



**FORCE
DEVELOPMENT**
SERVICES

Ladder Catalogue 2021 Issue 3.1



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1. Tactical Ladders.

Introduction.

Force Development Services (FDS) manufacture a range of heavy-duty ladders measuring up to 7m in overall length in single (twin stile) and double (triple stile) widths suitable for a wide variety of operational scenarios.

We also supply spare parts and accessories that complement the use of your ladder ensuring it is fit for your purpose.

Materials.

The predominant manufacturing material is marine-grade 6082 aluminium. The remaining materials (steel, nylon, fittings etc) are compatible with the specification and the structural requirements of the ladders.

All ladder sections are professionally powder coated in a matt black polyester ripple effect as standard; other finishes are available on request.

Ladder Care and Safety Handbook.

Each ladder order is supplied with the 'Ladder Care and Safety Handbook' introducing the safe use, maintenance and storage of ladders.

2. Product Testing.

Operator safety is of paramount importance to Force Development Services which is why our product testing ensures continued operational performance in the most demanding conditions.

During the development of all products, destructive testing is carried out to ensure all our designs are correctly evaluated for both structural integrity and long-term durability.

Safe working loads for equipment are defined by destructive testing data; the application of a minimum safety factor of three and subsequent testing to establish a safe working point where no permanent distortion takes place.



Safety when working at heights.

FDS will advise you of each ladder's Working Load Limit (WLL). This is the maximum load that can be applied to the ladder (including dynamic forces and shock loadings). Exceeding the limit will cause permanent damage to or failure of the ladder, which may result in injury to the user.

The Working Load Limit is always specified at the optimum and correct 75 degree climbing angle (except for marine boarding ladders). If this angle is reduced the Working Load Limit of the ladder will be reduced.

We recommend that an additional safety system is adopted by all ladder users to restrain the user in the event of a fall. Locking pins secured and used on ladder sections meet the ladder safe working load specification.

3. Single Section Ladders.

We manufacture over 35 types of single section ladders ranging in heights of 1m – 4m and five width options, including a wide triple stile. Non-standard lengths and widths are available on request (maximum width is 0.813m).

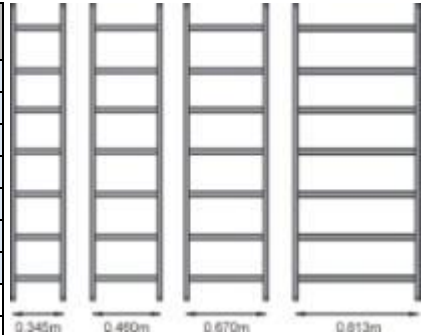
Single section ladders are typically used for dedicated targets such as ground floor windows and coaches. They cannot be extended or adjusted in length or attached to other sections of ladder.





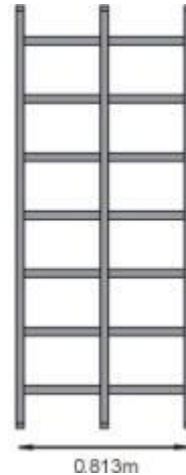
Single section (twin stile) ladders with a WLL of 360kg at 75 degrees.

Ladder Size	Part Number	Weight Kg
1.00m x 0.345m	CAL3001	3.0
1.50m x 0.345m	CAL3003	5.0
2.00m x 0.345m	CAL3005	6.0
2.50m x 0.345m	CAL3007	8.0
3.00m x 0.345m	CAL3009	9.0
3.50m x 0.345m	CAL3011	11.0
4.00m x 0.345m	CAL3012	12.0
1.00m x 0.460m	CAL3013	3.0
1.50m x 0.460m	CAL3015	5.0
2.00m x 0.460m	CAL3017	6.0
2.50m x 0.460m	CAL3019	8.0
3.00m x 0.460m	CAL3021	9.0
3.50m x 0.460m	CAL3023	11.0
4.00m x 0.460m	CAL3024	13.0
1.00m x 0.670m	CAL3025	4.0
1.50m x 0.670m	CAL3027	6.0
2.00m x 0.670m	CAL3029	7.0
2.50m x 0.670m	CAL3031	9.0
3.00m x 0.670m	CAL3033	11.0
3.50m x 0.670m	CAL3035	13.0
4.00m x 0.670m	CAL3036	14.0
1.25m x 0.750m	CAL3027B	
1.50m x 0.750m	CAL3027C	
1.00m x 0.813m	CAL3037	4.0
1.50m x 0.813m	CAL3039	6.0
2.00m x 0.813m	CAL3041	8.0
2.50m x 0.813m	CAL3043	10.0
3.00m x 0.813m	CAL3045	12.0
3.50m x 0.813m	CAL3047	14.0
4.00m x 0.813m	CAL3048	16.0



Single section (triple stile) ladders with a WLL of 400kg at 75 degrees.

Ladder Size	Part Number	Weight Kg
1.00m x 0.813m	CAL3101	5.0
1.50m x 0.813m	CAL3103	8.0
2.00m x 0.813m	CAL3105	10.0
2.50m x 0.813m	CAL3107	13.0
3.00m x 0.813m	CAL3109	15.0
3.50m x 0.813m	CAL3111	18.0
4.00m x 0.813m	CAL3113	20.0



4. Sectional Ladders.

Sectional ladders range in heights of 2m – 6m and three width options, including a wide triple stile. Non-standard lengths and widths are available to suit your requirements (maximum width is 0.813m).

The sectional ladders consist of a standard base ladder and middle / top sections which are connected by a heavy-duty nylon lined channel system complete with a detent locking pin. Up to four sections can be joined together to form ladders of up to 6m long.

Sectional ladders are fixed lengths and are not height adjustable, other than varying the lengths of ladder sections attached to each other.



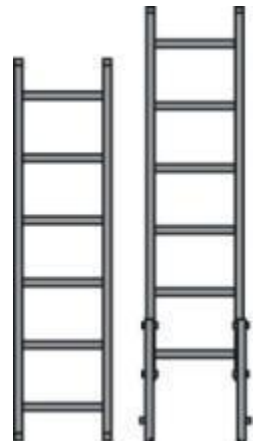
Sectional Twin Stile Ladder
shown with optional ladder
cushion rests



Sectional Triple Stile Ladder

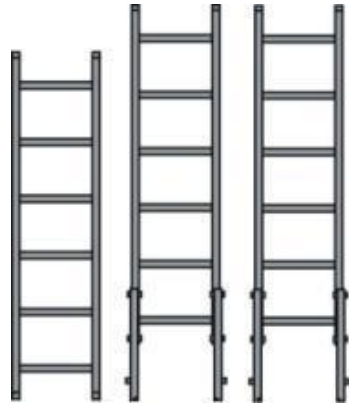
Sectional (twin stile) ladders – two sections with a WLL of 240kg at 75 degrees.

Ladder Size	Part Number	Weight Kg
2.00m x 0.460m	CAL3301	10.0
3.00m x 0.460m	CAL3303	13.0
4.00m x 0.460m	CAL3305	16.0
6.00m x 0.460m	CAL3307	22.0
2.00m x 0.670m	CAL3309	11.0
3.00m x 0.670m	CAL3311	15.0
4.00m x 0.670m	CAL3313	18.0
6.00m x 0.670m	CAL3315	25.0
2.00m x 0.813m	CAL3317	12.0
3.00m x 0.813m	CAL3319	16.0
4.00m x 0.813m	CAL3321	20.0
6.00m x 0.813m	CAL3323	28.0



Sectional (twin stile) ladders – three sections with a WLL of 220kg at 75 degrees.

Ladder Size	Part Number	Weight Kg
3.00m x 0.460m	CAL3325	17.0
4.50m x 0.460m	CAL3327	22.0
6.00m x 0.460m	CAL3329	26.0
3.00m x 0.670m	CAL3331	19.0
4.50m x 0.670m	CAL3333	24.0
6.00m x 0.670m	CAL3335	29.0
3.00m x 0.813m	CAL3337	20.0
4.50m x 0.813m	CAL3339	26.0
6.00m x 0.813m	CAL3341	32.0



Note: The overall length of a sectional ladder is the combined length of all connected sections.

Sectional (twin stile) ladders – four sections with a WLL of 200kg at 75 degrees.

Ladder Size	Part Number	Weight Kg
4.00m x 0.460m	CAL3343	24.0
6.00m x 0.460m	CAL3345	30.0
4.00m x 0.670m	CAL3347	26.0
6.00m x 0.670m	CAL3349	32.0





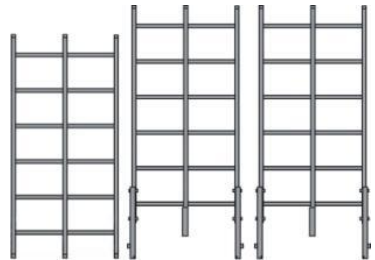
Sectional (triple stile) ladders – two sections with a WLL of 250kg at 75 degrees.

Ladder Size		Part Number	Weight Kg
2.00m 0.813m	x	CAL3401	14.0
3.00m 0.813m	x	CAL3403	19.0
4.00m 0.813m	x	CAL3405	24.0
6.00m 0.813m	x	CAL3407	34.0



Sectional (triple stile) ladders – three sections with a WLL of 200kg at 75 degrees.

Ladder Size		Part Number	Weight Kg
3.00m 0.813m	x	CAL3409	23.0
4.50m 0.813m	x	CAL3411	31.0
6.00m 0.813m	x	CAL3413	38.0



Note: The overall length of a sectional ladder is the combined length of all connected sections.

Sectional (triple stile) ladder – four sections with a WLL of 400kg.



Ladder Size	Part Number	Weight Kg
4.00m x 0.813m	CAL3415	32.0

Note: The overall length of a sectional ladder is the combined length of all connected sections.

Multi-level Extension Ladders.

A multi-level extension ladder consists of two sections (a base section and a sliding section) that can be adjusted in length.

Both sections are held in place by retaining brackets that permit the sliding section to be raised or lowered and then locked at the desired height. The foot of the sliding section has an auto-swing safety clutch which seats on the base section rungs, to secure the sliding section in place. The sliding section is further secured in place by straps with Velcro fastenings.

The two ladder sections are versatile as they can be separated and used as individual single section ladders.

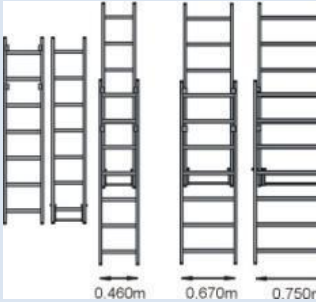
Multi-level extension ladders are available in both twin stile and triple stile (for team assault).

Multi-level (twin stile) extension ladders with a WLL of 300kg at 75 degrees.

Ladder Size	Part Number	Weight Kg
2.50m to 4.00m x 0.460m	CAL3507	18.0
3.00m to 5.00m x 0.460m	CAL3509	21.0
3.50m to 6.00m x 0.460m	CAL3510	24.0
3.75m to 6.50m x 0.460m	CAL3511	26.0
4.00m to 7.00m x 0.460m	CAL3511B	28.0
2.50m to 4.00m x 0.670m	CAL3512	23.0
3.00m to 5.00m x 0.670m	CAL3513	26.0





3.75m to 6.50m x 0.670m	CAL3515	33.0
4.00m to 7.00m x 0.670m	CAL3516	34.0
2.50m to 4.00m x 0.750m	CAL3516A	23.0
3.00m to 5.00m x 0.750m	CAL3517A	27.0
3.50m to 6.00m x 0.750m	CAL3517	32.0
3.75m to 6.50m x 0.750m	CAL3518A	33.0
 4.00m to 7.00m x 0.750m	CAL3518	34.0

Note: The overall length of a multi-level extension ladder is categorised by the fully retracted size and the fully extended size e.g., 2.5m (minimum) – 4.00m (maximum).

Multi-level (triple stile) extension ladders with a WLL of 410kg at 75 degrees.

Ladder Size	Part Number	Weight Kg
2.50m to 4.00m x 0.813m	CAL3701	30.0
3.00m to 5.00m x 0.813m	CAL3703	35.0
3.75m to 6.50m x 0.813m	CAL3705	43.0
4.00m to 7.00m x 0.813m	CAL3707	45.0



Note: The overall length of a multi-level extension ladder is categorised by the fully retracted size and the fully extended size e.g., 2.50m (minimum) – 4.00m (maximum).

5. Multi-level Combination Ladders.

Combination ladders combine both multi-level extension ladders and sectional ladders to form a ladder that is flexible in height adjustment.

These ladders offer the largest number of permutations of all ladder types and are easier to transport in small vehicles compared to the larger extension ladders. Combination ladders are supplied in both twin and triple stiles and can also be fitted to our range of Vehicle Borne Assault Systems (VBAS).

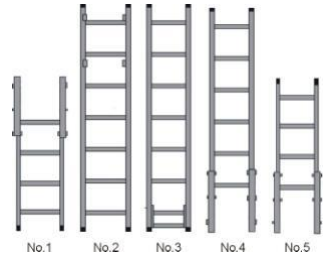


Combination ladder in component stack

Multi-level (twin stile) combination Ladder with a WLL of 240kg at 75 degrees.

This consists of five ladders that can be joined in several ways to provide the user with different permutations of ladder configuration. It has a maximum fully extended height of 6.25m and it is made up of the following five sections:

- Ladder number 1 Base extension
- Ladder number Base section
- Ladder number 3 Upper sliding section
- Ladder number 4 First top section
- Ladder number 5 Second top section

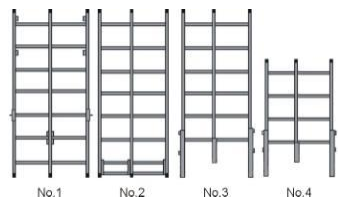


Ladder Size	Part Number	Weight Kg
Standalone (0.39m width)	CAL3801	29.0
VBAS (vehicle mounted) (0.39m width)	CAL3802	29.0

Multi-level (triple stile) combination ladder with a WLL of 350kg at 75 degrees.

This is a four-part ladder reaching a total height of either 5.25m or 5.5m. It can be supplied with vehicle mounting bushes and turntable fittings so that it is suitable for our VBAS. It is made up of the following sections:

- Ladder number 1 Base section
- Ladder number 2 Upper sliding section
- Ladder number 3 First top section
- Ladder number 4 Second top section



Ladder Size	Part Number	Weight Kg
Standalone (1.75 - 5.25m x 0.813m)	CAL3901	
Standalone (up to 5.50m x 0.813m)	CAL3901B	37.0

VBAS (vehicle mounted) (up to 5.50m x 0.813m)	CAL3902B	37.0
VBAS (vehicle mounted) (up to 5.50m x 0.813m) Turntable fittings included	CAL3903B	39.0

Note that the centre stile is offset to one side to allow the ladder sections to be connected in several permutations; ladder sections can only be connected if each is correctly presented to the next section.

6. Low Level Step Platforms.

This is a single section twin stile ladder complete with a small platform at the top. These ladders are typically used for entry into trains and coaches, giving the user a platform with a degree of standoff to operate from. They have a WLL of 150kg at 75 degrees.

Platform Size (With top rubber foot)	Part Number
0.615m x 0.460m	CEL 3802
0.865m x 0.460m	CEL 3803
1.115m x 0.460m	CEL 3804
1.365m x 0.460m	CEL 3805
1.615m x 0.460m	CEL 3806
1.865m x 0.460m	CEL 3807

Platform Size (With face bar)	Part Number
0.615m x 0.460m	CEL 3902
0.865m x 0.460m	CEL 3903
1.115m x 0.460m	CEL 3904
1.365m x 0.460m	CEL 3905
1.615m x 0.460m	CEL 3906
1.865m x 0.460m	CEL 3907



7. Marine Boarding Ladders.

The Marine Boarding Ladder was first developed for a specific boat/ship application and entered service in 2003 with naval boarding teams covering three continents.

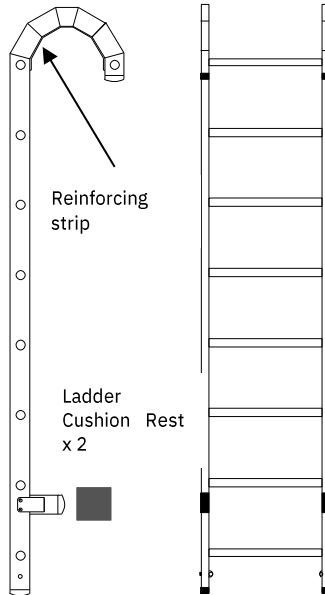
This single section ladder hangs vertically from an objective e.g., handrails or kick plates by utilising the top section. The main body of the ladder is sealed to allow the ladder to become buoyant if accidentally lost overboard. The optional bottom flexible ladder section is shock resistant to prevent damage to the RIB.

All options have a WLL of 150kg when vertical.



Ladder Size	Part Number	Weight Kg
1.00m x 0.46m (262mm hook)	MBL5007	
1.50m x 0.46m (262mm hook)	MBL5006	
2.00m x 0.46m (262mm hook)	MBL5005	10
2.50m x 0.46m (262mm hook)	MBL5013	
3.00m x 0.46m (262mm hook)	MBL5001	13
3.50m x 0.46m (262mm hook)	MBL5014	
4.00m x 0.46m (262mm hook)	MBL5002	16
2.00m x 0.39m (412mm hook)	MBL5015	
3.00m x 0.39m (412mm hook)	MBL5010	
4.00m x 0.39m (412mm hook)	MBL5011	
1.00m x 0.460m flexible wire extension	MBL5025	2
1.50m x 0.460m flexible wire extension	MBL5026	
2.00m x 0.460m flexible wire extension	MBL5027	

Basic layout of Marine Boarding Ladder upper section.



Lower Flexible Ladder.



8. Tactical Assault Ladders – Accessories.

Ladder Cushion Rest.

Part number: CEL1971

The ladder cushion rest is a laminated foam rubber shaped rest that fits to the top ends on a ladder. The cushion rests provide noise reduction, protection to the ladder and protection to the objective.



Ladder Side-Step.

Part number: CPN6001

The detachable sidestep can be mounted to the outer frame of the ladder to allow personnel to move outside the main ladder frame. The step is only suitable for wider (0.813m) FDS ladders and can be fitted to both the left- and right-hand side.



Stand Off Platforms.

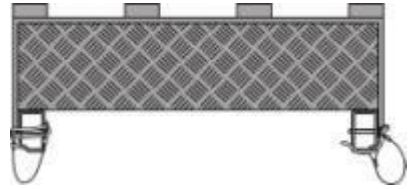
Part number: CEL1984 (specify ladder type and size when ordering)

Stand-off platforms can be secured to the top of all freestanding ladders, to provide ladder stand-off (not a working platform) from the objective. The stand-off platform aids the user access from the ladder top to the objective and from the objective to the ladder top.





Ladders must be fitted with internal inserts to permit the stand-off platform to be fitted and secured to the ladder. The stand-off platform internal ladder inserts are fitted during the manufacturing process and cannot be fitted to existing ladders.



Training and safety strap.

Part number: CEL1972-5

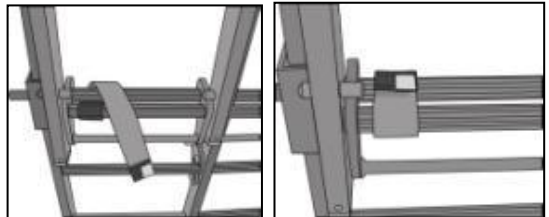
The training safety strap is for use with the ladder systems for the safe raising and lowering of ladders.



Velcro Ladder Strap.

Part number: 1004-1001-1002

Supplied with all new multi-level extension ladders to secure the sliding ladder section to the base ladder section preventing the auto-swing safety clutch from disengaging. The strap is secured to the ladder with press studs.



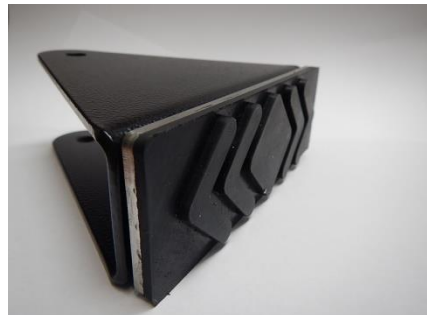
Multi surface grips.

Part number: ANC-002-MSG



Movable rubber feet.

Part number: ANC-002-MRF



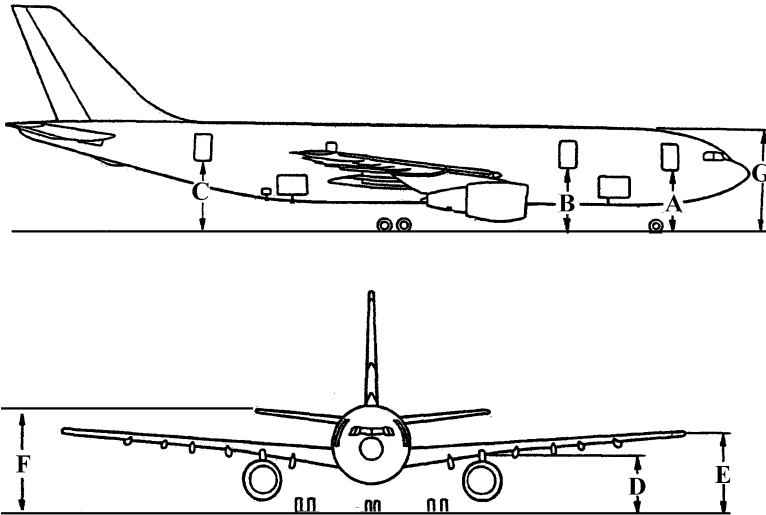
Aircraft Handbook.

Part number: CPN6003

The Aircraft Handbook provides information detailing door heights, seat layouts and door opening procedures if immediate action needs to be taken without prior access to similar aircraft.

The handbook covers over 40 aircraft and 70 variants including Boeing, Airbus, DC, and MD aircraft.

Example aircraft layout:



Vertical Clearances, Model A300 – 600

Operating Weight Empty		Maximum Ramp Weight	
	CG 25%	CG 15%	CG 34%
A	4.58 m	4.41 m	4.52 m
B	4.70 m	4.54 m	4.61 m
C	5.40 m	5.29 m	5.16 m
D	4.39 m	4.25 m	4.24 m
E	5.84 m	5.43 m	5.38 m
F	7.87 m	7.77 m	7.56 m
G	7.63 m	7.47 m	7.56 m