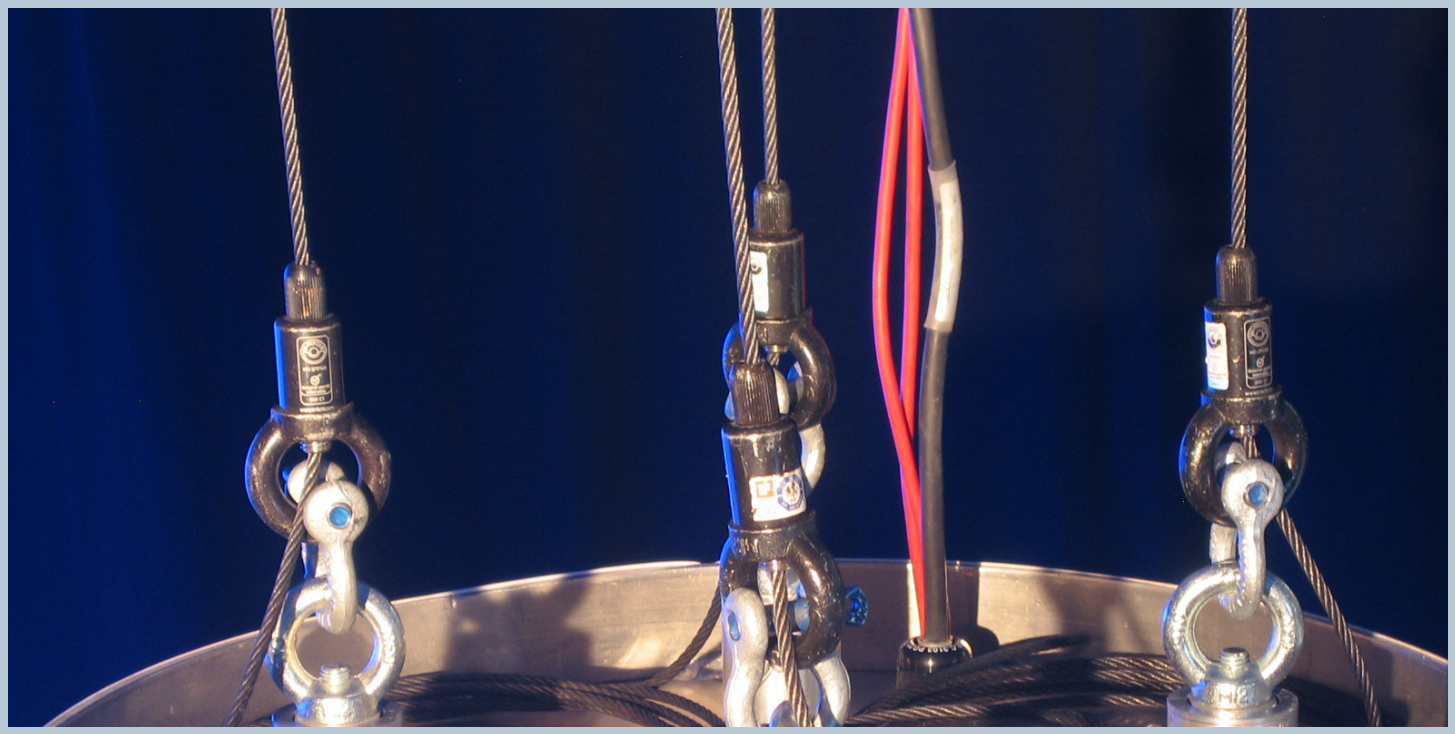
GRIPLOCK SYSTEMS

Griplock Systems® has been providing manufacturers and contractors with the world's highest quality and most reliable cable suspension products since 1992.
Griplock's® ground-breaking line of heavy duty 6-ball grippers are TÜV* certified. In addition, our 6-ball grippers are the only grippers to be BGV C1** certified for overhead use at European public events. As a result of meeting these stringent safety standards, our quick to install grippers are rapidly replacing traditional rigging hardware throughout the North American Event and Entertainment Industries.

**TÜV is a worldwide affiliation of independent testing laboratories similar to Underwriters Laboratories (UL).*
***The BGV C1 standard has been adopted throughout Europe as the rigging industry safety standard.*
See page 13 for more information.



THE GRIPLOCK® GRIPPER

SAFE AND EFFICIENT

FAST AND EASY TOOL-FREE INSTALLATION WITH THE HIGHEST SAFETY STANDARDS

FULLY ADJUSTABLE

ADJUST, RE-ADJUST AND RE-USE OVER AND OVER AGAIN

ULTRA HEAVY DUTY

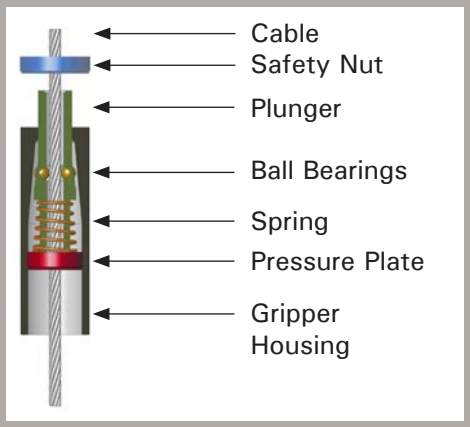
PERMANENTLY OR TEMPORARILY SUSPEND WITH UP TO 1,000 LBS SAFE WORKING LOAD*

HIGH VALUE

HIGH QUALITY ENGINEERING AT AN AFFORDABLE PRICE

**Safe Working Loads (SWLs) are 20% of the minimum break strength of the Gripper / Cable combinations - Static Loads Assumed.* *See Weight Charts on page 14.*

HOW A GRIPPER WORKS



Griplock® Grippers are sophisticated in design and simple to use:

Loosen the safety nut, insert the cable into the plunger and slide the gripper to the desired position. Where It Stops It Locks®! Release the plunger and tighten the safety nut to lock the gripper off in both directions. The 3- or 6-ball gripping mechanism is spring-loaded and lets the gripper move freely UP the cable. The gripper cannot move down unless the plunger is depressed and the gripping mechanism released. The plunger cannot be depressed while there is any weight on the gripper.

To re-adjust, loosen the safety nut, depress the plunger and move the gripper to a new position.

Most grippers are supplied with a safety nut. Even if they are not, their gripping ability in the downward direction is not affected.

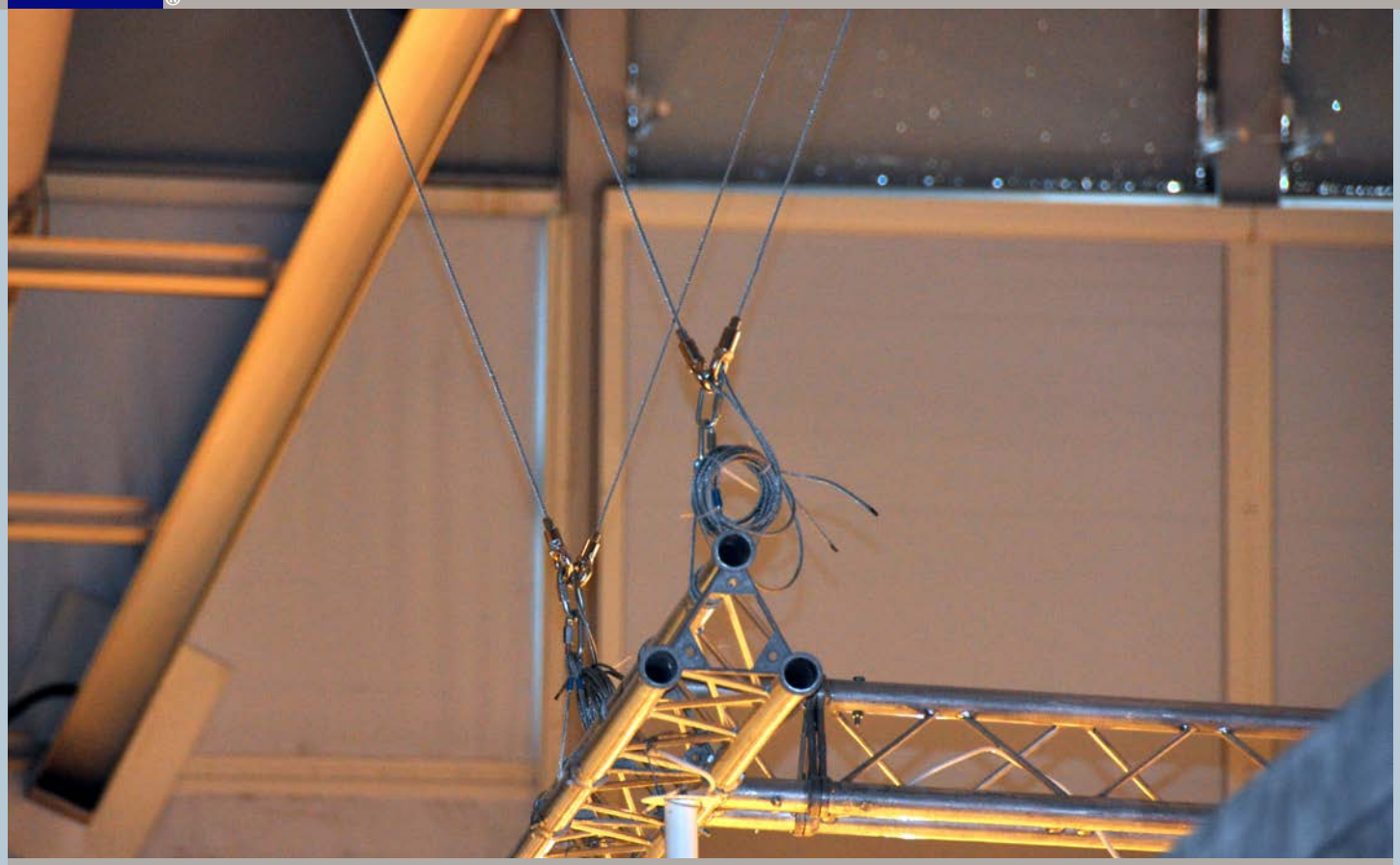
GRIPLOCK® **PREMIUM** and **ZF STANDARD** GRIPPERS

The finest grippers available anywhere, Griplock's **Premium** grippers combine an immense range of applications with a beautiful finish and extraordinary holding power.

Lower cost **ZF Standard** grippers are competitively priced for use in rigging applications. **ZF Standard** grippers are built to our specifications and receive full quality assurance testing. Part numbers are in green, eg. **ZF-15ZZ**. Griplock® Systems recommends a lower safe working load (SWL) for **ZF Standard** grippers than **Premium** grippers. See page 14.

GRIP LOCK SYSTEMS®

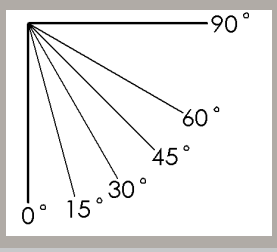
TECHNICAL DATA



ANGLED APPLICATIONS

- Cables should not enter or exit grippers at more than a 5° angle (see illustration at right).
- A pendant load exerts greater force on angled / non-vertical cables than it would on vertical cables.
- To determine the safe working load on an angled cable supporting a load, take the safe working load for the gripper / cable combination from the weight load chart on page 14 and multiply it by the factor from the chart below. For example, for a 3/16" galvanized cable with type 50 gripper at a 45° angle, take the 500 lbs from the weight load chart on page 14 and multiply it by 0.70 from below: 500 lbs x 0.70 = 350 lbs. So 350 lbs will be the safe working load for each suspension at a 45° angle instead of 500lbs for a vertical suspension. Angles beyond 60° are not recommended.

5° max. deviation from center line



For more information about this please call our office.

ANGLE FROM VERTICAL	0°	15°	30°	45°	60°
FACTOR	1	0.96	0.86	0.70	0.50

TECHNICAL DATA

BGV C1

BGV is the Institute for Statutory Accident Insurance and Prevention in Germany (Berufsgenossenschaft VBG). The BGV C1 standard is required by most European Insurance companies for public events.

Historically, both the US and European Event and Entertainment Industries have relied upon general industry standards for overhead cable rigging. While both the Americans and Europeans have dramatically improved their professional standards in these and allied industries in recent years, the US has maintained Safe Working Load (SWL) ratio rules of between 5:1 and 10:1, while the Europeans, led by Germany, have adopted BGV C1's more stringent standards. BGV C1 requires that a gripper / cable combination hold a minimum of 80% of the calculated minimum break-strength of the cable alone. Components meeting the 80% minimum are assigned a 12:1 SWL ratio based on the actual minimum break-strength of the cable.

Griplock's® Type 50 and 66 6-Ball grippers are the only grippers available in North America that meet the BGV C1 criteria. 3-ball grippers do not meet current BGV C1 standards.

THE BGV C1 SAFE WORKING LOAD

Testing for the BGV C1 certification was performed in Germany on 6-ball grippers using 6x19 fiber core cable, which is typically used for rigging in Europe. The SWL shown on all BGV C1 certified grippers reflects the 12:1 SWL ratio for fiber core cable. In the US however, riggers generally use the much stronger steel core cable. The results of tests on galvanized and stainless steel aircraft cables are shown in the tables on the following page.

INSTRUCTIONS FOR USE

- Use only 7x7 or 7x19 uncoated galvanized or 304 stainless steel aircraft cable. Charts on the following page assume the use of this type of cable. For information about the use of 6x7 or 6x19 fiber core versions of these cables, please contact our office.
- When feeding cable through a gripper always allow cable to pass 2" beyond the gripper housing.
- When cutting excess cable always leave a minimum of 2" of cable showing.
- Cable should be cut using purpose-built cutters.
- Cable will generally not fray when cut. In case of fraying, solder or otherwise seal the cut end.
- Cables should not enter or exit grippers at more than a 5° angle. See page 12.
- The Griplock® Rigging System is ideal for temporary static suspensions in most environments but is not recommended for permanent installations out of doors or in chemical-laden environments such as indoor swimming pools and certain manufacturing facilities. Please contact us for more information.

WEIGHT LOADS

STATIC SAFE WORKING LOADS (SWL) FOR GRIPLOCK® PREMIUM GRIPPERS

Safe working loads are 20% of the minimum break strength of the gripper / cable combination
Values in **BLUE** are for stainless steel cables. Values in **BLACK** are for galvanized cables.

CABLE DIAMETER		PREMIUM GRIPPER TYPE						MINIMUM BREAK STRENGTH FOR GRIPPER / CABLE COMBINATION
Inches	mm	Type 15	Type 18	Type 25	Type 30	Type 50	Type 66	
		3-Ball	3-Ball	3-Ball	6-Ball	6-Ball	6-Ball	
Safe Working Load in pounds *7x7 (up to 2.5mm cable) or 7x19 (1/8" cable and higher) galvanized & stainless steel cable*								
3/64"	1.2mm	33/28	33/28					165/140
	1.5mm	56/40	56/40	56/40				280/200
1/16"	1.6mm	60/50	60/50	60/50				300/250
5/64"	2.0mm		90/80	90/80				450/400
3/32"	2.4mm			126/110	126/110			630/550
	2.5mm			134/113	134/113			670/565
1/8"					250/225			1250/1125
3/16"						500/444		2500/2220
1/4"							1000/896	5000/4480

BOTH CHARTS

- Figures are in pounds.
- The 5:1 SWL reflects both US cable industry and European TÜV standards.
- Where no minimum break strength is shown, gripper and cable combinations are NOT compatible.
- Contact Griplock® Engineering if you are considering any other cable construction for your installation.

UPPER CHART

- The chart above applies to Griplock® **Premium** grippers only. It is not applicable to any other cable-gripping product, including Griplock's **ZF Standard** gripper line.

LOWER CHART

- The chart below applies to Griplock® **ZF Standard** grippers only. It is not applicable to any other cable-gripping product, including Griplock's **Premium** gripper line.

STATIC SAFE WORKING LOADS (SWL) FOR GRIPLOCK® ZF STANDARD GRIPPERS

Safe working loads are 20% of the minimum break strength of the gripper / cable combination
Values in **BLUE** are for stainless steel cables. Values in **BLACK** are for galvanized cables.

CABLE DIAMETER			ZF STANDARD GRIPPER TYPE		MINIMUM BREAK STRENGTH FOR GRIPPER / CABLE COMBINATION
	Inches	mm	Double Mechanism	Type 30 Single Mechanism	
			Looped Cable		
Safe Working Load in pounds *7x7 (up to 2.5mm cable) or 7x19 (1/8" cable and higher) galvanized & stainless steel cable*					
ZF-30-STRUT-RR	3/32"	2.4mm		95/87	475/435
		2.5mm		100/90	500/450
	1/8"			170/160	850/800
ZF15ZZ	3/64"	1.2mm	35/30		175/150
		1.5mm	60/50		300/250
	1/16"	1.6mm	75/65		375/225
ZF-30X2	3/32"	2.4mm	126/110		630/550
	1/8"		250/225		1250/1125