

GUIDELINES FOR USE

G-GUARD



CE
0353

G-Guard Range of Load Arresters

Retractable Fall Arrest Safety Line for
Protection of Machinery & Sensitive Loads

Directive 2006/42/EC



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EC DECLARATION OF CONFORMITY

Globestock Engineering Ltd
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Maesbury Road
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declares that the Equipment described hereafter

“G-Guard” Load Arrester (Retractable Load Fall Arrest Safety Line)

Models to 300kg with up to 25m maximum working rope length.

Models to 500kg with up to 25m maximum working rope length.

Models to 1000kg with up to 10m maximum working rope length.

has undergone an EC Type Examination and found to be in accordance with EC Council Directive 2006/42/EC on Machinery.

These models are described in the manufacturer’s technical file “G-Guards” dated 25th August 2010, and Annex I, dated 5th October 2011, describes model 500-3 500kg G-Guard.

Is identical to the Equipment which is the subject of Certificate of Adequacy No MDC951 issued by:

SGS United Kingdom Ltd.
Unit 10
Bowburn South Industrial Estate
Bowburn
Durham, DH6 5AD
United Kingdom

This equipment designed and manufactured by Globestock Ltd. has been assessed and certified as meeting the requirements of EC Machinery Directive 2006/42/EC, under the supervision of the notified body, SGS United Kingdom Ltd., Notified Body Number: 0353.

Standards Applied: EN ISO 12100: 2010.

Authorised signatory of manufacturer, and authorised EU representative responsible for technical file,

14th December 2011,
Oswestry, Shropshire, UK

Rob Elwin
Managing Director
Globestock Ltd.



GUIDELINES FOR USE

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1. **IMPORTANT NOTICE**

READ EQUIPMENT LABELS AND 'GUIDELINES FOR USE' BEFORE USING THIS PRODUCT.

BEFORE INSTALLING THIS EQUIPMENT IT IS ESSENTIAL THAT USERS ARE FULLY AWARE OF HOW THE EQUIPMENT OPERATES, WHERE IT SHOULD BE USED, WITH PLANNED MAINTENANCE & SCHEDULED INSPECTION PROCEDURES IN PLACE.

This Product is Not For Use Attached Directly to PERSONS.

These products have been designed and developed to reduce the risk of damage to sensitive equipment, injury or death occurring as a result of an overhead load falling. G-Guards used in accordance with issued instructions will provide a backup safety system should the primary support fail. Using the G-Guard Load Arrester as a backup safety system does not remove the responsibility to inspect and maintain the primary support system.

For the G-Range of load arresters to activate correctly, the protected load must be in unhindered accelerating free-fall upon failure of the primary support. If the activation speed is not reached then the G-Guard's fall brake may not engage to stop the falling load.

Incorrect use could lead to serious or fatal injury.

G-Guards are used in a wide range of diverse applications. Instructions for specific applications will vary. Some of the advice within these guidelines may not be suitable for all applications, causing safety hazards if incorrectly applied.

The safe use must be determined during a formal risk assessment, accompanied by an engineer's report, with an accurate weight measurement or assessment by calculation.

PRIOR TO USE:

Appropriate 'Risk Assessments' and 'Engineering Assessments' should be carried out, considering failure modes of the primary support, safe use of the G-Guard and emergency load recovery procedure in the event of a fall.

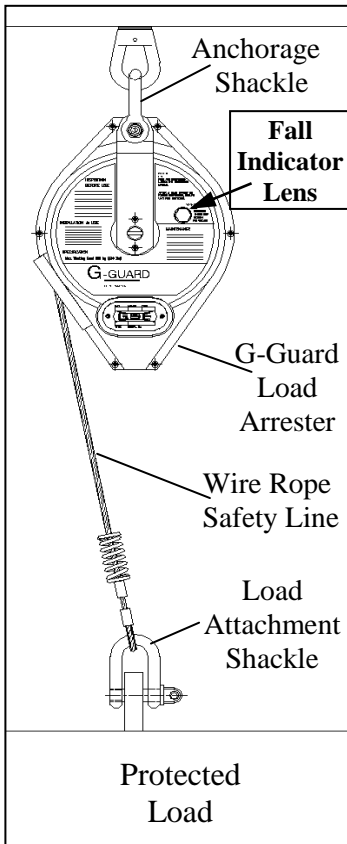
An initial inspection of the equipment should be performed. See 'Inspection Before Use' in section 3 of this booklet and the Front Label of the G-Guard.

Where possible, steps should be taken to restrict access to the area beneath the protected load.



2. G-Guard Retractable Load Arrester

The G-Guard is a retractable tensioned safety line for protection of machinery and sensitive loads. The fall protection brake includes a shock-absorbing element to minimise the forces encountered during a fall. The fall protection brake can be activated by quickly extracting the safety line from within the unit. This happens when a fall occurs. The wire rope safety line is spring tensioned so that it extracts and retracts from the unit, ensuring that there is no slack rope. This enables the load to move freely while keeping the potential fall distance to a minimum.



In the event of a fall, rope is pulled out of the unit at an accelerating rate. On reaching the activation speed the braking mechanism will engage. The energy of the fall is dissipated and the load brought to a halt. There should be adequate clearance below the protected load to safely stop a fall.

The load will remain suspended below or supported by the G-Guard. To release the fall arrest brake, the suspended load must first be raised slightly to remove the loading from the unit. (See section 7)

The G-Guard must be immediately removed from use and returned to a Globestock authorised servicing agency for inspection and re-certification.

The G-Guard has a tough aluminium housing. Internal components are manufactured from aluminium alloys, stainless steel, steel, bronze, and brass.

G-Guard Load Arresters have an internal shock absorbing fall arrest brake. These brakes are designed and set for optimum performance over the intended load range.

It is important that the G-Guard is not used to protect a Load of greater mass than that stated on it's front label. It is possible to protect a load of less than that of the intended Load Range, however as shock absorbing brakes are set for a higher load, both the anchorage strength and the strength of the attachment

point on the protected load, need to meet the anchorage strength requirements for the model of load arrester used. These are stated in the specifications page on the rear of this manual and also on the label attached to the front of the load arrester.

The indicator lens will show a red colour if the fall arrest brake has been used. The unit should then be removed from use and returned for brake resetting, Service and Re-Certification. (See section 8.2, page 11)



3. Inspection Before Use

Before using the G-Guard inspect as follows:

Inspection

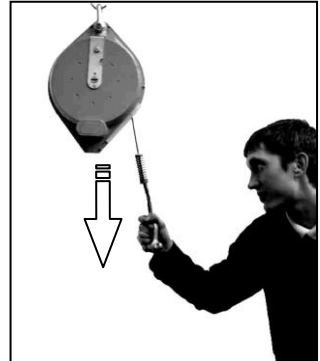
Inspect the fall arrest system for any signs of damage, wear or malfunction. The wire rope safety line should be extracted from, and allowed to retract back into the G-Guard as it is being inspected. The rope should freely return into the unit. No kinks, broken strands or excessive wear should be observed.

Check the wire rope's shackle for security and wear of the pin.

The fall Indicator Lens must not show red.

Test

Test the fall arrest function by pulling sharply on the shackle. The brake must lock positively, and remain locked until the pressure is released.



4. Considerations for Use

- Should any doubt arise about the safe condition of this device **DO NOT USE**. Return to manufacturer or a manufacturer authorised servicing agency for assessment, service and re-certification, before further use
- When handling, installing and inspecting the G-Guard, appropriate Personal Protective Equipment should be used. Example: Gloves, shoes and eye protection.
- Protect your hands when inspecting or handling the wire rope.
- The G-Guard should only be used or subjected to temperatures within the range of -15° to 70° centigrade. If the intended use is outside of this range then consult the manufacturer for application specific instruction.
- G-Guards should only be installed in applications where the primary support hoist runs at or below the maximum running speed of 0.6m/s. Lowering protected equipment faster than this may cause the fall arrest brake to engage without a fall occurring.
- Significant vibration in the system may affect the performance of the G-Guard.
- Always position the anchorage or choose an anchorage point that keeps the fall distance to a minimum.
- Ensure there is adequate clearance below the working area to safely arrest a fall.
- The potential fall path should be free of obstructions.
- When the rope is extended do not release and allow the wire rope to recoil freely back into the device.
- There should always be 1 metre of wire rope within the unit during use. This last metre has a red marker which should not be visible outside the G-Guard's housing.



- Never allow the wire rope safety line to become slack during use.
- While in use, keep clear of the arrester and keep hands away from the G-Guard's safety line exit of the housing.
- Do not allow the wire rope safety line to pass over sharp edges, electrical items/cables, become frayed or to kink as this weakens the rope.
- Once a fall has been stopped, the load will remain suspended from the G-Guard. This creates a hazard. A predetermined contingency plan should be immediately implemented to make the load safe.
- If possible, do not leave the wire rope extended for long periods of time. This will cause the retraction spring to weaken at an accelerated rate. If this cannot be avoided, more frequent examinations of the wire rope's retraction is recommended.
- When the uninstalled, then refitted, new nylon lock nuts should be used to retain the locking action.

5. Installation

If in any doubt please contact either a specialist or the manufacturer for advice.

The G-Guard may only be installed and used by a trained or otherwise competent person. G-Guard models can be heavy. Lifting aids or 2 persons are recommended to position the G-Guard and tighten fastenings during installation or removal. The use of ladders introduces additional hazards, so installation is best performed from a safe work platform.

Connect the G-Guard to an anchor point by its anchorage shackle, preferably arranged to limit twisting sideways, while maintaining free movement about the central axis. For optimum reliability the G-Guard should be installed with its central axis lying horizontally. See the illustrations in section 6 for examples. Suspending the unit freely from its anchorage shackle ensures that this is achieved. See section 6.1.

The anchorages and attachment points used should ideally be separate from the one's used by the primary support. This will help to ensure an entirely separate backup system is in place.

The anchorage for the G-Guard should be positioned so as to:

1. Ensure the safety line is positioned directly above the protected load's anchorage point. This will help minimise the fall distance. In the event of a fall occurring, swinging of the load will be kept to a minimum.
2. Avoid any obstacles.
3. Ensure the wire rope runs as freely as possible.

To attach the safety line to the load attachment point, a rope can be attached and used to pull to the safety line to the load attachment point, then fastened into position. Ensure no person is near the unit or path of the rope while this is being performed, as if released the shackle will recoil rapidly towards the Load Arrester body.

Once installed, the entire load arrest system must be inspected before use.



5.1 Anchorage Requirements

- Anchorages strengths for the individual G-Guard model may be found at the rear of this manual and on the front label attached to the G-Guard.
- All anchor points must adhere to this minimum strength requirement per attached G-Guard.
- For more than one G-Guard attached to a single anchorage structure, the minimum strength of that structure must be at least the sum of the anchorage strength requirements, for each attached G-Guard.
- Connectors must have a minimum strength of at least the anchorage requirements stated on the front label attached to the G-Guard.
- If the G-Guard is used with the wire rope doubled back over a pulley then the anchorage strength requirement is double that for the G-Guard model being used, for both the pulley and the dual anchorages overhead (G-Guard and rope end).

5.2 Connection to the Load

- The wire rope's shackle should be attached **directly** to the protected loads attachment point. Where attachment points have been designed to accept the rope safety line eyelet, the safety line should be attached directly to this attachment point. No intermediate linkages are permitted.
- Wire rope or webbing lanyards must not be used to extend the length of the wire rope. This may hinder the retraction of the safety line.
- The safety line connection point on the protected load should be arranged so as to prevent roll or twisting in the event of a fall occurring.
- The attachment point when using a single G-Guard should be directly above the loads centre of gravity. This will minimise 'rolling' of the load when stopping it's fall.
- Anchorage strength requirements also apply to the safety line attachment point on the load to be protected.

6. Assessing The Working Environment

For use as a backup safety system to protect overhead loads or structures against the danger of falling should the primary means of support fail. The G-Guard's retractable safety line is suitable for protecting loads that may require vertical mobility.

Load Arrester use must be identified and verified by formal risk assessments, with engineering assessments.

An assessment to determine the safe use and post-fall retrieval plan should be carried out, including consideration of the points raised in this manual.

Each application may be different. These instructions are produced as a guide only. They can never replace the requirement for a formal assessment of each application by a suitably competent person. The examples in sections 6.1 & 6.2 help to illustrate this.

The working procedures may need to be continually considered to suit any changes in the working environment.



6.1 G-Guard Anchored Vertically Overhead

Working with the G-Guard anchored vertically, directly above the Load attachment point, is the ideal arrangement for use. The potential fall distance is kept to a minimum. The rope retraction force and retraction spring life is maximised.

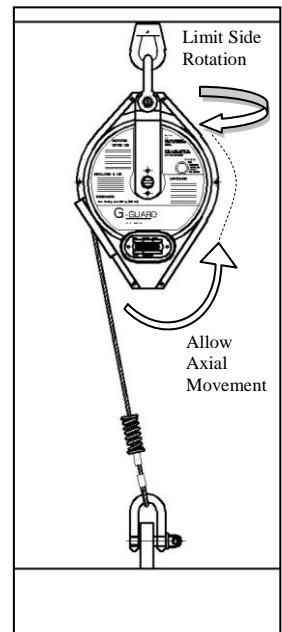
There should be adequate clearance below the working area to allow a fall to be stopped safely.

Be aware of obstructions that may hinder freefall, should a fall occur, as this may increase stopping distances or severe the rope safety line.

The G-Guard range is suitable as backup fall protection when anchored vertically above a load. This will facilitate vertical movement of the load, while maintaining a tight safety line to keep fall distances to a minimum.

Backup fall protection can be provided for:

- Raised or suspended loads.
- Raised gates.
- Costly equipment.
- Loads suspended above areas where it is not practical to completely prevent access.
- Raising equipment into location.
- Overhead equipment or structures subject to vertical movement.
- Production lines and production equipment.



Load Protected by One G-Guard

The wire rope safety line must be attached at the central point of the load, close to the hoist attachment if applicable, or so as to ensure maximum stability in the event of a fall arrest. The anchorage point on the protected load must be directly below the overhead anchorage point. Attaching the safety line directly below the overhead anchorage, to the central point of the load will help to minimise the amount of swing and dangerous movement when a fall is stopped. Attaching the load off centre will cause the load to rotate, which could cause further hazards or in extreme cases, damage to the supporting safety line.



Load Protected by Multiple G-Guards

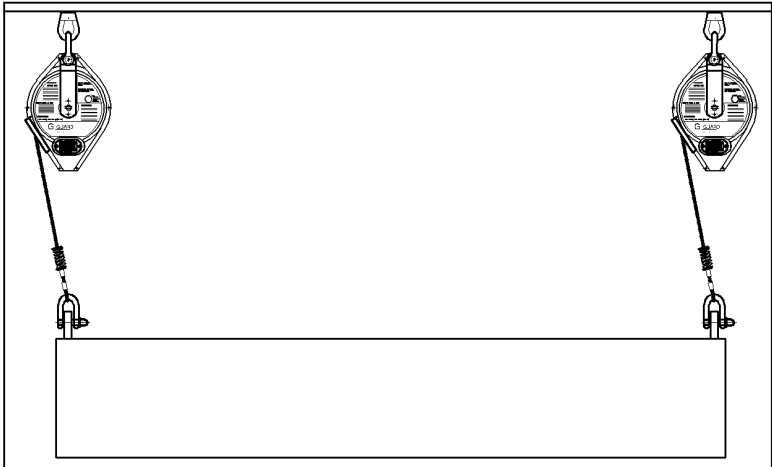
When considering the use of multiple G-Guards, an engineering assessment must be carried out. Consideration should be given to how the protected load or structure will react in the event of a fall occurring.

This may be possible where the load is extended out in the horizontal plane.

These types of loads or structures may swing and roll more uncontrollably due to their shape. It is recommended that these items are protected with G-Guard's mounted at the far extremities, to minimise fall distance and aid stability.

Certain structures may break apart in the event of a fall arrest, so further consideration must be given to avoid this. These structures may not be suitable for fall protection offered by the G-Guard range of Load Arresters.

It may be necessary to provide additional protection/support at identified critical points.



G-Guard with Safety Line Doubled over a Sheave or Pulley

In this configuration, the maximum working load can be doubled. This also has the effect of halving the activation speed, thus stopping the load in reduced distance. This system is also more sensitive to vibration of moving loads and erratic movements, which may result in activation of the fall brake when a fall has not occurred. The strengths of the overhead anchorage and the protected load attachment point must both be double that stated on the front label of the G-Guard and in the specifications at the rear of this booklet.



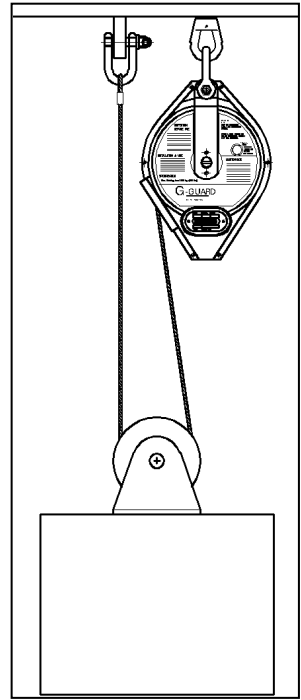
The sheave or pulley must be strong enough to support a load of double the anchorage strength requirement of the G-Guard and designed to work with double the load rating of the G-Guard.

Example: 500kg G-Guard using 1000kg Pulley.
Configuration used to protect loads up to 1000kg.

The wire rope must not be able to come off the pulley during operation.

As the safety line's retraction spring has to rotate the pulley in order to keep the safety line taut, the pulley must be as light and free running as possible. This additional resistance will decrease the working life of the internal retraction spring, therefore additional maintenance may be required. The retraction spring tension must be maintained to ensure maximum performance.

Correct pulley design is critical for reliable operation of this configuration.



Protecting Guided Loads

Multiple G-Guard units should not be used to protect loads that run between rigid vertical rails. This is because the fall arrest brakes do not activate at precisely the same time. One of the units may not activate, causing the full load to bear onto one unit only. This may cause overloading of the first G-Guard to activate.

In this configuration, only one G-Guard should be used for protection.

Be certain that the capacity of the G-Guard will not be exceeded.

6.2 G-Guard Anchored Horizontally

Where there is limited overhead space, it may be possible to mount the G-Guard horizontally out from the protected load.

The G-Guard must be mounted with the rope drum axis remaining horizontal for reliable operation.

Use a light weight, free running pulley with a capacity and design strength of at least twice the values specified on the front label of the installed G-Guard.

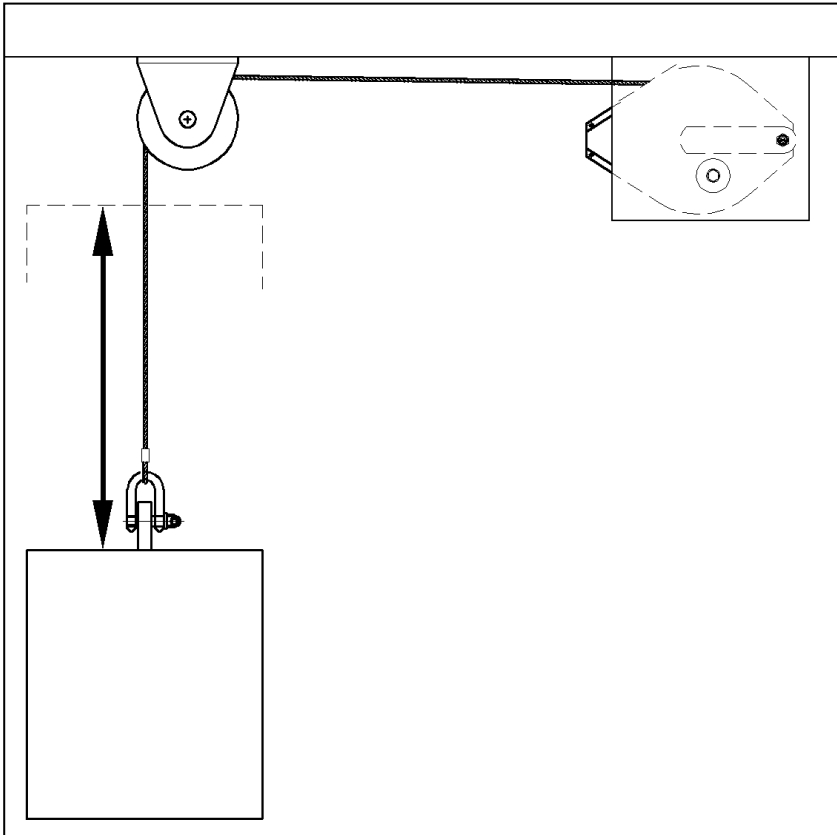
In the event of a fall, the **wire rope safety line must not pass over:**



- sharp or abrasive edges.
- masonry or steelwork.
- electrical wires or components that may harm the user.
- anything that may catch, trap or shear the wire rope.

The above points are critical.

In the event of the primary support failing, the load will enter into freefall. The G-Guard's brake mechanism will activate above the maximum running speed specified at the rear of this manual. If the fall does not reach sufficient speed then the brake may not activate.





7. Considerations for After a Fall

Upon failure of the primary support, the protected load enters into accelerating free-fall. When the G-Guard's activation speed is reached the fall brake engages bringing the falling load to a stop. The load will remain suspended.

The surrounding area must be immediately cordoned off, preventing unauthorised access until the load is moved to a safe area.

The suspended load must be moved to a safe area (the ground or a safe platform) as soon as possible.

In order to release the fall arrest brake mechanism, the suspended load must be lifted, allowing the rope to retract a little way into the G-Guard. This should allow the fall arrest mechanism to disengage. If the brake has disengaged, wire rope should pull out from the unit. It may not be possible to disengage the fall brake after it has engaged to stop a fall.

Note:

After stopping a fall it is common for the wire rope to bind on to the rope drum inside the unit. This may prevent the load from being lowered while attached to the G-Guard. In this case, the suspended load must be firstly supported, then the G-Guard's safety line disconnected. The Load can then be lowered and made safe.

Once the G-Guard has been used to stop a fall it must be removed immediately from use. The unit must be returned to a Globestock authorised servicing agency for inspection, test and re-certification, before further use.



8. Inspection & Maintenance

Like all complex mechanical safety devices, the G-Guard requires regular inspection and maintenance to ensure that the unit functions correctly.

Repairs or servicing should never be carried out on site or in the field. Do not tamper with or modify the unit.

If used for extended periods in minus temperatures, increased inspection and maintenance may be required. Contact your distributor for application specific guidance.

8.1 Periodic Examination.

The G-Guard should be periodically examined by a competent person, other than those using the equipment, at **least once in every 6 months** dependant upon the frequency of use and the operating environment. More frequent periodic examinations of the G-Guard are recommended for applications involving 50 or more daily cycles. Applications involving a large number of extraction / retraction cycles should be periodically examined at least every 3 months. The 'Examination Record' found on the rear of this booklet, outlines the main examination criteria. On passing this examination the record can be completed, signed off and the unit returned for use. Any observed faults must be rectified. If necessary or **in any doubt**, return the G-Guard for service and re-certification.

8.2 Service & Re-Certification.

The G-Guard must be returned for servicing annually and in the event of a fall arrest. Only Globestock Ltd, or a Globestock approved servicing agency can be used for this. On completion of a service and retest, a new Test Certificate will be issued which validates the unit for a further year of use.

8.3 Cleaning, Storage and Transportation

The G-Guard's exterior may be cleaned using warm water with a mild detergent. It should then be hung, by it anchorage shackle, to dry.

In order to maintain the wire rope safety line, extract the rope from the unit, removing any soiling. Apply a little light oil to a cloth. Hold the cloth around the rope, allowing the rope to slowly retract back into the unit. This will leave the rope lightly oiled, while ensuring the internal mechanism is not oil contaminated.

The unit should be stored in a clean, dry, chemical free environment. The unit is best stored off the floor, ideally hanging by it's anchorage shackle.

During transportation the G-Guard should be boxed or suitably retained so as to prevent damage or deterioration.

G-Guard - SPECIFICATIONS

G-Guard Model Number	Maximum Working Load	Strength of Anchorage Structure	Working Rope length	G-Guard Weight (kg)	Height (mm)	Width (mm)	Depth (mm)	Max. Stopping Distance (Approx)	Maximum Running Speed (m/s)
300-1-7G	300kg	14.7kN (1500kg)	7m (23 ft)	8.5 kg	480	230	130	1.0mtr	0.6 m/s
300-1-10G	300kg	14.7kN (1500kg)	10m (33 ft)	8.8 kg	480	230	130	1.0mtr	0.6 m/s
300-1-12G	300kg	14.7kN (1500kg)	12m (39.6 ft)	9.0 kg	480	230	130	1.0mtr	0.6 m/s
300-2-15G	300kg	14.7kN (1500kg)	15m (49.5 ft)	14.1 kg	620	290	135	1.0mtr	0.6 m/s
300-2-18G	300kg	14.7kN (1500kg)	18m (59.4 ft)	14.5 kg	620	290	135	1.0mtr	0.6 m/s
300-4-20G	300kg	14.7kN (1500kg)	20m (66 ft)	17.7 kg	600	290	196	1.0mtr	0.6 m/s
300-4-25G	300kg	14.7kN (1500kg)	25m (82.5 ft)	18.3 kg	600	290	196	1.0mtr	0.6 m/s
500-1-7G	500kg	24.5kN (2500kg)	7m (23 ft)	14.5 kg	600	290	196	1.0mtr	0.6 m/s
500-1-10G	500kg	24.5kN (2500kg)	10m (33 ft)	14.9 kg	600	290	196	1.0mtr	0.6 m/s
500-1-15G	500kg	24.5kN (2500kg)	15m (49.5 ft)	15.7 kg	600	290	196	1.0mtr	0.6 m/s
500-2-18G	500kg	24.5kN (2500kg)	18m (59.4 ft)	18.5 kg	600	290	196	1.0mtr	0.6 m/s
500-2-20G	500kg	24.5kN (2500kg)	20m (66 ft)	18.8 kg	600	290	196	1.0mtr	0.6 m/s
500-2-24G	500kg	24.5kN (2500kg)	24m (79.2 ft)	19.4 kg	600	290	196	1.0mtr	0.6 m/s
500-3-7G	500kg	24.5kN (2500kg)	7m (23 ft)	13.9kg	620	290	135	1.0mtr	0.6 m/s
500-3-10G	500kg	24.5kN (2500kg)	10m (33 ft)	14.1 kg	620	290	135	1.0mtr	0.6 m/s
500-3-15G	500kg	24.5kN (2500kg)	15m (49.5 ft)	14.5 kg	620	290	135	1.0mtr	0.6 m/s
1000-1-7G	1000kg	49kN (5000kg)	7m (23 ft)	20.8 kg	670	290	152	1.0mtr	0.6 m/s
1000-1-9G	1000kg	49kN (5000kg)	9m (29.7 ft)	21.3 kg	670	290	152	1.0mtr	0.6 m/s
1000-1-10G	1000kg	49kN (5000kg)	10m (33 ft)	21.6 kg	670	290	152	1.0mtr	0.6 m/s