greenhouse & poly-tunnel

A comprehensive bracing and support system for greenhouse and poly-tunnel structures and equipment







Guide to Applications

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BROC-GHPT-ENG-US

A comprehensive bracing and support system for greenhouse and poly-tunnel structures and equipment

Contents

Sheffield Headquarters (UK)


Manufacturing Plant (UK)


Gripple Europe Office (France)

Gripple

Gripple Limited has grown rapidly since it launched its original product in 1988. It has sold more than 250 million products to 75 countries worldwide, and in addition to its headquarters in Sheffield, England, it now has premises in mainland Europe and the USA.

It is an award winning company that continues to grow on the strength of its focus on innovation. The commitment to developing new products by its 'Ideas & Innovation' team has made Gripple a market leader.

Achieving high standards is paramount to Gripple, and with the entire range produced at its own manufacturing plant, quality control is guaranteed. This, combined with its strong global sales network and the assurance of millions of customers worldwide, means Gripple is well placed to meet your needs.

The inspiring innovation of the agricultural products and its pioneering invention of the Gripple Hanger System have changed the face of the greenhouse market.

Greenhouse Environment

Gripple has two core divisions servicing the construction and agricultural markets. Gripple Hangers have transformed the construction industry by providing a lightweight, fast solution to hanging mechanical, electrical and HVAC installations. The Gripple Agricultural division focuses on the fencing, vineyard trellising and fruit trellising industries.

These two established competencies have been combined to deliver solutions to the greenhouse and poly-tunnel industries.

Within the last five years, the benefits of Gripple have been recognised for use in greenhouse and the poly-tunnel applications. Installations include not only cross and overhead bracing, but also irrigation support, shade cloth installation, crop and trellis support as well as hanging systems for lighting, heating and cooling systems.

The greenhouse market is split between three main sectors: Glass, Polyethylene and Poly-Tunnel. The area of the world has a big impact into what type of greenhouse is constructed.

Greenhouses are an expanding industry because of the benefits they bring to growers. They allow fruits, vegetables and flowers to be grown all year round, and in the words of John Evelyn 1664 **"stand warm and safe from storms, winds, frosts, dews, blastings and other mis-chief's".**

The greenhouse market is worldwide, with particular countries and areas specialising in growing of certain flowers, fruits and vegetables. The climate, labour costs and space available for growth have a big impact on what is grown inside the greenhouse.

The Gripple system can be used in all three sectors, glass, polyethylene and poly-tunnel, bringing its unique benefits to the whole industry.








Savings in time and money

The whole essence of using Gripple in greenhouse construction is to save you time and money. Gripple is the natural replacement for tying, ratchets, buckles, cable bolts, crimps, threaded rod or chain for a number of reasons:

- Fast to install (as much as 15 times faster)
- Versatile
- Simple to use
- Strong but lightweight
- Safe and aesthetically pleasing
- Ready-to-use kits

The Gripple system

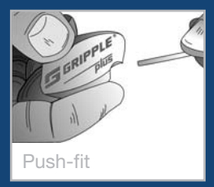
Like all great ideas, Gripple is a simple concept.
A Gripple is a wire joiner and tensioner in ONE. It operates on a simple push-fit principal, so there is no twisting, bending or knotting wires. The Gripple products can be used on solid wire, wire rope, cable and monofilament.

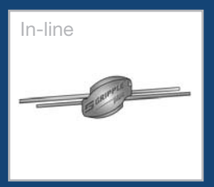
To make a join, simply push the first wire into the first channel. Then, take your second wire and push into the second channel. As a Gripple always allows movement in one direction, the wires can then be tensioned using the Gripple Tensioning Tool.

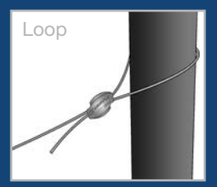
The hand-held Gripple Tensioning Tool is lightweight, compact and easy to use, and can deliver loads up to 400kg (880lb) load. Its gear-drive mechanism provides a 6:1 mechanical advantage, resulting in maximum tension for minimum effort; allowing you to re-tension wires effortlessly time after time.

The Gripple Tensioning Tool is key to capitalising on the Gripple system when it comes to applications where tension is essential – overhead and cross bracing, crop, flower and trellising support and shade cloth installation,

On hanging applications, where the natural load automatically tensions the wire/wire rope, there is no need to use the Gripple Tensioning Tool. For example – irrigation pipes, lighting, heating, and cooling systems and air conditioning units.

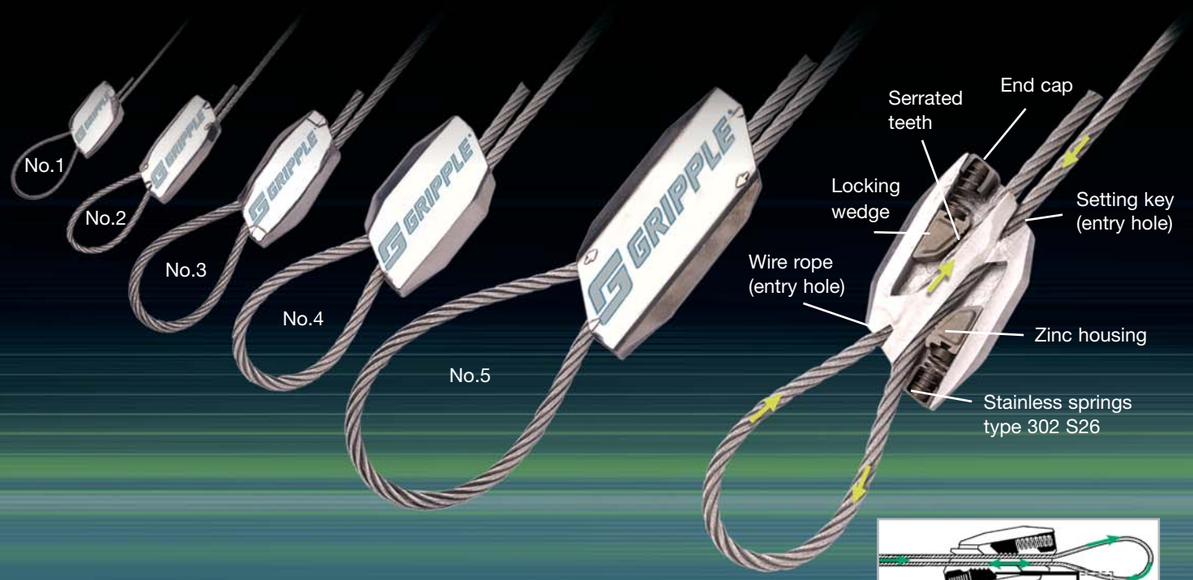


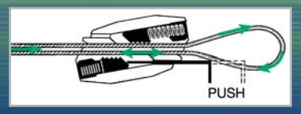




There are four Gripple product solutions to choose from:

- **Gripple Hangers –**
  are for suspending static equipment and have been designed with a 5:1 safety factor for use in safety-critical overhead applications- eg, Lighting, HVAC etc.
- **Gripple Plus Anchor Kits (GPAK) –**
  are for bracing, anchoring and securing structures. eg. Cross brace or Overhead brace.
- **Gripple Plus Units –**
  are for use on support wires (use with your own wire or monofilament) eg. Crop support wires.
- **Lockable Gripple Kits –**
  are for dynamic installations or heavy-duty bracing applications





Setting key location

Gripple Hanger Kits

Kits of Gripple Hangers for suspending irrigation pipes, lighting, heating and cooling systems, and air-conditioning units. Available in ready-to-use kits. Gripple Hanger Kits come complete with the Gripple unit and a length of wire rope with a pre-ferruled loop (for looping around structures, purlins, beams and trusses) or snap hook end fixing.

Gripple Hanger Kits

Size	SWL (safe working load)	End Fixing / Length
No.1	10 kg / 22 lb	Available with loop or snap hook end fixing, and in various wire lengths – 1m, 2m, 3m, 4m, 5m and 10m (3' – 33')
No.2	45 kg / 99 lb	
No.3	90 kg / 198 lb	
No.4	225 kg / 495 lb	
No.5	325 kg / 715 lb	

Gripple Plus Range

Gripple Plus units and kits are for joining and tensioning support wires (solid steel, wire rope or monofilament) and for bracing and anchoring applications.

Gripple Plus Anchor Kits

Gripple Plus Kits for bracing / anchoring		Working Load
GPAK 3	Kit comprising of a length of wire rope* (3mm / 1/8") with a pre-ferruled loop and a Gripple Plus Medium unit	400 kg / 880 lb
GPAK 4	Kit comprising of a length of wire rope* (4mm / 5/32") with a pre-ferruled loop and a Gripple Plus Large unit	600 kg / 1320 lb

** Various lengths of wire rope available*

Gripple Plus Units

Gripple Plus	Wire Range	Working Load
GP No.1	1.80 – 3.00mm / 15 – 11 ga	400 kg / 880 lb
GP Small	1.40 – 2.20mm / 17 – 13 ga	300 kg / 660 lb
GP Medium	2.00 – 3.25mm / 14 – 10 ga	400 kg / 880 lb
GP Large	3.25 – 4.20mm / 10 - 7 1/2 ga	600 kg / 1320 lb
Gripple Jumbo	2.50 – 3.15mm / 12 1/2 - 10 ga	600 kg / 1320 lb
Accessory: Monofilament		Length
2.50mm / 12 1/2 ga	100 kg / 220 lb	50m /100' or 1,500m / 4,950'
4.00mm / 8 ga	300 kg / 660 lb	821m / 2,709'

Gripple Plus Range

Lockable Gripple

Lockable Gripple

The same principal as all Gripple units but the Lockable Gripple comes complete with locking screws for additional security in heavy-duty applications or in dynamic environments. Use for cross bracing, hail netting or anchoring.

Lockable Gripple Kits

Lockable Gripple Kits		Working Load
No.5 Lockable Kit	Kit with 4m/ 13' of wire rope (5mm / 3/16") and a Lockable No.5	1200 kg / 2640 lb
No.6 Lockable Kit	Kit with 6m/ 20' of wire rope (6.35mm / 1/4") and a Lockable No.6	2400 kg / 5280 lb

Supporting wires in greenhouse & poly-tunnel

Product Contents

Cross Bracing

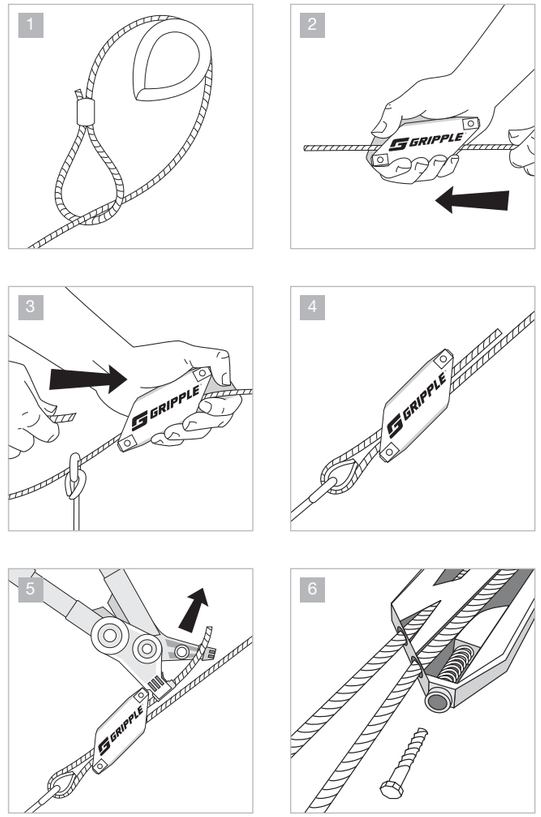
Product

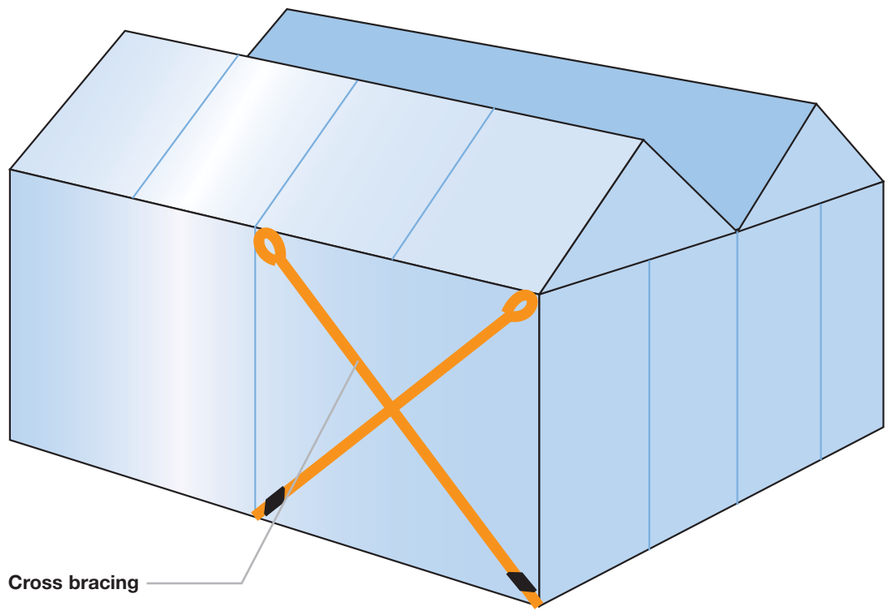
Product recommendation (refer to page 4):
GPAK 3
GPAK 4
No.5 Lockable Kit
No.6 Lockable Kit

How to Use

1. Using the pre-ferruled loop, hook the wire rope around the thimble to form a simple choke knot
2. Slide the wire rope through one of the two Gripple channels (marked with an arrow)
3. Wrap the wire rope around the second thimble
4. Push the wire rope through the second Gripple channel
5. Tension with the Tensioning Tool
6. Tighten the locking screws fully if necessary

Installation is complete





Overhead Bracing

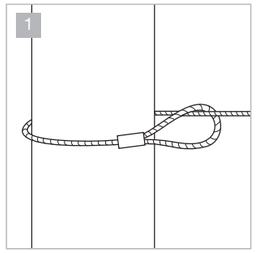
Product

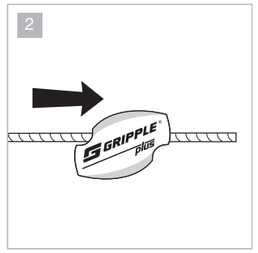
Product recommendation (refer to page 4):
GPAK 3
GPAK 4

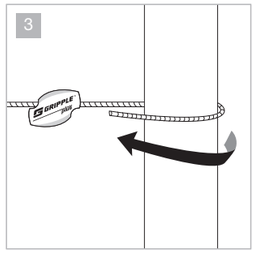
How to Use

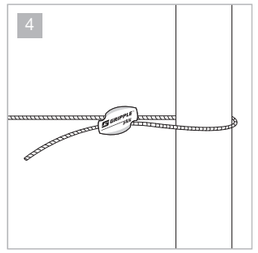
1. Using the pre-ferruled loop, hook the wire rope around or through the structural framework of the greenhouse (if using a thimble, then hook the wire rope around the thimble), to form a simple choke knot
2. Slide the wire rope through one of the two Gripple channels (marked with an arrow)
3. Wrap the wire rope around or through the opposite structural framework
4. Push the wire rope through the second Gripple channel
5. Tension with the Tensioning Tool

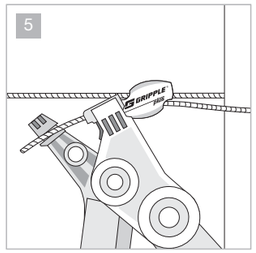
   Installation is complete

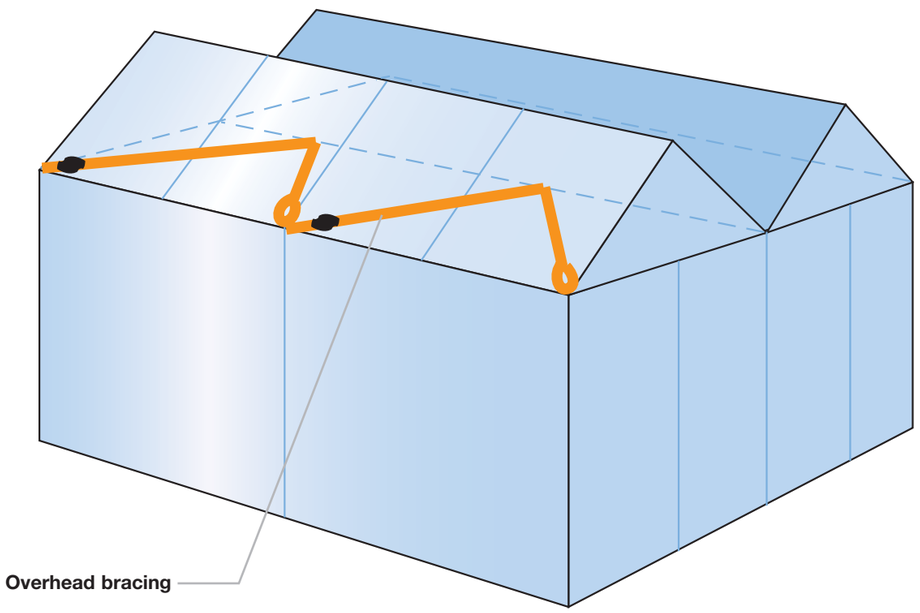












Anchoring

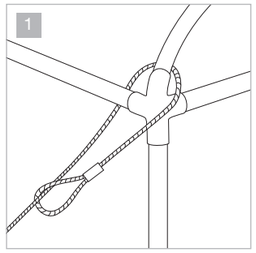
Product

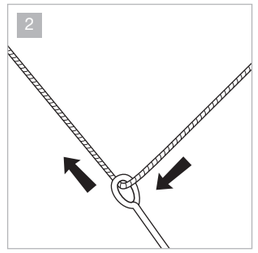
Product recommendation (refer to page 4):
GPAK 3
GPAK 4
No.5 Lockable Kit
No.6 Lockable Kit

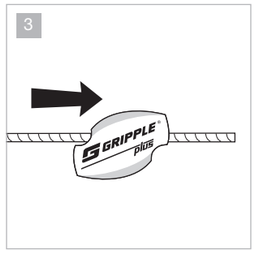
How to Use

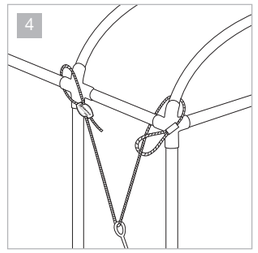
1. Using the pre-ferruled loop, hook the wire rope around the poly tunnel structural framework to form a simple choke knot
2. Feed the wire rope through the anchor point in the ground
3. Slide the wire rope through one of the two Gripple channels (marked with an arrow)
4. Wrap the wire rope around the poly-tunnel structural framework and back through the second Gripple channel
5. Tension with the Tensioning Tool

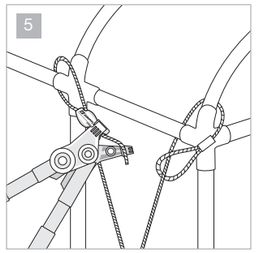
   Installation is complete

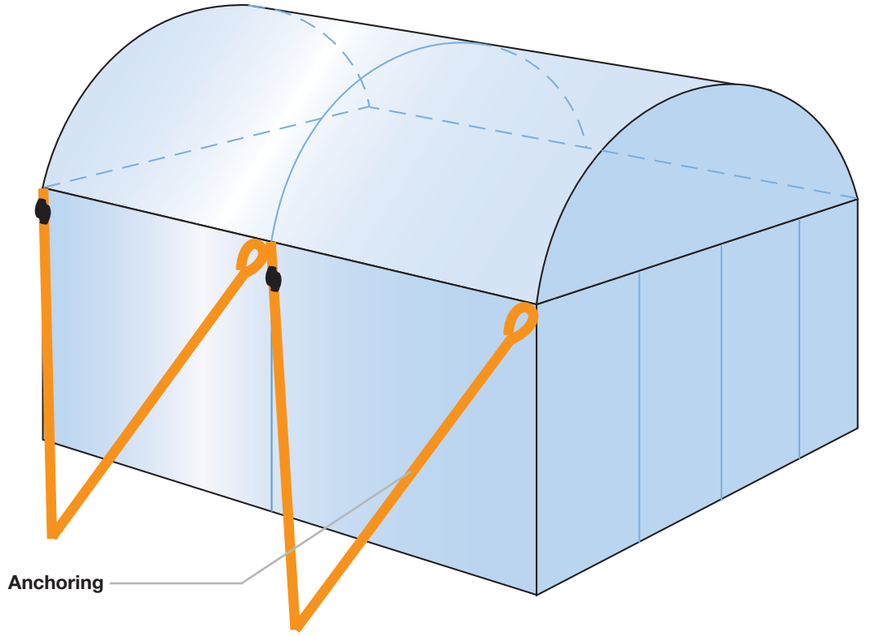












Shade Cloth Support

Product

For use with monofilament or wire:
2.00-3.00mm / 14-11 ga

Product recommendation (refer to page 4):
GP Small
GP Medium
GP1 (Method 2)

How to Use

Method 1

1. Slide the monofilament/wire through one of the Gripple channels (marked with an arrow)
2. Wrap the monofilament/wire around the greenhouse structural framework
3. Push the monofilament/wire through the second Gripple channel
4. Repeat steps 1 to 3 at the other end of the greenhouse
5. Tension with the Tensioning Tool

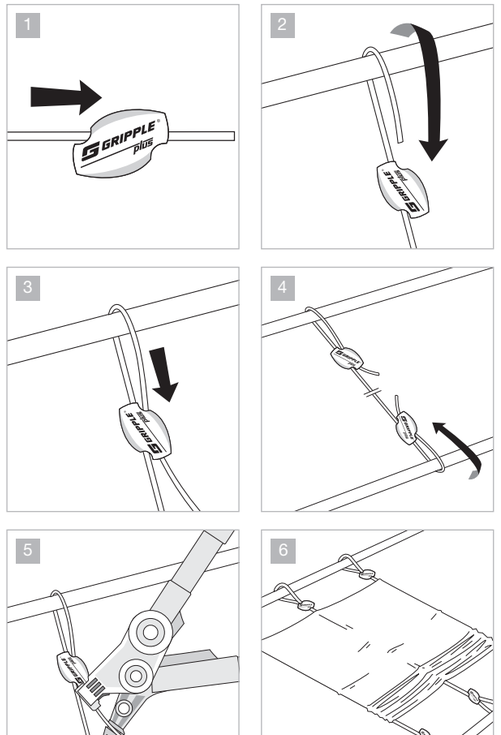
Installation is complete

Method 2

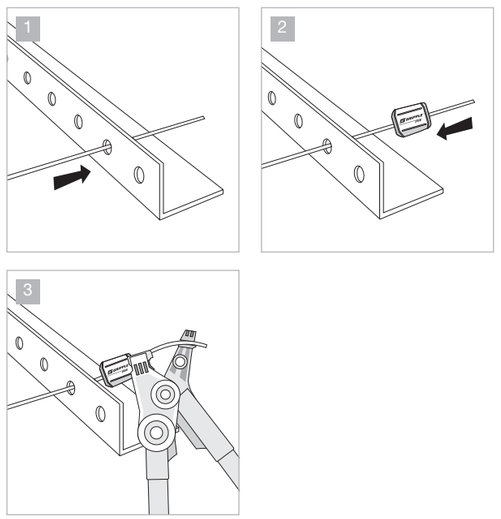
1. Push the monofilament/wire through the hole in the greenhouse structural framework
2. Slide the monofilament/wire through the only channel of the Gripple (marked with an arrow). Repeat steps 1 and 2 at the other end
3. Tension with the Tensioning Tool

Installation is complete

Method 1



Method 2



Flower, Fruit & Vegetable Support

Product

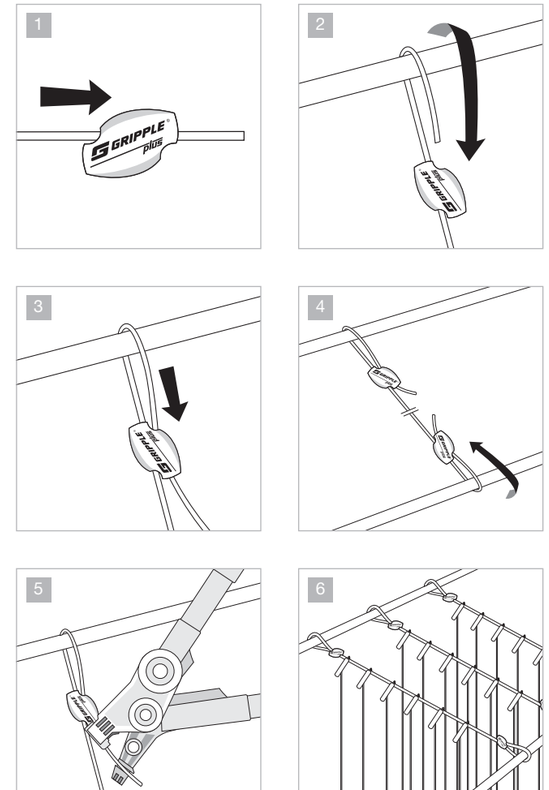
For use with wire: 2.50-3.25mm / 12½-10 ga

Product recommendation (refer to page 4):
GP Medium
GP Large
Gripple Jumbo

How to Use

1. Slide the wire through one of the Gripple channels (marked with an arrow)
2. Wrap the wire around the greenhouse structural framework
3. Push the wire through the second Gripple channel
4. Repeat steps 1 to 3 at the other end
5. Tension using the Tensioning Tool
6. Connect the lines of string, wire or monofilament to the support wires to enable the produce to grow upwards

Installation is complete



Irrigation Support

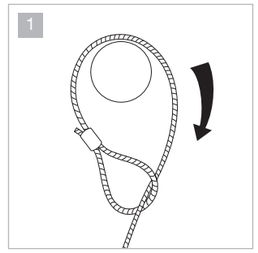
Product

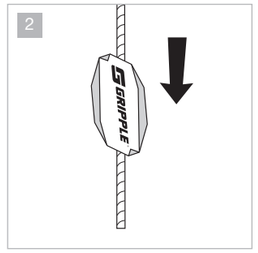
Product recommendation (refer to page 4):
See range of Gripple Hangers

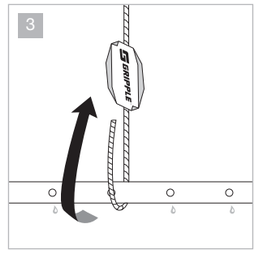
How to Use

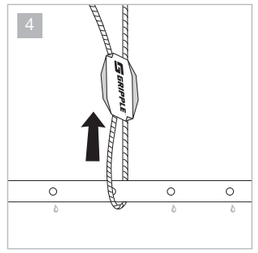
1. Using the pre-ferruled loop, hook the wire rope around the support wires or the greenhouse structural framework to form a simple choke knot
2. Slide the wire rope through one of the Gripple channels (marked with an arrow)
3. Pass the tail end of wire rope either around or to the irrigation pipe
4. Push the tail end of the wire rope through the second channel of the Gripple

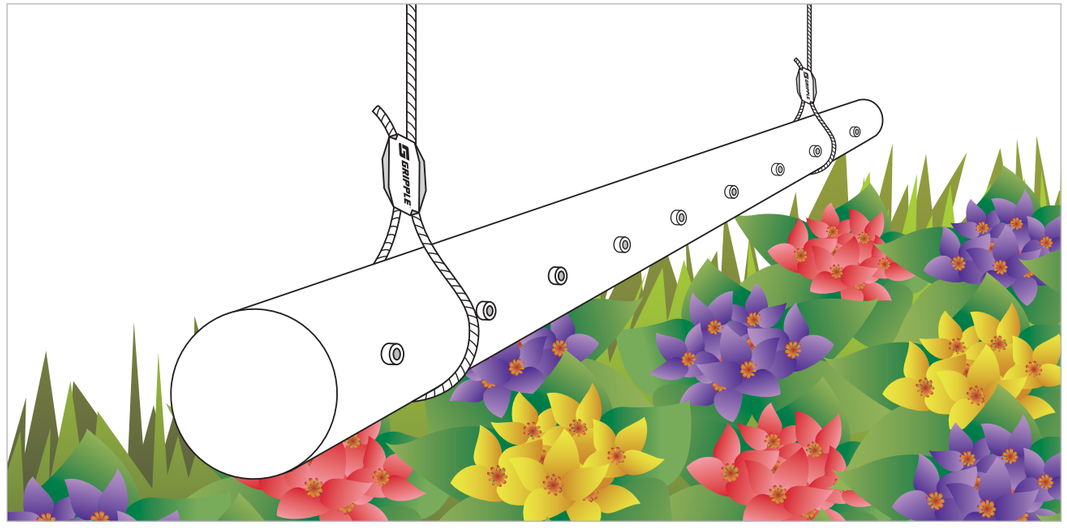
Installation is complete











Hanging System for Lighting

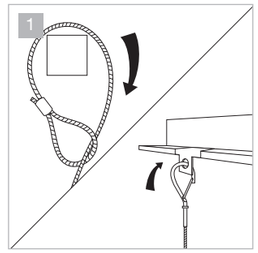
Product

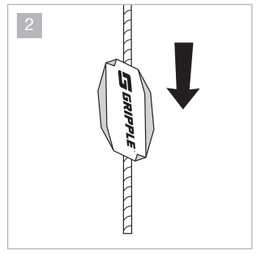
Product recommendation (refer to page 4):
See range of Gripple Hangers

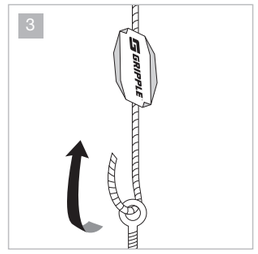
How to Use

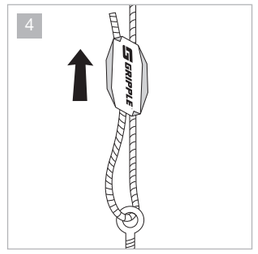
1. Using the pre-ferruled loop or the snap hook end fixing, hook the wire rope either around or to the greenhouse structural framework to form either a simple choke knot or a connection to a clip bracket
2. Slide the wire rope through one of the Gripple channels (marked with an arrow)
3. Pass the tail end of the wire rope either around or to the light fitting
4. Push the tail end of the wire rope through the second channel of the Gripple

Installation is complete









Hanging System for Heating, Cooling and Air-Conditioning Units

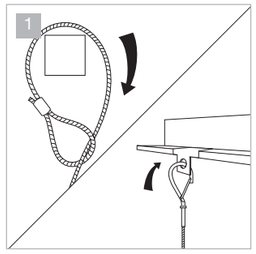
Product

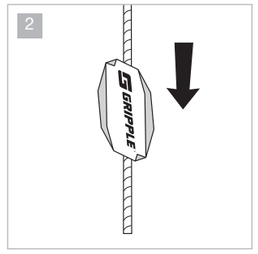
Product recommendation (refer to page 4):
See range of Gripple Hangers

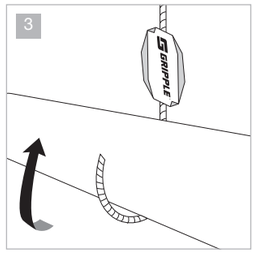
How to Use

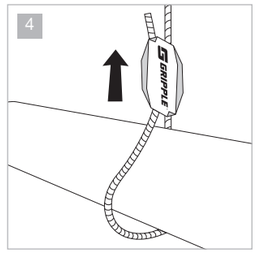
1. Using the pre-ferruled loop or the snap hook end fixing, hook the wire rope either around or to the greenhouse structural framework to form either a simple choke knot or a connection to a clip bracket
2. Slide the wire rope through one of the Gripple channels (marked with an arrow)
3. Pass the tail end of the wire rope either around or to the light fitting
4. Push the tail end of the wire rope through the second channel of the Gripple

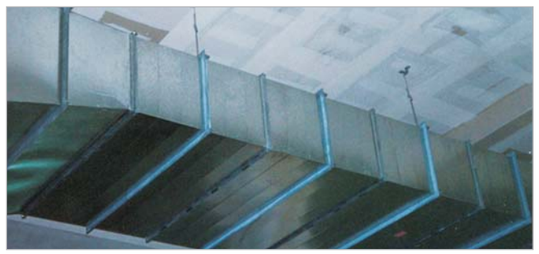
Installation is complete

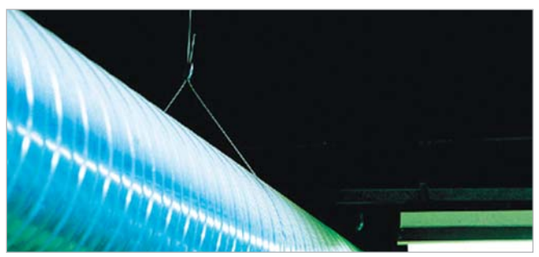












Heating Duct Support – Warm Air Distribution

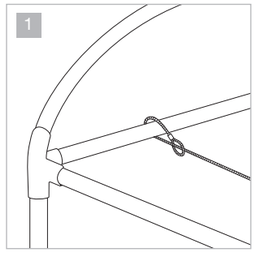
Product

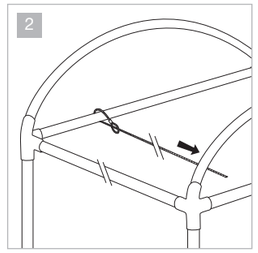
Product recommendation (refer to page 4):
GPAK 3
GPAK 4

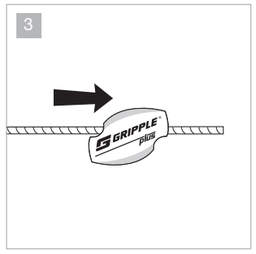
How to Use

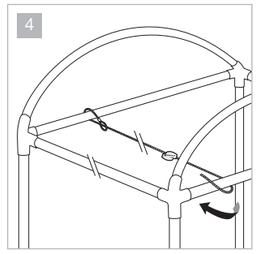
1. Using the pre-ferruled loop, hook the wire rope around or through the structural framework of the greenhouse to form a simple choke knot
2. Take the wire to the other end of the greenhouse
3. Slide the wire rope through one of the two Gripple channels (marked with an arrow)
4. Wrap the wire rope around or through the opposite structural framework
5. Push the wire rope through the second Gripple channel
6. Tension with the Tensioning Tool

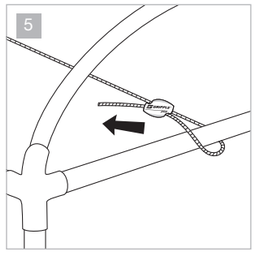
Installation is complete

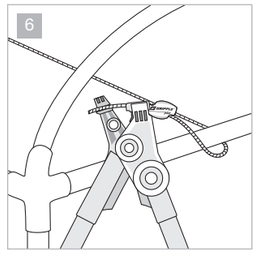












Gripple Hangers – how to choose the right size and model

1. Choose the size where the object's weight falls within the product's working range. Examples of the calculation formula are detailed below.
2. Unless specified, each of our end fixings maintains the load ratings of the individual kits.
3. Each size has a specified safe working load rated at 5:1, and offers a working load range.
4. The load range should be observed; choosing a size that is lighter or heavier than necessary is counter-productive, both functionally and financially.
5. Remember to adjust your size choice, if the hanger is to be used at an angle other than vertical. The table below (effect on SWL of hanging objects at an angle) shows the effect a sideways load has on a vertical installation.
6. In areas of high humidity (a paper factory) and frequent wash down (a food processing factory), stainless steel kits should be considered for extended life performance.

Calculation formula

A simple formula to determine the correct hanger size is:

Weight per metre x distance between hangers

Example 1:

15kg load per metre

Distance between hangers is 2m

Plane: vertical

15 x 2 = 30kg → **Size will be No.2**

Example 2:

60kg load per metre

Distance between hangers is 2.5m

Plane: vertical

60 x 2.5 = 150kg → **Size will be No.4**

Effect on SWL of hanging objects at an angle

The load rating for a Gripple Hanger is based on the suspension being hung vertically. If the wire rope is suspended at an angle, an additional sideways load is applied which reduces the load capacity of the suspension. The net effect is shown in the table below:

Maximum SWL (kg/lb) at an angle from vertical										
Gripple Hanger	0° vertical		15°		30°		45°		60°	
	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs
No.1	10	22	9.6	21.12	8.6	18.92	7	15.4	5	11
No.2	45	99	43.2	95.04	38.7	85.14	31.5	69.3	22.5	49.5
No.3	90	198	86.4	190.08	77.4	170.28	63	138.6	45	99
No.4	225	495	217.3	178.06	194.8	428.56	159.1	350.02	112.5	247.5
No.5	325	715	313.9	690.58	281.4	619.08	229.8	505.56	162.5	357.5
Load %	100		96		86		70		50	

Gripple Plus – recommendation for support wires

With consultation from the T.N.O. (Toegepast Natuurkundig Onderzoek, The Netherlands), a leading global wire manufacturer has compiled this recommended formula for the installation of support wires.

This table advises the wire diameter to use for support wires, based on crop load and support points. Tests are based on support wires spaced 80cm / 2.6' feet apart and **all tests** have been conducted using Gripple products to join and tension the wires.

Category	Wire diameter
A	2.50mm / 12½ ga
B	2.80mm / 12 ga
C	3.15mm / 10½ ga

Monofilament / Wire Rope Information

		Support every X distance				
Wire sag[1]	Est. Crop Weight* N/m² / lb/ft²	3.0 m / 10'	3.5 m / 11½'	4.0 m / 13'	4.5 m / 14¾'	5.0 m1/ 16½'
		Recommended Wire Diameter (High Tensile) mm/ ga				
150mm / 6"	150 / 3.13	A	A	A	B	C
150mm / 6"	200 / 4.18	A	A	B	C	C
150mm / 6"	250 / 5.22	A	B	C	C	--
200mm / 8"	150 / 3.13	A	A	A	A	B
200mm / 8"	200 / 4.18	A	A	A	B	C
200mm / 8"	250 / 5.22	A	A	B	C	C
250mm / 10"	150 / 3.13	A	A	A	A	A
250mm / 10"	200 / 4.18	A	A	A	A	B
250mm / 10"	250 / 5.22	A	A	A	B	C

[1] 'wire sag' is the distance measured between the 'wire drop' and the horizontal axis, between two fixed points.
* Typical crop weight 150N/m2 = tomato, cucumber, peppers.
* Typical crop weight 200N/m2 = beefsteak tomatoes, cluster tomatoes.

Certification

Lloyds Register performed an independent load rating certificate in the UK. This was preformed on 2-4-02. Certificate No. BHM 0116977/1.

Apave Parisienne performed an independent load rating certificate in France. Rapport d' essais number R02/450/0097.

TUV performed an independent load rating certification in Germany. This was preformed on 19/4/02. Belegnummer 68869002/By UL (Underwriters Laboratories Inc) performed an independent load rating in the USA. Subscriber No..293466-001.

RADCO preformed a tensile strength test in the USE, which was issued November 2000. Test Report No. RAD-2652. Project No. C-7772 Lab No. TL-1959

Further details on these certifications and additional testing verifications can be found on www.gripple.com in the **construction** section under **technical**.

National Greenhouse Manufacturers Association for North America