

CM[®]

CHAIN & RIGGING ATTACHMENTS

SHACKLES

CHAIN & SYNTHETIC
SLING COMPONENTS

RIGGING HARDWARE

CLAMPS

TRANSPORTATION
CHAIN & ATTACHMENTS

SPECIALTY PRODUCTS



C O L U M B U S M c K I N N O N C O R P O R A T I O N

SHACKLES

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Columbus McKinnon is proud to offer some of the strongest and most reliable shackles on the market. Manufactured in the U.S.A. through our state-of-the-art forging process, CM shackles are available in a variety of different styles and materials for virtually any rigging application.

DESIGN & DEVELOPMENT

SPECIFICATIONS

When manufacturing our shackles, Columbus McKinnon utilizes state-of-the-art forging equipment. The forging process is closely monitored to ensure consistent quality and the heat treatment process is computer-controlled and monitored to ensure that maximum performance parameters are met.

Each bit of product is checked to verify that the desired hardness range has been obtained.

All CM shackles are made from special bar quality material and comply with ASTM A322, ASTM A576 or ASTM A921. Galvanized shackles meet ASTM A153 or ASTM B695.

Pins and bolts meet SAE J429 and ASTM A394.

CM shackles meet or exceed the performance requirements of the specs listed below:

- ASME B30.26 ■ ANSI B18
- EN 13889 ■ ISO 2415

CM also offers shackles that meet U.S. Government Specification RR-C-271.

Every CM shackle is marked with an alpha-numeric trace code. For full information on CM shackle identification markings, see the Shackle Identification box to the right.

ENGINEERING & TESTING REQUIREMENTS

Columbus McKinnon has the capability to apply fracture mechanics, predict product life expectancy and conduct a multi-axial fatigue analysis to solve engineering problems related to safety-critical applications.

CM products having strength requirements are sample tested to ensure hardness, ductility and requisite loading parameters. All testing and measuring equipment is calibrated on a periodic basis. Our testing and measuring equipment is maintained and calibrated by a third party testing facility. CM products are also ISO 9001:2008 certified.

Certifications for all shackles are available online. RR-C-271 certification is available if requested at time of order.

Columbus McKinnon can also provide the following information if requested at time of order:

- Material certification
- Magnetic particle inspection
- Proof, ultimate, charpy, deformation and fatigue testing

CUSTOMIZATION

CM shackles are always designed to meet internal, customer, contractual and regulatory requirements. Columbus McKinnon has the capability to develop original product designs based on unique customer applications. The CM Engineering department has CAD stations to facilitate design and development activities. New product design and tooling is subject to computerized Finite Element Analysis (FEA) and all drawings are filed electronically. Custom products, or specials, designed to meet customer requirements require customer approval before the design is finalized.

In addition to product design, Columbus McKinnon also performs tooling and machine design to manufacture and process these products. Tooling that is required is purchased by the customer and remains their proprietary property throughout the life of the product.

► SHACKLE IDENTIFICATION

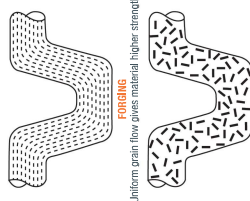
CM shackles and other rigging products can be identified by their unique markings.

We have taken extra efforts to enhance our shackle identification markings and our products now feature some of the largest and most user-friendly forged identification markings on the market. This innovation improves operator safety, reduces replacement costs and allows for easier identification of CM products in the field.

Every shackle is forged with the CM logo, its body or diameter size in imperial and/or metric units, trace code, USA, "Forged" and its specified strength requirements/working load limit (WLL). Most CM products also carry an alpha-numeric traceability code. Implemented in July 1990, this trace code system enables us to identify and track products once they ship from our plant, as well as determine:

- ▲ Date the product was forged
- ▲ Type and chemistry of steel
- ▲ Heat treating parameters
- ▲ In-process hardness testing results
- ▲ Strength data testing

Design and markings meet or exceed ASME B30.26



Uniform grain flow gives material higher strength

Random grain flow with larger grain structure makes material weaker than forged products

STANDARD & SPECIALTY SHACKLES

CM offers a full line of forged chain and anchor shackles for standard and specialty applications that are made right here in America. Chain shackles are best used for straight-line pulls, while anchor shackles have a more generous loop that allows them to be side loaded or used for multiple connections.

STANDARD:

SCREW PIN SHACKLES

Screw Pin Shackles allow for quick and easy removal of the screw pin, which makes this style ideal for applications where the shackle is removed frequently. While the threaded pin can resist axial forces, it should not be cyclically loaded and is unreliable and vulnerable to backing out in applications where the pin is subjected to a torque or twisting action. In some applications, it is recommended to mause the screw pin to prevent the pin from unscrewing. **Recommended for overhead lifting**, screw pin shackles are available in Super Strong, carbon and alloy steel with capacities up to 43 tons.

Shackles meet ASME B30.26. They also meet the performance and dimensional requirements of RR-C-271.

BOLT, NUT & COTTER SHACKLES

Of all shackle types, Bolt, Nut and Cotter Shackles provide the most secure pin arrangement, resisting axial and torsional loading. This type of shackle should be used in semi-permanent applications where the pin is removed infrequently. **Recommended for overhead lifting**, bolt, nut and cotter shackles are available in Super Strong, carbon and alloy steel with capacities up to 120 tons.

Shackles meet ASME B30.26. They also meet the performance and dimensional requirements of RR-C-271.

ROUND PIN SHACKLES

Round Pin Shackles allow for easy removal by simply removing the cotter that holds the pin in place. These shackles perform well where the pin is subjected to a torque or twisting action, but are not best for use where the pin is subject to an axial load. Round pin shackles are **not recommended for overhead lifting or side loaded**.

They feature a forged, heat-treated steel body with forged, heat-treated alloy steel pin and are available in Super Strong, carbon and alloy steel with capacities up to 43 tons.

Shackles meet the performance and dimensional requirements of RR-C-271.

SPECIALTY:

WEB SLING SHACKLES

Designed primarily for use with a synthetic web and round slings up to 6" in width. Available in capacities up to 12 tons. Body is made of carbon steel or heat-treated alloy steel.

NOTE: Shackles cannot be point loaded. The load should be evenly distributed over the entire pin to achieve full working load limit.

LONG REACH SHACKLES

Made of alloy steel, CM is one of the only manufacturers of long reach shackles. These shackles are ideal for use in construction applications where a longer reach is needed to attach to pick points, and can also be used as a ball for lifting thicker products.

NOTE: Shackles cannot be side loaded. The load should be evenly distributed over the entire pin to achieve full working load limit.



SHACKLE MATERIAL & FINISHES

MATERIALS

CM forged shackles are made exclusively from domestically produced (U.S.A.) Special Bar Quality (SBQ) steel having fine grain, with reduced sulfur and phosphorus. Silicon inclusions and oxide inclusions are minimized to enhance forging performance characteristics. Steel used in our products may include, but is not restricted to the following:

- Carbon Steel 1037, 1020, 1040, 1080, 1141
- Microalloy Steel
- Alloy 4130, 4140, 8630, 8640

Using this Special Bar Quality steel, CM manufactures shackles in three distinct materials: carbon, super strong and alloy. Each material has different properties and specifications. See our complete material comparison below.

3 TYPES OF SHACKLE MATERIAL

MATERIAL	STYLE	WLL (TONS)	SIZES (IN.)	STYLES	DESIGN FACTOR	FINISHES
CARBON Carbon/General chain shackles are available through Special Applications	Anchor	1/3 to 65 tons	3/16" to 3"	Bolt, Nut & Cotter; Screw Pin; Round Pin	6:1*	Orange Powder Coated, Galvanized
	Chain	1/2 to 35 tons	1/4" to 2"			
CARBON SPECIFICATIONS: Meet dimensional, performance and marking requirements of Federal Specification RR-C-271 (Regular Strength).						
SUPER STRONG 17 to 50% stronger than comparable-sized Carbon	Anchor	1/2 to 55 tons	3/16" to 2-1/2"	Bolt, Nut & Cotter; Screw Pin; Round Pin	6:1**	Orange Powder Coated, Self Colored, Galvanized
	Chain	3/4 to 35 tons	1/4" to 2"			
SUPER STRONG SPECIFICATIONS: Meet dimensional and exceed performance requirements of Federal Specification RR-C-271 (Regular Strength). Because they exceed requirements and are marked with higher strengths, they cannot be marked as meeting RR-C-271.						
ALLOY (U.S.) ~50% stronger than comparable-sized Carbon and ~25% stronger than Super Strong	Anchor	2 to 120 tons	3/8" to 3"	Bolt, Nut & Cotter; Screw Pin; Round Pin	5:1	Orange Powder Coated, Self Colored, Galvanized
ALLOY SPECIFICATIONS: Meet dimensional, performance and marking requirements of Federal Specification RR-C-271 (High Strength).						

* 2-1/2" and 3" carbon shackles have a 5:1 design factor.

** Round pin and all 2-1/2" Super Strong shackles have a 5:1 design factor.

FINISHES

CM shackles are available in three finishes: galvanized, self-colored and the recognizable CM orange powder coating.

GALVANIZED

Provides the best corrosive protection of all finishes which prevents it from wearing over time. Meets ASTM standards.

SELF-COLORED

Natural steel color easily blends with other steel finishes. Provides no protection from corrosion, but enables full exposure or identification markings.

CM ORANGE POWDER COATED

Easily recognizable as a CM product. Provides protection from corrosion and harsh environments and allows for visual identification of the manufacturer.

SHACKLE USE, CARE & INSPECTION

Improper use or care of shackles can result in bodily injury or property damage. Always observe the following guidelines when using shackles.

- Do not exceed the working load limit.
- Do not shock load.
- If the shackle is side loaded, the WLL must be reduced in accordance with the manufacturer's recommendation or a qualified person. Shackles are designed and rated for in-line applied tension. You can attach multiple slings in the body of a shackle without reducing the capacity provided that the shackle is symmetrically loaded and the included angle does not exceed 120 degrees. (See Side Loading and Symmetrical Loading sections).
- Do not replace pin or bolt with other than original equipment.
- Inspect before use for wear, deformation and pin engagement as outlined in ASME B30.26. (See full inspection guidelines below).

Care should be exercised so that the shackle is not abused during use. When using shackles, it is important to:

- If necessary, use spacers on the shackle pin to assure that the shackle is not loaded at an angle. Load line of action should be through the center line of the shackle body and the middle of the shackle pin.
- The shackle should be protected with zinc plating or a galvanized finish if used in harsh environments.
- The shackle should not be subjected to high or low temperatures that could affect thermal treatment and the strength of the shackle. (Note: Per ASME B30.26 shackles are rated for temperatures between -40°F to 400°F.

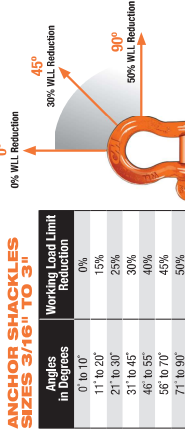
SCREW PIN TIGHTENING

When tightening screw pins, it is important that shackle screw pin threads and the tapped threads in the shackle head are clean and free of burrs and damage. These conditions can cause an under-tightening of the shackle screw pin. The shackle screw pin should be tightly fitted into the shackle's leg opening until the threads engage and the shoulder of the screw pin makes contact with shackle body.

SIDE LOADING

When side loading a shackle with a single sling, the rated WLL will be reduced in accordance with the manufacturer's recommendation or a qualified person. ASME B30.26 also recommends reducing the capacity of a shackle when it is side loaded. (See figure below.) Note that only anchor shackles 3/16" to 3" may be side loaded. Chain or long-reach shackles should not be side loaded.

ANCHOR SHACKLES SIZES 3/16" TO 3"



SYMMETRICAL LOADING

Shackles symmetrically loaded with two legs at a maximum included angle of 120° can be used to full working load limit. Side and symmetrical loading data applies to screw pin and bolt nut cotter anchor shackles as shown to the right.

► SHACKLE INSPECTION

Shackles should be visually inspected before each use in line with ASME B30.26 regulations. Shackles should be discarded if any of the following conditions are apparent:

- ▲ Any parts are worn more than 10% of the original dimensions
- ▲ Load bearing components are bent, twisted, distorted, stretched, elongated, cracked or broken
- ▲ Excessive pitting, corrosion, nicks or gouges
- ▲ Indication of heat damage
- ▲ Missing or illegible manufacturer's name or trademark, working load limit or size
- ▲ Load pins have bent or visibly damaged threads
- ▲ Cotter pins or hairpin retainers are damaged

CHARPY IMPACT TEST

The Charpy V-notch Test was developed during World War 2 to test the penetration resistance of steel armor. It has since evolved into a method to test for toughness of steel in critical structures such as buildings or bridges.

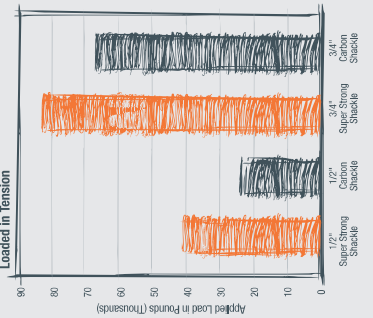
In this test, a bar is mounted horizontally with the notch facing away from an impact weight suspended on a pendulum. When the weight is released, it swings down and breaks through the bar. An indicator measures how far the pendulum continues to swing after breaking the bar. The momentum of the pendulum is then the measure of the resistance of the material to breaking or penetration.

CM Super Strong shackles, with the lower hardness values, will consistently pull more than a competitor's carbon shackles of the same diameter. CM Super Strong shackles were designed to improve overall load strength and ductility without an increase in shackle diameter.

CM alloy shackles will meet the Charpy Impact Test requirements. Results of this testing show that CM Super Strong shackles greatly exceed the minimum strength requirements.

RESULTS OF COMPARISON TESTING CM SUPER STRONG SHACKLES VERSUS STANDARD CARBON SHACKLES

The Comparative Strength of the Shackles Loaded in Tension



"Clearly, the CM Big Orange[®] shackles exhibited superior strength and more ductility than the carbon steel shackles of the same nominal section size. When loaded above the yield point, the CM Big Orange shackle performance was superior, before failure."

The CM Big Orange[®] shock test results indicated severe deformation occurred but no fracture was present. The carbon steel shackles fractured in two test results. These results indicate that the CM Big Orange shackle assembly is stronger and more ductile than the standard carbon shackles of the same size. For these reasons, the CM Big Orange shackle provides more extensive deformation prior to fracture. In the superiority of the CM Big Orange shackles when compared to the carbon steel shackles under the shock loaded conditions.

Verified by John Blocksworth, P.E.
Q.C. Metallurgical Laboratory, Inc.

* CM Big Orange[®] shackles are now referred to as CM Super Strong shackles.

SHACKLE SPECIFICATIONS

DIMENSIONS & WORKING LOAD LIMITS

CM shackles are available in different dimensions with varying working load limits depending on the material they are made of. See the charts below for sizes and working load limits of our alloy, carbon and super strong shackles.

CARBON

Size (in.)	WLL (tons)	WLL (lbs.)	Pin Dia. (in.)	W dim. (in.)
3/16	1/3	667	0.25	0.38
1/4	1/2	1,000	0.31	0.47
5/16	3/4	1,500	0.38	0.53
3/8	1	2,000	0.44	0.66
7/16	1-1/2	3,000	0.50	0.72
1/2	2	4,000	0.63	0.84
5/8	3-1/4	6,500	0.75	1.06
3/4	4-3/4	9,500	0.88	1.28
7/8	6-1/2	13,000	1.00	1.44
1	8-1/2	17,000	1.13	1.72
1-1/8	9-1/2	19,000	1.25	1.84
1-1/4	12	24,000	1.38	2.03
1-3/8	15-1/2	27,000	1.50	2.25
1-1/2	17	34,000	1.63	2.41
1-3/4	20	40,000	1.75	2.66
1-7/8	25	50,000	2.00	2.94
2	30	60,000	2.25	3.28
2-1/2	35	70,000	2.50	4.13
3	45	110,000	3.25	5.50

SUPER STRONG

Size (in.)	WLL (tons)	WLL (lbs.)	Pin Dia. (in.)	W dim. (in.)
3/16	1/2	1,000	0.25	0.38
1/4	3/4	1,500	0.31	0.47
5/16	1	2,000	0.38	0.53
3/8	1-1/2	3,000	0.44	0.66
7/16	2	4,000	0.50	0.72
1/2	3	6,000	0.63	0.84
5/8	4-1/2	9,000	0.75	1.06
3/4	6-1/2	13,000	0.88	1.28
7/8	8-1/2	17,000	1.00	1.44
1	10	20,000	1.13	1.72
1-1/8	12	24,000	1.25	1.84
1-1/4	14	28,000	1.38	2.03
1-3/8	17	34,000	1.50	2.25
1-1/2	20	40,000	1.63	2.41
1-3/4	24	48,000	1.75	2.66
1-7/8	30	60,000	2.00	2.94
2	35	70,000	2.25	3.28
2-1/2	55	110,000	2.75	4.13

* Screw Pin & Round Pin style only
** Bolt, Nut & Cotter style only



SUPER STRONG ANCHOR SHACKLES

WORKING LOAD LIMIT: 1/2 TO 55 TONS

CM Super Strong Shackles are carbon-type shackles with strength ratings that are 17 to 50% stronger than comparable-sized carbon shackles. As a result, these shackles are designed with a 6:1 design factor. Anchor shackles can be side loaded or used for multiple connections.

BENEFITS & FEATURES

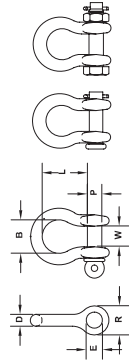
- Manufactured from technically advanced domestic (U.S.A.) micro alloy steel with optimal hardness for strength and ductility
- Shackles show major deformation before failure
- Working load limit and traceability codes shown as permanent markings on body
- All shackles have alloy quenched and tempered pins
- Available in sizes 3/16" to 2-1/2"
- Available finishes include powder coated, galvanized or self-colored
- Shackles meet dimensional requirements and exceed performance requirements of RR-C-271
- Special testing and certification is available if requested at the time of the order
- Note: Screw pin and bolt/nut/cotter shackles have a 6:1 design factor. 2-1/2" and all round pin shackles have a 5:1 design factor.
- Screw pin & bolt/nut/cotter shackles meet ASME B30.26



Screw Pin

Bolt, Nut & Cotter

Round Pin



STYLES: Screw Pin, Round Pin, Bolt/Nut/Cotter
FINISHES: Self Colored, Galvanized, Orange Powder Coated

Size (in.)	Working Load Limit (ton)	Std. Pkg.	Weight (lbs.)	Screw Pin			Round Pin			Both Nut & Cotter			Dimensions (in.)						
				Self Colored	Galva- nized	Orange Pin- coated	Self Colored	Galva- nized	Orange Pin- coated	Self Colored	Galva- nized	Orange Pin- coated	P	E	W	R	L	B (min.)	
3/16	1/2	50	0.06	—	M6455	—	M6455	—	M6455	—	—	—	—	0.25	0.29	0.38	0.57	0.88	0.58
1/4	3/4	50	0.12	M646	M646	M646	M646	M646	M646	M646	M646	M646	M646	0.31	0.36	0.47	0.75	1.13	0.75
5/16	1	50	0.20	M647	M647	M647	M647	M647	M647	M647	M647	M647	M647	0.38	0.45	0.53	0.84	1.25	0.81
3/8	1-1/2	50	0.30	M648	M648	M648	M648	M648	M648	M648	M648	M648	M648	0.44	0.52	0.66	1.00	1.40	1.00
7/16	2	50	0.50	M649	M649	M649	M649	M649	M649	M649	M649	M649	M649	0.50	0.58	0.72	1.15	1.69	1.19
1/2	3	50	0.75	M650	M650	M650	M650	M650	M650	M650	M650	M650	M650	0.63	0.70	0.84	1.24	1.94	1.38
5/8	4-1/2	25	1.30	M651	M651	M651	M651	M651	M651	M651	M651	M651	M651	0.75	0.83	1.06	1.66	2.41	1.63
3/4	6-1/2	10	2.30	M652	M652	M652	M652	M652	M652	M652	M652	M652	M652	0.88	0.95	1.28	1.94	2.84	1.89
7/8	8-1/2	10	3.50	M653	M653	M653	M653	M653	M653	M653	M653	M653	M653	1.00	1.09	1.44	2.14	3.31	2.06
1	10	5	5.00	M654	M654	M654	M654	M654	M654	M654	M654	M654	M654	1.13	1.22	1.72	2.44	3.75	2.52
1-1/8	12	Bulk	7.00	M655	M655	M655	M655	M655	M655	M655	M655	M655	M655	1.25	1.36	1.84	2.66	4.02	2.69
1-1/4	14	Bulk	9.50	M656	M656	M656	M656	M656	M656	M656	M656	M656	M656	1.38	1.52	2.03	3.15	4.83	3.28
1-3/8	17	Bulk	12.50	M657	M657	M657	M657	M657	M657	M657	M657	M657	M657	1.50	1.65	2.25	3.25	5.19	3.55
1-1/2	20	Bulk	17.20	M658	M658	M658	M658	M658	M658	M658	M658	M658	M658	1.63	1.77	2.41	3.50	5.63	3.90
1-5/8	24	Bulk	23.50	M659	M659	M659	M659	M659	M659	M659	M659	M659	M659	1.75	1.88	2.66	3.91	6.13	4.13
1-3/4	30	Bulk	27.70	M660	M660	M660	M660	M660	M660	M660	M660	M660	M660	2.00	2.13	2.94	4.06	6.97	4.75
2	35	Bulk	39.00	M661	M661	M661	M661	M661	M661	M661	M661	M661	M661	2.25	2.38	3.28	4.51	7.44	5.50
2-1/2	55	Bulk	90.50	—	—	—	—	—	—	—	—	—	—	2.75	2.91	4.13	6.25	10.48	6.75

SUPER STRONG CHAIN SHACKLES

WORKING LOAD LIMIT: 3/4 TO 35 TONS

CM Super Strong Shackles are carbon-type shackles with strength ratings that are 17 to 50% stronger than comparable sized carbon shackles. As a result, these shackles are designed with a 6:1 design factor. Chain shackles are best suited for straight-line pulls.

BENEFITS & FEATURES

- Manufactured from technically advanced domestic (U.S.A.) micro alloy steel with optimal hardness for strength and ductility.
- Shackles show major deformation before failure
- Working load limit and traceability codes shown as permanent markings on body
- All shackles have alloy quenched and tempered pins
- Available in sizes 1/4" to 2"
- Available finishes: galvanized
- Carbon industrial/government rated chain shackles available through special quote.
- Shackles meet dimensional requirements and exceed performance requirements of RH-C-271
- Special testing and certification is available if requested at the time of the order
- Note: Screw pin and bolt/nut/cotter shackles have a 6:1 design factor.
- Screw pin & bolt/nut/cotter shackles meet ASME B30.26



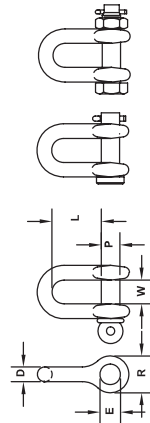
Round Pin



Screw Pin



Bolt, Nut & Cotter



STYLES: Screw Pin, Round Pin, Bolt/Nut/Cotter
FINISHES: Galvanized

Size D (in.)	Working Load Limit (ton)	Product Code				Dimensions (in.)						
		Std. Pkg.	Weight (lbs.)	Screw Pin Galva- nized	Round Pin Galva- nized	Bolt & Nut & Cotter Galva- nized	P	E	W	R	L	B
1/4	3/4	50	0.12	M746G	M946G	M946G	0.31	0.36	0.47	0.75	0.88	0.88
5/16	1	50	0.20	M747G	M947G	M947G	0.38	0.46	0.56	0.84	1.03	1.03
3/8	1-1/2	50	0.30	M748G	M948G	M948G	0.44	0.52	0.66	0.99	1.25	1.25
1/2	3	50	0.75	M750G	M950G	M950G	0.63	0.70	0.84	1.25	1.69	1.69
5/8	4-1/2	25	1.30	M751G	M951G	M951G	0.75	0.83	1.09	1.58	2.00	2.00
3/4	6-1/2	10	3.50	M752G	M952G	M952G	1.00	1.09	1.44	2.14	2.88	2.88
1	10	5	5.00	M754G	M954G	M954G	1.13	1.22	1.72	2.41	3.19	3.19
1-1/4	14	Bulk	9.50	M756G	M956G	M956G	1.38	1.50	2.03	3.13	3.94	3.94
1-3/8	17	Bulk	12.50	M757G	M957G	M957G	1.50	1.63	2.25	3.32	4.44	4.44
1-1/2	20	Bulk	17.20	M758G	M958G	M958G	1.63	1.78	2.38	3.57	4.88	4.88
1-5/8	24	Bulk	23.50	M759G	M959G	M959G	1.75	1.88	2.63	3.94	5.25	5.25
1-3/4	30	Bulk	27.70	M777G	M977G	M977G	2.00	2.13	2.88	4.06	5.75	5.75
2	35	Bulk	39.00	M759G	M959G	M959G	2.25	2.38	3.28	4.53	6.75	6.75

CARBON ANCHOR SHACKLES (INDUSTRIAL/GOVERNMENT-RATED)

WORKING LOAD LIMIT: 1/3 TO 85 TONS

CM Industrial/Government-Rated Carbon Shackles are designed with a 6:1 design factor. Anchor shackles can be side loaded or used for multiple connections.

BENEFITS & FEATURES

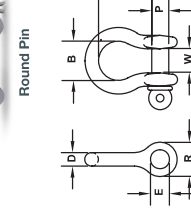
- Manufactured from technically advanced domestic (U.S.A.) micro alloy steel with optimal hardness for strength and ductility.
- All shackles have alloy quenched and tempered pins
- Working load limit and traceability codes shown as permanent markings on body
- Available in sizes 3/16" to 3"
- Available finishes include powder coated, self-colored or galvanized per ASTM A153
- All bolt, nut & cotter shackles have thread-protected ends
- Shackles meet dimensional, marking and performance requirements of RH-C-271
- Standard industry tolerances apply
- Design factor 6:1 (2-1/2" and 3" carbon shackles have a 5:1 design factor)
- Screw pin & bolt/nut/cotter shackles meet ASME B30.26



Screw Pin



Bolt, Nut & Cotter



Round Pin

► DID YOU KNOW?

CM INDUSTRIAL/GOVERNMENT VS. CM SUPER STRONG SHACKLES

An Industrial Government shackle is a Super Strong shackle de-rated to meet, not exceed, the Federal Specification RH-C-271.

That means it has the same dimensions and performance characteristics as a Super Strong shackle but is marked with specifications to meet government requirements.

Example:

- 1" Super Strong shackle will be marked 10 ton WLL
- 1" Industrial/Government shackle will be marked 8-1/2 ton WLL

For more information, visit us at www.cmworks.com

STYLES: Screw Pin, Round Pin, Bolt/Nut/Cotter
FINISHES: Galvanized, Orange Powder Coated

Size D (in.)	Working Load Limit (ton)	Std. Pkg.	Weight (lbs.)	Product Code				Dimensions (in.)						
				Screw Pin Galvanized	Orange Powder Coated	Round Pin Galvanized	Bolt, Nut & Cotter Galvanized	P	E	W	R	L	B	(min.)
3/16	1/3	50	0.06	MC645G	—	MC345G	—	0.25	0.29	0.38	0.57	0.83	0.58	0.58
1/4	1/2	50	0.12	MC646G	MC646P	MC346G	MC346G	0.31	0.36	0.47	0.75	1.13	0.75	0.75
5/16	3/4	50	0.20	MC647G	MC647P	MC347G	MC347G	0.38	0.45	0.53	0.84	1.25	0.81	0.81
3/8	1	50	0.30	MC648G	MC648P	MC348G	MC348G	0.44	0.52	0.66	1.00	1.40	1.00	1.00
1/2	1-1/2	50	0.50	MC649G	MC649P	MC349G	MC349G	0.50	0.58	0.72	1.15	1.69	1.19	1.19
5/8	2	50	0.75	MC650G	MC650P	MC350G	MC350G	0.63	0.70	0.84	1.24	1.94	1.38	1.38
3/4	3-1/4	25	1.30	MC651G	MC651P	MC351G	MC351G	0.75	0.83	1.06	1.66	2.41	1.63	1.63
1	4-3/4	10	3.50	MC652G	MC652P	MC352G	MC352G	0.88	0.95	1.28	1.94	2.84	1.89	1.89
1-1/4	6-1/2	5	5.00	MC653G	MC653P	MC353G	MC353G	1.00	1.09	1.44	2.14	3.31	2.06	2.06
1-1/8	8-1/2	Bulk	7.00	MC654G	MC654P	MC354G	MC354G	1.13	1.22	1.72	2.44	3.75	2.52	2.52
1-1/4	12	Bulk	9.00	MC655G	—	MC355G	MC355G	1.25	1.36	1.84	2.66	4.02	2.69	2.69
1-3/8	13-1/2	Bulk	12.50	MC656G	—	MC356G	MC356G	1.38	1.52	2.03	3.15	4.83	2.88	2.88
1-1/2	17	Bulk	17.20	MC657G	—	MC357G	MC357G	1.50	1.65	2.25	3.25	5.19	3.25	3.25
1-5/8	20	Bulk	23.50	MC658G	—	MC358G	MC358G	1.63	1.77	2.41	3.50	5.83	3.50	3.50
1-3/4	25	Bulk	27.70	MC659G	—	MC359G	MC359G	1.75	1.88	2.66	3.91	6.73	4.13	4.13
2	35	Bulk	39.00	MC660G	MC660P	MC360G	MC360G	2.00	2.13	2.94	4.06	6.97	4.75	4.75
2-1/2	55	Bulk	90.00	—	—	—	—	2.25	2.38	3.28	4.51	7.44	5.50	5.50
3	85	Bulk	138.00	—	—	—	—	3.25	3.41	5.00	6.75	13.00	7.38	7.38

ALLOY ANCHOR SHACKLES

WORKING LOAD LIMIT: 2 TO 120 TONS

CM Alloy Shackles are designed with a 5:1 design factor and have a strength rating approximately 50% higher than a comparable-sized carbon shackle and about 25% stronger than super strong shackles. Anchor shackles can be side loaded or used for multiple connections.

BENEFITS & FEATURES

- 3/8" to 2" sizes made in the U.S.A. from domestic (U.S.A.) Special Bar Quality (SBC) steel having fine grain, reduced sulfur and phosphorus.
- Shackles show major deformation before failure.
- Working load limit and traceability codes shown as permanent markings on body and tempered pins.
- Available in sizes 3/8" to 3"
- Available finishes include powder coated, galvanized or self-colored.
- Shackles meet dimensional, marking and performance requirements of RRC-C271.
- Special testing and certification is available if requested at the time of the order.
- Design factor 5:1.
- Screw pin & bolt/nut/cotter shackles meet ASME B30.26.



STYLES: Screw Pin, Round Pin, Bolt/Nut/Cotter
FINISHES: Self Colored, Galvanized, Orange Powder Coated

Size D (in.)	Working Load (ton)	Std. Pkg. (lbs.)	Weight (lbs.)	Product Code										Dimensions (in.)							
				Screw Pin		Round Pin		Bolt, Nut & Cotter		P		E		W		R		L		B min	
				Self Colored	Galva- nized	Orange Powder Coated	Self Colored	Galva- nized	Orange Powder Coated	Self Colored	Galva- nized	Orange Powder Coated	Self Colored	Galva- nized	Orange Powder Coated	Self Colored	Galva- nized	Orange Powder Coated	Self Colored	Galva- nized	Orange Powder Coated
3/8	2	50	0.30	M648A	M648AP	—	—	—	—	M648A	M648AP	—	—	M648A	M648AP	0.44	0.52	0.66	1.00	1.40	1.00
7/16	2.6	50	0.50	M649A	M649AP	—	—	—	—	M649A	M649AP	—	—	M649A	M649AP	0.50	0.58	0.72	1.15	1.69	1.19
1/2	3.3	50	0.75	M650A	M650AP	—	—	—	—	M650A	M650AP	—	—	M650A	M650AP	0.63	0.70	0.84	1.34	1.94	1.38
5/8	5	25	1.30	M651A	M651AP	M351A	M351AP	M651A	M651AP	M351A	M351AP	M651A	M651AP	M351A	M351AP	0.75	0.83	1.06	1.66	2.41	1.63
3/4	7	10	2.30	M652A	M652AP	M352A	M352AP	M652A	M652AP	M352A	M352AP	M652A	M652AP	M352A	M352AP	0.88	0.95	1.28	1.94	2.84	1.89
7/8	9.5	10	3.50	M653A	M653AP	M353A	M353AP	M653A	M653AP	M353A	M353AP	M653A	M653AP	M353A	M353AP	1.00	1.09	1.44	2.14	3.31	2.06
1	12.5	5	5.00	M654A	M654AP	M354A	M354AP	M654A	M654AP	M354A	M354AP	M654A	M654AP	M354A	M354AP	1.13	1.22	1.72	2.44	3.75	2.52
1-1/8	15	5	7.00	M655A	M655AP	M355A	M355AP	M655A	M655AP	M355A	M355AP	M655A	M655AP	M355A	M355AP	1.25	1.36	1.84	2.66	4.02	2.69
1-1/4	18	5	9.50	M656A	M656AP	M356A	M356AP	M656A	M656AP	M356A	M356AP	M656A	M656AP	M356A	M356AP	1.38	1.52	2.03	3.15	4.65	2.88
1-3/8	21	5	12.50	M657A	M657AP	M357A	M357AP	M657A	M657AP	M357A	M357AP	M657A	M657AP	M357A	M357AP	1.50	1.65	2.25	3.25	5.19	3.25
1-1/2	25	5	17.20	M658A	M658AP	M358A	M358AP	M658A	M658AP	M358A	M358AP	M658A	M658AP	M358A	M358AP	1.63	1.77	2.41	3.50	5.63	3.50
1-5/8	29	5	23.50	M659A	M659AP	M359A	M359AP	M659A	M659AP	M359A	M359AP	M659A	M659AP	M359A	M359AP	1.75	1.88	2.66	3.91	6.13	4.13
1-3/4	34	5	27.70	M660A	M660AP	M360A	M360AP	M660A	M660AP	M360A	M360AP	M660A	M660AP	M360A	M360AP	1.88	2.03	2.94	4.06	6.97	4.75
2	40	5	30.00	M661A	M661AP	M361A	M361AP	M661A	M661AP	M361A	M361AP	M661A	M661AP	M361A	M361AP	2.00	2.13	2.94	4.06	6.97	4.75
2-1/2	85	5	109.00	M662A	M662AP	M362A	M362AP	M662A	M662AP	M362A	M362AP	M662A	M662AP	M362A	M362AP	2.25	2.38	3.28	4.51	7.44	5.50
3	120	5	148.00	M663A	M663AP	M363A	M363AP	M663A	M663AP	M363A	M363AP	M663A	M663AP	M363A	M363AP	2.75	2.99	4.13	6.13	10.46	6.75

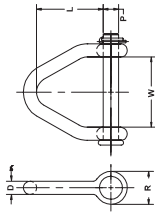
CARBON WEB SLING SHACKLE

WORKING LOAD LIMIT: 8,000 TO 23,500 LBS.

Web sling shackles are designed to connect synthetic web and round slings to eye bolts and other lifting hardware.

BENEFITS & FEATURES

- Design factor 4:1
- Web Sling Shackles can be used on web slings from 2 to 6 inches in width
- Shackle body: carbon steel, heat treated
- Shackle pin: alloy steel, heat treated
- Finish: hot dip galvanized
- Zinc-plated lynch pin comes standard
- Cotter or hairpin available on special order.
- Do not point load. The load should be evenly distributed over the entire pin to achieve full working load limit.



Product Code	Pin Number	Lynch Pin Number	Working Load Limit (lbs.)	Dimensions (in.)					Weight (lbs.)
				P	D	L	W	R	
M702	2X702	65930	8,000	0.75	0.63	2.25	2.00	1.63	1.70
M703	2X703	65930	13,000	0.88	0.75	3.25	3.00	1.88	2.86
M704	2X704	65930	11,000	0.88	0.75	3.75	4.00	1.88	3.15
M705	2X705	65934	18,000	1.00	0.88	4.25	5.00	2.13	4.75
M706	2X706	65934	18,000	1.13	1.00	4.75	6.00	2.38	6.75
M706H	2X706H	65934	23,500	1.25	1.13	4.75	6.00	2.63	9.80

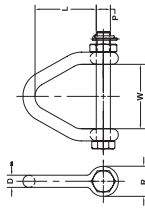
ALLOY WEB SLING SHACKLE

WORKING LOAD LIMIT: 13,500 TO 22,500 LBS.

Web sling shackles are designed to connect synthetic web and round slings to eye bolts and other lifting hardware.

BENEFITS & FEATURES

- Design factor 6:1
- Web Sling Shackles can be used on web slings from 3 to 6 inches in width
- Utilize a bolt and nut with lynchpin to secure the assembly in place for longer life
- All shackles are galvanized
- Marked with working load limit (WLL) and size
- Do not point load. The load should be evenly distributed over the entire pin to achieve full working load limit.



Product Code	Pin Number	Lynch Pin Number	Working Load Limit (lbs.)	Dimensions (in.)					Weight (lbs.)
				P	D	L	W	R	
M703A	2X8703A	65930	13,500	0.88	0.75	3.25	3.00	1.88	3.01
M704A	2X8704A	65930	14,500	0.88	0.75	3.75	4.00	1.88	3.16
M705A	2X8705A	65934	19,000	1.00	1.00	4.25	5.00	2.38	6.04
M706A	2X8706A	65934	22,500	1.13	1.13	4.75	6.00	2.63	9.02



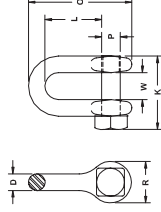
TRAWLING SHACKLE

WORKING LOAD LIMIT: 4,000 TO 13,000 LBS.

Load-rated trawling chain shackles are used for various applications, such as on trawl doors, the rigging of nets, and areas where critical loads are applied.

BENEFITS & FEATURES

- Design factor 6:1
- Micro-alloy steel bodies
- Heat-treated alloy pins
- Square head pins for convenience in wrench tightening and loosening
- Durable orange powder coated finish



Product Code	Working Load Limit (lbs.)	Dimensions (in.)							Weight (lbs.)
		D	P	W	L	O	R	K	
M4495*	4,000	0.44	0.50	0.72	1.50	2.75	1.13	1.91	0.43
M450	6,000	0.50	0.63	0.84	1.69	3.13	1.25	2.06	0.60
M451	9,000	0.63	0.75	1.09	2.00	3.78	1.58	2.63	1.30
M452	13,000	0.75	0.88	1.25	2.38	4.53	1.89	3.13	2.20

* Product has a hex-head bolt and galvanized finish



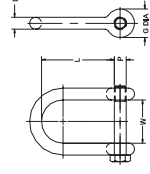
LONG-REACH SHACKLE

WORKING LOAD LIMIT: 7,000 TO 50,000 LBS.

As one of the only manufacturers of long-reach shackles, we designed these shackles for use in construction applications where a longer reach is needed to attach to pick points.

BENEFITS & FEATURES

- Design factor of 5:1
- Meets the requirements of ASME B30.26, but must not be side loaded
- Alloy steel
- WLL forged on body
- Offered in self-colored or durable orange powder coated finish
- Do not point load. The load should be evenly distributed over the entire pin to achieve full working load limit.
- Do not side load long-reach shackles
- 80% of bolt/pin must be covered to obtain full working load limit



STYLES: Screw Pin, Bolt/Nut/Cotter
FINISHES: Self Colored, Orange Powder Coated



Bolt Nut & Cotter

Screw Pin