WIRE ROPE HARDWARE

VGD

VANGUARD STEEL LTD.

This is

VANGUARD STEEL LTD.

at your service

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CONVERSION CHART

WIRE ROPE CLIP WARNINGS AND INFORMATION

It is very important to read and understand all information shown before using a wire rope clips

'Golden U-Bolt' Drop Forged
Heavy Duty Applications

Malleable
Light Duty Applications

T-316 Stainless Steel
Light Duty Applications

Warning:

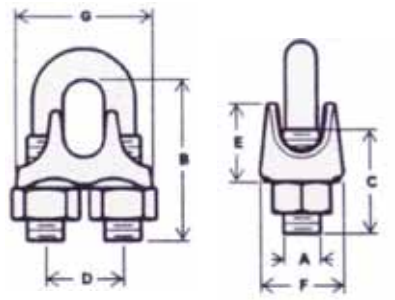
FAILURE TO OBSERVE THESE WARNINGS MAY RESULT IN SERIOUS INJURY OR DEATH!

- **ALWAYS** inspect wire rope clips before use. Check for wear, damage, bending or deformation. Also check the working condition of the saddle, threads on u-bolt and nuts.
- **ALWAYS** make sure to perform regular inspection of the wire rope end termination, clips and thimbles looking for signs of wear, abuse and general adequacy
- **ALWAYS** destroy and dispose of wire rope clips that are beyond safe use
- **NEVER** substitute competitors saddle or nuts on Vanguard wire rope clips
- **NEVER** use with plastic coated wire rope
- **NEVER** stagger clips
- **NEVER** 'saddle a dead horse' - the U goes on the dead end of the rope where crushing will not affect the breaking strength of the hoist line
- **NEVER** join ropes without the use of a thimble
- **NEVER** shock load
- **ALWAYS** match the same size clip with the same sized wire rope
- **ALWAYS** make sure to prepare wire rope end and termination only as instructed, for greater detail please refer to installation steps chart shown below
- **ALWAYS** make sure that you have used the recommended number of clips and the correct amount of rope turn back from the thimble before testing the assembly. If a pulley/sheave is used instead of a thimble add one additional clip
- **ALWAYS** use at least three clips when making any prepared loop or thimble-eye termination for wire rope, especially for hoisting.
- **ALWAYS** make sure that the clips are evenly spaced apart
- **ALWAYS** make sure to test assemblies before each use. The load should be of equal or greater weight than the loads expected to be hoisted, making sure to check and retighten (if necessary the nuts to their recommended torque value.

Installation			
Step 1: APPLY 1st clip one base width from dead end of the rope - U-bolt over dead end - live end rests in clip saddle. Tighten nuts evenly to recommended torque. 	**Step 2:** APPLY 2nd clip as close to loop as possible - U-bolt over dead end - turn nuts firmly but do not tighten! 	**Step 3:** ALL OTHER CLIPS - Space evenly between first two. 	**Step 4:** APPLY TENSION and tighten all nuts to recommended torque. **RE-CHECK nut torque after rope has been in operation**

MALLEABLE WIRE ROPE CLIPS

- To be used for light duty, non-critical applications only
- Typical uses include guard lines and fencing
- Electro-galvanized finish
- Rope diameter stamped on saddle
- Federal Specification FF-C-450D, Type 1, Class 2
- Torque tested threads
- The tightening torque values shown are based upon the threads being clean, dry and free of lubrication

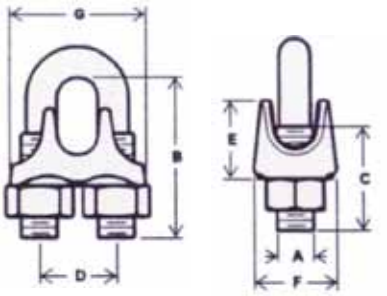


Rope Diameter	Weight (lbs/100)	Dimensions (inches)							Nut Torque (ft/lbs)	Min. No. Clips	Turn Back Length (inches)	Vanguard Code
		A	B	C	D	E	F	G				
1/16**	4.30	0.15	0.65	0.34	0.46	0.36	0.43	0.66	2.0	3	3.00	2901 0004
1/8**	4.30	0.18	0.72	0.56	0.43	0.43	0.55	0.85	3.0	3	4.75	2901 0008
3/16	6.80	0.23	0.92	0.63	0.54	0.52	0.61	1.05	4.5	3	5.50	2901 0012
1/4	14.50	0.30	1.13	0.83	0.67	0.60	0.76	1.23	15.0	3	7.00	2901 0016
5/16	15.00	0.30	1.23	0.86	0.69	0.64	0.82	1.34	15.0	3	7.75	2901 0020
3/8	21.50	0.36	1.50	1.06	0.88	0.90	0.92	1.58	30.0	3	9.50	2901 0024
7/16	24.00	0.36	1.54	1.07	0.94	0.87	0.93	1.64	40.0	3	10.25	2901 0028
1/2	37.00	0.42	1.96	1.28	1.04	0.94	1.07	1.91	45.0	4	15.25	2901 0032
5/8	59.00	0.48	2.14	1.39	1.30	1.10	1.16	2.23	75.0	4	16.00	2901 0040
3/4	84.00	0.54	2.54	1.46	1.33	1.35	1.30	2.40	75.0	5	22.25	2901 0048
7/8	128.00	0.61	2.90	1.77	1.55	1.53	1.46	2.77	130.0	5	23.50	2901 0056
1	150.00	0.61	3.23	2.15	1.81	1.73	1.74	3.02	130.0	6	31.00	2901 0100
1-1/8	243.00	0.72	4.44	2.70	1.84	1.97	1.77	3.24	200.0	7	39.00	2901 0108

** Note: 1/16” and 1/8” are not covered by Federal Specification FF-C-450D

STAINLESS WIRE ROPE CLIPS

- To be used for light duty, non-critical applications only
- Made from Type 316 stainless steel
- Electro-polished finish
- Rope diameter stamped on saddle



Rope Diameter	Weight (lbs/100)	Dimensions (inches)							Vanguard Code
		A	B	C	D	E	F	G	
1/8	4	0.19	0.81	0.55	0.40	0.40	0.51	0.82	2915 0008
5/32	5	0.17	0.93	0.63	0.52	0.46	0.55	0.92	2915 0010
3/16	6	0.23	0.97	0.60	0.56	0.50	0.55	1.00	2915 0012
1/4	13	0.30	1.24	0.85	0.71	0.59	0.71	1.24	2915 0016
5/16	15	0.30	1.40	0.90	0.80	0.60	0.77	1.38	2915 0020
3/8	28	0.37	1.81	1.15	0.90	0.88	0.82	1.58	2915 0024
1/2	42	0.44	2.14	1.34	1.20	0.90	1.00	1.93	2915 0032

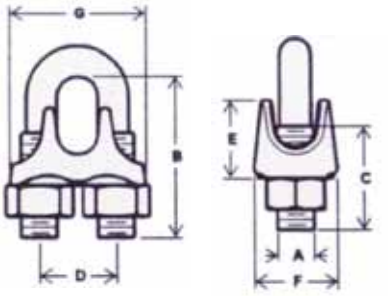
Warning:

Failure to follow these instructions can result in serious property damage, injury or death!

- **NEVER** use malleable or stainless steel clips for overhead lifting

'GOLDEN U-BOLT'® FORGED WIRE ROPE CLIPS

- Meet Federal Spec. FF-C-450, Type 1, Class 1 and ASME B30.26 standard
- Forged saddle, hot dipped galvanized, permanently embossed with VGD®, size and forged
- Gold Chromated U-Bolts and Nuts identify 'Vanguard' product
- Torque tested threads
- The tightening torque values shown are based upon the threads being clean, dry and free of lubrication.



Rope Diameter	Min. No. of Clips	Rope turn-back	Torque (ft lbs)	Weight (lbs/100)	Dimensions (inches)							Vanguard Code
					A	B	C	D	E	F	G	
1/8	2	3-1/4	4.5	6	0.20	0.75	0.54	0.41	0.48	0.80	0.90	2907 0008
3/16	2	3-3/4	7.5	10	0.24	0.98	0.65	0.56	0.55	0.95	1.16	2907 0012
1/4	2	4-3/4	15.0	19	0.30	1.06	0.67	0.78	0.67	1.18	1.54	2907 0016
5/16	2	5-1/2	30.0	29	0.37	1.35	0.80	0.84	0.77	1.33	1.65	2907 0020
3/8	2	6-1/2	45.0	44	0.42	1.50	0.81	0.96	0.98	1.55	1.92	2907 0024
1/2	3	11-1/2	65.0	73	0.48	1.83	1.10	1.12	1.19	1.91	2.29	2907 0032
5/8	3	12	95.0	102	0.54	2.40	1.22	1.38	1.33	2.05	2.50	2907 0040
3/4	4	18	130.0	142	0.61	2.84	1.51	1.51	1.40	2.25	2.82	2907 0048
7/8	4	19	225.0	212	0.73	3.10	1.79	1.73	1.60	2.41	3.16	2907 0056
1	5	26	225.0	255	0.73	3.58	1.80	1.85	1.77	2.64	3.44	2907 0100
1-1/8	6	34	225.0	280	0.73	3.90	2.09	1.95	1.95	2.74	3.52	2907 0108
1-1/4	7	37	360.0	437	0.86	4.26	2.13	2.37	2.31	3.14	4.11	2907 0116
1-1/2	7	48	360.0	531	0.86	4.78	2.42	2.53	2.51	3.35	4.41	2907 0132
1-3/4	7	53	590.0	980	1.09	5.64	2.85	3.10	2.94	3.82	5.28	2907 0148
2	8	71	750.0	1,375	1.20	6.75	3.11	3.31	3.31	4.41	5.86	2907 0200

* Additional sizes available upon request, minimum order quantity may apply.

Warning:

Failure to follow these instructions can result in serious property damage, injury or death!

- **NEVER** stagger clips
- **NEVER** mount U-Bolts over live end of rope
- **NEVER** join ropes without the use of a thimble
- For more information please see the wire rope clip warning and information section found in the hardware section of this catalogue

'GOLDEN U-BOLT'® FORGED WIRE ROPE CLIPS

Efficiency rating:

The efficiency rating for wire rope end terminations are based upon the catalogue strength of standard EIPS wire rope. The efficiency rating of properly prepared loop or thimble - eye termination for clips between the sizes of 1/8 to 7/8” is 80% and for 1 to 2” it is 90%.

Note:

- If a greater number of clips are used than shown in the table, the amount of rope turn back should be increased proportionately.
- If a pulley/sheave is used instead of a thimble add one additional clip.
- The tightening torque values shown are based upon the threads being clean, dry and free of lubrication.

The number of clips shown on this chart is based upon using RRL or RLL 6 x 19 and/or 6 x 36 classes of steel core (IWRC) and fiber core (FC) wire ropes, IPS, EIPS and EEIPS.

For Seale construction or other large outer wire type construction in the 6 x 19 classification one additional clip is required for sizes 1” or larger.

The information on this chart also covers 8 x 19 classes, IPS, EIPS and EEIPS for sizes up to and including 1-1/2” and rotation resistant 19 x 7 class, IPS, EIPS and EEIPS for sizes up to and including 1-3/4”.

For elevator, personal hoist and scaffold applications refer to ANSI A17.1 and ANSI A10.4. These standards do not recommend U-bolts wire rope terminations.

SHACKLE WARNINGS AND INFORMATION

It is very important to read and understand all information shown before using a shackle

Screw Pin Anchor Shackles

Bolt Type Anchor Shackles

Screw Pin Chain Shackles

Warning:

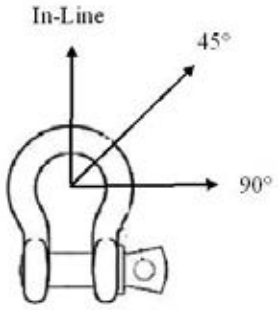
FAILURE TO OBSERVE THESE WARNINGS MAY RESULT IN SERIOUS INJURY OR DEATH!

- **ALWAYS** inspect shackles before use. Check for wear, damage, bent or elongation of the body or pin, spreading of the shackle legs also check to see if there is any damage to the threads.
- **NEVER** replace shackle pins with a competitors pin
- **NEVER** replace a shackle pin with a bolt pin, the load will bend the pin
- **NEVER** exceed 120° included angle. Use Bolt Type and/or Screw Pin Shackles ONLY.
- **NEVER** re-use shackles or pins which are visibly deformed
- **NEVER** use shackles which are worn in the crown or pin by more than 10% of the original diameter
- **NEVER** use screw pin shackles if the pin can roll under the load – bolt type shackles with cotter pin are recommended for these applications
- **NEVER** proof test shackles beyond 2 times the working load limit (WLL)
- **NEVER** modify, repair or reshape a shackle by welding, heating or bending as this will affect the working load limit (WLL)
- **NEVER** allow a shackle to be pulled at an angle; this will cause the legs to open. The pin should be packed with washers to centre the shackle
- **NEVER** shock load
- **ALWAYS** make sure that the shackle being used is large enough to avoid pinching or bunching when used with synthetic slings
- **ALWAYS** make sure that the diameter of the shackle is greater than the wire rope diameter if there is no thimble in the eye
- **ALWAYS** mouse screw pin shackles when used in long term or high vibration applications
- **ALWAYS** make sure that the shackle properly supports the load.

Working Load Limits (WLL) are based on shackles in new condition and are subject to downward adjustment in case of side loading:

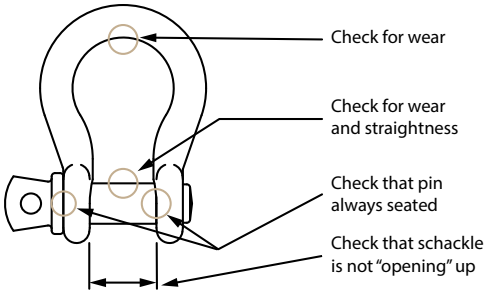
Side Load Capacity Reduction Chart	
Angle of side load	**Capacity**
0° from vertical in-line	100% of the WLL
45° from vertical in-line	70% of the WLL
90° from vertical in-line	50% of the WLL

* For screw pin and bolt type shackles only – NEVER side load round pin/chain shackles



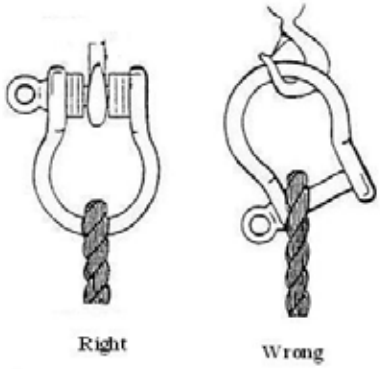
SHACKLE WARNINGS AND INFORMATION

It is very important to read and understand all information shown before using a shackle



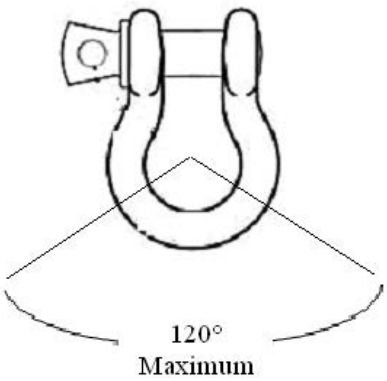
Shackle inspection

Check for wear, damage, bent or elongation of the body or pin, spreading of the shackle legs also check to see if there is any damage to the threads.



Eccentric shackle loads

To prevent an angular lift with a shackle, pack the pin. This will centre the load preventing the legs from spreading and the shackle from failing

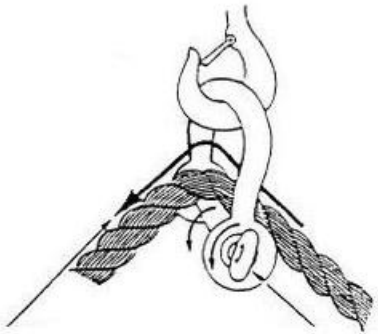


Symmetrical loading

Shackles symmetrically loaded with two leg slings having a maximum included angle of 120° can be utilized to full Working Load Limit (WLL). Only bolt type with cotter pin and screw pin shackles should be used for this application.

Rolling of the pin

If the load shifts the sling can unscrew the shackle pin. For long term applications or where the load can cause the pin to rotate, bolt type shackles with cotter pin should be used.



Mousing of a screw pin shackle

Mousing is a secondary securement method used to secure screw pin from rotation or loosening. Annealed iron wire is looped through the hole in collar of pin and around adjacent leg of shackle body with wire ends securely twisted together.

Multiple wraps are required for securement where the load may slide on the shackle pin.

'GOLDEN PIN'® SCREW PIN ANCHOR SHACKLES

- Meet the performance requirements of U.S. Fed. Spec. RR-C-271D, Type 4A, Grade A, Class 2
- Heat treated carbon steel bows, quenched and tempered with Alloy pins
- Hot dipped galvanized
- Metallic coating of shackle pins allows for closer thread tolerances than possible for shackles with an extra layer of paint
- Design factor 6:1

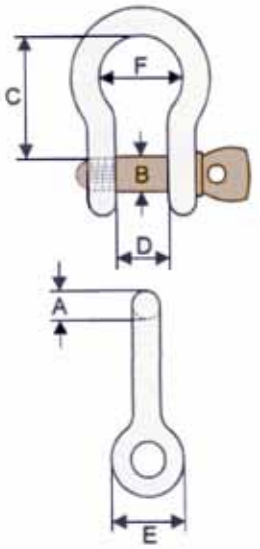
To assure total traceability and to exceed the requirements of ASME B30.26 'Golden Pin' shackles bodies are embossed with:

- Vanguard
- WLL (working load limit)
- Size
- Trace Code

'Golden Pin' shackles pins are stamped with:

- Vanguard I.D. (VGD®)
- Alloy Pin I.D.WLL (HS)
- Yellow chromated for instant recognition
- Trace Code

Size	Pin Diameter	Dimensions (inches)				WLL (tons)	Weight (lbs)	Vanguard Code
A	B	C	D	E	F			
3/16	1/4	0.93	0.39	0.59	0.64	1/3	0.06	2902 0012
1/4	5/16	1.14	0.49	0.70	0.75	1/2	0.12	2902 0016
5/16	3/8	1.23	0.53	0.83	0.80	3/4	0.18	2902 0020
3/8	7/16	1.41	0.69	0.98	1.01	1	0.32	2902 0024
7/16	1/2	1.70	0.72	1.06	1.13	1-1/2	0.45	2902 0028
1/2	5/8	1.83	0.83	1.18	1.25	2	0.68	2902 0032
5/8	3/4	2.36	1.06	1.55	1.67	3-1/4	1.36	2902 0040
3/4	7/8	2.76	1.24	1.78	1.98	4-3/4	2.24	2902 0048
7/8	1	3.29	1.42	2.09	2.25	6-1/2	3.50	2902 0056
1	1-1/8	3.69	1.75	2.35	2.66	8-1/2	5.00	2902 0100
1-1/8	1-1/4	4.23	1.80	2.71	2.79	9-1/2	7.65	2902 0108
1-1/4	1-3/8	4.63	2.12	3.01	3.15	12	10.40	2902 0116
1-3/8	1-1/2	5.17	2.30	3.32	3.60	13-1/2	13.80	2902 0124
1-1/2	1-5/8	5.67	2.39	3.63	3.85	17	17.90	2902 0132
1-3/4	2	7.06	2.96	4.23	4.99	25	27.90	2902 0148
2	2-1/4	7.75	3.31	5.11	5.59	35	42.70	2902 0200
2-1/2	2-3/4	10.25	4.00	5.75	7.00	55	85.00	2902 0232



* Additional sizes available upon request, minimum order quantity may apply.

Note: If the pin, after a 1/4 turn, remains hard to remove, there ia a good chance that the shackle has been overloaded beyond the designed working load limit (WLL) and it, therefore, must be discarded.

Warning:

NEVER EXCEED WORKING LOAD LIMIT!
Failure to follow instructions can result in serious property damage, injury or death!

- For more information please see the shackle warning information found in the hardware section of this catalogue

'GOLDEN PIN'® BOLT TYPE ANCHOR SHACKLES

- Meet the performance requirements of U.S. Fed. Spec. RR-C-271D, Type 4A, Grade A, Class 3
- Heat treated carbon steel bows, quenched and tempered with Alloy pins
- Hot dipped galvanized
- Metallic coating of shackle pins allows for closer thread tolerances than possible for shackles with an extra layer of paint
- Recommended for long term service installation as well as for applications where there is the possibility that the pin can rotate under load
- Design factor 6:1

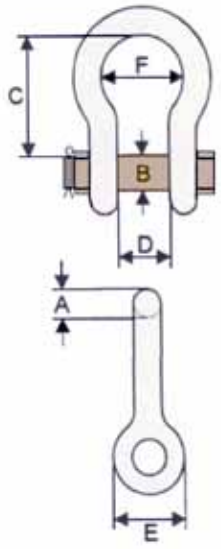
To assure total traceability and to exceed the requirements of ASME B30.26 'Golden Pin' shackles bodies are embossed with:

- Vanguard
- WLL (working load limit)
- Size
- Trace Code

'Golden Pin' shackles pins are stamped with:

- Vanguard I.D. (VGD®)
- Alloy Pin I.D.WLL (HS)
- Yellow chromated for instant recognition
- Trace Code

Size	Pin Diameter	Dimensions (inches)				WLL (tons)	Weight (lbs)	Vanguard Code
A	B	C	D	E	F			
1/4	5/16	1.14	0.50	0.67	0.77	1/2	0.13	2914 0016
5/16	3/8	1.22	0.54	0.83	0.83	3/4	0.21	2914 0020
3/8	7/16	1.41	0.66	1.00	0.99	1	0.36	2914 0024
7/16	1/2	1.72	0.75	1.03	1.12	1-1/2	0.47	2914 0028
1/2	5/8	1.87	0.84	1.19	1.16	2	0.80	2914 0032
5/8	3/4	2.38	1.06	1.58	1.68	3-1/4	1.61	2914 0040
3/4	7/8	2.82	1.27	1.80	1.99	4-3/4	2.45	2914 0048
7/8	1	3.33	1.44	2.09	2.27	6-1/2	3.85	2914 0056
1	1-1/8	3.75	1.72	2.38	2.68	8-1/2	5.65	2914 0100
1-1/8	1-1/4	4.21	1.89	2.72	2.91	9-1/2	8.52	2914 0108
1-1/4	1-3/8	4.67	2.24	2.98	3.20	12	11.10	2914 0116
1-3/8	1-1/2	5.25	2.51	3.32	3.62	13-1/2	14.88	2914 0124
1-1/2	1-5/8	5.70	2.68	3.60	3.82	17	19.30	2914 0132
1-3/4	2	7.00	3.07	4.24	4.65	25	30.45	2914 0148
2	2-1/4	7.85	3.25	5.05	5.77	35	46.63	2914 0200



* Additional sizes available upon request, minimum order quantity may apply.

Note: If the pin, after a 1/4 turn, remains hard to remove, there ia a good chance that the shackle has been overloaded beyond the designed working load limit (WLL) and it, therefore, must be discarded.

Warning:

NEVER EXCEED WORKING LOAD LIMIT!
Failure to follow instructions can result in serious property damage, injury or death!

- For more information please see the shackle warning information found in the hardware section of this catalogue

'GOLDEN PIN'® SCREW PIN CHAIN SHACKLES

- Meet the performance requirements of U.S. Fed. Spec. RR-C-271D, Type 4A, Grade A, Class 2
- Heat treated carbon steel bows, quenched and tempered with Alloy pins
- Hot dipped galvanized
- Metallic coating of shackle pins allows for closer thread tolerances than possible for shackles with an extra layer of paint
- Design factor 6:1

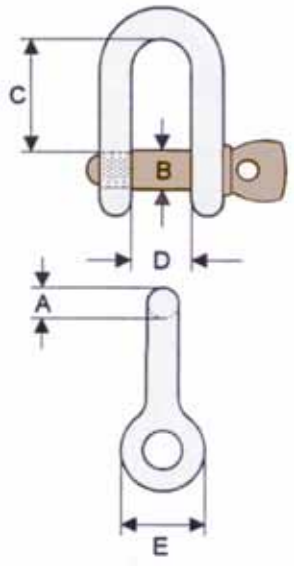
To assure total traceability and to exceed the requirements of ASME B30.26 'Golden Pin' shackles bodies are embossed with:

- Vanguard
- WLL (working load limit)
- Size
- Trace Code

'Golden Pin' shackles pins are stamped with:

- Vanguard I.D. (VGD®)
- Alloy Pin I.D.WLL (HS)
- Yellow chromated for instant recognition
- Trace Code

Size	Pin Diameter	Dimensions (inches)			WLL (tons)	Weight (lbs)	Vanguard Code
A	B	C	D	E			
1/4	5/16	0.83	0.47	0.71	1/2	0.11	3912 0016
5/16	3/8	0.98	0.47	0.75	3/4	0.17	3912 0020
3/8	7/16	1.22	0.63	0.96	1	0.24	3912 0024
7/16	1/2	1.50	0.75	1.06	1-1/2	0.40	3912 0028
1/2	5/8	1.61	0.83	1.22	2	0.59	3912 0032
5/8	3/4	2.01	1.10	1.57	3-1/4	1.20	3912 0040
3/4	7/8	2.41	1.25	1.81	4-3/4	2.20	3912 0048
7/8	1	2.80	1.42	2.13	6-1/2	3.20	3912 0056
1	1-1/8	3.15	1.77	2.36	8-1/2	4.80	3912 0100
1-1/8	1-1/4	3.50	1.85	2.69	9-1/2	6.80	3912 0108
1-1/4	1-3/8	3.97	2.05	3.00	12	9.00	3912 0116
1-1/2	1-5/8	4.80	2.39	3.68	17	16.00	3912 0132
2	2-1/4	6.75	3.25	5.00	35	43.00	3912 0200



* Additional sizes available upon request, minimum order quantity may apply.

Note: If the pin, after a 1/4 turn, remains hard to remove, there ia a good chance that the shackle has been overloaded beyond the designed working load limit (WLL) and it, therefore, must be discarded.

Warning:

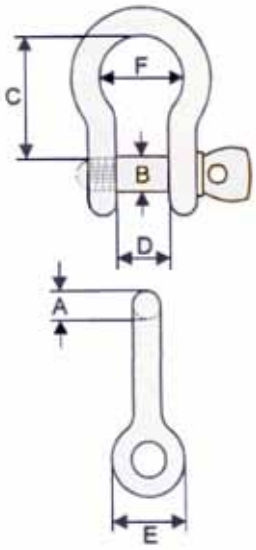
NEVER EXCEED WORKING LOAD LIMIT!
Failure to follow instructions can result in serious property damage, injury or death!

- For more information please see the shackle warning information found in the hardware section of this catalogue

"SILVER PIN"® SCREW PIN ANCHOR SHACKLES

- Meet the performance requirements of U.S. Fed. Spec. RR-C-271D, Type 4A, Grade A, Class 2
- Heat treated carbon steel bows, quenched and tempered with Alloy pins
- Hot dipped galvanized
- Shackles bodies embossed with size, WLL and trace code
- Design factor 6:1

Size	Pin Diameter	Dimensions (inches)				WLL (tons)	Weight (lbs)	Vanguard Code
A	B	C	D	E	F			
3/16	1/4	0.93	0.39	0.59	0.64	1/3	0.06	2902 5012
1/4	5/16	1.14	0.49	0.70	0.75	1/2	0.12	2902 5016
5/16	3/8	1.23	0.53	0.83	0.80	3/4	0.18	2902 5020
3/8	7/16	1.41	0.69	0.98	1.01	1	0.32	2902 5024
7/16	1/2	1.70	0.72	1.06	1.13	1-1/2	0.45	2902 5028
1/2	5/8	1.83	0.83	1.18	1.25	2	0.68	2902 5032
5/8	3/4	2.36	1.06	1.55	1.67	3-1/4	1.36	2902 5040
3/4	7/8	2.76	1.24	1.78	1.98	4-3/4	2.24	2902 5048
7/8	1	3.29	1.42	2.09	2.25	6-1/2	3.50	2902 5056
1	1-1/8	3.69	1.75	2.35	2.66	8-1/2	5.00	2902 5100
1-1/8	1-1/4	4.23	1.80	2.71	2.79	9-1/2	7.65	2902 5108
1-1/4	1-3/8	4.63	2.12	3.01	3.15	12	10.40	2902 5116
1-3/8	1-1/2	5.17	2.30	3.32	3.60	13-1/2	13.80	2902 5124
1-1/2	1-5/8	5.67	2.39	3.63	3.85	17	17.90	2902 5132
1-3/4	2	7.06	2.96	4.23	4.99	25	27.90	2902 5148
2	2-1/4	7.75	3.31	5.11	5.59	35	42.70	2902 5200
2-1/2	2-3/4	10.25	4.00	5.75	7.00	55	85.00	2902 5232



* Additional sizes available upon request, minimum order quantity may apply.

Note: If the pin, after a 1/4 turn, remains hard to remove, there ia a good chance that the shackle has been overloaded beyond the designed working load limit (WLL) and it, therefore, must be discarded.

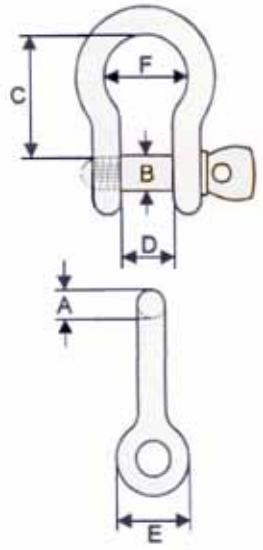
Warning:

NEVER EXCEED WORKING LOAD LIMIT!
Failure to follow instructions can result in serious property damage, injury or death!

- For more information please see the shackle warning information found in the hardware section of this catalogue

STAINLESS SCREW PIN ANCHOR SHACKLES

- To be used for light duty, non-critical applications only
- Made from AISI 316 stainless steel
- Bright polished finish
- Cast



Size	Dimensions (inches)						WLL (tons)	Nominal Breaking Strength (lbs)	Vanguard Code
	A	B	C	D	E	F			
3/16	0.19	0.25	0.88	0.38	0.56	0.60	1/4	4,404	3913 0012
1/4	0.25	0.31	1.13	0.47	0.61	0.78	1/4	6,612	3913 0016
5/16	0.31	0.38	1.22	0.53	0.75	0.84	1/3	9,918	3913 0020
3/8	0.38	0.44	1.44	0.66	0.91	1.03	1/2	13,224	3913 0024
7/16	0.44	0.50	1.69	0.75	1.06	1.16	2/3	19,836	3913 0028
1/2	0.50	0.63	1.88	0.81	1.19	1.31	1	26,454	3913 0032
5/8	0.63	0.75	2.38	1.06	1.50	1.69	1-1/2	42,990	3913 0040
3/4	0.75	0.88	2.81	1.25	1.81	2.00	2-1/4	62,826	3913 0048
7/8	0.88	1.00	3.31	1.44	2.09	2.28	3	57,269	3913 0056
1	1.00	1.13	3.75	1.69	2.38	2.69	4	74,890	3913 0100

* Additional sizes available upon request, minimum order quantity may apply.

Note: If the pin, after a 1/4 turn, remains hard to remove, there ia a good chance that the shackle has been overloaded beyond the designed working load limit (WLL) and it, therefore, must be discarded.

Warning:

NEVER EXCEED WORKING LOAD LIMIT!
Failure to follow instructions can result in serious property damage, injury or death!

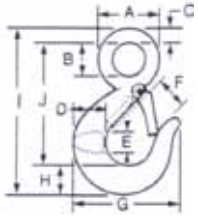
- For more information please see the shackle warning information found in the hardware section of this catalogue

HOIST HOOKS

'Black Eye'®

- Forged Carbon or Alloy Steel, quenched & tempered
- Embossed Working Load Limit (WLL) with 5:1 safety factor
- Colour coding prevents mix-ups
- Carbon Steel - black eye, red body
- Alloy Steel - black eye, gold body

WLL (tons)		Dimensions (inches)										Weight (lbs)	Vanguard Code	
Carbon	Alloy	A	B	C	D	E	F	G	H	I	J		Carbon	Alloy
1/2		0.56	0.62	0.35	0.75	0.53	0.76	2.55	0.75	3.83	2.75	0.38	2910 0005	
3/4	1	1.50	0.75	0.38	0.88	0.63	0.94	2.88	0.75	4.38	3.25	0.50	2910 0007	2910 1010
1	1-1/2	1.75	0.88	0.44	1.00	0.69	1.06	3.13	0.81	4.88	3.63	0.80	2910 0010	2910 1015
1-1/2	2	2.00	1.13	0.50	1.19	0.81	1.12	3.50	1.00	5.50	4.13	1.10	2910 0015	2910 1020
2	3	2.38	1.25	0.59	1.38	0.94	1.22	3.94	1.19	6.31	4.56	1.70	2910 0020	2910 1030
3	4-1/2	3.00	1.56	0.69	1.63	1.19	1.50	5.00	1.50	7.94	5.75	3.60	2910 0030	2910 1045
5	7	3.81	2.00	0.88	2.06	1.50	1.88	6.25	1.75	10.00	7.38	7.00	2910 0050	2910 1070
7-1/2	11	4.70	2.43	1.19	2.53	1.68	2.23	7.25	2.37	12.25	9.00	13.27	2910 0075	2910 1110

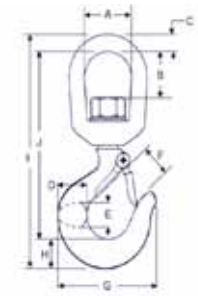


SWIVEL HOOKS

'Black Eye'®

- Forged Carbon or Alloy Steel, quenched & tempered
- Embossed Working Load Limit (WLL) with:
  - 5:1 safety factor for Carbon hooks
  - 4.5:1 safety factor for Alloy hooks

WLL (tons)		Dimensions (inches)										Approx. Weight (lbs)	Vanguard Code	
Carbon	Alloy	A	B	C	D	E	F	G	H	I	J		Carbon	Alloy
3/4	1	1.23	0.92	0.40	0.83	0.60	0.98	2.95	0.86	5.50	4.35	0.55	2928 0010	2928 1010
1	1-1/2	1.50	1.35	0.52	0.94	0.66	1.07	3.33	0.86	6.50	5.23	0.75	2928 0011	2928 1015
1-1/2	2	1.73	1.70	0.64	1.13	0.75	1.10	3.75	1.04	7.50	6.00	1.25	2928 0015	2928 1020
2	3	1.70	1.60	0.64	1.36	0.87	1.21	4.25	1.20	8.00	6.25	1.70	2928 0020	2928 1030
3	4-1/2	1.95	1.84	0.78	1.66	1.11	1.52	5.00	1.55	9.50	7.50	3.60	2928 0030	2928 1045
5	7	2.42	2.42	1.02	2.10	1.35	2.04	7.00	1.99	11.75	9.75	7.08	2928 0050	2928 1070
7-1/2	11	2.70	2.51	1.10	2.65	1.75	2.40	8.00	2.45	14.50	11.12	13.00	2928 0075	2928 1110
	15	4.10	3.76	1.50	3.50	2.69	3.41	10.34	3.00	21.34	16.71	22.00		2928 1150
	22	4.10	3.76	1.50	4.63	3.00	4.00	13.62	3.61	23.25	18.01	41.00		2928 1220



STAINLESS LATCH KITS (FOR HOIST HOOKS)

WLL (tons)		Vanguard Code	WLL (tons)		Vanguard Code
Carbon	Alloy		Carbon	Alloy	
3/4	1	29190010	3	4-1/2	2919 0030
1	1-1/2	29190011	5	7	2919 0050
1-1/2	2	29190021	7-1/2	11	2919 0075
2	3	29190022		15	2919 1509
				22	2919 2209

Warning:

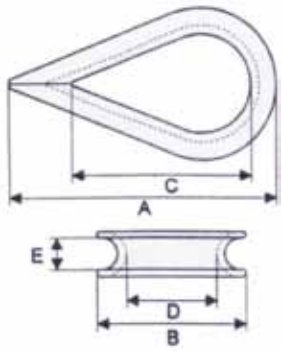
NEVER EXCEED WORKING LOAD LIMITS!

- Swivels are designed for positioning only and should not rotate under load
- Inspect hooks and latches frequently and discard hooks which show signs of deformation or excessive wear
- Latches are not designed to support loads - replace bent latches
- Always use thimbles to install hooks onto a rope
- Recommended maximum Proof Load: 2 x WLL

STANDARD WIRE ROPE THIMBLES

- Manufactured to U.S. Fed. Spec. FF-T-276B, Type II
- For light duty applications with fibre or wire ropes to protect rope eyes against cuts and abrasions
- Electroplated zinc coating

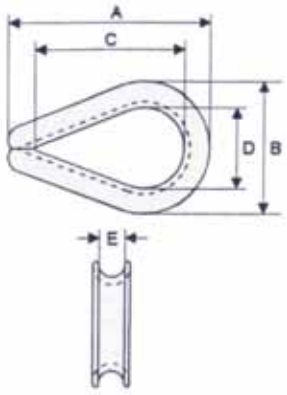
Size	Dimensions (inches)					Weight (lbs/100)	Vanguard Code
	A	B	C	D	E		
1/8	1.92	1.18	1.33	0.70	0.19	3	2905 0008
3/16	1.92	1.13	1.38	0.72	0.24	3	2905 0012
1/4	1.95	1.09	1.38	0.71	0.29	3	2905 0016
5/16	2.11	1.22	1.52	0.81	0.36	4	2905 0020
3/8	2.25	1.43	1.70	0.94	0.40	6	2905 0024
1/2	2.70	1.78	1.85	1.18	0.61	10	2905 0032
5/8	3.48	2.32	2.32	1.37	0.74	32	2905 0040
3/4	3.72	2.70	2.58	1.61	0.81	48	2905 0048
7/8	4.97	3.08	3.54	1.89	1.00	76	2905 0056
1	5.57	3.72	4.13	2.52	1.07	92	29050100



HEAVY WIRE ROPE THIMBLES

- Manufactured to U.S. Fed. Spec. FF-T-276B, Type III
- Made from cold rolled steel, hot dip galvanized, for protection of rope eyes in demanding applications
- Also available in Stainless Steel where corrosive elements call for greater protection

Size	Dimensions (inches)					Weight (lbs/100)	Vanguard Code	
	A	B	C	D	E		Galvanized	Stainless Steel
1/4	2.22	1.49	1.65	0.89	0.32	6	2906 0016	2961 0016
5/16	2.53	1.82	1.88	1.08	0.40	11	2906 0020	2961 0020
3/8	2.89	2.06	2.11	1.14	0.53	21	2906 0024	2961 0024
7/16	3.25	2.32	2.39	1.24	0.55	27	2906 0028	2961 0028
1/2	3.63	2.70	2.86	1.47	0.60	51	2906 0032	2961 0032
9/16	3.53	2.77	2.66	1.53	0.56	51	2906 0036	2961 0036
5/8	4.26	3.07	3.33	1.75	0.76	69	2906 0040	2961 0040
3/4	5.09	3.73	3.68	2.04	0.95	153	2906 0048	2961 0048
7/8	5.66	4.05	4.32	2.19	1.09	187	2906 0056	2961 0056
1	6.56	4.50	4.80	2.32	1.25	248	2906 0100	2961 0100
1-1/8	7.00	5.53	5.17	2.99	1.50	332	2906 0108	2961 0108
1-1/4	9.00	6.50	7.50	3.20	1.64	816	2906 0116	2961 0116
1-3/8 - 1-1/2	9.00	6.75	7.50	3.30	1.90	1,040	2906 0124	2961 0124
1-3/4	12.00	8.11	8.64	4.10	1.50	1,510	2906 0148	2961 0148
2	15.30	9.90	11.90	6.03	2.00	2,170	2906 0200	2961 0200

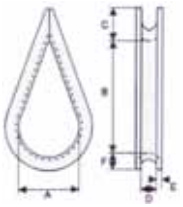


Warning: **Thimbles are not designed to support loads!**

STAINLESS AN - THIMBLES

- For applications using small diameter galvanized or stainless cables

Size	Item No.	Dimensions (inches)						Weight (lbs/100)	Vanguard Code
		A	B	C	D	E	F		
3/64 - 1/16 - 5/64	C-3	0.350	0.671	0.187	0.093	0.032	0.078	0.15	2960 0004
3/32 - 1/8 - 7/64	C-4	0.350	0.671	0.218	0.140	0.032	0.078	0.43	2960 0006
5/32	C-5	0.400	0.796	0.218	0.171	0.032	0.109	0.60	2960 0010
3/16	C-6	0.500	1.000	0.312	0.203	0.032	0.171	0.98	2960 0012
1/4	C-8	0.700	1.406	0.406	0.265	0.032	0.171	1.50	2960 0016
5/16	C-10	0.900	1.796	0.437	0.328	0.040	0.218	3.50	2960 0020
3/8	C-12	1.000	2.000	0.625	0.390	0.060	0.265	8.50	2960 0024



OVAL SLEEVES

- Available in aluminum, copper, zinc plated, and stainless steel (see prefix*)

Cable Size	Dimensions (inches)				Weight (lbs/100)		Vanguard Suffix Code*
	A	B	C	D	Alum	Copper	
3/64	0.133	0.196	0.071	0.375	0.06	0.20	 0003
1/16	0.172	0.250	0.078	0.375	0.08	0.25	 0004
3/32	0.278	0.404	0.130	0.500	0.25	0.60	 0006
1/8	0.343	0.500	0.156	0.625	0.58	1.00	 0008
5/32	0.375	0.562	0.187	0.687	0.70	2.30	 0010
3/16	0.440	0.665	0.223	1.000	1.45	5.30	 0012
1/4	0.536	0.818	0.290	1.125	2.80	7.00	 0016
5/16	0.687	1.031	0.375	1.250	4.10	12.20	 0020
3/8	0.750	1.156	0.438	1.437	5.70	15.60	 0024
7/16	0.937	1.437	0.500	1.938	11.60		 0028
1/2	1.062	1.625	0.562	2.000	17.20		 0032

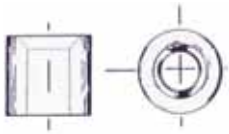
Prefix*	
Aluminum	2950 ....
Copper	2952 ....
Zinc Plated	2954 ....
Stainless Steel	2955 ....

STOP SLEEVES

- Available in aluminum or copper (see prefix*)

Cable Size	Dimensions (inches)		Weight (lbs/100)		Vanguard Suffix Code*
	A	B	Alum	Copper	
1/16	0.156	0.250	0.04	0.20	 0004
3/32	0.313	0.344	0.25	0.80	 0006
1/8	0.313	0.344	0.23	0.70	 0008
5/32	0.344	0.438	0.40	1.20	 0010
3/16	0.344	0.438	0.35	1.05	 0012
1/4	0.688	0.688	2.10	6.10	 0016

Prefix*	
Aluminum	2951 ....
Copper	2953 ....



Note:

Properly swaged, **oval sleeves** are capable of maintaining over 90% of the breaking strength of the cable. However, to determine the exact holding strength, a pull test must be performed prior to use. The maximum holding strength of **stop sleeves** is approximately 1/3 of the strength of the cable. **Safety Margins must be maintained in line with the respective applications.**

FORGED EYE BOLT WARNINGS AND INFORMATION

It is very important to read and understand all information shown before using eye bolts

Shoulder Nut Eye Bolt

Regular Nut Eye Bolt

Machinery Eye Bolt

Shoulder nut and/or machinery eye bolts are recommended for rigging hardware, except when prohibited by the configuration of the item that the eye bolts are attached to.

Where non-shoulder eye bolts are required, they should only be used for vertical pulls or in rigging systems designed, analyzed and approved by a properly qualified/competent person.

For vertical loading eye bolts without shoulders have the same load-carrying capacity/ability as shoulder eye bolts

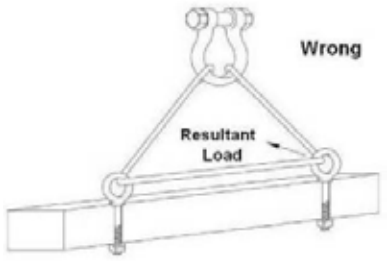
Warning:

FAILURE TO OBSERVE THESE WARNINGS MAY RESULT IN SERIOUS INJURY OR DEATH!

- **ALWAYS** inspect eye bolts before use, checking for wear, damage, bent or elongation of the eye and/or shank and damage to the threads. The inspection should be performed by a properly trained/competent person
- **ALWAYS** make sure that the threads on the shank and the receiving hole are clean before use
- **ALWAYS** apply load to the eye bolt in the plane of the eye not at an angle
- **ALWAYS** tighten nuts securely against the load
- **NEVER** lift or transport loads over or near people
- **NEVER** exceed the rate capacity (WLL) of any component
- **NEVER** insert the tip of a hook into an eye bolt, use a *'Golden Pin'* ® shackle to avoid loading the hook tip
- **NEVER** machine, cut, grind or in any way alter eye bolts
- **NEVER** use eye bolts which show signs of wear or deformation
- **NEVER** use regular nut eye bolts for angular lifts. Only shoulder nut or machinery eye bolts should be used and observe WLL capacity adjustment information

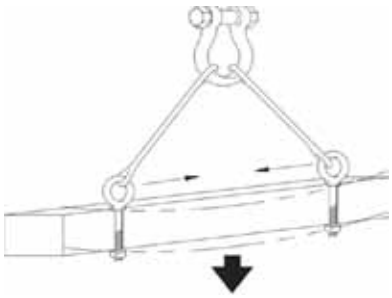
REEVING OF A SLING THROUGH AN EYE BOLT

Slings should never be reeved through an eye bolt or through a pair of eye bolts. Reeving will alter the angle of the loading on the eye bolts. Only one leg should be attached to each eye bolt.



After properly attaching the slings to the eye bolts, slowly lift the load. Watch the load carefully and be prepared to stop lifting the load if it starts to buckle.

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

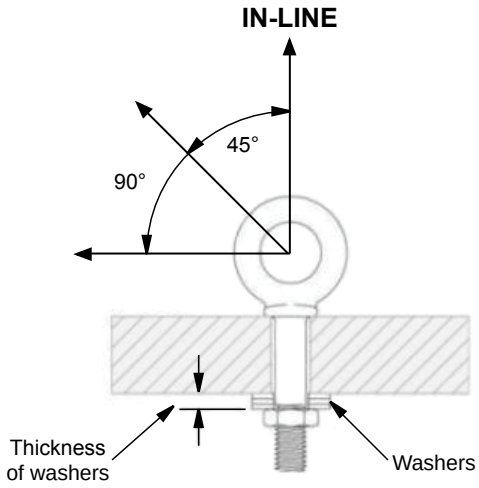


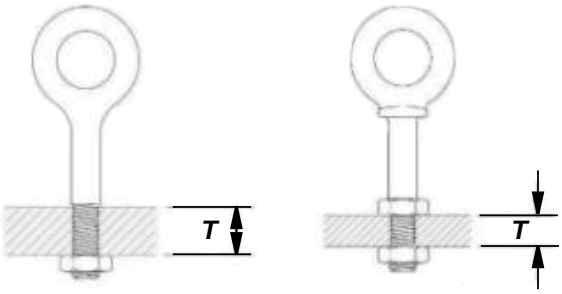
FORGED EYE BOLT WARNINGS AND INFORMATION

It is very important to read and understand all information shown before using eye bolts

CAPACITY ADJUSTMENT FOR ANGULAR LOADING

Lift Angle in-line pull	Maximum Load
45º	30% of the working load limit (WLL)
90º	25% of the working load limit (WLL)





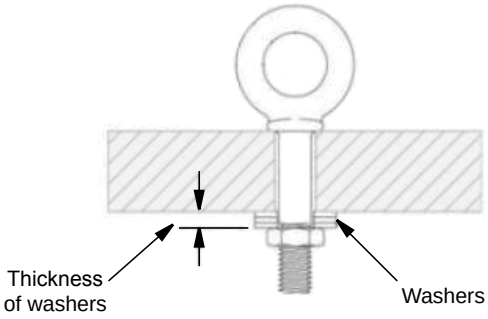
EYE BOLT INSTALLATION

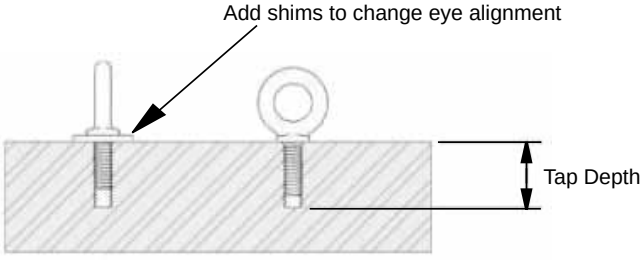
Use one nut if the thickness is more than one eye bolt diameter (*T*>). Use two nuts if the thickness is less than or equal to the eye bolt diameter (*T*≤) as shown.

Always tighten nut securely against the load.

INSTALLATION FOR ANGULAR LOADING

Use shoulder nut eye bolts for angular loading. If the eye bolt protrudes so far through the load that the nut cannot be tightened securely against the load, use properly sized washers/spacer to take up the excess space between the nut and the load (as shown). The thickness of the washers/spacer must exceed the distance between the bottom of the load and the last thread of the eye bolt.





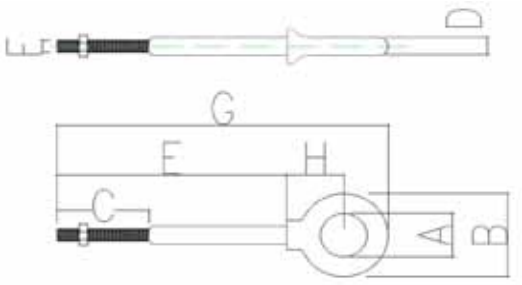
INSTALLATION OF MACHINERY EYE BOLTS

These eye bolts are primarily intended to be installed in tapped holes. For installation, tap the load (tap depth) to a minimum depth of one-half the eye bolt size beyond the shank length of the machinery eye bolt.

If the plane of the machinery eye bolt is not aligned with the sling line, add shims (washers/spacers) of proper thickness to adjust the angle of the plane of the eye to match the sling line (as shown).

SHOULDER NUT EYE BOLTS

- Permanently embossed with VGD© and size for traceability to meet ASME B30.26
- Forged carbon steel
- Quenched and tempered
- Hot dipped galvanized with heavy hex nut
- UNC Threads
- Design factor proof load 2:1 WLL, ultimate load 5:1 WLL



Size (inches)	Dimensions (inches)								WLL (lbs)	Weight (lbs)	Vanguard Code
	A	B	C	D	E	F	G	H			
1/4 X 2	0.496	0.887	1.638	0.198	2.025	0.235	2.953	0.485	650	0.06	2971 1020
1/4 X 4	0.502	0.898	2.727	0.205	4.013	0.235	4.970	0.503	650	0.08	2971 1040
5/16 X 2-1/4	0.614	1.138	1.565	0.240	2.295	0.302	3.542	0.678	1,200	0.11	2971 2022
5/16 X 4-1/4	0.620	1.153	2.644	0.246	4.278	0.309	5.568	0.714	1,200	0.16	2971 2042
3/8 X 2-1/2	0.736	1.361	1.667	0.322	2.525	0.364	3.997	0.792	1,550	0.17	2971 3025
3/8 X 4-1/2	0.762	1.384	2.551	0.325	4.465	0.369	5.979	0.822	1,550	0.25	2971 3045
1/2 X 3-1/4	0.983	1.769	1.605	0.412	3.217	0.487	5.165	1.064	2,600	0.40	2971 4032
1/2 X 6	0.995	1.780	3.021	0.425	6.005	0.482	8.000	1.105	2,600	0.53	2971 4060
5/8 X 4	1.267	2.317	2.158	0.549	4.154	0.605	6.563	1.251	5,200	0.78	2971 5040
5/8 X 6	1.264	2.303	3.094	0.572	6.082	0.609	8.500	1.267	5,200	0.81	2971 5060
3/4 X 4-1/2	1.514	2.817	2.162	0.721	4.505	0.719	7.489	2.576	7,200	1.41	2971 6045
3/4 X 6	1.516	2.802	3.092	0.732	5.985	0.721	9.000	1.614	7,200	1.51	2971 6060
1 X 6	1.995	3.983	3.102	0.983	6.452	0.975	10.500	2.057	13,300	3.20	2971 7060

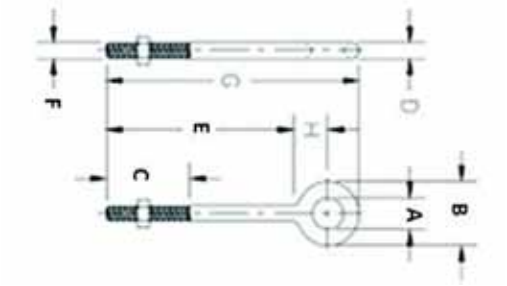
Warning:

NEVER EXCEED WORKING LOAD LIMITS
WORKING LOAD LIMITS PERTAIN TO IN-LINE PULLS ONLY

- **NEVER** use eye bolts which show signs of wear or deformation

REGULAR NUT EYE BOLTS

- Permanently embossed with VGD© and size for traceability to meet ASME B30.26
- Forged carbon steel
- Quenched and tempered
- Hot dipped galvanized with heavy hex nut
- UNC Threads
- Design factor proof load 2:1 WLL, ultimate load 5:1 WLL



Size (inches)	Dimensions (inches)								WLL (lbs)	Weight (lbs)	Vanguard Code
	A	B	C	D	E	F	G	H			
5/16 X 4-1/4	0.625	1.253	2.673	0.302	4.285	0.304	5.583	0.672	1,200	0.16	2970 2042
3/8 X 2-1/2	0.745	1.515	1.556	0.387	2.512	0.362	4.052	0.783	1,550	0.19	2970 3025
3/8 X 4-1/2	0.762	1.502	2.598	0.396	4.496	0.366	6.025	0.778	1,550	0.25	2970 3045
3/8 X 6	0.761	1.498	3.791	0.401	5.960	0.359	7.470	0.761	1,550	0.30	2970 3060
1/2 X 3-1/4	0.973	2.028	1.598	0.537	3.361	0.489	5.445	0.980	2,600	0.51	2970 4032
1/2 X 6	0.971	2.022	3.150	0.544	6.046	0.489	8.100	0.953	2,600	0.63	2970 4060
1/2 X 8	0.992	2.038	3.161	0.541	8.250	0.497	10.250	0.981	2,600	0.76	2970 4080
1/2 X 10	0.995	2.031	3.169	0.535	10.250	0.494	12.250	0.985	2,600	0.87	2970 4100
1/2 X 12	1.002	2.029	3.340	0.532	12.250	0.492	14.250	0.984	2,600	1.00	2970 4120
5/8 X 4	1.257	2.517	2.264	0.641	4.125	0.602	6.675	1.292	5,200	0.94	2970 5040
5/8 X 6	1.267	2.514	3.185	0.646	6.213	0.605	8.750	1.281	5,200	1.13	2970 5060
5/8 X 8	1.251	2.508	3.183	0.632	8.250	0.610	10.750	1.246	5,200	1.32	2970 5080
5/8 X 10	1.252	2.509	3.230	0.630	10.250	0.608	12.750	1.245	5,200	1.49	2970 5100
5/8 X 12	1.254	2.501	3.971	0.638	12.250	0.603	14.750	1.250	5,200	1.59	2970 5120
3/4 X 4-1/2	1.483	2.967	2.094	0.751	4.750	0.734	7.844	1.611	7,200	1.51	2970 6045
3/4 X 6	1.484	2.959	3.370	0.752	6.348	0.737	9.350	1.523	7,200	1.82	2970 6060
3/4 X 8	1.485	2.975	3.189	0.761	8.400	0.735	11.400	1.513	7,200	1.95	2970 6080
3/4 X 10	1.477	2.974	2.915	0.765	10.250	0.728	13.250	1.514	7,200	2.08	2970 6100
3/4 X 12	1.473	2.965	4.320	0.762	12.250	0.725	15.250	1.517	7,200	2.77	2970 6120
1 X 6	1.978	3.972	3.008	0.977	6.500	0.965	10.500	2.014	13,300	3.23	2970 7060
1 X 12	1.965	3.984	4.379	0.975	12.500	0.973	16.500	2.008	13,300	4.68	2970 7120

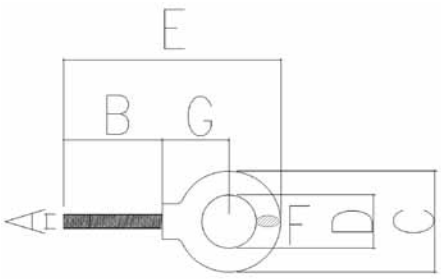
Warning:

NEVER EXCEED WORKING LOAD LIMITS
WORKING LOAD LIMITS PERTAIN TO IN-LINE PULLS ONLY

- **NEVER** use eye bolts which show signs of wear or deformation

MACHINED EYE BOLTS

- Permanently embossed with trace code, VGD© and size for traceability to meet ASME B30.26
- Forged carbon steel
- Quenched and tempered
- UNC Threads
- Design factor proof load 2:1 WLL, ultimate load 5:1 WLL



Size (inches)	Dimensions (inches)							WLL (lbs)	Proof Load (lbs)	Weight (lbs)	Vanguard Code
	A	B	C	D	E	F	G				
1/4 X 1	0.235	1.005	1.211	0.773	2.388	0.232	0.778	650	1,300	0.05	2975 1010
5/16 X 1-1/8	0.293	1.227	1.435	0.880	2.849	0.284	0.905	1,200	2,400	0.09	2975 2011
3/8 X 1-1/4	0.367	1.245	1.717	0.928	3.310	0.377	1.207	1,550	3,100	0.15	2975 3012
1/2 X 1-1/2	0.487	1.472	2.145	1.158	3.967	0.466	1.423	2,600	5,200	0.28	2975 4015
5/8 X 1-3/4	0.612	1.791	2.587	1.376	4.739	0.639	1.655	5,200	10,400	0.55	2975 5017
3/4 X 2	0.743	1.976	2.845	1.492	5.297	0.691	1.899	7,200	14,400	0.96	2975 6020
7/8 X 2-1/4	0.859	2.252	3.228	1.685	5.945	0.798	2.079	10,600	21,200	1.54	2975 7022
1 X 2-1/2	0.993	2.414	3.563	1.774	6.551	0.943	2.356	13,300	26,600	2.38	2975 9025
1-1/4 X 3	1.229	2.995	4.328	2.245	7.733	1.070	2.574	21,000	42,000	3.99	2975 9030
1-1/2 X 3-1/2	1.465	3.449	5.366	2.832	9.250	1.347	3.118	24,000	48,000	7.20	2975 9035

Warning:

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WORKING LOAD LIMITS PERTAIN TO IN-LINE PULLS ONLY

- **NEVER** use eye bolts which show signs of wear or deformation

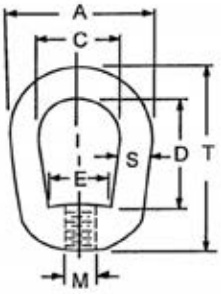
SCREW EYE BOLTS

- Forged Carbon Steel, quenched & tempered, hot dip galvanized

Dimensions (inches)					Weight (lbs)	Vanguard Code
Diameter (A)	B	C	D	E		
1/4	1.98	1.53	0.46	0.92	0.06	2973 1020
5/16	2.39	1.88	0.62	1.15	0.09	2973 2025
3/8	2.69	2.00	0.75	1.42	0.17	2973 3025
1/2	3.34	2.54	0.94	1.74	0.34	2973 4032
5/8	4.00	3.34	1.21	2.27	0.69	2973 5040

FORGED EYE NUTS

- Permanently embossed with trace code, VGD© and size for traceability to meet ASME B30.26
- Forged carbon steel
- Quenched and tempered
- Hot dipped galvanized
- UNC Threads
- Design factor proof load 2:1 WLL, ultimate load 5:1 WLL



Size	Dimensions (inches)									WLL (lbs)	Weight (lbs)	Vanguard Code
	Nominal	Tap Size	A	C	D	E	S	T	M			
1	1/4	1/4	1.282	0.745	1.032	0.628	0.254	1.678	0.229	520	0.09	2974 0016
2	5/16	3/8	1.602	0.965	1.212	0.748	0.325	2.072	0.314	1,250	0.18	2974 0020
3	3/8	1/2	2.005	1.232	1.478	0.975	0.394	2.513	0.425	2,250	0.28	2974 0024
4	1/2	5/8	2.523	1.488	1.947	1.186	0.517	3.242	0.538	3,600	0.58	2974 0032
5	5/8	3/4	3.004	1.732	2.425	1.328	0.645	3.882	0.665	5,200	1.00	2974 0040
6	3/4	7/8	3.507	1.991	2.642	1.588	0.778	4.334	0.766	7,200	1.70	2974 0048
7	7/8	1	3.894	2.232	3.015	1.804	0.827	4.952	0.887	10,000	2.75	2974 0056
8	1	1-1/4	4.505	2.476	3.503	1.925	1.020	5.763	1.101	15,500	3.90	2974 0100
10	1-1/4	1-1/2	5.615	3.098	4.025	2.372	1.254	6.738	1.356	22,500	6.70	2974 0116
11	1-1/2	2	7.175	3.990	6.133	3.957	1.585	10.250	1.790	40,000	18.70	2974 0132

Note: order by tap size, markings on the eye nut are for the body stock size

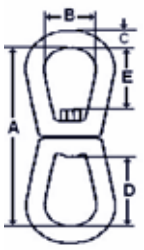
Warning:

NEVER EXCEED WORKING LOAD LIMITS
WORKING LOAD LIMITS PERTAIN TO IN-LINE PULLS ONLY

- **NEVER** use eye bolts which show signs of wear or deformation

FORGED EYE & EYE SWIVELS

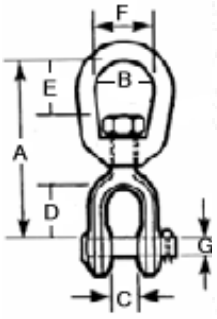
- Manufactured to U.S. Fed. Spec. RR-C-271D Type VII, Class 2
- Forged steel - quenched and tempered
- Hot dip galvanized
- Swivel size permanently embossed
- Proof Load: 2 Times the Working Load Limit (WLL)
- Ultimate Load: 5 Times the Working Load Limit (WLL)



Size	Dimensions (inches)					WLL (lbs)	Vanguard Code
	A	B	C	D	E		
1/4	2.94	0.75	0.25	1.00	0.69	850	2929 0016
5/16	3.56	1.00	0.32	1.25	0.81	1,250	2929 0020
3/8	4.31	1.25	0.38	1.50	0.94	2,250	2929 0024
1/2	5.44	1.50	0.50	2.00	1.31	3,600	2929 0032
5/8	6.56	1.75	0.63	2.38	1.56	5,200	2929 0040
3/4	7.19	2.00	0.75	2.63	1.75	7,200	2929 0048
7/8	8.38	2.25	0.96	3.06	2.06	10,000	2929 0056
1	9.63	2.50	1.00	3.50	2.31	12,500	2929 0100
1-1/4	11.44	3.13	1.25	3.69	2.69	18,000	2929 0116
1-1/2	17.13	4.00	1.50	4.19	3.88	45,200	2929 0132

FORGED JAW & EYE SWIVELS

- Manufactured to U.S. Fed. Spec. RR-C-271D Type VII, Class 2
- Forged steel - quenched and tempered
- Hot dip galvanized
- Swivel size permanently embossed
- Proof Load: 2 Times the Working Load Limit (WLL)
- Ultimate Load: 5 Times the Working Load Limit (WLL)



Size	Dimensions (inches)							WLL (lbs)	Vanguard Code
	A	B	C	D	E	F	G		
1/4	2.63	0.75	0.47	0.88	0.69	1.25	0.25	850	2929 1016
5/16	2.94	1.00	0.50	0.88	0.81	1.63	0.31	1,250	2929 1020
3/8	3.63	1.25	0.63	1.06	0.94	2.00	0.38	2,250	2929 1024
1/2	4.50	1.50	0.75	1.31	1.31	2.50	0.50	3,600	2929 1032
5/8	5.31	1.75	0.94	1.50	1.56	3.00	0.63	5,200	2929 1040
3/4	5.06	2.00	1.13	1.75	1.75	3.50	0.75	7,200	2929 1048
7/8	7.00	2.25	1.19	2.06	2.06	4.00	0.88	10,000	2929 1056
1	8.56	2.50	1.75	2.81	2.31	4.50	1.13	12,500	2929 1100
1-1/4	9.75	3.13	2.06	2.81	2.69	5.69	1.38	18,000	2929 1116

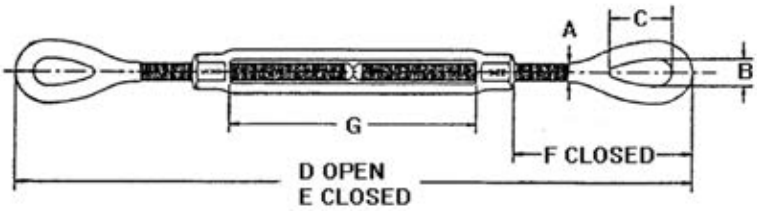
Warning:

NEVER EXCEED WORKING LOAD LIMITS!

- **NEVER** insert the point of a hook into a swivel eye
- These swivels are only for positioning and are not intended to act as swivels under load
- The working load limits (WLL) apply to straight line pulls only

EYE & EYE FORGED TURNBUCKLES WITH LOCKNUTS

- Meeting the requirements of U.S. Fed. Spec. FF-T-791B Type 1, Form 1 (open body)
- Permanently embossed with R, L, VGD© and size for traceability to meet ASME B30.26
- Hexagon heads forged into bodies permit fast and easy adjustments
- Forged carbon steel, bodies heat treated by normalizing, end-fitting quenched & tempered
- Hot dipped galvanized
- UNC Threads
- Design factor proof load 2.5:1, ultimate load 5:1



Dimensions (inches)						Approx. Weight (lbs)	WLL (lbs)	Vanguard Code
Diameter x Take-Up A x G	B	C	D Open	E Closed	F Closed			
1/4 x 4	0.32	075	12.18	8.83	1.78	0.26	500	2920 10161
5/16 x 4-1/2	0.43	0.90	14.09	9.67	2.11	0.45	800	2920 10201
3/8 x 6	0.52	0.93	18.10	12.20	2.57	0.76	1,200	2920 10241
1/2 x 6	0.72	1.13	19.57	14.22	3.36	1.54	2,200	2920 10321
1/2 x 9	0.69	1.44	26.90	16.90	3.27	1.13	2,200	2920 20321
1/2 x 12	0.72	1.40	31.85	20.00	3.26	2.14	2,200	2920 30321
5/8 x 6	0.81	1.43	22.00	16.00	3.79	3.28	3,500	2920 10401
5/8 x 9	0.86	1.71	28.66	19.69	4.21	2.83	3,500	2920 20401
5/8 x 12	0.88	1.74	34.93	21.69	3.90	3.42	3,500	2920 30401
3/4 x 6	0.96	1.81	23.66	17.72	4.67	4.61	5,200	2920 10481
3/4 x 9	1.00	2.07	31.10	20.64	4.70	4.61	5,200	2920 20481
3/4 x 12	1.00	2.09	37.10	23.66	4.69	5.48	5,200	2920 30481
3/4 x 18	0.94	2.10	47.40	30.39	4.97	7.19	5,200	2920 40481
7/8 x 12	1.26	2.07	38.56	24.80	5.11	7.22	7,200	2920 30561
7/8 x 18	1.25	2.38	50.57	30.82	5.10	9.95	7,200	2920 40561
1 x 12	1.45	2.38	41.97	27.80	6.37	11.50	10,000	2920 31001
1 x 18	1.35	3.01	51.20	34.60	6.75	14.00	10,000	2920 41001
1 x 24	1.41	3.00	64.29	41.73	7.46	17.25	10,000	2920 51001
1-1/4 x 12	1.76	3.49	43.18	31.10	8.10	19.00	15,200	2920 31161
1-1/4 x 18	1.81	3.56	57.07	36.56	7.72	23.00	15,200	2920 41161
1-1/2 x 12	2.14	4.13	45.28	35.04	9.55	27.50	21,400	2920 31321
1-1/2 x 18	2.12	4.07	60.01	39.00	8.63	31.00	21,400	2920 41321
1-1/2 x 24	2.12	4.06	72.00	45.00	8.62	37.50	21,400	2920 51321
2 x 24	2.69	5.75	79.19	55.19	13.09	82.25	37,000	2920 52001

* Interchanged turnbuckles available upon request (sold in pairs)

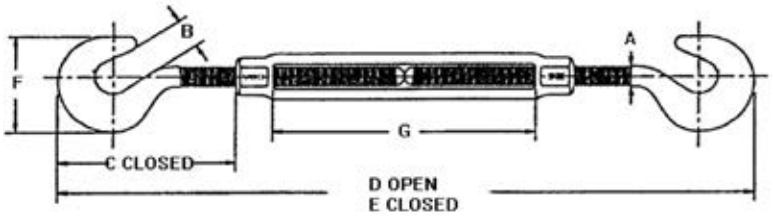
Warning:

NEVER EXCEED WORKING LOAD LIMITS!
FAILURE TO OBSERVE these warnings may result in serious injury or death!

- Turnbuckles are designed for straight (in-line) pulls only
- **NEVER** re-use turnbuckles showing signs of deformation or damaged threads

HOOK & HOOK FORGED TURNBUCKLES WITH LOCKNUTS

- Meeting the requirements of U.S. Fed. Spec. FF-T-791B Type 1, Form 1 (open body)
- Permanently embossed with R, L, VGD© and size for traceability to meet ASME B30.26
- Hexagon heads forged into bodies permit fast and easy adjustments
- Forged carbon steel, bodies heat treated by normalizing, end-fitting quenched & tempered
- Hot dipped galvanized
- UNC Threads
- Design factor proof load 2.5:1, ultimate load 5:1



Dimensions (inches)						Approx. Weight (lbs)	WLL (lbs)	Vanguard Code
Diameter x Take-Up A x G	B	C Closed	D Open	E Closed	F			
1/4 x 4	0.49	1.58	11.94	7.94	1.33	0.30	400	2923 10161
5/16 x 4-1/2	0.50	1.92	13.79	9.30	1.50	0.47	700	2923 10201
3/8 x 6	0.56	2.23	17.45	11.62	1.74	0.78	1,000	2923 10241
1/2 x 6	0.78	3.08	19.56	13.38	2.28	1.60	1,500	2923 10321
1/2 x 9	0.71	3.23	24.61	16.93	3.19	1.83	1,500	2923 20321
1/2 x 12	0.77	3.25	31.50	19.38	2.24	2.28	1,500	2923 30321
5/8 x 6	0.91	3.69	22.51	15.25	2.81	2.75	2,250	2923 10401
5/8 x 9	0.85	3.93	27.00	18.50	2.71	3.38	2,250	2923 20401
5/8 x 12	0.84	3.47	32.80	21.18	2.70	3.50	2,250	2923 30401
3/4 x 6	0.99	4.52	24.78	17.29	3.33	3.89	3,000	2923 10481
3/4 x 9	0.99	4.36	30.87	20.28	3.33	5.28	3,000	2923 20481
3/4 x 12	1.01	4.36	34.75	23.25	3.15	5.43	3,000	2923 30481
3/4 x 18	0.98	4.52	48.79	28.28	3.33	8.12	3,000	2923 40481
7/8 x 12	1.13	5.19	38.76	25.00	3.79	8.10	4,000	2923 30561
7/8 x 18	1.13	5.19	50.85	31.00	3.78	9.95	4,000	2923 40561
1 x 12	1.27	6.12	38.20	26.77	3.99	11.93	5,000	2923 31001
1 x 18	1.25	5.85	52.36	32.69	4.25	14.00	5,000	2923 41001
1 x 24	1.25	5.87	64.69	38.70	4.26	17.25	5,000	2923 51001
1-1/4 x 12	1.51	7.22	44.06	29.58	5.13	20.58	6,500	2923 31161
1-1/4 x 18	1.51	7.22	56.07	35.56	5.15	23.00	6,500	2923 41161
1-1/2 x 12	1.88	8.36	47.45	32.44	5.75	27.50	7,500	2923 31321
1-1/2 x 18	1.89	8.35	59.45	38.45	5.75	31.00	7,500	2923 41321
1-1/2 x 24	1.90	8.38	71.45	44.45	5.75	37.50	7,500	2923 51321

* Interchanged turnbuckles available upon request (sold in pairs)

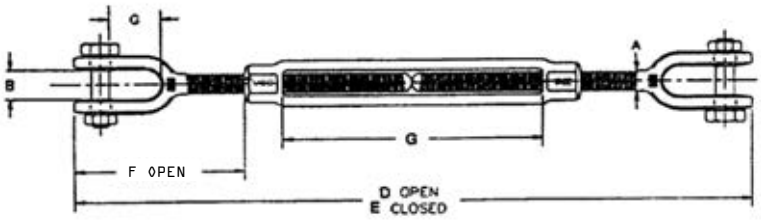
Warning:

NEVER EXCEED WORKING LOAD LIMITS!
FAILURE TO OBSERVE these warnings may result in serious injury or death!

- Turnbuckles are designed for straight (in-line) pulls only
- **NEVER** re-use turnbuckles showing signs of deformation or damaged threads

JAW & JAW FORGED TURNBUCKLES WITH LOCKNUTS

- Meeting the requirements of U.S. Fed. Spec. FF-T-791B Type 1, Form 1 (open body)
- Permanently embossed with R, L, VGD© and size for traceability to meet ASME B30.26
- Hexagon heads forged into bodies permit fast and easy adjustments
- Forged carbon steel, bodies heat treated by normalizing, end-fitting quenched & tempered
- Hot dipped galvanized
- UNC Threads
- Design factor proof load 2.5:1, ultimate load 5:1



Dimensions (inches)						Approx. Weight (lbs)	WLL (lbs)	Vanguard Code
Diameter x Take-Up A x G	B	C	D Open	E Closed	F Open			
1/4 x 4	0.54	0.68	12.01	7.89	1.79	0.36	500	2925 10161
5/16 x 4-1/2	0.59	0.91	13.92	9.41	2.13	0.52	800	2925 10201
3/8 x 6	0.74	1.04	17.63	11.38	2.52	0.81	1,200	2925 10241
1/2 x 6	0.65	1.08	19.09	13.19	2.71	1.56	2,200	2925 10321
1/2 x 9	0.61	1.10	23.95	15.95	2.65	1.74	2,200	2925 20321
1/2 x 12	0.66	1.07	30.90	19.00	2.72	2.40	2,200	2925 30321
5/8 x 6	0.77	1.46	22.13	14.89	3.43	2.72	3,500	2925 10401
5/8 x 9	0.95	1.46	27.20	18.31	3.70	3.43	3,500	2925 20401
5/8 x 12	0.77	1.42	32.99	21.26	3.70	3.91	3,500	2925 30401
3/4 x 6	1.05	1.61	22.75	16.75	4.23	4.11	5,200	2925 10481
3/4 x 9	1.01	1.76	28.50	19.50	4.19	5.46	5,200	2925 20481
3/4 x 12	1.02	1.75	34.75	22.75	4.29	6.43	5,200	2925 30481
3/4 x 18	0.90	1.61	49.29	29.53	4.56	8.07	5,200	2925 40481
7/8 x 12	1.24	2.01	36.25	24.62	5.00	8.14	7,200	2925 30561
7/8 x 18	1.23	1.75	50.17	30.30	4.86	10.78	7,200	2925 40561
1 x 6	1.26	2.14	30.43	20.50	5.74	10.18	10,000	2925 11001
1 x 12	1.40	2.19	38.00	26.50	5.84	12.52	10,000	2925 31001
1 x 18	1.21	2.07	51.00	33.00	6.01	15.14	10,000	2925 41001
1 x 24	1.31	2.07	64.06	38.06	5.53	18.08	10,000	2925 51001
1-1/4 x 12	2.03	2.94	41.75	30.50	7.50	20.59	15,200	2925 31161
1-1/4 x 18	2.08	2.95	54.00	37.50	8.25	24.68	15,200	2925 41161
1-1/2 x 12	2.19	2.93	43.62	32.68	7.97	30.69	21,400	2925 31321
1-1/2 x 18	2.08	2.80	56.30	38.58	8.38	36.75	21,400	2925 41321
1-1/2 x 24	2.34	3.10	69.00	45.00	8.88	40.67	21,400	2925 51321
2 x 24	3.07	4.14	76.38	54.13	12.40	94.25	37,000	2925 52001

* Interchanged turnbuckles available upon request (sold in pairs)

Warning:

NEVER EXCEED WORKING LOAD LIMITS!
FAILURE TO OBSERVE these warnings may result in serious injury or death!

- Turnbuckles are designed for straight (in-line) pulls only
- **NEVER** re-use turnbuckles showing signs of deformation or damaged threads

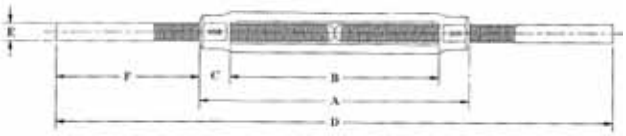
FORGED TURNBUCKLE BODIES

- Meet the requirements of US Fed. Spec. FF-T-791B Type 1, Form 1 (open body)
- Permanent embossed with R, L, VGD® and size for traceability to meet ASME B30.26
- Forged carbon steel, heat treated by normalizing
- Hot dipped galvanized
- UNC Threads
- Design factor proof load 2.5:1 the WLL - ultimate load 5:1 the WLL

Dimensions (inches)							Approx. Weight (lbs)	WLL (lbs)	Vanguard Code
Diameter x Take-Up E x B	A	C	D	G	H	J			
3/8 x 6	7.13	0.56	0.88	0.62	0.50	0.19	0.29	1,200	2927 1024C
1/2 x 6	7.51	0.75	1.12	0.81	0.62	0.25	0.60	2,200	2927 1032C
5/8 x 6	7.88	0.94	1.38	1.00	0.75	0.31	0.90	3,500	2927 1040C
3/4 x 6	8.18	1.08	1.63	1.12	0.94	0.38	1.30	5,200	2927 1048C
7/8 x 6	8.62	1.31	1.94	1.31	1.06	0.44	1.80	7,200	2927 1056C
1 x 6	9.00	1.50	2.25	1.50	1.25	0.50	2.48	10,000	2927 1100C
1-1/4 x 6	9.12	1.56	2.62	1.88	1.50	0.56	3.75	15,200	2927 1116C
1-1/2 x 6	9.78	1.88	3.00	2.25	1.75	0.62	6.50	21,400	2927 1032C

FORGED STUB END TURNBUCKLES

- Meet the requirements of US Fed. Spec. FF-T-791B Type 1, Form 1 (open body)
- Permanent embossed with R, L, VGD® and size for traceability to meet ASME B30.26
- Forged carbon steel bodies heat treated by normalizing. end fittings quenched and tempered
- Self colored
- UNC Threads
- Design factor proof load 2.5:1 the WLL - ultimate load 5:1 the WLL



Dimensions (inches)					Approx. Weight (lbs)	WLL (lbs)	Vanguard Code
Diameter x Take-Up E x B	A	C	D	F			
3/8 x 6	7.13	0.56	16.00	4.45	0.76	1,200	2926 1024C
1/2 x 6	7.50	0.75	16.00	4.25	1.54	2,200	2926 1032C
5/8 x 6	7.88	0.94	16.00	4.07	3.28	3,500	2926 1040C
3/4 x 6	8.25	1.13	17.00	4.38	3.79	5,200	2926 1048C
7/8 x 6	8.63	1.31	18.00	4.69	5.84	7,200	2926 1056C
1 x 6	9.01	1.51	19.00	5.01	9.04	10,000	2926 1100C

Warning:

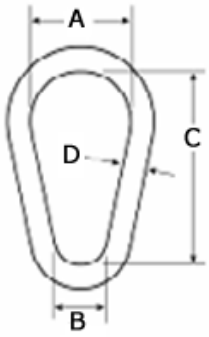
NEVER EXCEED WORKING LOAD LIMITS!
FAILURE TO OBSERVE these warnings may result in serious injury or death!

- Turnbuckles are designed for straight (in-line) pulls only
- **NEVER** re-use turnbuckles showing signs of deformation or damaged threads

WELDLESS PEAR SHAPED LINKS

- Drop Forged - Alloy Steel – Quenched and Tempered
- Hot dipped galvanized finish
- Permanently embossed with Vanguard, size, Working Load Limit (WLL) and trace code
- Proof Load 2 times WLL
- Design factor 5 times WLL

Dimensions (inches)				WLL* (lbs)	Weight (lbs)	Vanguard Code
D	A	B	C			
3/8	1.50	0.75	2.25	1,800	0.23	3932 1024
1/2	2.00	1.00	3.00	7,000	0.55	3932 1032
5/8	2.50	1.25	3.75	9,000	1.10	3932 1040
3/4	2.75	1.38	4.50	12,300	1.95	3932 1048
7/8	3.50	1.75	5.25	15,000	2.78	3932 1056
1	3.75	1.88	6.00	24,360	4.30	3932 1100



Note:

Working Load Limit (WLL) is based upon single leg (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120°

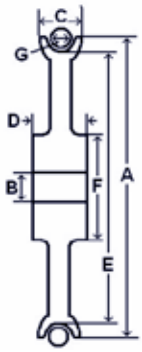
Warning:

NEVER EXCEED WORKING LOAD LIMIT!
Failure to follow instructions can result in serious property damage, injury or death!

- Proof loading is mandatory for weldless pear shaped links when used on any overhead lifting apparatus

WIRE ROPE SHEAVES

- Machined from C-1045 steel



Dimensions (inches)							Weight (lbs)	Vanguard Code
A	B	C	D	E	F	G		
3	3/4	7/8	1	2-1/4	1-1/4	5/16	1	2937 0300
4	1	7/8	1	3-1/8	1-1/2	3/8	2	2937 0400
5	1	7/8	1	4	2-1/2	1/2	3	2937 0500
6	1-3/8	1-1/4	1-1/2	4-3/4	3	5/8	6	2937 0600

- Alternate bore sizes can be achieved by installing self-lubricated Bronze bushings!
- There is no established load rating for these sheaves; the Working Load Limit (WLL) depends on the pulleys onto which the sheaves are to be installed!

Warning:

NEVER EXCEED WORKING LOAD LIMITS!

SNATCH BLOCK WARNINGS AND INFORMATION

It is very important to read and understand all information shown before using a snatch block

V-1800 (with Hook)

V-1900 (with Swivel Shackle)

V-4000 (Tail Board - Pin Only)

Warning:

FAILURE TO OBSERVE THESE WARNINGS MAY RESULT IN SERIOUS INJURY OR DEATH!
All inspections, maintenance, block lifting design and rigging of blocks should be performed by a qualified/competent person (as defined by ANSI/ASME B.30)

- **ALWAYS** inspect snatch blocks before use (see maintenance section below). If during the inspection the unit is found to be damaged, cracked or deformed it must be removed from service immediately for repair.
- **ALWAYS** design and rig snatch block systems so that the load will not slip of fall.
- **ALWAYS** design lifting systems with the appropriate number of sheave assemblies to prevent premature sheave, bearing or wire rope wear and failure.
- **ALWAYS** make sure that all workers keep their hands, bodies and clothing away from the block sheaves, and pinch points where the wire rope makes contact with any part of the block or load.
- **ALWAYS** make sure that the hook NOT that latch supports the load.
- **ALWAYS** make sure that snatch blocks are regularly inspected, lubricated and maintained (see maintenance section shown below).
- **NEVER** exceed the working load limit (WLL).
- **NEVER** side load a snatch block.
- **NEVER** weld snatch blocks or load supporting parts.
- **NEVER** lift or transport loads over or near people.

MAINTENANCE:
To ensure peak efficiency and extended service life, it is necessary that blocks be inspected at frequent intervals. The inspection should be performed by a properly trained/competent person (as defined by ANSI/ASME B.30)

Inspect the block for any signs of wear or damage such as:

- Worn or damaged sheaves, bushings, side plates, pins, hooks or shackles. Damaged snatch blocks must be immediately removed from service until repaired. Replace any part showing signs of wear or damage!
- Hook latch for proper fit and operation. Replace deformed latches!

LOADS:
Throughout this catalogue the term Working Load Limit (WLL) is being used. It refers to the maximum load or force which a product is designed to support under normal operating and environmental conditions, the product is considered to be in an ‘as new’ condition.

IMPORTANT:
The total load on a block, and therefore also on any fitting which is attached to the block, is usually considerably greater than the actual load lifted or pulled. The deciding factor in determining the total load on a single line block is the angle between the lead line and load line.

SNATCH BLOCKS

- Forged alloy hooks – heat treated – with latch
- Shackle forged steel – heat treated
- Forged steel swivel tees, yokes and shafts
- Bronze bush with grease nipple
- Fittings are painted yellow for quick recognition
- Designed for intermittent use with low line speed
- Ultimate load 4 x Working Load Limit (WLL)

Sheave Diameter (inches)	Rope Diameter (inches)	WLL (tons)	Weight (lbs/pc)	Vanguard Code
V-1800 SNATCH BLOCK WITH HOOK AND LATCH				
3	3/8	2	3	2936 2030
4-1/2	1/2	4	12	2936 2045
6	3/4	8	27	2936 2060
8	3/4	8	35	2936 2080
10	3/4	8	50	2936 2100
8	1-1/8	15	58	2936 2081
8	1-1/8	20	103	2936 2082
V-1900 SNATCH BLOCK WITH SWIVEL SHACKLE				
3	3/8	2	3	2935 3030
4-1/2	1/2	4	13	2935 3045
6	3/4	8	29	2935 3060
8	3/4	8	36	2935 3080
10	3/4	8	53	2935 3100
14	5/8	8	81	2935 3140
8	1-1/8	15	65	2935 3081
10	7/8 - 1	15	82	2935 3101
8	1-1/8	20	117	2935 3082
V-4000 TAILBOARD WITH PIN ONLY				
3	3/8	2	3	2935 1030
4-1/2	1/2	4	8	2935 1045
6	3/4	8	15	2935 1060
8	3/4	8	25	2935 1080
8	1-1/8	15	35	2935 1081
8	1-1/8	20	70	2935 1083

LOAD CALCULATION TABLE

Lead/Load Line Angle	Factor	Lead/Load Line Angle	Factor	Lead/Load Line Angle	Factor
0°	2.00	60°	1.73	130°	0.84
10°	1.99	70°	1.64	135°	0.76
20°	1.97	80°	1.53	140°	0.68
30°	1.93	90°	1.41	150°	0.52
40°	1.87	100°	1.29	160°	0.35
45°	1.84	110°	1.15	170°	0.17
50°	1.81	120°	1.00	180°	0.00

Actual Load Lifted

X **Multiplication Factor**

Total Load on Block (single line systems only)

Warning:

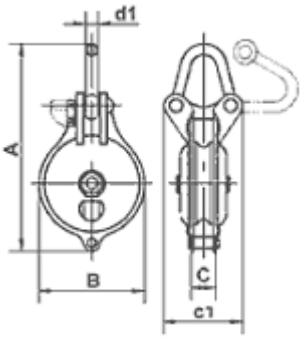
NEVER EXCEED WORKING LOAD LIMITS!

Failure to follow these instructions can result in serious property damage, injury or death!

- **Please** see snatch block warning and information section for greater detail

YARDING BLOCKS

- Designed for light duty high speed applications
- Forged steel shackle
- Roller bearings with grease nipple
- Pull pin to use as snatch block
- Top eye swivels opens for easy access to sheave
- Sheave axle secured with lock washer and nut to help prevent loosening due to vibration
- Ultimate load 3 x Working Load Limit (WLL)

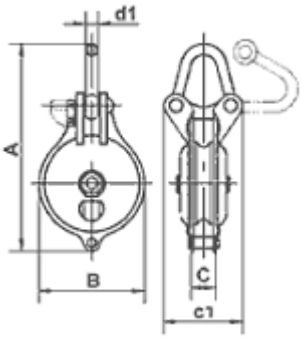


WLL (tons)	Dimensions (inches)						Weight (lbs/pc)	Vanguard Code	
	Sheave Diameter	A	B	C	C-1	D-1		Painted (Red)	Hot Dipped Galvanized
1-1/2	3	6.93	3.35	1.02	3.15	0.47	3	2936 0300	2936 03001
3	4	9.25	4.76	1.34	3.39	0.63	5	2936 0400	2936 04001
4-1/2	5	12.01	5.71	1.50	4.06	0.71	9	2936 0500	2936 05001
6	6	13.78	7.09	1.61	4.33	0.87	17	2936 0600	2936 06001
8	8	16.73	8.86	1.81	6.50	1.10	35	2936 0800	2936 08001

* H.D. Galv units are not a standard stock item at all distribution centres.

FX YARDING BLOCKS

- Designed for light duty high speed applications
- Forged steel shackle
- Roller bearings with grease nipple
- Pull pin to use as snatch block
- Top eye swivels opens for easy access to sheave
- Sheave axle secured with lock washer and nut to help prevent loosening due to vibration
- All black finish helps the block to blend into its surroundings
- Ultimate load 3 x Working Load Limit (WLL)



WLL (tons)	Dimensions (inches)						Weight (lbs/pc)	Vanguard Code
	Sheave Diameter	A	B	C	C-1	D-1		
1-1/2	3	6.93	3.35	1.02	3.15	0.47	3	2936 0030
3	4	9.25	4.76	1.34	3.39	0.63	5	2936 0040

* FX Yarding Blocks are not a standard stock item at all distribution centres.

Warning:

NEVER EXCEED WORKING LOAD LIMITS!
Failure to follow these instructions can result in serious property damage, injury or death!

GIN BLOCKS

- Designed for light hoisting with low line speed
- Forged swivel hook with latch
- Painted red finish
- For use with manila and/or 3 strand synthetic ropes
- Commonly used by roofers, painters and industrial contractors
- Ultimate load 3 x Working Load Limit (WLL)

Sheave Dimensions (inches)			Rope Size (inches)	WLL (tons)	Weight (lbs/pc)	Vanguard Code
Outside Diameter	Rim Thickness	Bearing Diameter				
12	1.38	0.88	1	1	13	2935 4012

PULLEY BLOCKS (Single Sheave)

- Cast iron sheaves
- Bronze bushing and C1045 steel supporting bushing provide better oil retention
- Hook complete with latch
- Side plate opens for easy access to sheave
- Zerk type grease fittings
- Tested to 200% of the rated capacity

Sheave Size (inches)	Rope Size (inches)	WLL (tons)	Weight (lbs/pc)	Vanguard Code
3	3/8	1/2	3.15	2935 5030
4	7/16	1	5.54	2935 5040
5	1/2	1-1/2	8.30	2935 5050
6	5/8	2	15.50	2935 5060

* Not a standard stock item at all distribution centres.

** Additional sizes and multiple sheave units available upon request, minimum order quantities may apply

Warning:

NEVER EXCEED WORKING LOAD LIMITS!

Failure to follow these instructions can result in serious property damage, injury or death!

SK 05 KOREAN TYPE BLOCKS

- Used for lashing equipment on lumber vessels and log carriers
- Forged alloy swivel eye, heat treated
- Top eye swivel opens for easy access to sheave
- Bearing
- Painted Red finish
- Ultimate load 2 x Working Load Limit (WLL)

Sheave Diameter (inches)	Rope Size (inches)	WLL (tons)	Weight (lbs/pc)	Vanguard Code
6	3/4 - 15/16	5	35.30	2935 6060

* Not a standard stock item at all distribution centres.

ROLLER SHACKLE

- Used for lashing equipment on lumber vessels and log carriers
- Hot dipped galvanized
- Ultimate load 2 x Working Load Limit (WLL)

Dimensions (inches)			Rope Size (inches)	WLL (tons)	Weight (lbs/pc)	Vanguard Code
Sheave Diameter	Roller Thickness	Roller Diameter				
1-1/8	2	2 - 7/8	4	4	8.20	2946 6028

* Not a standard stock item at all distribution centres.

Warning:

NEVER EXCEED WORKING LOAD LIMITS!
Failure to follow these instructions can result in serious property damage, injury or death!

IMPACT CUTTERS

- Portable cutters strictly designed for cutting wire ropes
- Actuated by striking with a hammer, they are easy to operate and give superior performance without jamming
- Precision-engineered to deliver a clean cut without affecting the original roundness of the wire rope
- Blades and dies made of high quality tool steel, heat treated and ground to close tolerances
- Replacement parts available upon request

Model No.	Maximum Rope Diameter (inches)	Dimensions (inches)		Weight (lbs/pc)	Vanguard Code
		Height	Base		
1 - Light Duty	3/4	6	3-1/2	8	3001 5000
1A - Heavy Duty	11/16	7	6-1/4	17	3001 5001
2 - Extra Heavy Duty	1-1/2	9	7-3/4	28	3001 6000

REPLACEMENT PARTS FOR IMPACT CUTTERS

Item	Model No.	Vanguard Code
Plunger & Pin	1 - Light Duty	3002 5000
	1A - Heavy Duty	3002 5010
	2 - Extra Heavy Duty	3002 6000
Die Sets	1 - Light Duty	3002 5001
	1A - Heavy Duty	3002 5011
	2 - Extra Heavy Duty	3002 6001
Blade & Pin	1 - Light Duty	3002 5002
	1A - Heavy Duty	3002 5012
	2 - Extra Heavy Duty	3002 6002
Blade Pins	1 - Light Duty	3002 5003
	1A - Heavy Duty	3002 5013
	2 - Extra Heavy Duty	3002 6003

Warning:

Failure to follow these instructions can result in serious property damage, injury or death!

- Cutters are sharp and should be used with extreme caution!
- Cutters may be damaged if used beyond the stated capacity or on materials/products that they are not designed to cut

FELCO C-3 CUTTER

- Thumb catch designed for one hand use
- Hardened and tempered blades
- Triangular cutting actions of the blades avoids squashing of strands. Thanks to this feature it is typically not necessary to tie the cable before cutting.
- Designed for repetitive use
- Ideal for smaller diameters thanks to the specially shaped cutting head
- The supple spring reduces user fatigue and increase comfort

FELCO C-7 CUTTER

- Thumb catch designed for one hand use
- Triangular cutting actions of the blades avoids squashing of strands. Thanks to this feature it is typically not necessary to tie the cable before cutting.
- Designed for repetitive use
- Blade and centre bolt are made of high quality hardened steel offering exceptional performance
- Pressed steel handles with non-slip grips

FELCO CDO – COMMANDO

For cutting barbed wire

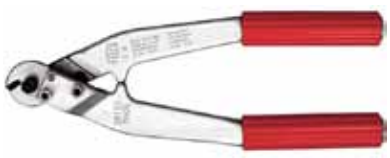
- The cutting notch allows the wire to be caught by holding it at the bottom of the cutting profile, designed for one hand use
- Hardened and tempered blades designed to cut the strongest cables
- Triangular cutting actions of the blades avoids squashing of strands. Thanks to this feature it is typically not necessary to tie the cable before cutting.
- Well suited for fishery, forestry and agricultural applications

FELCO CP

Universal cutter

- Thumb catch designed for one hand use
- Hardened and tempered blades
- Extremely versatile tool, offering very clean cutting on a wide variety of materials
- Well suited for cutting wire mesh, netting, sheet metal, leather, plastic, paper, packing straps and wire

FELCO C-9 CUTTER



- Strong, lightweight forged aluminum handles
- Plastic handle grips provide comfort when in use
- Blades and fasteners are made of high quality hardened steel
- Triangular cutting actions of the blades avoids squashing of strands. Thanks to this feature it is typically not necessary to tie the cable before cutting.
- Capable of cutting materials up to 0.35” (9mm)

FELCO C-12 CUTTER

- Strong, lightweight forged aluminum handles
- Plastic handle grips provide comfort when in use
- Blades and fasteners are made of high quality hardened steel
- Triangular cutting actions of the blades avoids squashing of strands. Thanks to this feature it is typically not necessary to tie the cable before cutting.
- Capable of cutting materials up to 0.47” (12mm)

FELCO C-16 CUTTER

- Strong, lightweight forged aluminum handles
- Plastic handle grips provide comfort when in use
- Blades and fasteners are made of high quality hardened steel
- Triangular cutting actions of the blades avoids squashing of strands. Thanks to this feature it is typically not necessary to tie the cable before cutting.
- Capable of cutting materials up to 0.63” (16mm)

** If you are cutting electrical cable primarily the C-16E cutter is your best choice

FELCO C-108 CUTTER

- Strong, lightweight forged aluminum handles
- Plastic handle grips provide comfort when in use
- Blades and fasteners are made of high quality hardened steel, they are phosphate treated making them extremely corrosions resistant.
- Triangular cutting actions of the blades avoids squashing of strands. Thanks to this feature it is typically not necessary to tie the cable before cutting.
- Unique reduction gearing system, provides the maximum amount of force transmission by intensifying the users’ energy.
- Capable of cutting materials up to 0.32” (8mm)

FELCO C-112 CUTTER

- Strong, lightweight forged aluminum handles
- Plastic handle grips provide comfort when in use
- Blades and fasteners are made of high quality hardened steel, they are phosphate treated making them extremely corrosions resistant
- Triangular cutting actions of the blades avoids squashing of strands. Thanks to this feature it is typically not necessary to tie the cable before cutting
- Unique reduction gearing system, provides the maximum amount of force transmission by intensifying the users’ energy
- Capable of cutting materials up to 0.50” (12.7mm)

STANDARD SPARE PARTS LISTING

Model No.	Part No.	Description	Vanguard Code
C-7	C 7/4	Bolt	3002 0407
	C 7/5	Counter Nut	3002 0907
	C 7/10	Spring	3002 1907
C-9	C 9/2	Handle with Plastic Pin	3002 0209
	C 9/3	Plastic Handle Grip	3002 0309
	C 9/4	Pin	3002 0409
	C 9/5	Blade (Single)	3002 0509
	C 9/90	Parts Kit (includes C9/6, C9/7 & C9/8)	3002 3099
C-12	C 12/2	Handle with Plastic Pin	3002 0212
	C 12/3	Plastic Handle Grip	3002 0312
	C 12/4	Pin	3002 0412
	C 12/5	Blade (Single)	3002 0512
	C 12/90	Parts Kit (includes C12/6, C12/7, C12/8 & C12/9)	3002 3129
C-16	C 16/2	Handle with Plastic Pin	3002 0216
	C 16/3	Plastic Handle Grip	3002 0316
	C 16/4	Pin	3002 0416
	C 16/5	Blade (Single)	3002 0516
	C 16/90	Parts Kit (includes C16/6, C16/7, C16/8 & C16/9)	3002 3169
C-108	C 108/2	Handle with Plastic Pin	3002 0218
	C 108/5	Blade (Single)	3002 0518
	C 108/6	Centre Bolt	3002 0618
	C 108/10	Hex Screw	3002 1018
	C 108/11	Counter Nut	3002 1118
	C 108/12	Cam	3002 1218
	C 108/13	Finger	3002 1318
	C 108/14	Lever with 2 Pins	3002 1418
	C 108/15	Pin for Cam	3002 1518
	C 108/16	Pin for Finger	3002 1618
C-112	C 112/2	Handle with Coating and Pin	3002 0220
	C 112/5	Blade (Single)	3002 0520
	C 112/6	Centre Bolt	3002 0620
	C 112/10	Hex Screw	3002 1020
	C 112/12	Cam	3002 1220
	C 112/13	Finger	3002 1320
	C 112/14	Lever with 2 Pins	3002 1420
	C 112/16	Pin for Finger and Cam	3002 1620
	C 112/17	Mobile Spare Blade	3002 1720
	C 112/18	Connecting Rod	3002 1820
	C 112/19	Bolt for Lever	3002 1920
	C 112/20	Washer	3002 2020
	C 112/21	Nut	3002 2120
	C 112/22	Counter Nut	3002 2220

Warning:

- These tools are sharp and should be used with caution!
- These cutters if used beyond the stated capacities or on materials not indicated on application chart can damage the blades and parts
- After use tools should be properly cleaned, it is also recommended that oil be applied to the blades and bolts to prevent corrosion

Application Suitability	Model and Maximum Capabilities (inches)			
	C-3	C-7	CDO	CP
Galvanized steel cables, fiber core	0.12	0.28	0.20	0.08
Galvanized steel cable, steel core	0.10	0.20		
Welded wire mesh		√		√
Hard steel cables, resistance 160 kg/mm^2		0.20		
Non-oxidable cable 190 kg/mm^2		0.16		
Extremely tough steel cables, resistance 210 kg/mm^2		0.12		
Electrical cable (copper or aluminum) with steel core	0.12	0.28		
Aluminum or copper rod	0.12	0.20		
Iron rod, resistant to 60 kg/mm^2		0.16		
Tempered spring wire		0.10		
Steel strip 0.06 x 1.26" (1.5 x 32mm)				0.06
Rubber conveyor belts		√		
Leather sheet				√
Barbed wire			√	

Application Suitability	Model and Maximum Capabilities (inches)					
	C-9	C-12	C-16	C-16E Electrical	C-108	C-112
Galvanized steel cables, fiber core	0.35	0.47	0.63	0.63	0.32	0.50
Galvanized steel cable, steel core	0.32	0.40	0.55	0.55	0.32	0.50
Welded wire mesh	√	√	√		√	√
Hard steel cables, resistance 160 kg/mm^2	0.28	0.32	0.55	0.39	0.32	0.50
Non-oxidable cable 190 kg/mm^2	0.24	0.24	0.28		0.32	0.50
Extremely tough steel cables, resistance 210 kg/mm^2	0.20	0.20	0.24		0.32	0.50
Electrical cable (copper or aluminum) with steel core	0.35	0.47	0.63	0.79	0.32	0.50
Aluminum or copper rod	0.35	0.39	0.55	0.55	0.32	0.50
Iron rod, resistant to 60 kg/mm^2	0.28	0.32	0.39	0.39	0.32	0.50
Tempered spring wire	0.12	0.16	0.20	0.20	0.24	0.32
Rubber conveyor belts	√	√	√			
Pre-stressed concrete girder			√		√	√

Model	Overall Length (inches)	Weight (lbs/pc)	Vanguard Code
C-3	7.50	0.60	3001 0003
C-7	8.00	0.63	3001 0007
CDO	7.70	0.62	3001 0005
CP	8.10	0.64	3001 0006
C-9	12.80	1.65	3001 0009
C-12	19.70	3.31	3001 0012
C-16	23.20	5.07	3001 0016
C-16E	23.20	5.07	3001 0017
C-108	22.00	4.30	3001 0108
C-112	28.70	7.94	3001 0112

SWAGING TOOLS

Are designed to crimp ovals and stop sleeves. When properly swaged oval sleeves will offer the same published nominal breaking strength of the cable it is being used on (designed for use on 3 x 7; 7 x 7; and 7 x 19 constructions). Sleeves used on other constructions will not hold to the nominal published breaking strength.

Hand Swager

Bench Swager

Combo Swager

Model No.	Applications	Length (inches)	Weight (lbs/pc)	Vanguard Code
	HAND SWAGER			
0 - 3/64	Swages 3/64”oval and stop sleeves, plus 3/64” and 1/16” stainless steel oval sleeves.	20.00	4.20	3003 0013
0 - 1/16SC	Swages 1/16”oval and stop sleeves, plus 3/32” stainless steel oval sleeves.	20.00	4.20	3003 1004
HSC 350	Swages 1/16, 5/64, 3/32, 7/64 and 1/8” oval and stop sleeves. Cutting feature included in jaw	16.93	2.42	3003 1006
HSC 600	Swages 1/16, 5/64, 3/32, 7/64. 1/8, 5/32 and 3/16” oval and stop sleeves. Cutting feature included in jaw.	25.60	5.51	3003 1002
0 - 3/16SC	Swages 3/16”oval sleeves, plus 7/32” stainless steel sleeves.	20.00	4.20	3003 0004
0 - 1/4	Designed for swaging copper and aluminum 1/4”oval sleeve and 1/4, 5/16 and 3/8” stop sleeve.	28.00	5.00	3003 0003
0 - 5/16	Designed for swaging 5/16 “oval sleeve.	28.00	5.00	3003 1005
HSC 1000 Combo	Swages 1/4 and 5/16” oval and stop sleeves.	39.77	16.52	3003 1010
	BENCH SWAGER			
HSC 600BB	Swages 1/16, 5/64, 3/32, 7/64. 1/8, 5/32 and 3/16” oval and stop sleeves. Cutting feature included in jaw	21.26	11.45	3003 1001
#1 BSC	Swages 1/16”, 3/32”, 1 / 8 “, 5/32”, and 3/16” oval and stop sleeves plus 7/32” stop sleeves.	22.50	6.60	3003 0001
	PARTS AND GAUGES			
GA 1P	Sleeve gauge – 3/16” oval sleeves, 7/32, 1/4, 9/32 and 5/16” stops and ovals.			3003 2001
GA 2P	Sleeve gauge – 1/32, 3/64, 1/16, 3/32, 1/8, 5/32, 3/16” and 7/32 stops and ovals.			3003 2002
JAW	HSC – 600 Replacement Jaw.			3003 9003

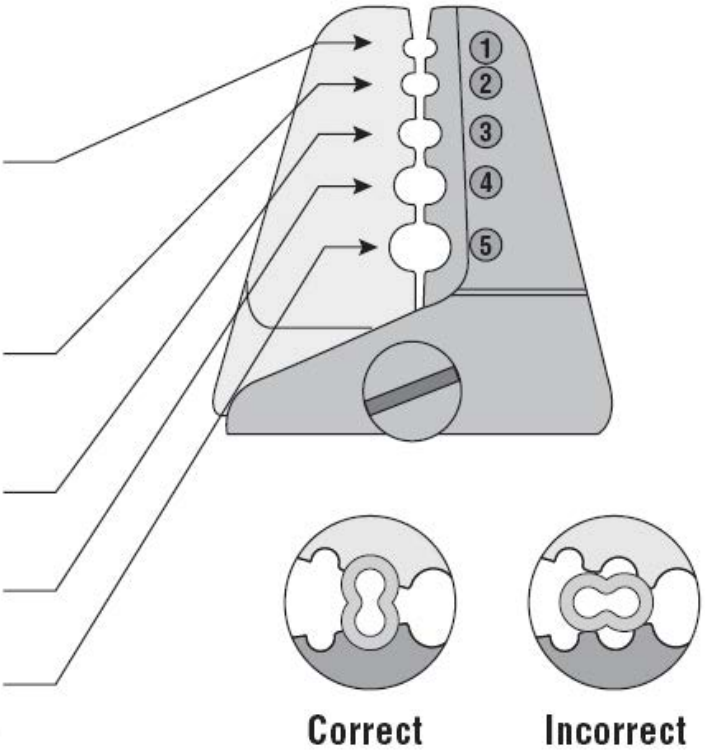
MAINTENANCE:

- Clean and lubricate moving parts
- Check to make sure that all bolts are properly tightened
- Check to make sure that the swager is properly adjusted

SWAGING INSTRUCTIONS

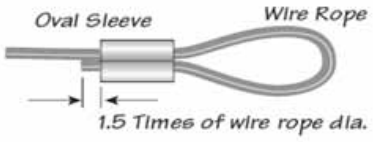
Cable splicing is much easier if the cable is cut clean without frayed ends. We highly recommend the use of Felco cutting tools to achieve the best results. To determine which cable cutter is best suited for your application please refer to the Felco technical pages found on pages 56-59.

Crimps	Cable Size	Position
1	1/16	1
1	5/64	
2	3/32	2
2	7/64	
3	1/8	3
3	5/32	4
3	3/16	5

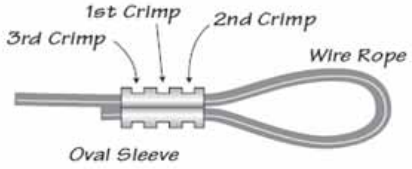


STEP 2 **REQUIRED NUMBER OF SWAGES** **PROPER INSERTION OF SLEEVE**

1. Cut cable to the required length and lace the cable through the sleeve so that the end will protrude after crimping.
2. Properly insert sleeve into the correct cavity and line up the sleeve between the swager jaws with the long axis crosswise to the jaws.
3. Swage each sleeve the correct number of times following the swage sequence shown. Close lever handles completely until the swager snaps shut indicating complete closure.
4. Lap splice can be made by 2 oval sleeves. Keep a short space between the sleeves.



STEP 1



STEP 3

STEP 4 (LAP SPLICE)

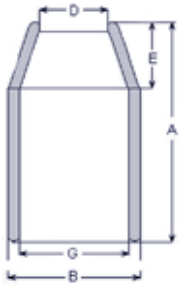
Warning:

Swaging is accomplished on bare wire rope. If plastic wire rope is used, remove plastic coating as required.
Properly swaged oval sleeves will develop the published nominal breaking strength of the cable on 3 x 7; 7 x 7; and 7 x 19 constructions. Sleeves used on other constructions will not hold to the nominal published breaking strength.

FLEMISH EYE SLEEVES

- Made from specially processed low carbon steel
- For use with 6 x 19 and 6 x 37 RRL classification steel wire ropes

Rope Size	Dimensions (before swage)					Maximum Dimensions (after swage)		Weight (lbs)	Vanguard Code
	A	B	D	E	G	1st Stage	2nd Stage		
1/4	1.00	0.66	0.31	0.28	0.47		0.57	0.045	2956 0016
5/16	1.50	0.91	0.38	0.44	0.62		0.08	0.137	2956 0020
3/8	1.50	0.91	0.47	0.39	0.66		0.75	0.120	2956 0024
7/16	2.00	1.22	0.53	0.65	0.85		1.01	0.310	2956 0028
1/2	2.00	1.22	0.63	0.56	0.91		1.01	0.280	2956 0032
9/16	2.75	1.47	0.70	0.63	1.03		1.24	0.630	2956 0036
5/8	2.75	1.47	0.75	0.63	1.09		1.24	0.500	2956 0040
3/4	3.19	1.72	0.91	0.84	1.28		1.46	0.900	2956 0048
7/8	3.56	2.03	1.03	1.00	1.53		1.68	1.380	2956 0056
1	4.00	2.28	1.16	1.13	1.72	2.00	1.93	1.900	2956 0100
1-1/8	4.81	2.50	1.28	1.25	1.94	2.25	2.13	2.570	2956 0108
1-1/4	5.19	2.78	1.44	1.41	2.16	2.50	2.32	3.440	2956 0116
1-3/8	5.81	3.00	1.56	1.56	2.36	2.75	2.52	4.200	2956 0124
1-1/2	6.25	3.25	1.69	1.69	2.63	2.87	2.71	4.880	2956 0132
1-3/4	7.25	3.84	1.94	1.97	3.13	3.84	3.10	7.850	2956 0148
2	8.50	4.38	2.25	2.25	3.63	3.81	3.56	11.000	2956 0200



Note:

The cold swaging of dies is a delicate process, requiring considerate movement of the steel in the fitting, as it is forced under great pressure to flow into the crevices between wires and strand, as well as elongating parallel to the wire rope. For this reason, swaging must be performed by way of multiple pressings. This will also prevent excessive 'flashing', a term used to describe the material which is squeezed out into the area between the die faces. Excessive flashing can result in scoring and/or cracking of the sleeves!

Inspect swaging dies frequently for nicks or scratches, which should be polished out!
Apply lubricants to the die blocks prior to swaging!

After swaging, measure the OD of the sleeve and compare the results against the figures shown in the table to assure that the sleeve has been properly swaged.

BOLT CUTTERS

- Heavy duty high carbon machined steel jaws
- Multi-purpose adjustable jaws, with centre cut blades
- Heavy duty blades with a satin finish
- Blades clearance adjustable with eccentric nut
- Tubular steel handles with comfortable rubber handles maximize user comfort and prevent slipping when cutting.
- Suitable for cutting mild steel materials such as rods, bolts, rivets, bars and chain

Model No.	Capacity (inches)	Length (inches)	Weight (lbs)	Vanguard Code
WD 9-14	3/16	14	3.00	3004 0014
WD 9-18	1/4	18	5.50	3004 0018
WD 9-24	5/16	24	8.60	3004 0024
WD 9-30	3/8	30	10.00	3004 0030
WD 9-36	7/16	36	13.00	3004 0036
WD 9-42	1/2	42	18.00	3004 0042

MAINTENANCE:

- Clean and lubricate moving parts
- Check to make sure that all bolts are properly tightened
- Check to make sure that the blades and jaw are in good working condition before use

TIRE CHAIN PLIERS

Industrial grade chain pliers allow for quick and easy replacement of cross chains.

- Heat treated alloy steel jaws
- Opens and closes tire chain cross links
- Toggle joints turn 50lbs of hand pressure into 4,000lbs cutting pressure
- Tubular steel handles with rubber handles maximize user comfort and prevent slipping when cutting.

Model No.	Length (inches)	Weight (lbs)	Vanguard Code
7302 VGD-02	20.75	5.00	4004 0020
7302 VGD-01	32.50	7.00	4004 0030

* Not a standard stock item at all distribution centres.

TIRE CHAIN TENSIONERS

- A heavy duty tool with ratchet binder action designed to be used when installing tensioning of large tractor and skidder tire chains.
- Greatly simplifies and eases the proper installation/tensioning of snow chains.

Model No.	Weight (lbs)	Vanguard Code
VSCT	12.00	3819 9001

* Not a standard stock item at all distribution centres.

Warning:

Failure to follow these instructions can result in serious property damage, injury or death!

- Use extreme care when using these tools as they are capable of inflicting serious injury if misused
- **ALWAYS** make sure to keep hands and feet away from the jaws and all other moving parts

To Convert	Multiply By	To Obtain	To Convert	Multiply By	To Obtain
Miles (statute)	1.609	Kilometers		0.621	Miles (statute)
Yards	0.914	Meters		1.094	Yards
Feet	0.305	Meters		3.281	Feet
Inches	25.400	Millimeters		0.039	Inches
Short Tons	0.907	Metric Tons		1.102	Short Tons
Long Tons	1.016	Metric Tons		0.984	Long Tons
Pounds	0.454	Kilograms		2.205	Pounds
Pounds	0.00444	Kilo newtons		224.8	Pounds
Pounds per Foot	1.488	Kilos per Meter		0.672	Pounds per Foot
Pounds per sq. ft.	4.882	Kilos per sq. m		0.205	Pounds per sq. ft.
Pounds per sq. in.	0.070	Kilos per sq. cm		14.223	Pounds per sq. in.
Square Inches	645.200	Sq. Millimeters		0.002	Square Inches
Cubic Inches	16.387	Cubic Centimeters		0.061	Cubic Inches
Cubic Feet	0.028	Cubic Meters		35.310	Cubic Feet
Cubic Yards	0.765	Cubic Meters		1.308	Cubic Yards
U.S. Gallons	3.785	Liters		0.264	U.S. Gallons
Imperial Gallons	4.546	Liters		0.220	Imperial Gallons
Cubic Feet	28.320	Liters		0.035	Cubic Feet
Diameter	3.142	Circumference		0.318	Diameter
Deg. Fahrenheit	.5556 x (F° – 32)	Degrees Celsius		(1.8 x C°) + 32	Deg. Fahrenheit

1 Statute Mile -	1760 Yards -	5280 Feet -	1.60934 Km
1 Nautical Mile -	6080 Feet -	1.85318 Km	
1 Fathom -	6 Feet -	1.82880 Meters	
1 Rod -	5.5 Yards -	16.5 Feet -	5.02919 Meters