# OPERATING, MAINTENANCE AND SERVICE MANUAL Prolyft

## PLE-11 / 12 / 13 series CHAIN HOIST


**Follow all instructions and warnings for inspecting, maintaining and operating this chain hoist.**

The use of any chain hoist presents some risk of personal injury or property damage. That risk is greatly increased if proper instructions and warnings are not followed.
Before using this chain hoist, each operator should become thoroughly familiar with all warnings, instructions, and recommendations in this manual. Retain this manual for future reference and use.

Forward this manual to the chain hoist operator.
Failure to operate the equipment as directed in the manual may cause injury.

Should you have any questions or have problems with this product, please call Prolyft at **+31 (0)594 85 15 15**

| **500 KG** | **1000 Kg** | **2000 Kg** |
|---|---|---|
| PLE-11 | PLE-12 | PLE-13 |

Before using the chain hoist, fill in the information below:

Model No. _____

Serial No. _____

Purchase Date _____

Service point _____

PROLYFT

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# SAFETY PRECAUTIONS

Each Prolyft Chain hoist is built in accordance with the specifications contained here in, and at the time of manufacture complies with our interpretation of applicable sections of European FEM or equivalent to American Society of Mechanical Engineers Code (ASME) B30.16 "Overhead Hoists," the National Electrical Code (ANSI/NFPA 70) and the Occupational Safety and Health Act (OSHA). Since OSHA states the National Electrical Code applies to all electric chain hoists, installers are required to provide current overload protection and grounding on the branch circuit section in keeping with the code. Check each installation for compliance with the application, operation and maintenance sections of these articles.

| **FEM classification** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **load spectrum** | **average daily use in hours** | | | | | | |
| | <0,25 | <0,5 | <1 | <2 | <4 | <8 | <16 |
| Light duty | | | | 1Bm | 1Am | 2m | 3m |
| Medium duty | | | 1Bm | 1Am | 2m | 3m | |
| Intensive duty | | 1Bm | 1Am | 2m | 3m | | |
| Very intensive duty | 1Bm | 1Am | 2m | 3m | | | |

| **FEM classification** | | | | |
|---|---|---|---|---|
| **Class** | 1Bm | 1Am | 2m | 3m |
| duty factor of motor | 25% | 30% | 40% | 50% |
| starts per hour | 150 | 180 | 240 | 300 |

The Prolyft has 1Am classification (2m pending)

## DONT'S

1. **NOT** operate a damaged, malfunctioning or unusually performing chain hoist.
2. **NOT** operate the chain hoist until you have thoroughly read and understood the manufacturer's Operating and Maintenance Instructions or Manuals.
3. **NOT** operate a chain hoist, which has been modified without the manufacturer's approval.
4. **NOT** allow anyone under 18 years of age to operate the chain hoist.
5. **NOT** lift more than rated load for the chain hoist.
6. **NOT** operate a chain hoist unless it has been securely attached to a suitable support.
7. **NOT** use chain hoists with load chains that are knotted, twisted, kinked, damaged, or worn.
8. **NOT** use the chain hoist to lift, support, or otherwise transport people, without additional or mandatory local or national safety precautions.
9. **NOT** let anyone stand beneath a moving load!
10. **NOT** move a load in any manner that can endanger persons.
11. **NOT** operate unless all persons are and remain clear of the supported load.
12. **NOT** operate unless load is centered under chain hoist.
13. **NOT** use limit switches as routine operating stops. They are emergency devices only.
14. **NOT** operate a chain hoist when it is restricted from forming a straight line from hook to hook in the direction of loading.
15. **NOT** use load chain as a sling, or wrap the load chain around load.
16. **NOT** apply the load to the tip of the hook or to the hook latch.
17. **NOT** apply load unless load chain is properly seated in the chain sprocket(s).
18. **NOT** apply load if bearing prevents equal loading on all load supporting chains.
19. **NOT** operate beyobeyond the limits of the load chain travel
20. **NOT** use the chain hoist's overload limiting clutch to measure load.
21. **NOT** leave a load supported by the chain hoist unattended unless specific precautions have been taken.
22. **NOT** allow the load chain or hook to be used as an electrical or welding ground.
23. **NOT** allow the load chain or hook to be touched by a live welding electrode.
24. **NOT** remove or obscure the warnings on the chain hoist.
25. **NOT** operate a chain hoist on which the safety placards or decals are missing or illegible.
26. **NOT** operate a chain hoist unless load slings or other approved single attachments are properly sized and seated in the hook saddle.
27. **NOT** allow your attention to be diverted from operating the chain hoist.
28. **NOT** allow the chain hoist to be subjected to sharp contact with other chain hoists, structures, or objects through misuse.
29. **NOT** adjust or repair the chain hoist unless qualified to perform such adjustments or repairs.
30. **NOT** attempt to lengthen the load chain or repair damaged load chain.
31. **NOT** drag the load chain and/or chain hook across dirty, sandy of abrasive surfaces (concrete floors).
32. **NOT** hold on to the load chain, which is dangerous for obvious reasons and hold on to the motor housing which is dangerous as this can get very hot. Holding onto the power or control pigtails is certainly not advised as well.

## DO'S

1. **DO** make sure that the weight of the load to be suspended is known, and in accordance to the lifting capacity of the chain hoist. In multiple lifts make sure a rigging plot is present.
2. **DO** make sure that the hoist operator is in good physical and mental condition.
3. **DO** check the chain hoist, suspension-hook, chain-hook, hook latches, as well as the load-chain itself, prior to each time of use for any damage, deformation or malfunction.
4. **DO** make sure that the structure from which the Prolyft chain hoist is suspended, as well as the slinging equipment is able to safely absorb the force resulting from the weight of the load and the chain hoist itself, multiplied by the dynamics of starting and stopping the lifting action. For the Prolyft this is app.1,4 times the static load.
5. **DO** check brake function by tensioning the chain hoist prior to each lift operation.
6. **DO** shut down a chain hoist that malfunctions or performs unusually and report such malfunction.
7. **DO** make sure hook travel is in the same direction as shown on the controls.
8. **DO** maintain firm footing or be otherwise secured when operating the chain hoist.
9. **DO** guide the chain hoist to take up slack chain carefully without twisting or knotting.
10. **DO** make sure load is balanced and load holding action is secure before continuing lifting operation.
11. **DO** always keep your attention to the chain hoist and the load that it is supporting.
12. **DO** use hook latches. Latches are to retain slings, chains, etc. under slack conditions only.

13. **DO** make sure the hook latches are closed and not supporting any parts of the load.
14. **DO** make sure the load is free to move and will clear all obstructions.
15. **DO** make sure the power (and control) cables and connectors have proper stress relieves and are never fully tight during lifting or lowering movement.
16. **DO** warn personnel of an approaching load.
17. **DO** avoid swinging the load or hook.
18. **DO** inspect the chain hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
19. **DO** use a protective cover for the chain hoist to prevent exposure to rainfall when applied outdoors.
20. **DO** only use factory recommended parts when repairing the unit.
21. **DO** protect the load chain from weld splatter or other damaging contaminants.
22. **DO** lubricate load chain according to manufacturer's recommendations.
23. **DO** transport the chain hoist in a flight case or other sturdy & protective facility.

## CHAIN HOIST SPECIFICATIONS

The Prolyft is a rugged and portable chain hoist designed for the demands of rigging applications. With its compact construction and ability to operate inverted, the Prolyft allows for greater flexibility in mounting the unit as required by each application. The light weight and high strength of the aluminium alloy housings are a plus when the chain hoist is moved from site to site.
The Prolyft oil filled gearbox provides smooth and reliable operation, while its magnetic disc brake provides the sure stopping and secure holding of loads that is expected in rigging applications.
On the low voltage controlled hoist the lifting height is regulated by adjustable up and down limit switches. As a standard, all Prolyft hooks are equipped with sturdy hook latches.

Lifting speeds can vary 5%.
Speeds are measured with full load in an upward direction.
Dimensions are measured over the outmost exterior parts of the hoist – excluding the chain-hook. Prolyft chain-hoists come standard with handles to manoeuvre or guide the hoist in or out of a flight case, or position it over the load.

**Technical specifications Prolyft Performance hoist PLE series**

| | PLE-11-001 | PLE-12-001 | PLE-13-001 |
|---|---|---|---|
| Load capacity | 500kg | 1000kg | 2000kg |
| Lifting Speed 50Hz standard m/min | 4 | 4 | 2 |
| Operating voltage | 400v-3P-50Hz/ 460v-3p-60Hz | 400v-3P-50Hz/ 460v-3p-60Hz | 400v-3P-50Hz/ 460v-3p-60Hz |
| Single phase operation | optional | optional | optional |
| Protection class | IP 54* | IP 54* | IP 54* |
| Motor power at 50Hz | 0,75kw | 0,75kw | 0,75kw |
| Power consumption at operation | 1,9amp | 1,9amp | 1,9amp |
| FEM Classification | 1Am (2m pending) | 1Am (2m pending) | 1Am (2m pending) |
| FEM Duty factor | 50% | 50% | 50% |
| Starts per hour | 300 | 300 | 300 |
| Noice level | 68db | 68db | 68db |
| Load wheel | 5 pocket | 5 pocket | 5 pocket |
| Load chain DIN 5684 | 7,1 x 20,5mm | 7,1 x 20,5mm | 7,1 x 20,5mm |
| Falls of chain | 1 | 1 | 2 |
| Weight of chain per meter lift | 1,1kg | 1,1kg | 2,2kg |
| Weight of body | 34kg | 34kg | 37kg |
| Type of control | direct | direct | direct |
| Type of connector | CEE 16A-4p | CEE 16A-4p | CEE 16A-4p |
| Low voltage control | optional 115v | optional 115v | optional 115v |
| Suspension with swivelhook | standard | standard | standard |

* IP 55 available as option

# APPLICATION INFORMATION

The Prolyft is intended for professional use in rigging applications to lift and support material loads within its rated capacity. It is designed as a component to be integrated into a rigging system. The user is responsible for ensuring the adequacy and reliability of their controller and power supply and the whole lifting system and operation as such. Prolyft can not be held responsible for applications other than those for which the Prolyft hoist is intended. Prior to installation and operation, we caution the user to review his application for abnormal environmental or handling conditions and to observe the applicable recommendations as follows:

### ADVERSE ENVIRONMENTAL CONDITIONS

Do not use the chain hoist in areas containing flammable vapours, liquids, gases or any combustible dusts or fibres. Do not use this chain hoist in highly corrosive, abrasive or wet environments. Standard Prolyft hoists have an IP54 protection class. For outdoor use in rainy conditions it is advised to use an IP55 protection class. Do not use this chain hoist in applications involving extended exposure to ambient temperatures below -20°C (-10°F) or above 50°C (130°F.)

### LIFTING OF HAZARDOUS LOADS

This chain hoist is not recommended for use in lifting or transporting hazardous loads or materials which could cause widespread damage if dropped. The lifting of loads which could explode or create chemical or radioactive contamination if dropped requires fail-safe redundant supporting devices which are not incorporated into this chain hoist.

### TANDEM LIFTS AND MULTIPLE LIFTS

Chain hoists – of any manufacturer unless otherwise stated - are basically designed to operate as a stand alone type of machinery. When two (or more) chain-hoists are used to lift one single load the risks increase considerably. Several countries around the world have legislation that in such cases it is mandatory to reduce the allowable amount of load lifted to 75% or even 66% of the rated capacity of the chain hoist.
Prolyft considers the application of the chain hoists in any other than stand alone situations as being the responsibility of the operator or user. Prolyft strongly advises operators to acquire sufficient knowledge of the local, national or international rules and regulations when these types of lifting are applied.

### SUSPENDING LOADS OVER PEOPLE

The suspension of loads over people demands the highest level of rigging knowledge, equipment, and equipment maintenance. The Prolyft must be installed and used in accordance to local and national standards and regulations when suspending loads over people. These include the following important precautions.

1. It is preferred that the load always be tied off with an auxiliary chain or cable ('secondary' or 'safety') before access to the area beneath the load is permitted.
2. As an alternative, the system may be designed in such way that malfunction or failure of one chain hoists load bearing components does not cause load loss and/or overloading of any other chain hoists in the system. Note that in such a system, chain hoist performance and function must be monitored visually or should be monitored using load cells.
3. Never operate the chain hoist while people are under the load.

# SAFETY INFORMATION

1. Follow all local electrical and safety codes, and applicable local standards.
2. The chain hoist must be securely and adequately grounded. The power pigtail includes a green/yellow lead for grounding.
3. Be careful when touching the exterior of an operating motor; it may be hot enough to be painful or cause injury. With modern motors this condition is normal if operated at rated load and voltage (modern motors are built to operate at higher temperatures).

**WARNING**

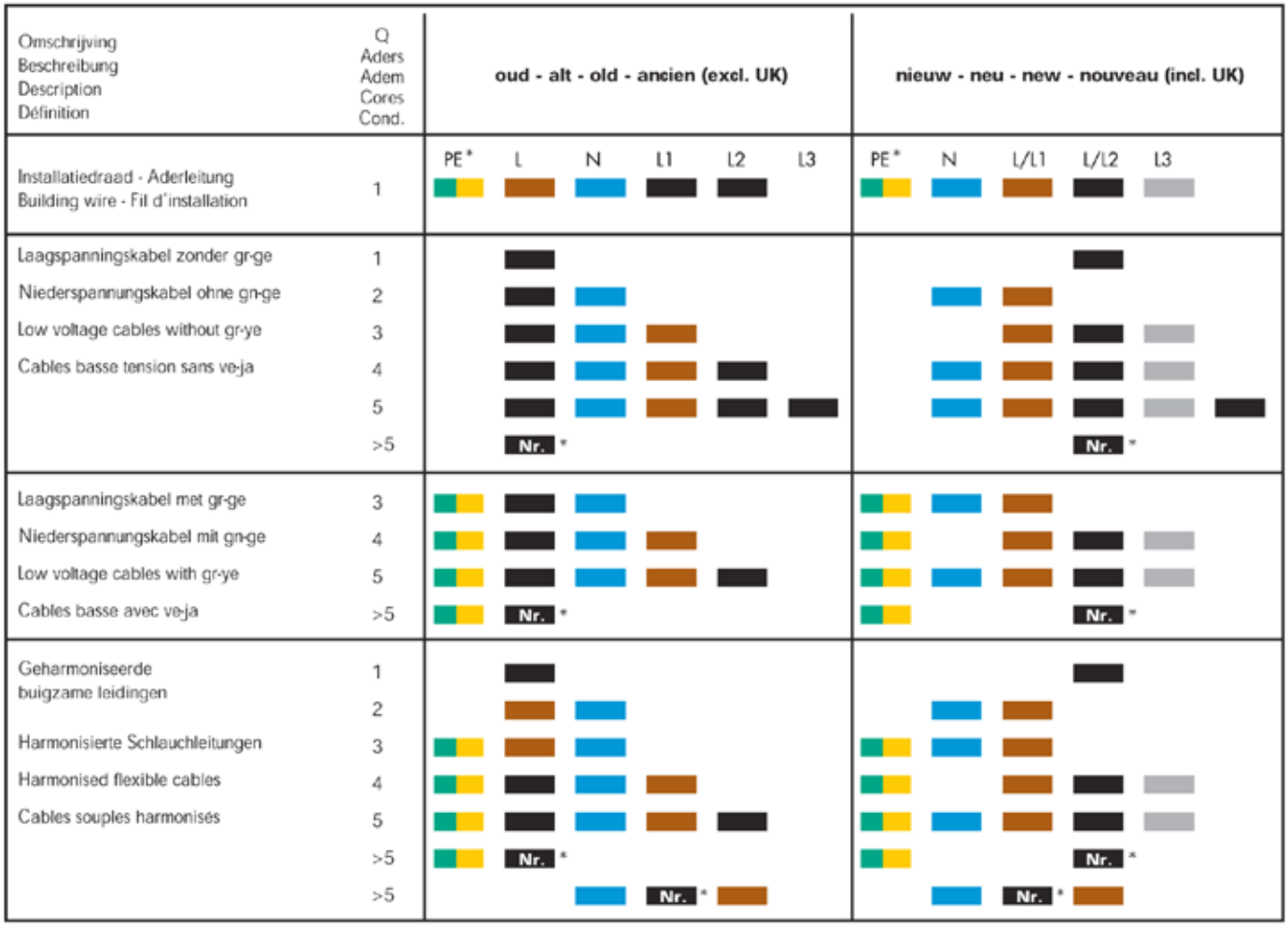
**Always disconnect the power source before working on or near a chain hoist or its connected load. If the power disconnect point is out of sight, lock it in the open position and tag to prevent unexpected application of power.**

4. Protect the power and control cables from coming in contact with sharp objects.
5. Do not kink the electrical cables and never allow them to come in contact with oil, grease, hot surfaces, or chemicals.
6. Make certain that the power source conforms to the requirements of your equipment.
7. Visually check the unit daily before operating chain hoist.
8. Cluttered areas and benches invite accidents.
9. The operator should not engage in any practise that will divert his attention while operating the chain hoist.
10. Before using the chain hoist, the operator should be certain that all personnel are clear of the load.
11. **Do not** operate chain hoist with loads exceeding its rated capacity.
12. Supporting frames or beams used as a chain hoist hanger must have a greater load capacity than the chain hoist.
13. **Do not** attempt to operate chain hoist beyond normal maximum lift range.
14. Align chain hoist for a straight vertical pull. Avoid side pull or end pull.
15. **Do not** operate chain hoist with twisted, knotted, damaged or corroded chain.
16. **Do not** operate a damaged or malfunctioning chain hoist until necessary adjustments or repairs have been made.
17. **Do not** use a chain hoist to lift people or to carry loads over people.
18. **Do not** leave a load suspended in the air unattended.
19. Always remove load before making repairs.
20. **Do not** remove or obscure capacity or warning decals.

# INSTALLATION

### POWER & CONTROL SYSTEM REQUIREMENTS

The Prolyft hoist comes in a direct control and a low voltage version. They must be connected to a power and control system that is properly designed to operate the chain hoist and to handle the power consumption of the motor.
Prolyft hoists are standard wired for 400V-3ph-50Hz operations. For other voltages the chain hoist motor can be re-wired internally for ( 415V-3ph-50Hz, 380V-3ph-50Hz, 208V-3ph-50z, 200V-3ph-50Hz, 460V-3ph-60Hz and 230V-3ph-60Hz)




Notes: * PE = beschermingsleiding - Schutzleiter - protective conductor - conducteur de protection, N = nulleiding - Neutralleiter - neutral conductor - conducteur neutre,
L, L1, L2, L3 = faseleidingen - Phasenleiter - phase conductors - conducteurs de phase, Nr. = zwart genummerd - schwarz nummeriert - black numbered - noir numéroté

## PRELIMINARY CHECKS

Before installing / starting to use the chain hoist, check the following:

### General:

1. After unpacking the unit, carefully inspect for any damage that may have occurred during transit. Check for loose, missing or damaged parts. Shipping damage claims must be filed with the carrier. Be sure that the voltage labelled on the unit matches your power supply.
2. Make sure all supporting structures and attaching devices have the strength to safety absorb the weight of the intended loads. If in doubt, consult a qualified structural engineer.
3. Chain hoists should not experience voltage drops of more than 10% of the supply voltage. It is critical to use adequate sized power cables. On multiple voltage chain hoists, the installer must ensure that the chain hoist is correctly wired for the intended voltage (See WIRING, page 21).

**WARNING**

**ALWAYS DISCONNECT CHAIN HOISTS FROM POWER SUPPLY before removing electrical cover or when making any electrical connection in the chain hoist.**

4. The user's control board must be grounded in accordance with the electrical codes that are applicable in the local area. Power cables to chain hoists must include a ground conductor. The power pigtail includes a yellow/green ground conductor.
5. The installation area must provide safe operating conditions for the operator, including sufficient room for the operator and other personnel to stand clear of the load at all times.

# RIGGING & MOTOR HANDLING INSTRUCTIONS FOR TEMPORARY INSTALLATIONS

## RIGGING THE HOIST IN 'MOTOR DOWN' POSITION ('CHAIN CLIMBER')

**CAUTION**

**Parts of this procedure can involve working from an elevated platform, scissor lift or cherry picker. Before doing so, make sure you are competent to work with those and take all needed safety precautions.**

1. Before each use, visually inspect the hoist and all load bearing parts of the hoist, like hooks and load chain.
2. Make sure the intended structural support component is able to safely absorb the chain-hoist lifting capacity

**WARNING**

**A fully loaded motor can put considerably higher forces to the support structure when dynamic forces are induced. A similar thing happens when a lowering movement of other hoists on the same load (e.g. truss-structure) causes the centre of gravity to slide towards the resting hoist, which will get overloaded. Overload protection in the chain hoist causes the structure to be overloaded as well.**

3. Attach the chain hook to the main structural support member, either direct to an existing eyebolt or lug-plate, or using a bracket or beam clamp. It is also possible to use a sling or bridle. Avoid slinging on sharp edges.
4. Connect the power (and control) cable and make sure these have proper stress relieves, and sufficient slack in every direction of (planned) tilting of the load. Use Velcro or cable-strings to tie the cable to the hoist-body or lifting (suspension) hook.

**CAUTION**

**Tie-wraps may eventually cut the cable or the conductors, and (gaffer-) tape might leave remains of the glue-layer to cable or hoists, gathering dirt and dust etc.**

5. Check the direction of travel. If the pre-selection switch on the controller is in the up-direction the chain hoist should run in up-direction.
6. Check if both the lifting directions work properly (lifting and lowering). It is better to find a malfunction in a relay at ground level than at elevations that are out of reach.
7. Guide the chain carefully into the chain-guides when running it taut. Prevent the chain from twisting, knotting or piling upon the hoist body. (In a well-designed flight case the chain-motor can rest in the box, until the chain has been run taut.)

**WARNING**

**Always use gloves to protect your hands. Keep your hands away from the chain hoist by at least 0,5m (1,5 ft). Getting caught in between chain and chain guide can cause severe injuries or even loss of fingers. Do not let your hair or clothes get caught in between chain and chain guide.**

8. Lift the chain hoist (out of the flight case) to about 1 meter (3 ft) above the floor.

**CAUTION**

**Always guide the chain hoist using the handles. Never use the chain to move the chain body around.**

9. Attach the chain bag to the chain bag-mounting bracket with the chain bag hooks facing outwards.
10. Take slack chain from the floor and put this into the chain bag with as less twisting as possible.
11. Lift the dead-end chain from the chain guides (when possible) to about 1m from the chain bag bottom to relieve possible twists.
    Let it sink back in smoothly.
12. Attach the load to the suspended hoist.

**WARNING**

**Do NOT move the suspended chain hoist towards the load. This will result in swaying or side pulling and can be hazardous when the load is lifted.**

13. Attach the load to the chain hoist suspension hook.
    Use an eyebolt or lashing eye fixed to the load or proper sling(s) that will not harm the load itself.
14. Use a shackle when a basket hitch is used, and connect this to the suspension hook.

**CAUTION**

**Prevent slings to have a side-force to the suspension hook. Two wire rope thimbles might not fit the suspension hook saddle area and can cause hazardous situations.**

15. Make sure the chain bag is hanging free of the load and the inlet of chain is not obstructed.
16. Run the load chain up until it is just taut.
17. Visually check the whole lifting structure from chain hook down along the load chain to the load.

**CAUTION**

**Any unusual or disruptive appearance of chain links along the stretch of load chain might indicate deformation of one or more links. This should be inspected before the lifting operation starts.**

18. Check all suspension connections as well as the power (and control) cable(s).
19. Remove all people from the area before you start lifting the load.
    **Do NOT** allow any people to stand under the moving load.
20. Make sure you have a full visual view on the complete travel path of the load.
21. Lift the load to the required height.

**WARNING**

**Do not use the control button in an intermittent switching manner. This can lead to hazardous situations.
The chain hoist motor can get overheated and considerable increase of forces due to dynamic loading can be caused.**

**WARNING**

**Do not let anyone stand under the suspended load until this is properly secured, using a secondary suspension.**

23. Add a secondary in between support structure and the load when persons have to get under the load.
24. Make sure this secondary is as tight as possible, preferably using clutch-chains.

## DE-RIGGING THE HOIST IN 'MOTOR DOWN' SITUATION

**CAUTION**

**Part of this procedure can involve working from an elevated platform, scissors lift or cherry picker. Before doing so make sure you are competent to work with those and take all safety precautions needed.**

1. Remove the secondary (when present).

**WARNING**

**Do not let anyone stand under the suspended load when the secondary is removed.**

2. Check the direction of travel. If the pre-selection switch on the controller is in the down-direction the chain hoist should run in down-direction.
3. Check if both the lifting directions work properly (lifting and lowering).
4. Remove all people from the area before you start lowering the load.
   **Do NOT** allow any people to stand under the moving load.
5. Make sure you have a full visual view on the complete travel path of the load.
6. Bring the load down until within reach for further dismantling.

**WARNING**

**Do not use the control button in an intermittent switching manner. This can lead to hazardous situations. The chain hoist motor can get overheated or considerable increase of forces due to dynamic loading can be caused.**

7. Remove all parts of the load and any slings attached to the suspension hook.
8. Remove the chain bag and (when applicable) put this in the chain bag compartment of the chain hoist flight case.
9. Lower the chain hoist gently on the floor (place the hoist horizontally and not vertically) or place the hoist into a designated flight case.
10. Run the chain out until approx. 0,5m (1,5 ft) is remaining on the dead end.

**CAUTION**

**When running out the chain, make sure the incoming chain part is free of loops, twists etc., and the outgoing part is not piling up on top of the motor housing.
This might result in jamming or catching chains parts and can cause severe damage to individual chain links, thus resulting in hazardous lifting thereafter.**

**CAUTION**

**Never run the chain all the way to the limit switch, and leave it like that.
Run back the chain for approx. 15cm.
to release the limit switch.**

11. Disconnect power and control cables and store them into a safe area in the flight case.
12. Take the chain hook from the supporting structure, bring the chain down gently and guide it into the chain compartment of the flight case.
13. Hook the chain hook onto the U-bracket in the flight-case to prevent it from twisting around and knotting with the chain during transport.
14. Remove beam clamp, bracket, and sling or bridle materials from the supporting structure.

## RIGGING THE HOIST IN 'MOTOR UP' POSITION

**CAUTION**

**Parts of this procedure can involve working from an elevated platform, scissors lift or cherry picker.
Before doing so make sure you are competent to work with those and take all safety precautions needed.**

1. Before each use, visually inspect the hoist and all load bearing parts of the hoist, like hook and chain.
2. Make sure the intended structural support component is able to safely absorb the chain-hoist lifting capacity.

**WARNING**

**A fully loaded motor can put considerably higher forces to the support structure when dynamic forces are induced.
A similar thing happens when a lowering movement of other hoists on the same load (e.g. truss-structure) causes the centre of gravity to slide towards the resting hoist, which will get overloaded.
Overload protection in the chain hoist causes the structure to be overloaded as well.**

3. Attach the chain bag to the chain bag bracket, with the hooks facing outward.
4. Put the chain into the chain bag and make sure there are no twists or knots in the chain in the chain bag.
5. Attach the chain hook to the main structural support member, either direct to an existing eyebolt or lug-plate, or using a bracket or beam clamp. It is also possible to use a sling or bridle. Avoid slinging on sharp edges.

6. Connect the power (and control) cable and make sure these will have proper stress relieves and sufficient slack in every direction of (planned) tilting of the load. Use Velcro or cable-strings to tie the cable to the hoist-body or lifting (suspension) hook.

**CAUTION**

**Tie-wraps may eventually cut the cable or the conductors, and (gaffer-) tape might leave remains of the glue-layer to cable or hoists, gathering dirt and dust etc.**

7. Lower the chain hook by letting the chain run out to the required height.
8. Put the load under the chain hook.

**WARNING**

**Do NOT move the chain hook towards the load. This will result in swaying or side pulling, and can become hazardous when the load is lifted.**

9. Attach the load to the chain hook, either to a lug plate, eyebolt or using one or more slings.
10. Run the chain up until the load chain just taut.
11. Check all lifting and slinging connections, and lift the load until it is freely floating of the ground.
12. Visually check the whole lifting structure from chain hoist and cables through the load chain down to the load.

**CAUTION**

**Any unusual or disruptive appearance of chain links along the stretch of load chain might indicate deformation of one or more links that should be inspected before the lifting operation starts.**

13. Remove all people from the area before you start lifting the load. Do NOT allow any people to stand under the moving load.
14. Make sure you have a full visual view on the complete travel path of the load.
15. Lift the load to the required height.

**WARNING**

**Do not use the control button in an intermittent switching manner. This can lead to hazardous situations. The chain hoist motor can get overheated or considerable increase of forces due to dynamic loading can be caused.**

**WARNING**

**Do not let anyone stand under the suspended load until this is properly secured, using a secondary suspension.**

16. Add a secondary in between support structure and the load when persons have to get under the load.
17. Make sure this secondary is as tight as possible, preferably using clutch-chains.

## DE-RIGGING THE HOIST IN 'MOTOR UP' SITUATION

**CAUTION**

**Part of this procedure can involve working from an elevated platform, scissor lift or cherry picker. Before doing so make sure you are competent to work with those and take all safety precautions needed.**

1. Remove the secondary (when present).

**WARNING**

**Do not let anyone stand under the suspended load when the secondary is removed.**

2. Check the direction of travel. If the pre-selection switch on the controller is in the down-direction the chain hoist should run in down-direction.
3. Check if both the lifting directions work properly (lifting and lowering).
4. Remove all people from the area before you start lowering the load. **Do NOT** allow any people to stand under the moving load.
5. Make sure you have a full visual view on the complete travel path of the load.
6. Bring the load down until within reach for further dismantling.

**WARNING**

**Do not use the control button in an intermittent switching manner. This can lead to hazardous situations. The chain hoist motor can get overheated or considerable increase of forces due to dynamic loading can be caused.**

7. Remove all parts of the load and any slings attached to the chain hook.
8. Run the load chain out (depending on the specific circumstances of use and storage).
9. When running the load chain out, make sure approx. 0,5m (1,5 ft) is remaining on the dead end.

**CAUTION**

**Never run the chain all the way to the limit switch, and leave it like that. Run back the chain for approx. 15cm. to release the limit switch.**

10. Disconnect the power (and control) cables.
11. Remove the chain hoist from the suspension structure and bring it down.
12. Put the chain hoist and the chain bag in their compartments of the flight case (when applicable) or other transport and/or storage facility.
13. Remove any bracket, beam clamp or slinging from the main structure elements.

## INSTALLING THE CHAIN HOIST

**General:**

1. Be certain that supporting structures and attachment points have the strength to safety absorb the weight of the intended loads.
2. Hooks should be attached to appropriate points such that the load will be applied at the saddle of the hook only.
   Never allow a load to rest on the tip of a hook.
   Hook latches should always close completely.
3. The Prolyft can be mounted upright as "motor up" in the traditional industry situation or "motor down", which has become standard in the entertainment touring industry.
   Always make sure that it is clear whether the load chain shall move or whether the hoist housing shall move. This does have effect on the way power and control cables should be run.
4. Connect the controls to the chain hoist as shown in the Wiring Diagrams starting on page 21. When installing a three-phase chain hoist, check to make sure the chain hoist travels in the direction intended when operating the controls.
   To correct improper motor travel, reverse any two wires (except the yellow/green ground wire) at the power source.
   Do not change connections in the chain hoist.
   Once the direction of travel is verified to be correct, permanent connections can be made at the power source.
5. Once the controls are properly connected, run the motor in the down direction to allow enough length of chain to attach the load hook to its suspension point.
6. Ensure that the load will bear on the saddle of the hook.
7. The chain hoist should be permitted to align itself for a straight and plumb pull.

**⚠ CAUTION**

**Do not attempt to pull around corners. Chains that move can be hazardous in grinding action and eating itself into softer surfaces such as aluminium trusses.**

8. Reset the limit switches – when present - to allow for only the amount of travel required (See LIMIT SWITCH ADJUSTMENT, page 17).
9. It is imperative that no twists exist in the chain, especially on double-reeved units. Chain twists can create hazardous conditions! Twists occur when the 2-ton load block is capsized or when the slack end of chain is not properly attached at the side of the chain hoist.
10. If necessary, lubricate the chain, see LUBRICATION, page 18.

**Touring:**

1. Chain hoists used in the touring sector are often moved from one venue to the next in repetitive use. This might cause more than average wear and tear on the hoist. Therefore a sturdy and protective transport facility (flight case or road box) is strongly advised. This should give adequate support to the housing of the chain hoist in any direction, and have a eparate compartment for the load chain.
2. Chain hoists used in the touring sector often need their load chains to be run in and out. This should be given thorough attention, as jamming or knotting might seriously damage the load chain.
3. It is necessary to have a thorough visual check of all major components before each operation.
4. Any kind of damage has to be checked and must be within the limits of the rejection criteria mentioned in this operation manual.

## OVERLOAD LIMITING PROTECTION

This chain hoist is equipped with a factory-calibrated overload limiting clutch that will permit the lifting of loads within its rated capacity, but will prevent the lifting of damaging overloads while the chain hoist is being operated. This is conceived through a mechanical slipping device, as is the case in almost all chain hoists found in the entertainment industry.
If the load being lifted exceeds the lifting capability of the overload clutch, the motor will continue to run, causing overheating of both the clutch and motor.
This condition should be avoided by immediately releasing the "UP" button and reducing the load to within the rated capacity of the chain hoist.
See GEARING, page 19, for additional instructions on this device.

## LIMITS OF TRAVEL

1. Chain travel for the Prolyft low voltage control hoist is limited by "UP" and "DOWN" limit switches that should be adjusted for the application to prevent dangerous conditions or incidents that could occur with over travel. It is strongly advised to never run the chain hoist up to these limits. They are additional safety features and should be kept as such.
   Before transport run back the chain for approx. 15cm. to release the limit switch. This prevents the micro switch from tripping at each bump in the road.
2. Chain travel for the Prolyft direct control hoist is not limited, except for the chain-stop and chain hook (mechanically). It is strongly advised to always keep at least 15 cm (6") of chain free, staying away from the chain hook and the chain stop.

**⚠ CAUTION**

**Not doing so can cause additional wear on the overload protection, and might result in hazardous situations.**

**⚠ WARNING**

**When two or more chain hoists are used in combination lifting a single load the operation of just one might lead to a shift in the centre of gravity of the load and therefore a change in load per chain hoist. Overloading one of them, even when not moving at the time, can result in extremely hazardous situations, where a chain reaction of overload failures might happen.**

**⚠ CAUTION**

**Limit switches are electrical connected in such way that they are in direct conjunction with the two phases which determine the direction of the lift. In case somehow the phases are exchanged with the third one, limit switches are overridden and will damage!**

### CHAIN BAG (OPTIONAL ACCESSORY)

1. It is strongly recommended to use a chain bag with the Prolyft. Chain bags like shown in Figure 1 are available from the manufacturer/supplier. The bags, which are colored black, fit closely to the chain hoist and are as inconspicuous as possible. Be sure to follow the directions that come with Prolyft chain bags before installing.
2. Any other chain bags used should be capable of safely supporting the weight of the full length of the load chain, and preferable have a 'drainage hole' at the bottom to prevent accumulation of rainwater in case of outdoor use.

**CAUTION**

**Do not attempt to store more chain in a chain bag than outlined on its instruction sheet or serious damage to the chain hoist may result and hazardous conditions may be created.**

*Figure 1 - PLE serie with optional Chain Bag*

## CONVERTING A 1000KG HOIST INTO A 2000KG VERSION

A Prolyft PLE-12 model hoist can be converted into a 2000 kg version by means of a special kit (article code:PLS-13-002).
This kit contains a 2 ton chain block + hook and an anchor point.

1. Run the chain through the hoist in such way that +/- 1 (one) meter of hoist chain is left. This facilitates the conversion.
2. Disconnect the hoist form the power supply.
3. Take out bolt (11) to release the aluminium chain guide (6)
4. Take off the chain hook (12)
5. Feed the chain over the chain wheel of the 2 ton block (21)
   **Note:** Be sure that the welds of the chain links are facing outwards (and sideways) only!
6. Feed the chain through the chain guide (6) and connect the anchor point (4 & 5)
   **Note:** Be sure that both chain falls are free of twists. Failure can cause severe damage to the hoist or other property and even result in personal injury or death!
7. Place the chain guide back and fasten bolt (9) to a torque of 14Nm.
8. Check again if the chain is lined up correctly, and run the double reeved chain out to its required length.
9. Reverse the lifting hook at the body of the hoist (see figure 10)
10. Pass the serial number of the hoist through to Prolyft for guarantee reasons
11. Change the decals of the hoist to the proper WLL (2000 Kg).

**NOTE !**
As the hoist is now changed into a double reeve, two-fall system the lifting speed and lifting height are reduced by factor 2.
When lifting height should be maintained, another chain, at least twice the length of the required height, should be installed.
Make sure no other that the original Prolyft load chain is used.
Reset limit switches if necessary as described on 15-16.
Limit switch travel is changed also, see page 17.

## OPERATION

This chain hoist is designed for operation within the limits of its rated capacity. It needs to be controlled by a special dedicated control system or a push button station. Prolyft strongly advises to use control systems with thermal motor protectors for each controlled hoist. The UP direction is controlled by closing the circuit between X1 and C20. DOWN is controlled by closing the circuit between X1 and C21 (See Figures 7A-7B).
The operator should be aware of the location of the load at all times.
If the extreme limits are encountered, the user should immediately stop the motor.
With properly set limits, tandem units can be synchronized by easing each one to its corresponding limit. Depending on the application, you will use the "UP" or "DOWN" limit as your guide.

**WARNING**

**Do not use chain hoist to lift, support or otherwise transport people.**

### OPERATING NOTES

Points which must be observed at all times to maintain proper operation:

1. Know the weight(s) of the load to be lifted. Never overload the chain hoist.
2. Use common sense at all times when operating a chain hoist.
3. **Do NOT** operate if direction of travel is not the same as indicated on button being pushed.
   Make sure phases are corrected until direction of travel is coherent with push button operation.
4. **Do NOT** make side pulls with the chain hoist.
5. **Do NOT** sling the chain hoist load chain around an attachment point. Use a separate and proper sling.
6. Run the motor until the load chain is as good as taut.
7. Check the load being held securely in the hook or sling chains, before it is raised.
8. Never stand or allow people beneath a moving load!
9. **Do NOT** move a load in such a manner as to endanger personnel.
10. **Do NOT** move the load by intermittent use of the control button.
11. **Do NOT** lower into areas where visibility is obscured unless a specific person is guiding the operation.
12. **Do NOT** operate unless limit switch devices function. Test without load prior to each time of use.
13. **Do NOT** operate when chain hoist is not over the centre of gravity of the load.
14. **Do NOT** operate a damaged or malfunctioning chain hoist.

### EMERGENCY PROCEDURE = LOWERING WITHOUT POWER

If the power fails with a load suspended, the chain hoist will automatically stop. In an emergency – and in an emergency only - the load can be lowered without power as follows:

1. DISCONNECT CHAIN HOIST FROM POWER SUPPLY AND REMOVE ELECTRICAL COVER.
2. Open disc brake manually by using two screwdriver blades, one on each side of the brake at a point close to the brake spring posts. Apply pressure to the underside of the armature plate (points "X", Figure 4, page 17) to close the solenoid and release the brake.
3. Use several quick releases instead of holding brake open continuously. Do not exceed normal lowering speed.

## OPTIONAL FEATURES

### SENSORS FOR POSITIONING

Prolyft hoist can be equipped with internal sensors for positioning purposes. Contact your dealer or Authorised Service station.

### SPEED CONTROLS

For reasons of smooth operation or variable lifting speeds chain hoists can be run through variable speed frequency controls. Contact your dealer or Authorised Service station.

**⚠ CAUTION**

**The overload limiting clutch is an emergency protective device and should not be used to measure the maximum load to be lifted, or to sense the overload imposed by a constrained load. While the overload limiting clutch will protect the lifting motor from damaging overloads, it will not ensure that a load is within the rated capacity of the chain hoist.**

**⚠ WARNING**

**Do not purposely allow the overload limiting clutch to slip. Excessive slippage will damage the clutch and motor. Hazardous conditions will be created!**

## HOOKS & LUGS

Refer to Figure 2.

1. Visually inspect hooks before use for conditions for cracking, extreme wear, deformation or spreading.
2. Replace hooks showing any of these signs. If the throat openings are spread wider than the maximum permissible 15% increase listed here, the hooks have been overstressed and must be replaced. Any hook that is bent or twisted more than 10° from the plane of an unbent hook must also be replaced.
3. The hook latches should be checked before use to ensure that they close the hook throat opening in a secure manner when a load is applied.
   **NOTE!** A latch opened in the wrong direction is an indication for an overloaded hook!
4. Inspect the hook shank and nut for any stripping of the threads or other damage. The hook nut should be fully restrained by the retaining pin.

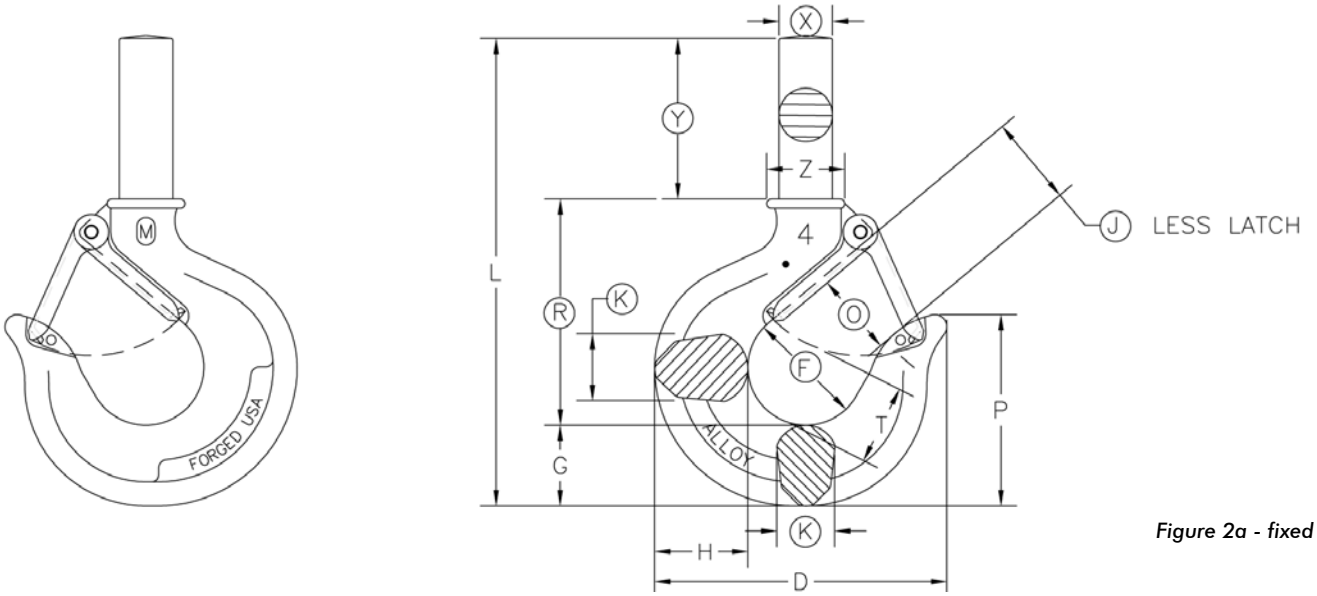



*Figure 2a - fixed hook*

| **FIXED HOOK** | REF. | SIZE | D | F | G | H | J | K | L | O | P | R | T | X | XX | Y | YY | Z | LATCH HOLE DIA. | LATCH KIT CODE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hook no: 4 | 1304 | INCH | 3,67 | 1,50 | 1,06 | 1,21 | 1,06 | 0,88 | 6,29 | 1,06 | 2,54 | 2,75 | 1,03 | 0,72 | | 2,50 | | 1,00 | 0,18 | 4 X 1304 |
| 500 and 1000kg | | MM | 93,22 | 38,10 | 26,92 | 30,73 | 26,92 | 22,35 | 159,77 | 26,92 | 64,52 | 69,85 | 26,16 | 18,29 | | 63,50 | | 25,40 | 4,57 | |
| Hook no: 5 | 1305 | INCH | 4,20 | 1,63 | 1,27 | 1,43 | 1,19 | 0,94 | 7,26 | 1,16 | 2,80 | 3,16 | 1,16 | 0,88 | | 2,84 | | 1,00 | 0,18 | 4 X 1305 |
| 2000kg | | MM | 106,68 | 41,40 | 32,26 | 36,32 | 30,23 | 23,88 | 184,40 | 29,46 | 71,12 | 80,26 | 29,46 | 22,35 | | 72,14 | | 25,40 | 4,57 | |
| | | | | | | | | | | | | | | | | | | | | |
| **REVOLVING HOOK** | REF. | SIZE | D | F | G | H | J | K | L | O | P | R | T | X | XX | Y | YY | Z | LATCH HOLE DIA. | LATCH KIT CODE |
| Hook no: 4 | 3M104 | INCH | 4,73 | 1,76 | 1,48 | 1,65 | 1,32 | 1,00 | 4,85 | 1,26 | 3,06 | 3,57 | 1,29 | 1,04 | 1,16 | 1,06 | 0,56 | 1,00 | 0,18 | 4 X 1304 |
| 500 and 1000kg | | MM | 120,14 | 44,70 | 37,59 | 41,91 | 33,53 | 25,40 | 123,19 | 32,00 | 77,72 | 90,68 | 32,77 | 26,42 | 29,46 | 26,92 | 14,22 | 25,40 | 4,57 | |
| * Hook no: 5 | 3M205 | INCH | 5,26 | 1,89 | 1,69 | 1,87 | 1,45 | 1,06 | 6,19 | 1,36 | 3,32 | 3,98 | 1,42 | 1,20 | 1,76 | 1,69 | 1,09 | 1,00 | 0,18 | 4 X 1305 |
| 2000kg | | MM | 133,60 | 48,01 | 42,93 | 47,50 | 36,83 | 26,92 | 157,23 | 34,54 | 84,33 | 101,09 | 36,07 | 30,48 | 44,70 | 42,93 | 27,69 | 25,40 | 4,57 | |

* Standard hook mounted on PLE 11/12/13.

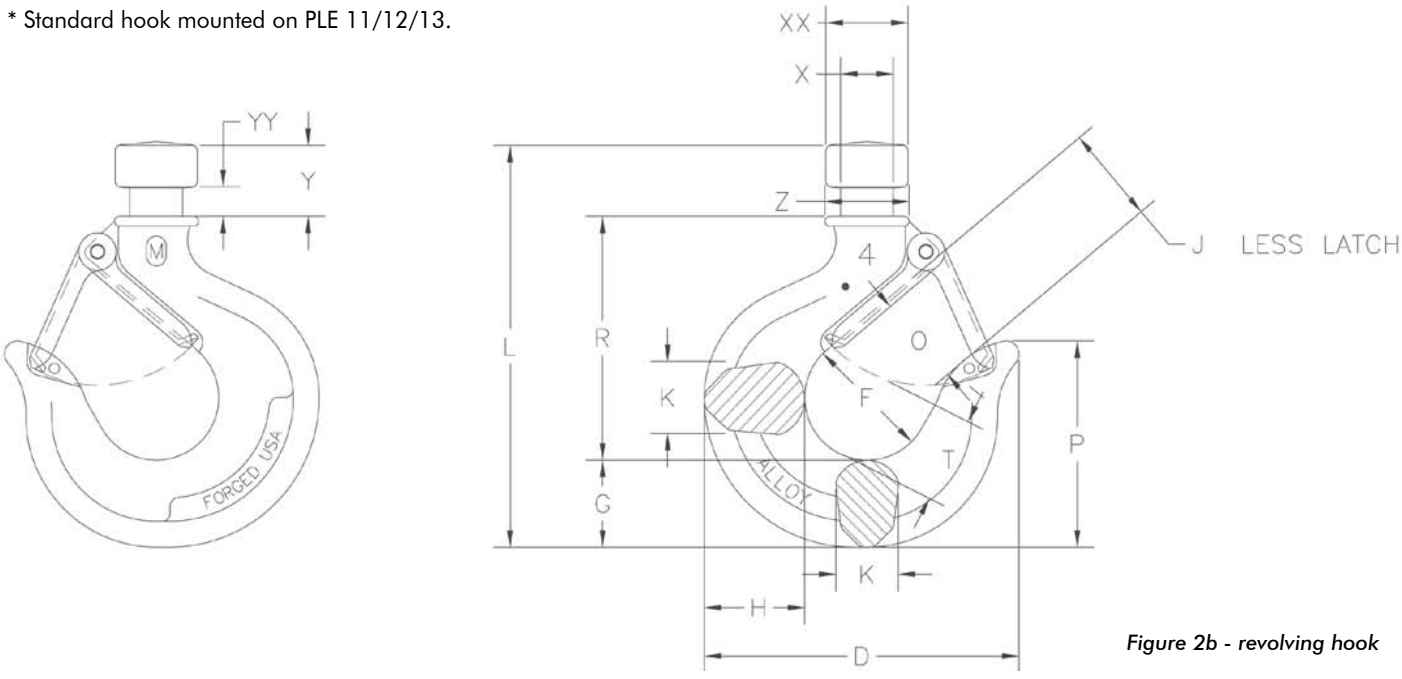



*Figure 2b - revolving hook*

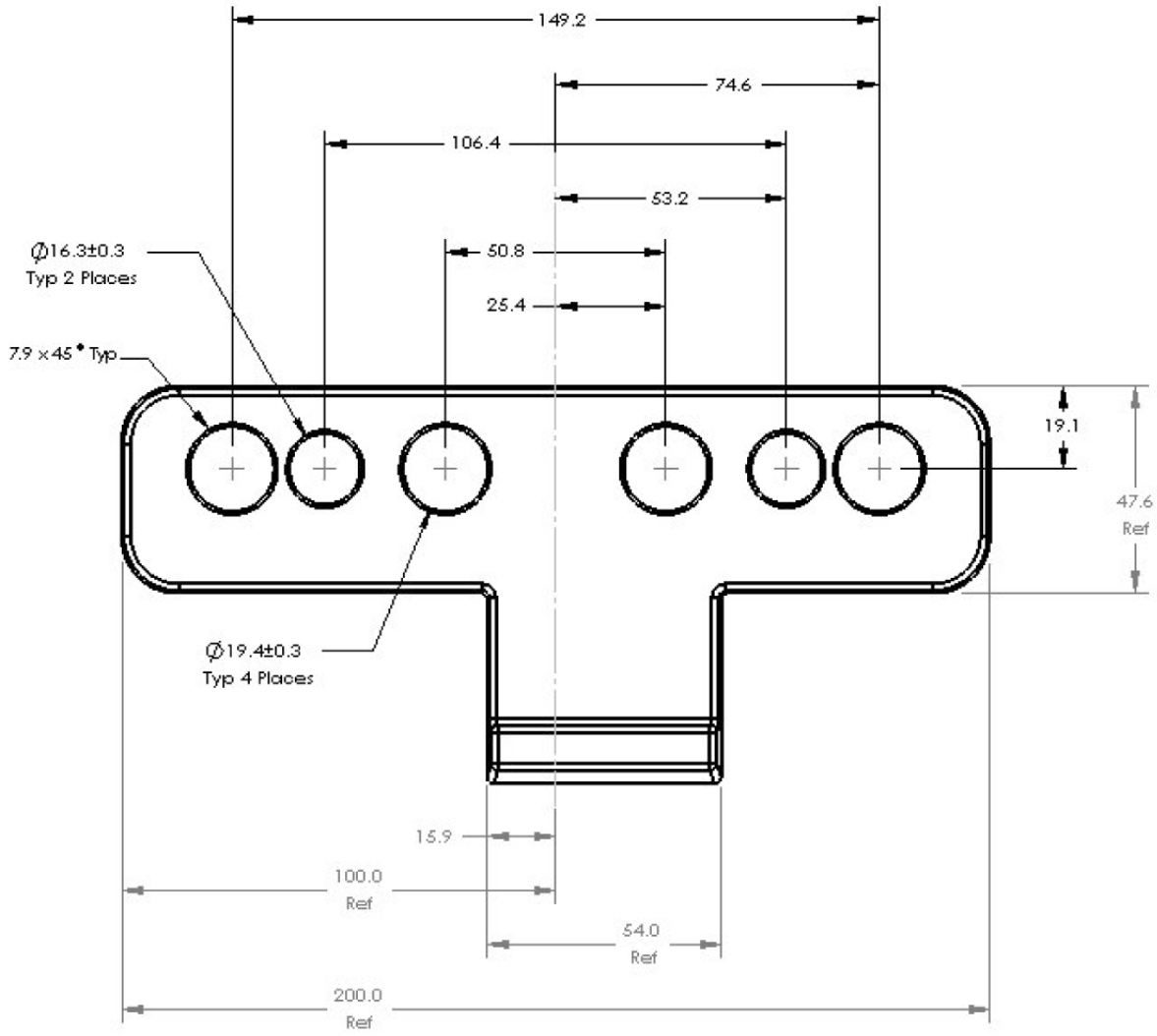



*Figure 2c - lug*

This is the standard multi-purpose suspension lug available for Prolyft. Dimensions are in mm.
This lug is made reversible for conversion from single-reeved to double-reeved configurations.

# INSPECTION & MAINTENANCE

## CHECKING & INSPECTIONS

A planned inspection routine should be established for this chain hoist based upon frequency of use, severity of use, and environmental conditions. Some inspections should be made frequently (daily to monthly) and others periodically (monthly to yearly).
Circumstances where chain hoists are used in the entertainment industry can vary as much as any other type of application. Ranging from fixed installations in well protected conference centres to six-months of continuous outdoor use in aggressive atmospheric conditions at beach-stages. Or from occasional use in TV-studios to almost daily application in the touring industry, or from less than one lift a day in a theatre to manifold lifting sequences is a smoke-saturated and hard to reach discotheque-rig.
It is strongly recommended that an Inspection and Maintenance Check List and an Inspector's Report, similar to those shown in Figures 8A and 8B on page 23 and 24 to be used and filed for reference. All inspections should be performed or overseen by a designated inspector.
Special inspections should be made following any significant repairs or any operating occurrence leading one to suspect that the chain hoist's capability may have been impaired.

## CHAIN

1. Inspect chain before each use for twisted links, damage, denting, deformation, cracking or corrosion*. Check the chain for overall wear or stretch by selecting an unworn, un-stretched length of chain (at the slack end for example). Let the chain hang vertically with a light load (about 10 kg (22 lbs) on the chain to pull it taut. Use a large calliper to measure the outside length of a convenient number of links (about 150mm (6"). Measure the same number of links in a used section of chain and calculate the percentage increase in length of the worn chain.

**⚠ CAUTION**

**The chain used on this lifting motor has very carefully controlled dimensions and has been heat treated. Do not attempt to substitute any other manufacturer's chain.**

2. Chain is to be kept clean and lubricated (See LUBRICATION, page 18). Visually check chain every time chain hoist is used. The chain hoist must not be operated when chain is twisted or kinked. An important phase of chain hoist maintenance is chain inspection. Check individual links and check for chain elongation.

As oil needs to sit at the bearing surface of each chain link it is advised to submerge the chain in oil for 30min. Take it out and let the chain hang dripping for 24 hours before putting in the hoist. Every hoist comes with a can of chain oil which should be used to drip oil at chain link bearing surfaces.

Prolyte has the experience that in the entertainment industry chain wear in general is only very limited, and often even impossible to measure after 10 years of normal use. On the other hand it is a well known fact that the load chains in the entertainment do tend to be misused or even abused and sometimes badly neglected in corrosion prevention. Severely damaged, deformed, dented, partly 'eaten' or even broken chain links have been regularly reported by users in the entertainment sector, and constant attention must be given that such chains are immediately taken out of service.
All this is typically the responsibility of the customer or user of the chain hoists.

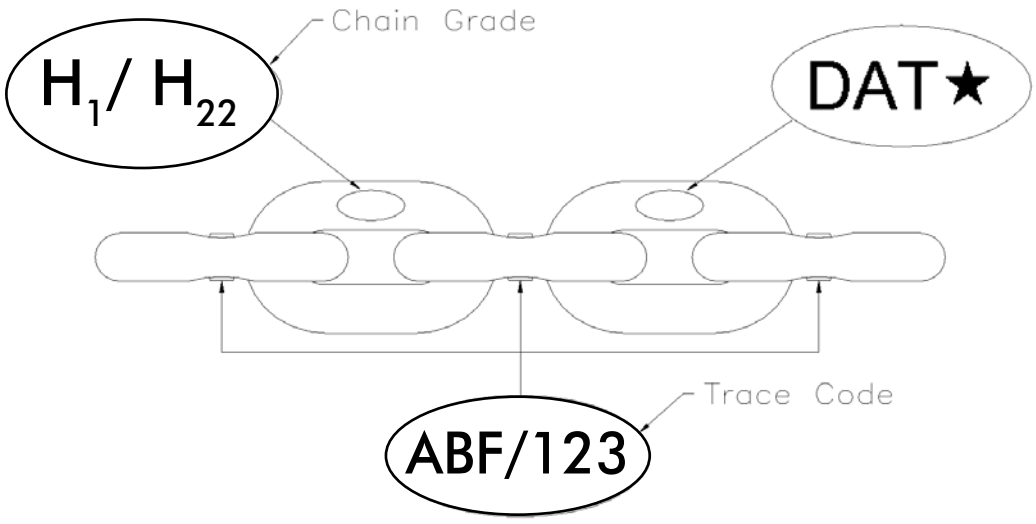
## IDENTIFICATION OF CHAIN:

Prolyft load chain can be recognised and determined original by the following marks on the chain

**Chain specifications:**

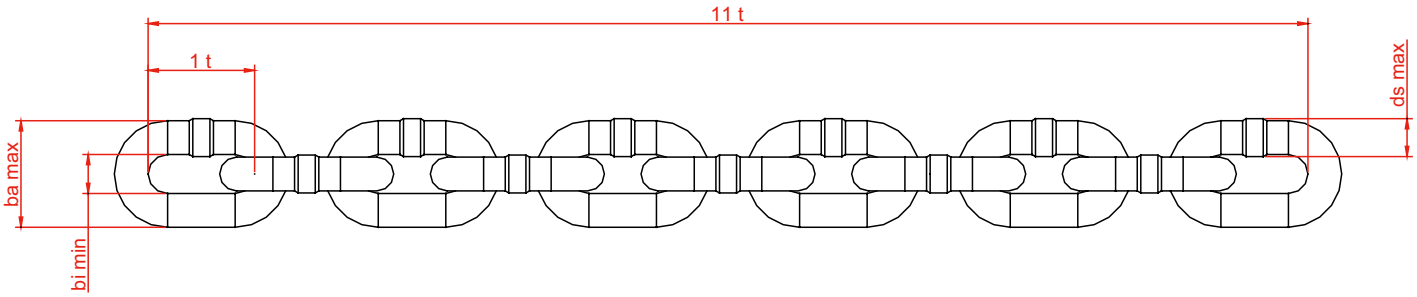
- diameter - 7.1mm (0.281") fractions
- pitch - 20.5mm (0.808") fractions
- class - DAT*
- grade - Grade 80 (8), minimum tensile strength: 800 N/mm²
- applicable standards - DIN 8684
- type of marking - see sample picture below. Every 10 links.
- surface hardness - 85 HR15N (500Hv on Vickers scale) = (+/- 75HRA Rockwell A scale)
- max. working load - 1000kg (2206lbs) single strand
- minimum breaking strength - 6448 kg (14,418lbs) single strand
- max. elongation - 10%
- weight per meter - 1.114 kg/m (2.49 lbs/m = 0.76 lbs/ft ~ 3/4 lbs / ft )

For replacement load chains use Prolyft chain only.

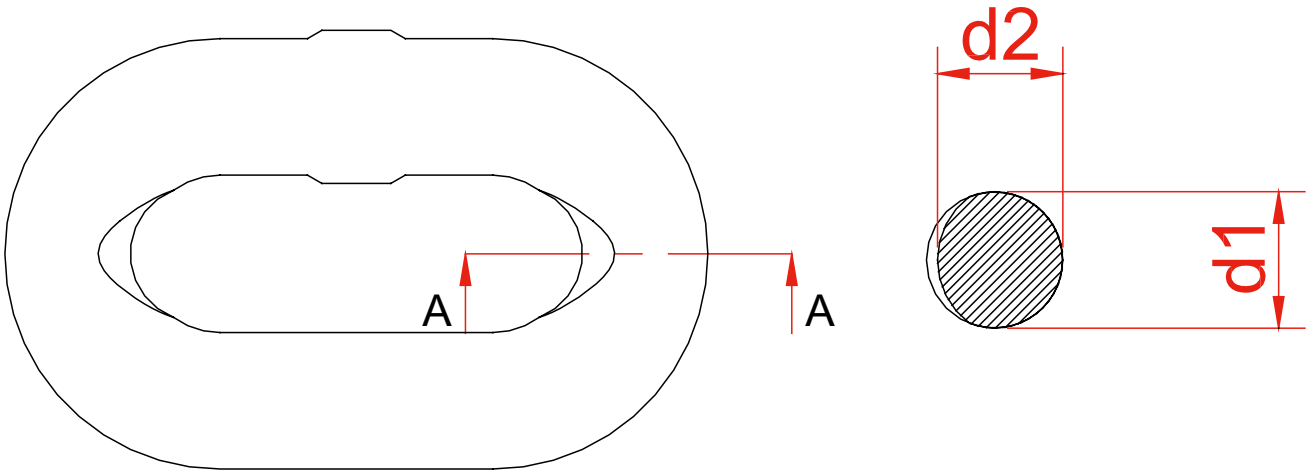



* Make sure the inspection frequency complies with the applicable regulations

# CAUTION




**Chain to be measured over 11 links (11t)**
**Max. allowable wear is 2% of 11t. (as per DIN 685 T5)**




**Measure d1 and d2 > (d1+d2)/2 <=0.9d**

**WARNING**

**Chains of completely identical size and measurement still can be fully and totally different in steel alloy and characteristics like breakings strength, ductility, elongation and price. Load chains for chain hoists are generally more expensive because of the characteristics needed for safe operation. Regular slinging chains are certainly cheaper but in no way safe when used in a chain hoist. Never leave even the slightest bit of doubt, when safety is a major issue.**

## CHAIN REPLACEMENT WITH CHAIN IN LIFTING MOTOR

1. With the unit hanging by the suspension hook (motor up position), run the load hook to its "UP" limit.
2. DISCONNECT CHAIN HOIST FROM POWER SUPPLY and remove the electrical cover.
3. Using a screwdriver, pry the spring guide plate out of the slots in the limit switch nuts (See Figure 5, page 19). Turn the gold nut back to about the center of the threaded shaft.
   Do not disconnect the wires from the limit switches.
4. Remove the load block assembly from the old chain.
   On double-chained lifting motors detach the chain from the chain support and pull it through the load block assembly.
5. Make a "C" shaped chain link by grinding through the end link on the load end of the old chain.
6. Using the "C" link, attach the new chain to the load end of the old chain. Be sure that the welds of the upstanding links of the new chain will face outward from the load sheave. The end links must be oriented for attachment to the dead-end shackle and the chain support (double-chained only) without any twist in the chain.
   Note that the chain end is attached to the shackle with a split link.
7. With the electrical cover off, connect the chain hoist to the power supply. Be sure that the green ground wire is properly grounded (See INSTALLATION, page 5).
8. Carefully jog the "UP" button and run the joined pieces of chain into the lifting motor until about 15" of the new chain comes out the other side.
9. DISCONNECT CHAIN HOIST FROM POWER SUPPLY.
10. Remove the "C" link and the old chain. Remove the chain stop from the old chain by prying off its retaining ring with a flathead screwdriver. If attached, remove the old chain from the shackle on the side of the lifting motor by opening up the split link.
11. Attach the chain stop to the slack end of the new chain by capturing the 12th link with the two stop halves positioned with their tapered ends pointing towards the lifting motor. Slide the sleeve over the halves and attach the retaining ring. If you are not using a chain container, attach the slack end of the new chain to the shackle on the side of the unit using the split link. DO NOT allow twists in the chain.
12. Adjust the lower limit switch (See ADJUSTING LOWER LIMIT, page 17).
13. Attach the load block on single-chained chain hoist using a new load block screw or pin (See Figure 17).
    On double-chained chain hoist, feed the chain through the load block (welds of the upstanding links will be in towards the sheave) and fasten the end of the chain to the chain support using a new chain support pin (See Figure 17).
    Be sure there are no twists in the chain.
14. Adjust the upper limit switch (See ADJUSTING UPPER LIMIT, page 17).

## CHAIN REPLACEMENT WITH NO CHAIN IN CHAIN HOIST

1. DISCONNECT CHAIN HOIST FROM POWER SUPPLY and move the chain hoist to a work table. Remove the electrical cover, electrical panel and the electric brake assembly.

**WARNING**

**Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.**

**TO AVOID INJURY:**
**Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.**

2. Detach the chain stripper from the bottom of the chain hoist.
3. Insert the new chain between the load sheave and the chain guide. Feed the chain into the chain hoist by manually turning the brake hub. Allow about 40cm (15") of chain below the chain hoist on the slack end. Be sure the welds of the upstanding links are out away from the load sheave and that proper orientation is observed for attachment of the slack end. Also be sure the load hook assembly (if already attached to the chain) is toward the centre of the chain hoist or to your right looking from the transmission end.
4. Reinstall the chain stripper observing proper chain alignment and avoiding any twist in the chain.
5. Follow steps 11 through 14 in previous section, CHAIN REPACEMENT WITH CHAIN IN CHAIN HOIST, to complete the chain-replacement procedure.

**NOTE:** Inspect chain guides and load sheave for wear, replace as needed.

## LOAD CHAIN CLEANING

Clean the load chain with acid-free solvent and coat with new SAE 90 gear oil. Wipe excess oil to prevent dripping. Never apply grease to the chain.

## CHAIN END STOP

The end stop on the dead-end chain should be mounted on the 11th link. (No less than 11 links should be in between the dead-end and the chain stop).

## CHAIN-END

The dead-end of the chain needs to be connected to bolt which is used to connect the chain bag bracket to the jam free guide (see page 33, pos 10 and fig. 5 page 19).

## CUTTING CHAINS


Prolyft load chain is hardened and therefore difficult to cut.
The following methods are recommended when cutting a length of new chain from stock or cutting a worn chain.

a) Use a grinder and nick the link on both sides, then secure the link in a vise and break of with a hammer.
b) Use a bolt cutter with special cutter jaws for cutting hardened chain.

## LIMIT SWITCH ADJUSTMENT

Refer to Figure 5.

**WARNING**

**If the phase are not connected properly, the limit switch might malfunction**

**IMPORTANT:** Before placing chain hoist in operation, check the limit switch adjustment. Limit switches are provided to protect the chain hoist against damage resulting from over travel or to allow setting the hook travel within the factory-set limits of travel.
The standard Prolyft limit switch allows for the maximum amount of lift, 43 meter (143') on the 500/1000kg models and 21 meter (71') on the 2000kg models.

The limit switch adjusting nuts are colour-coded gold for the "UP" limit and silver for the "DOWN" limit. Movement of the limit switch nuts toward or away from each other increases or decreases the hook travel respectively.

## ADJUSTING UPPER LIMIT (GOLD NUT)

1. Suspend the chain hoist in the motor up position. For single-fall models operate "UP" until there is a minimum clearance of 51mm (2") from the chain hoist housing and the rear-end of the block. Double-reeved models require a minimum clearance of 25mm (1") from the chain support to the chain-guide side of the load block.
2. DISCONNECT CHAIN HOIST FROM POWER SUPPLY and remove the electrical cover.

**WARNING**

**Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.**
**TO AVOID INJURY:**
**Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.**

3. With a screwdriver, pry the spring guide plate out of the slots in the limit switch nuts.
4. Turn the slotted gold nut toward its limit switch until the switch "clicks" then turn two slots farther. Release the spring guide plate and be sure it slips back into the slots in both limit switch nuts. Do not disturb the silver slotted nut if it has been set previously.

## ADJUSTING LOWER LIMIT (SILVER NUT)

1. Suspend the chain hoist in the motor up position.
   Operate "DOWN" to a point where the slack-end loop of the chain hangs down 15cm (6") or more from the chain hoist housing (or the limit desired in any particular application allowing the minimum 15cm (6").
   There should be a minimum clearance of 51mm (2") between the chain stop and the bottom of the chain hoist.
2. DISCONNECT CHAIN HOIST FROM POWER SUPPLY and remove the electrical cover.

**WARNING**

**Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.**
**TO AVOID INJURY:**
**Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.**

3. With a screwdriver, pry the spring guide plate out of the slots in the limit switch nuts.
4. Turn the slotted silver nut toward its limit switch until the switch "clicks," then turn two slots farther. Release the spring guide plate and be sure it slips back in the slots in both limit switch nuts.
   Do not disturb the gold slotted nut if it has been set previously.

## CHECK BOTH UPPER AND LOWER LIMITS

1. Connect the chain hoist to the power supply.
   Be sure the green ground wire is properly grounded.

**CAUTION**

**If the wires running to the limit switches are ever disconnected for any purpose, be sure to replace wires in accordance with the correct wiring diagram (See Figures 7A - 7B).**

2. Check the direction of hook travel (See INSTALLING THE CHAIN HOIST, page 10).
3. Carefully operate to upper limit and observe if it stops automatically at desired level. Do not allow load block to run into the chain hoist housing - this will damage the chain hoist. Maintain a minimum clearance of 51mm (2") from the chain hoist housing and the load block on single fall models and 25mm (1") from the chain support to the load block on double-reeved models.
4. Carefully operate to lower limit and observe if it stops automatically at the desired level. Do not allow slack-end loop of chain to become taut against chain hoist housing. This will damage the chain hoist. There should be a minimum clearance of 51mm (2") between the chain stop and the chain hoist.
5. If upper and lower limits operate satisfactorily, the chain hoist is ready for use. If they are not as desired, repeat adjustment.

## BRAKE

Properly adjusted, this brake will release promptly when energized. It is capable of both smoothly stopping and securely holding the rated capacity of the chain hoist. If the chain hoist develops either undesirable over-travel after a push button is released (this condition is most noticeable in the lowering direction) or hesitates to lift the load promptly, the brake should be adjusted.

## BRAKE ADJUSTMENT

Refer to Figure 4.

1. DISCONNECT CHAIN HOIST FROM POWER SUPPLY and remove the electrical cover.

**WARNING**

**Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.**
**TO AVOID INJURY:**
**Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.**

2. With reference to Figure 4, the gap between the brake armature "A" and the field "B" should be checked. The correct gap is 0.38mm (0.015"). Adjustment should not be necessary until gap reaches 1mm (0.040").
3. Adjust gap by adjusting the 3 locknuts "F" and checking with a feeler gauge to be sure gap is the same on both ends of the solenoid.
4. Check of the brake discs are properly aligned before re-assembly

5. Adjustment is now complete and the brake properly set. Replace the electrical cover, reconnect the power supply, and check chain hoist brake action.

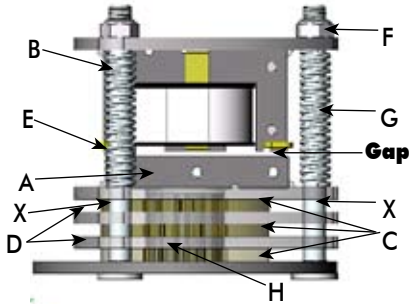



*Figure 4 — Brake Assembly*

**⚠CAUTION**

**Be sure the bottom of the armature does not bear against the splined adapter "H". As adjustments are made, the built-in clearance will be reduced. When this clearance is gone REPLACE BRAKE DISCS. Minimum allowable disc thickness is .4,1". See Figure 12 for further illustration.**

### WIRING

Refer to Figures 7A and 7B on page 21. Single-phase units (115/230V) are wired for 230V and 3-phase units (230/460V) are wired for 230V/460V unless otherwise specified when ordering. Conversion of dual voltage units can be done simply and quickly as follows.

1. DISCONNECT CHAIN HOIST FROM POWER SUPPLY and remove electrical cover.
2. When converting a 380-460V/3-phase unit to 230/3phase add the C4, C5, and C6 jumper wires as shown in Figure 7A and 7B. The T4, T5, and T6 motor leads are then spliced together. one of the transformer leads H2 (Low voltage) and H4 (High voltage) is connected to the contactor as shown on the diagram depending on the voltage.
3. Make sure that all of the screw clamps on the contactor and terminal blocks are tightened. Tug on the connected wires to ensure they are securely connected and match the diagram to ensure proper wiring.
4. Check the operation of the chain hoist, ensuring that the direction of travel is correct (See INSTALLING THE CHAIN HOIST, page 10).

**IMPORTANT:** Always refer to the wiring diagram located on the inside of the electrical cover or Figures 7A and 7B when performing electrical repairs. Make sure all terminals are securely fastened and check for damaged insulation. It is also imperative that the power circuit has conductors of adequate size.

### LUBRICATION

Refer to Figure 9. Proper lubrication is necessary to ensure a long and reliable chain hoist life. Refer to the following and the RECOMMENDED LUBRICATION SCHEDULE for lubrication points, type of lubricant, and frequency of lubrication.

### GEARING

The gearbox of this chain hoist is filled at assembly with 1153cc (39oz US) of SAE 90 EP gear oil. To check oil level, hang the unit by the suspension hook (motor up position) (the unit and decals will be upside down) and remove the oil level check plug. With the chain hoist hanging level, the gear oil should be even with the hole.

### BEARINGS

All bearings except hook bearing and (2 ton block) idler sheave bearings are lubricated at the factory and should not require additional lubrication. Noisy or worn bearings should be replaced.

### IDLER SHEAVE BEARING (BUSHING)

Disassemble the 2-ton load block and apply a light coat of NLGI #2 grease, or equivalent, inside of the bearing.

**NOTE:** If the chain hoist is used in an atmosphere containing abrasive dust, frequent cleaning and oiling may be necessary.

### HOOK BEARING

Apply a few drops of new SAE 30 gear or motor oil around the edge of the bearing.

### LIMIT SWITCH SHAFT

Remove any dirt accumulation and spray with a general purpose lubricant.

**⚠WARNING**

**Remove load and disconnect chain hoist from power supply before starting to do any repairs or to take any sections apart.**

## Chain Hoist Repairs

### CHAIN HOIST REPAIRS

NOTE: If you do not have an experienced mechanic to do your repair work, we recommend that you send your chain hoist to an approved service station for repairs. Use authorized repair parts only.

1. For major repairs or when the chain hoist is to be sectioned in the suspension area, it will be necessary to move the chain hoist to a workbench or table.
2. For repairs which can be done by removing the electrical cover only, the chain hoist need not be moved. Lowering the chain hoist to a convenient working level is desirable.

The following repair instructions will help you in understanding repair procedures, when related to the Replacement Parts List on page 34. For clarity these are broken down into areas.

### BOLTS

All bolts should be 8.8 grade minimum. The bolts of the gearbox housing require a torque moment of 12,5 Nm. The bolts should be tightened crosswise. All critical bolts are sealed.

### ELECTRICAL PARTS AND BRAKE

1. Refer to Figures 13 and 14. Remove the cover to access the controls.
   The terminal blocks and end clamps snap off of the rails on the plate using a small screwdriver.
   DO NOT SLIDE THE END CLAMPS.
   The contactor can be slid off the rail, but must be snapped on. Where the contactor fits the rail, one side has springs or pads that apply pressure against the edge of the rail. By pressing against that side at the base of the contactor, you can snap the part on or off using a rotating action. Note the numbers that label the terminals on the contactor and orient the part as shown in Figures 7A-7B.

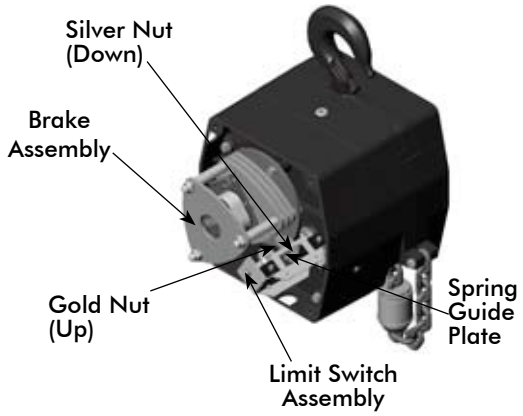



*Figure 5 — Brake and Limit Switch Assembly*

2. Remove the electrical panel by removing the stand-off screws (See Figures 13 & 14). The limit switch and brake are now accessible as shown in Figure 5.
3. Remove the transformer bolted to the back of the panel plate if it requires replacement.
4. Refer to Figure 15 to disassemble the limit switch. See LIMIT SWITCH ADJUSTMENT on page 17 to properly set the upper and lower limits of travel.

## MOTOR

Refer to Figure 11

The chain hoist's motor is located on the opposite end to that of the electrical parts, but the two are tied together with electrical leads running through the housing.

1. If it is necessary to replace or repair the motor, DISCONNECT THE CHAIN HOIST FROM THE POWER SUPPLY and remove the electrical cover.
2. Loosen the screw clamps on the terminal blocks and reversing contactor to disconnect the motor leads (See Figures 14 and 15).
3. Remove the four motor mounting bolts attaching the motor to the housing. It will come loose at the motor coupling.

**WARNING**

**Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.**

**TO AVOID INJURY:**
**Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.**

4. Inspect the motor coupling, motor shaft and all the bearings. Replace as necessary.
5. Install new or repaired motor according to the wiring diagram located inside the electrical cover or Figures 7A and 7B.

## GEARING

Use the Replacement Parts List for Basic Unit and Gearbox Parts to help in repairs on gearing (See Figures 10 and 16). As disassembly is extensive for gearing, disconnect the chain hoist and move it to a workbench.

1. DISCONNECT THE CHAIN HOIST FROM THE POWER SUPPLY and remove electrical cover.
2. Remove electrical panel.
3. Remove brake assembly.
4. Drain oil from the gearbox.
5. Remove the four screws attaching the gearbox cover to the gear housing and remove the gearbox cover.
6. Inspect gears for broken or severely worn teeth and inspect all bearings. Replace as necessary. The overload slip clutch is factory calibrated and must not be disassembled or readjusted.

**CAUTION**

**Do not disassemble or readjust clutch, or replace with a clutch assembly from another lifting motor. Doing so will void the warranty and may create an unsafe condition. If replacement is needed due to wear or loss of adjustment, always use a new clutch assembly.**

7. Reassemble in reverse order of disassembly making sure the gasket is in place and in good condition. Coat gasket with Permatex® or other gasket cement. Extreme care should be taken to avoid damage to oil seals.
8. Make sure the oil is refreshed to its proper oil level, as indicated on the hoist. To much oil will cause the hoist to leak oil during operation.
9. Check all wire terminals to be sure they are properly seated and in accordance with wiring diagram.
   Before placing chain hoist back into service, check brake adjustment.

*Figure 6 - Assembled Gearing*

## SUSPENSION

Use the Parts List for Basic Unit and Chaining Parts to help in repairs in this section (See Figures 10 and 17). The chain hoist sections must be separated at the top hook line in order to inspect the load sheave and chain guides. See CHAIN REPLACEMENT WITH NO CHAIN IN CHAIN HOIST, page 16.

While this section is apart, check the following:

- Load sheave
- Chain, Chain guides and plates
- Chain support (on 2 ton models)
- Bearings

Replace parts as necessary including screws, lock washers, etc. When reassembled, recheck operation.

## POWER CORD PRECAUTIONS

Electric chain hoists require a sufficient power supply. It is especially important with single-phase voltage to ensure that the conductors running to the chain hoist from the power source are adequate in size to handle the power requirements of the chain hoist. Inadequate power cables and branch circuits will cause low voltage, high amperage, damage to the chain hoist, and potential fire hazards. Such problems can be minimized by using 230V power on 115/230V chain hoists. The following are recommendations for the conductor gauge size depending on the length, horsepower and voltage for 3-phase 400V hoist.

## MAINS POWER CABLE

| WIRE | COLOR / EU | COLOR / US | PIN |
|---|---|---|---|
| L1 / U1 | Brown | Brown | 1 |
| L2 / V1 | Black | Black | 2 |
| L3 / W1 | Grey/Black | Black | 3 |
| PE / ground | Yellow/Green | Yellow/Green | GND |
| Zero | Blue | Blue | N |

## LOW VOLTAGE CONTROL CABLE

| WIRE | COLOR / EU | FUNCTION | PIN |
|---|---|---|---|
| L1 | Brown | 110Vac | 1 |
| L2 | Blue | Up | 2 |
| L3 | Black | Down | 3 |
| PE / ground | Yellow/Green | | GND |

## MAINS CABLE

| WIRE | COLOR / EU | COLOR / US | PIN |
|---|---|---|---|
| L1 / U1 | Brown | White | 1 |
| L2 / V1 | Blue | Blue | 2 |
| L3 / W1 | Grey/Black | Ren | 3 |
| PE / ground | Yellow/Green | Green | GND |

## BRAKE INS / BRAKE OUTS

| WIRE | COLOR / EU | PIN |
|---|---|---|
| **MOTOR 1** | | |
| L1 | Brown | 1 |
| L2 | Black | 2 |
| L3 | Black | 3 |
| GND | Yellow/Green | 4 |
| **MOTOR 2** | | |
| L1 | Brown | 5 |
| L2 | Black | 6 |
| L3 | Black | 7 |
| GND | Yellow/Green | 8 |
| **MOTOR 3** | | |
| L1 | Brown | 9 |
| L2 | Black | 10 |
| L3 | Black | 11 |
| GND | Yellow/Green | 12 |
| **MOTOR 4** | | |
| L1 | Brown | 13 |
| L2 | Black | 14 |
| L3 | Black | 15 |
| GND | Yellow/Green | 16+pe |

## PICKLE FOR LOW VOLTAGE CONTROL

| WIRE | COLOR / EU | FUNCTION | PIN |
|---|---|---|---|
| L1 | Brown | 110Vac | 1 |
| L2 | Blue | Up | 2 |
| L3 | Grey/Black | Down | 3 |
| PE / ground | Yellow/Green | | GND |

## MULTI CABLES

| WIRE | WIRE NO: | PIN |
|---|---|---|
| L1 | 1 | 1 |
| L2 | 2 | 2 |
| L3 | 3 | 3 |
| GND | 4 | 4 |
| | | |
| L1 | 5 | 5 |
| L2 | 6 | 6 |
| L3 | 7 | 7 |
| GND | 8 | 8 |
| | | |
| L1 | 9 | 9 |
| L2 | 10 | 10 |
| L3 | 11 | 11 |
| GND | 12 | 12 |
| | | |
| L1 | 13 | 13 |
| L2 | 14 | 14 |
| L3 | 15 | 15 |
| GND | 16 | 16+pe |

## MAX. CABLE LENGTH IN METERS

| LIFTING CAPACITY PROLYFT HOIST | 1,5 MM2 CORDS | | 2,5MM2 CORDS | |
|---|---|---|---|---|
| | 400V/50 hz | 230v/50hz | 400V/50 hz | 230v/50hz |
| 250 Kg | 230 | 75 | 255 | 80 |
| 500 Kg | 100 | 40 | 110 | 45 |
| 1000 Kg | 65 | 25 | 75 | 25 |
| 2000 Kg | 65 | 25 | 75 | 25 |

## FREQUENCY OF INSPECTION

### FREQUENT CHECKS

Indicates items requiring inspection daily to monthly.
'Daily' inspections should be taken as visual checks 'prior to each time of use' and may be performed by the operator if properly designated. In general the items to be checked accordingly are: chain hook & latch, suspension hook & latch, load chain, power and control tails including the stress reliefes and connectors. Furthermore the general state of the hoist body should be observed for missing parts or anything that might indicate a deterioration of the safe use of the chain hoist. Checks like these do not legally require filling out any written document, however in dry-hire rental companies this still might be advised for liability reasons.

### PERIODIC INSPECTION

Indicates items requiring inspection monthly to yearly. Inspections to be performed by or under the direction of a properly designated person. The exact period of inspection will depend on frequency and type of usage, as already stated on page 15. Determination of this period will be based on the user's experience. In standard entertainment applications it is recommended that the user begins with a semi-annually inspection and extends the periods to annually based on user's semi-annually experience. It is advised however to check with local or national legal regulations or standards and stick to the mandatory frequency, even if from a technical point of view this would not be required.

Items to be inspected are those of the frequent inspection, plus at least the following:
- gear box lubricant level,
- lifting capacity in static and dynamic response, using a testing facility,
- (any) screwed connection in power and control cords and connectors – and resealing if needed,
- wear measurement on load chain,
- dead end fixation of load chain,
- chain bag condition and - chain bag suspension points and so on.

All of these items are to be documented and signed by the person having executed the inspections.

## WIRING DIAGRAMS

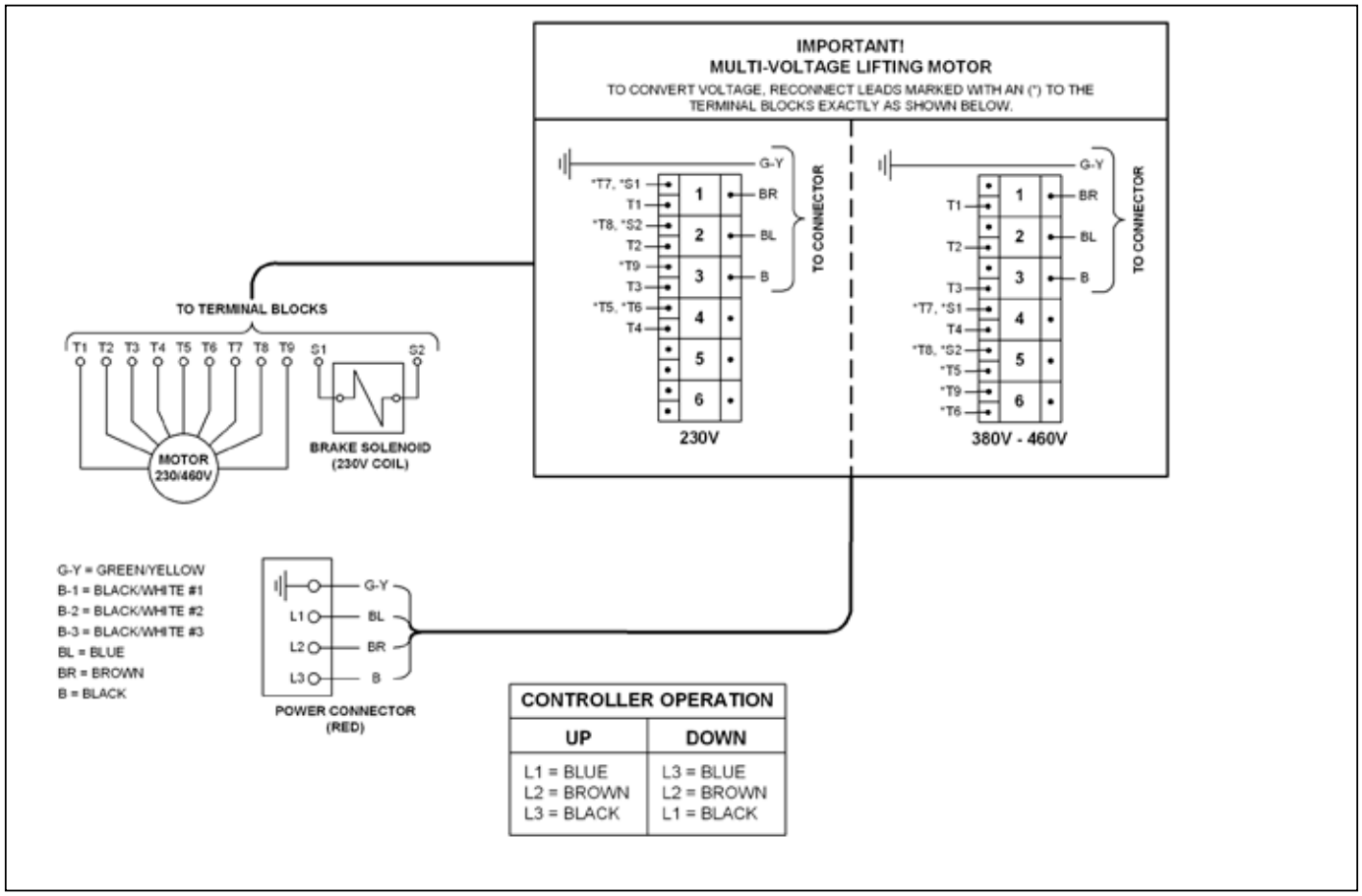



*Figure 7A — Direct Control Diagram*

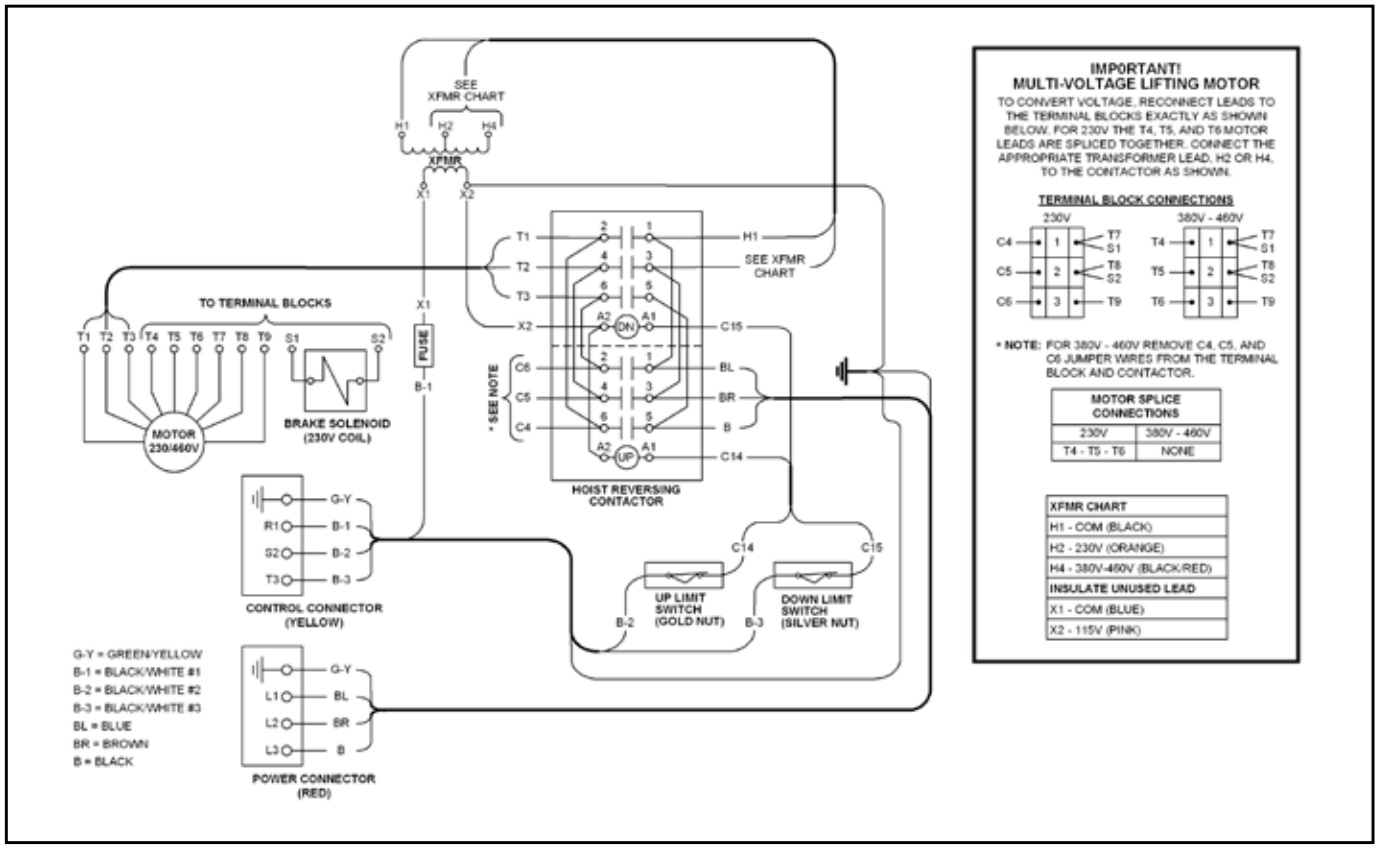



*Figure 7B - Low Voltage diagram*

**WARNING**

**Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.**

**TO AVOID INJURY:**
**Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.**

# TROUBLE SHOOTING

Always disconnect unit from the power supply system before removing chain hoist covers or the back cover of a control station.

| — Probable Cause — | — Remedy — |
|---|---|
| **Hook fails to stop at end of travel** | |
| 1. Limit switch not operating | 1. Check adjustment (See LIMIT SWITCH ADJUSTMENT, page 17). Check connections against wiring diagram. Tighten loose connections or replace. |
| 2. Phase are reversed. | 2. Check phase and reverse if needed. |
| 3. Brass limit switch nuts not moving on shaft | 3. Check for stripped threads or bent nut guide. |
| 4. Reversing contactor malfunctioning | 4. Remove electrical cover and check reversing contactor. |
| **Lifting motor does not respond to pushbutton** | |
| 1. Power failure in supply lines | 1. Check circuit breakers, switches and connections in power supply lines. |
| 2. Wrong voltage or frequency | 2. Check voltage and frequency of power supply against the rating on the nameplate of the motor. |
| 3. Improper connections in chain hoist or pushbutton station | 3. Check all connections at line connectors and on terminal block. Check terminal block on dual voltage chian hoist for proper voltage connections. |
| 4. Brake does not release | 4. Check connections to the solenoid coil. Check for open or short circuit. Check for proper adjustment (See BRAKE ADJUSTMENT, page 17). |
| 5. Faulty reversing contactor | 5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. |
| **Hook does not stop promptly** | |
| 1. Chain hoist overloaded | 1. Reduce load to within rated capacity of chain hoist. |
| 2. Brake not holding | 2. Check brake adjustment (See BRAKE ADJUSTMENT, page 17). It may be necessary to replace discs. |
| **Hook moves in wrong direction** | |
| 1. Three phase reversal | 1. Reverse any two wires (except the green ground wire) at the power source (See INSTALLATION, page 5). |
| 2. Improper connections | 2. Check all connections against wiring diagram. |
| **Chain hoist hesitates to lift when energized** | |
| 1. Chain hoist overloaded | 1. Reduce load within rated capacity of chain hoist. |
| 2. Motor brake requires adjustment | 2. Check motor brake adjustment (See BRAKE ADJUSTMENT, page 17). |
| 3. Worn overload limiting clutch | 3. Replace clutch. |
| 4. Low voltage | 4. Determine cause of low voltage and bring up to within plus or minus 10% of the voltage specified on the motor. Measure voltage at the lifting motor reversing contactor while lifting a load. |
| 5. Faulty SINPAC® starting switch or start capacitor (single phase chain hoist only) | 5. Replace faulty component. |
| **Hook raises but will not lower** | |
| 1. "DOWN" circuit open | 1. Check circuit for loose connections. Check "DOWN" limit switch for malfunction. |
| 2. Broken conductor in pushbutton cable | 2. Check each conductor in the cable. If one is broken, replace entire cable. |
| 3. Faulty reversing contactor | 3. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. |
| **Hook lowers but will not raise** | |
| 1. Lifting motor overloaded | 1. Reduce load to within rated capacity of chain hoist. |
| 2. Low voltage | 2. Determine cause of low voltage and bring up to within plus or minus 10% of the voltage specified on the motor. Measure voltage at the chain hoist reversing contactor while lifting a load. |
| 3. "UP" circuit open | 3. Check circuit for loose connections. Check "UP" limit switch for malfunction. |
| 4. Broken conductor in pushbutton cable | 4. Check each conductor in the cable. If one is broken, replace entire cable. |
| 5. Faulty reversing contactor | 5. Check coils for open or short circuit, check all connections in control circuit. Check for burned contacts. Replace as needed. |
| 6. Faulty capacitor (single phase lifting motor only) | 6. Check starting capacitor on motor. Replace if necessary. |
| 7. Worn overload limiting clutch | 7. Replace overload clutch assembly. |
| 8. Loose screw clamps | 8. Ensure that screw clamps are tightened on the terminal blocks and reversing contactor. |
| **Motor overheats** | |
| 1. Excessive load | 1. Reduce load to within rated capacity of chain hoist. |
| 2. Low voltage | 2. Determine cause of low voltage and bring up to within plus or minus 10% of the voltage specified on the motor. Measure voltage at the chain hoist reversing contactor while lifting a load. |
| 3. Extreme external heating | 3. As the ambient temperature rises towards the 130°F limitation of the unit, frequency of the chain hoist operation must be limited to avoid overheating of the motor. See ADVERSE ENVIRONMENTAL CONDITIONS, page 5. |
| 4. Frequent starting or reversing | 4. Excessive inching, jogging or reversing should be avoided since this type of operation will drastically shorten the life of motor, contactor and brake. |
| 5. Brake dragging | 5. Check brake adjustment (See BRAKE ADJUSTMENT, page 17). |
| **Lack of proper lifting speed** | |
| 1. chain hoistr overloaded | 1. Reduce load to within rated capacity of chain hoist. |
| 2. Brake dragging | 2. Check for proper brake adjustment or other defects. |
| 3 Low voltage | 3. Ensure that the voltage at the reversing contactor is within ±10% of the nominal voltage while lifting a load. |
| 4. Overload limiting clutch intermittently slipping | 4. Replace overload clutch assembly. |
| **Motor brake noise or chatter (while starting chain hoist)** | |
| 1. Brake needs adjustment | 1. See BRAKE ADJUSTMENT, page 17. |
| 2. Low voltage | 2. Ensure that the voltage at the reversing contactor is within ±10% of the nominal voltage while lifting a load. |
| **Motor brake "buzz" (anytime chain hoist is running)** | |
| 1. Brake needs adjustment | 1. See BRAKE ADJUSTMENT, page 17. |
| 2. Broken shading coil on brake frame | 2. Replace shading coil or complete brake frame assembly. |

# INSPECTION AND MAINTENANCE CHECK LIST
# ELECTRIC POWERED OVERHEAD CHAIN CHAIN HOIST

Type of chain hoist_____ Capacity (Tons) _____

Location_____ Original Installation Date _____

Manufacturer_____ Manufacturer's Serial No._____

| Item | Frequency of Inspection | | | Possible Deficiencies | OK | Action Required |
|---|---|---|---|---|---|---|
| | Frequent | | Periodic | | | |
| | Daily | semi-annually | 1-12 Mo. | | | |
| Operating Controls | * | * | * | Any deficiency causing improper operation | | |
| Limit Switches | * | * | * | 1. Any deficiency causing improper operation<br>2. Pitting or deterioration | | |
| Brake Mechanism | * | * | * | 1. Slippage or excessive drift<br>2. Glazing, contamination or excessive wear | | |
| Hooks | * | * | * | Excessive throat opening 15% bent or twisted more than 10 degrees, damaged hook latch, wear, chemical damage, worn hook bearing. To find cracks, (use dye penetrant, magnetic or other suitable detection methods) | | |
| Suspension Lug (if used) | * | * | * | Cracks, excessive wear or other damage which may impair the strength of the lug. To find cracks, (use dye penetrant, magnetic particle or other suitable detection methods) | | |
| Chain | * | * | * | Inadequate lubrication, excessive wear or stretch, cracked, damaged or twisted links, corrosion or foreign substance | | |
| Hook and Suspension Lug Connections | | | * | Cracks, bending, stripped threads | | |
| Pins, Bearings, Bushings Shafts, Couplings | | | * | Excessive wear, corrosion, cracks, distortion | | |
| Nuts, Bolts, Rivets | | | * | Looseness, stripped and damaged threads, corrosion | | |
| Sheaves | | | * | Distortion, cracks, and excessive wear.<br>Build-up of foreign substances | | |
| Housings, Load Block | | | * | Cracks, distortion. Excessive wear, internal build-up of foreign substances | | |
| Wiring and Terminals | | | * | Fraying, defective insulation | | |
| Chain hoist Reversing Contactor, other Electrical Apparatus | | | * | Loose connections, burned or pitted contacts | | |
| Supporting Structure and Trolley (if used) | | | * | Damage or wear which restricts ability to support imposed loads | | |
| Nameplates, Decals, Warning Labels | | | * | Missing, damaged or illegible | | |
| NOTE: Refer to Maintenance and Inspection Sections of the Lifting Motor-Maintenance Manual for further details. | | | | | | |

**FREQUENCY OF INSPECTION**

Frequent - Indicates items requiring inspection daily to monthly. Daily inspections may be performed by the operator if properly designated.

Periodic - Indicates items requiring inspection monthly to yearly. Inspections to be performed by or under the direction of a properly designated period. The exact period of inspection will depend on frequency and type of usage. Determination of this period will be based on the user's experience. It is recommended that the user begin with a monthly inspection and extend the periods to quarterly, semi-annual or annually based on user's semi-annually experience.

**Figure 8A — Recommended Inspection and Maintenance Check List**

**NOTE:**This inspection and maintenance check list is in accordance with our interpretation of the requirements of the Safety Standard for Overhead Hoists ASMEB30.16. It is, however, the ultimate responsibility of the employer/user to interpret and adhere to the applicable requirements of this safety standard.

| INSPECTOR'S REPORT | | | |
|---|---|---|---|
| ITEM | REMARKS (LIST DEFICIENCIES AND RECOMMENDED ACTION) | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Inspector's Signature | Date Inspected | Approved by | Date |

**Figure 8B — Recommended Inspector's Report**

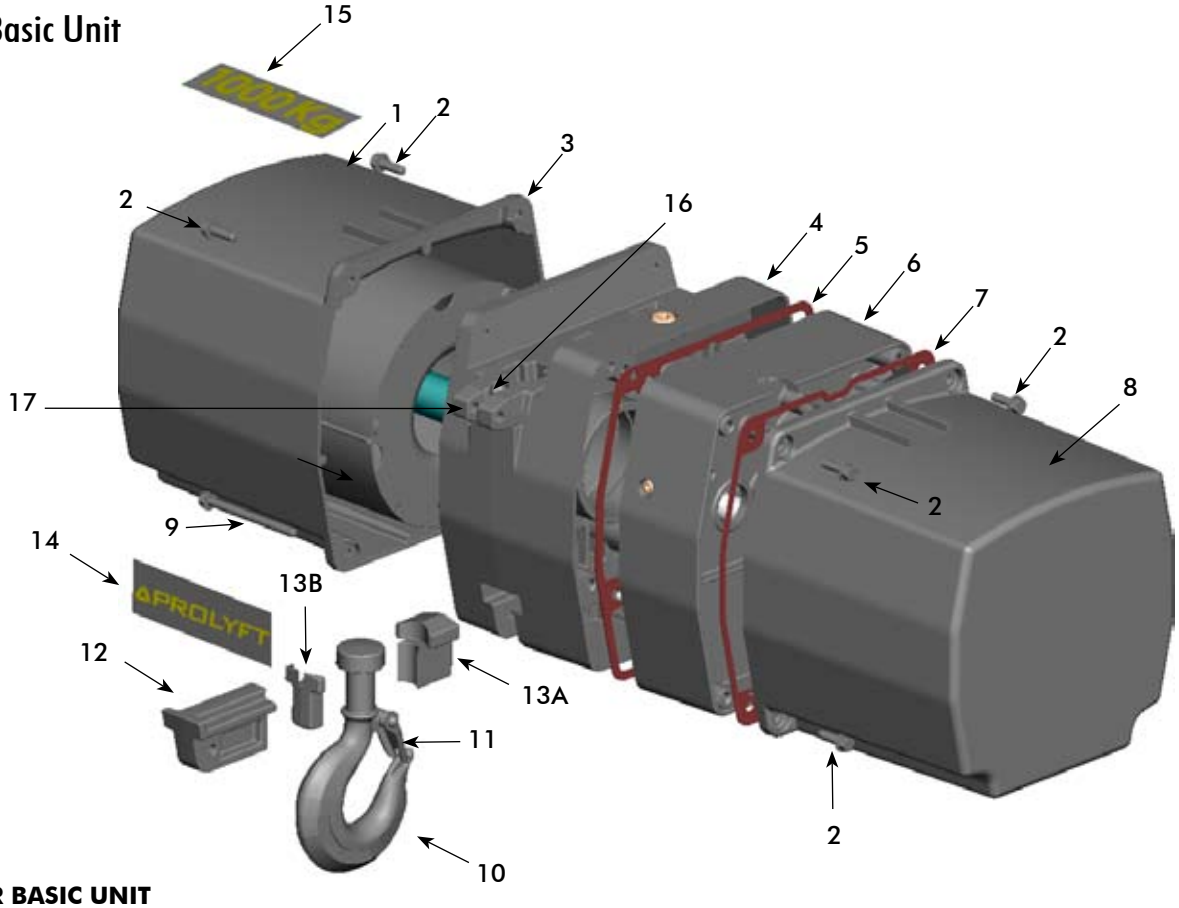
| RECOMMENDED LUBRICATION SCHEDULE* LIFTING MOTOR | | | | | |
|---|---|---|---|---|---|
| FIGURE & REFERENCE NO. | COMPONENT | TYPE OF LUBRICANT (USE ONLY NEW LUBRICANT) | TYPE OF SERVICE AND FREQUENCY OF LUBRICATION | | |
| | | | HEAVY | NORMAL | INFREQUENT |
| Figure 19 Ref. No. 8 | Load Chain | SAE 90 gear oil Daily | Weekly | Monthly | |
| Figure 18 | Gearing | SAE 90 extreme pressure (EP) gear oil | At periodic inspection (See Figure 8A) (Yearly replacements is advised) | | |
| Figure 19 Ref. No. 18 & 30 | Load Hook Bearing | SAE 30 gear or motor oil | Weekly | Monthly | Yearly |
| Figure 19 Ref. No. 27 | Idler Sheave Bearing (Bushing) Assembly | NLGI #2 multi-purpose lithium base grease | At periodic inspection (See Figure 8A) | | |

**NOTE:** All bearings except hook and idler sheave bearings are prelubricated and sealed.

(*) This lubrication schedule is based on a chain hoist operating in normal environment conditions. Lifting motors operating in adverse atmospheres containing excessive heat, corrosive fumes or vapors, abrasive dust, etc., should be lubricated more frequently.

**Figure 9 — Recommended Lubrication Schedule**

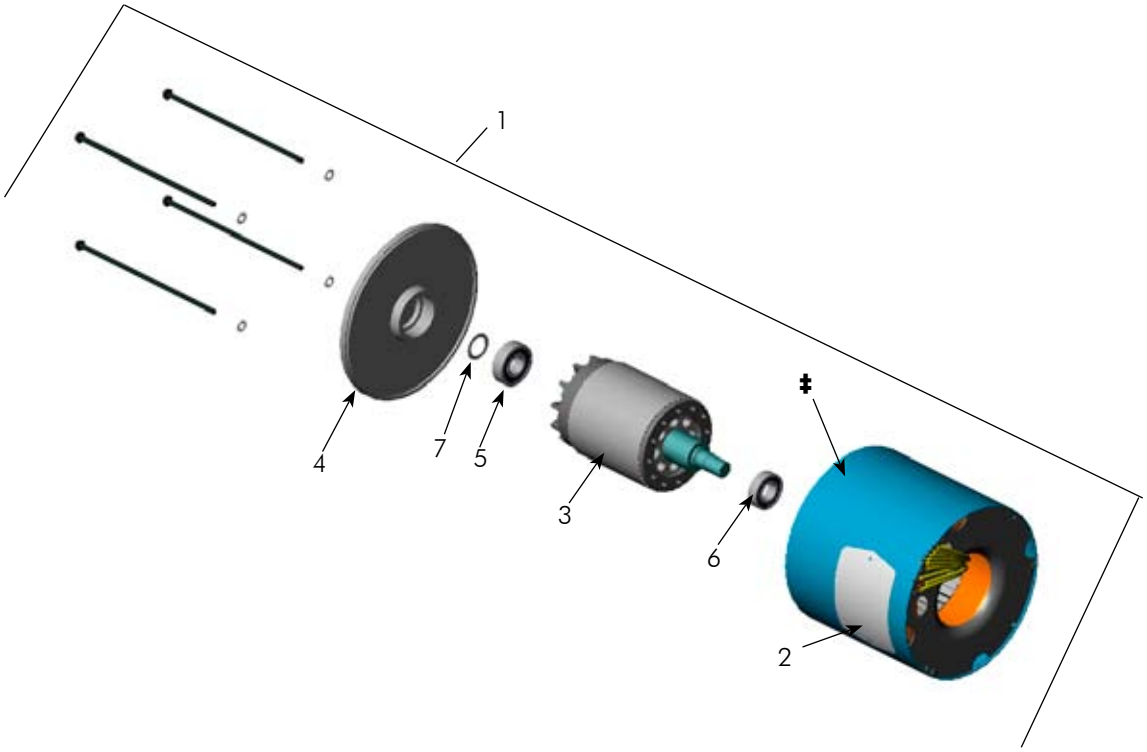
## Figure 10 - Basic Unit




**PARTS LIST FOR BASIC UNIT**

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 1 | Motor | | 1 |
| | (See Figures 11 & 12) | | |
| 2 | Cover Screw | H2976P | 7 |
| 3 | Motor Cover | JM38 | 1 |
| 4 | Transmission Housing | JM3533 | 1 |
| 5 | Transmission Case Gasket | JM560 | 1 |
| 6 | Transmission Cover | JM34 | 1 |
| 7 | Electrical Cover Gasket | JM563 | 1 |
| 8 | Electrical Cover | JM38 | 1 |
| 9 | Hook Retainer Screw | H2709P | 1 |
| 10 | Top Hook Assembly with Latch | | |
| | Swivel Hook (std.) | 3M205A01S | 1 |
| | †Rigid Hook | 3M405A01S | 1 |
| 11 | Latch Kit Assembly | 4X1305 | 1 |
| 12 | Hook Retainer | JM285 | 1 |
| 13A | Swivel Hook Retainer | JM49-2A | 1 |
| 13B | Swivel Hook Retainer | JM49-2B | 1 |
| 14 | Prolyft Decal | 677PL8 | 1 |
| 15 | Capacity Decal | | |
| | 500 Kg | JLC675R-05 | 1 |
| | 1000Kg | JLC675R-10 | 1 |
| | 2000Kg | JLC675R-20 | 1 |
| 16 | Socket head screw $^1/_4$ x 1 $^1/_4$ | S49-77 | 1 |
| 17 | Jam free chain guide | JM254 | 1 |

# Figure 11 - MOTOR, 3-PHASE



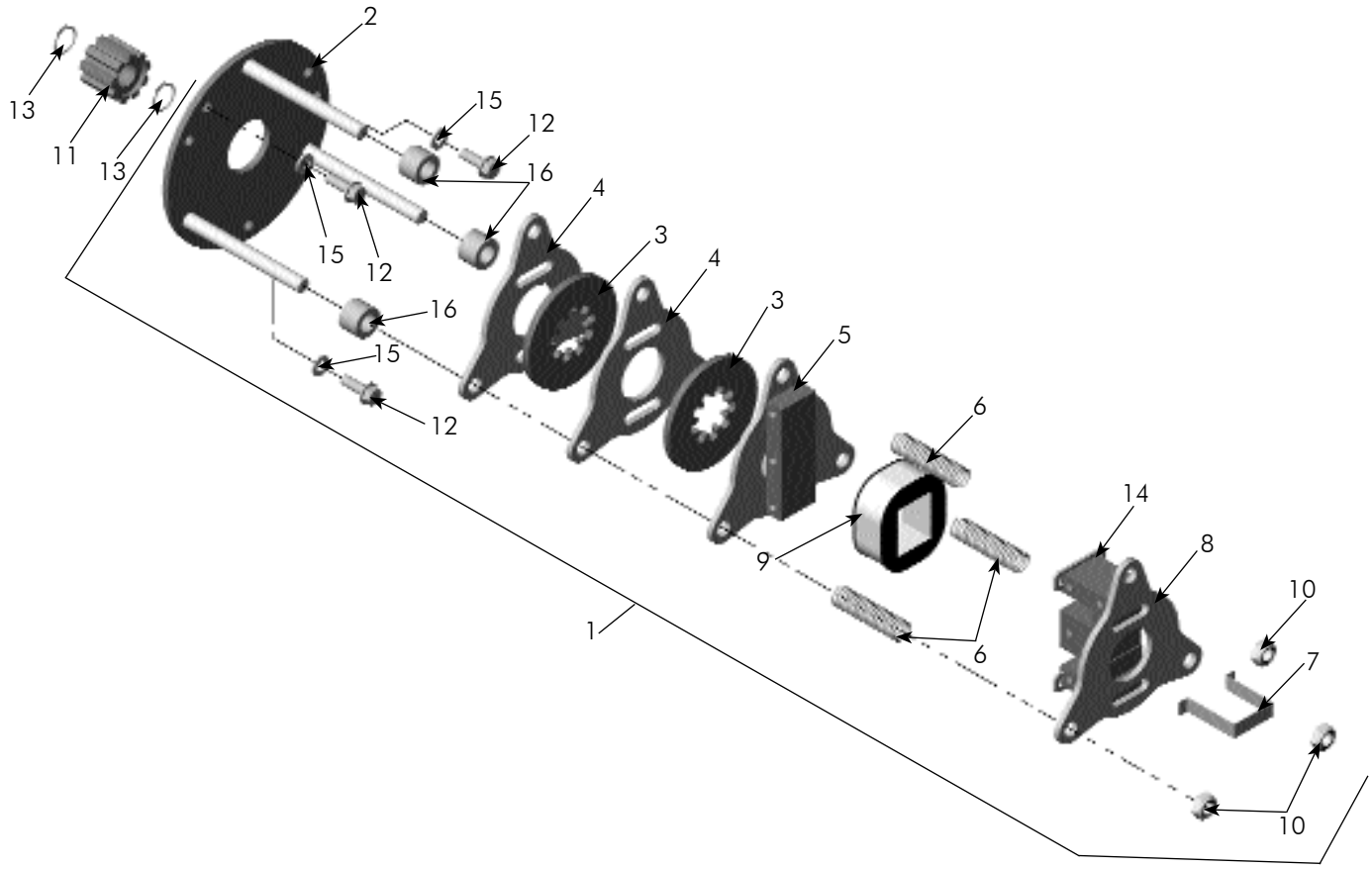

**(‡) Refer to the motor nameplate for part number voltage, full load amperage, horsepower, and other motor information.**

**PARTS LIST FOR MOTOR, 3-PHASE**

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 1 | Motor | | |
| | 1 hp | 863PM4 | 1 |
| 2 | Stator Assembly | * | 1 |
| 3 | Rotor Assembly | * | 1 |
| 4 | End Shield | * | 1 |
| 5 | Rear Bearing | 500K3 | 1 |
| 6 | Front Bearing | 732012C | 1 |
| 7 | Shim Washer | * | 1 |

*** Not available as an individual part.**

# Figure 12 - BRAKE & SOLENOID PARTS




NOTE: Refer to wiring diagram inside electrical cover of lifting motor or Figures 7A, 7B or 7C, when connecting any wires.

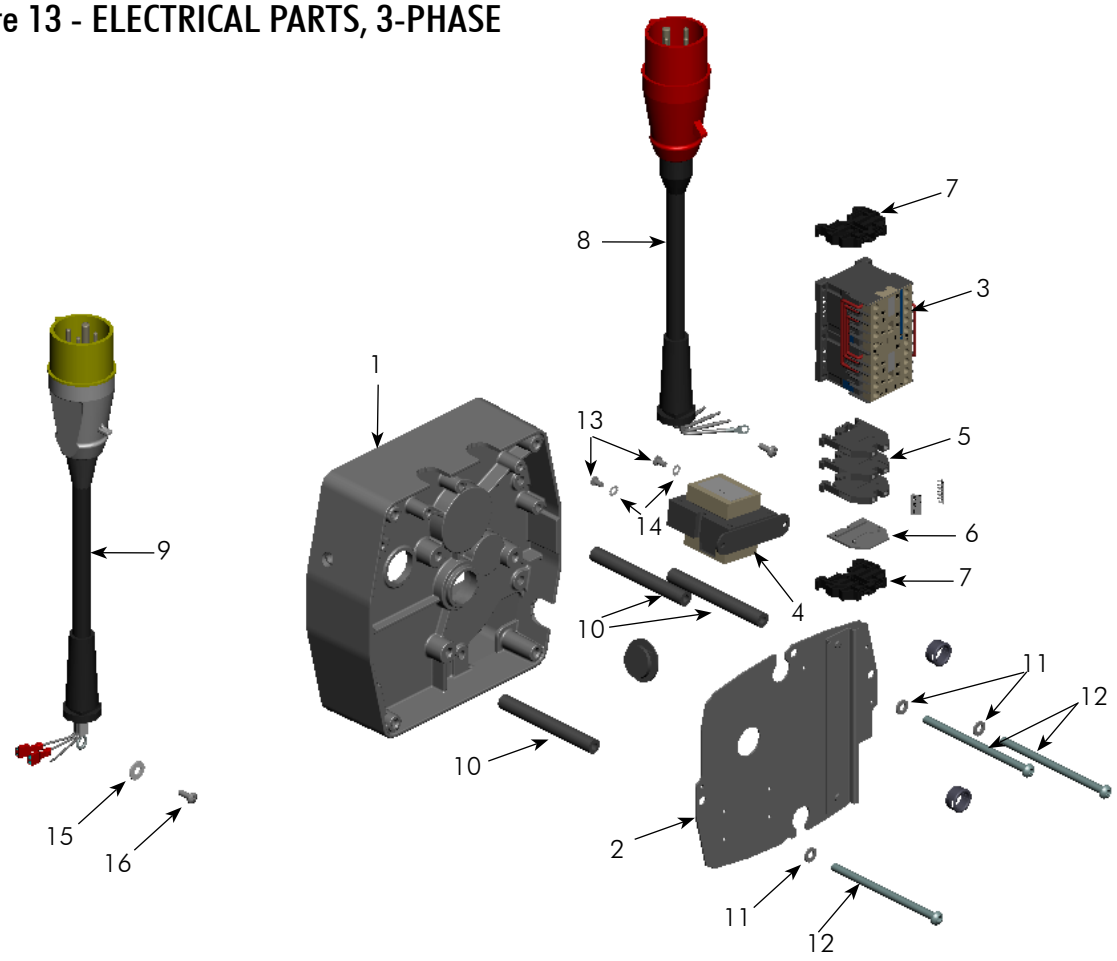
**PARTS LIST FOR BRAKE & SOLENOID**

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 1 | Brake Assembly Zinc* | | 1 |
| | 1 hp, 230 Volt | 854PL2BZ | 1 |
| 2 | Plate & Stud Assem. Zinc Plated | 859JG1Z | 1 |
| 3 | Brake Disc | 581J1A | 3 |
| 4 | Brake Plate Zinc Plated | JF291Z | 2 |
| 5 | Plate & Armature Zinc Plated | JF858Z | 1 |

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 6 | Spring | 344J6 | 3 |
| 7 | Retainer | JF710 | 1 |
| 8 | Plate & Frame Assem. Zinc Plated | JF857Z | 1 |
| 9 | Brake Coil* | | |
| | 230V* | 853JL2 | 1 |
| 10 | Locknut | H3978 | 3 |
| 11 | Adapter | JM142Z | 1 |
| 12 | Screw | H2976P | 3 |
| 13 | Retaining Ring | H5501 | 2 |
| 14 | Shading Coil | 860J1 | 2 |
| | Shading Coil Adhesive | H7812 | 1 |
| 15 | Lockwasher | H4134 | 3 |

*** Note: 230/460V-3 Phase models use 230V brake coils.**

# Figure 13 - ELECTRICAL PARTS, 3-PHASE



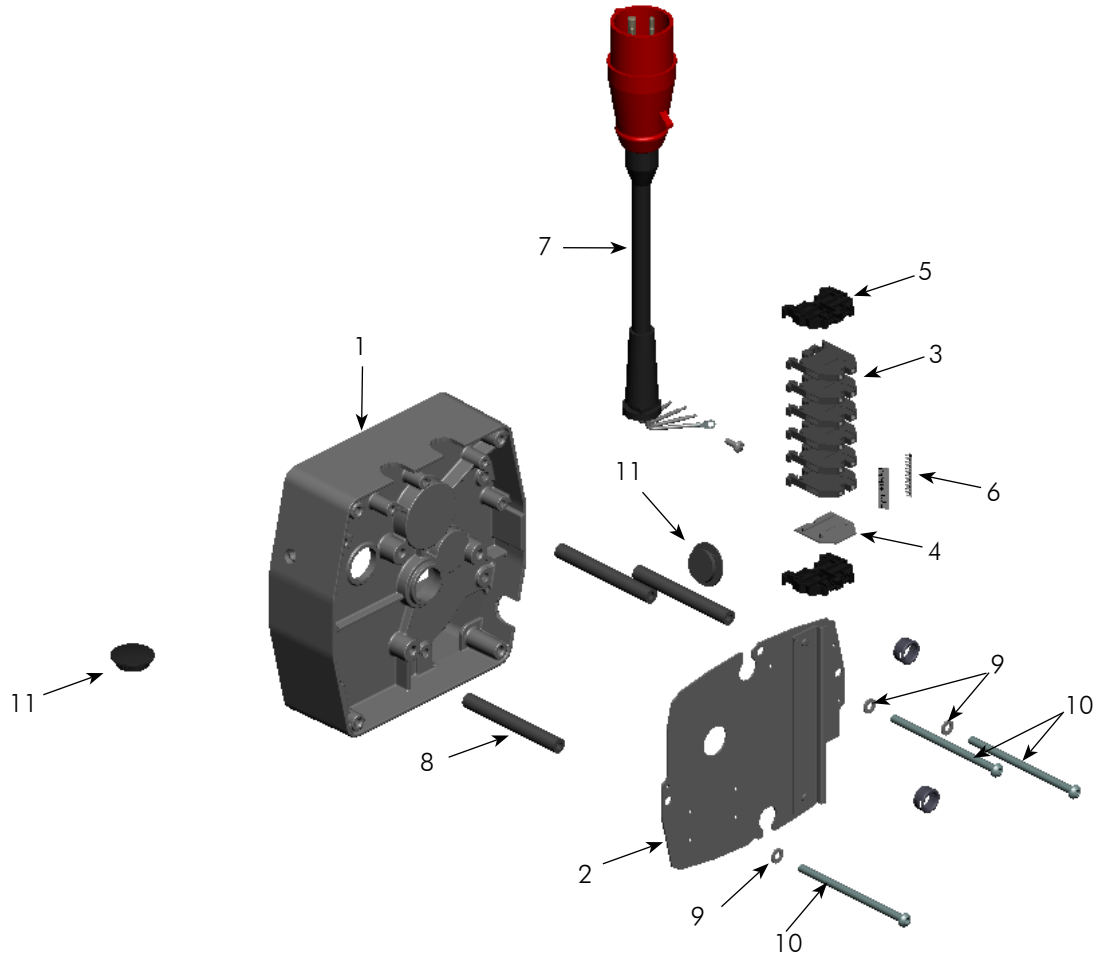

**PARTS LIST FOR ELECTRICAL PARTS, 3-PHASE**

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 1 | Transmission Cover | JM34-1 | 1 |
| 2 | Panel Plate | 257UJ200 | 1 |
| 3 | Reversing Contactor* | 854JM12 | 7 |
| | 24V Coil | 28860 | 1 |
| 4 | Transformer* | 24799 | 1 |
| | Pri.: 230/460V, Sec.: 24V | 821J432 | 1 |
| | Pri.: 230/460V, Sec.: 115V | 821J431 | 1 |
| | Pri.: 208V, Sec.: 24V | 821J472 | 1 |
| | Pri.: 208V, Sec.: 115V | 821J471 | 1 |
| | Pri.: 380V, Sec.: 24V | 821J482 | 1 |
| | Pri.: 380V, Sec.: 115V | 821J481 | |
| | Pri.: 415V, Sec.: 24V | 821J492 | 1 |
| | Pri.: 415V, Sec.: 115V | 821J491 | 1 |
| | Pri.: 575V, Sec.: 24V | 821J452 | 1 |
| | Pri.: 575V, Sec.: 115V | 821J451 | 1 |
| 5 | Terminal Block, 230/460V | 909J10 | 3 |
| 6 | End Plate, 230/460V | 909J12 | 1 |
| 7 | End Clamp | 909J17 | 2 |

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 8 | Power Pigtail | | |
| | 3-Phase (4 cond.) | 953PL1 | 1 |
| 9 | Control Pigtail | 299PL4-2 | 1 |
| 10 | Panel Standoff Spacer Zinc Plated | 200J4Z | 3 |
| 11 | 1/4" Internal-tooth Lockwasher | H4134 | 3 |
| 12 | 1/4-20UNC X 4" Screw | H1027P | 3 |
| 13 | 8-32UNC X 5/16" Screw | H2751 | 2 |
| 14 | #8 External-tooth Lockwasher | H4158 | 2 |
| 15 | 1/4" Flatwasher | H4002P | 1 |
| 16 | 10-24UNC X 1/2" Screw | H2970 | 2 |
| 17 | opening pug | JM761 | 1 |

*** Coil voltage of the contactor and the secondary voltage of the transformer are the same. This is referred to as the control voltage. Standard units are supplied with 115V Control.**

# Figure 14 - ELECTRICAL PARTS



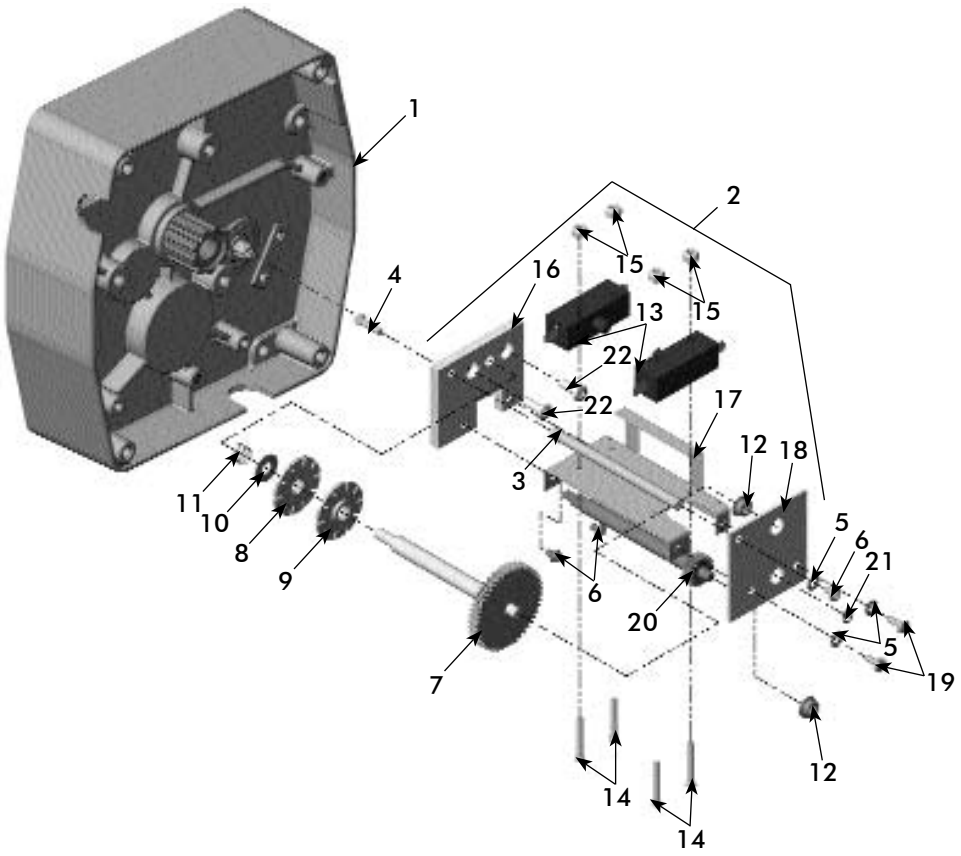

**PARTS LIST FOR ELECTRICAL PARTS, 1-PHASE**

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 1 | Transmission Cover | JM34 | 1 |
| 2 | Panel Plate | 257UJ200 | 1 |
| 3 | Terminal Block | 909J10 | 6 |
| 4 | End Plate | 909J15 | 1 |
| 5 | End Clamp | 909J13 | 3 |
| 6 | Marking Strip | 909J11 | 1 |
| 7 | Power Pigtail | 953PL1 | |

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 8 | Panel Standoff Spacer | 200J4Z | 3 |
| 9 | 1/4" Internal-tooth Lockwasher | H4134 | 3 |
| 10 | 1/4-20UNC X 4" Screw | H1027P | 3 |
| 11 | opening plug | JM761 | 2 |

*** Coil voltage of the contactor and the secondary voltage of the transformer are the same. This is referred to as the control voltage. Standard units are supplied with 115V Control.**

# Figure 15 - LIMIT SWITCH PARTS

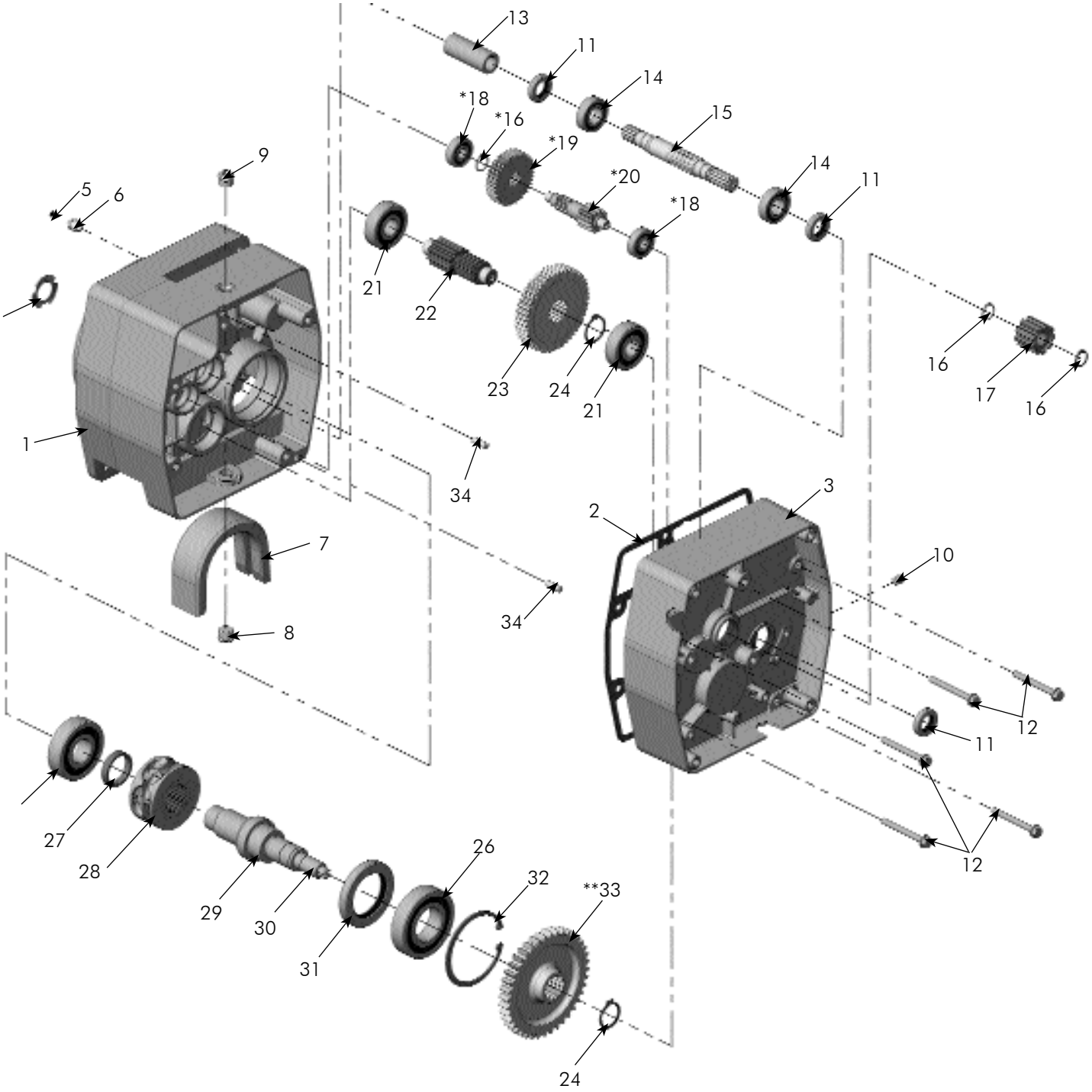



**PARTS LIST FOR LIMIT SWITCH**

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 1 | Transmission Cover | JM34-1 | 1 |
| 2 | Limit Switch Assembly | 944JG6Z | 1 |
| | (Includes items 3-21) | | |
| 3 | Post | 110J14Z | 1 |
| 4 | 8-32UNC X 1/2" Screw | H1210 | 1 |
| 5 | #8 External-tooth Lockwasher | H4158 | 3 |
| 6 | 8-32UNC X 1/4" Screw | 854823 | 3 |
| 7 | Limit Switch Shaft & Gear | 117JG2 | 1 |
| 8 | Limit Switch Nut (gold) | SK6000-63W | 1 |
| 9 | Limit Switch Nut (silver) | SK6000-63Z | 1 |
| 10 | Thrust Washer | 255K16 | 1 |
| 11 | Spring | PB287 | 1 |

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 12 | Bushing | JF531-4 | 2 |
| 13 | Switch | 815J1 | 2 |
| 14 | 6-32UNC X 1" Screw | H1402P | 4 |
| 15 | 6-32UNC Elastic Locknut | H3944 | 4 |
| 16 | Mounting Plate | 129J1Z | 1 |
| 17 | Frame and Guide Assembly | 258JG7 | 1 |
| 18 | End Plate | 258J8Z | 1 |
| 19 | 8-32UNC X 3/8" Screw | H2741P | 2 |
| 20 | Drive Pinion | 427J1 | 1 |
| 21 | Retaining Ring | H5520 | 1 |
| 22 | 10-24UNC X 3/8" Screw | H2981P | 2 |

# Figure 16 - GEARBOX




**(*) NOTE: This stage of gearing is not required on 8 m/min models.**

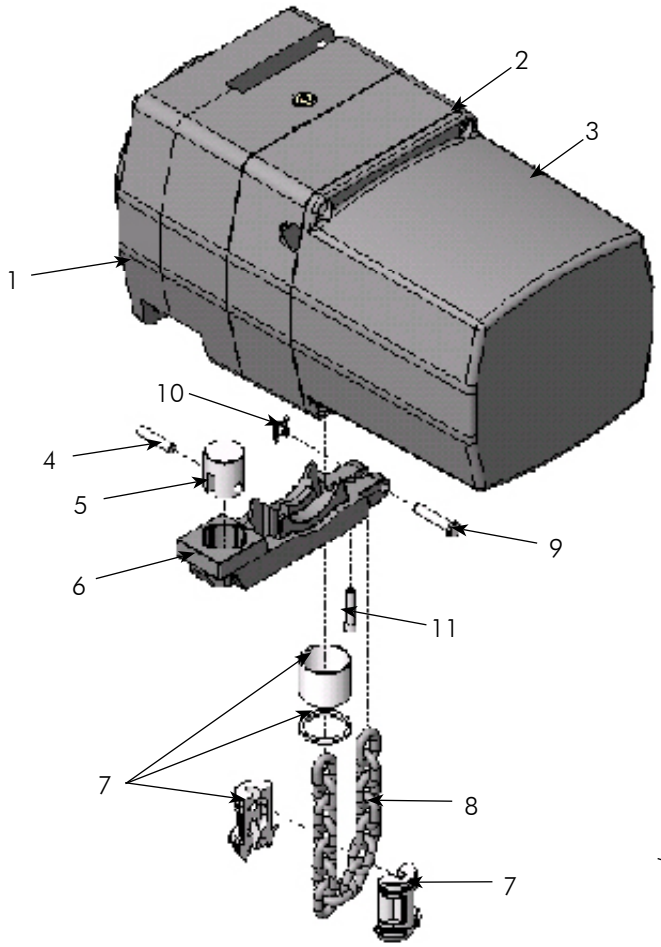
**(**) NOTE: Orient the output gear (33) with Long Boss towards the transmission cover (3)**

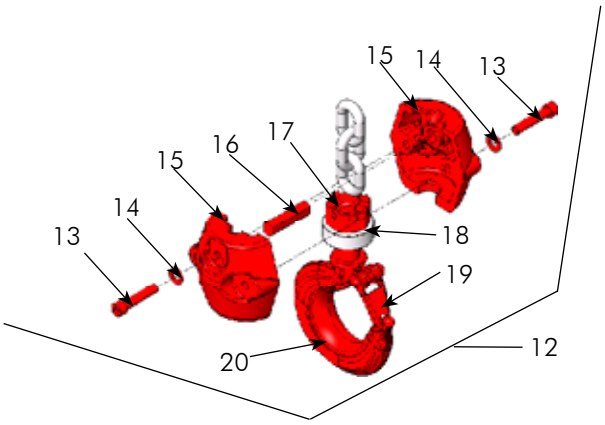
**PARTS LIST FOR GEARBOX**

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 1 | Sheave Housing | JM3533 | 1 |
| 2 | Transmission Gasket | JM560 | 1 |
| 3 | Transmission Cover (Includes Oil Seals) | JM34 | 1 |
| 4 | Spring Washer | 360J1 | 1 |
| 5 | O-ring | H5605 | 1 |
| 6 | Pressure Relief Fitting | SK1912-21W | 1 |
| 7 | Chain Guide | JM273 | 1 |
| 8 | Oil Plug | H6297 | 2 |
| 10 | Oil Plug - Level | H6295 | 1 |
| 11 | Oil Seal | 561K2 | 3 |
| 12 | Screw, HWH Self-threading | H2693P | 5 |
| 13 | Motor Coupling | JM107 | 1 |
| 14 | Bearing | 500K33 | 2 |
| 15 | Input Pinion | | |
| | 8 & 16 fpm | JL400B | 1 |
| | 32 fpm | JL400-1 | 1 |
| 16 | Retaining Ring | H5501 | 3 |
| 17 | Brake Adapter | JM142 | 1 |
| 18 | Bearing for 8 & 16 fpm | 500K34 | 2 |
| 19 | High Speed Pinion for 8 & 16 fpm | JL426 | 1 |
| 20 | Intermediate Pinion | | |
| | 1/2 ton, 16 fpm | JL402A | 1 |
| | 1 & 2 ton | JL403A | 1 |
| 21 | Bearing | 500K39 | 2 |
| 22 | Output Pinion | JL401 | 1 |
| 23 | Overload Clutch Assembly | | |
| | 1/2 ton, 16 fpm | 591JG32 | 1 |
| | 1/2 ton, 32 fpm | 591JG34 | 1 |
| | 1 & 2 ton | 591JG33 | 1 |
| 24 | Retaining Ring | H5503 | 2 |
| 25 | Bearing | 500K28 | 1 |
| 26 | Bearing | P003255 | 1 |
| 27 | Spacer - Load Sheave | JM127 | 1 |
| 28 | Load Sheave-9/32" Chain | JF16-3 | 1 |
| 29 | Load Sheave Shaft | JM132 | 1 |
| 30 | Stub Shaft - Limit Switch Drive | JM140 | 1 |
| 31 | Oil Seal | 011612800 | 1 |
| 32 | Retaining Ring | H5598 | 1 |
| 33 | Output Gear | JL421 | 1 |
| 34 | Dowel Pin | H5382 | 2 |
| * | Gear Oil | H7642 | 1153 cc |

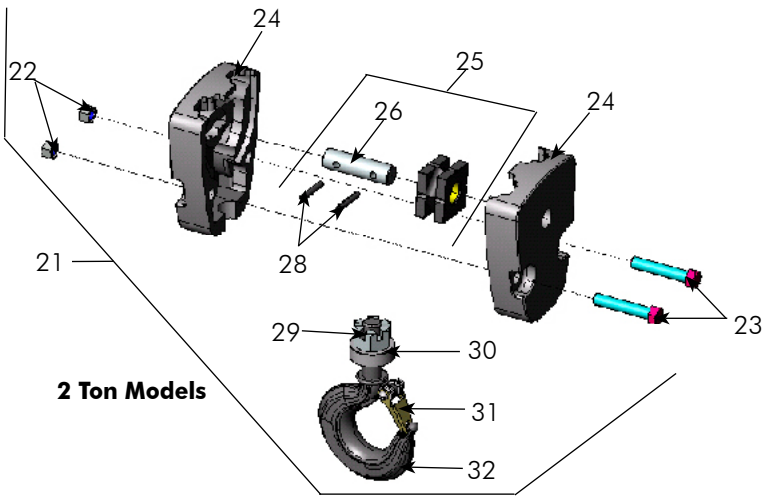
*** Not Shown**

# Figure 17 - CHAINING PARTS




**1 Ton & Under Models**




**2 Ton Models**

**PARTS LIST FOR REPLACEMENT PARTS**

| Ref. No. | Description | Part No. | Qty. |
|---|---|---|---|
| 1 | Housing | JM3533 | 1 |
| 2 | Transmission Cover | JM34 | 1 |
| 3 | Electrical Cover | JM36 | 1 |
| 4 | Anchor Pin (2 ton only) | JM111 | 1 |
| 5 | Anchor (2 ton only) | JM109 | 1 |
| 6 | Chain Stripper | JM254 | 1 |
| 7 | Chain Stop Kit (Kits include halves, sleeve and retaining ring) | 75JG6K | 1 |
| 8 | Load Chain | JL19-1 | * |
| 9 | Attachment Pin | JM18-1 | 1 |
| 10 | Retaining Clip | H5597 | 1 |
| 11 | 1/4-20UNC x 1¼" | | |
| | Socket Head Cap Screw | S49-77 | 1 |
| 12 | Bottom Block Assembly | | |
| | 1 ton & Under | 913JG3AS | |
| 13 | 1/4-20UNC x 1¼" | S49-77 | 2 |
| | Socket Head Cap Screw | | |
| 14 | 1/4" Internal-tooth | | |
| | Lockwasher | H4134 | 2 |
| 15 | Load Block Frame | 30J14 | 2 |
| 16 | Load Block Pin | 18J8 | 1 |
| 17 | Slotted Hex Nut | H3986P | 1 |
| 18 | Bearing | JF510 | 1 |
| 19 | Latch Kit | 4X1304 | 1 |
| 20 | Bottom Hook Assembly with Latch for 1 Ton & Under | 3JG20S | 1 |
| 21 | Bottom Block Assembly for 2 Ton | JF914-6 | 1 |
| 22 | 3/8-24 Hex Locknut | H3964P | 2 |
| 23 | Load Block Screw | H2403P | 2 |
| 24 | Load Block Frame | JF30-1 | 2 |
| 25 | Sheave Shaft Assembly | JF917-1 | 1 |
| 26 | Sheave Shaft | JF122-1 | 1 |
| 27 | Sheave & Bearing Assembly | JF916 | 1 |
| 28 | Roll Pin | H5234 | 2 |
| 29 | 3/8-24 Hex Locknut | H3991P | 1 |
| 30 | Bearing | JF511 | 1 |
| 31 | Latch Kit | 4X1305 | 1 |
| 32 | Bottom Hook Assembly with Latch for 2 Ton | 3KG1W | 1 |

*** Replacement chain is sold by the foot. For single-chained models, add 2 ft to the lift for the total amount of feet. For double-chained models, double the lift and add 3 ft.**

# Warranty


## LIFE TIME WARRANTY REGULATIONS

If your hoist is inspected, certified and, if necessary, repaired by a Prolyft / Vendor authorised service point the warranty as described can extend for a technical lifetime. If not a normal 2 year warranty is applicable. See regulations.
The hoist should not exceed the FEM class of operating times in use*. The periodic inspection should be carried out at a minimum of once a year (local or specific regulations can vary to this sequence).
Every hoist is thoroughly inspected and tested prior to shipment from the factory and service point. Should any problem develop, return the complete hoist prepaid to your nearest Prolyft Authorised Warranty Service point.
If inspection reveals that the problem is caused by defective workmanship or material, repairs will be made without charge and the hoist will be returned, transportation prepaid. This warranty does not apply where:

(1) - deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, over loading, chemical or abrasive actions, improper maintenance, or excessive heat; nor for lifting chains, chain guides, buffers, sprockets chain buckets hooks and cabling;
(2) - problems resulted from repairs, modifications, or alterations made by persons other than factory or Prolyft Authorized Warranty service personnel;
(3) - the hoist has been abused or damaged as a result of an accident;
(4) - repair parts or accessories other than those supplied by Prolyft Authorised Warranty Service points have been used on the hoist.
(5) - failures caused by a lack of maintenance.

Equipment and accessories not of the seller's manufacture are to be warranted by their manufacturer.
Except as stated herein, Prolyte makes no other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

* (currently 1Am, 2m pending)

If for reasons outside the control of the vendor the delivery is delayed, the time lag can not exceed 3 months.

If the use (installation of the hoist is delayed, the extension of the guarantee (limited to 3 months)) must be requested and written conformation obtained.

The warranty only applies for original, service point or factory installed spare parts, including chain.

The warranty excludes any other services or indemnities.
The repairs covered by the guarantee are carried out, as a rule, in the workshop of the service point.
All replaced parts become the property of the vendor and must be returned to the vendor at his prior approved expense.

For components of relative particular importance that are not manufactured by the vendor or his authorised service point, and which carry the brand name of specialised manufactures the manufacture's guarantee (which can vary) is applicable.

## TWO YEAR WARRANTY

The hoist should not exceed the FEM class of operating times an use. The inspection should be carried out at a minimum of once a year (local or specific regulations can vary to this sequence).

Every hoist is thoroughly inspected and tested prior to shipment from the factory and service point. Should any problem develop, return the complete hoist prepaid to your nearest Prolyft Authorised Warranty Service point.
If inspection reveals that the problem is caused by defective workmanship or material, repairs will be made without charge and the hoist will be returned, transportation prepaid. This warranty does not apply where:

(1) deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, overloading, chemical or abrasive actions, improper maintenance, or excessive heat; nor for lifting chains, chain guides, buffers, sprockets chain buckets hooks and cabling;
(2) problems resulted from repairs, modifications, or alterations made by persons other than factory or Prolyft Authorized Warranty service personnel;
(3) the hoist has been abused or damaged as a result of an accident;
(4) repair parts or accessories other than those supplied by Prolyft Authorised Warranty Service points are used on the hoist.
(5) failures caused by a lack of maintenance.

Equipment and accessories not of the seller's manufacture are to be warranted by their manufacturer.
Except as stated herein, Prolyte makes no other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

If for reasons outside the control of the vendor the delivery is delayed, the time lag can not exceed 3 months.

If the use (installation of the hoist is delayed, the extension of the guarantee (limited to 3 months) must be requested and written conformation obtained.

The warranty only applies for original, service point or factory installed spare parts, including chain.

The guarantee excludes any other services or indemnities.
The repairs covered by the guarantee are carried out, as a rule, in the workshop of the service point or vendor or authorised agent.
All replaced parts become the property of the vendor and must be returned to the vendor at his prior approved expense.

For components of relative particular importance that are not manufactured by the vendor or his authorised service point, and which carry the brand name of specialised manufactures the manufacture's guarantee (which can vary) is applicable.

**WARNING**

**Alterations or modifications of equipment and use of non-factory repair parts can lead to dangerous operation and injury.**

**TO AVOID INJURY:**

- **Do not alter or modify equipment**
- **Do not use equipment to lift, support or otherwise transport people**
- **Do not suspend unattended loads over people**

CE

PROLYFT

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