

ManSafe® for Aircraft

Wingrip®
Overhead Systems
Self Retracting Lifeline (SRL)



Introduction



Falls from height are the single biggest cause of death and one of the biggest causes of serious injury in the workplace today. For businesses whose workers need to operate quickly and effectively at height, fall protection is already a major issue—and this will become increasingly important as specific legal measures continue to be introduced worldwide such as OSHA in the United States and the Temporary Working at Height Directive in Europe. These measures include;

- Where fall protection is needed
- Which systems are acceptable
- Who is responsible

Whether companies or individuals, those who instruct or allow operatives to work at height have a clear responsibility for their safety—including aircraft owners and managers.

Latchways plc

- Global leader in engineered fall protection systems
- Long-term commitment to service with comprehensive training, customer support and a worldwide network of installers
- Established for more than 30 years
- Latchways' product quality is unsurpassed
- Listed on the London Stock Exchange. Develops innovative systems, according to customer needs
- In addition, to in-house evaluation, Latchways products are tested externally by notified independent test bodies
- ISO9001:2008 accredited and ISO14001:2004 accredited

ManSafe for Aircraft

Latchways has developed the Wingrip range alongside selected aircraft manufacturers as an inherently safe fall protection system suitable for the majority of fixed-wing aircraft. The vacuum based systems can be fixed to wings, fuselage or stabilisers. Workers wear a full body harness attached to the system via a work positioning rope, enabling safe, hands-free access for maintenance. Generally used for fall restraint, the system is tested and rated for fall arrest, engineered with a safety factor of 2 and limits any load transferred to the aircraft structure.

In addition to Wingrip, Latchways offers a comprehensive range of fall protection systems for a number of industries including roofing, utilities, tourism and telecoms.

Wingrip at a glance

- Lightweight and portable, anchors weigh less than 6 kg
- Suitable for wet or dry surfaces, inside hangars or on the apron
- Approved and used by all major aircraft manufacturers
- Easy to install and offers simple hands-free operation
- Inherently safe, even with fuel tanks open
- Run on compressed air or nitrogen, no electrical requirement
- Independently tested to meet all relevant international standards
- No metal on metal contact to protect aircraft surface and eliminate risk of sparking
- Guaranteed safety period with all systems
- Multiple-user cable based system or single-user anchor options, tailored to customer needs
- Suitable for both heavy and light maintenance environments



The Wingrip range

Overview

The Latchways Wingrip range of products were first brought to the market in 1999 when the single user system was introduced to the aviation industry. Since then the product range has gone from strength to strength, growing with the needs of the customers and changes in legislation. All of the product development within the Wingrip range has initially been led by customer requests from the MoD to Boeing.

The Wingrip product range is supported by a network of services which have been continuously developed since day one to ensure that the customer is offered a complete solution, from advice on purchase to training and support during the products lifetime. The Wingrip product range is a modular system incorporating interchangeable components, giving the end user choice and flexibility when addressing worker fall protection issues.



Wingrip single user system

Since 1999 the Wingrip vacuum anchor has provided a single fall protection anchor point for one worker on wings, fuselage or stabilisers. Quickly and easily installed, the highly portable single-user system is particularly suited to line maintenance and other short-term, temporary work.

The anchor is positioned and vacuum locked in place, then used by a worker wearing a full body harness with a safety lanyard and work positioning rope, connected to the vacuum anchor. The adjustable work positioning rope provides a safe working radius of 3 m and is particularly helpful to locate the worker for comfortable hands-free working. Two vacuum anchors can be used to triangulate and fix the worker's position.

System benefits

- Ideal for short term access
- System installed and ready for use in a matter of minutes
- Extra users protected by simply adding an additional vacuum pad to the system
- Easily upgraded to Lifeline system
- 2 pads can be used together to provide a restraint system even on the smallest of aircraft



The Wingrip range

Wingrip lifeline system

The Wingrip horizontal lifeline system was introduced to the market in 2005 to allow safe, hands-free access for up to four workers along the entire length of a wing or fuselage and is used ideally for construction, heavier maintenance or return operations.

The system consists of two end-anchor vacuum pads with cables spanning between them and intermediate anchors as needed to suit

any cable length. Each anchor is positioned and vacuum locked in place, then the stainless steel safety cables connected and tensioned at one end.

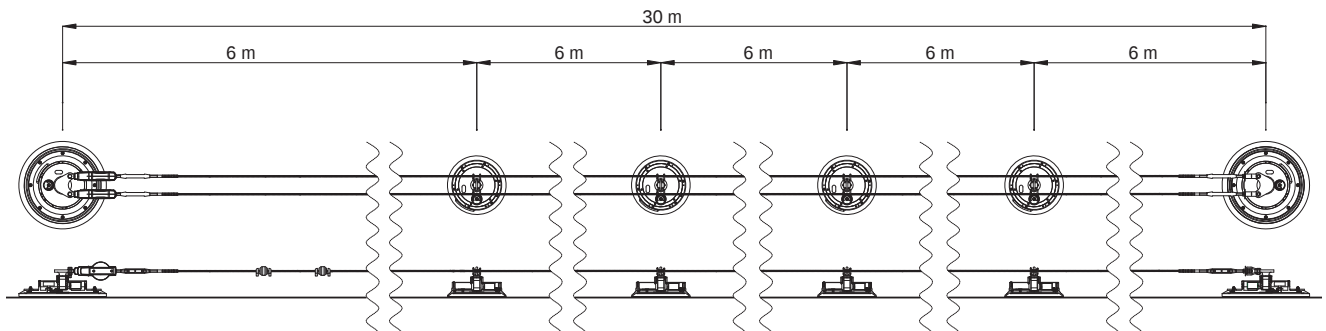
Workers connect to the cable using the unique Latchways' shuttle. Up to four workers can use the system, wearing full body harnesses and work positioning ropes.

This system allows hands-free movement along the whole cable length, with shuttles gliding over intermediate anchors.

System benefits

- Available in any length to suit any wing
- Ideal for heavy maintenance / longer access requirements
- Up to 4 users per system
- Fall arrest rated
- Safe method of installation and strip down
- Provides full access to any wing without needing to disconnect
- Hands-free operation
- Engineered system

Typical layout of a Latchways Wingrip twin line system



Wingrip Barrier system

The Wingrip barrier system was developed in 2007 to provide a collective solution to working at height on aircraft during manufacture and maintenance.

The system can be installed by one operative in complete safety and once set up will provide an enclosed safe working environment for an unlimited number of workers for any duration of time.

The Wingrip barrier system provides the ultimate in work at height safety by eliminating all fall risks. Workers require only basic training to work within the system without the need to use harnesses and lanyards.

The system consists of upright stanchions connected at the base to a Wingrip vacuum pad. The interface of the stanchion is fully adjustable and ensures a perfect installation can be achieved on any undulating surface.

Horizontal rails are adjustable in length and angle which allows any shape of system to be installed and adjustment of the layout at any time.

Systems can be supplied to enclose any size area from 1 m² to the entire upper surface of an aircraft.



The Wingrip range

Wingrip AIO

The latest addition to the Latchways Wingrip range is the Wingrip AIO vacuum anchor, which is perfect for flightline or quick hanger tasks. The Wingrip AIO is a certified fall arrest system that has been designed for use by personnel working on aircraft during manufacture or routine maintenance operations, providing both fall arrest and fall restraint. The Wingrip AIO derived from a need that was raised by a long term customer; Latchways took this request and engineered an innovative solution that broke the boundaries of aircraft fall protection technology by utilising innovative technologies and state of the art materials such as carbon fibre.

The Wingrip AIO fall protection system is lightweight, compact in size, intrinsically safe and can be used inside and outside aircraft hangars and maintenance facilities.

The system is powered by either compressed Air or Nitrogen having a wide range of working temperatures i.e. Arctic freezing to very high desert temperatures. It is quick to deploy and easy to use on 'walking' areas of wings or structural sections of the fuselage.

The WinGrip AIO is a fall arrest rated vacuum anchor with a removable, rechargeable gas bottle. The AIO anchor can also be supplied using shop air that would be found in any hanger. Once the pad has been vacuum locked in place the worker can attach to the system wearing a full body harness and work positioning ropes and have hands-free access to undertake all necessary maintenance.



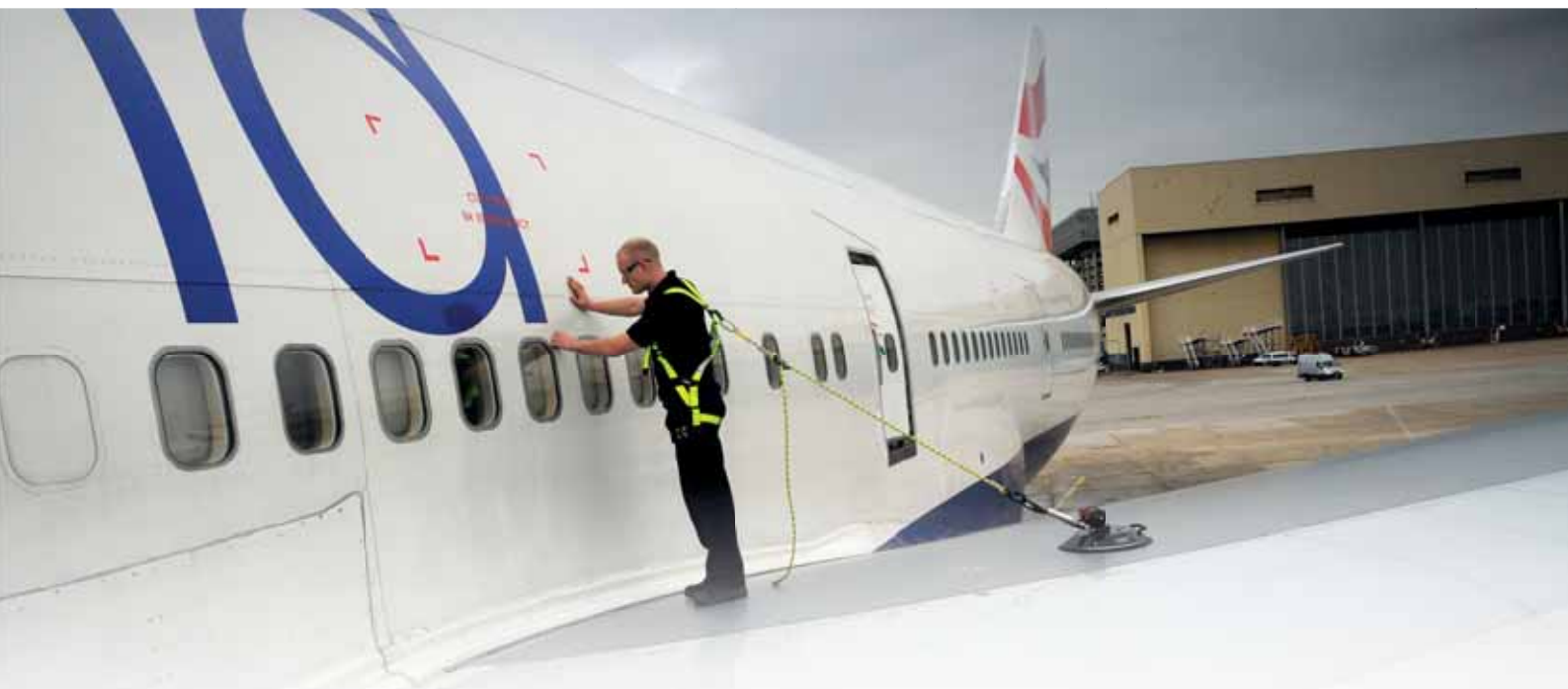
ManSafe for Aircraft



System benefits

- Ergonomically designed
- Lightweight carbon fibre
- Can be used independently; no need for additional modules or pads
- Uses no electricity; suitable for use in both wet and dry conditions
- Powered by nitrogen or compressed air
- Re-fillable gas bottle; allowing unlimited usage time
- Compliant with all relevant worldwide standards such as ANSI and CE certification

Why choose Wingrip?



Commercial

Wingrip is now the industry standard for fall protection systems when maintaining fixed-wing commercial aircraft—adopted by airlines, major manufacturers and MROs around the world. Operators in all countries appreciate the flexibility of Wingrip to suit their specific needs, reliability of the system to minimise downtime and Latchways' commitment to long-term support.

Military

Latchways has the resources, expertise and management ethos to meet the procurement procedures and long-term service commitments demanded by military organisations. In addition, the Wingrip system is suited to most fixed-wing aircraft, with the mobility, speed of installation and suitability for outside use demanded by the military. Wingrip is already widely used by various military organisations globally including those in USA, Australia, UK and other European countries—holding US national stock codes, NATO stock numbers and other similar recognitions.



Manufacturers

Boeing

Wingrip is being used for a number of different Boeing aircraft including the innovative Boeing 787 Dreamliner, as well as for its AOG teams. Wingrip is approved for use on the entire Boeing fleet of aircraft.

Airbus

Wingrip is now used extensively in the manufacture of Airbus aircraft and is also the Airbus specified tool in the Airbus Aircraft Maintenance Manual. Latchways has worked closely with Airbus, developing the Wingrip multiple-user cable-based system in response to their particular needs. Wingrip is listed in the Airbus AMM for all aircraft types as the only system to use for fall protection on their aircraft.



Photo ©Boeing

Case Study: Ministry of Defence

Within the Royal Air Force (RAF), aircraft inspection, maintenance and repair personnel are working in high risk situations every day working at up to 16 metres above the ground. It is the role of the Working at Height Cell within the Defence Equipment and Support (DE&S) agency to provide advice; technical support and equipment, so that in these situations, the most appropriate working at height solution is used.

The Working at Height Support Cell is integrated into the Air Commodities Project Team (AC PT) within DE&S, to support working at height equipment, offering advice and promoting safety awareness in the working at height environment. They began utilising Wingrip in 2008 following a competitive tender process, where Wingrip was selected due the quality and engineering of the product, the whole life cost and the ongoing support services offered by Latchways.

By utilising Wingrip and working closely with Latchways the RAF have:

- Significantly reduced the residual risk on working at height activities wherever the Wingrip systems are used
- Added significant value, through training, support and product development
- Rolled out training to large numbers of the workforce
- Implemented Wingrip in seven sites across the UK where aircraft maintenance is carried out

Latchways offer a full service and:

- Provide all training directly
- Identify specific sets of equipment to suit coverage to every aircraft type
- Identify new areas of risk
- Develop new products to further increase worker safety
- Provide all onsite maintenance and inspection
- Are available whenever or wherever needed

“We chose Wingrip after carefully assessing and comparing it to the competition in terms of value for money, through-life costs; Fitness for purpose and overall quality. We’re delighted with Latchways’ products, systems, service and support. “Latchways resolves any issues quickly, responds to our feedback and innovates swiftly to meet our evolving requirements.”

Mike Wilkinson—DE&S

Products used by the MoD

- Lifeline system
- Barrier system
- Single-user
- Wingrip AIO

“Since the introduction of Wingrip into the RAF in 2008, we have improved the overall level of safety whilst aircraft technicians are working at height on the upper surfaces of our large body aircraft fleet.

The level of training provided by Latchways has been pivotal in the successful implementation of the Wingrip systems. This has been greatly beneficial to the cultural change to Working at Height safety within the RAF.

The Wingrip system has been received well, especially as we have now introduced the ‘Wingrip AIO’, which is a quick and easy system to install. This system is also ideal for operational deployments as it is easily transportable by air to any location where aircraft maintenance is undertaken and working at height is required.

Wingrip is ensuring the safety of our personnel now and the future generations of RAF personnel.”

**Flight Sergeant Andy Moat—
Working at Height Support Cell**

Value added services



It is central to Latchways' philosophy to build close working relationships with its customers, providing a complete package of services over the long term—not just supplying products. For example, a full design service can be provided for specific aircraft with the most efficient usage of Wingrip systems, as shown below. Training for workers and managers in all aspects of installing and using Wingrip systems can also be provided, together with system maintenance.

Example of Wingrip systems layout and coverage

-  Denotes coverage when using single pad system. The single pad system can be placed along the entire length of the fuselage or on the rear stabilizers.
-  Denotes coverage provided by twin line system.
-  End anchor pad
-  Intermediate pad



Overhead

In addition to the Wingrip range of products Latchways are able to offer the complete working at height solution for the aerospace industry.

The Latchways ManSafe® Single and Multispan Overhead Systems provide permanent cable-based fall arrest within hangars where aircraft positioning is consistent or access is continuously required in the same area. The overhead systems combine revolutionary Constant Force® technology with an innovative mobile anchorage in a robust solution that offers outstanding levels of safety, convenience and versatility. Workers attached to the overhead system enjoy both unfettered mobility and continuous, hands-free security whilst working at height.



Self Retracting Lifelines (SRLs)

To complement the overhead systems Latchways has combined innovative engineering, superior materials and futuristic design with quick and easy maintenance to provide the most advanced range of self retracting lifelines (SRL) on the market. The SRLs have been developed with a number of unique features to provide a smarter, safer and stronger alternative to traditional SRLs.

- Patented frictionless braking system
- 100% reliable locking mechanism not driven by tensioned springs
- Modular construction wrapped in a strengthened case
- Reduced maintenance time and costs





ManSafe®

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BY LATCHWAYS

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