

Unique Selling Points of the Limpet® L2 Height Safety System

This document summarises the key differences between the Limpet® L2 height safety system and conventional climb assist products, such as the Ibex from PowerClimber and Tractelift from Tractel.

1. Limpet® systems...reinventing assisted climbing

The Limpet® L2 is a high speed safety line that is taken in and paid out of the main unit in response to a user's movements. This distinguishes it from all other powered climb assist products, which use a motor to drive a 'continuous loop' through pulleys at each end of the ladder. The L2's use of a single safety line in conjunction with smart electronics provides it with unique attributes that are discussed in this document.



2. Limpet® L2 offers better and smarter climb assist

The Limpet® L2's 'Reactive Climb Assist®' sensors immediately and automatically weigh the user as soon as they clip into the Limpet® safety line. Starting assisted ascent or descent is intuitive and quick and requires no button press. As the user starts to climb the ladder they receive assistance that is equivalent to 90% of their total weight. As they climb, the L2 adapts itself to their climbing speed ensuring a smooth and consistent level of assistance.

The L2 can provide 90% assistance up to a maximum weight of 140Kg/ 308lb, significantly more than any other climb assist product on the market. By comparison, all other climb assist products offer pre-set levels of assistance, with the next best product providing a maximum of 55kg/ 121lb.

	Max Climb Assist
LIMPET TECHNOLOGY - L2	90% of users weight up to max 140kg (308lb)
POWER CLIMBER - IBEX 1000	Up to max 57kg (125lb)
TRACTEL – TRACTELIFT I	Up to max 40kg (88lb)
CAPITAL SAFETY – LAD-SAF	Up to max 54kg (120lb)
AVANTI – CLIMB ASSIST TYPE VI	Up to max 40kg (88lb)
GORACON – G-CLIMBER	Up to max 40kg (88lb)

3. Limpet® L2 provides best performing fall arrest

The Limpet® L2 is unique among climb assists in offering integrated and fully certified fall arrest (ANSI Z359.14).

The L2 uses sensors to detect the level of tension on the Limpet® safety line. In order to maintain a constant tension, the L2 pays out or takes in the line. Since no slack can ever build up in the system, the user is always on a 'tight' rope from above. This 'Proactive Fall Prevention™' significantly reduces the likelihood of the user coming off the ladder in the first place. However, should a slip occur, any fall is immediately arrested, with vertical displacement of less than 1cm (half an inch).

Conventional cable or rail based fall arrest systems by contrast, are unlikely to arrest a fall in less than 1 metre (3 feet), with consequent risk of injury even if the system successfully deploys. Furthermore, in the event of a fall, they require to be taken out of use in order to replace their shock absorbers, rendering the ladder unsafe for climbing while maintenance occurs.

4. Limpet® L2 integrated fall arrest means no compatibility problems

Conventional climb assist products are not certified to arrest falls. Consequently, a dedicated fall arrest system must also be installed in order to allow users to safely climb a ladder. Equipping a ladder with a continuous loop climb assist plus a cable fall arrest system may itself make the act of climbing or descending the ladder more difficult than if the ladder were completely unobstructed. Having separate fall arrest and climb assist systems also means that there are two sets of equipment on the ladder that require inspection and maintenance over time, with associated costs.

The issue of compatibility between independent fall arrest and climb assist products is also a point of concern. All conventional climb assists require that the user attaches their harness to the continuous loop at a point above the fall arrest system. In the event of a fall, it is likely to be the climb assist loop and not the dedicated fall arrest cable that will bear the force of the fall. Since conventional climb assist products are not designed or certified to arrest falls, it is possible that the climb assist line may break causing the user to drop onto the fall arrest cable. Under circumstances where the climb assist product has interfered with the arrest forces generated in a fall, it is possible that the cable grab mechanism will not correctly deploy. For this reason, a growing number of energy companies now demand that compatibility tests between fall arrest and climb assist products are passed before climb assists will be considered for installation.

The Limpet® L2 avoids these problems entirely by being a fully integrated climb assist and certified fall arrest system. Although the L2 will work perfectly if the climber is also clipped in to a cable or rail based fall arrest product, there is no need for a separate system to be used.

5. Limpet[®] L2 is engineered to last

Limpet[®] systems are high quality multi-function devices. Compact and rugged, the L2 is built to last at least twenty five years with components specified to a safety factor of x15. All parts including the drive unit are rated to IP 56 or above (equivalent to NEMA 4). This means that spillages or oil leaks inside the turbine will not reduce the performance and reliability of the L2. Other climb assist products are rated to only IP 44.

The L2 has a wider operating temperature (-40 C to +54C) than other climb assist systems (-35 C to +40 C), which may be important in regions that experience extremes of heat or cold.

6. Limpet[®] L2 provides recording and monitoring functions

The L2 enables detailed monitoring and recording of personnel access to each tower via its built in system log. This means that usage can be monitored and service schedules precisely tailored, including the replacement of key components. Self-monitoring and diagnosis also means that the system is maintained in an optimum state of readiness.

7. Limpet[®] L2 is quick to install and easy to use

A Limpet[®] L2 can be retrofitted into a wind turbine in three to four hours by a trained installer. Unlike continuous loop climb assist products, Limpet systems do not require belt or rope termination or welding on site. All components are manufactured prior to installation, making the installation process quicker and more repeatable. The compactness of the Limpet[®] L2 also provides a great deal of versatility with respect to installation options; it can be positioned at the top or the bottom of a ladder according to the customer's preference and the specific requirements of the installation. The L2 can be positioned on its side or upside down if required in order to minimise its footprint in confined spaces.

8. Limpet® systems versus conventional climb assist products

The following table provides a comparison of the features and attributes of the Limpet® L2 and L5 height safety systems and alternative climb assist products.

Supplier name	LIMPET TECHNOLOGY		POWER CLIMBER	CAPITAL SAFETY	AVANTI	GORACON	TRACTEL
Product name	Limpet L2	Limpet L5	Ibex	Lad-Saf	Climb Assist Type VI	G-Climber	Tractelift Type I
Line type	Single line	Single line	Continuous loop	Continuous loop	Continuous loop	Continuous loop	Continuous loop
Integrated fall arrest	Yes - Proactive Fall Prevention™	Yes - Proactive Fall Prevention™)	No	Yes	No	No	No
Integrated rescue	No	Yes. Certified to lower 2 people simultaneously at 1m/ second.	No	No	No	No	No
Integrated personnel hoisting	No	Yes. Certified to hoist up to 309lb	No	No	No	No	No
'Smart' assist options	Yes, system calculates appropriate assistance according to user weight	Yes, system calculates appropriate assistance according to user weight	No, manual configuration	No, manual configuration	No, manual configuration	No, manual configuration	No, manual configuration
Climb assist options	Provides 90% assistance up to max 309lb	Provides 90% assistance up to max 309lb	55,77,99, 121lb	44 to 110lb	77 or 99lb	77 or 99lb	88lb
Log recording	Yes, stores last 1250 events	Yes, stores last 1250 events	No	No	No	No	No
Operating temperature	-40c to +54c	-40c to +54c	-35c to +40c		-10c to +55c (standard) -20C to +55c (option)	-30c to +50c	-35c to +40c
IP Rating	44 66 (optional)	66	55 (control box) 44 (motor)		55 (control box) 44 (motor)	54 (control box)	
Compatibility w. fall arrest	Integrated fall arrest	Integrated fall arrest		Integrated fall arrest		Offers G-Connect lanyard to ensure climb assist line does not arrest fall	