	7.21	9.16	3.63	1.42	-	-	0.13	0.03	0.25
1-1/2	30	1021110	1021129	1262407	18.8	2.38	3.62	1.62	1.63	5.75	1.39	6.88	7.73	10.00	3.88	1.53	-	-	0.13	0.03	0.25
1-3/4	40	1021138	1021147	1262416	33.8	2.88	4.19	2.25	2.00	7.00	1.75	8.81	9.33	12.34	5.00	1.84	-	-	0.13	0.03	0.25
2	55	1021156	1021165	1262425	49.9	3.25	4.81	2.40	2.25	7.75	2.00	10.16	10.41	13.68	5.75	2.08	-	-	0.13	0.03	0.25
2-1/2	85	1021174	1021183	1262434	103	4.12	5.81	3.12	2.75	10.50	2.62	12.75	13.58	17.90	7.25	2.71	-	-	0.25	0.03	0.25
3	120	1021192	-	1262443	162	5.00	6.50	3.63	3.25	13.00	3.00	14.62	15.13	21.50	7.88	3.12	-	-	0.25	0.04	0.25
3-1/2	† 150	1021218	-	1262452	268	5.25	8.00	4.38	3.75	14.63	3.75	17.02	20.33	24.88	9.00	3.62	4.00	1.80	0.25	0.01	0.25
4	† 175	1021236	-	1262461	318	5.50	9.00	4.56	4.25	14.50	4.00	18.00	21.20	25.68	10.00	4.00	4.00	1.80	0.25	0.01	0.25
4-3/4	† 200	1021234	-	-	461	7.25	10.50	5.00	4.75	15.19	4.58	20.84	24.04	27.81	11.00	4.75	4.00	1.80	0.25	0.01	0.25
5	† 250	1021243	-	-	608	8.50	12.00	5.62	5.00	18.50	4.85	23.62	24.87	32.61	13.00	5.00	4.00	1.80	0.25	0.01	0.25
6	† 300	1021252	-	-	797	8.38	13.00	6.06	6.00	18.72	4.89	24.76	26.22	34.28	13.00	5.88	4.00	1.80	0.25	0.01	0.25
7*	† 400	1021478	-	-	1289	8.25	14.00	7.25	7.00	22.50	6.50	26.00	29.66	40.25	13.00	6.00	4.00	1.80	0.25	0.01	0.25

4.5:1 Design Factor for sizes 2 through 21 metric tons, 5.4:1 Design Factor for sizes 30 through 175 metric tons. 4:1 Design Factor for 200 through 400 metric tons. Maximum Proof Load is 2 times the Working Load Limit. *Cast alloy steel.†Furnished with round head bolts with a handle. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

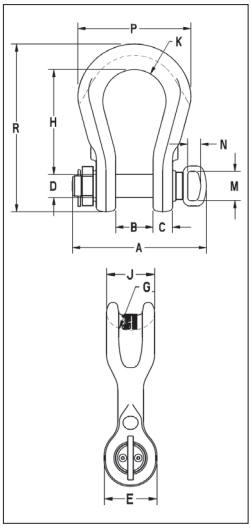
APPLICATION AND WARNING INFORMATION SECTION 17

WIDE BODY SHACKLES

SHACKLES

1

G-2160 / S-2160



- Increase in shackle bow radius provides minimum 58% gain in sling bearing surface and eliminates need for a thimble.
- Increases usable sling strength a minimum of 15% and greatly improves life of wire rope slings.
- Can be used to connect synthetic web slings, synthetic round slings or wire rope slings.
- All sizes Quenched & Tempered for maximum strength.
- Forged alloy steel from 7 through 300 metric tons.
- Cast alloy steel from 400 through 1550 metric tons.
- Proof tested as follows:
  - 7 through 75 metric tons and 200 through 300 metric tons: 2 x WLL
  - 125 metric tons: 1.6 x WLL
  - 400 metric tons and higher: 1.33 x WLL
- All ratings are in metric tons, embossed on side of bow.
- G-2160, (7 through 55t), are hot-dip galvanized and pins are painted red.
- G-2160 (75t and larger), bows are furnished Dimetcoted; Pins are Dimetcoted, then painted red.
- S-2160 bows and pins are painted red.
- Shackles 30t and larger are RFID equipped.
- Approved for use at -40° C (-40° F) to 204° C (400° F).
- Bow and bolt are certified to meet Charpy impact testing of 42 Joules (31 ft-lb) min. avg. at -20° C (-4° F).
- All 2160 shackles are individually proof tested and magnetic particle inspected. Crosby certification available at time of order.
- Shackles requiring ABS, Lloyds and other certifications are available upon special request and must be specified at time of order.
- Type approved and certification to DNV Rules for Certification of Lifting Appliances, and are produced in accordance with DNV MSA requirements. Databook is provided that includes required documents.
  - Serialization / Identification
  - Material Testing (physical / chemical / Charpy)
  - Proof Testing
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-2160 / S-2160 Wide Body Shackles

Working Load Limit (t)*	Stock No.		Weight Each (lb)	Dimensions (in)														
	G-2160	S-2160		A	B +/- .25	C	D +/- .02	E	G	H	J	K	M	N	P	R	Effective Body Diameter
7	1021256	1021548	4.0	4.14	1.25	.69	.88	1.82	1.25	3.56	1.60	1.25	-	-	4.10	5.87	2.1
12.5	1021265	1021557	8.8	5.38	1.69	.92	1.13	2.38	1.37	4.63	2.13	1.63	-	-	5.51	7.63	2.4
18	1021274	1021566	14.9	6.69	2.03	1.16	1.38	2.69	1.50	5.81	2.50	2.00	-	-	6.76	9.38	2.8
30	1021283	1021575	26.5	7.69	2.37	1.38	1.63	3.50	2.50	6.94	3.13	2.50	-	-	8.50	11.38	4.1
40	1021285	1021584	46.0	9.28	2.88	1.69	2.00	4.00	1.75	8.06	3.75	3.00	-	-	10.62	13.62	3.6
55	1021287	1021593	68.0	10.36	3.25	2.00	2.25	4.63	2.00	9.36	4.50	3.50	-	-	12.26	15.63	4.3
75	1022101	-	112	15.04	4.13	2.39	2.75	5.34	3.75	11.53	5.00	3.64	4.00	1.80	12.64	18.66	6.3
125	1022110	-	193	18.32	5.12	3.10	3.15	6.50	3.75	14.37	5.91	4.33	4.00	1.80	15.47	23.00	6.8
200	1022118	-	420	19.35	5.91	3.39	4.12	8.41	5.25	18.91	8.56	5.42	4.00	1.80	20.27	30.44	9.5
300	1022127	-	805	22.61	7.38	4.30	5.25	10.50	6.13	23.63	10.38	6.31	4.00	1.80	23.93	37.66	11.4
400	1021334	-	1143	30.27	8.66	5.16	6.30	12.56	7.99	22.64	12.60	7.28	4.00	1.80	27.17	38.78	14.3
500	1021343	-	1439	33.35	9.84	5.73	7.09	13.39	8.09	24.81	13.39	8.86	4.00	1.80	31.10	42.72	14.8
600	1021352	-	2132	36.02	10.83	6.23	7.87	15.50	13.00	27.56	14.57	9.74	5.75	2.25	34.05	47.24	20.3
700	1021361	-	2579	38.91	11.81	6.59	8.46	17.03	8.87	28.94	15.75	10.63	5.75	2.25	37.01	50.18	16.6
800	1021254	-	3025	41.66	12.80	7.30	9.06	17.69	9.76	29.53	16.54	10.92	5.75	2.25	38.39	52.09	18.0
900	1021389	-	3678	43.73	13.78	7.78	9.84	18.81	13.00	29.82	18.81	11.52	5.75	2.25	40.35	54.59	22.4
1000	1021370	-	4079	45.98	14.96	8.33	10.63	20.00	10.26	29.92	18.11	12.11	5.75	2.25	42.32	55.31	19.3
1250	1021272	-	5320	49.86	16.99	9.16	11.81	22.56	13.92	36.61	20.87	12.70	-	-	46.26	65.35	24.4
1550	1021281	-	8302	54.89	18.31	11.10	12.60	24.25	12.52	42.32	22.82	13.29	-	-	51.81	74.63	23.9

5:1 Design Factor on 75 through 300 metric tons. Maximum Proof Load is 2 times the Working Load Limit on 75 through 300 metric tons (except for 125 metric tons which is proof tested to 1.6 times the Working Load Limit). 4.5:1 Design Factor on 400 through 1550 metric tons. Maximum Proof Load is 1.33 times the Working Load Limit on 400 through 1550 metric tons.

APPLICATION AND WARNING INFORMATION SECTION 17

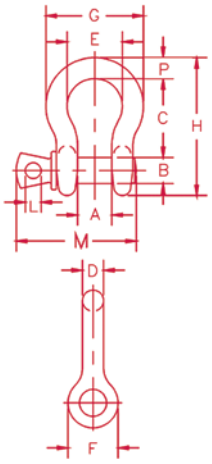
SPECIALTY SHACKLES

The Crosby Group, Inc.

S-209T
Theatrical Shackle

SEE APPLICATION AND WARNING INFORMATION
In Crosby Catalog
Para Español: www.thecrosbygroup.com

- Sizes: 3/8" through 3/4"
- Capacities: 1 through 4-3/4 metric tonnes.
- Forged - Quenched and Tempered, with alloy pins.
- Working Load Limit permanently shown on every shackle.
- Flat black baked on power coat finish.
- Fatigue Rated.
- Industry leading 6 to 1 design factor.
- Screw pin anchor shackles meet the performance requirement of Federal Specification RR-C-271F Type A, Grade A, Class 2, except for those provisions required of the contractor.
- Meets the performance requirements of EN 13889:2003.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.



S-209T Theatrical Shackles

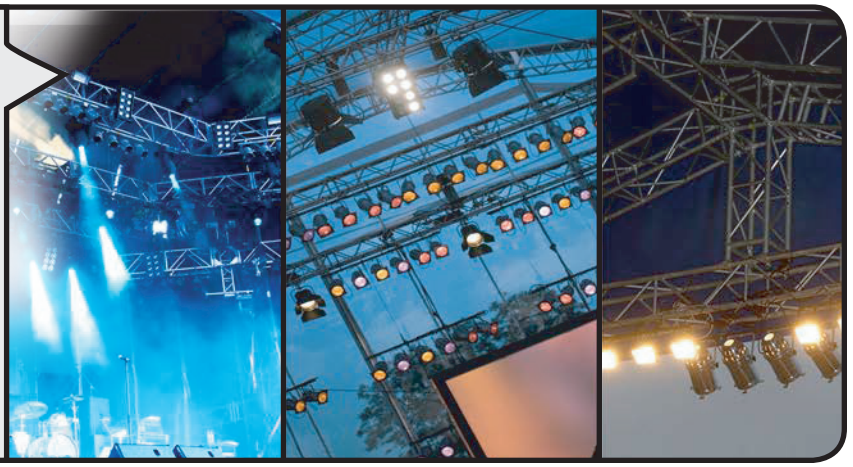
Load Rated® Fatigue Rated® QUIC-CHECK® "QT" QUENCHED & TEMPERED® MAXTOUGH®

Nominal Size (in.)	Working Load Limit (t)*	S-209T Stock No.	Weight Each (lbs.)	Dimensions (in.)											Tolerance + / -	
				A	B	C	D	E	F	G	H	L	M	P	C	A
3/8	1	1018706	.31	.66	.44	1.44	.38	1.03	.91	1.78	2.49	.25	2.02	.38	.13	.06
7/16	1-1/2	1018724	.38	.75	.50	1.69	.40	1.16	1.06	2.03	2.91	.31	2.37	.44	.13	.06
1/2	2	1018742	.72	.81	.63	1.88	.50	1.31	1.19	2.31	3.28	.38	2.69	.50	.13	.06
5/8	3-1/4	1018760	1.37	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	.44	3.34	.69	.13	.06
3/4	4-3/4	1018778	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06

* Minimum Ultimate Load is 5 times the Working Load Limit. Maximum Proof Load is 2.0 times the Working Load Limit.

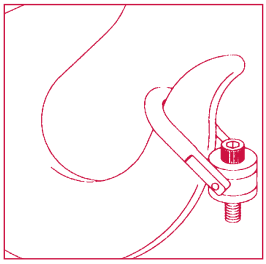
S-209T...The "Crosby"

When you're looking for the top-named shackle used for theatrical and stage rigging applications, ask for a "Crosby"—the name synonymous with quality, safety and heavy lifting. The S-209T shackle is enhanced with a flat black baked-on power coat finish that causes the shackle to blend in with stage surroundings. This guarantees "behind-the-scene" strength and dependability without detracting the eye from on-stage action.



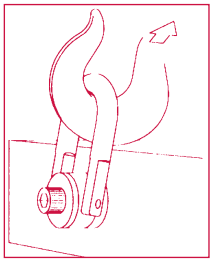
The Crosby Group, Inc.

Warnings and Application Instructions



WRONG

Figure 1



WRONG

Figure 2

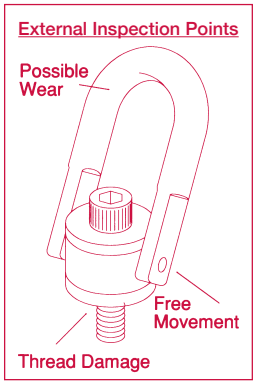
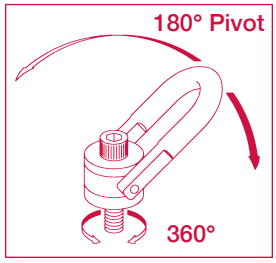


Figure 3



RIGHT

Figure 4

Hoist Ring Application Assembly Safety

- Use swivel hoist ring only with ferrous metal (steel, iron) or soft metal (i.e., aluminum) loads (work piece). Do not leave threaded end of hoist ring in aluminum loads for long time periods due to corrosion.
- After determining the loads on each hoist ring, select the proper size hoist ring using the Working Load Limit ratings in Table 1 for UNC threads and Table 2 for Metric threads.
- Drill and tap the work piece to the correct size to a minimum depth of one-half the threaded shank diameter plus the threaded shank length. See rated load limit and bolt torque requirements imprinted on top of the swivel trunnion. (See Table 1 and/or Table 2)
- Install hoist ring to recommended torque with a torque wrench making sure the bushing flange meets the load (work piece) surface.
- Never use spacers between bushing flange and mounting surface.
- Always select proper load rated lifting device for use with Swivel Hoist Ring.
- Attach lifting device ensuring free fit to hoist ring bail (lifting ring). (Fig. 1)
- Apply partial load and check proper rotation and alignment. There should be no interference between load (work piece) and hoist ring bail. (Fig. 2)
- **Special Note:** When a Hoist Ring is installed with a retention nut, the nut must have full thread engagement and must meet one of the following standards to develop the Working Load Limit (WLL).
  1. ASTM A-563 (A) Grade D Hex Thick
     (B) Grade DH Standard Hex
  2. SAE Grade 8 — Standard Hex

Hoist Ring Inspection/Maintenance

- Always inspect hoist ring before use.
- Regularly inspect hoist ring parts. (Fig. 3)
- Never use hoist ring that show signs of corrosion, wear or damage.
- Never use hoist ring if bail is bent or elongated.
- Always be sure threads on shank and receiving holes are clean, not damaged, and fit properly.
- Always check with torque wrench before using an already installed hoist ring.
- Always make sure there are no spacers (washers) used between bushing flange and the mounting surface. Remove any spacers (washers) and retorque before use.
- Always ensure free movement of bail. The bail should pivot 180° and swivel 360°. (Fig. 4)
- Always be sure total work piece surface is in contact with hoist ring bushing mating surface. Drilled and tapped hole must be 90° to load (work piece) surface.

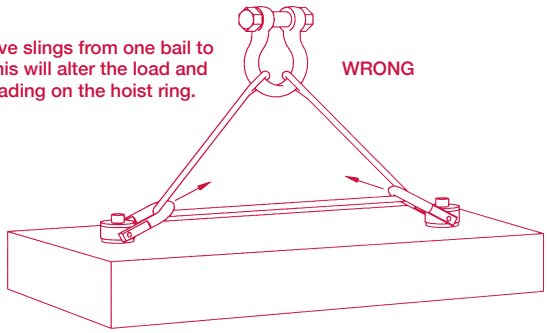
WARNING:
- Loads may slip or fall if proper Hoist Ring assembly and lifting procedures are not used.
- A falling load may cause serious injury or death.
- Use only genuine Crosby parts as replacements.
- Read, understand and follow all instructions, diagrams and chart information before using swivel hoist ring assembly.

HOIST RINGS

The Crosby Group, Inc.

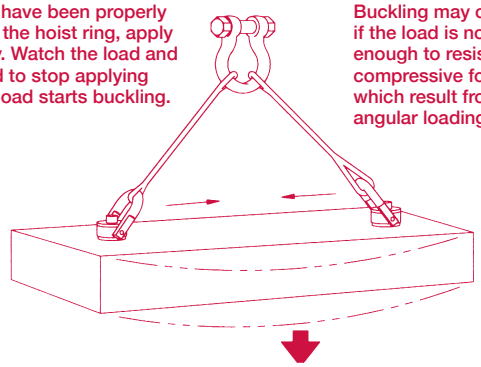
Warnings and Application Instructions

Do not reeve slings from one bail to another. This will alter the load and angle of loading on the hoist ring.



After slings have been properly attached to the hoist ring, apply force slowly. Watch the load and be prepared to stop applying force if the load starts buckling.

Buckling may occur if the load is not stiff enough to resist the compressive forces which result from the angular loading.



Operating Safety

- Never exceed the capacity of the swivel hoist ring, see Table 1 for UNC threads and Table 2 for Metric threads.

WARNING:
- Loads may slip or fall if proper Hoist Ring assembly and lifting procedures are not used.
- A falling load may cause serious injury or death.
- Use only genuine Crosby parts as replacements.
- Read, understand and follow all instructions, diagrams and chart information before using swivel hoist ring assembly.

- When using lifting slings of two or more legs, make sure the forces in the legs are calculated using the angle from the vertical to the leg and select the proper size swivel hoist ring to allow for the angular forces. **(Note:** Sling angles will de-rate sling members (chain, rope, or webbing) but will not de-rate swivel hoist ring capacity.)

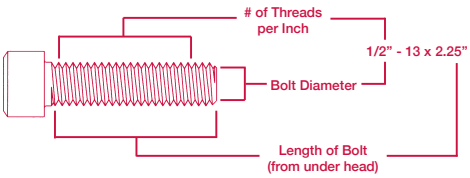
The Crosby Group, Inc.

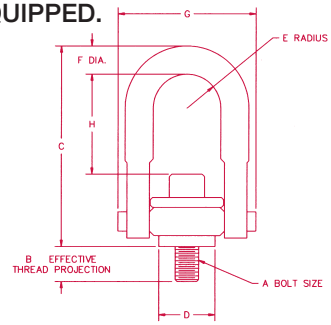
UNC Swivel Hoist Rings

Load Rated® Fatigue Rated® RFID EQUIPPED Crosby

HR-125
Swivel Hoist Ring

- Top washer has the following features:
  - The Working Load Limit and Recommended Torque value are permanently stamped into each washer.
  - Washer is color coded for easy identification: Red - UNC thread.
- Individually Proof Tested to 2-1/2 times Working Load Limit.
- Bolt specification is an Alloy socket head cap screw to ASTM A 574.
- All threads listed are UNC.
- **BOLT SIZE IDENTIFICATION:** The size of the bolt will be stated as in the drawing above. Illustration shows meaning of each dimension given.
- Frame 2 and larger are **RFID EQUIPPED.**





HR-125 UNC Threads

Table 1

Frame Size No.	HR-125 Stock No.	Working Load Limit (lbs.)*	Torque in Ft. Lbs.	Dimensions (in.)								Weight Each (lbs.)
				Bolt Size A ‡	Effective Thread Projection Length B	C	D	Radius E	Diameter F	G	H	
1 †	1016887	800	7	5/16 - 18 x 1.50	0.58	2.72	0.97	0.46	0.34	1.87	1.12	0.37
1 †	1016898	1000	12	3/8 - 16 x 1.50	0.58	2.72	0.97	0.46	0.34	1.87	1.05	0.39
2	1016909	2500	28	1/2 - 13 x 2.00	0.70	4.85	1.96	0.87	0.75	3.35	2.29	2.33
2 †	1016912	2500	28	1/2 - 13 x 2.50	1.20	4.85	1.96	0.87	0.75	3.35	2.29	2.36
2	1016920	4000	60	5/8 - 11 x 2.00	0.70	4.85	1.96	0.87	0.75	3.35	2.16	2.41
2 †	1016924	4000	60	5/8 - 11 x 2.75	1.45	4.85	1.96	0.87	0.75	3.35	2.16	2.47
2	1016931	5000	100	3/4 - 10 x 2.25	0.95	4.85	1.96	0.87	0.75	3.35	2.04	2.52
2 †	1016935	5000	100	3/4 - 10 x 2.75	1.45	4.85	1.96	0.87	0.75	3.35	2.04	2.59
3	1016942	7000 **	100	3/4 - 10 x 2.75	0.89	6.57	2.96	1.36	0.94	4.87	2.97	6.72
3 †	1016946	7000 **	100	3/4 - 10 x 3.50	1.64	6.57	2.96	1.36	0.94	4.87	2.97	6.81
3	1016953	8000	160	7/8 - 9 x 2.75	0.89	6.57	2.96	1.36	0.94	4.87	2.84	6.84
3 †	1016957	8000	160	7/8 - 9 x 3.50	1.64	6.57	2.96	1.36	0.94	4.87	2.84	6.96
3	1016964	10000	230	1 - 8 x 3.00	1.14	6.57	2.96	1.36	0.94	4.87	2.72	7.09
3 †	1016969	10000	230	1 - 8 x 4.00	2.14	6.57	2.96	1.36	0.94	4.87	2.72	7.31
4	1016975	15000	470	1-1/4 - 7 x 4.50	2.21	8.72	3.71	1.75	1.19	6.18	3.93	14.51
5	1016986	24000	800	1-1/2 - 6 x 6.75	3.00	12.55	4.71	2.39	1.75	8.48	5.52	37.73
5	1016997	30000	1100	2 - 4-1/2 x 6.75	3.00	12.55	4.71	2.39	1.75	8.48	5.02	40.69
6	1017001	50000	2100	2-1/2 - 4 x 8.0	4.00	16.88	5.75	3.00	2.25	11.00	8.03	88.00
7	1017005	75000	4300	3 - 4 x 10.5	5.00	19.50	6.45	3.75	2.75	14.16	8.50	166.00
8	1017009	100000	5100	3-1/2 - 4 x 13.0 #	7.00	22.09	7.75	4.00	3.25	15.91	9.28	265.00

*Ultimate Load is 5 times the Working Load Limit.
** Ultimate Load is 4.5 times the Working Load Limit for 7000# Hoist Ring when tested in 90 degree orientation.
† Long Bolts are designed to be used with soft metal (i.e., aluminum) workpiece. While the long bolts may also be used with ferrous metal (i.e.,steel & iron) workpiece, short bolts are designed for ferrous workpieces only.
‡ Bolt specification is an Alloy socket head cap screw to ASTM A 574.
# Hex head bolt used on Frame 8 (100,000lb.) Hoist Ring.

SEE APPLICATION AND WARNING INFORMATION
In Crosby Catelog
Para Español: www.thecrosbygroup.com

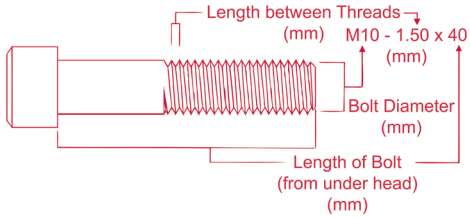
SWIVEL HOIST RINGS

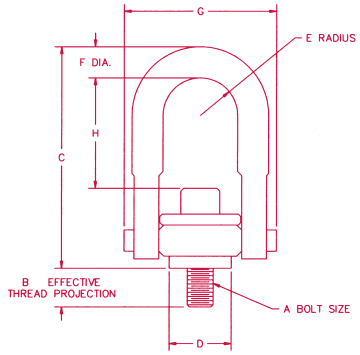
The Crosby Group, Inc.

Metric Swivel Hoist Rings

HR-125M
Swivel Hoist Ring

- Top washer has the following features:
  - The Working Load Limit and Recommended Torque value are permanently stamped into each washer.
  - Washer is color coded for easy identification: Silver - Metric thread.
- Individually Proof Tested to 2-1/2 times Working Load Limit.
- Bolt specification is a Grade 12.9 Alloy socket head cap screw to Din 912. All threads listed are metric (ASME B18.3.1m).
- Designed to be used with ferrous workpiece only.
- **BOLT SIZE IDENTIFICATION:** The size of the bolt will be stated as in the drawing above. Illustration shows meaning of each dimension given.
- Frame 2 and larger **RFID EQUIPPED**.





HR-125M Metric Threads

Table 2

Frame Size No.	HR-125M Stock No.	Working Load Limit (kg)		Torque in Nm*	Dimensions (mm)								Weight Each (kg)
		At a 5:1 Design Factor †	At a 4:1 Design Factor †		(A) Bolt Size ‡	(B)Effective Thread Projection Length	C	D	Radius E	Diameter F	G	H	
1	1016602	400	500	10	M8X1.25X40	16.9	69.9	24.6	11.8	8.5	47.5	29.9	.17
1	1016613	450	550	16	M10X1.50X40	16.9	69.9	24.6	11.8	8.5	47.5	28.1	.18
2	1016624	1050	1300	38	M12X1.75X50	16.9	123	49.8	22.3	17.5	85.1	60.4	1.05
2	1016635	1900	2400	81	M16X2.00X60	26.9	123	49.8	22.3	17.5	85.1	56.3	1.11
2	1016644	2150	2700	136	M20X2.50X65	31.9	123	49.8	22.3	17.5	85.1	52.3	1.17
3	1016657	3000	3750	136	M20X2.50X75	27.8	167	75.2	34.7	25.4	124	76.6	3.09
3	1016668	4200	5250	312	M24X3.00X80	32.8	167	75.2	34.7	25.4	124	70.5	3.21
4	1016679	7000	8750	637	M30X3.50X120	61.7	222	94.2	44.5	30.5	157	102	6.53
5	1016690	11000	13750	1005	M36X4.00X150	54.0	318	120	60.7	44.5	215	142	16.8
5	1016701	12500	15600	1005	M42X4.50X160	64.0	318	120	60.7	44.5	215	136	17.4
5	1016712	13500	16900	1350	M48X5.00X160	74.0	318	120	60.7	44.5	215	130	18.0

*The tightening torque values shown are based upon threads being clean, dry and free of lubrication.
† Individually proof loaded to 2-1/2 times the Working Load Limit based on the 4:1 design factor.
‡ Bolt specification is a Grade 12.9 Alloy socket head cap screw to Din 912.
All threads are metric (ASME/ANSI B18.3.1m).

SEE APPLICATION AND WARNING INFORMATION
In Crosby Catelog
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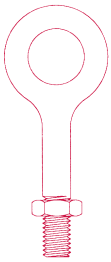
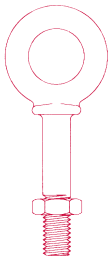
The Crosby Group, Inc.

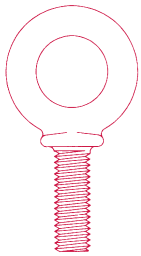
Warnings & Application Instructions



G-291
Regular Nut
Eye Bolt



G-277
Shoulder Nut
Eye Bolt



G-279
Machinery Nut
Eye Bolt

Important Safety Information — Read & Follow

Inspection/Maintenance Safety:

- Always inspect eye bolt before use.
- Never use eye bolt that shows signs of wear or damage.
- Never use eye bolt if eye or shank is bent or elongated.
- Always be sure threads on shank and receiving holes are clean.
- Never machine, grind, or cut eye bolt.

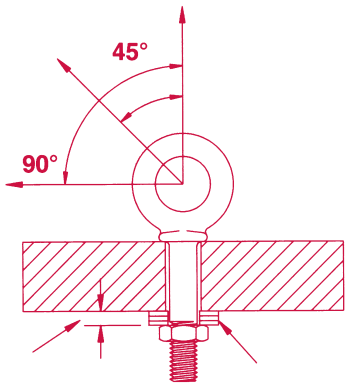
Assembly Safety:

- Never exceed load limits specified in Table 1.
- Never use regular nut eye bolts for angular lifts.
- Always use shoulder nut eye bolts (or machinery eye bolts) for angular lifts.
- For angular lifts, adjust working load as follows:

Direction of Pull	Adjusted Working Load
45 degrees	30% of rated working load
90 degrees	25% of rated working load

- Never undercut eye bolt to seat shoulder against the load.
- Always countersink receiving hole or use washers to seat shoulder.
- Always screw eye bolt down completely for proper seating.
- Always tighten nuts securely against the load.

Table 1 (In-Line Load)	
Size (in.)	**Working Load Limit (lbs.)**
1/4	650
5/16	1200
3/8	1550
1/2	2600
5/8	5200
3/4	7200
7/8	10600
1	13300
1 1/4	21000
1 1/2	24000



IN - LINE

Shoulder Nut Eye Bolt — Installation for Angular Loading

- The threaded shank must protrude through the load sufficiently to allow full engagement of the nut.
- If the eye bolt protrudes so far through the load that the nut cannot be tightened securely against the load, use properly sized washer to take up the excess space BETWEEN THE NUT AND THE LOAD.
- Place washers or spacers between nut and load so that when the nut is tightened securely, the shoulder is secured flush against the load surface.
- Thickness of spacers must exceed this distance between the bottom of the load and the last thread of the eye bolt.

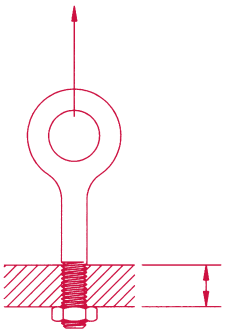
WARNING:
- Loads may slip or fall if proper eye bolt assembly and lifting procedures are not used.
- A falling load may cause serious injury or death.
- Read and understand both sides of these instructions, and follow all eye bolt safety information presented here.
- Read, understand and follow all information in diagrams and charts below before using eye bolt assemblies.

EYE BOLTS

The Crosby Group, Inc.

Regular Nut & Shoulder Nut Eye Bolt — Installation for In-line Loading

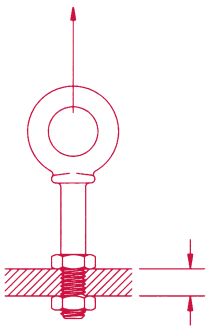
Warnings and Application Instructions



RIGHT

More than one eye bolt diameter of threads, only (1) nut required.

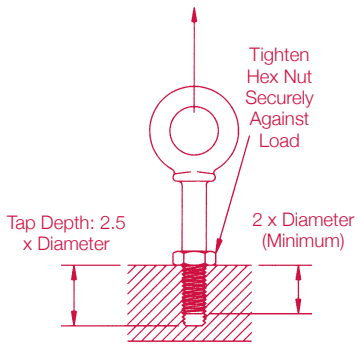
Tighten hex nut securely against load



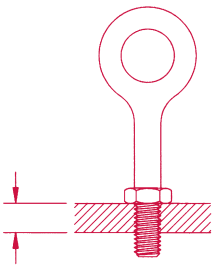
RIGHT

One eye bolt diameter of threads or less, use two (2) nuts.

Tighten hex nut securely against load



RIGHT

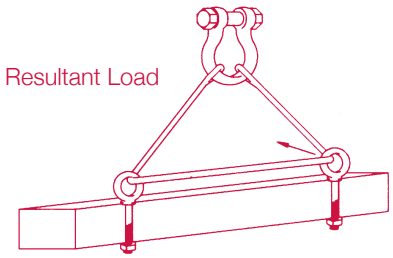


WRONG

One eye bolt diameter or less

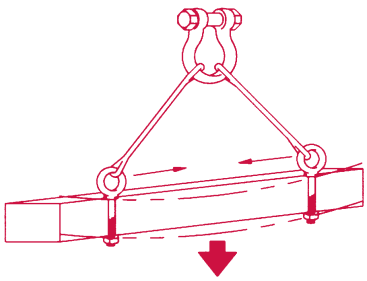
Operating Safety

- Always stand clear of load.
- Always lift load with steady, even pull – do not jerk.
- Always apply load to eye bolt in the plane of the eye – not at an angle.
- Never exceed the capacity of the eye bolt–see Table 1.
- When using lifting slings of two or more legs, make sure the loads in the legs are calculated using the angle from the vertical to the leg and properly size the shoulder nut or machinery eye bolt for the angular load.



WRONG

Do not reeve slings from one eye bolt to another. This will alter the load and angle of loading on the eye bolt.



After slings have been properly attached to the eye blots, apply force slowly. Watch the load carefully and be prepared to stop applying force if the load starts buckling.

Buckling may occur if the load is not stiff enough to resist the compressive forces which result from the angular loading.

WARNING:
- Loads may slip or fall if proper eye bolt assembly and lifting procedures are not used.
- A falling load may cause serious injury or death.
- Read and understand both sides of these instructions, and follow all eye bolt safety information presented here.
- Read, understand and follow all information in diagrams and charts below before using eye bolt assemblies.

The Crosby Group, Inc.

Machinery Eye Bolt — Installation for In-Line & Angular Loading

Warnings and Application Instructions

These eye bolts are primarily intended to be installed into tapped holes.

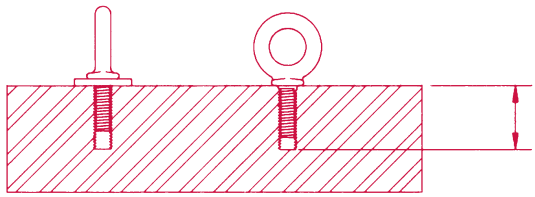
1. After the loads on the eye bolts have been calculated, select the proper size eye bolt for the job.
   For angular lifts, adjust working load as follows:

Direction of Pull	Adjusted Working Load
45 degrees	30% of rated working load
90 degrees	25% of rated working load

2. Drill and tap the load to the correct sizes to a minimum depth of one-half the eye bolt size beyond the shank length of the machinery eye bolt.
3. Thread the eye bolt into the load until the shoulder is flush and securely tightened against the load.
4. If the plane of the machinery eye bolt is not aligned with the sling line, estimate the amount of unthreading rotation necessary to align the plane of the eye properly.
5. Remove the machinery eye bolt from the load and add shims (washers) of proper thickness to adjust the angle of the plane of the eye to match the sling line. Use Table 2 to estimate the required shim thickness for the amount of unthreading rotation required.

Table 2

Eye Bolt Size (in.)	Shim Thickness Required to Change Rotation 90° (in.)
1/4	0.0125
5/16	0.0139
3/8	0.0156
1/2	0.0192
5/8	0.0227
3/4	0.0250
7/8	0.0278
1	0.0312
1 1/4	0.0357
1 1/2	0.0417



Shim added to change eye alignment 90°
Minimum tap depth is basic shank length plus one-half the nominal eye bolt diameter.

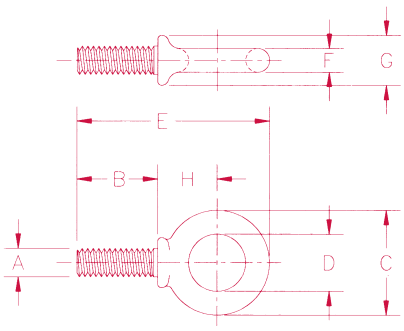
EYE BOLTS

The Crosby Group, Inc.

Shoulder Type Machinery Eye Bolts

SEE APPLICATION AND WARNING INFORMATION

S-279



- Forged Steel — Quenched & Tempered.
- Recommended for straight ine pull.
- Fatigue tested to 1 1/2 times the Working Load Limit for 20,000 cycles.

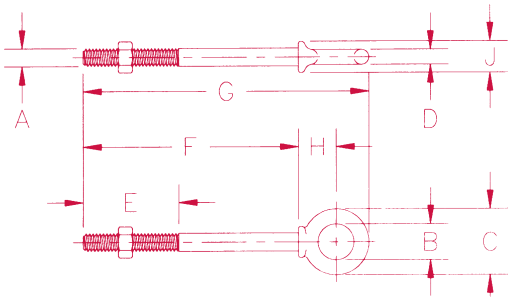
Size	CERTEX Cat. Ref. No.	Crosby Stock No.	Working Load Limit* (lbs.)	Weight Per 100 (lbs.)	Dimensions (in.)							
					A	B	C	D	E	F	G	H
1/4 x 1	CX10-0313	9900182	650	5.10	0.25	1.00	0.88	0.50	1.94	0.19	0.47	0.50
5/16 x 1 1 /8	CX10-0314	9900191	1200	6.20	0.31	1.13	1.12	0.62	2.38	0.25	0.56	0.69
3/8 x 1 1/4	CX10-0315	9900208	1550	12.50	0.38	1.25	1.38	0.75	2.72	0.31	0.66	0.78
1/2 x 1 1/2	CX10-0316	9900217	2600	25.00	0.50	1.50	1.75	1.00	3.38	0.38	0.91	1.00
5/8 x 1 3/4	CX10-0317	9900226	5200	50.00	0.63	1.75	2.25	1.25	4.19	0.50	1.12	1.31
3/4 x 2	CX10-0318	9900235	7200	87.50	0.75	2.00	2.75	1.50	4.94	0.62	1.38	1.56
7/8 x 2 1/4	CX10-0319	9900244	10600	157.20	0.88	2.25	3.25	1.75	5.72	0.75	1.56	1.84
1 x 2 1/2	CX10-0320	9900253	13300	218.00	1.00	2.50	3.75	2.00	6.47	0.88	1.81	2.09
1 1/4 x 3	CX10-0321	9900262	21000	380.00	1.25	3.00	4.50	2.50	7.72	1.00	2.28	2.47
1 1/2 x 3 1 /2	CX10-0322	9900271	24000	700.00	1.50	3.50	5.50	3.00	9.25	1.25	2.75	3.00

* Ultimate load is 5 times the Working Load Limit.

The Crosby Group, Inc.

Shoulder Nut Eye Bolts

G-277



- Forged Steel
- Hot Dip galvanized.
- Furnished with standard Hot Dip galvanized, heavy hex nuts.
- Fatigue tested to 1 1/2 times the Working Load Limit for 20,000 cycles.

SEE APPLICATION AND WARNING INFORMATION

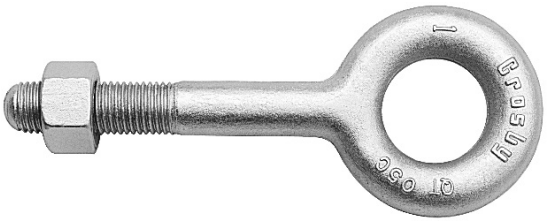
Shank Diameter & Length (in.)	CERTEX Cat. Ref. No.	Crosby G-277 Stock No. Galv.	Working Load Limit* (lbs.)	Weight Per 100 (lbs.)	Dimensions (in.)								
					A	B	C	D	E	F	G	H	J
1/4 x 2	CX10-0323	1045014	650	6.60	0.25	0.50	0.88	0.19	1.50	2.00	2.94	0.50	0.47
1/4 x 4	CX10-0324	1045032	650	9.10	0.25	0.50	0.88	0.19	2.50	4.00	4.94	0.50	0.47
5/16 x 2 1/4	CX10-0325	1045050	1200	12.50	0.31	0.62	1.12	0.25	1.50	2.25	3.50	0.69	0.56
5/16 x 4 1/4	CX10-0326	1045078	1200	18.80	0.31	0.62	1.12	0.25	2.50	4.25	5.50	0.69	0.56
3/8 x 2 1/2	CX10-0327	1045096	1550	21.40	0.38	0.75	1.38	0.31	1.50	2.50	3.97	0.78	0.66
3/8 x 4 1/2	CX10-0328	1045112	1550	25.30	0.38	0.75	1.38	0.31	2.50	4.50	5.97	0.78	0.66
1/2 x 3 1/4	CX10-0329	1045130	2600	42.60	0.50	1.00	1.75	0.38	1.50	3.25	5.12	1.00	0.91
1/2 x 6	CX10-0330	1045158	2600	56.80	0.50	1.00	1.75	0.38	3.00	6.00	7.88	1.00	0.91
5/8 x 4	CX10-0331	1045176	5200	68.60	0.62	1.25	2.25	0.50	2.00	4.00	6.44	1.31	1.12
5/8 x 6	CX10-0332	1045194	5200	102.40	0.62	1.25	2.25	0.50	3.00	6.00	8.44	1.31	1.12
3/4 x 4 1/2	CX10-0333	1045210	7200	144.50	0.75	1.50	2.75	0.62	2.00	4.50	7.44	1.56	1.38
3/4 x 6	CX10-0334	1045238	7200	167.50	0.75	1.50	2.75	0.62	3.00	6.00	8.94	1.56	1.38
7/8 x 5	CX10-0335	1045256	10600	225.00	0.88	1.75	3.25	0.75	2.50	5.00	8.46	1.84	1.56
1 x 6	CX10-0336	1045292	13300	366.30	1.00	2.00	3.75	0.88	3.00	6.00	9.97	2.09	1.81
1 x 9	CX10-0337	1045318	13300	422.50	1.00	2.00	3.75	0.88	4.00	9.00	12.97	2.09	1.81
1 1/4 x 8	CX10-0338	1045336	21000	650.00	1.25	2.50	4.50	1.00	4.00	8.00	12.72	2.47	2.28
1 1/4 x 1 2	CX10-0339	1045354	21000	795.00	1.25	2.50	4.50	1.00	4.00	12.00	16.72	2.47	2.28
1 1/2 x 15	CX10 -0340	1045372	24000	1425.00	1.50	3.00	5.50	1.25	6.00	15.00	20.75	3.00	2.75

* Ultimate load is 5 times the Working Load Limit.

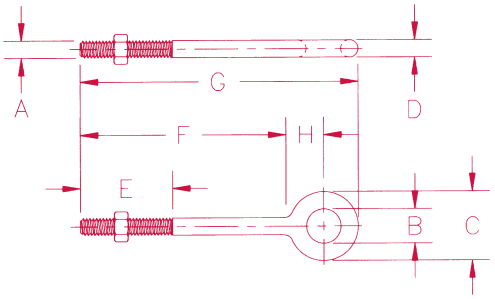
EYE BOLTS

The Crosby Group, Inc.

Regular Nut Eye Bolts



G-291



- Recommended for straight line pull.
- All Bolts Hot Dip galvanized after threading.
- Furnished with standard Hot Dip galvanized hex nuts.
- Forged Steel — Quenched and Tempered.
- Fatigue tested to 1 1/2 times the Working Load Limit for 20,000 cycles.

SEE APPLICATION AND WARNING INFORMATION

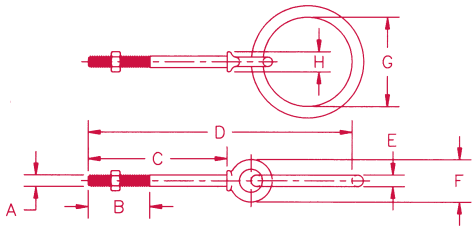
Shank Diameter & Length (in.)	CERTEX Cat. Ref. No.	Crosby G-291 Stock No. Galv.	Working Load Limit* (lbs.)	Weight Per 100 (lbs.)	Dimensions (in.)							
					A	B	C	D	E	F	G	H
1/4 x 2	CX10-0346	1043230	650	8.20	.25	.50	1.00	.25	1.50	2.00	3.06	0.56
1/4 x 4	CX10-0347	1043258	650	11.70	.25	.50	1.00	.25	2.50	4.00	5.06	0.56
5/16 x 2 1/4	CX10-0348	1043276	1200	13.30	.31	.62	1.25	.31	1.50	2.25	3.56	0.69
5/16 x 4 1/4	CX10-0349	1043294	1200	25.00	.31	.62	1.25	.31	2.50	4.25	5.56	0.69
3/8 x 2 1/2	CX10-0350	1043310	1550	23.30	.38	.75	1.50	.38	1.50	2.50	4.12	0.88
3/8 x 4 1/2	CX10-0351	1043338	1550	29.50	.38	.75	1.50	.38	2.50	4.50	6.12	0.88
3/8 x 6	CX10-0352	1043356	1550	35.20	.38	.75	1.50	.38	2.50	6.00	7.62	0.88
1/2 x 3 1/4	CX10-0353	1043374	2600	50.30	.50	1.00	2.00	.50	1.50	3.25	5.38	1.12
1/2 x 6	CX10-0354	1043392	2600	66.10	.50	1.00	2.00	.50	3.00	6.00	8.12	1.12
1/2 x 8	CX10-0355	1043418	2600	82.00	.50	1.00	2.00	.50	3.00	8.00	10.12	1.12
1/2 x 10	CX10-0356	1043436	2600	88.00	.50	1.00	2.00	.50	3.00	10.00	12.12	1.12
1/2 x 12	CX10-0357	1043454	2600	114.20	.50	1.00	2.00	.50	3.00	12.00	14.12	1.12
5/8 x 4	CX10-0358	1043472	5200	103.10	.62	1.25	2.50	.62	2.00	4.00	6.69	1.44
5/8 x 6	CX10-0359	1043490	5200	118.20	.62	1.25	2.50	.62	3.00	6.00	8.69	1.44
5/8 x 8	CX10-0360	1043515	5200	135.10	.62	1.25	2.50	.62	3.00	8.00	10.69	1.44
5/8 x 10	CX10-0361	1043533	5200	153.60	.62	1.25	2.50	.62	3.00	10.00	12.69	1.44
5/8 x 12	CX10-0362	1043551	5200	167.10	.62	1.25	2.50	.62	4.00	12.00	14.69	1.44
3/4 x 4 1/2	CX10-0363	1043579	7200	168.60	.75	1.50	3.00	.75	2.00	4.50	7.69	1.69
3/4 x 6	CX10-0364	1043597	7200	184.50	.75	1.50	3.00	.75	3.00	6.00	9.19	1.69
3/4 x 8	CX10-0365	1043613	7200	207.90	.75	1.50	3.00	.75	3.00	8.00	11.19	1.69
3/4 x 10	CX10-0366	1043631	7200	235.00	.75	1.50	3.00	.75	3.00	10.00	13.19	1.69
3/4 x 12	CX10-0367	1043659	7200	257.50	.75	1.50	3.00	.75	4.00	12.00	15.19	1.69
3/4 x 15	CX10-0368	1043677	7200	298.00	.75	1.50	3.00	.75	5.00	15.00	18.19	1.69
7/8 x 5	CX10-0369	1043695	10600	270.00	.88	1.75	3.50	.88	2.50	5.00	8.75	2.00
7/8 x 8	CX10-0370	1043711	10600	308.00	.88	1.75	3.50	.88	4.00	8.00	11.75	2.00
7/8 x 12	CX10-0371	1043739	10600	400.00	.88	1.75	3.50	.88	4.00	12.00	15.75	2.00
1 x 6	CX10-0372	1043757	13300	421.00	1.00	2.00	4.00	1.00	3.00	6.00	10.31	2.31
1 x 9	CX10-0373	1043775	13300	468.50	1.00	2.00	4.00	1.00	4.00	9.00	13.31	2.31
1 x 12	CX10-0374	1043793	13300	540.00	1.00	2.00	4.00	1.00	4.00	12.00	16.31	2.31
1 x 18	CX10-0375	1043819	13300	650.00	1.00	2.00	4.00	1.00	7.00	18.00	22.31	2.31
1 1/4 x 8	CX10-0376	1043837	21000	750.00	1.25	2.50	5.00	1.25	4.00	8.00	13.38	2.88
1 1/4 x 12	CX10-0377	1043855	21000	900.00	1.25	2.50	5.00	1.25	4.00	12.00	17.38	2.88
1 1/4 x 20	CX10-0378	1043873	21000	1210.00	1.25	2.50	5.00	1.25	6.00	20.00	25.38	2.88

* Ultimate load is 5 times the Working Load Limit.

The Crosby Group, Inc.

Shoulder Nut Ring Bolts

G-257



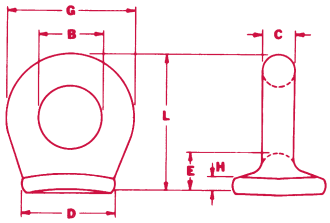
- Forged Steel — Quenched and Tempered
- Diameter of ring stock is same as shank diameter.
- Hot Dip galvanized.

Ring Bolt Size (in.)	CERTEX Cat. Ref. No.	Crosby G-257 Stock No. Galv.	Working Load Limit* (lbs.)	Weight Per 100 (lbs.)	Dimensions (in.)							
					A	B	C	D	E	F	G	H
3/8 x 4 1/2	CX10-0379	1046335	1200	56.60	0.38	2.50	4.50	7.66	0.38	1.38	2.00	0.66
1/2 X 6	CX10 -0380	1046371	2200	100.00	0.50	3.00	6.00	10.00	0.50	1.75	2.50	0.91

* Ultimate load is 5 times the Working Load Limit.

Pad Eyes

S-264



- Forged Steel — Quenched and Tempered
- Forged from 1035 Carbon Steel.
- Excellent welding qualities.
- Widely used on farm machinery, trucks, steel hulled marine vessels and material handling equipment.
- Reference American Welding Society specifications for proper welding procedures.

Size No	CERTEX Cat. Ref. No.	Crosby S-264 Stock No. S.C.	Weight Per 100 (lbs.)	Dimensions (in.)						
				B	C	D	E	G	H	L
*0	CX10-0381	1090722	2.80	0.25	0.19	0.63	.31	.63	.09	.75
*1	CX10-0382	1090740	6.50	0.38	0.25	0.88	.41	.88	.13	1.03
*1 1/2	CX10-0383	1090768	10.40	0.63	0.25	1.00	.44	1.13	.16	1.31
2	CX10-0384	1090786	21.10	0.75	0.38	1.06	.50	1.50	.19	1.63
4	CX10-0385	1090802	52.20	1.00	0.56	1.44	.78	2.13	.22	2.34
5	CX10-0386	1090820	82.50	1.25	0.69	1.75	.81	2.63	.25	2.75

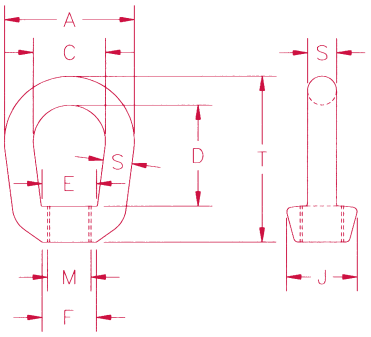
* Meets the requirements of Military Specification MS-51930A

EYE BOLTS

The Crosby Group, Inc.

Eye Nuts

G-400



- Forged Steel — Quenched and Tempered.
- Threaded.
- Hot Dip galvanized.
- Tapped with standard UNC class 2 thread.

Size No.	Stock Size (in.) S	CERTEX Cat . Ref. No.	Crosby G-400 Stock No. Galv.	Std. Tap Size	Max. Tap Size	Working Load Limit* (lbs.)	Weight Each (lbs.)	Dimensions (in.)							
								A	C	D	E	F	J	M	T
1	.25	CX10-0387	1090438	1/4	3/8	520	.09	1.25	.75	1.06	.66	.50	.69	.25	1.69
2	.31	CX10-0388	1090474	3/8	7/16	1250	.17	1.63	1.00	1.25	.75	.56	.81	.38	2.06
3A	.38	CX10-0389	1090517	1/2	1/2	2250	.28	2.00	1.25	1.50	1.00	.81	1.00	.50	2.50
4	.50	CX10-0390	1090535	5/8	3/4	3600	.60	2.50	1.50	2.00	1.19	1.00	1.31	.63	3.19
5	.63	CX10-0391	1090553	3/4	7/8	5200	1.00	3.00	1.75	2.38	1.38	1.13	1.50	.75	3.88
6	.75	CX10-0392	1090571	7/8	1	7200	1.65	3.50	2.00	2.63	1.63	1.31	1.88	.88	4.31
7	.88	CX10-0393	1090599	1	1 1/4	10000	2.69	4.00	2.25	3.06	1.88	1.56	2.13	1.00	5.00
8	1.00	CX10-0394	1090633	1 1/4	1 1/2	15500	3.87	4.50	2.50	3.50	1.94	1.88	2.38	1.25	5.75
9	1.13	CX10-0395	1090651	1 3/8	1 1/2	18500	5.00	5.00	2.75	3.75	2.00	2.00	2.56	1.38	6.25
10	1.25	CX10-0396	1090679	1 1/2	1 3/4	22500	6.78	5.63	3.13	4.00	2.38	2.25	3.00	1.50	6.75
11	1.50	CX10-0397	1090697	2	2 3/4	40000	14.60	7.00	4.00	6.25	4.00	3.38	4.00	2.00	10.00

* Ultimate load is 5 times the Working Load Limit. Rating based on standard tap size.

RUD

StarPoint® – VRS-F Swivel Eyebolt

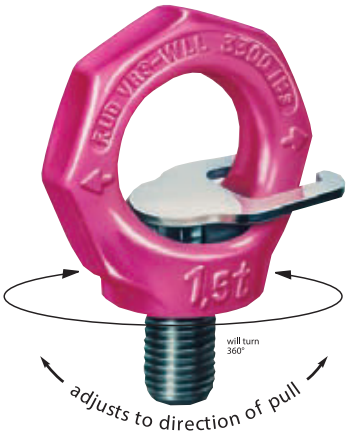
Type UNC	RUD No.	WLL lbs.	M	A	B	C	D	E	L
VRS-F 1/2-13UNC	8501003	1650	1/2	1-5/8	1/2	3/8	1-3/16	1-3/16	23/32
VRS-F 1/2-13UNC	8501004	3300	5/8	1-15/16	9/16	9/16	1-3/8	1-3/8	15/16
VRS-F 1/2-13UNC	8501005	5070	3/4	2-1/4	11/16	11/16	1-9/16	1-9/16	1-3/16
VRS-F 1/2-13UNC	8501006	5070	7/8	2-1/4	11/16	11/16	1-9/16	1-9/16	1-1/4
VRS-F 1/2-13UNC	8501007	7050	1	2-3/4	13/16	13/16	1-7/8	1-7/8	1-13/32
VRS-F 1/2-13UNC	8501008	9920	1-1/4	3-3/8	1	1	2-3/8	2-3/8	1-3/4

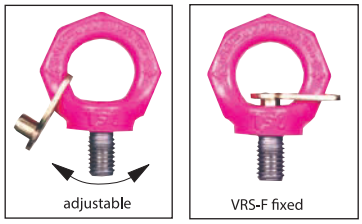
Metric Sizes (mm)

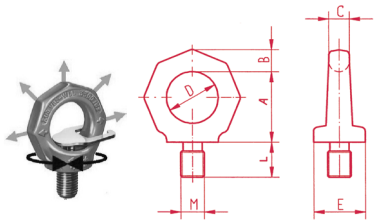
Type Metric	RUD No.	WLL t	M	A	B	C	D	E	L
VRS-F M10	7982213	0.4	10	34	11	8.5	25	25	15
VRS-F M12	7982214	0.75	12	42	13	10	30	30	18
VRS-F M16	7982215	1.5	16	49	15	14	35	35	24
VRS-F M20	7982216	2.3	20	57	17	16	40	40	30
VRS-F M24	7982217	3.2	24	69	21	19	48	48	36
VRS-F M30	7982218	4.5	30	86	26	24	60	60	48
VRS-F M36	7984201	7	36	103	32	29	72	75	54
VRS-F M42	7984202	9	42	120	38	34	82	85	63
VRS-F M48	7984203	12	48	137	43	38	94	100	72

*Nominal WLL

Box quantities







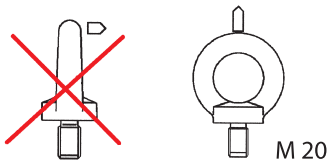
Attention: Lateral forces with standard eyebolts acc. to DIN 580 are forbidden!

The StarPoint® is the perfect solution to eliminate the unsafe and rigid style eye bolt.

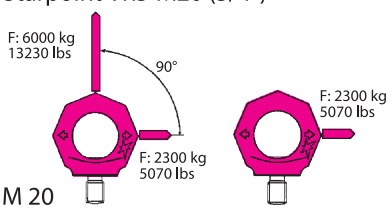
- Safety factor 4:1 in any direction.
- Marked working load limits (WLL) are rated at 90° from thread.
- Clear indication of working load limit in metric tons and lbs. for side loading applications.
- Forged material (1.6541) alloy quenched and tempered.
- The Distinct Florescent pink powder-coating changes its color when temperatures exceed 200°C. If the StarPoint® reaches temperatures of 400°C, the color changes to a deep black with small bubbles, indication that it has been over-heated.
- Body and bolt, 100% electromagnetic alloy crack tested in accordance with specification EN 1677.
- The StarPoint® is supplied with an annealed star-profile-key. Simply engage the Hexagon socket bolt with the star-profile-key and use your fingers to respectively tighten or untighten the arrangement. Disengage the key.
- The StarPoint® is rotatable!

Comparison:

Eye bolt 3/4" DIN 580-M20



Starpoint VRS-M20 (3/4")



LIFTING POINTS

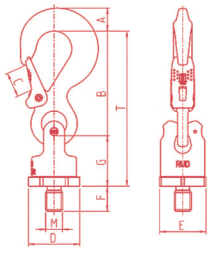
RUD

PowerPoint Star

The first generation of lifting points with a double ball bearing which enables jerk-free turning, swiveling and tilting. PP-S is designed with a universal connection for every lifting appliance (hook and ring assemblies, round slings, loops endless slings etc.)

- Optimized design prevents the lifting points as well as the load from being damaged
- Tested design factor 4:1 in any direction
- Cr Ni Mo Steel, Quenched and tempered
- Double Ball Bearing for smooth tilting and turning
- Maximum WLL with the smallest thread diameter
- Can be turned in a 90° position from the bolt center line
- Not suitable for permanent swiveling under full load
- Body and bolt, 100% electro-magnetic alloy crack tested in accordance with specification EN 1677
- Surface: pink powder coated

PP-S (Vario)
PowerPoint-Star

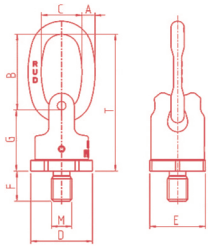


PowerPoint-Star

NOTE: RUD Lifting Points are also available in metric sizes

Type	RUD No.	WLL lbs.	M	A	C	T
PP-S – 0.63t-1/2 – 13UNC	7990720	1385	1/2	1/2	23/32	4-9/16
PP-S – 1.5t-5/8 – 11UNC	7989908	3300	5/8	13/16	1	5-3/4
PP-S – 2.5t-3/4 – 10UNC	7989909	5500	3/4	17/64	1-3/16	7-23/64
PP-S – 2.5t-7/8 – 9UNC	7989910	5500	7/8	1-7/64	1-3/16	7-23/64
PP-S – 4t-1 – 8UNC	7989911	8800	1	1-13/32	1-3/8	8-15/16
PP-S – 5t-1-1/4 – 7UNC	7989912	11000	1-1/4	1-15/32	1-9/16	10-1/2
PP-S – 8t-1-1/2 – 6UNC	7989913	17600	1-1/2	1-15/16	1-13/16	12-13/64

PP-B (Vario)
PowerPoint-B

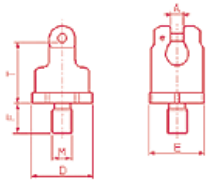


* Nominal WLL

PowerPoint-B

Type	RUD No.	WLL lbs.	M	A	C	T
PP-B – 0.63t-1/2 – 13UNC	7989901	1385	1/2	3/8	1-3/8	4-1/8
PP-B – 1.5t-5/8 – 11UNC	7989902	3300	5/8	7/16	1-3/8	5-7/32
PP-B – 2.5t-3/4 – 10UNC	7989903	5500	3/4	1/2	1-9/16	7-5/16
PP-B – 2.5t-7/8 – 9UNC	7989904	5500	7/8	1/2	1-9/16	7-5/16
PP-B – 4t-1 – 8UNC	7989905	8800	1	5/8	1-3/4	6-3/4
PP-B – 5t-1-1/4 – 7UNC	7989906	11000	1-1/4	7/8	2-3/8	8-3/4
PP-B – 8t-1-1/2 – 6UNC	7989907	17600	1-1/2	1	2-9/16	9-1/2

PP-VIP (Vario)
PowerPoint-VIP

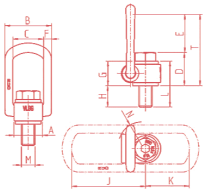


* Nominal WLL

PowerPoint-VIP

Type	RUD No.	WLL lbs.	M	VIP Chain Connection A	F	G
PP-VIP – 0.63t-1/2 – 13UNC	7989920	1385	1/2	5/32	11/16	1-5/8
PP-VIP – 1.5t-5/8 – 11UNC	7989921	3300	5/8	15/64	15/16	2
PP-VIP – 2.5t-3/4 – 10UNC	7989922	5500	3/4	5/16	1-3/16	2-13/32
PP-VIP – 2.5t-7/8 – 9UNC	7989923	5500	7/8	5/16	1-3/16	2-13/32
PP-VIP – 4t-1 – 8UNC	7989924	8800	1	3/8	1-13/32	3-1/16
PP-VIP – 5t-1-1/4 – 7UNC	7989925	11000	1-1/4	1/2	1-13/16	3-5/8
PP-VIP – 8t-1-1/2 – 6UNC	7989926	17600	1-1/2	5/8	2-1/8	4

Load Ring bolted
VLBG



* Nominal WLL

VLBG-Adjustable in pull direction, turns 380

Type	RUD No.	WLL lbs.	M	H	C	T
VLBG-Z – 1t-1/2 – 13UNC	8502349	1385	1/2	7/8	1-1/32	3
VLBG-Z – 1.5t-5/8 – 11UNC	8502350	3300	5/8	9/16	1-1/2	3-5/16
VLBG-Z – 2.5t-3/4 – 10UNC	8502351	5500	3/4	5/8	2-1/8	4-11/32
VLBG-Z – 2.5t-7/8 – 9UNC	8502352	5500	7/8	5/8	2-1/8	4-11/32
VLBG-Z – 4t-1 – 8UNC	8502353	8800	1	5/8	2-1/8	4-15/16
VLBG-Z – 5t-1-1/4 – 7UNC	8503187	11000	1-1/4	15/16	2-1/2	5-3/4

* Nominal WLL

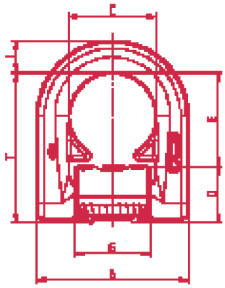
Why are RUD-Lifting Points Pink?

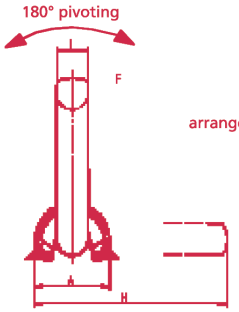
The special fluorescent pink powder coating permanently changes color at increased temperatures. If chain reaches temperatures of 400°C, the color changes to a deep black with small bubbles, indicating that the chain as been over-heated; the chain should not be used at this high temperature.

The special fluorescent pink powder coating permanently highlights the maximum temperature at which the VIP lifting point has been used.

RUD

Load Ring - VLBS
For Welding





EMI OFB
005137

Type	RUD No. captive complete	RUD No. without spring	WLL lbs.	A	B	C	D	E	ØF	G	H	I	T	Weld ◺	Weight lbs.
VLBS 1.5	79 93 035	79 93 115	3300	1-1/4	2-5/8	1-1/2	63/64	1-9/16	17/32	1-19/64	3-7/16	9/16	2-9/16	HV 5+3	0.77
VLBS 4	79 93 036	79 93 116	8800	1-21/32	3-27/64	2	1-1/4	2-3/64	21/32	1-13/16	4-13/32	45/64	3-16/64	HV 8+3	1.76
VLBS 6.7	79 93 037	79 93 117	14740	2-13/32	4-15/32	2-5/8	1-47/64	2-7/8	7/8	2-3/8	6-3/16	15/16	4-21/32	HV 12+4	4.18
VLBS 10	79 93 038	79 93 118	22000	2-61/64	5-5/64	2-5/8	2-5/32	2-51/64	1-3/64	2-3/8	6-13/16	1-3/64	4-31/32	HV 16+4	14.96
VLBS 16	–	79 93 041	35200	3-3/4	7-31/64	3-15/16	2-23/32	4-1/8	1-1/64	3-35/64	9-9/16	1-37/64	6-55/64	HV 25+6	14.96

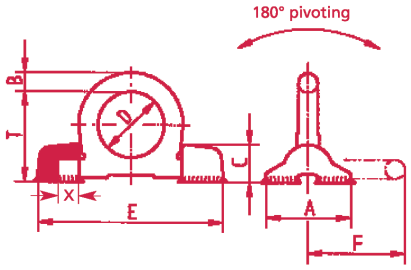
- The new VLBS forged out of high tensile CrNiMo - steel with an innovative design offers many advantages.
  - Up to 50% higher WLL.
  - The two protective supporting lugs (inside the load ring) are patented and they improve the connection with the attachment in addition to the protected clamping spring.
  - The support effect is exceptional, especially if the ring is side loaded or the lifting point is welded on an uneven work piece.
  - The special fluorescent pink powder coating permanently highlights the maximum temperature at which the VIP chain has been used.
- Easy and quick to weld assemble.
- Compact and shapely design.
- High dynamic and static strength.
- Forged suspension ring acc. to EN 1677, grade 80, electromagnetic crack detected, pink powder coated; meets the requirements of the appropriate safety authorities.
- The welding block has been forged of material 1.0570 (St 52-3) and clearly stamped with the permissible WLL. The patented distance lugs assist in achieving the correct root weld.

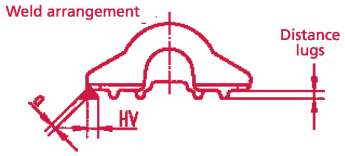
- **Important:** By the special weld design (continuous HV), the requirements of DIN 18800 are fulfilled, i.e., a closed weld avoids corrosion and thus suitable for outdoor use.
- **Distinctive features for type LBS-U:** A protected spring maintains the load ring in every required position. The parts are assembled in such a way that they remain captive.
- The spring reduces vibration induced noise.

LIFTING POINTS

RUD

Load Ring - VRBS
For Welding

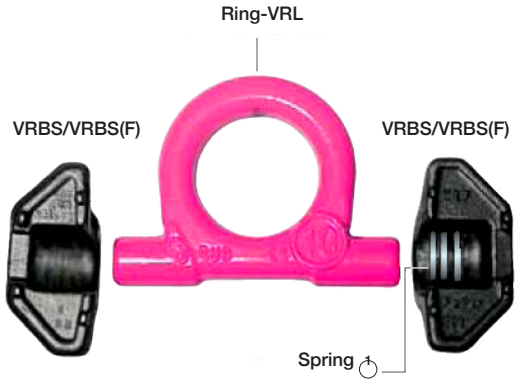




EMI OFB 005138

Type	RUD No. captive complete	WLL lbs.	A	B	C	D	E	F	O	Q	X	T	Weld HV + a	Weight lbs.
VRBS 4	79 92 488	8800	2-29/64	5/8	1-7/64	1-7/8	5-5/16	2-51/64	21/32	3-1/32	9/16	2-9/16	HV 4 + 3	1.76
VRBS 6.7	79 92 489	14740	3-15/32	25/32	1-17/32	2-3/8	6-11/16	3-19/32	29/32	3-31/32	19/32	3-5/16	HV 5.5+3	4.62
VRBS 10	79 92 490	22000	3-15/16	7/8	1-13/16	2-9/16	7-11/16	3-15/16	1-7/64	4-11/64	7/8	3-3/4	HV 6+4	6.16
VRBS 16	79 92 491	35200	5-1/8	1-3/16	2-1/4	3-35/64	10-7/16	5-9/32	1-13/32	5-25/32	1-7/64	5	HV 8.5+4	14.52
VRBS 30	60267	66000	6-19/64	1-21/32	3-5/64	5-1/8	14-49/64	7-43/64	1-55/64	8-21/32	1-29/64	7	HV 15+4	41.80
VRBS 50	56 834	110000	9-7/16	2-3/4	4-23/32	9-1/16	24-13/32	13-3/8	2-9/16	14-31/32	–	12-21/64	HV 25+8	187.00

- Distribution of the load force due to the 2 point fixing, hence an optimized force introduction to the work piece.
- Forged, suspension ring acc. to EN 1677-1, electromagnetic crack detected, pink power coated. Suspension ring can also be ordered single. For instance VRL 4. This lifting point fulfills the requirements of the appropriate safety authorities (German Employer's insurance Association). Stamped ⊛.
- Lays flat when not in use.
- Low profile.
- Rounded well shaped design.
- High dynamic and static strength.
- The welding blocks are forged out of the ideal weldable steel ST52-3N (S355J2+N) and the nominal WLL is embossed.



Subject to technical alterations

- Patented distance lugs assist in achieving the correct root weld (approx. 3 mm).
- The weld arrangement (continuous HV weld) fulfills the requirements of DIN 18800 i.e. the closed weld avoids corrosion and is thus suitable for outdoor use.

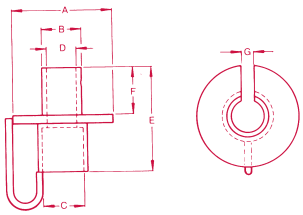
ATTENTION:
Refer to the RUD user welding instructions!

The Caldwell Group

Model PC — "Tea Cup" Pipe Carrier

Features:

- An efficient way to handle concrete water and sewer pipes.
- The Caldwell "Tea Cup" Pipe Carrier will save you time and money.
- Three sizes available, to handle from 3/4" to 1-1/2" cable, and lift up to 15 tons.
- Designed and manufactured to ASME B30.20 and B30.9.



Specifications — Model PC

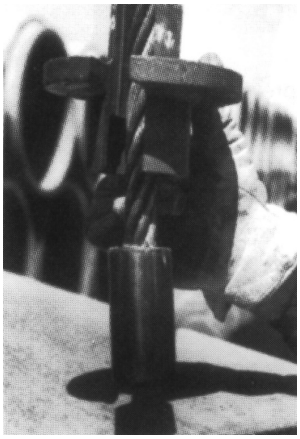
CERTEX Cat. Ref.	Caldwell Model No.	Rated Capacity Tons	Sling Dia. (in.)	Dimensions (in.)							WT. (lbs)
				A	B	C	D	E	F	G	
CX10-0432 CX10-0433	PC-3/4	4.9	3/4” 7/8”	5-9/16	2	2-1/8	1-1/8	4-11/16	1-7/8	1-1/8	9
CX10-0434 CX10-0435 CX10-0436	PC-1	8.5	1” 1-1/8” 1-1/4”	6	2-1/2	2-5/8	1-3/8	5-5/8	2	1-3/8	12
CX10-0437	PC-1-1/2	15.0	1-1/2	8	3	3-1/4	1-5/8	7-5/8	3	1-5/8	22

Tea Cup Lifting Sling Option — LS

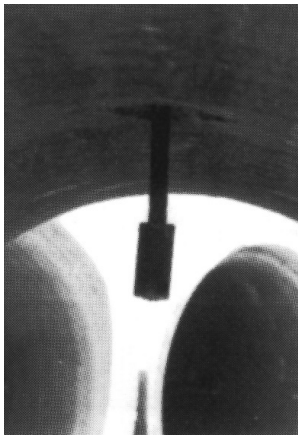
Specifications — Model LS

CERTEX Cat. Ref. No.	Caldwell Model No.	Sling Dia. (in.)	Standard Length (ft.)	After Swage Dim. (in.)		WT. (lbs)
				A	B	
CX10-0438	LS-3/4	3/4	5	3.25	1.55	9
CX10-0439	LS-7/8	7/8	5	3.86	1.80	14
CX10-0440	LS-1	1	5	4.36	2.05	19
CX10-0441	LS-1-1/8	1-1/8	5	4.81	2.30	26
CX10-0442	LS-1-1/4	1-1/4	5	5.42	2.56	33
CX10-0443	LS-1-1/2	1-1/2	5	6.52	3.00	52

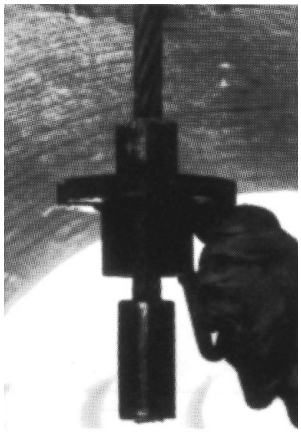
Operation:



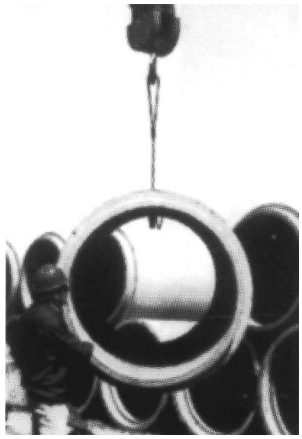
1. Drop pipe carrier lifting sling through hole in pipe.



2. Align and insert “tea cup” pipe carrier into lifting sling.

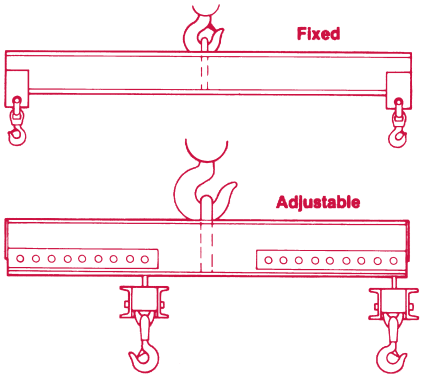


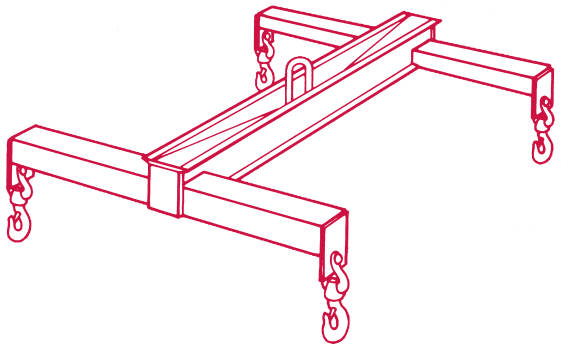
3. Lift pipe.



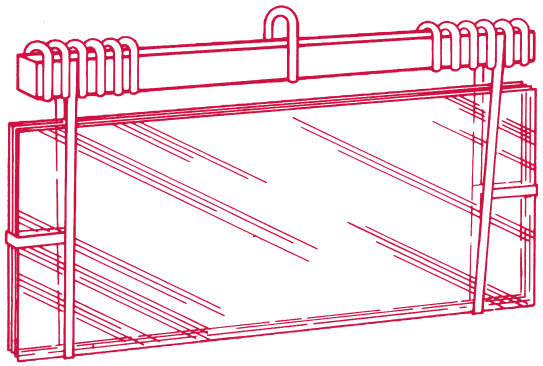
BEAMS

Beam Configurations

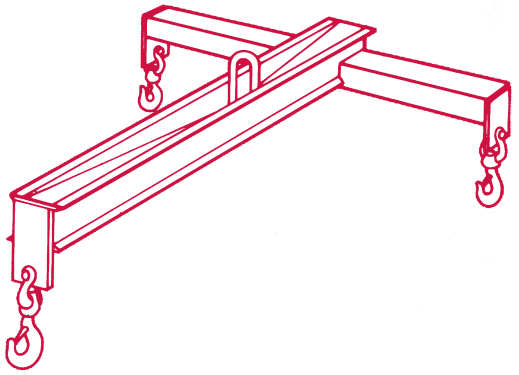




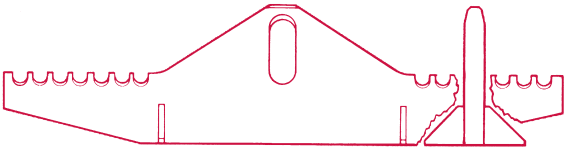
Four Point Lift Beams



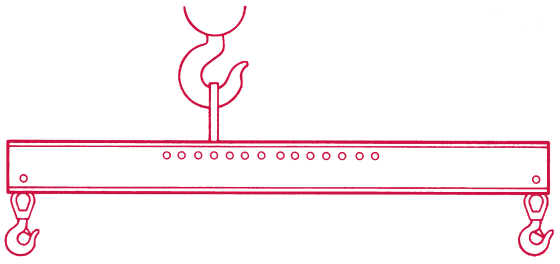
Glass Pack Beams
Custom lifting beam handles packs of glass panes with slings.



Three Point Lift Beam



High Capacity Sling Beams

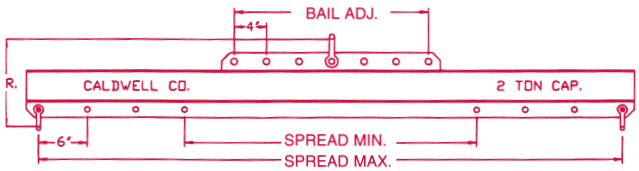


Adjustable Center Bail
for off-center loads.

Beams and Spreaders can be made to meet your requirements exactly.
A few examples of special configurations are shown here. Details will vary depending on capacity.

The Caldwell Group

Model 16 — Adjustable Spreader/Lifting Beam



Features:

- Use as 2, 3, or 4 point lifting or spreader beam.
- Converts to spreader beam with addition of top rigging.
- Has adjustable lifting points.
- Can handle both wide and unbalanced loads.
- Low headroom capability.
- Shackles included.
- Designed and manufactured to ASME B30.20.

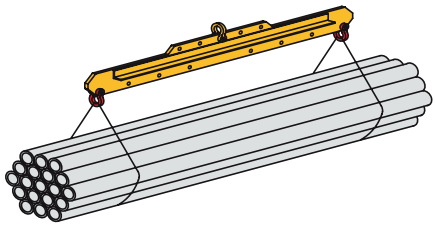
Options:

- Pair of swivel hooks — Code S
- Chain top rigging — Code C
- Cross beams (one or two) specify spread(s) Consult Factory

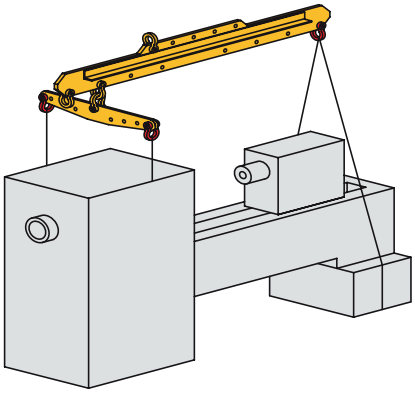
Specifications:

CERTEX Cat. Ref. No.	Caldwell Model No.	Rated Cap. (tons)	Spread (in)		Bail Adj. (in)	Hdrm. (in.)	Bolt Type Anchor Shackle (tons)		Wgt. (lbs.)
			Max	Min			Top	Bottom	
CX10-0445	16-1/2-6	1/2	72	36	24	8	1 1/2	1 1/2	70
CX10-0446	16-1-6	1	72	36	24	9 1/2	2	2	120
CX10-0447	16-2-6	2	72	36	24	11	3 1/4	2	140
CX10-0448	16-4-8	4	96	48	32	14 1/2	4 3/4	3 1/4	265
CX10-0449	16-5-10	5	120	60	40	17 1/4	6 1/2	4 3/4	445
CX10-0450	16-7-12	7	144	72	48	20 1/2	8 1/2	4 3/4	580

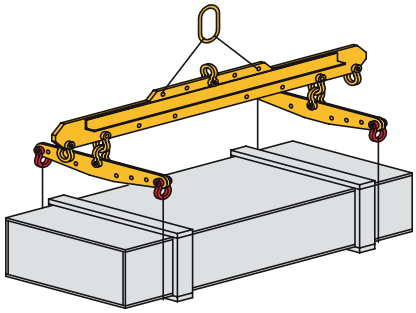
Operation:



2 Point Lift



3 Point Lift



4 Point Lift

C-HOOKS

Ordering Instructions

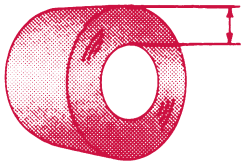
Define Coil Sizes

Determine your maximum coil width (dimension “K”). Your C-Hook’s nominal center of gravity, “E”, should equal half of “K”. This allows your widest coil to be centered under the lifting bail for a level lift.

If you are handling multiple coils or coiled rod or wire, please provide the maximum load width and request a quote on a “full length lower arm”.

Determine your minimum coil width. The listed models show a range of coil widths which can be handled one at a time by the same lifter. (Larger ranges can be furnished.) “L” is the narrowest coil that can be lifted without the lifter’s lower arm protruding past the edge of the coil. Coils narrower than “L” may be handled if centered under the bail.

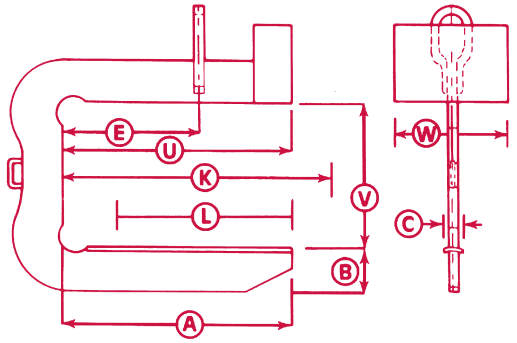
Radial Thickness



Determine maximum radial thickness to be handled. Most users select a vertical clearance, "V", that is 3" to 5" greater than the maximum radial thickness.

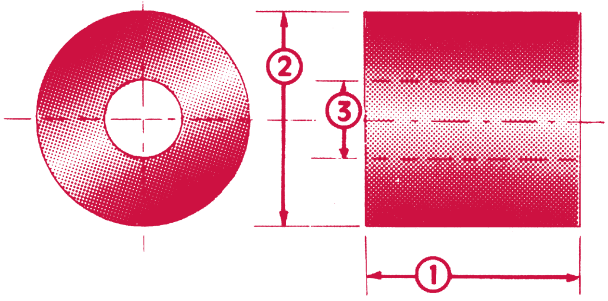
$$\text{Radial Thickness} = \frac{\text{Max. OD of coil} - \text{Min. ID of coil}}{2}$$

Coil Lifter Dimensions



A. Lift Arm Length _____"
B. Max. Arm Depth _____"
C. Max. Arm Width _____"
U. Upper Arm Length _____"
V. Vertical Clearance _____"

Coil Load Details

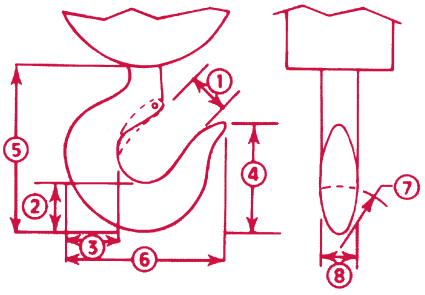


1. Max. Width_____ Min. Width _____
2. Max. Outside Diameter _____
3. Min. Inside Diameter _____
4. Max. Weight _____

Will more than one coil be handled at once?_____

Hook Dimensions

1. _____"
2. _____"
3. _____"
4. _____"
5. _____"
6. _____"
7. _____"
8. _____"



Capacity _____Tons.

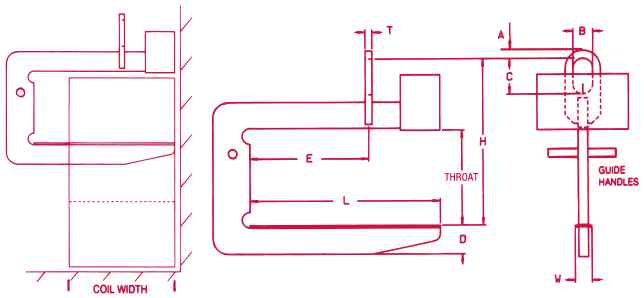
Other Features . . .

The Caldwell Group

Model 82-RC — Close Stacking "C" Hook

- Recessed Counterweight allows for close stacking of coils which maximizes floor space.
- Handles a wide range of coil widths.
- Designed for heavy duty application.
- High tensile alloy steel plate reduces physical size and weight.
- Counter balanced to hang level.
- Inside radius on hooks avoid coil edge contact.
- Curved coil saddle is standard.
- Guide handle for ease of coil positioning.
- Available with optional padding for additional coil protection.
- Designed and manufactured to ASME B30.20.

CAUTION:
Center of gravity must be centered under crane hook to prevent tilting of the lifter and load.



Specifications:

CERTEX Cat. Ref. No.	Caldwell Model No.	Cap. (tons)	Dimensions (in.)											Wgt. (lbs.)
			Coil Width		Throat	Lifting Arm			HDRM H	Bail Dimensions				
										Opening			THK. T	
			Max	Min		Length L	Depth D	Width W		A	B	C		
CX10-0454	82RC-5-36		36	24	24	30	5-5/16	4	37-1/4	1-1/2	4	7	1-1/4	550
CX10-0455	82RC-5-48	5	48	30	24	39	6-1/8	4	38-1/16	1-1/2	4	7	1-1/4	707
CX10-0456	82RC-5-60		60	36	24	48	6-15/16	4	38-15/16	1-1/2	4	7	1-1/4	853
CX10-0457	82RC-7 1/2-36		36	24	24	30	5-5/8	4	37-1/2	1-1/2	4	7	1-1/2	750
CX10-0458	82RC-7 1/2-48	7-1/2	48	30	24	39	6-3/8	4	38-1/4	1-1/2	4	7	1-1/2	996
CX10-0459	82RC-7 1/2-60		60	36	24	48	6-15/16	4	39	1-1/2	4	7	1-1/2	1161
CX10-0460	82RC-10-48		48	30	24	39	7-3/16	4	41-1/4	2	5	9	1-3/4	1200
CX10-0461	82RC-10-60	10	60	36	24	48	7-5/8	4	41-1/2	2	5	9	1-3/4	1645
CX10-0462	82RC-10-72		72	42	24	57	7-1/4	4	41-1/4	2	5	9	1-3/4	2100
CX10-0463	82RC-15-48		48	30	30	39	7-1/4	4	47-7/8	2-1/4	5	9	1-3/4	2054
CX10-0464	82RC-15-60	15	60	36	30	48	8	4	48	2-1/4	5	9	1-3/4	2410
CX10-0465	82RC-15-72		72	42	30	57	8-3/4	4	48-3/4	2-1/4	5	9	1-3/4	2814
CX10-0466	82RC-20-60	20	60	36	30	48	9-1/8	4	52-1/8	2-1/4	6	12	2	2864
CX10-0467	82RC-20-72		72	42	30	57	9-3/4	4	52-1/2	2-1/4	6	12	2	2951
CX10-0468	82RC-25-60	25	60	36	34	48	9	4	57-3/4	2-1/2	6	14	2-1/4	3077
CX10-0469	82RC-25-72		72	42	34	57	9-3/4	4	58-3/4	2-1/2	6	14	2-1/4	3570
CX10-0470	82RC-30-60	30	60	36	34	48	9-7/8	4	58-3/4	2-3/4	6	14	2-1/2	3480
CX10-0471	82RC-30-72		72	42	34	57	10-5/8	4	59-3/8	2-3/4	6	14	2-1/2	4260
CX10-0472	82RC-40-72	40	72	42	38	57	11	5	68	3-1/4	7	18	3	6100

Counter weight extends beyond arm one-half of the counter weight width, in capacities 25 ton and Greater.
Other sizes available, consult factory.

RIG-RELEASE® MANUAL RELEASING HOOK

The Caldwell Group

Model RR - Manual Release Unit

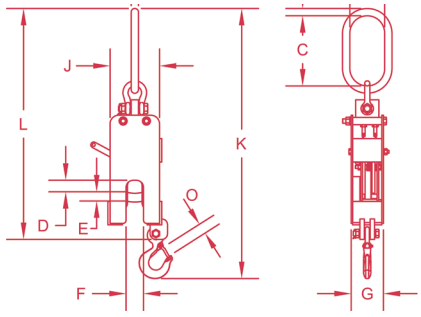
1 Ton Unit Shown

- Rope Guide allows rigging to be released when hook is either above or beside the operator.
- Designed for rugged outdoor use.
- Easy to use - simply rig, lift, set and release.
- LOCK & CAPTURE feature engages with very little load weight (see Minimum Load in chart below).
- Rated load capacity can be lifted from either Lift Arm or the lower Strip Sling Hook. Do not exceed rated capacity of hook.
- Oversized bail for easy mounting on crane hook - 5, 10 & 15 ton units provided with fixed bails.
- Designed and manufactured to ASME standards.

INSTOCK PROGRAM

WARNING:
Lifting at less than minimum load can result in injury or death.

Chart data is based upon the minimum number of springs.



Patent No. 7,380,849

Specifications - Manual Release

Model Number	Rated Cap. (tons)	Dimensions (inches)								Bail Dimensions (inches)				Weight (lbs.)
		D	E	F	G	J	K	L	O	A	B	C	T	
RR-1	1	1.15	0.75	1.25	2.77	4.25	23.10	19.75	0.89	0.63	3.00	6.00	0.63	14
RR-2.5	2.5	1.75	1.00	1.50	4.25	9.56	31.67	26.88	1.09	0.63	3.00	6.00	0.63	45
RR-5	5	1.83	1.50	1.50	5.00	11.13	36.40	30.75	1.36	2.00	4.00	7.00	1.25	110
RR-10	10	2.25	1.75	2.00	6.31	11.00	41.16	32.13	2.08	2.00	4.00	7.00	1.25	200
RR-15	15	3.00	2.50	2.50	6.31	15.00	49.25	39.25	2.27	2.50	5.00	9.00	1.50	325

NOTE: For larger capacities see page E.21.

Specifications

Model Number	Rated Capacity (tons)	*Minimum Load (lbs.)		Rigging		
				Recommended Lifting Slings	**Maximum Allowable Rigging Weight (lbs.)	
		Basket	Choker	Rope Dia. (inches)	Basket	Choker
RR-1	1	30	15	3/8	14	7
RR-2.5	2.5	80	40	5/8	28	14
RR-5	5	230	115	7/8	60	30
RR-10	10	230	115	1-1/4	100	50
RR-15	15	400	200	1-1/2	100	50

*If minimum load weight is not met, safety mechanism will not engage into the LOCK & CAPTURE position.
**If maximum allowable rigging weight is exceeded, unit will remain in the LOCK & CAPTURE position and can not be released.
If the maximum allowable rigging weight needs to be increased, additional springs can be added, refer to the Instruction Manual.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