



Midpeninsula Regional
Open Space District

Memorandum

DATE: August 12, 2020

MEMO TO: Board of Directors

THROUGH: Ana Ruiz, General Manager *aruiz*

FROM: Leigh Guggemos, Capital Project Manager III

SUBJECT: Deer Hollow Farm White Barn -- Replacement of Attic Stairs with Pull-down Ladder

On March 11, 2020 (R-20-27), the Board of Directors approved the following General Manager's recommendation for the Deer Hollow Farm (DHF) White Barn Structural Stabilization Project:

Approve the structural stabilization measures for the Deer Hollow Farm White Barn as recommended in the Basis of Design Report prepared by Wiss, Janney, Elstner Associates, Inc. (WJE), dated December 18, 2019.

The Basis of Design Report recommended improvements to the existing stairs that lead to the attic level of the White Barn. Staff recommended replacing the existing stairs with a prefabricated pull-down style attic ladder. The Board inquired about the usability, cost, safety, and visual impact of a pull-down ladder and suggested that staff explore alternatives. Suggestions included leaving the existing stairs as-is, asking the project architect to design custom stairs, and to have DHF staff test different options. The General Manager stated that District staff would explore the alternatives and test different options with DHF staff.

The current and future use of the attic is for light storage only. DHF staff occasionally stores small items such as holiday decorations and raincoats. The attic framing is not rated to support heavier loads. As such, DHF staff does not regularly access the attic and they do not bring large and heavy items up and down the stairs. The public is prohibited from entering the attic level.

The existing stairs do not comply with the current building code for either a stair or a ladder. Deficiencies include the steep pitch, narrow width, low head room, and varying sizes of the treads and risers. The base of the stairs and posts are supported directly on the soil and show signs of insect damage. See Attachment 1 for photographs of the existing stairs.

District staff explored the option of keeping the existing stairs as-is. The California Existing Building Code allows existing non-compliant stairs and handrails to remain. However, DHF staff as the primary users of the White Barn do not feel safe using the stairs in its current condition due to the steep pitch, narrow width, low head room, and non-uniform treads and risers. Additionally, the finished floor elevation of the ground level will be higher than current conditions once the new concrete slab is installed as part of the rehabilitation project to achieve

proper drainage. The higher elevation will change the riser height of the bottom step, further exacerbating the unsafe situation. Alternatively, all riser heights could be modified, however, Santa Clara County may consider the change in riser height an alteration that will require the stairs to comply with the current building code.

Installing custom-designed code compliant stairs would require blocking a door and/or significant reframing at the attic level. The shallower pitch required of new stairs would take up a larger footprint at the ground level and reduce the amount of usable space on the first floor.

A custom-designed ladder could be installed in lieu of the stairs. A ladder would still have a narrow width and steep pitch, which are the current concerns with the existing stairs. However, the treads and risers would be uniform and the head room improved by widening the opening in the attic floor framing.

A prefabricated pull-down style ladder would function similarly to a custom ladder, with the additional benefit of being out of the way while not in use. Hay is stored right up against the existing stairs on the ground level as DHF staff needs to maximize usable space within the first level of the barn. A pull-down ladder would allow more room to unload and access the hay while still providing access to the attic when needed.

The draft Basis of Design Report dated October 29, 2019 included options to replace the stairs with a permanently installed system or a pull-down attic ladder. DHF staff reviewed the draft BOD report and informed the District that their preference is the pull-down attic ladder. District staff presented their preferred option to the Board at the March 11, 2020 board meeting.

During the Board meeting, several Board members raised concerns about pull-down attic ladders. The Board commented that in their experience, pull-down attic ladders are too narrow and the treads are too shallow. District staff reached out to DHF staff after the Board meeting to relay Board concerns on pull-down attic ladders and to confirm DHF staff concerns with the existing stairs, their minimal usage, and their continued preference for a pull-down ladder to be installed. DHF staff confirmed that a pull-down ladder remains their preference.

To address Board concerns, District staff directed WJE to provide options for pull-down ladders with the greatest width and deepest treads. WJE provided three prefabricated ladder options for District staff and DHF staff to review. The ladders are all similar in appearance, installation, and function. The table below shows the ladder options and key dimensions for safety and usability.

	Werner WH3010	Fakro LWP	Louisville L305P
Tread Width	20.75"	13.25"	20.5"
Tread Depth	4.5"	3.125"	5.25"
Pitch	61°	60°	58°

The Louisville and Werner ladders have similar width and the Louisville has deeper treads and a slightly shallower pitch. The Fakro is both narrower and the treads are not as deep. The Fakro dimensions are similar to what is more commonly seen in residential or small business applications. On May 5, 2020, the above ladder options with specifications and photos were sent to the DHF staff and they selected the Louisville L305P as their preferred option. See Attachment 2 for ladder cutsheets.

On July 24, 2020, District staff acquired a Louisville ladder for DHF staff to try firsthand and the ladder was setup temporarily in the shop at the Foothills Field Office. Due to error in the

shipping process, the Louisville ladder that was setup is narrower than the preferred model with a tread width of 14 inches instead of 20.5 inches. Nevertheless, DHF staff was pleased with the Louisville ladder, felt that it was easy to operate, and did not pose any safety or usability concerns. Based on DHF staff's input, the Louisville L305P appears to be the appropriate choice. See Attachment 3 for photos of the sample ladder setup.

The estimated cost for the prefabricated pull-down ladder option is \$3,000, including removal of the existing stairs, strengthening the opening framing, and installation of the new ladder. The cost of the ladder itself is approximately \$300, with most of the cost in strengthening the existing framing and installation. WJE's analysis determined that the existing opening framing needs to be strengthened for all options, including keeping the existing stairs as-is. Custom built options have higher installation costs as well as additional design fees.

In conclusion, based on the additional follow-up work, replacing the existing White Barn attic stairs with a prefabricated pull-down attic ladder is District staff's recommendation and the preferred option of DHF staff. This option addresses safety concerns of the existing stairs and allows the ladder to be stowed while not in use. The attic is not regularly accessed and the additional working space below the ladder is most desirable. Keeping the existing stairs in place would still require strengthening of the opening framing and would likely need additional modifications due the raised ground floor elevation. The Louisville L305P is the preferred option among the prefabricated ladder options, with deeper treads and similar or wider width than other options. As an additional safety feature, District staff will consider incorporating a handrail attached the barn wall adjacent to where the ladder pulls down. Staff will proceed as described above unless additional concerns are raised by the Board.

###

ATTACHMENT 1 - EXISTING STAIRS



1. Stairs are steep with low headroom. Posts rest directly on soil.



2 View of the stairs after a hay delivery.



3 Stairs are used infrequently. Often inaccessible after hay deliveries.



4 View behind the stairs.

ATTACHMENT 2 - ATTIC LADDER CUT SHEETS



SERIES BIG BOY

LOUISVILLE LADDER 30X60 WOOD ATTIC LADDER, 350- POUND LOAD CAPACITY, L305P

Duty Rating:
Load: 350

This Louisville Big Boy Series wood attic ladder has a working load capability of 350lbs. This wood attic ladder fits ceiling heights of 8' 9" to 10' and has a rough opening of 30" X 60". The Big Boy L305P features extra-deep 5-1/4" reinforced steps, adjustable spring, an ergonomic T-handle, and easy-hang straps.

FEATURES

- "30" Wide Opening"
- "Extra-Deep 5 1/2" Reinforced Steps"
- Easy-Hang Strap
- Adjustable Spring
- Ergonomic T-Handle For An Easier Opening

WHERE TO BUY

Attic Instructions NEW STYLE 1 SHEET FORMAT ▶

MATERIAL

Wood

STYLE

Big Boy

LOAD CAPACITY

350

PRODUCT SPECIFICATIONS

- Product: Attic Ladders
- Load Capacity (lbs): 350
- Weight: 82
- Rough Opening (in): 30x60
- Approx. Cubes (ft): 14.2
- ANSI Certified
- SKU: L305P
- Rung Type: Standard
- Ceiling Height Minimum (ft): 8.75
- Landing Space (in): 70
- Step Width (in): 5.25
- Style: Big Boy
- Material: Wood
- Ceiling Height Maximum (ft): 10
- Project Width or Clearance Century (in): 79
- Rail Size (in): 0.75x4.375

RELATED PARTS & ACCESSORIES





ATTIC LADDER INSTALLATION INSTRUCTIONS

MODELS: S224P, S254P, AS226P, AS256P, AL226P, AL256P, CS224P, CS224I, CS254P, CS254I, CL224P, CL224I, CL254P, CL254I, L224P, L254P, S305P, CS305P, L305P, CL305P, AL228P, AL258P

WARNING

Before you start installing your new Louisville Ceiling Mounted Folding Attic Ladder, you must read and understand the following:

1. For residential use only. Not for use in a commercial or industrial setting
2. Installation requires two people.
3. Check the ceiling height to make sure the ladder length is correct. If the ladder is too short, return it to the point of purchase for an exchange. Under no circumstance is any folding attic ladder to be used when the ceiling-to-floor measurement exceeds the maximum ceiling height as indicated for the Ceiling Mounted Folding Attic Ladder you are installing (See "Max Ceiling Height" column in table 2, page 3).
4. This folding attic ladder is completely assembled and is ready for installation. Do not disassemble it to install.
5. The springs on this folding attic ladder are under pressure. Do not attempt to remove or replace before installation.
6. Prior to installation, verify that all fasteners are properly tightened. Re-check these periodically after initial installation.
7. Make sure there is no wiring or piping that the saw or drill can come in contact with during installation.
8. Opening or standing on the folding attic ladder's climbing sections prior to properly fastening to ceiling joists could cause serious bodily injury.
9. Verify that the unit meets local building codes and that the intended area of installation is of sufficient strength to be used for a walking or working surface.
10. If the home has roof trusses, do not cut the ceiling joists without consulting an engineer for approval.
11. Before installation, read all the instruction labels on the folding attic ladder.
12. Improper installation could result in serious bodily injury.
13. Do not attempt to open the door prior to installation.
14. Only use 16d nails or ¼" x 3" lag screws (not included) for the permanent installation step.
15. Follow the "Adjust The Ladder Length" instructions on Step 3 for proper trimming instructions.
16. Annually lubricate (spray silicon recommended) pivot points of right and left folding arm mechanism (power arm assembly) to provide smooth, long-lasting operation.

1

Included with your Folding Attic Ladder

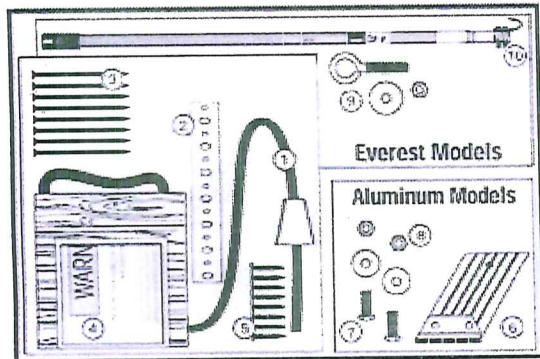


FIGURE 1: All models

NO.	ITEM	QTY.
1	Pull cord – 36"	1
2	Support Straps	4
3	16d nails	8
4	Installation Instructions	1
5	Roofing nails – ¾"	8
6	**Aluminum feet	2
7	**¾" Bolts	2
8	**¼" Lock nuts & washers	2
9	+Eyebolt, nut & washer	1
10	+Pole hook	1

**Aluminum models | +Everest models

TABLE 1

STEP 1: PRELIMINARY INSTALLATION INSTRUCTIONS

A. Attach four E-Z Hang temporary support straps to the frame. Refer to figure 3 and instructions listed below.

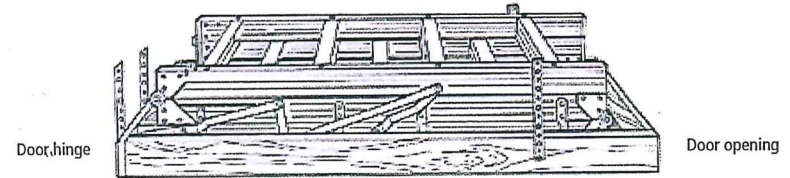


FIGURE 3

- Place the folding attic ladder on the floor with the door opening on your right-hand side.
 - Using the roofing nails and straps provided, attach one strap using two nails on the outside of the attic ladder frame at the extreme right hand corner near the door stop block.
 - Attach the second strap opposite the first strap on the far outside frame.
 - The third and fourth straps should be positioned on the door hinge side near each corner opposite the door opening.
- B. Position one person up in the attic, and position one person in the room below. When using a step ladder make sure ladder is fully open, all feet firmly supported and user's weight and materials does not exceed the load rating of the ladder.
- C. The person in the room below will need to raise the attic ladder into the rough opening and position the attic ladder's door frame flush with the ceiling surface.
- D. The person in the attic should then bend the metal E-Z Hang strapping at the four corners of the attic ladder frame over the adjoining ceiling joists and nail through the metal strapping using four of the 16d nails provided to temporarily suspend the attic ladder.

CAUTION: This is only a temporary connection, NEVER climb on ladder in this condition.

E. Carefully open attic ladder door but do not unfold the climbing section until indicated in step 3. Place the frame on the door hinge side of the ladder up against the header and center side to side in the rough opening. Temporarily secure to header with 16d nail. Make sure frame is flush with ceiling before nailing (figure 4, next page).

4

F. Center and square the opposite side of attic ladder frame using shims. Ensure ladder frame is square by measuring diagonals of the frame within ¼". Secure other sides of ladder frame to ceiling joists with remaining three 16d nails (figure 4).

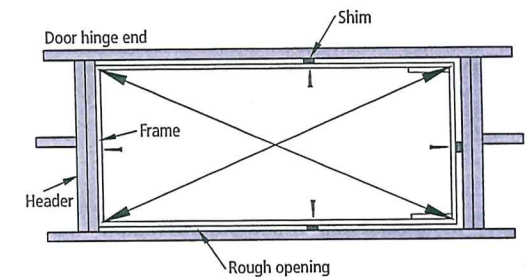


FIGURE 4

STEP 2: PERMANENT INSTALLATION

A. Install fasteners at the 12 locations shown in figure 5 for permanent installation. Either ¼" x 3" lag screws or 16d nails should be used. Install shims when necessary to fill any gaps between the door frame and rough opening. Make sure to install the fasteners in the holes provided in the corner brackets and pivot plates.

NOTE: When using lag screws first drill ¼" diameter holes through the frame at each location to prevent splitting and follow with ¾" pilot holes in the ceiling joist facilitate installation of the lag screw.

ATTIC LADDER SERIES NAME AND MODEL NUMBER CROSS REFERENCE

WOOD					ALUMINUM				
Series	Models				Series	Models			
Premium	S224P	S254P	L224P	L254P	Summit	AS226P	AS256P	AL226P	AL256P
Champion	CS224P	CS254P	CL224P	CL254P	Everest	AL228P		AL258P	
	CS224I	CS254I	CL224I	CL254I					
Big Boy	S305P	CS305P	L305P	CL305P					

MATERIALS REQUIRED

- [1.] Stepladder [2.] Hammer [3.] Adjustable wrench [4.] Tape measure [5.] Hand saw [6.] Hack saw [7.] Drill [8.] Drill bit 3/16", 1/4" [9.] Phillips screw driver [10.] (12) 1/4" x 3" lag screws or 16d nails [11.] Shims

2

Installation instructions for wood models and for aluminum models

Read instructions and warnings completely before starting

IMPORTANT: DO NOT OPEN FOLDING ATTIC LADDER UNTIL INSTRUCTED TO IN STEP NUMBER 3.

Folding Attic Ladder Location:

Allow ample room for the swing clearance and the landing space of the folding attic ladder when it is opened (see figure 2 and table 2). Locate the folding attic ladder rough opening so that when you enter the storage area, you will have adequate head clearance.

You must have a rough opening as shown for your model in table 2. If not, proceed to the appendix for framing instructions.

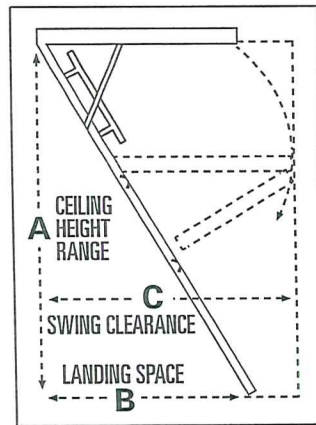


FIGURE 2

MODEL	ROUGH OPENING	MAX. CEILING HT. "A"	LANDING SPACE* "B"	SWING CLEARANCE "C"
S224P, AS226P, CS224P, CS224I	22 1/2" x 54"	8' 9"	63"	66"
S254P, AS256P, CS254P, CS254I	25 1/2" x 54"	8' 9"	63"	66"
L224P, AL226P, CL224P, CL224I	22 1/2" x 54"	10'	71"	75"
L254P, AL256P, CL254P, CL254I	25 1/2" x 54"	10'	71"	75"
S305P	30" x 60"	8' 9"	63"	66"
CS305P	30" x 54"	8' 9"	60"	69"
L305P	30" x 60"	10'	71"	75"
CL305P	30" x 54"	10' 1"	67"	79"
AL228P	22 1/2" x 63"	12'	85"	87"
AL258P	25 1/2" x 63"	12'	85"	87"

*When installed at maximum ceiling height

TABLE 2

3

B. WARNING: Never use deck or sheetrock screws for permanent installation.

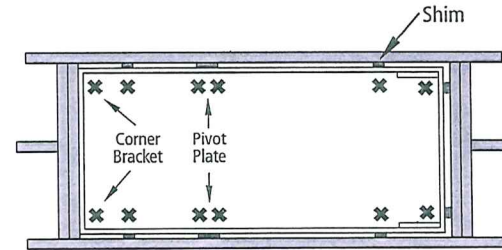


FIGURE 5

5

STEP 3: ADJUST LADDER LENGTH

A. Carefully unfold ladder to the ground rotating bottom section behind middle section (figure 6). Press down on top and middle sections of the ladder to ensure the power arms are fully extended before taking measurements for trimming your ladder.

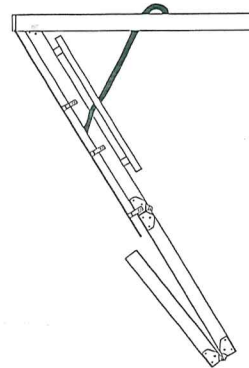


FIGURE 6

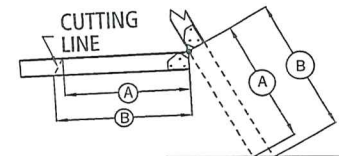


FIGURE 7

B. With a straight edge, measure distances from middle section to floor, for both A & B lengths (figure 7).

WOOD MODELS: Proceed to "C"
ALUMINUM MODELS: Skip to page 7 "Additional steps for aluminum models only"

C. Record A & B values in table 3 for both rails.

	LEFT RAIL		RIGHT RAIL	
	A	B	A	B
Measurement to floor				

TABLE 3 (Wood models only)

D. Transfer these dimensions to the bottom section of the ladder right and left rails and draw a cutting line between the two points. Trim bottom section to length using wood saw (figure 7).

Proceed to "Check the length after making your cuts" on page 8...

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ADDITIONAL STEPS FOR ALUMINUM MODELS ONLY:

A. For aluminum models, complete table 4. Subtract 3/4" from each measurement and record the results in row titled "Rail cut length".

	LEFT RAIL		RIGHT RAIL	
	A	B	A	B
Measurement to floor				
Subtract for shoe	(-3/4")	(-3/4")	(-3/4")	(-3/4")
Rail cut length				

TABLE 4 (Aluminum models only)

B. Transfer cut length dimensions from table 4 to the bottom section of the ladder right and left rails and draw a cutting line between the two points. Trim bottom section to length using a metal cutting saw (figure 7).

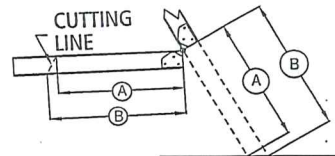


FIGURE 7 (repeated from previous page)

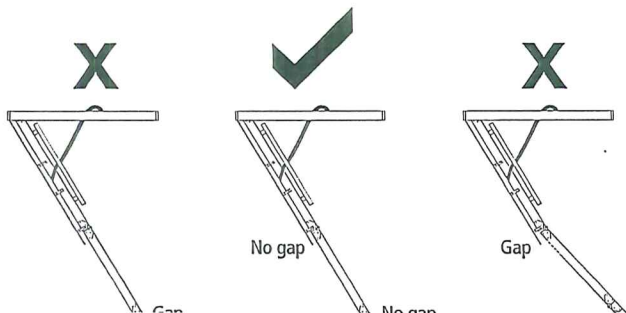
C. Rotate bottom section back in line with top sections and press down on the middle section to ensure that the power arms are fully extended.

D. Slide aluminum foot over ladder rail. Position foot so that the extended sections remain straight and the foot is in full contact with the floor. Drill 1/4" hole through the rail using the hole provided on the foot as a template. Anchor securely with 3/4" bolts and locknuts provided.

7

CHECK THE LENGTH AFTER MAKING YOUR CUTS

Again, be sure the attic ladder power arms are fully extended. Trimmed correctly, your attic ladder should look like figure 9. Verify that there are no gaps in the section and both feet are flat on the floor.



EVEREST ALUMINUM 12' FOLDING ATTIC LADDER OPENING AND CLOSING INSTRUCTIONS

Closely follow instructions attached to pole hook when opening and closing Everest Folding Attic ladder.

Required to operate: Two People | Attic ladder Pole hook | Stepladder or Step Stool

Opening Instructions:

1. Standing on the floor, reach up with the pole hook and firmly hook the eye-bolt on the attic door and pull to open door.
2. Position a stepladder to the side of the attic ladder's climbing section drop-down area.

DANGER: never place stepladder or person in the path of the attic ladder's climbing section drop-down area.

3. Position the two people (one on the stepladder and one on the floor) on either side of the attic ladder drop-down area.
4. The person on the stepladder should slowly and carefully begin unfolding the two hinged sections of the attic ladder to the person on the floor.
5. Continue to unfold the attic ladder until both sections are fully extended. Press downward on the climbing section to ensure power arm assembly is fully open and in the locked position.

Closing Instructions:

1. Position one person on the stepladder and the other on the floor on either side of the attic ladder.
2. The person on the floor should begin to fold up the bottom and middle sections, handing off to the person on the stepladder to complete the folding process.
3. Use the pole hook to tap the power arm toward the open end of the attic ladder (away from the door hinge) to release power arm (See figure 12).
4. Hook the eye-bolt on the door with the pole hook and push firmly upward until the springs engage. Slowly control the door with the pole hook until completely closed.
5. Remove pole hook and store in a safe place.

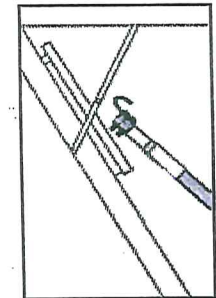


FIGURE 12

10

APPENDIX – Framing A Rough Opening Parallel To Ceiling Joist

Make a rough opening to the size as required in table 2 (page 3) ensuring that the dimensions of the diagonals of the frame are the same as illustrated in figure 13.

A. For Rough opening without joist removal (figure 13)

- Locate headers in front and rear of the opening as shown in figure 13.
- Check for squareness by making sure that diagonal measurements are within 1/8".
- Secure using (3) 16d nails into each end of the Header.

B. Rough opening with joist removal (figure 14)

- Install temporary support boards spanning both sides of joists to be removed.
- Remove joist at length to allow for double headers to be installed on both ends of opening.

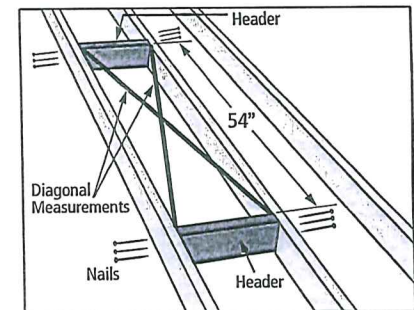


FIGURE 13

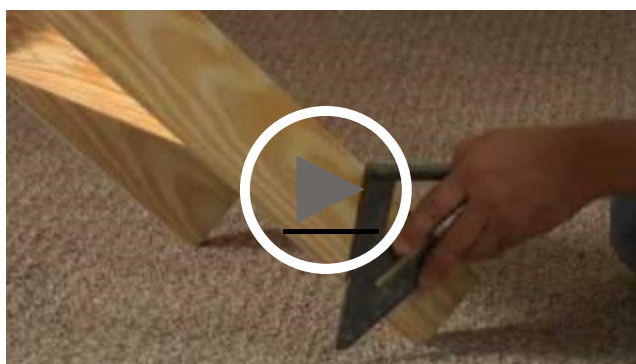


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WH3010 30.5IN W X 54IN L X 10FT H CEILING HEAVY DUTY WOOD ATTIC LADDER

0 Reviews

144 questions and 145 answers for this product

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OVERVIEW

SIZE	STYLE	ROUGH OPENING WIDTH X LENGTH	LOAD CAPACITY	MATERIAL
10ft	Folding	30.5in x 54in	350lb	Wood

The WH3010 Heavy Duty Wood Attic Ladder boasts a duty rating of 350lb. These ladders come fully assembled and ready to install. Full wrap-around door hinge minimizes heat loss. High quality door can be painted or stained. Pull string allows for easy opening and closing. Hinges butt metal to metal to maintain ladder rigidity. Counter-balance mechanism eliminates sag and springiness.

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FEATURES

- Counter-balance mechanism eliminates sag and springiness
- Full wrap-around door hinge minimizes heat loss
- High quality door can be painted or stained
- Hinges butt metal to metal to maintain ladder rigidity
- Pull string allows for easy operation
- Easy to open and close
- Fully assembled and ready to install

SPECIFICATIONS

FEATURE	SIZE / DETAILS
Unique Features	Compact Designs
Size	10ft
Max Floor to Ceiling Height Range	105in-124in
Max Floor to Ceiling Height	10ft 3in
Min Floor to Ceiling Height	8ft 9in

Rough Opening Width x Length	30.5in x 54in
Load Capacity	350lb
Step Width	20-3/4in
Grooved Steps-Actual Lumber Size	3/4in x 4-1/2in
Rail Size	3/4in x 4-1/2in
Approx. Product Weight (lb)	63
Performance	Professional
Approx. Shipping Weight (lb)	63
Certifications	ANSI A14.9 (2010)
Closed Depth	54.25in
Closed Height	14.69in
Closed Width	30.5in
Door Material	Plywood
Foot Material	Wood
Frame Material	Pine
Full Width Door Hinge	Yes
Door Included	Yes
Handrail Included	Yes
Landing Space Range	64in
Locking Device	Spring
Material	Wood

Materials Warning	TSCA Title VI Compliant, Wood Dust Warning Required
Metal-to-Metal Rail hinge	Yes
Swing Clearance	72in
Number of People for Installation	2
Number of Steps	11
Opening Device	Rope
Separate Foot Attachment	Yes
Style	Folding

ADDITIONAL WH SERIES MODELS

MODEL NO.	UNIQUE FEATURES	SIZE	MAX FLOOR TO CEILING HEIGHT RANGE	MAX FLOOR TO CEILING HEIGHT	MIN FLOOR TO CEILING HEIGHT
<u>WH2208</u>	Compact Designs	8ft	84in-105in	8ft 9in	7ft

<u>WH2210</u>	Compact Designs	10ft	105in-124in	10ft 3in	8ft 9in
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<u>WH2508</u>	Compact Designs	8ft	84in-105in	8ft 9in	7ft
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<u>WH2510</u>	Compact Designs	10ft	105in-124in	10ft 3in	8ft 9in
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<u>WH3008</u>	Compact Designs	8ft	84in-105in	8ft 9in	7ft
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<u>WH3010</u>	Compact Designs	10ft	105in-124in	10ft 3in	8ft 9in
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TECHNICAL SPECIFICATION

ATTIC LADDER LWP

I. APPLICATION

LWP is an insulated folding attic ladder designed to provide safe and easy access to non-inhabited spaces. It eliminates a need for installing more expensive and space consuming staircases. Fakro **LWP** model is recommended for garage and inside a house installation.

II. STRUCTURE

No.	Element	Description
1	Hatch	insulated, sandwich type, beige thickness: 1 3/8" thermal insulation thickness: 1 1/8". hatch equipped with a lock.
2	Frame	pinewood height: 5 1/2" gasket: 1 pcs
3	Ladder	pinewood ladder width: 15" stringer height: 31 1/8" distance between steps: 9 7/8"
4	Steps	made of pinewood, equipped with anti-slip profile. step width: 3 3/8" thickness: 7/8" length: 13 1/4"
5	Standard Accessories	handrail in red colour. control rod for opening the hatch.

III. DIMENSIONS

No.	Rough Opening	Room height
1	22,5" x 47"	7'5" - 8'11"
2	25" x 47"	
3	22,5" x 54"	7'10" - 10'1"
4	25" x 54"	
5	30" x 54"	
6	22,5" x 54"	8'8 1/2" - 10'8"
7	25" x 54"	
8	30" x 54"	

IV. TECHNICAL PARAMETERS

Maximum loading	300 lbs
Heat transfer coefficient	R-value: 5.9

V. COMPATIBLE ACCESSORIES

Plastic ends LXS	Available for all sizes
Metal handrail LXH	While ordering handrail please provide attic ladder type. Handrail can be mounted on the left or right side of ladder.
Ladder Balustrade LXB-U	The balustrade is available in one standard size 30"x54" for all attic ladders.
Wooden trim LXL-W	The trims are available in one size 30"x54" for smaller sizes have to be cut.
PCV trim LXL-PVC	The trims are available in one size 30"x54" for smaller sizes have to be cut.
Box extension LXN	The standard box height is 4". While ordering the LXN please provide ladder type and size.
Upper hatch LXW	The height of the upper hatch box is 7 3/4".
Installation brackets LXX	Maximum ceiling 13 3/4"

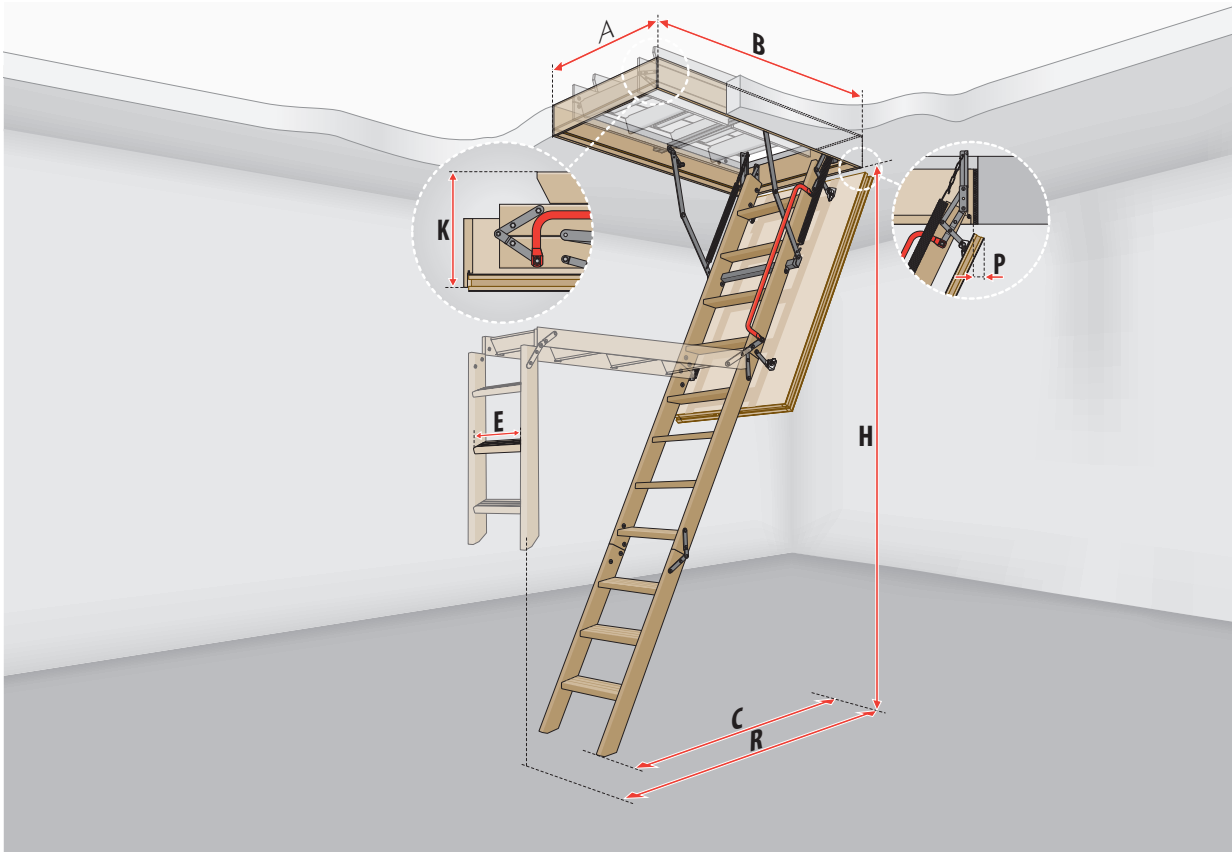


VI. ASSEMBLY INFORMATION

The **LWP Attic Ladder** is delivered to the customer fully assembled and does not require any pre-installation work. New design of the loft ladder (hatch fastened by means of special the so-called "clicks") allows for easy and quick installation without the need for entering the attic. The length of the last segment should be cut on-site to suit to existing ceiling height. Installation of the product must be carried out in accordance with the included fitting instructions.

Pre-installation, installation and safety instruction: <http://www.fakrousa.com/our-products/offer/-installation-instructions/>
Installation movies: <http://www.fakrousa.com/our-products/offer/attic-ladders/>

VII.DETAILED DIMENSIONS

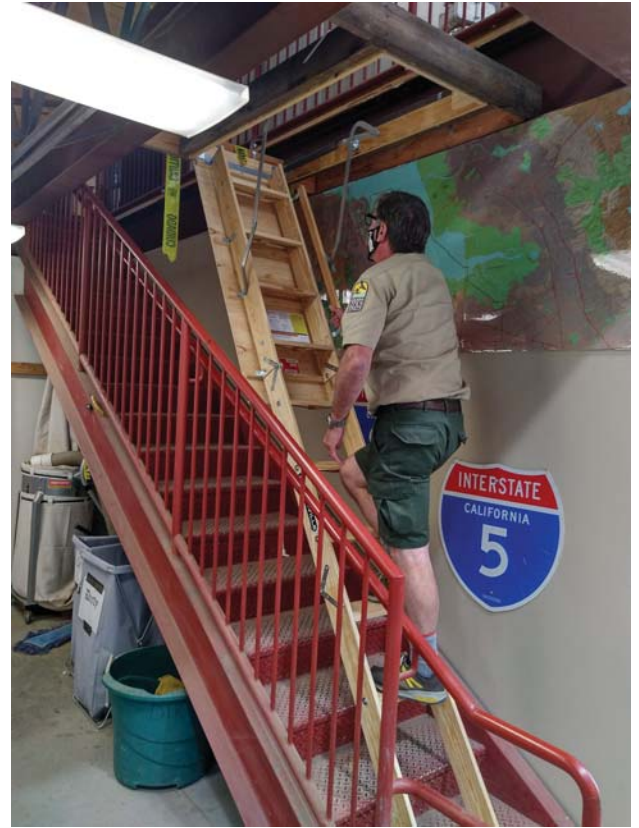


LWP		22½"x47"	25"x47"	22½"x54"	25"x54"	30"x54"	22½" x 54"	25"x54"	30"x54"	
Manufacturer's part number		66801	66802	66803	66804	66809	66853	66854	66855	
Ceiling height	H	7'5" - 8'11"			7'10" - 10'1"			8'8" - 10'8"		
Rough opening	AxB	22½"x47"	25"x47"	22½"x54"	25"x54"	30"x54"	22½"x54"	25"x54"	30"x54"	
Outside frame dimensions		22"x46⅝"	24½"x46⅝"	22"x53½"	24½"x53½"	29½"x53½"	22"x53½"	24½"x53½"	29½"x53½"	
Internal frame dimensions		20½"x44⅞"	23"x44 ⅞"	20 ½"x51¾"	23"x51¾"	28"x51¾"	20½"x51¾"	23"x51¾"	28"x51¾"	
Projection	R	64½"			72"			75"½"		
Landing space	C	57½"			64"			65"½"		
Folded ladder height	K								10¾"	
Board movement after opening	P								1¼"	
Frame height									5½"	

ATTACHMENT 3 - SAMPLE ATTIC LADDER



1. Sample Louisville ladder in FFO. Final ladder will be 6 inches wider.



2. District and DHF staff tried the sample ladder first hand.



3. The deep treads feel safe and comfortable to use.



4. The ladder when closed sits flush with the framing and it is easy to operate.