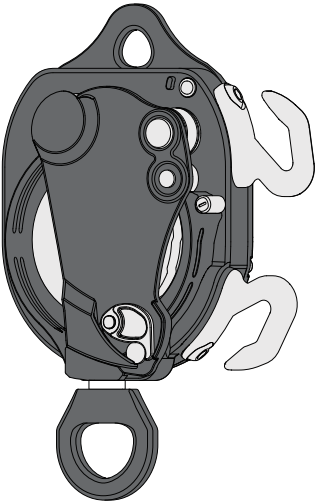
Artisans Working At Heights



AWAH-Z2 Series Drill Powered Pulley

User Manual

Applicable models

Z2 / Z2-R / Z2-A

V 3.5

Product Name	Drill Powered Pulley
Applicable models	Z2 Basic Z2-R Rescue Z2-A Arborist
Product Type	Pulley / Ascender / Descender
Execution standards	XF 494—2023
⚠Warning	1. According to XF 494—2023, this device may be used for person support. The manufacturer requires the use of a backup system simultaneously. 2. In the European Union (EU), this product is not certified as PPE and therefore must not be used as PPE/ person support under EU rules. 3. In other countries, users are required by local regulations to decide whether to use it for person support. The manufacturer requires the use of a backup system simultaneously.
Language	English

User Manual

AWAH Z2 Drill Powered Pulley

Please read the manual and understand the contents before using the device.
Please keep this instruction manual safe and available to record any repairs or maintenance done on the unit.

This manual describes techniques and methods for correct product use. Please pay extra attention to the warning signs, which identify the potential hazards and special precautions for using this product. These warnings are not exhaustive, for more information or updated versions of instructions please visit the company's website or the WeChat official account. It is the user's responsibility to read all instructions and use this product correctly, any misuse will cause safety risks. If you have any questions or do not fully understand this manual, please contact us.

Declaration of Conformity

The AWAH Z2 series Drill Powered Pulleys have been tested and are compliant with the XF 494–2023 standard. Please refer to the test report for details.

Contents

1. Responsibilities and warnings

Any work involving the use of this product is dangerous. Users are responsible for and bear the consequences of their actions, decisions, and safety. Do not use this product if you cannot assume responsibility or cannot fully understand this manual.

1.1 Before using this product, you must:

- Read and understand this User Manual completely.

- Take specific training for the proper use of this product in a safe environment.

- Familiarize yourself with this product, understand its performance, the restrictions of using and the potential hazards associated with using this device.

- Understand and accept the dangers involved.

1.2 This product is intended for use only by competent and responsible personnel or under direct visual supervision by competent and responsible persons.

1.3 Ignoring any of these warnings can result in damage to property, serious injury, or even death.

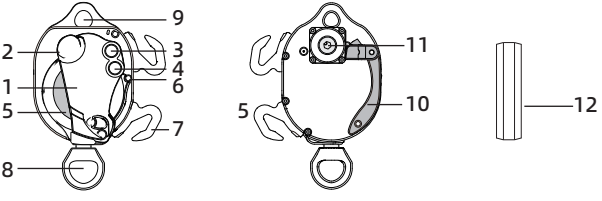
1.4 The company does not assume any responsibility for any direct or indirect results such as property damage, personal injury, or death caused by the use of this product.

1.5 It is recommended to purchase commercial insurance for users and goods to cover property damage, personal injury, or death caused by possible operational errors.




2. Product introduction

2.1 Product illustrations



1 Movable panel	2 Guide bearing for rope entry	3 Guide bearing for rope exit
4 Bearing for pressing rope	5 Wheel	6 Friction bar
7 Friction hook	8 Main attachment hole	9 Becket
10 Handle for Releasing	11 Electric drill adapter interface	12 Electric drill adapter shaft

A Name & Model	B Read the manual before use	C Indication of gears
D Indication of the rope direction	E Serial Number	F Specifications
G Becket MBS	H QR code for electronic manual	

25 A 00 00 0000-XXXX

Year of manufacture

Month of manufacture

Day of manufacture

Identifying code

Serial code

Batch code

Letter	A	B	C	D	E	F	G	H	J	K	L	M
Month	1	2	3	4	5	6	7	8	9	10	11	12

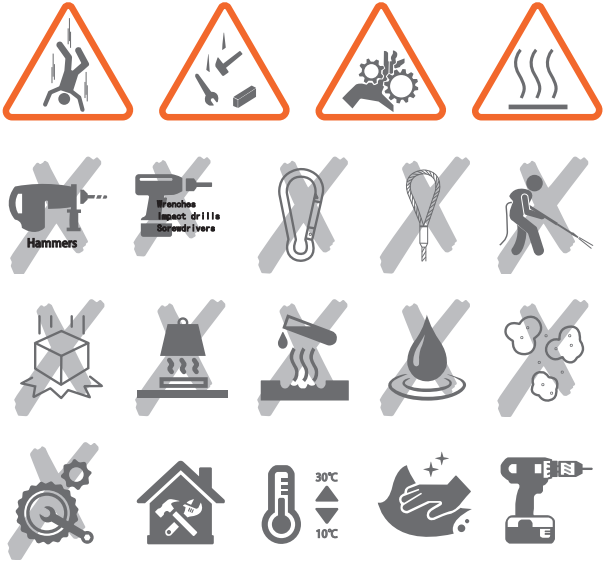
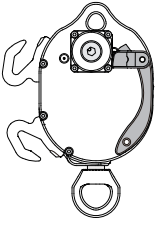
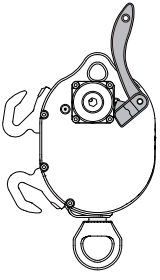


Figure 1 Indication of handle position

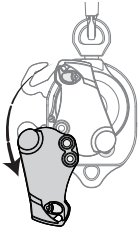


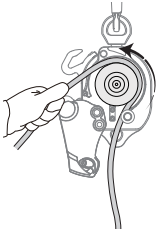
Teeth engaged

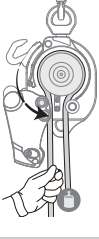


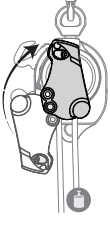
Free spinning pulley

Figure 2 Load the rope









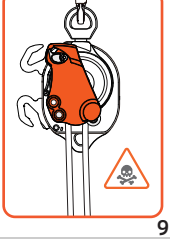


Figure 3 **Functional checks**

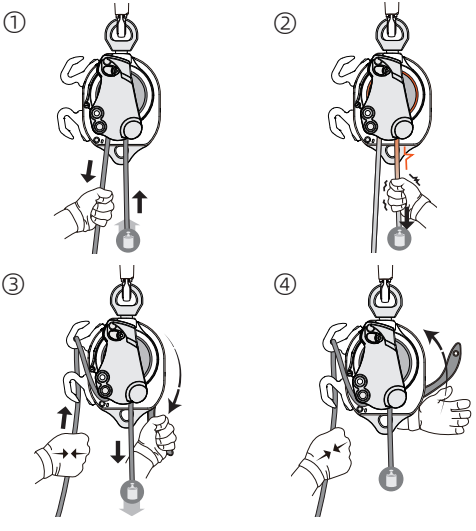


Figure 4 **Lifting**

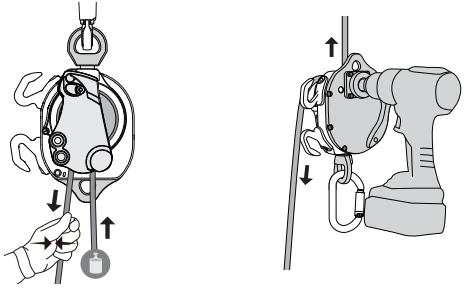
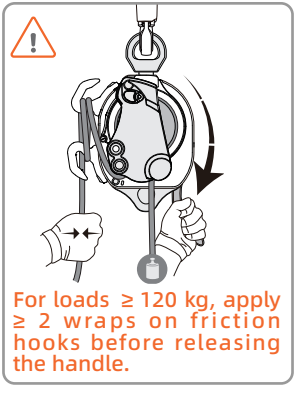
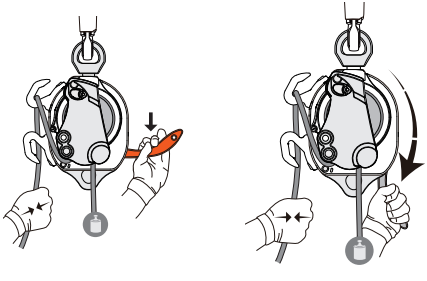


Figure 5 Lowering





DO NOT PULL THE HANDLE SLOWLY

Pull it quickly

When the handle is unlocked, the internal ratchet is unhooked and the wheel for winding rope instantly becomes a high-efficiency pulley. Therefore, before pulling the handle, be sure to wrap the rope on the friction hooks to obtain sufficient friction, and the greater the weight to lowering, the more turns the rope needs to be wrapped.

Figure 6 **Warnings of incorrect operation**

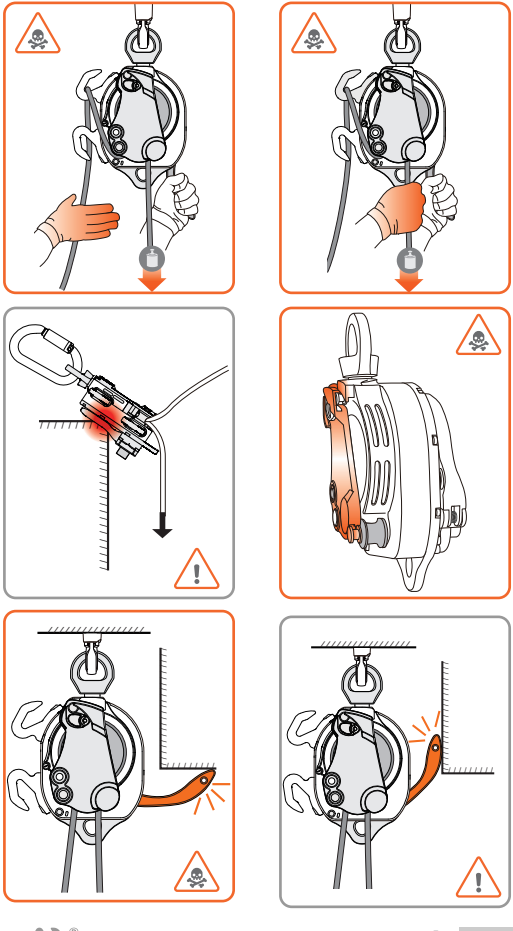


Figure 7 **Risks of entanglement**

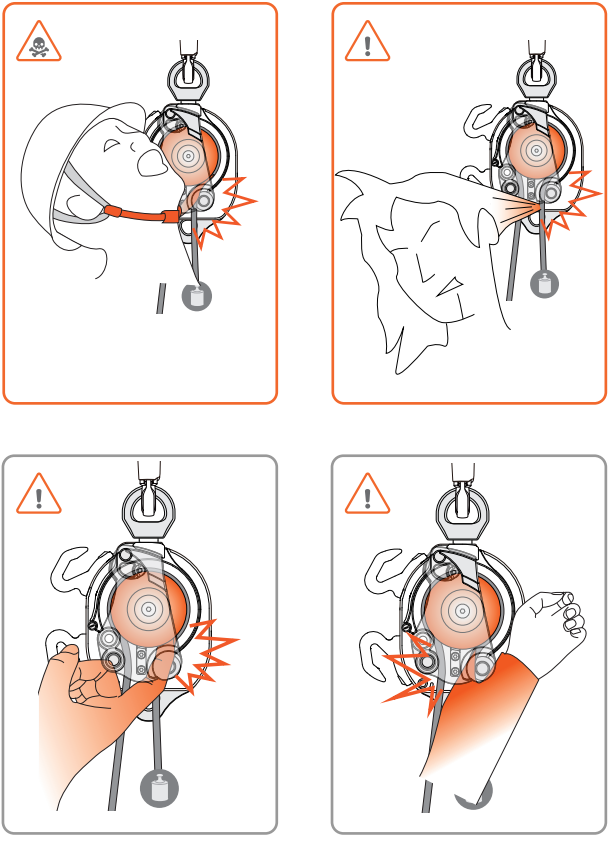


Figure 8 **Locking off the rope**

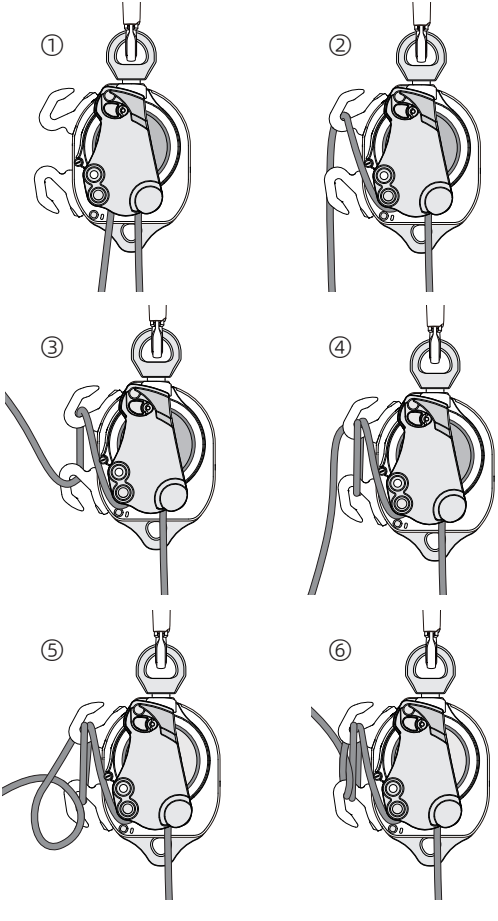
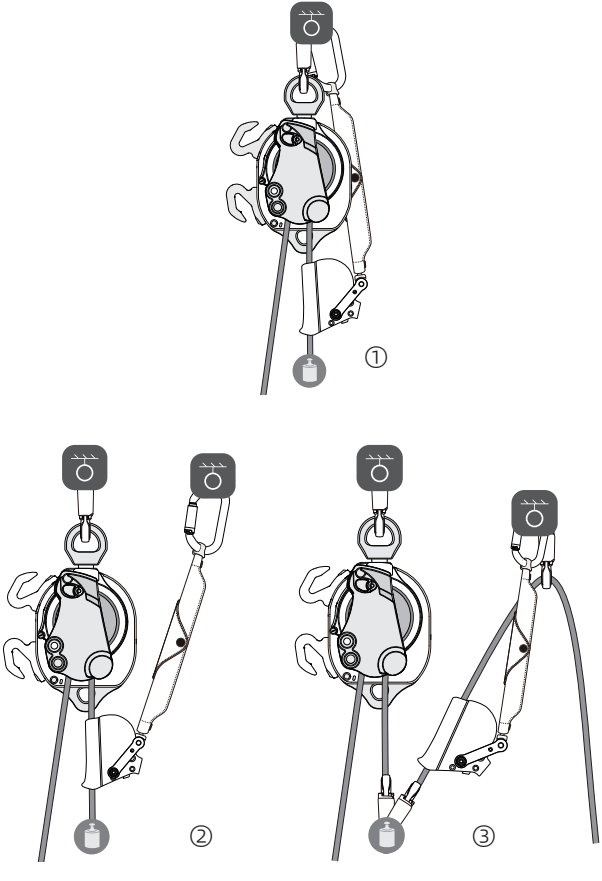


Figure 9 **Must be used with a backup system**



2.2 Product introduction

AWAH-Z2 is a drill-powered pulley, integrating a progress capture pulley, gears for assisted lifting, and friction arms to be a descender. It can be connected to an electric drill to provide lifting power. It can be used for efficiently pulling, holding, lifting and lowering weight WHEN USED WITH A BACK UP DEVICE.

2.3 Scope of use

2.3.1 The core component of this product is a releasable unidirectional pulley, which can be used alone as a fixed pulley or combined with additional pulley(s) to form an mechanical advantage System.

2.3.2 To lift weight, use an electric drill to turn the adapter shaft counter-clockwise. This product only supports manual descent. It does not support descent by electric drill power.

2.3.3 This product should only be used in a dry environment. It is not waterproof or dustproof. Use in environments with chemical hazards such as seawater or corrosive liquids and gases will lead to a reduced product lifespan. As this can cause safety hazards, the product should not be used in the above environments.

2.4 Technical specifications

Model / Specs	Z2 Basic	Z2-R Rescue	Z2-A Arborist
Execution standards	XF 494–2023 Fire Rescue Industry Standards of China		
Product types	Pulley / Ascender / Descender		
Weight	2.34 kg	2.37kg	2.03 kg
Compatibility of rope	Specialized rope ø10.5~11 mm		EN 1891 ø10.5~11 mm
	Ultra-high molecular weight polyethylene ropes or polypropylene ropes are prohibited		
Max load	150 kg	200 kg	200 kg
Swivel	○	○	●
Becket	○	●	●
Wheel is user-replaceable	○	○	●
Compatibility of carabiner	Oval	Oval	Any shape
Torque of electric drill	50~150 N·m/ 440~1,330 in-lbs No Impact Drills (Brushless Drill Recommended)		
Descent speed limit	0.5 m/s (Max Load) ~ 2.0 m/s (Min Load)		
Operating temperature	– 15° C ~ 45° C / 5 °F ~ 113 °F		
Dust and waterproof	No		
Life span	Either 6 years after the date of manufacture, or lifting by 20,000 meters, whichever condition comes first shall prevail.		

2.5 Compatible parts

2.5.1 The electric drills connected to this product should meet the torque requirements in section 2.4. It is strictly forbidden to use electric hammers, electric wrenches, impact drills, screwdrivers and other power tools with rotary impact or radial impact functions. Do not use the impact gear setting of electric drills. The impact function can damage the gears.

2.5.2 The thickness of the rope directly affects the load that this product can carry, that is, the thinner the rope, the more likely it is to slide under lower loads. The use of spiral ropes, wire ropes, flat belts (ropes) or chains is forbidden. Ultra-high molecular weight polyethylene ropes or polypropylene ropes are prohibited.

⚠ **Note 1: The greater the load, the faster the rope will wear out. The longer it is used, the more wear and tear the rope will see.**

⚠ **Note 2: The life of ropes varies greatly depending on the quality, refer to the information provided by the rope manufacturer to assess whether the rope should be scrapped.**

3. Safety Rules

The user should have the corresponding theoretical knowledge and practical ability of working at height, and must read and understand this manual completely. Safe operation of this device requires mastering the operating principles, knowing it's usage limitations and understanding the potential hazards associated with using this device.

3.1 When using this product, do not use connectors or ropes that do not meet the requirements of this manual. The device is strictly limited to use within the nominal load range. Overloaded use will shorten the life of this product. Serious overload may damage the device during one use (including damage to the gears and compatible parts such as ropes, connectors and electric drills).

3.2 Users must be medically fit for work at height. Users with physical illnesses, psychological conditions, or substance dependencies–such as high blood pressure, heart disease, dizziness, acrophobia, or frequent alcohol use–may be at increased risk and could compromise the safe operation of the device. If you feel unwell, please immediately stop working with this product.

3.3 Before use, a sufficiently wide isolation area should be set up. Supervision should be arranged, and unrelated personnel should be prohibited from entering the work area to prevent being injured by falling objects or the work system from being damaged by someone.

3.4 Users should take protective measures in advance. Correctly wear harnesses, gloves, helmets, goggles, shoes and other PPE suitable for the nature of work that meet relevant standards. This prevents accidents such as falling from height, electric shock, extrusion, impact, and rope breakage.

3.5 When lifting or lowering, this product must be accompanied by a personal protective equipment (PPE) backup safety system, as shown in Figure 9.

3.6 To prevent damage to personnel, goods, ropes, and this product, do not obstruct the path of lifting and lowering.

3.7 This product may generate high temperatures during use, which can lead to a decrease in braking performance and may melt the rope sheath. It is advisable in this scenario to slow down the descent, or after placing release handle in the locked position, unwrap the rope from the friction hooks and wait

for them to cool down. Do not use in rain or wet conditions.

3.8 This product will gradually wear out during normal use, users should strictly carry out pre-use inspections, in-use inspections, regular inspections, and scrap assessments to timely evaluate whether the device can continue to serve.

3.9 This product is not intended for fall arrest. Do not connect into a fall-arrest system as an energy-absorbing component. Overloading can damage the rope.

4. Operating Instructions

4.1 Loading the rope

(1) Clip the connector into the main attachment hole.

(2) Open the movable panel and load the rope.

(3) Close the movable panel.

(4) Check to make sure the handle is in the locked position.

⚠ **Note: The movable panel of Z2/Z2-R has a closed hole, the connector needs to be removed to load and remove the rope. Be very careful not to drop the product**

when handling.

4.2 Installing a backup system

Figure 9 shows three modes of backup systems. A fall arrest system or rope clamp that complies with the relevant standards or is certified and rated for the full load is recommended. Keep slack to a minimum and verify fall clearance.

⚠ Attention: Some fall arresters cannot effectively stop falls on taut ropes and cannot be used in the way shown in Figure 9 ① ② . They can only be used in the way shown in ③ (Attention should be paid to whether the extension of the rope after a fall occurs is within the allowable safety range).

⚠ Warning 1: The amount of slack in the backup system should be as small as possible to reduce the impact of the fall. The backup system should have a certain degree of flexibility to cushion the impact of the fall.

⚠ Warning 2: The load to be lifted or lowered should be within the allowable range of the backup system, and overload use will be a safety risk.

⚠ Warning 3: There should be adequate clearance distance under the backup safety system to prevent hitting obstacles or the ground when falling.

4.3 Lifting

4.3.1 Lifting manually. This product can be used as a one-way pulley to manually lift weight.

4.3.2 Lifting by electric drill. This product only supports the counterclockwise rotation of the electric drill to input power to lift.

⚠ **Warning 1: When lifting, always ensure that the release handle is in the locked position to prevent falling.**

⚠ **Warning 2: After lifting to the desired position, the rope should be immediately locked before removing the electric drill to prevent the internal teeth from failing to lock and causing falling.**

4.4 Lowering

4.4.1 Prepare for lowering.

(1) Load the rope correctly.

(2) Check to ensure that the handle is in the locked position.

(3) The control end of the rope is wrapped around the friction hooks with maximum friction and locked.

4.4.2 Descent steps.

(1) The left hand quickly pulls the release handle to the bottom and keeps it in the release position.

(2) The right hand gradually and slowly unties the rope from the friction hooks, and in the process of

untying, the right hand grasps the control end of the rope, and it is strictly forbidden to let go freely.

(3) The user begins to descend slowly after obtaining appropriate friction; during the descent, the right hand maintains control of the control end of the rope, and it is strictly forbidden to take off the hand.

(4) To pause the descent, wrap the rope around the friction hooks with maximum friction and lock it, and pull the release handle to the locked position.

(5) In case of emergency, the release handle can be quickly and completely released to allow it to quickly rebound back into the locked position to quickly stop the descent, but it is not recommended to use this method frequently due to possible impact force.

4.5 Rope retraction

Attach drill and run counterclockwise to retract rope quickly. Ensure handle is locked before spinning.

5. Device checks

5.1 Check before use

Before using this product, inspect and test that you have the correct rope, correct connecting components,

and that the backup system is functioning properly.

⚠ **Note: Other connecting components are also necessary for systematic safety, please refer to the information provided by the relevant manufacturer to check as required.**

5.1.1 Check whether this product has deformation, corrosion, cracks, severe wear, sharp surfaces, etc. If any, stop using it immediately.

5.1.2 Check the cleanliness of components such as wheel, friction bar, friction hooks, etc. If they have grease, it will reduce the friction, which could result in an accidental fall. If they have grains of sand, it will accelerate wear and tear.

5.1.3 Check whether the rope is broken, the rope sheath is damaged, partially thickened/thinned, partially bulged/sunken, severely fuzzy, excessively hardened/soft, entangled, knotted in the middle, or dirty, or the rope has been contact with substances that could weaken the performance (such as oil, acid, alkali, unknown chemicals, etc.). If there are any, replace the rope with one that has no safety hazards.

5.1.4 If the noise of gear has significantly increased when running, abnormal jitter, unable to lift, unstable work or stuck, etc., it may indicate that the bearings or

gears are worn excessively. The device should then be retired.

5.1.5 Before official use, at least 1 lifting and lowering test of goods should be taken. It is recommended that the lifting height is not more than 30 cm / 12 inches. Pay attention to listen to whether the "click" sound emitted by the ratchet working is deep and even. If the sound is not normal, the device may be faulty and should immediately stop being used.

5.2 Inspection during use

5.2.1 During the lifting process, pay close attention to the abnormal situation of the device in accordance with the requirements of 5.1.4 and 5.1.5.

5.2.2 During the lifting process, it is necessary to observe whether the rope is sliding in the wheel, as continuous sliding can generate high temperatures and cause damage to the rope.

5.2.3 During the descent process, the temperature of the friction bar and friction hooks should be paid close attention in accordance with the requirements of 3.7.

5.3 Inspection regularly

Carry out as comprehensive inspection every 6 months. In addition to the pre-use inspection items, the following items should be checked:

5.3.1 Check the friction components, if the wear is excessive, it should be scrapped in time or contact the manufacturer for replacement.

Position	Original size	Safety margin
Friction bar	ø 8 mm	≥ 4 mm
Friction hook	ø 10 mm	≥ 8 mm

5.3.2 This product has been lubricated internally and is maintenance-free under normal conditions. If abnormal noise is observed, a qualified technician may add high-temp grease via the service port.

⚠ **Note: If you need to add lubricating grease or replace the input shaft gear, you can remove the square cover (at the electric drill adapter interface). Replacement of the internal mechanism or housing requires the device to be returned to the factory or authorized distributor.**

5.3.3 Check the moving parts and springs of the release handle. If they are stuck, clean them thoroughly and apply lubricating grease.

5.3.4 Check all fixing bolts of the product. If they protrude above the mounting surface, they are loose.

Please tighten them. If the bolts loosen repeatedly, add a small amount of low-temperature anaerobic glue, tighten them, and let stand and solidify before use.

5.3.5 Check the input shaft gear of the product, and replace it if it is excessively worn. Please visit our website.

5.4 Scrap assessment

A comprehensive inspection should be carried out every 12 months, and in addition to the regular inspection items, the following items should be checked:

5.4.1 The main structure of this product is metal, and should be stored in a dry, cool, sealed environment without corrosive liquids or corrosive gases. Under these conditions, the theoretical lifespan of the lubricating oil in the bearings of this product is 6 years.

5.4.2 Wheel wear should be evaluated using a rope with the nominal minimum diameter and the rated maximum load. Suspend the weight so it remains stationary, and ensure the release handle is in the locked position. Keep rope straight, hands off, and no wraps on hooks. Any measurable slide indicates the wheel must be replaced, returned to the factory for

maintenance, or the device should be scrapped.

5.4.3 The user should record and analyze the lifting and lowering load, running distance and other data, and recommend scrapping after exceeding the nominal allowable range. If assessed for continued use, more rigorous pre-use inspections, in-use inspections, and periodic inspections at shorter intervals should be performed.

5.4.4 If there is any doubt about the security of the device, you should immediately stop using it and contact the manufacturer for technical support.

6. Storage and maintenance

Good storage and maintenance can extend the life of this product.

6.1 Storage recommended 10~30 ℃ / 50~86 ℉ for longevity, short-term storage outside this range is safe. Avoiding water ingress, moisture, corrosive liquid and corrosive gas erosion, as well as avoiding heavy pressure and falls from height will extend the lifespan of this product.

6.2 During transportation, a bag or box with a cushioning capacity should be used to protect this product from severe impact, contact with sediment and dust, etc.

6.3 After each use, this product should be wiped clean with a clean damp towel, and then ventilated to dry, not exposed to the sun. Avoid sweat and other corrosive liquids staying on the surface for a long time and causing corrosion.

6.4 The gears, wheel, guide bearing for rope entry, and guide bearing for rope exit of this product can be replaced after wear, provided that the safety margin of the ratchet teeth (internal locking component) is sufficient after inspection.

6.5 Regularly inspect the handle moving parts, guide bearing for rope entry, and guide bearing for rope exit, clean up dirt and add lubricating oil.

6.6 Except for replacing the input shaft gear and the wheel, any modification, replacement or repair of this product can only be carried out by the manufacturer or authorized distributor, and self-disassembly, modification and repair are strictly prohibited.

7. Limited Warranty

This product is a consumable. The manufacturer provides a one year limited warranty for defects in the materials and production process of the product.

The warranty does not cover damage to the product caused by wear, deformation, corrosion, oxidation, self-modification or repair, incorrect operation, improper storage and transportation, and other usage than for which it was designed. The input shaft components are wear parts and are not covered by the warranty.

Tips: Please pay close attention to the information on the official website, register the product on our WeChat official account, and keep your contact information open to ensure that you do not miss possible product defect recall notices.

AWAH Z2 Repair record

Device name:			
SN:			
No.	Repair items	Repairer	Date
1	Replace the friction bar		
2	Replace the friction hook		
3	Fill with grease		
4	Replace the input shaft gear		
5	Replace the wheel		
6			
7			

AWAH Z2 Inspection record

Device name:		
SN:		
Location	Inspector signature	Date

No.	Detect items	Results
1	The handle rebounds normally to the locked position	
2	The wheel locks when the rope is pulled on one side and turns when pulled on the other side	
3	Rotate the wheel slowly, you can hear a deep and even "click" sound	
4	The movable side panel can open and snap into the fixing pins normally	
5	The attachment holes are not deformed or cracked	
6	There is no oil leakage in the housing	
7	The body is free from corrosion, deformation, cracking, or wear	
8	Bolts, rivets, and other fasteners are not loose	
9	The remaining size of the friction bar and friction hooks is within the safety range	
10	The texts, marks, etc. on the body are clearly legible	
Conclusion	☐ normal ☐ pending further inspection ☐ repair required ☐ scrapped	

AWAH Z2 Usage record

Device name:

SN: **Date of use:** _____

Usage Times	Lifting (kg/lbs)	height (m/ft)	Lowering (kg/lbs)	height (m/ft)	Remark
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Subtotal	Average kg/lbs	Total m/ft	Average kg/lbs	Total m/ft	

Artisans Working At Heights Co., Ltd.

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