



# Flexible Sided Ladders

Portable, lightweight vertical access

Made in the UK for over 40 years



## Lyon Equipment flexible sided ladders



**Lyon Equipment is the leading manufacturer of flexible sided ladders. Our expertise draws on over 40 years' experience of ladder production, with each ladder individually assembled with care and precision.**

Our history does not however make us a slave to tradition. We are constantly updating our production methods and product ranges to ensure that our ladders meet the needs of today's users.



New materials, new finishes and stronger, corrosion resistant rung fixing methods have all been introduced, backed up by extensive in-house testing to prove that our ladders meet the high standards our customers expect.

Quality and reliability are our watchwords. We are proud that our production systems are accredited to ISO 9001 and all aspects of our ladder manufacture are regularly audited.

Made exclusively in our production facility at Tebay, Cumbria, our flexible sided ladders are supplied worldwide to meet the needs of customers in industry and for outdoor sports.



Originally developed for cavers, Lyon Equipment's flexible sided ladders are now widely used in:

- **Military and tactical operations**
- **Confined space and silo access**
- **Marine / pleasure boat mast rigging**
- **Film, theatre and events rigging**
- **Manhole and sewer access and egress**
- **Climbing walls (training aids)**



The enduring popularity of flexible sided ladders is because of their unique advantages over other access systems.

### Lyon flexible sided ladders....

- **are light and easy to transport: they can be rolled up and carried in one hand**
- **are versatile. Our range of materials and styles allows ladders to be produced that can be used in a range of environments, from silent and sensitive to no-nonsense industrial**
- **can be used in confined and irregular shaped spaces where conventional ladders simply could not be deployed**
- **take up little room if size and weight are an issue**
- **are quick to set up and deploy**
- **can be custom-made to the exact length required**

At Lyon Equipment we produce flexible sided ladders in a choice of four basic styles

- COMPACT**
- SPELEO**
- WIDE RUNG**
- FIBRELIGHT**



**Please Note:**  
Flexible sided ladders and their accessories are not Personal Protective Equipment. Flexible sided ladders must always be used with a separate fall protection system. Flexible sided ladders are not suitable for emergency escapes. It is extremely difficult to use these ladders safely if you are in any way incapacitated.





## Ladder construction

**Lyon Equipment can design and produce flexible sided ladders to suit individual needs and environments. To achieve this, we offer a choice of rung types, side materials and connections.**

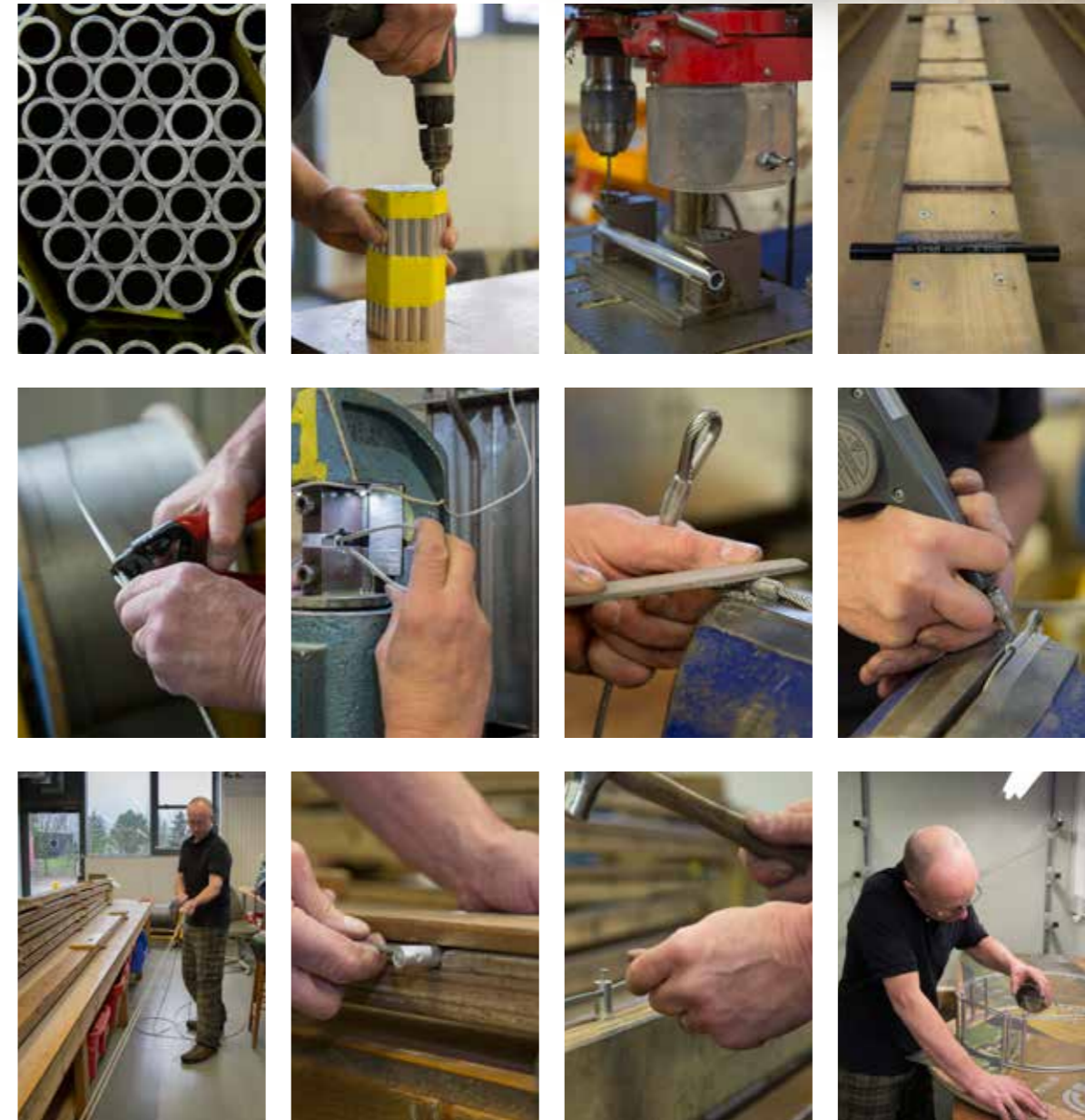
### RUNG TYPES

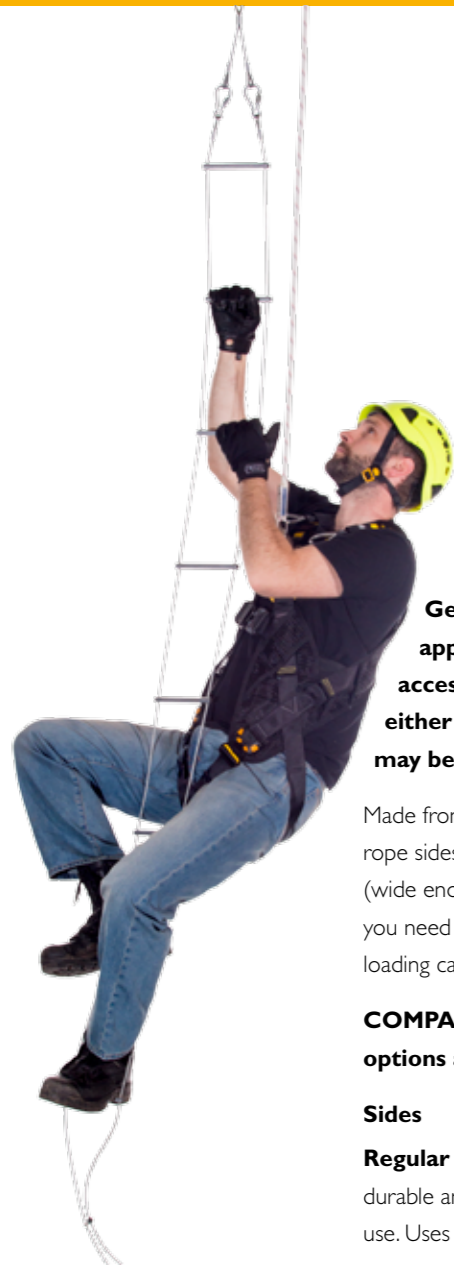


- Aluminium alloy - plain**      Used on regular and lightweight ladders. Available in 2 diameters - 12.5 mm (COMPACT ladders only) and 25 mm (WIDE RUNG only).
- Aluminium alloy - black anodised**      For low visibility in military, security or theatrical applications. The additional protection from corrosion given by the anodising process makes these rungs more suitable for use in corrosive environments such as marine facilities and chemical plants. Available in 2 diameters - 12.5 mm (COMPACT ladders only) and 25 mm (WIDE RUNG only).
- High grip knurled**      Knurled finish for extra grip. Available in 2 diameters - 12.5 mm (COMPACT ladders only) and 25 mm (WIDE RUNG only)
- High grip 34 mm fluted GRP**      Chunky rungs which are easier to grip. GRP (Glass Reinforced Plastic) rungs also have the advantage that they are least likely to scratch any surface they contact.

### SIDE MATERIALS

- Galvanised steel wire rope**      Used on regular ladders (4 mm) and lightweight ladders (3 mm), galvanised wire rope is ideal for most applications offering high strength and durability.
- Stainless steel wire rope**      Where a corrosive atmosphere might reduce the life span of galvanised wire rope, this stainless steel wire rope gives additional durability.
- Polyester rope**      8 mm rope for use on WIDE RUNG GRP ladders only. May be suitable for use in environments where electric shock is a risk.





## COMPACT Ladders

**General purpose ladders, for applications such as manhole entry and access to lighting truss. For sport caving, either the COMPACT or SPELEO ladders may be used.**

Made from aluminium alloy rungs and flexible wire rope sides, COMPACT ladders are 150 mm wide (wide enough for one foot) and are ideal when you need to keep weight down without reducing loading capacity.

**COMPACT ladders come with two side wire options and with three rung options:**

### Sides

**Regular wire sides** – the most popular style – durable and versatile. Recommended for frequent use. Uses 4 mm wire.

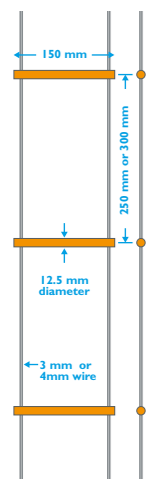
**Lightweight wire sides** – for situations where weight is more important than durability. Only recommended for infrequent use. Uses 3 mm wire.

### Rungs

**Plain alloy rung** – self-coloured alloy rung. The standard for most applications.

**Black anodised rung** – fitted on stainless steel wire rope sides, providing additional corrosion resistance e.g. for use in marine environments. Also useful for theatres and military applications where a less bright finish is required (Regular ladder only).

**Black high grip rung** – as above, but with a knurled finish for improved grip (Regular ladder only).



### Key COMPACT features:

- COMPACT design allows easy storage and transport
- Available with three side wire options: 3mm galvanised, 4mm galvanised and 4mm stainless steel
- Available with three different rung options
- Choice of two rung spacings: 25 or 30 cm
- 5 or 10 metres standard lengths
- Lengths of up to 20 metres to special order
- Easily joined together if necessary



## SPELEO Ladders

**COMPACT ladders with a simplified C-Link connection, specially designed for caving.**

**SPELEO ladders have plain alloy rungs and come with two side wire options:**

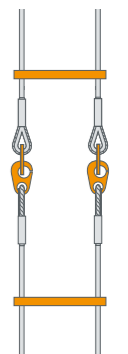
**Regular** - durable and versatile. Uses 4 mm galvanised steel wire.

**Lightweight** - for situations where weight is more important than durability. Uses 3 mm galvanised steel wire.

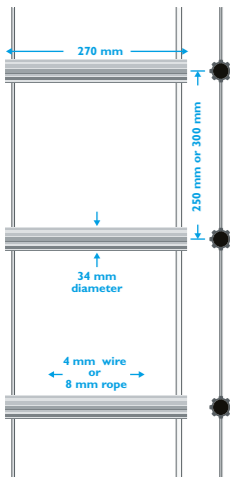
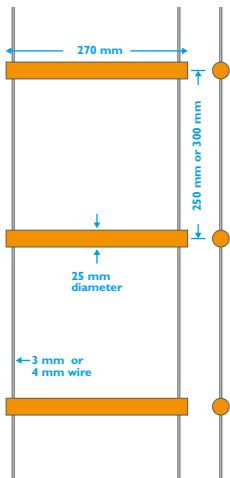


### Key SPELEO features:

- C-Links are permanently fixed to the ladder during manufacture to prevent loss. Request at the time of ordering as these cannot be fitted after manufacture.
- Easy to connect together, even with cold wet hands
- Lightweight



SPELEO ladder shown with Lyon Y spreader accessory fitted



## WIDE RUNG Ladders

**Ladders which are wide enough for both feet, to allow positioning whilst carrying out a task. Used for applications such as inspection and cleaning of silos.**

WIDE RUNG ladders are made from either aluminium alloy or glass reinforced plastic (GRP) rungs with flexible wire or textile rope sides. WIDE RUNG ladders are 270 mm wide allowing the climber to place both feet on one rung and the larger diameter rungs are more comfortable to stand on whilst carrying out a task.

### WIDE RUNG options:

WIDE RUNG ladders are available with five options for rungs and sides:

**Plain alloy rungs with wire sides** - self coloured alloy rungs with 4 mm galvanised steel wire rope sides. The standard for most applications and easy to clean - used by the food and pharmaceutical industries.

**Black anodised rungs with wire sides** - alloy rungs with satin black finish and 4 mm stainless steel wire rope sides. Providing additional corrosion resistance e.g. for use in marine environments. Also useful for theatres and military applications where a less bright finish is required.



**Black high grip rungs with wire sides** - as above, but with a knurled finish for improved grip.

**GRP rungs with wire sides** - large diameter glass reinforced plastic (GRP) rungs, with deep fluting for easy grip. Comes with 4 mm stainless steel wire sides. Easy to clean and fluted rungs make it suitable for use in muddy / slippery environments.

**GRP rungs with rope sides** - GRP rungs as above, but with polyester rope sides. May be more suitable where electric shock is a potential hazard.

### Key WIDE RUNG features:

- Wide enough to fit both feet side by side
- Large diameter rungs easier to hold and more comfortable to stand on
- Easy clean materials options
- Available with five options for rungs and sides
- Choice of two rung spacings – 25 or 30 cm
- Made to order in lengths of up to 15 metres

### OPTIONAL GRP RUNG STAND OFFS

Keeps ladders away from a wall allowing easier climbing. A pair of stand offs can be applied to every third rung of the ladder for vertical hangs. More may be required if the ladder rests on an inclined/curved surface.



## FIBRELIGHT Ladders

**Wide enough for a single foot, these specialist ladders are lightweight and make virtually no noise when deployed. They are an alternative to wire sided or wood and rope ladders. Constructed from textile sides and carbon fibre rungs they are ideally suited to wet environments.**

### Key features:

- Easy to rig
- Compact for easy storage
- Non metallic ladder – no parts to corrode
- Less noise
- Complete with bag and stainless steel connector
- Lighter than our COMPACT or WIDE RUNG ladders
- Can be ordered by the metre (up to 20 metres)
- 30 cm rung spacing
- Black, yellow and red tape available
- Maximum rated load of 120 kg

NOTE: For lightweight use only. For heavy and / or regular use, we recommend our COMPACT or WIDE RUNG ladders.

### JOINING FIBRELIGHT LADDERS

Standard FIBRELIGHT ladders are supplied with a single anchor point and Maillon Rapide at the head making them unsuitable for connection to other ladders to increase the length. FIBRELIGHT ladders can be made to customer's specified lengths.





Swaged eyelet with removable Maillon Rapide

Swaged eyelet with captive Maillon Rapide

## Connections

### LADDER LENGTH

We usually make ladders of either 5 m or 10 m lengths but can make longer on request. Joining shorter lengths of ladder gives greater versatility and ease of transport and storage than having one continuous unit.

### CONNECTION OPTIONS (EXCEPT FIBRELIGHT)

If two or more ladders are to be joined, use of one of the following connection methods will ensure that spacing between rungs is consistent across the join.

#### Swaged eyelets only

Unless otherwise specified, ladders will be supplied with a swaged eyelet on the end of each side wire. They can then be connected with a removable 6 mm standard pattern Maillon Rapide.

- Maillon Rapides are lightweight screw-link connectors with high strength
- Removable Maillon Rapides are easily fitted or replaced by the user

#### Captive Maillon Rapides

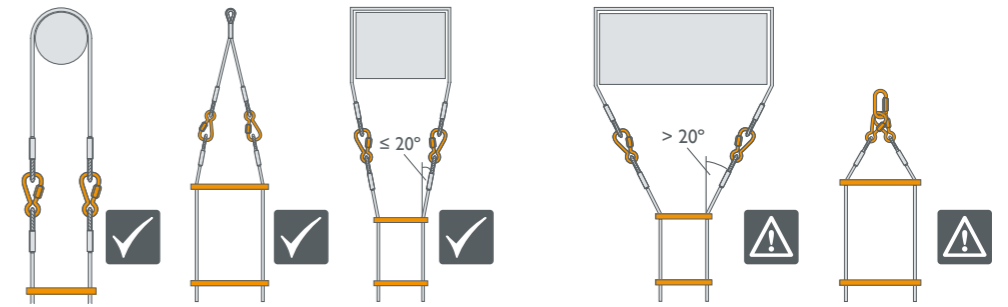
- Lightweight screw-link connectors with high strength
- Permanently fixed to the ladder during manufacture to prevent loss. Request at the time of ordering as these cannot be fitted after manufacture
- Ideal for industrial use, can be used on many types of anchor

NOTE: Captive Maillon Rapides are only available in galvanised steel and are not suitable for ladders with stainless steel wire or rope sides.



**GRP Ladders with polyester rope sides**  
Unless requested, eyelets are not fitted to the bottom.

Ladders can be suspended from a wide variety of anchor points. One important point to note is that, to reduce wear and excessive loading, the wire sides must not be distorted beyond an angle of 20° from vertical.



## Fixing ladders to anchor points



### WIRE LADDER BELAYS

For fixing COMPACT and WIDE RUNG ladders to a large circumference anchor point such as an I-beam. To reduce wear and excessive loading, the side wires of the ladder must not be distorted beyond an angle of 20 degrees from vertical.



### Y SPREADER

#### (COMPACT Ladders only)

If a COMPACT ladder will be fixed to a single point, a Y Spreader should be used.

4 types of Y Spreader are available to match ladder connection options and materials.

(A Y Spreader is not required for fixing a WIDE RUNG ladder to a single point – the wires above the top rungs are long enough to give the correct angle when fixed directly to a single point.)

Code	Length	Termination	Breaking Load
LO 4 1	1 m	Swaged eyelets	10 kN
LO 4 15	1.5 m		
LO 4 2	2 m		
LO 4 3	3 m	C-links for SPELEO ladders only	2.5 kN
LC 4 1	1 m		
LC 4 15	1.5 m		
LC 4 2	2 m		
LC 4 3	3 m		

Code	Description	Connector
LO 4	4 mm galvanised spreader with swaged eyelets	Swaged eyelets
LM 4	4 mm galvanised spreader with captive eyelet Maillon Rapide	Maillon Rapide
LC 4	4 mm galvanised spreader with C-links - SPELEO only	C-links
LO 4YS	4 mm stainless steel spreader with swaged eyelets	Swaged eyelets



### STORAGE & RAPID DEPLOYMENT POUCH

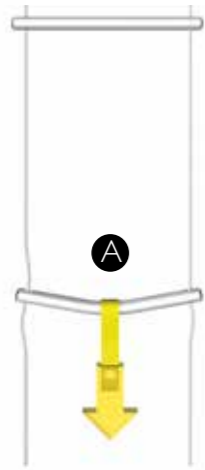
Allows ladders to be stored at the point of use ready for immediate deployment.



## Testing & specifications

Lyon has one of the most comprehensive test regimes in the world for its flexible sided ladders.

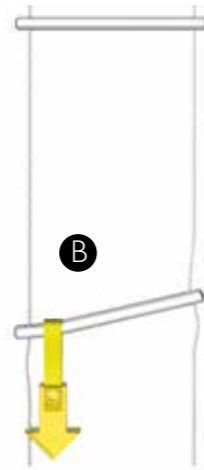
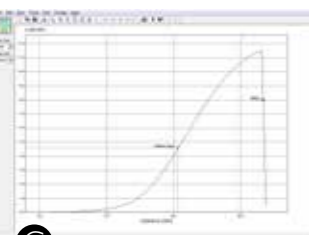
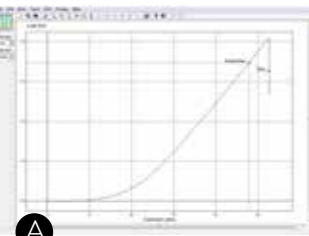
In order to provide valid realistic strength ratings of practical use, sample ladders are tested to destruction using a 3 stage process.



### A - RUNG STRENGTH

This test simulates the load of hands or feet. Connections narrower than 18 mm may result in lower values being achieved. This is the reason why karabiners, slings and ropes should not be used to suspend loads or climbers from rungs.

The figure we state is the minimum breaking load of the rung. It is worth noting that the rung may not break at the figure quoted - it may deform and the ladder must be retired.



### B - RUNG SLIPPAGE

Another key loading limit is reached when rung slippage occurs. This is the point at which rungs slip along the wire sides. Our tests indicate the earliest stage at which this may occur. In the event of rung slippage the ladder must be retired.



### C - WIRE SIDE BREAKAGE

Side wires are tested independently to produce figure C.

Our maximum rated load figures are based on our testing and our experience of how our ladders are used in the field.



Ladder type	Rung			Sides	Breaking Loads (kN)			Weight (kg) per 10m length†		Max rated load (kg)
	Dia (mm)	Width (mm)	Material		A	B	C	25 cm spacing	30 cm spacing	
SPELEO Regular	12.5	150	Dural aluminium alloy	4 mm 7x19 galvanised steel wire rope	2.8	4	10	2.6	2.4	100
SPELEO Lightweight	12.5	150	Dural aluminium alloy	3 mm 7x7 galvanised steel wire rope	2.8	4	6	2.0	1.8	100
COMPACT Regular	12.5	150	Dural aluminium alloy	4 mm 7x19 galvanised steel wire rope	2.8	4	10	2.6	2.4	140
COMPACT Lightweight	12.5	150	Dural aluminium alloy	3 mm 7x7 galvanised steel wire rope	2.8	4	6	2.0	1.8	140
COMPACT Black Rung	12.5	150	Black anodised Dural aluminium alloy	4 mm 7x19 316 stainless steel wire rope	2.8	4	10	2.6	2.4	140
WIDE Regular	25	270	Dural aluminium alloy	4 mm 7x19 galvanised steel wire rope	5	8	10	7.5	6.2	140
WIDE Black Rung	25	270	Black anodised Dural aluminium alloy	4 mm 7x19 316 stainless steel wire rope	5	8	10	7.5	6.2	140
GRP Wire	34	270	Fluted glass reinforced plastic (GRP)	4 mm 7x19 316 stainless steel wire rope	5	5	10	9.5	8.0	140
GRP Rope	34	270	Fluted glass reinforced plastic (GRP)	8 mm braided polyester rope	5	5	8	N/A	10.6	140

### FIBRELIGHT LADDER SPECIFICATIONS

Ladder type	Rung			Sides	Max rated load	Rung spacing
	Dia (mm)	Width (mm)	Material			
FIBRELIGHT	10	150	Solid carbon fibre rods inside a polyester tape sleeve	20 mm wide polyester tape	120 kg	30 cm

### FIBRELIGHT LADDER WEIGHTS

(Including bag and Maillon Rapide connector)

Ladder length	Weight
5m	1.18 kg
10m	2.35 kg
15m	3.53 kg
20m	4.70 kg





## Ladder ordering information

We have a range of 'off the shelf' ladders available. To order a tailor made SPELEO, COMPACT or WIDE RUNG ladder the following information will help you.

Codes for our SPELEO, COMPACT and WIDE RUNG ladders are made up of several parts, which signify the various features of the ladder:

Example: ordering an **LO 4 10 25 SA** will give you a COMPACT ladder with:

- **Black anodised rungs**
- **4 mm stainless steel wire rope sides**
- **swaged eyelets ends**
- **10 m long**
- **25 cm rung spacing**

Speak to your stockist to discuss your exact requirements.

Example:

<b>LO</b>	<b>4</b>	<b>10</b>	<b>25</b>	<b>SA</b>	
					Extra information about ladder:
					SA = anodised rungs/stainless steel wire rope
					WA = wide alloy rungs
					WSA = wide anodised rungs/stainless steel wire rope
					WG = wide glass fibre rungs
					HG = High Grip
					Rung Spacing: 25 or 30 cm
					Ladder length: standard lengths are 5 & 10 metres
					Diameter of sides: 3 mm or 4 mm wire rope, or 8 mm polyester rope
Ladder terminations:					LO = swaged eyelets
					LM = swaged eyelets plus Maillon Rapide (screw link connector)
					LC = swaged eyelets plus 'C' link (SPELEO)



## International Ladder Stockists

### ORDERING INFORMATION

All flexible ladders manufactured by Lyon Equipment Limited are available through selected stockists throughout the UK.

Please go to our Stockists page on our website to see a complete list of Lyon ladder stockists.

If you wish to buy ladders outside the UK please contact us directly at [work.rescue@lyon.co.uk](mailto:work.rescue@lyon.co.uk) or through our international stockist list.

Lyon Equipment office hours are:  
 Monday - Thursday 9am - 5pm  
 Friday 9am - 1pm



[www.lyon.co.uk/workandrescue/Stockists](http://www.lyon.co.uk/workandrescue/Stockists)





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