

Alcoa  
Fastening  
Systems



C6L<sup>®</sup>

The original  
vibration-resistant  
HuckBolt<sup>®</sup>

Locking groove design  
Simple installation  
Consistent clamp force

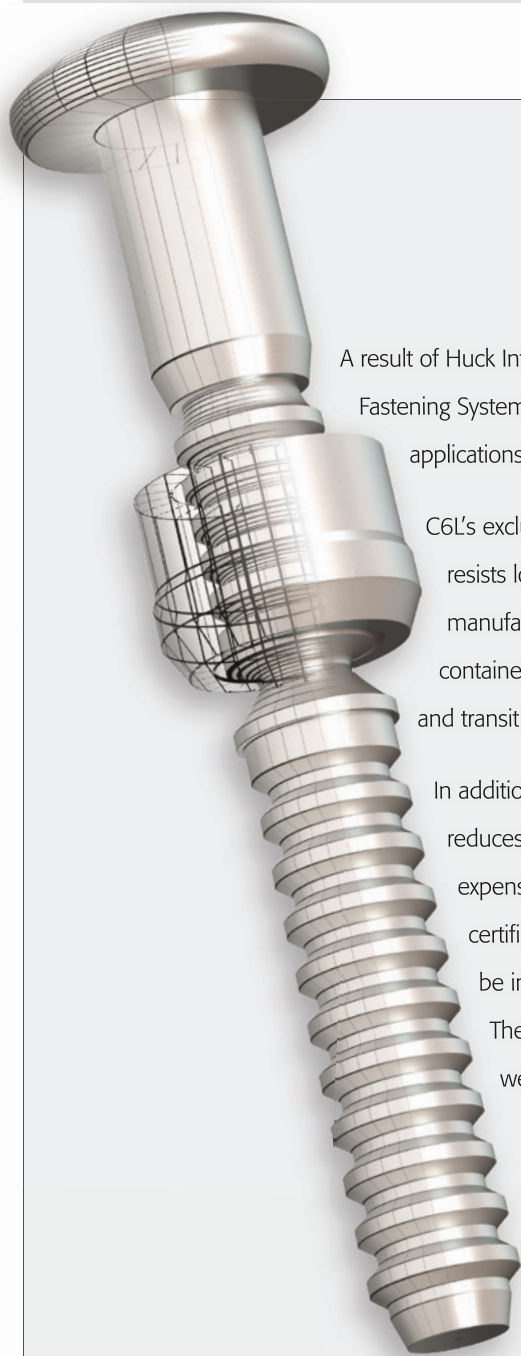
3/16"-3/8"



**HUCK**<sup>®</sup>

# The Huck C6L®

The classic 6-groove locking fastener built with staying power.



A result of Huck International innovation a half-century ago, the versatile Alcoa Fastening Systems C6L® HuckBolt® remains the number one fastening system for applications that require a strong, vibration-resistant seal today.

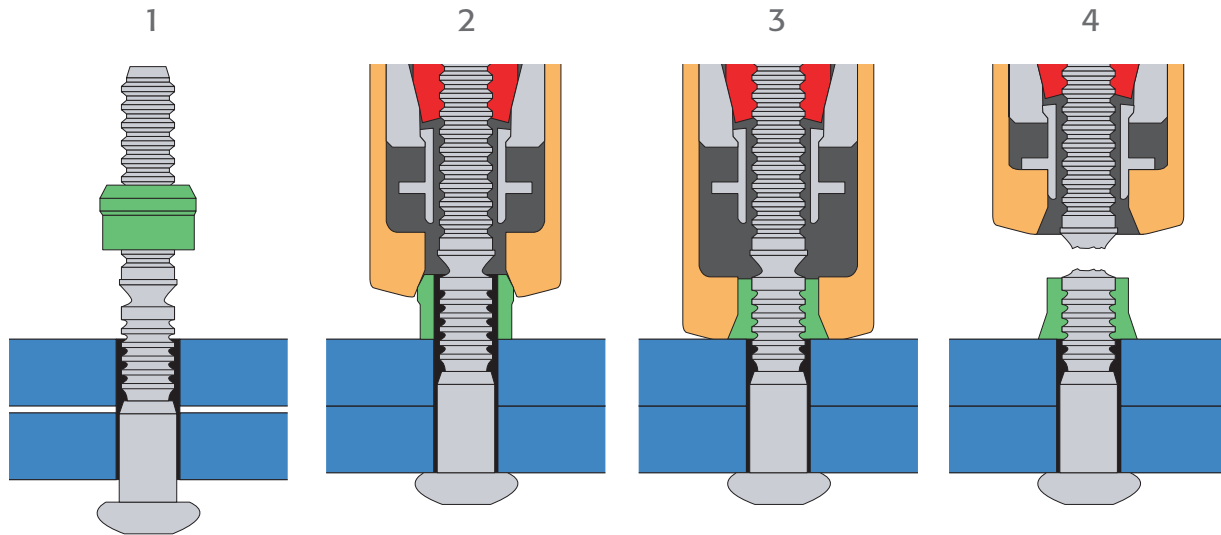
C6L's exclusive locking groove design ensures a permanent fit that resists loosening. That means it's ideal for applications from general manufacturing to such high-vibration applications as HVAC, trailer and container assembly, rotary and rotating equipment, shopping carts, railroad and transit cars, geodesic structures, and many others.

In addition to offering superior fastening performance, the C6L system reduces labor and installation costs, along with rework and warranty expenses. For example, using the C6L eliminates the need to hire certified welders or specially trained employees, because workers can be instructed to install these foolproof fasteners in a matter of minutes.

The C6L is simply stronger, easier to install, and more durable than welding, adhesives, or conventional threaded fastening systems.

## Installation Sequence

The C6L's unique design virtually eliminates installation errors caused by operator or tool variables. The C6L ensures that once the collar swage is complete, the pintail breaks off and the fastener is tightly installed. No rework required. And you can count on consistent, high-uniform clamp force with every C6L installation, time after time.



1  
The pin is inserted into the prepared hole and the smooth bore collar is placed on the pin.

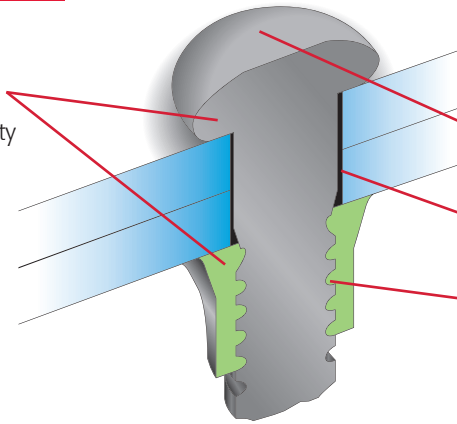
2  
The installation tool is applied to the pintail. When the tool is activated, the jaws in the nose assembly pull on the pintail and the nose anvil pushes on the collar to remove any gap.

3  
The nose anvil starts to swage the collar into the lockgrooves on the pin. Continued swaging causes the collar to lengthen and develop clamp.

4  
When swaging of the collar into the lockgrooves is complete, the pintail separates from the pin which completes the installation cycle.

## Secure, fast installation

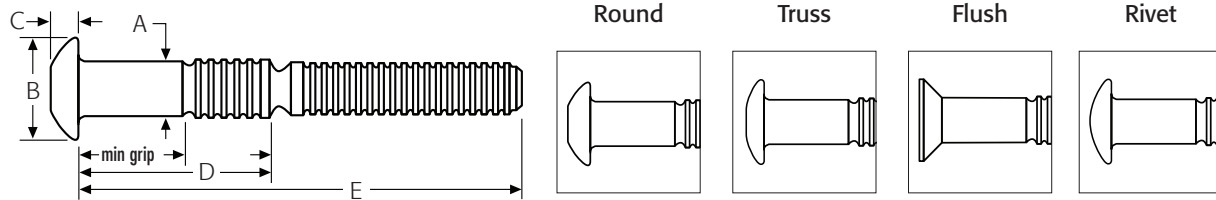
- Wide bearing collar and head spread load to ensure structural integrity



- Corrosion resistant coatings can be painted
- Excellent gap pull-out and high retained clamp
- High fatigue annular lock groove form extends the life of your structure

# Data and Dimensions

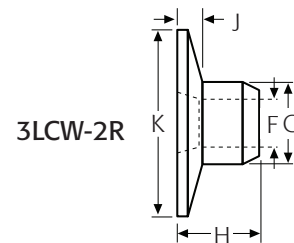
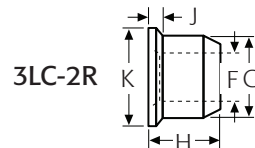
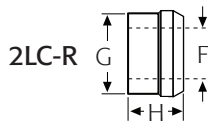
## Head style options



## Fastener dimensions

|            |             | Round Head  |             | Truss Head  |             | Flush Head  |             | Rivet Head |      |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------|
| Diameter   | A           | B           | C           | B           | C           | B           | C           | B          | C    |
| 6 (3/16")  | .190 - .195 | .360 - .390 | .113 - .125 | .406 - .469 | .078 - .088 |             |             | .469       | .094 |
| 8 (1/4")   | .254 - .259 | .475 - .525 | .136 - .152 | .531 - .594 | .103 - .115 | .437 - .473 | .104 - .113 |            |      |
| 10 (5/16") | .317 - .322 | .594 - .656 | .181 - .201 | .703 - .797 | .127 - .141 |             |             |            |      |
| 12 (3/8")  | .380 - .385 | .713 - .787 | .223 - .248 | .828 - .922 | .186 - .202 |             |             |            |      |

## Collar style options



## Collar dimensions

| Collar Type | Part Number                 | Collar Diameter | F Diameter    | G Diameter    | H Length      | J (1, 2) Dimension | K Diameter    |
|-------------|-----------------------------|-----------------|---------------|---------------|---------------|--------------------|---------------|
| Standard    | 2LC-R, 2LC-F                | 6 (3/16")       | 0.187 - 0.196 | 0.304 - 0.311 | 0.220 - 0.260 |                    |               |
|             | LC-I, 2LC-2CU               | 8 (1/4")        | 0.256 - 0.265 | 0.402 - 0.409 | 0.290 - 0.320 |                    |               |
|             |                             | 10 (5/16")      | 0.304 - 0.310 | 0.485 - 0.494 | 0.350 - 0.380 |                    |               |
|             |                             | 12 (3/8")       | 0.375 - 0.385 | 0.590 - 0.600 | 0.430 - 0.460 |                    |               |
| Flange      | 3LC-2R, 3LC-F <sup>1</sup>  | 6               | 0.187 - 0.196 | 0.304 - 0.311 | 0.250 - 0.280 | 0.031 - 0.062      | 0.359 - 0.391 |
|             | 3LC-I, 3LC-2CU <sup>1</sup> | 8               | 0.256 - 0.267 | 0.402 - 0.409 | 0.349 - 0.379 | 0.047 - 0.078      | 0.484 - 0.516 |
|             |                             | 10              | 0.304 - 0.312 | 0.498 - 0.507 | 0.394 - 0.426 | 0.062 - 0.094      | 0.609 - 0.641 |
|             |                             | 12              | 0.378 - 0.390 | 0.599 - 0.610 | 0.502 - 0.532 | 0.062 - 0.125      | 0.719 - 0.781 |
| Wide Flange | 3LCW-2R8 <sup>1</sup>       | 8               | 0.253 - 0.272 | 0.400 - 0.409 | 0.410 - 0.480 | 0.105 - 0.156      | 0.853 - 1.022 |
|             | 3LCW-2R10 <sup>1</sup>      | 10              | 0.304 - 0.312 | 0.498 - 0.507 | 0.474 - 0.506 | 0.144 - 0.196      | 0.984 - 1.016 |

<sup>1</sup> When using 3LC Collars, add "J" dimension to thickness of material being fastened to determine grip number.

<sup>2</sup> When using 8LC collars, subtract "J" dimension from thickness of material being fastened to determine grip number.



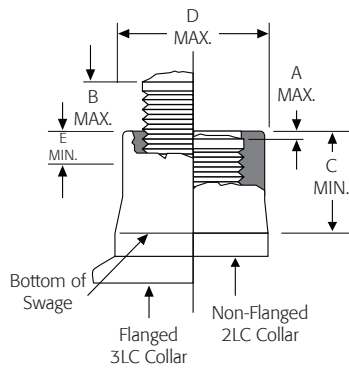
### Installed fastener values

|       | Carbon Steel (R) Pins             |             |             | 2024 Aluminum (C) Pins |       |         | 6061 Aluminum (F) Pins |       |         | Stainless Steel (U) Pins   |       |         |
|-------|-----------------------------------|-------------|-------------|------------------------|-------|---------|------------------------|-------|---------|----------------------------|-------|---------|
|       | 2LC-R or 3LC-2R Collars (Grade 5) |             |             | 2LC-F or 3LC-F Collars |       |         | LC-I or 3LC-I Collars  |       |         | 2LC-2CU or 3LC-2CU Collars |       |         |
| Diam. | Shear                             | Clamp       | Tensile     | Shear                  | Clamp | Tensile | Shear                  | Clamp | Tensile | Shear                      | Clamp | Tensile |
| 6     | 1725 (2430)                       | 1025 (1200) | 1650 (2200) | 1050                   | 550   | 1000    | 775                    | 350   | 530     | 2000                       | 1025  | 1455    |
| 8     | 3050 (4300)                       | 1805 (2300) | 3000 (3700) | 1875                   | 950   | 1800    | 1375                   | 620   | 975     | 3550                       | 1805  | 2750    |
| 10    | 4725 (6700)                       | 2810 (4200) | 4600 (6000) | 2925                   | 1500  | 2850    | 2125                   | 965   | 1550    | 5525                       | 2810  | 4250    |
| 12    | 6825 (9600)                       | 4020 (5980) | 6500 (9300) | 4200                   | 2200  | 4200    | 3050                   | 1380  | 2400    | 7950                       | 4020  | 6100    |

### Grip tables

| Grip | Grip Range    | 3/16" (6) |       | 1/4" (8) |       | Grip | Grip Range    | 5/16" (10) |       | 3/8" (12) |       |
|------|---------------|-----------|-------|----------|-------|------|---------------|------------|-------|-----------|-------|
|      |               | E         | F     | E        | F     |      |               | E          | F     | E         | F     |
| 2    | 0.063 - 0.188 | 0.394     | 1.404 | 0.485    | 1.520 |      |               |            |       |           |       |
| 3    | 0.125 - 0.250 | 0.457     | 1.466 | 0.548    | 1.583 |      |               |            |       |           |       |
| 4    | 0.188 - 0.313 | 0.519     | 1.529 | 0.610    | 1.645 | 4    | 0.125 - 0.375 | 0.749      | 1.906 | 0.809     | 2.125 |
| 5    | 0.250 - 0.375 | 0.582     | 1.591 | 0.673    | 1.708 |      |               |            |       |           |       |
| 6    | 0.313 - 0.438 | 0.644     | 1.654 | 0.735    | 1.770 | 6    | 0.250 - 0.500 | 0.874      | 2.031 | 0.934     | 2.250 |
| 7    | 0.375 - 0.500 | 0.707     | 1.716 | 0.798    | 1.833 |      |               |            |       |           |       |
| 8    | 0.438 - 0.563 | 0.769     | 1.779 | 0.860    | 1.895 | 8    | 0.375 - 0.625 | 1.000      | 2.156 | 1.059     | 2.375 |
| 9    | 0.500 - 0.625 | 0.832     | 1.841 | 0.923    | 1.958 |      |               |            |       |           |       |
| 10   | 0.563 - 0.688 | 0.894     | 1.904 | 0.985    | 2.020 | 10   | 0.500 - 0.750 | 1.124      | 2.281 | 1.184     | 2.500 |
| 11   | 0.625 - 0.750 | 0.957     | 1.966 | 1.048    | 2.083 |      |               |            |       |           |       |
| 12   | 0.688 - 0.813 | 1.019     | 2.029 | 1.110    | 2.145 | 12   | 0.625 - 0.875 | 1.249      | 2.406 | 1.309     | 2.625 |
| 13   | 0.750 - 0.875 | 1.082     | 2.091 | 1.173    | 2.208 |      |               |            |       |           |       |
| 14   | 0.813 - 0.938 | 1.144     | 2.154 | 1.235    | 2.270 | 14   | 0.750 - 1.000 | 1.374      | 2.531 | 1.434     | 2.750 |
| 15   | 0.875 - 1.000 | 1.207     | 2.216 | 1.298    | 2.333 |      |               |            |       |           |       |
| 16   | 0.938 - 1.063 | 1.269     | 2.279 | 1.360    | 2.395 | 16   | 0.875 - 1.125 | 1.500      | 2.656 | 1.559     | 2.875 |
| 17   | 1.000 - 1.125 | 1.332     | 2.341 | 1.423    | 2.458 |      |               |            |       |           |       |
| 18   | 1.063 - 1.188 | 1.394     | 2.404 | 1.458    | 2.520 | 18   | 1.000 - 1.250 | 1.624      | 2.781 | 1.684     | 3.000 |
| 19   | 1.125 - 1.250 | 1.457     | 2.466 | 1.548    | 2.583 |      |               |            |       |           |       |
| 20   | 1.188 - 1.313 | 1.519     | 2.529 | 1.610    | 2.645 | 20   | 1.125 - 1.375 | 1.749      | 2.906 | 1.809     | 3.125 |
| 21   | 1.250 - 1.375 | 1.582     | 2.591 | 1.673    | 2.708 |      |               |            |       |           |       |
| 22   | 1.313 - 1.438 | 1.644     | 2.654 | 1.735    | 2.770 | 22   | 1.250 - 1.500 | 1.874      | 3.031 | 1.934     | 3.250 |
| 23   | 1.375 - 1.500 | 1.707     | 2.716 | 1.798    | 2.833 |      |               |            |       |           |       |
| 24   | 1.438 - 1.563 |           |       | 1.866    | 2.895 | 24   | 1.375 - 1.625 | 2.000      | 3.156 | 2.059     | 3.375 |
| 25   | 1.500 - 1.625 |           |       | 1.923    | 2.958 |      |               |            |       |           |       |
| 26   | 1.563 - 1.688 |           |       | 1.985    | 3.020 | 26   | 1.500 - 1.750 | 2.124      | 3.281 | 2.184     | 3.500 |
| 27   | 1.625 - 1.750 |           |       | 2.048    | 3.083 |      |               |            |       |           |       |
| 28   | 1.688 - 1.813 |           |       | 2.110    | 3.145 | 28   | 1.625 - 1.875 | 2.249      | 3.406 | 2.309     | 3.625 |
| 29   | 1.750 - 1.875 |           |       | 2.173    | 3.208 |      |               |            |       |           |       |
| 30   | 1.813 - 1.938 |           |       | 2.235    | 3.270 | 30   | 1.750 - 2.000 | 2.374      | 3.531 | 2.434     | 3.750 |
| 31   | 1.875 - 2.000 |           |       | 2.298    | 3.333 |      |               |            |       |           |       |
| 32   | 1.938 - 2.063 |           |       | 2.368    | 3.395 | 32   | 1.875 - 2.125 | 2.500      | 3.656 | 2.559     | 3.875 |
| 37   |               |           |       | 2.637    | 3.708 |      |               |            |       |           |       |

# C6L® Inspection Data and Installation Tooling



## Inspection data

| Nominal Size                                     | A max | B max | C min | D max | E min | Hole Size  |            |
|--------------------------------------------------|-------|-------|-------|-------|-------|------------|------------|
|                                                  |       |       |       |       |       | 2LC Collar | 3LC Collar |
| Straight Bore Anvil Tooling                      |       |       |       |       |       |            |            |
| 6 (3/16")                                        | .078  | .125  | .172  | .276  | —     | .218       | .234       |
| 8 (1/4")                                         | .078  | .156  | .250  | .364  | —     | .281       | .312       |
| 10 (5/16")                                       | .140  | .219  | .281  | .454  | —     | .359       | .390       |
| 12 (3/8")                                        | .125  | .281  | .344  | .552  | —     | .421       | .468       |
| Tapered Bore Anvil Tooling (99-3003 and 99-3006) |       |       |       |       |       |            |            |
| 6 (3/16")                                        | .040  | .125  | .180  | .276  | .115  | .218       | .234       |
| 8 (1/4")                                         | .030  | .156  | .230  | .364  | .085  | .281       | .312       |

Should "A" or "B" dimensions exceed the given values, the fastener is out-of-grip. A "C" dimension less than the given value indicates an incomplete swage. A "D" dimension greater than the given values indicates an incorrect or worn anvil on the installation tool. "E" is the minimum length from the top of the collar to measure "D" diameter for tapered bore anvils.

## Installation Tools

| Pneudraulic Tools |       |         |            |            |                      | Hydraulic Tools    |            |
|-------------------|-------|---------|------------|------------|----------------------|--------------------|------------|
| Tool Model        | Size  | 244     | 245/255    | 246/256    | 2025 <sup>1</sup>    | 2480               | 2580       |
| Nose Assembly     | 3/16" | 99-3010 | 99-2558    | 99-2558    | 99-3003 <sup>1</sup> | 99-3003<br>99-3010 |            |
|                   | 1/4"  | 99-3417 | 99-2564    | 99-2564    | 99-3006 <sup>1</sup> | 99-3006<br>99-3417 |            |
|                   | 5/16" |         | 99-99-245  | 99-99-245  |                      |                    | 99-99-245  |
|                   | 3/8"  |         | 99-100-245 | 99-100-245 |                      |                    | 99-100-245 |

<sup>1</sup> Note: When using tapered bore anvils with single acting tooling (2025), use visual inspection data for tapered bore anvil tooling.



## Tooling weight and dimensions

| Model             | Type        | Weight   | Length | Height | Width |
|-------------------|-------------|----------|--------|--------|-------|
| 255               | pneudraulic | 8.8 lbs  | 7.1"   | 14.9"  | 4.6"  |
| 256               | pneudraulic | 11.1 lbs | 7.8"   | 14.9"  | 6.1"  |
| 2025 <sup>1</sup> | pneudraulic | 5.75 lbs | 8.4"   | 12.5"  | 4.4"  |
| 2480              | hydraulic   | 2.2 lbs  | 8.6"   | 6.5"   | 1.9"  |
| 2580              | hydraulic   | 6.6 lbs  | 8.4"   | 6.5"   | 2.2"  |

# Ordering Information

Follow the form below to construct a part number for ordering C6L pins and their respective collars.  
Refer to the Grip Data chart for grip numbers.

## Pins (Grade 2 Steel, Aluminum, Stainless Steel)

C6L – (MATERIAL) (DIAMETER) – (GRIP NUMBER) (FINISH)

Example: C6LT-R8-4G is a C6L HuckBolt Pin, Truss Head, Carbon Steel, 1/4" Diameter, Grip 4, Zinc Finish

| Head Style | Prefix | Material             | Code | Diameter | Code | Grip                          | Finish | Suffix |
|------------|--------|----------------------|------|----------|------|-------------------------------|--------|--------|
| Round      | C6LB   | Grade 2 Carbon Steel | R    | 3/16"    | 6    | Refer to Grip Table on page 5 | Zinc   | G      |
| Truss      | C6LT   | 2024 Aluminum Alloy  | C    | 1/4"     | 8    |                               |        |        |
| Flush      | C6L90  | 6061 Aluminum Alloy  | F    | 5/16"    | 10   |                               |        |        |
| Rivet      | C98LT  | Stainless Steel      | U    | 3/8"     | 12   |                               |        |        |

## Collars (Grade 2 Steel, Aluminum, Stainless Steel)

(TYPE) – (MATERIAL) (DIAMETER) (FINISH)

Example: 2LC-R8G is a Standard C6L HuckBolt Collar, Carbon Steel, 1/4" Diameter, Zinc Finish

| Head Style  | Prefix | Material                     | Code | Diameter | Code | Finish | Suffix |
|-------------|--------|------------------------------|------|----------|------|--------|--------|
| Standard    | 2LC    | Carbon Steel                 | 2R/R | 3/16"    | 6    | Zinc   | G      |
| Flange      | 3LC    | 6061 Alum Alloy Heat Treated | I    | 1/4"     | 8    |        |        |
| Wide Flange | 3LCW   | 6061 Alum Alloy              | F    | 5/16"    | 10   |        |        |
|             |        | Stainless Steel              | 2CU  | 3/8"     | 12   |        |        |

## Pins (Grade 5)

C120L (HEAD STYLE) – (MATERIAL) (DIAMETER) – (GRIP NUMBER) (FINISH)

Example: C120LT-R8-4G is a C120L HuckBolt Pin, Truss Head, Carbon Steel, 1/4" Diameter, Grip 4, Zinc Finish

| Head Style | Prefix | Material             | Code | Diameter | Code | Grip                          | Finish | Suffix |
|------------|--------|----------------------|------|----------|------|-------------------------------|--------|--------|
| Round      | C120B  | Grade 5 Carbon Steel | R    | 3/16"    | 6    | Refer to Grip Table on page 5 | Zinc   | G      |
| Truss      | C120T  |                      |      | 1/4"     | 8    |                               |        |        |
| Flush      | C12090 |                      |      | 5/16"    | 10   |                               |        |        |
|            |        |                      |      | 3/8"     | 12   |                               |        |        |

## Collars (Grade 5)

(TYPE) – (MATERIAL) (DIAMETER) (FINISH)

Example: 2LC120-R8G is a Standard C120L HuckBolt Collar, Carbon Steel, 1/4 Diameter, Zinc Finish

| Grade 5  | Prefix | Material     | Code | Diameter | Code | Finish | Suffix |
|----------|--------|--------------|------|----------|------|--------|--------|
| Standard | 2LC120 | Carbon Steel | 2R/R | 3/16"    | 6    | Zinc   | G      |
| Flange   | 3LC120 |              |      | 1/4"     | 8    |        |        |
|          |        |              |      | 5/16"    | 10   |        |        |
|          |        |              |      | 3/8"     | 12   |        |        |

# Alcoa Fastening Systems



For more than 120 years, the name Alcoa has been recognized worldwide as a strong leader in product quality and customer support. These strengths are found in every product manufactured for Alcoa Fastening Systems, offering the greatest breadth and depth of fastening system solutions in the industry.

Alcoa Fastening Systems (AFS) maintains company offices in the United States and in many other countries. AFS fastener distributors are also located in many of the world's industrial centers, where they provide a ready source of AFS fasteners, installation tools, tool parts, and application assistance.

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