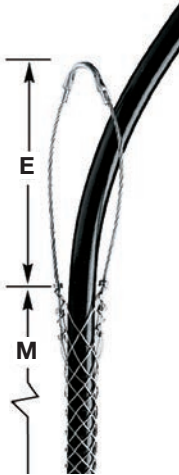




**IMPORTANT**  
 Read all breaking strength, safety and technical data relating to this product. Pages V-41 to V-45.

**Single Eye, Closed Mesh**

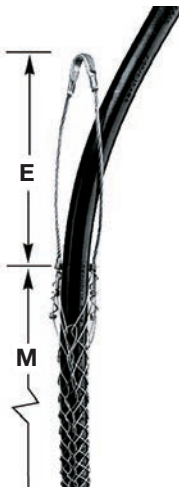
For permanent support when cable end is available to be installed through grip.



Cable Diameter Range Inches (cm)	Approx. Breaking Strength Lbs. (N)		E Inches (cm)	M Inches (cm)	Tin-Coated Bronze	Stainless Steel
	Tin-Coated Bronze	Stainless Steel				
.50"-.62" (1.27-1.57)	530 (2,357)	1,370 (6,094)	7" (17.78)	10" (25.40)	<b>02201013</b>	<b>02401013</b>
.63"-.74" (1.60-1.88)	790 (3,514)	2,060 (9,163)	8" (20.32)	10" (25.40)	<b>02201014</b>	<b>02401014</b>
.75"-.99" (1.90-2.51)	1,020 (4,537)	2,060 (9,163)	8" (20.32)	13" (33.02)	<b>02201015</b>	<b>02401015</b>
1.00"-1.24" (2.54-3.15)	1,610 (7,161)	2,678 (11,912)	9" (22.86)	14" (35.56)	<b>02201017</b>	<b>02401017</b>
1.25"-1.49" (3.17-3.78)	1,610 (7,161)	4,490 (19,972)	10" (25.40)	15" (38.10)	<b>02201018</b>	<b>02401018</b>
1.50"-1.74" (3.81-4.42)	1,610 (7,161)	4,492 (19,981)	12" (30.48)	17" (43.18)	<b>02201019</b>	<b>02401019</b>
1.75"-1.99" (4.44-5.05)	2,150 (9,563)	5,000 (22,241)	14" (35.56)	19" (48.26)	<b>02201020</b>	<b>02401020</b>
2.00"-2.49" (5.08-6.32)	3,260 (14,500)	8,940 (39,767)	16" (40.64)	21" (53.34)	<b>02201021</b>	<b>02401021</b>
2.50"-2.99" (6.35-7.59)	3,260 (14,500)	8,947 (39,798)	18" (45.72)	23" (58.42)	<b>02201022</b>	<b>02401022</b>
3.00"-3.49" (7.62-8.86)	4,900 (21,795)	13,420 (59,695)	21" (53.34)	25" (63.50)	<b>02201023</b>	<b>02401023</b>
3.50"-3.99" (8.89-10.13)	4,900 (21,795)	—	24" (60.96)	27" (68.58)	<b>02201024</b>	—

**Single Eye, Split Mesh, Lace Closing**

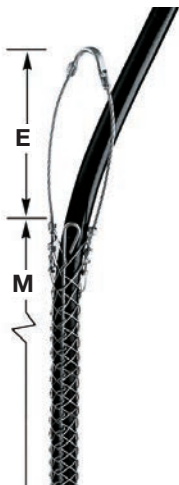
For permanent support when cable end is not available.



Cable Diameter Range Inches (cm)	Approx. Breaking Strength Lbs. (N)		E Inches (cm)	M Inches (cm)	Tin-Coated Bronze	Stainless Steel
	Tin-Coated Bronze	Stainless Steel				
.50"-.62" (1.27-1.57)	530 (2,357)	1,370 (6,094)	7" (17.78)	10" (25.40)	<b>02202013</b>	<b>02402013</b>
.63"-.74" (1.60-1.88)	790 (3,514)	2,066 (9,190)	8" (20.32)	10" (25.40)	<b>02202014</b>	<b>02402014</b>
.75"-.99" (1.90-2.51)	1,020 (4,537)	2,060 (9,163)	8" (20.32)	13" (33.02)	<b>02202015</b>	<b>02402015</b>
1.00"-1.24" (2.54-3.15)	1,610 (7,161)	2,670 (11,876)	9" (22.86)	14" (35.56)	<b>02202017</b>	<b>02402017</b>
1.25"-1.49" (3.17-3.78)	1,610 (7,161)	4,490 (19,972)	10" (25.40)	15" (38.10)	<b>02202018</b>	<b>02402018</b>
1.50"-1.74" (3.81-4.42)	1,610 (7,161)	4,490 (19,972)	12" (30.48)	17" (43.18)	<b>02202019</b>	<b>02402019</b>
1.75"-1.99" (4.44-5.05)	2,150 (9,563)	4,375 (19,461)	14" (35.56)	19" (48.26)	<b>02202020</b>	<b>02402020</b>
2.00"-2.49" (5.08-6.32)	3,260 (14,500)	8,947 (39,798)	16" (40.64)	21" (53.34)	<b>02202021</b>	<b>02402021</b>
2.50"-2.99" (6.35-7.59)	3,260 (14,500)	8,940 (39,767)	18" (45.72)	23" (58.42)	<b>02202022</b>	<b>02402022</b>
3.00"-3.49" (7.62-8.86)	4,900 (21,795)	13,420 (59,695)	21" (53.34)	25" (63.50)	<b>02202023</b>	<b>02402023</b>
3.50"-3.99" (8.89-10.13)	4,900 (21,795)	13,420 (59,695)	24" (60.96)	27" (68.58)	<b>02202024</b>	<b>02402024</b>

**Single Eye, Split Mesh, Rod Closing**

For support when cable end is not available.



Cable Diameter Range Inches (cm)	Approx. Breaking Strength Lbs. (N)		E Inches (cm)	M Inches (cm)	Tin-Coated Bronze	Stainless Steel
	Tin-Coated Bronze	Stainless Steel				
.50"-.62" (1.27-1.57)	790 (3,514)	1,050 (4,670)	7" (17.78)	8.5" (21.59)	<b>02203013</b>	<b>02403013</b>
.63"-.74" (1.60-1.88)	790 (3,514)	2,050 (9,119)	8" (20.32)	8.5" (21.59)	<b>02203014</b>	<b>02403014</b>
.75"-.99" (1.90-2.51)	1,020 (4,537)	2,050 (9,119)	8" (20.32)	10.5" (26.67)	<b>02203015</b>	<b>02403015</b>
1.00"-1.24" (2.54-3.15)	1,610 (7,161)	2,650 (11,788)	9" (22.86)	12.5" (31.75)	<b>02203017</b>	<b>02403017</b>
1.25"-1.49" (3.17-3.78)	1,610 (7,161)	4,500 (20,017)	10" (25.40)	14.5" (36.83)	<b>02203018</b>	<b>02403018</b>
1.50"-1.74" (3.81-4.42)	1,610 (7,161)	4,500 (20,017)	12" (30.48)	15.5" (39.37)	<b>02203019</b>	<b>02403019</b>
1.75"-1.99" (4.44-5.05)	2,150 (9,563)	6,000 (26,689)	14" (35.56)	16.5" (41.91)	<b>02203020</b>	<b>02403020</b>
2.00"-2.49" (5.08-6.32)	3,260 (14,500)	8,950 (39,812)	16" (40.64)	19.5" (49.53)	<b>02203021</b>	<b>02403021</b>
2.50"-2.99" (6.35-7.59)	3,260 (14,500)	7,750 (34,474)	18" (45.72)	21.5" (54.61)	<b>02203022</b>	<b>02403022</b>
3.00"-3.49" (7.62-8.86)	5,750 (25,576)	8,500 (37,810)	21" (53.34)	23.5" (59.69)	<b>02203023</b>	<b>02403023</b>
3.50"-3.99" (8.89-10.13)	5,750 (25,576)	—	24" (60.96)	25.5" (64.77)	<b>02203024</b>	—

Note: E-Eye length. M-Mesh length at nominal diameter.



## Kellems® Support Grips

Kellems Support Grips are used to hold the weight of electrical cable as it hangs in a vertical, sloping or horizontal position. Electrical cable must be supported, or its dead weight can cause excessive strain or pullout at the connections resulting in power failure. Support grips also absorb additional strain from flexure, vibration, expansion and contraction. Kellems Support Grips listed in this catalog are made of high grade, non-magnetic tin-coated bronze strand. Stainless steel grips, made of alloy 302-304 SST for severe service or unusual environmental conditions, are available on request.

### Select the Correct Support Grip

Each Kellems grip is designed to work on a specific range of cable diameters.

- Step 1** Refer to the Kellems chart below to determine the grip style best suited for your application.

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- Step 2** Determine your cable outside diameter.

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- Step 3** Find the grip size that encompasses your cable diameter.

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- Step 4** Whenever possible, use a closed mesh that assembles over the cable end. If the cable end is not available, use a split mesh.

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- Step 5** Where available, select an eye style that suits your needs.

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- Step 6** Select the proper material—tinned bronze or stainless steel\*.

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- Step 7** Estimate the tension to be put on the grip, establish the working load you require and compare this to the listed approximate breaking strength of the grip to insure that the grip will be strong enough. Refer to page V-42 for safety and working load considerations.

**CAUTION:** It is very important to comply with all of the following precautions.

1. Support grips are to be installed by a qualified individual in accordance with all applicable national and local safety, electrical and rigging codes.
2. Ensure that the correct grip is selected for your specific needs.
3. Do not use a support grip for any application other than supporting cable.
4. Thoroughly examine the grip for damage. Do not use a damaged grip.
5. Ensure that the recommended work load of the grip is suitable for the application. Never use grips at their approximated rated breaking strength. A safety factor of 10 is recommended for support grips.
6. Do not alter grips in any way. For example, do not flatten, straighten, bend or otherwise modify eye tubes, hooks, and strand equalizers.
7. Do not attach any type of hook, clamp or other hardware directly to the stranded bale of a “U” eye support grip. The formed eye tube is the only acceptable means of attachment to external hardware.
8. Always apply 2 bands at 1" and 2" respectively, from the tail end of the mesh to guard against accidental release of the grip. Accidental release can occur if an object contracts and pushes against the tail end of the mesh, thereby expanding and releasing it's hold.

### Support Grip Selection Chart

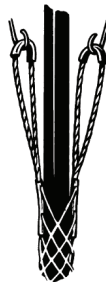
Grip Styles	Application	Page
Closed mesh	Standard, permanent support, cable end available.	V-28 to V-36
Split lace closing	Standard, permanent support, cable end unavailable.	V-28 to V-33
Split rod closing	Standard, temporary support, cable end unavailable. Tape or band tail end of wire mesh grip after positioning for permanent support.	V-28 to V-31
Material*	Tin-coated bronze standard or stainless steel by special request.	V-28 to V-34
Standard support grips	Support vertical runs to 99 ft. loads to 600 lbs.	V-28 to V-31
Heavy duty grips	Support vertical runs over 100 ft. loads over 600 lbs.	V-32, V-33
Service drop	Light duty to support service entrance cable.	V-34, V-35
Bus drop	Light duty support, indoors only, on Bus drop cable.	V-36
Conduit riser	Support cable runs in rigid (Schedule 40) conduit.	V-37 to V-39
Fiber optic cable support grips	Support fiber optic cable.	V-50

*Note: \*Most catalog listed support grips are made of tin-coated bronze strand. To order stainless steel support grips, change the first three catalog number digits from 022-0x-xxx to 024-0x-xxx. Consult Technical Service for details.*

### Eye Styles



Single



Double



Universal



Offset



## Safety And Working Load Factors For Wire Mesh Grips

The broad application of Kellems grips on a wide variety of objects requires that adequate safety factors be used to establish working loads. The approximate breaking strength of a Kellems grip represents an average calculation based on data established from actual direct tension testing done in our engineering laboratories.

It is impossible to catalog or guarantee a safety factor suitable for all applications as operating conditions are never the same. The tension, diameter, movement, number of objects gripped, gripping surface, and the attachments used are just some of the factors which vary with each application. These factors, together with the effects of abrasion, corrosion, prior use or abuse and any other variables of a specific application, must be considered by the user and

the grip replaced as appropriate. Where the conditions of the application are not well defined or known, or where risk of injury to persons or property is involved, a greater safety factor should be utilized.

**Under normal conditions, Kellems' recommended factor of safety is five for catalog listed pulling grips, and ten for catalog listed support grips.**

Any warranty as to quality, performance or fitness for use of grips is always premised on the condition that the published breaking strengths apply only to new, unused grips, and that such products are properly stored, handled, used, maintained, and inspected by the user at a frequency appropriate for the use and condition of the grip.

### Examples

Grip Style	Approx. Breaking Strength Lbs. (N)	Safety Factor	Max. Recommended Load Lbs. (N)	Catalog Number
Pulling Grips	27,200 (120,986)	5	5,440 (24,197)	<b>03301027</b>
Support Grips	1,610 (7,161)	10	161 (716)	<b>02202019</b>

The maximum recommended working load is the tension to be exerted on the grip in application with a margin of safety to take care of unforeseen and unusual circumstances.

It is the end-user's decision to determine how much of a safety factor is acceptable for the application.

The metric unit of measure (force) for breaking strength and load is newtons (N). To convert from newtons to the metric unit of weight (kilograms) the conversion factor is 9.808 newtons/kilogram.

### Support Grip Materials

Material	Features	Grip Type
Tin-coated bronze wire	<ul style="list-style-type: none"> <li>• Corrosion resistant for normal outside areas</li> <li>• Non-magnetic</li> <li>• Moderate strength</li> </ul>	<ul style="list-style-type: none"> <li>• Support grips</li> <li>• Service drop grips</li> <li>• Conduit riser grips</li> </ul>
Stainless steel wire (302-304)	<ul style="list-style-type: none"> <li>• High strength</li> <li>• Corrosion resistant</li> </ul>	<ul style="list-style-type: none"> <li>• Support grips</li> <li>• Hose containment grips</li> </ul>
Galvanized steel wire	<ul style="list-style-type: none"> <li>• Slightly magnetic</li> <li>• Not subject to continuous outside environment</li> </ul>	<ul style="list-style-type: none"> <li>• Bus drop grips</li> </ul>

### Approvals

CSA Certifications are indicated on appropriate product catalog pages.

*Note: It is always recommended that the tail end of the grip be banded after the installation on the cable to prevent accidental release of the mesh. See page V-15 for end bands.*



### Split Support Grip Lace Closing Instructions

Single Weave Grips should be laced with single strand lacing; double weave with double strand. Lacing strands should be the same material as the grip. Kellems supplies the appropriate lacing with each grip.

1. Start the lacing at the lead or anchoring end of the grip. Thread the lacings through the first two loops of the split and pull through until the lacings are centered at this point. Lace as you would your shoe, crossing the lacings before lacing the next two loops.
2. Don't pull lacing too tight. Leave a space between adjoining loops approximately equal to the width of one diamond of the mesh.
3. Twist the lacing strands tightly together at the tail end of the grip.
4. Wrap the ends of the lacings once or twice tightly around the tail of the grip, twisting the ends together securely. Excess lace can be cut off.



### Split Support Grip Rod Closing Instructions

The stainless steel rod is a precise built-in feature which makes threading easy and fast. The strands of the mesh pass around the rod and match up with the strands from the opposite direction. The rod does not touch the cable at any point and therefore cannot cut the cable. Rod Closing Grips are reusable. They may be removed and reused as many times as desired.

#### 1. Fast to install

Wrap the grip around the cable and thread the rod through the pre-formed loops with a corkscrew motion, using the curved end of the rod to engage the loops.

2. The action required is a steady push and twist simultaneously. The fingers of the left hand are used to bring the loops together just ahead of the hook on the end of the rod.
3. To remove, simply pull the rod out.



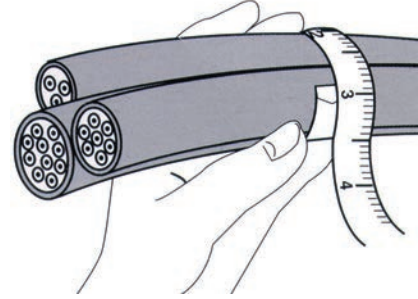


## For Support Grips Only\*

### Multiple Cable Selection Charts for Cables and Wires of Unequal Diameters

#### How to choose the correct grip size:

1. Find the Grip Circumference Range by measuring the circumference of the bundle of different diameter cables to be gripped (see illustration).
2. Divide the bundle circumference by 3.14 to determine the diameter.
3. Choose a grip offering a range of cable diameters the same as the cable diameter.



### For Cables of Equal Diameters

Under "Number of Cables in One Grip", find the diameter of your single cable in vertical column. Read the grip diameter range to the right.

If your diameter is the maximum of the range shown, go to the next larger size for Split Grips, stay with the same size for Closed Grips.

**Example:** 3 cables, each with .89" (2.26) diameter, for a Closed Grip select the 1.50"-1.74" (3.81-4.42) range, for a Split Grip select the 1.75"-1.99" (4.44-5.05) range.

### Number of Cables in One Grip

2	3	4	5	6 and 7	8	9	Grip Dia. Range Inches (cm)
.30-.38 (.76-.97)	.25-.31 (.63-.79)	.22-.27 (.56-.69)	.19-.24 (.48-.61)	.17-.22 (.43-.56)	.15-.19 (.38-.48)	.14-.18 (.36-.46)	.50-.61 (1.27-1.55)
.38-.44 (.97-1.12)	.31-.36 (.79-.91)	.27-.31 (.69-.79)	.24-.29 (.61-.74)	.22-.26 (.56-.66)	.19-.23 (.48-.58)	.18-.21 (.46-.53)	.62-.74 (1.57-1.88)
.44-.59 (1.12-1.50)	.36-.49 (.91-1.24)	.31-.42 (.79-1.07)	.29-.38 (.74-.97)	.26-.34 (.66-.86)	.23-.31 (.58-.79)	.21-.28 (.53-.71)	.75-.99 (1.90-2.51)
.59-.75 (1.50-1.90)	.49-.63 (1.24-1.60)	.42-.54 (1.07-1.37)	.38-.48 (.97-1.22)	.34-.43 (.86-1.09)	.31-.39 (.79-.99)	.28-.35 (.71-.89)	1.00-1.24 (2.54-3.15)
.75-.90 (1.90-2.29)	.63-.76 (1.60-1.93)	.54-.65 (1.37-1.65)	.48-.58 (1.22-1.47)	.43-.52 (1.09-1.32)	.39-.46 (.99-1.17)	.35-.42 (.89-1.07)	1.25-1.49 (3.17-3.78)
.90-1.07 (2.29-2.72)	.76-.89 (1.93-2.26)	.65-.77 (1.65-1.96)	.58-.67 (1.47-1.70)	.52-.60 (1.32-1.52)	.46-.54 (1.17-1.37)	.42-.49 (1.07-1.24)	1.50-1.74 (3.81-4.42)
1.07-1.22 (2.72-3.10)	.89-1.02 (2.26-2.59)	.77-.88 (1.96-2.24)	.67-.77 (1.70-1.96)	.60-.69 (1.52-1.75)	.54-.62 (1.37-1.57)	.49-.56 (1.24-1.42)	1.75-1.99 (4.44-5.05)
1.22-1.53 (3.10-3.89)	1.02-1.28 (2.59-3.25)	.88-1.10 (2.24-2.79)	.77-.96 (1.96-2.44)	.69-.86 (1.75-2.18)	.62-.77 (1.57-1.96)	.56-.71 (1.42-1.80)	2.00-2.49 (5.08-6.32)
1.53-1.83 (3.89-4.65)	1.28-1.53 (3.25-3.89)	1.10-1.32 (2.79-3.35)	.96-1.16 (2.44-2.95)	.86-1.03 (2.18-2.62)	.77-.93 (1.96-2.36)	.71-.85 (1.80-2.16)	2.50-2.99 (6.35-7.59)
1.83-2.14 (4.65-5.44)	1.53-1.79 (3.89-4.55)	1.32-1.54 (3.35-3.91)	1.16-1.35 (2.95-3.43)	1.03-1.20 (2.62-3.05)	.93-1.08 (2.36-2.74)	.85-.99 (2.16-2.51)	3.00-3.49 (7.62-8.86)
2.14-2.44 (5.44-6.20)	1.79-2.05 (4.55-5.21)	1.54-1.76 (3.91-4.47)	1.35-1.54 (3.43-3.91)	1.20-1.37 (3.05-3.48)	1.08-1.24 (2.74-3.15)	.99-1.13 (2.51-2.87)	3.50-3.99 (8.89-10.13)
2.44-2.75 (6.20-6.98)	2.05-2.30 (5.21-5.84)	1.76-1.98 (4.47-5.03)	1.54-1.74 (3.91-4.42)	1.37-1.55 (3.48-3.94)	1.24-1.39 (3.15-3.53)	1.13-1.27 (2.87-3.23)	4.00-4.49 (10.16-11.40)
2.75-3.06 (6.98-7.77)	2.30-2.56 (5.84-6.50)	1.98-2.20 (5.03-5.59)	1.74-1.93 (4.42-4.90)	1.55-1.72 (3.94-4.37)	1.39-1.55 (3.53-3.94)	1.27-1.41 (3.23-3.58)	4.50-4.99 (11.43-12.67)

Note: \*This chart is to be used for determining grip size when multiple cables are held in a single Support Grip. For Conduit Riser multiple cable selection, see page V-45. It is always recommended that, when multiple cables are installed in a Support Grip, the tail end of the grip be banded after installation on the cable bundle. See page Tech-23 for cable and wire charts.