ATLANTIC PRODUCTS

LBW620NC
LBW650NC
LBW650-25X10C
LBW680NC
CTW2500R

Large Brake Winch Series

Installation instructions and operating manual for Atlantic Large Brake Winches.

PLEASE READ CAREFULLY BEFORE OPERATING THE WINCH

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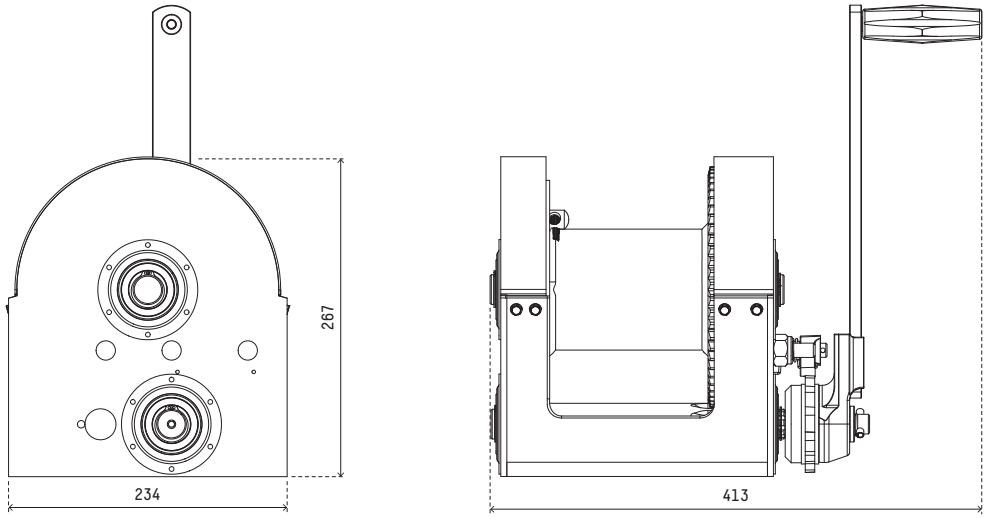
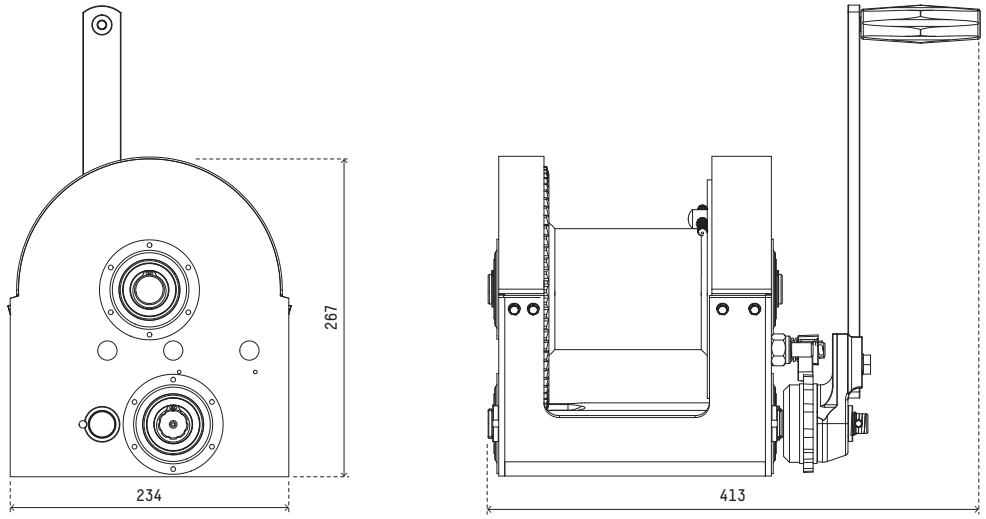
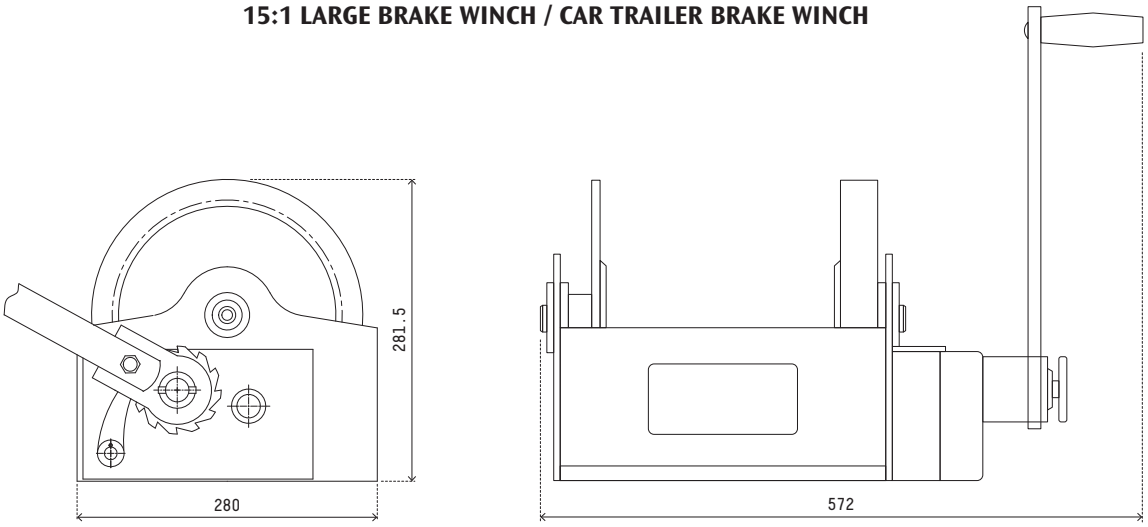
Winch Dimensions



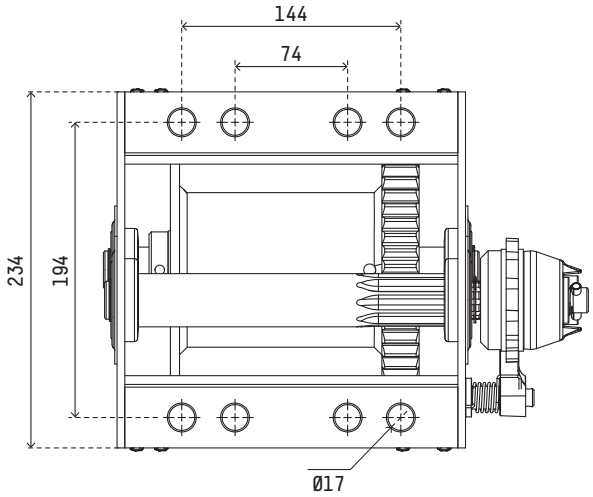
8:1 LARGE BRAKE WINCH



15:1 LARGE BRAKE WINCH / CAR TRAILER BRAKE WINCH



15:1 EXTRA LARGE BRAKE WINCH



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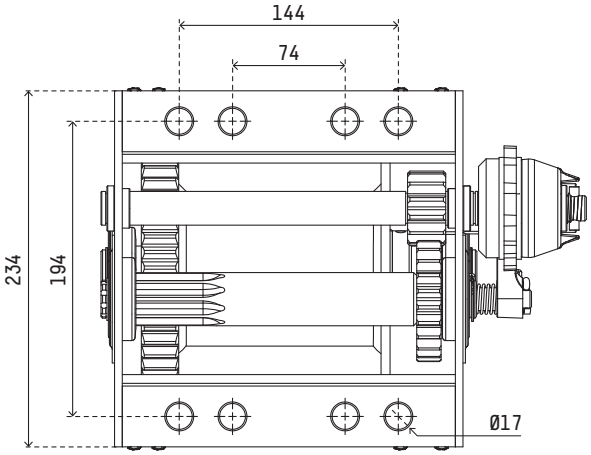

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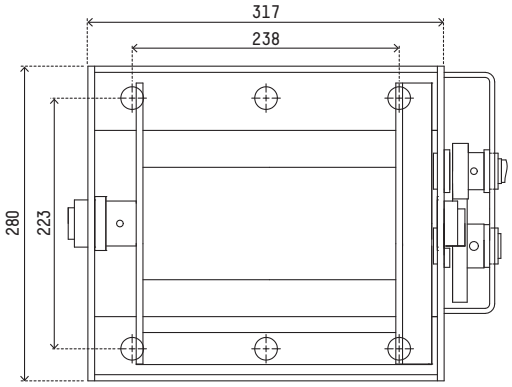

15:1 EXTRA LARGE BRAKE WINCH

DO THE FOLLOWING:

- **Read carefully and comply with the guidelines set forth in this Operating Manual.**
- **Keep hands away from the drum, gears, wire cable and other moving parts of the equipment. Install the wire cable/fibre rope securely to the winch drum.**
- **Keep your clothing clear of the cable, rope and hook and its opening during operation and/or when spooling.**
- **Tighten the brake winch handle adapter before use to ensure optimal braking ability.**
- **Ensure cable/rope is secured correctly before use of the brake winch.**
- **Ensure at least 3 full wraps of cable/rope are on the drum at all times.**
- **Regularly examine all parts of the brake winch and do not use if damaged. Repair or replace any defective parts of the brake winch.**
- **Keep out of the path of the load should the wire cable/fibre rope break and snap back and cause injury.**

TEMPERATURE

- **Winches may be operated in temperatures from -25°C to +49°C**
- **Winches may be stored in temperatures from -25°C to +63°C**
- **Winches shall not be forcefully or rapidly cooled or heated. For example, winches shall not be placed into sub-zero refrigerated transport modules, nor subjected to heat guns or gas torches.**

DO NOT DO THE FOLLOWING:

- **Do not lift people or lift a load over people. Alert all people in close proximity and keep non-operating users away from the working area before use of the brake winch.**
- **Never lift more than the capacity stated on the brake winch.**
- **Never apply a load on the brake winch with the cable in full extension.**
- **Do not walk or work under a load or in the line of force of any load.**
- **Do not exceed the load rating of the winch or any other component in the system. To do so could result in failure of the equipment.**
- **Do not use more than one winch to move a load that exceeds the load rating of a single winch. A shift in load weight could overload the equipment.**
- **Do not use damaged or malfunctioning equipment. To do so could result in failure of the equipment.**
- **Do not modify the equipment in any way. To do so could cause equipment failure.**
- **Never lubricate (grease) the braking mechanism of the brake winch.**
- **Do not apply a load on the winch with the wire cable/fibre rope fully extended.**
- **Never disengage the clutch while the cable/rope is under tension.**
- **Never engage the clutch while the drum is rotating.**
- **Never winch when there are less than 3 wraps of cable/rope on the drum.**
- **Never wrap the cable/rope around a load as this will damage the cable/rope.**
- **Do not swing the load as this may cause damage.**
- **Never leave a suspended load unattended.**
- **Do not wrap the wire cable/fibre rope around the load. This may damage the wire cable/fibre rope and could cause the load to fall. Use a sling or other approved lifting device.**
- **Do not divert your attention from the operation. Stay alert to the possibility of accidents, and try to prevent them from happening.**
- **Do not jerk or swing the load. Avoid shock loads by starting and stopping the load smoothly. Shock loads overload the equipment and may cause damage.**
- **Do not leave a suspended load unattended unless specific precautions have been undertaken and keep people away from the winch and out from under the load.**

GENERAL THEORY OF OPERATION

IMPORTANT: Limit non-uniform winding by keeping tension on the wire cable. It is the operators responsibility to detect and account for different factors affecting the condition and performance of the equipment.

The pull required to move the load must not exceed the load rating of the winch. Consider the total force required to move the load, not the weight of the load.
The winch can develop forces that will exceed the load rating. It is the responsibility of the winch operator to limit the size of the load. Inspect the winch regularly for damage according to the instructions contained in the Owner's Manual.
Performance ratings of the winch are affected by the amount of wire cable wound onto the drum, the way in which it is wound, and the way the winch is used.
Drum capacity depends on how tightly and evenly the wire cable is wound onto the drum. Actual drum capacities are usually 25-30% less than the values shown in performance tables, due to loose winding and overlapping.
Load rating represents the maximum pull that can be placed on a new winch. Load ratings are assigned values for specific amounts of load travel or wire cable accumulation. The load rating decreases as layers of wire cable accumulate on the drum.
Duty ratings refer to the type of use the winch is subject to. Consider the following when determining duty rating:
Environment: harsh environments include hot, cold, dirty, wet or corrosive surroundings. Protect the winch against harsh environments when possible.
Maintenance: poor maintenance, meaning poor cleaning, lubrication or inspection, leads to poor operation and possible damage of the winch. Minimise poor maintenance by carefully following the instructions contained in the Owner's Manual.
Loading: severe loading includes shock loading and moving loads that exceed the load rating of the winch. Avoid shock loads, and do not exceed the load rating of the winch.
Frequency of operation: frequent or lengthy operations increase wear and shorten the life span of gears, bushes, and other components. Increase maintenance of the winch if used in frequent operations.

Installation of the Winch

ATTACHING THE HANDLE

1. Turn handle adaptor clockwise until ratchet has engaged.
2. Attach the handle once the ratchet has engaged.

INSTALLING THE WINCH

IMPORTANT:
Inspect the winch immediately following installation. This will give provide a record of the condition of the winch from which to compare future inspections.

WARNING:
Do not install the winch near corrosive chemicals, flammable materials or other elements that may damage the winch or injure the operator. Adequately protect the winch and operator from such elements.

Position the winch so the operator can stand clear of the load, and out of the path of possible broken wire cable that could snap back and cause injury.

Attach the winch to a rigid and level foundation that will support the winch and its load under all load conditions, including shock loading.

1. Locate the winch in an area clear of traffic and obstacles that could interfere with its operation. Make sure the winch is accessible for maintenance and operation.
2. The winch should be positioned onto a solid / flat foundation base able to support the winch and the load / unload operations under all conditions.
3. Fasten the winch securely to the mounting (base), utilising all four mounting holes to ensure maximum capacity. 4ea. M10 galvanised or G316 stainless steel bolts, flat and spring washers and nuts should be used to secure the winch to its mounting.

INSTALLING WIRE CABLE / ROPE

IMPORTANT:
Use wire cable/fibre rope and other rigging equipment rated for the capacity of the winch.
Do not drag the wire cable/fibre rope through dirt or debris that could cause damage, or poor operation.
Always wear protective clothing when handling wire cable.
Install the wire cable/fibre rope securely to the winch drum. A poorly secured wire cable/fibre rope could come loose from its anchor and could release the load.
Ensure the wire cable/fibre rope is wound correctly or the winch may not work properly and could release the load.
Always ensure that a minimum of three full turns remain on the winch drum at all times.

Keep the following in mind when selecting. Contact a reputable supplier for assistance.

1. Breaking strength of new wire cable / fibre rope should be at least 2 times greater than the rating of the winch.
2. Wire cable/fibre rope lay must agree with the winding direction of the drum to insure proper winding.
3. Secure the wire cable / fibre rope to the winch drum as per the securing instructions below.
4. Test the wire cable / fibre rope installation by operating the winch.
5. Wind three full turns of wire cable onto the drum by operating the winch whilst holding the wire cable taut. These turns serve as an anchor wraps and must remain on the drum at all times.

Dependant on Winch model, two securing methods for cable are applicable:

Instruction for securing a cable to a winch using a plate clamp fitting:

1. Tape the cable end using 50mm – 70mm of plastic tape. This is to stop the cable end from fraying and causing injury in use.
2. Fold the end of the cable (approximately 30mm) back on itself and permanently kink the end.
3. Feed the taped end of the cable through the round hole of the drum flange (disc) from inside the drum.
4. Place one of the cup head bolts into Hole 1 of the clamp fitting, with the head on the inside of the drum assembly, and pull the cable tight against the bolt. Attach the nut and tighten.
5. Align the second hole in the plate with Hole 2, and secure with the second bolt and nut.

Instruction for securing a cable to a winch using a single bolt fitting

1. Place the cup headed bolt into the square hole with the head on the inside of the drum assembly.
2. Screw on the combination nut and washer only 2-3 threads.
3. Tape the cable end using 50mm – 70mm of plastic tape. This is to stop the cable end from fraying and causing injury in use.
4. Feed the taped end of the cable through the round hole of the drum flange (disc) from inside the drum and double back to loop the cable under the bolt, behind the washer and back towards the round hole.
5. While holding the cable in place under the nut with the left hand, pull the cable tight with the right hand.
6. Using the thumb of the left hand hold the cable in place inside the drum and tighten the nut to secure the cable in place.

Turn the handle to wind the wire cable onto the winch drum. Uniformly wind the wire cable onto the winch drum by holding the wire cable taut.

Instruction for securing fibre rope to winch – Note: Fibre rope to be ≤ Ø7mm

1. Take the winch drum with the gear facing the assembler and the free end of the rope and wrap three turns around the hub of the drum in an anticlockwise direction.
2. Take the free end and pass it between the three turns and the drum hub and then pass the free end over the three turns on the drum and under the last turn.
3. Pass free end of the rope under the last bite and through the 'cable' hole in the flange. Pull firmly so that the turns on the drum lie reasonably flat. The length protruding needs to be about 150mm.
4. Insert from inside the drum flange (centre hole) the M6 square neck cup head bolt and screw the M6 flanged serrated hexagon nut onto the bolt.
5. Wrap the rope around the M6 bolt inside the flanged serrated hexagon nut. Secure the fibre rope by tightening the nut using an M6 spanner. When securing, ensure that the rope fibres do not catch on the bolt threads and that the rope stays inside the flanged section. Trim any excess rope.
6. The turns around the drum will have become loose. Work the turns so that the rope lays flat against the hub and there is no slack.

Operations of the Brake Winch including non-technical periodic inspections, maintenance requirements and adhering to the safety considerations outlined in this instruction manual are to be performed by a qualified driver.

PREPARING FOR OPERATION

IMPORTANT:
When determining whether the load will exceed the load rating, consider the total force required to move the load.

Consider the operation. Do not begin until you are sure you can perform the entire operation without hazard.

Inspect all components of the system.

Inspect the winch and other equipment in accordance with Inspection instruction.

Operators should be in good health, alert and suitably clothed (i.e. no loose clothing)

The load must be clear of objects and free to move. Ensure the load will not tip, spin, roll away, or in any way move uncontrollably.

Know your load and make sure you do not exceed the load rating of the winch or any other equipment in your system.

ATTACHING THE LOAD

WARNING:
Do not wrap the wire cable / fibre rope around the load. This may damage the wire cable / fibre rope and could cause the load to fall. Use a sling or other approved lifting device.

Clear objects from the path of the load so you can move it freely and observe it at all times during the operation.

Attach the load using a nylon sling, or other approved rigging device. Follow the recommendations of the sling manufacturer.

Seat the sling in the saddle of the snap hook with the hook latch completely closed.

Centre the load on the hook so it will remain balanced and not tip or rotate to one side.

MOVING THE LOAD

IMPORTANT:
Obey a stop signal from anyone.
Maintain tension on the wire cable to keep it tightly and evenly wound on the drum.
If the winch and load are not visible during the entire operation, get help from another person.
Appoint a supervisor if more than one person is involved in the operation. This will reduce confusion and increase safety.
Where possible, remove the handle when the winch is not in use, to help avoid unauthorised use.

Move the load slowly and smoothly, only a small distance at first. Make sure the load is balanced and securely attached before continuing.

Observe the wire cable as it winds onto the drum. If it becomes loose, uneven, or overlapped, stop the operation and rewind before continuing. Continued operation with overlapped or uneven wire cable can damage and shorten its life.

LUBRICATING THE WINCH

IMPORTANT:
Make sure the lubricant has a temperature rating appropriate for the ambient temperatures of the operation.

Lubricate the winch properly to help protect it from wear and rust.

Ensure no lubricant comes in contact with the brake pads (mechanism)

Lubricate the winch at least every three months, by applying a light grade oil to the shafts and bushes. Rotate the drum several times to allow oil to penetrate, and wipe off excess oil to avoid dirt accumulation.

CLEANING THE WINCH

IMPORTANT:
Increase the frequency of maintenance if the winch is:
- **Operated for long periods.**
- **Used to pull heavy loads.**
- **Operated in wet, dirty, hot or cold surroundings.**

Wipe all components to remove dirt and grease off the winch.

When inspecting the Brake pads, remove the handle adapter and clean any brake pad dust that is on or inside the thread on the handle adapter.

Clean the handle adapter thread that engages and turns on the threaded handle adapter shaft, this will ensure operative performance.

Clean the winch every three months or whenever it is dirty.

Leave a light film of oil on all surfaces to protect them against rust and corrosion. **Ensure no lubricant comes in contact with the brake pads (mechanism)**

Wipe off excess amounts of oil to avoid accumulation of dirt.

Remove all unnecessary objects from the area surrounding the winch.

INSPECTING THE WINCH

IMPORTANT:
Keep written records of inspection. This allows comparison with comments from previous inspections so you can see changes in condition or performance

Inspect the winch to detect signs of damage or poor operation before they become hazardous.

DISCARDING THE WINCH

Each winch has a finite design life after which it shall be discarded. The design life shall be the lesser period of 7 (seven) years from the date of commissioning or 8 (eight) years from the date of purchase.

Technical inspections of the Brake Winch from pre-operational to periodic inspections including major repairs (lubricants, torque specifications) are to be performed by a vehicle mechanic.

PRE-OPERATIONAL INSPECTION

PERFORM:
- **Before each operation.**
- **Whenever you notice signs of damage or poor operation**

Visually inspect the entire winch and all other associated equipment involved in the operation.

- Check all equipment for cracks, dents, bending, rust, wear, corrosion and other damage.
- Check gears, shafts and bushes for wear, and other damage.
- Make sure the wire cable is installed correctly and anchored securely to the drum
- Make sure the winch is properly lubricated.
- Make sure the handle is securely held in place.
- Make sure the mounting fasteners are tightened securely
- Make sure the foundation is in good condition, and capable of supporting the winch and its load under all load conditions.

Test winch performance by moving a test load equal to 20% of the rated capacity.

- Listen for unusual noises, and look for signs of damage as you operate the winch.
- Make sure the winch cable winds evenly and tightly onto the drum. If it is loose or uneven, rewind it before continuing.
- Make sure the handle moves freely in both directions.

Completely correct all problems before continuing. Use the Troubleshooting Chart (at end of this Section) to help determine the cause of certain problems.

REGULAR INSPECTIONS

PERFORM:
- **Every three (3) months.**
- **Whenever you return the winch to service from storage.**
- **Whenever you notice damage or poor operation in a frequent inspection.**
- **Whenever you have, or think you may have, overloaded or shock loaded the winch.**

Visually inspect the entire winch and all other associated equipment involved in the operation.

- **Do not continue to use the damaged or overloaded equipment.**
- Check the finish for wear, flaking, or other damage.
- Check all equipment for cracks, dents, bending, rust, wear corrosion and other damage. If the equipment was overloaded, or if you notice cracks and other signs of overloading and damage, promptly remove the equipment from use and have it repaired or replaced.
- Inspect friction plates/pads and mating surfaces for contamination, dust, corrosion and wear. If necessary, lightly remove surface contamination, etc. REPLACE friction plates/pads if excessive wear (to 1mm thick) is evident or are either cracked or broken.
- Check all fasteners for stripped threads, wear, bending, and other damage.
- Check gears, shafts and bushes for wear, and other damage.
- Check the foundation for cracks, corrosion, and other damage.
- Make sure the winch is properly lubricated.
- Make sure all labels and plates are readable, firmly attached, free from damage and clean.

PERIODIC INSPECTIONS

PERFORM:
- **Every twelve (12) months.**
- **Whenever you return the winch to service from storage.**
- **Whenever you notice damage or poor operation in a frequent inspection.**
- **Whenever you have, or think you may have, overloaded or shock loaded the winch.**

Visually inspect the entire winch and all other associated equipment involved in the operation.

- **Do not continue to use the damaged or overloaded equipment.**
- Detailed inspection of full length of rope
- Detailed inspection of both end terminations
- Measuring hook wear
- Removing covers and looking at all internal components
- Checking all nuts and bolts for tightness
- Review / assess the maintenance procedures that are currently being implemented, and comparing them to the usage and environment
- Check the finish for wear, flaking, or other damage.
- Check all equipment for cracks, dents, bending, rust, wear corrosion and other damage. If the equipment was overloaded, or if you notice cracks and other signs of overloading and damage, promptly remove the equipment from use and have it repaired or replaced.
- Inspect friction plates/pads and mating surfaces for contamination, dust, corrosion and wear. If necessary, lightly remove surface contamination, etc. REPLACE friction plates/pads if excessive wear (to 1mm thick) is evident or are either cracked or broken.
- Check all fasteners for stripped threads, wear, bending, and other damage.
- Check gears, shafts and bushes for wear, and other damage.
- Check the foundation for cracks, corrosion, and other damage.
- Make sure the winch is properly lubricated.
- Make sure all labels and plates are readable, firmly attached, free from damage and clean.

IF YOUR WINCH INSTALLED WITH FIBRE ROPE:

1. Unwind the fibre rope completely.

- Check the entire length of fibre rope for excessive wear, chafing, cuts, dirt and grit, and other damage.

Then,

- Make sure the snap hook is securely attached to the fibre rope.
- Check the throat opening, thickness, and twist of the snap hook. Replace the hook if it shows signs of damage. **See figure 2.**
- Make sure the hook latch opens without binding and closes when released.
- Check the anchor holes in the drum flange, clamp fittings and bolts for signs of wear or distortion.

IF YOUR WINCH INSTALLED WITH WIRE CABLE:

1. Remove the wire cable entirely from the drum.

- Always wear protective clothing when handling wire cable.
- Check the entire length of wire cable for bent wires, crushed areas, broken or cut wires, corrosion, and other damage. Carefully inspect areas that pass over sheaves or through roller guides.
- Note the location and concentration of broken wires. Replace the wire cable if more than 6 wires are broken in one lay, or more than 3 wires are broken in one strand in one lay. **See Figure 1.**
- Make sure the snap hook is securely attached to the wire cable, and the wire cable where it is attached is not frayed, corroded, broken, or otherwise damaged.
- Check the throat opening, thickness, and twist of the snap hook. Replace the hook if it shows signs of damage. **See figure 2.**
- Make sure the hook latch opens without binding and closes when released.
- Check the anchor holes in the drum flange, clamp fittings and bolts for signs of wear or distortion.
- Measure the diameter of the wire cable, especially in areas where wear is noticeable. Replace the wire cable if the diameter measures below the minimum diameter at any point. **See figure 3.**

2. Remove the winch from the foundation.

- Check fasteners for stripped threads, wear, bending, and other damage.
- Check the frame (winch body) for bending, distortion, cracks, and other damage. A bent frame is caused by overloading, and is a sign that your application may require a winch with a larger load rating.
- Move the drum with your hands.
- Check for excessive movement indicating worn or loose gears, bushings, or shafts.
- Disassemble the winch if necessary. Inspect gears, shafts and bushes for wear, corrosion, distortion, and other damage

3. Fasten the winch securely to the foundation.

4. Install the wire cable.

5. Test winch performance by operating the winch with a test load equal to the load rating.

- Listen for unusual noises, and look for signs of damage as you operate the winch.
- Make sure the winch cable winds evenly and tightly onto the drum. If it is loose or uneven, rewind it before continuing.
- Make sure the handle moves freely in both directions.

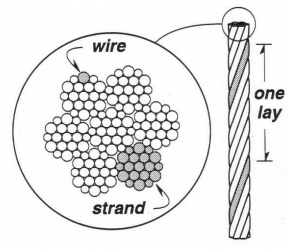

Figure 1 - Broken Wires
The wire rope assembly must be replaced if more than 6 wires are broken in one lay, or if more than 3 wires are broken in one strand in one lay.

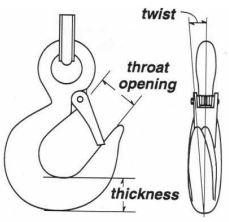

Figure 2 - Load Hook Inspection
The wire rope assembly must be replaced if the throat opening is 15% wider than nominal, if the thickness is 10% less than nominal, or if the hook is twisted 10 degrees or more.

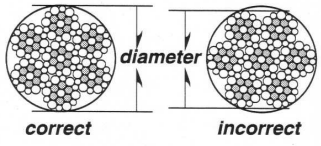

Figure 3 - Rope Diameter
The wire rope assembly must be replaced if the diameter measures less than the minimum diameter at any point.

Troubleshooting Guide

Problem	Possible Cause(s)	Corrective Action
Handle turns, drum doesn't turn	• Loose or broken pins • Loose, stripped or broken gears	• Inspect winch, repair as necessary • inspect gears and repair as necessary
Handle turns hard or not at all	• Gears broken or locked • Load too heavy • Pins loose or broken on winch • Drum shaft broken or seized • Brake disc damaged or locked	• inspect and repair as necessary • Lighten load • Inspect winch, repair as necessary • Inspect, repair or replace as necessary • Inspect brake, repair as necessary
Brake does not operate properly	• Friction discs worn or damaged • Friction discs damaged from lubrication • Disc brake ratchet pawl damaged • Handle adapter loose	• Inspect and replace as necessary • Inspect and replace as necessary • Inspect and repair as necessary • Tighten handle adapter on drive shaft
Excessively worn gears or bushes	• Load too heavy • Poor lubrication of gears or bushes	• Lighten load • Inspect and relubricate as necessary
Overheating	• Operated too long without rest • Load too heavy • Poor lubrication • Bushings seized up / damaged	• Allow to cool • Lighten load • Inspect and lubricate as necessary • Inspect and replace as necessary
Unusual noises (high pitched squeak / grinding noise / rattling noise)	• Poor lubrication • Contaminated lubrication • Loose bolts, or other fasteners	• Inspect and lubricate as necessary • Clean and re-lubricate winch • Tighten all bolts and other fasteners

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All documentation meet AS1418.1 and AS1418.2