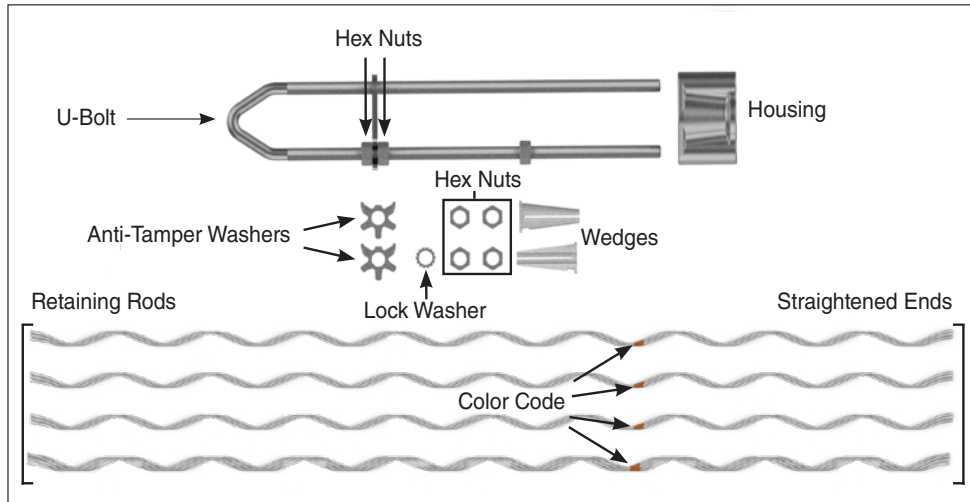




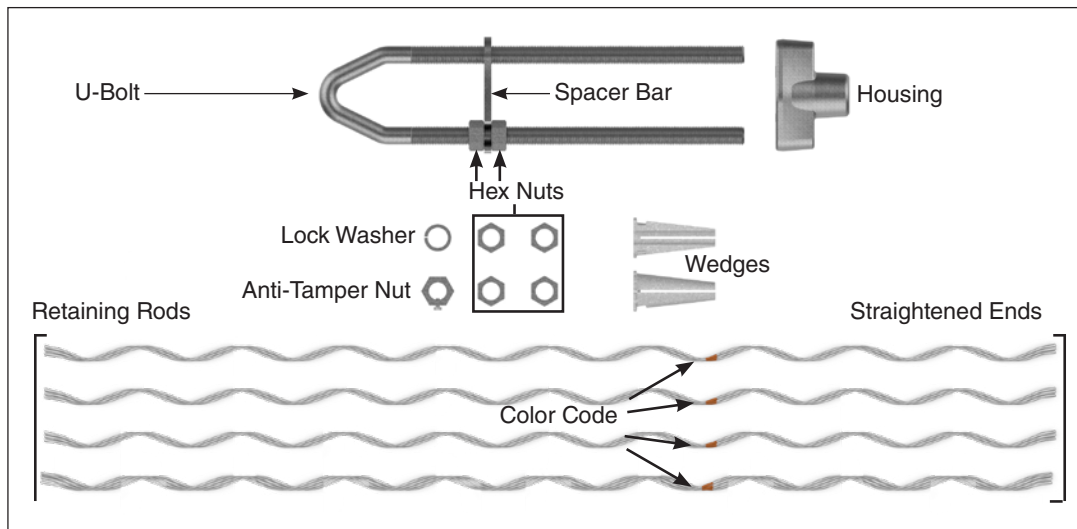
VARI-GRIP™ Dead-End

NOMENCLATURE

VARI-GRIP™ Dead-End



VARI-GRIP™ Gen2 Dead-End



- U-Bolt:** Galvanized Steel
- Housing:** VARI-GRIP: Galvanized Ductile Iron
VARI-GRIP Gen2: Galvanized Steel
- Wedges:** Aluminum
- Spacer Bar:** Galvanized Steel (supplied with adjustable models only, except for standard VARI-GRIP models with 1½ and 1¾ u-bolts which use conformal castings. Gen2 designs do not use conformal castings)
- Nuts & Washers:** Galvanized Steel
- Retaining Rods:** Galvanized Steel for Galvanized Steel Strand, Aluminum-covered Steel for Aluminum-covered Steel Strand
- Color Code:** Identifies Strand Size

VARI-GRIP™ Dead-End

GENERAL RECOMMENDATIONS

VARI-GRIP Dead-Ends are designed for use on Transmission, Tower and Antenna, Communications and other types of guyed structures that require use of large guy strand. VARI-GRIP Dead-End components, such as the housing, U-Bolt, and hex nuts allow for adjustment in guy tensions.

The unique housing, wedge and rod design of the VARI-GRIP Dead-End is designed to provide a holding strength of 100% of the strand's rated breaking load. The high-strength U-Bolt allows for adjusting the guy strand tension without the need for a turnbuckle. VARI-GRIP Dead-Ends are available for strands as small as 7/16" (20,800#) to as large as 1.78" (295,500#). 0", and 18" take-up U-Bolts are available for most strand sizes.

Gen2 Design: The improved VARI-GRIP Gen2 design allows for proper U-bolt support without the need for conformal castings. The new design is also lighter while keeping the strength of the old design.

RATED HOLDING STRENGTH (RHS): VARI-GRIP Dead-Ends are designed to hold the maximum loads published on the catalog pages for only those specific strands listed.

MATERIAL SELECTION: VARI-GRIP Dead-End retaining rods are made from material compatible with the strand for which they are designed.

VARI-GRIPS ARE NOT ACCEPTABLE FOR USE ON WIRE ROPE APPLICATIONS.

INSTALLATION GUIDELINES

Compatibility: The retaining rods are made from a material that is compatible with the guy strand material (i.e., aluminum-clad steel rods for aluminum-clad steel guy strand). Where guying requirements call for strands not shown on the catalog pages, consult PLP. VARI-GRIPS are not acceptable for use on wire rope applications.

Installation: The guy strand installation tension should be at least 10% of the rated breaking strength of the strand while maintaining a service tension of 10%.

Strand Compatibility: VARI-GRIP Dead-Ends should be used only on the size and strand for which they are designed. The VARI-GRIP Dead-End Retaining Rods MUST have the same lay direction as the strand to which they are applied. WHEN ORDERING VARI-GRIP DEAD-ENDS, SPECIFY THE STRAND AND THE STRAND LAY DIRECTION ON WHICH THEY ARE TO BE USED.

When installing VARI-GRIP Dead-Ends, care should be taken not to damage the protective coatings on the hardware, rods or fittings.

VARI-GRIP Dead-Ends should not be used as tools, i.e., come-alongs, pulling-grips, etc.

Factory suggests guy tensions be maintained at a minimum of approximately 10% of the Strand's Rated Breaking Strength (RBS).

Guy tension may be roughly determined by measuring the torque on the hex nuts (during initial installation with threads well lubricated). If this method is to be used, an anti-seize compound applied liberally on the threads of the U-Bolt and anti-tamper washers will permit more accurate measurements.

The anti-seize compound will also make the nut tightening procedure easier.

Consult Factory for torque/tension information or for any unusual installations.

The spacer bar and hex nuts (supplied with the 18" take-up model) should be installed as close to the interior radius of the U-Bolt as possible.

Attachment Fittings: When installing VARI-GRIP Dead-Ends to a pin or other linkage, refer to the table below for minimum and maximum diameters. The minimum dimension indicates the smallest fitting that will ensure support of the U-Bolt, while the maximum dimension indicates the largest fitting that will fit through the U-Bolt.

Acceptable Pin Diameters for VARI-GRIP Gen2

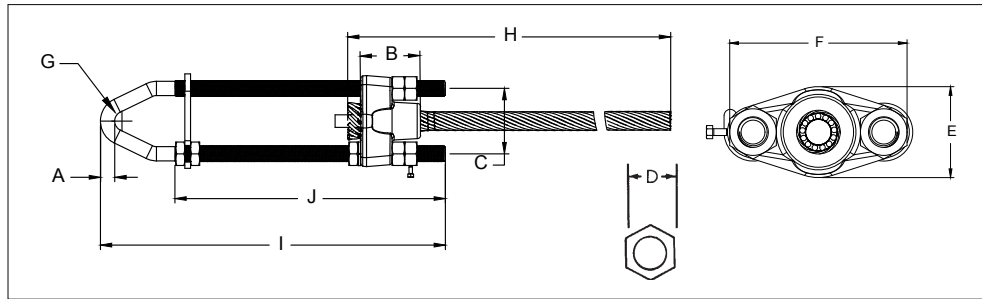
| Strand Range | U-Bolt Thread Dia. | Min. Pin Dia. | Max. Pin Dia. |
|---------------|--------------------|---------------|---------------|
| .744" - .888" | 1" | 1" | 1-1/4" |
| 1" - 1.125" | 1-1/8" | 1-1/8" | 1-1/2" |

Acceptable Pin Diameters for VARI-GRIP

| Strand Range | U-Bolt Dia. | Minimum | Maximum |
|-------------------------------------|-------------|---------|---------|
| .438"-.500" | 5/8" | 5/8" | 1-1/8" |
| .546"-.661" | 3/4" | 3/4" | 1-1/8" |
| .744"-.914" | 1" | 1" | 1-1/4" |
| .915"-1.034" | 1-1/8" | 1-1/8" | 1-3/8" |
| 1-1/8" EHS 1" BS 61#7 61#6 | 1-1/2" | 4" | 4" |
| 61#5 91#6 | 1-3/4" | 4" | 4-1/2" |



VARI-GRIP™ Dead-End



Dimensional Data

| Strand Range | U-Bolt Dia. | | | | | | | H | I (0") | I (18") | Design |
|---------------|-------------|----------|---------|----------|----------|-----------|---------|--|-----------|-----------|--------|
| | A | B | C | D | E | F | G | | | | |
| .438"-.500" | 5/8" | 3-1/4" | 3-1/4" | 1-1/16" | 3-17/32" | 4-3/4" | 15/16" | See Rod Length in the table on next page | N/A | 29-9/16" | Std. |
| .546"-.661" | 3/4" | 3-1/2" | 3-9/16" | 1-1/8" | 2-13/16" | 5-3/16" | 19/32" | | 11-11/16" | 28-5/16" | Std. |
| 3/4", 7/8" | 1" | 4-1/8" | 4-1/2" | 1-5/8" | 3-1/8" | 6-1/4" | 11/16" | | 18-5/8" | 23-7/8" | Gen2 |
| .744"-.914" | 1" | 4-1/2" | 4-3/4" | 1-1/2" | 3-5/16" | 6-11/16" | 5/8" | | 12-11/16" | 33-3/16" | Std. |
| .915"-.1.034" | 1-1/8" | 4-15/16" | 5-3/8" | 1-5/8" | 3-5/8" | 7-5/8" | 3/4" | | 14" | 33-1/2" | Std. |
| 1", 1-1/8" | 1-1/8" | 4-1/3" | 5-1/2" | 1-31/32" | 3-3/4" | 7-5/8" | 7/8" | | 26-3/4" | 27-15/16" | Gen2 |
| 1.25"-.1.460" | 1-1/2" | 7-1/4" | 7-1/8" | 2-5/16" | 5-1/4" | 10-1/8" | 2-1/16" | | 20-3/4" | 39-15/16" | Std. |
| 1.5"-.1.64" | 1-3/4" | 7-1/4" | 8-3/16" | 2-5/8" | 5-9/16" | 11-11/16" | 2-1/2" | | 22-1/2" | 42-3/4" | Std. |
| 1.78" | 1-3/4" | 8-3/4" | 8-3/16" | 2-5/8" | 6-5/8" | 12-3/8" | 2-1/2" | | 22-1/2" | 42-3/4" | Std. |

ORDERING INFORMATION

Be sure that the VARI-GRIP Dead-End selected matches the material, lay direction, and strength of the strand being used.

Aluminum Clad Steel Strand (left-hand lay)

| Catalog Number 0" Take-Up | Catalog Number 18" Take-Up | Nominal Strand Diameter | | Construction | U-Bolt Diameter | Rods Per Set | Rod Length | Subset | Color Code | Rated Holding Strength (Lbs.) | Design |
|---------------------------|----------------------------|-------------------------|-------|---------------|-----------------|--------------|------------|-----------|------------|-------------------------------|--------|
| | | Min. | Max | | | | | | | | |
| N/A | VG-18-3000 | .546 | .546 | 7#5 | 3/4" | 12 | 26" | 3-3-3-3 | Yellow | 27,030 | Std. |
| N/A | VG-18-3100 | .572 | .572 | 19#9 | 3/4" | 11 | 28" | 3-4-4 | Orange | 34,290 | Std. |
| VG-0-3101 | VG-18-3101 | 0.636 | 0.661 | 19#8 | 3/4" | 11 | 32" | 3-4-4 | Black | 42,240 | Std. |
| VG-0-3102 | VG-18-3102 | 0.713 | 0.741 | 19#7 37#10 | 1" | 12 | 35" | 3-3-3-3 | Yellow | 51,730 52,950 | Std. |
| VG-0-3103BR | VG-18-3103BR | 0.800 | 0.810 | 19#6 37#9 | 1" | 12 | 46" | 3-3-3-3 | Green | 61,700 66,770 | Gen2 |
| VG-0-3104BR | VG-18-3104BR | 0.893 | 0.903 | 37#8 | 1" | 12 | 54" | 3-3-3-3 | Yellow | 84,200 | Gen2 |
| VG-0-3105BR | VG-18-3105BR | 0.904 | 0.914 | 19#5 | 1" | 12 | 54" | 3-3-3-3 | Yellow | 73,350 | Gen2 |
| VG-0-3106BR | VG-18-3106BR | 0.911 | 0.921 | 61#10 | 1-1/8" | 13 | 54" | 3-3-3-4 | Yellow | 87,290 | Gen2 |
| VG-0-3107BR | VG-18-3107BR | 1.000 | 1.010 | 37#7 | 1-1/8" | 14 | 58" | 3-3-4-4 | Green | 100,700 | Gen2 |
| VG-0-3108BR | VG-18-3108BR | 1.024 | 1.034 | 61#9 | 1-1/8" | 14 | 76" | 3-3-4-4 | Purple | 110,100 | Gen2 |
| VG-0-3109BR | VG-18-3109BR | 1.130 | 1.130 | 37#6 | 1-1/8" | 14 | 86" | 3-3-4-4 | Yellow | 120,200 | Gen2 |
| VG-0-3110 | VG-18-3110 | 1.160 | 1.160 | 61#8 | 1-1/2" | 14 | 98" | 3-3-4-4 | Orange | 138,800 | Std. |
| VG-0-3111 | VG-18-3111 | 1.270 | 1.270 | 37#5 | 1-1/2" | 16 | 105" | 4-4-4-4 | Red | 142,800 | Std. |
| VG-61#7-0 | VG-61#7-18 | 1.300 | 1.300 | 61#7 | 1-1/2" | 16 | 106" | 4-4-4-4 | Blue | 166,100 | Std. |
| VG-61#6-0 | VG-61#6-18 | 1.460 | 1.460 | 61#6 | 1-1/2" | 18 | 116" | 3-3-4-4-4 | Green | 198,100 | Std. |
| VG-61#5-0 | VG-61#5-18 | 1.640 | 1.640 | 61#5 | 1-3/4" | 20 | 129" | 4-4-4-4-4 | Orange | 235,500 | Std. |
| VG-91#6-0 | VG-91#6-18 | 1.780 | 1.780 | 91#6 | 1-3/4" | 18 | 165" | 3-3-4-4-4 | Red | 295,500 | Std. |

VARI-GRIP™ Dead-End

ORDERING INFORMATION

Galvanized Steel Extra High Strength Strand (left hand lay)

| Catalog Number 0" Take-Up | Catalog Number 18" Take-Up | Nominal Strand Range | | Nominal Strand Size | Construction | U-Bolt Diameter | Rods Per Set | Rod Length | Subset | Color Code | Rated Holding Strength (Lbs.) | Design |
|---------------------------------|----------------------------------|----------------------|-------|---------------------|--------------|-----------------|--------------|------------|---------|------------|-------------------------------|--------|
| | | Min. | Max. | | | | | | | | | |
| N/A | VG-18-2100 | 0.438 | 0.438 | 7/16" | 7W | 5/8" | 11 | 27" | 3-4-4 | Red | 20,800 | Std. |
| N/A | VG-18-2101 | 0.459 | 0.500 | 1/2" | 7W or 19W | 5/8" | 12 | 30" | 3-3-3-3 | Blue | 26,900 | Std. |
| VG-0-2108 | VG-18-2108 | 0.559 | 0.563 | 9/16" | 7W or 19W | 3/4" | 11 | 28" | 3-4-4 | Yellow | 35,000 | Std. |
| VG-0-2102 | VG-18-2102 | 0.621 | 0.625 | 5/8" | 7W or 19W | 3/4" | 11 | 31" | 3-4-4 | Black | 42,400 | Std. |
| VG-0-2103BR | VG-18-2103BR | 0.75 | 0.75 | 3/4" | 1x19 | 1" | 12 | 44" | 3-3-3-3 | Orange | 68,000 | Gen2 |
| VG-0-2104BR | VG-18-2104BR | 0.875 | 0.875 | 7/8" | 1x19 | 1" | 13 | 58" | 3-3-3-4 | Green | 92,000 | Gen2 |
| VG-0-2105BR | VG-18-2105BR | 1 | 1 | 1" | 1x31 | 1-1/8" | 14 | 66" | 3-3-4-4 | Blue | 122,000 | Gen2 |
| VG-0-2106BR | VG-18-2106BR | 1.125 | 1.125 | 1-1/8" | 37W | 1-1/8" | 14 | 95" | 3-3-4-4 | Yellow | 156,000 | Gen2 |
| VG-0-2107 | VG-18-2107 | 1.250 | 1.250 | 1-1/4" | 37w | 1-1/2" | 16 | 103" | 4-4-4-4 | Red | 162,200# | Std. |

Galvanized Steel Bridge Strand (left hand lay)

| Catalog Number 0" Take-Up | Catalog Number 18" Take-Up | Nominal Strand Range | | Nominal Strand Size | Construction | U-Bolt Diameter | Rods Per Set | Rod Length | Subset | Color Code | Rated Holding Strength (Lbs.) | Design |
|---------------------------------|----------------------------------|----------------------|-------|---------------------|---------------|-----------------|--------------|------------|-------------|------------|-------------------------------|--------|
| | | Min. | Max. | | | | | | | | | |
| VG-0-2103BR | VG-18-2103BR | 0.75 | 0.75 | 3/4" | 1 x 19 | 1" | 12 | 44" | 3-3-3-3 | Orange | 68,000 | Gen2 |
| VG-0-4104BR | VG-18-4104BR | 0.813 | 0.813 | 13/16" | 1 x 19 | 1" | 12 | 54" | 3-3-3-3 | Red | 80,000 | Gen2 |
| VG-0-2104BR | VG-18-2104BR | 0.875 | 0.875 | 7/8" | 1 x 19 | 1" | 13 | 58" | 3-3-3-4 | Green | 92,000 | Gen2 |
| VG-0-4106BR | VG-18-4106BR | 0.938 | 0.938 | 15/16" | 1 x 31 or 37W | 1-1/8" | 14 | 63" | 3-3-4-4 | Black | 108,000 | Gen2 |
| VG-0-2105BR | VG-18-2105BR | 1 | 1 | 1" | 1 x 31 | 1-1/8" | 14 | 66" | 3-3-4-4 | Blue | 122,000 | Gen2 |
| VG-0-4108BR | VG-18-4108BR | 1.063 | 1.063 | 1-1/16" | 1 x 31 | 1-1/8" | 14 | 91" | 3-3-4-4 | Green | 138,000 | Gen2 |
| VG-0-2106BR | VG-18-2106BR | 1.125 | 1.125 | 1-1/8" | 37W | 1-1/8" | 14 | 95" | 3-3-4-4 | Yellow | 156,000 | Gen2 |
| VG-0-4109 | VG-18-4109 | 1.187 | 1.187 | 1-3/16" | 1 x 37 | 1-1/2" | 15 | 99" | 3-4-4-4 | Orange | 172,000 | Std |
| VG-0-2107 | VG-18-2107 | 1.250 | 1.250 | 1-1/4" | 1 x 43 | 1-1/2" | 16 | 103" | 4-4-4-4 | Red | 192,000 | Std |
| VG-0-4110 | VG-18-4110 | 1.313 | 1.313 | 1-5/16" | 1 x 43 | 1-1/2" | 17 | 107" | 3-3-3-3-3-2 | Black | 212,000 | Std |
| VG-0-4111 | VG-18-4111 | 1.375 | 1.375 | 1-3/8" | 1 x 43 | 1-1/2" | 17 | 110" | 3-3-3-3-3-2 | Orange | 232,000 | Std |
| VG-0-4112 | VG-18-4112 | 1.438 | 1.438 | 1-7/16" | 1 x 43 | 1-1/2" | 18 | 114" | 3-3-3-3-3-3 | Green | 252,000 | Std |
| VG-0-4113 | VG-18-4113 | 1.500 | 1.500 | 1-1/2" | 1 x 43 | 1-3/4" | 16 | 119" | 3-3-3-3-2-2 | Pink | 276,000 | Std |



VARI-GRIP™ Dead-End

Galvanized Steel Bridge Strand (right hand lay)

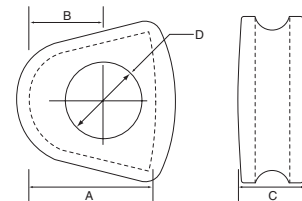
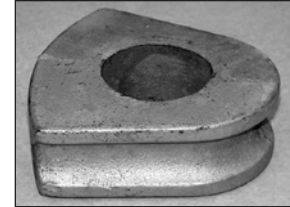
| Catalog Number 0" Take-Up | Catalog Number 18" Take-Up | Nominal Strand Range | | Nominal Strand Size | Con-struction | U-Bolt Diameter | Rods Per Set | Rod Length | Subset | Color Code | Rated Holding Strength (Lbs.) | Design |
|---------------------------|----------------------------|----------------------|-------|---------------------|---------------|-----------------|--------------|------------|-------------|------------|-------------------------------|--------|
| | | Min. | Max. | | | | | | | | | |
| VG-0-5103BR | VG-18-5103BR | 0.75 | 0.75 | 3/4" | 1x19 | 1" | 12 | 44" | 3-3-3-3 | Orange | 68,000 | Gen2 |
| VG-0-5104BR | VG-18-5104BR | 0.813 | 0.813 | 13/16" | 1 X 19 | 1" | 12 | 54" | 3-3-3-3 | Red | 80,000 | Gen2 |
| VG-0-5105BR | VG-18-5105BR | 0.875 | 0.875 | 7/8" | 1x19 | 1" | 13 | 58" | 3-3-3-4 | Green | 92,000 | Gen2 |
| VG-0-5106BR | VG-18-5106BR | 0.938 | 0.938 | 15/16" | 1 X 31 | 1-1/8" | 14 | 63" | 3-3-4-4 | Black | 108,000 | Gen2 |
| VG-0-5107BR | VG-18-5107BR | 1 | 1 | 1" | 1x31 | 1-1/8" | 14 | 66" | 3-3-4-4 | Blue | 122,000 | Gen2 |
| VG-0-5108BR | VG-18-5108BR | 1.063 | 1.063 | 1-1/16" | 1 X 31 | 1-1/8" | 14 | 91" | 3-3-4-4 | Green | 138,000 | Gen2 |
| VG-0-5109BR | VG-18-5109BR | 1.125 | 1.125 | 1-1/8" | 1 X 37 | 1-1/8" | 14 | 95" | 3-3-4-4 | Yellow | 156,000 | Gen2 |
| VG-0-5110 | VG-18-5110 | 1.187 | 1.187 | 1-3/16" | 1 X 37 | 1-1/2" | 15 | 99" | 3-4-4-4 | Orange | 172,000 | Std. |
| VG-0-5111 | VG-18-5111 | 1.250 | 1.250 | 1-1/4" | 1 X 43 | 1-1/2" | 16 | 103" | 4-4-4-4 | Red | 192,000 | Std. |
| VG-0-5112 | VG-18-5112 | 1.313 | 1.313 | 1-5/16" | 1 X 43 | 1-1/2" | 17 | 107" | 3-3-3-3-3-2 | Black | 212,000 | Std. |
| VG-0-5113 | VG-18-5113 | 1.375 | 1.375 | 1-3/8" | 1 X 43 | 1-1/2" | 17 | 110" | 3-3-3-3-3-2 | Orange | 232,000 | Std. |
| VG-0-5114 | VG-18-5114 | 1.438 | 1.438 | 1-7/16" | 1 X 43 | 1-1/2" | 18 | 114" | 3-3-3-3-3-3 | Green | 252,000 | Std. |
| VG-0-5115 | VG-18-5115 | 1.500 | 1.500 | 1-1/2" | 1 X 43 | 1-3/4" | 19 | 119" | 3-3-3-3-2-2 | Pink | 276,000 | Std. |

Conformal Casting

To be used with Standard VARI-GRIP only. Gen2 VARI-GRIPS do not require this.

(Supplied with Dead-Ends using 1-1/2" and 1-3/4" U-Bolts to assure proper support)

| Strand Sizes | U-Bolt Dia. | A | B | C | D |
|--|-------------|--------|-------|--------|--------|
| 1-1/8" EHS, 1-1/4" EHS, 37#6, 61#8, 37#5, 61#7, 1" BS, 1-1/16" BS, 1-1/8" BS, 1-3/16" BS | 1-1/2" | 5" | 2.75" | 2.875" | 2.875" |
| 61#6, 1-1/4" BS, 1-5/16" BS, 1-3/8" BS, 1-7/16" BS, | 1-1/2" | 5" | 3" | 2.875" | 3.125" |
| 61#5, 1-1/2" BS | 1-3/4" | 5.844" | 3.75" | 3.375" | 3.625" |
| 91#6 | 1-3/4" | 5.844" | 4" | 3.375" | 3.875" |



NOTE: Conformal castings are not required for Gen2 VARI-GRIP Dead-Ends.