



Instructions for the safe use of: Wire Rope Grip/Pull Lifting Machines

The information in this leaflet should be passed to the user of the equipment

This document is issued in accordance with the requirements of Section 6 of the Health and Safety at Work etc Act 1974, amended March 1988. It outlines the care and safe use of LIFTING MACHINES WHICH GRIP/PULL WIRE ROPE and is based on Section 4 of the LEEA Code of Practice for the Safe Use of Lifting Equipment.* It should be read in conjunction with the requirements for lifting appliances for general purposes, given overleaf, which form an integral part of these instructions.

This information is of a general nature only covering the main points for the safe use of machines which grip and pull a wire rope for lifting purposes, referred to as grip/pull machines in this document. It may be necessary to supplement this information for specific applications.

ALWAYS:

- Store and handle grip/pull machines correctly.
- Inspect the machine, rope and accessories before use and before placing into storage.
- Ensure mounting and suspension points are secure and suitable for the full loads that will be imposed.
- Ensure the machine is free to align correctly with the rope and the rope is free of any obstructions.
- Use only the correct rope supplied for the machine.

NEVER:

- Use kinked, damaged ropes or ropes with broken wires.
- Extend or force operating levers.
- Operate raising and lowering levers at the same time.
- Use grip/pull machines if the rope is twisted or trapped.
- Use grip/pull machines for man-riding applications unless they are specifically designed/adapted for that purpose.

Selecting the Correct Grip/pull Machine

Grip/pull machines are available in a range of capacities, with manual operation (hydraulic operation is available for certain applications) for both lifting and pulling duties. Various rope lengths are available. Select the machine to be used taking the following into account:

Type of machine - manual, hydraulic - lifting or pulling capacity - length of rope and need for rope collecting/coiling.

Rigging arrangement - diverters, pulley blocks - anchorage and suspension points - imposed loads.

Consult the supplier if the machine is to be used for man-riding applications.

Storing and Handling Grip/pull Machines

Never return damaged grip/pull machines, ropes etc to storage. They should be dry, clean and protected from corrosion.

Rope should be carefully coiled onto a suitable drum or frame for storage, taking care to avoid any twists.

Store machines and ropes on a suitable rack, not on the floor where they may be damaged.

Installing and Commissioning

Follow any specific instructions for installation and commissioning issued by the supplier and the general requirements given overleaf.

Using Grip/pull Machines Safely

Do not use defective grip/pull machines, ropes, pulleys etc.

Check the rigging arrangement, that anchorage and suspension points are secure and adequate for the imposed loads.

Ensure the correct rope is fitted and that it is not twisted or kinked. The machine must be free to align with the rope.

For lifting operations do not exceed the marked SWL. The line pull must not exceed that stated for pulling applications.

Only use the operating lever provided with the machine and do not extend this with tubes etc. Undue force will damage the machine or cause safety pins to shear.

Do not attempt to operate the raising and lowering levers at the same time.

For man-riding applications only use a machine which has been designed or specially adapted for that purpose, following the suppliers specific instructions. Additional safety equipment will be necessary.

In-service Inspection and Maintenance

Follow the specific instructions for maintenance issued by the supplier. These should be incorporated into the site maintenance programme observing any particular needs due to the site or working conditions. Lack of lubrication will result in a jerky movement or failure to operate. Keep the machine well lubricated. It is impossible to over lubricate grip/pull machines.

Regularly inspect the grip/pull machine and rope and, in the event of the following defects, refer the machine to a Competent Person for thorough examination: casing damaged or distorted; shear pins distorted or broken; operating lever bent or distorted; incorrect diameter sheaves used in association with rope; incorrect rope fitted; rope is kinked, worn, corroded or has broken wires; wire rope termination is damaged, cracked or pulled; terminal fittings damaged, distorted, cracked or gouged; marking illegible; jerky operation; any other visual defects or operational faults.

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Further information is given in:

- * The Code of Practice for the Safe Use of Lifting Equipment, published by:

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LIFTING APPLIANCES FOR GENERAL PURPOSES

(MANUAL AND POWER OPERATED BLOCKS)

The following information is based on Section 1 - Appendix 1.6 of the Code of Practice for the Safe Use of Lifting Equipment* and should be read in conjunction with the instructions for safe use, given overleaf, of which it forms an integral part and with any specific instructions issued by the supplier.

This information is of a general nature only covering the main points for the safe use of manual and power operated blocks.

ALWAYS:

- Ensure suspension points and anchorages are adequate for the full imposed load.
- Check the load chain/wire rope is hanging freely and is not twisted or knotted.
- Position the hook over the centre of gravity of the load.
- Check the operation of the brake before making the lift.
- Ensure the slings are secure and load is free to be lifted.
- Check the travel path is clear.
- Ensure the landing area is properly prepared.

NEVER:

- Exceed the marked SWL.
- Use the load chain/wire rope as a sling.
- Shock load the block or other equipment.
- Lift on the point of the hook.
- Overcrowd the hook with fittings.
- Permit the load to swing out of control.
- Leave suspended loads unattended.

Types of blocks

A wide range of manual and power operated blocks is available. This section of the leaflet is concerned with matters which are common to the safe use of the following listed equipment when used to lift in a vertical plane only.

Pulley blocks for fibre or wire rope used with winches, hand chain blocks, chain lever hoists, power operated wire rope blocks and power operated chain blocks. The use of trolleys is often associated with blocks and these may be built in with the trolley as an integral part of the appliance, or independent with the block hung on.

Operative Training

Lifting appliances should only be used by trained operatives** who understand their use and that of the associated equipment used in the lift.

Installation and Commissioning

The erection procedure will vary with the equipment and should be carried out in accordance with the suppliers instructions paying attention to the following matters:

Prior to installation inspect the equipment to ensure no damage has occurred in store or transit.

Ensure the support structure is adequate for the full loads that will imposed, is tested and marked with the SWL.

When erecting trolleys ensure they are correctly set for the beam width and that the track is fitted with end stops and remains level at all loads up to the maximum.

When suspending appliances by a top hook ensure the support fits freely into the seat of the hook.

After erection ensure that the chain/wire rope hangs freely and is not twisted or knotted.

With power operated blocks the supply should be connected by a suitably Qualified Person taking account of any statutory or technical requirements (eg Electricity at Work Regulations, Pressure Systems and Transportable Gas Containers Regulations).

Test run to ensure the free and correct movement of the chain/rope. Check the operation of the brake. Check direction of control command, position and operation of travel limits and safety devices.

Safe Use of Blocks

The basic objectives of any lifting operation are to move the load to the desired location and land it safely, efficiently and without damage to the load, the equipment used or the surrounding buildings, plant etc. In addition to any specific instructions relating to the block the following general points must be observed:

- o Never attempt lifting operations unless you have been trained in the use of the equipment and slinging procedures.
- o Position the hook directly over the centre of gravity so that the line of pull is vertical.
- o Do not use the chain/wire rope to sling the load, ie do not wrap it round the load, back hook or choke hitch.
- o Do not lift on the point of the hook or overcrowd the hook with fittings.
- o Never lift/lower more than the marked SWL. In the case of manual equipment if abnormally high effort is required, and with power operated appliances they fail to lift the load, or if the load slips this is an indication of too high a load or a fault - check the load and the appliance.
- o Avoid unnecessary inching of power operated appliances and do not impose sudden or shock loads.
- o Push rather than pull loads suspended from appliances with push/pull trolleys and if un-laden pull on the bottom hook. Never pull an appliance by the pendant control, supply cable or hose.
- o Avoid sudden movement of travel motion or undue effort in pushing the load which can cause the load to swing.
- o Avoid excessive or intentional use of motion limits unless they are additional limits intended for that purpose. Avoid running appliances against end stops.
- o Do not allow anyone to pass under or ride upon the load. Never leave suspended loads unattended unless in an emergency then ensure the area is cordoned off and kept clear.
- o Do not remove guards, protective covers, weather proof covers, heat shields etc without the authority of a Competent Person

In-Service Inspection and Maintenance

The Provision and Use of Work Equipment Regulations 1998 and the Lifting Operations and Lifting Equipment Regulations 1998 both require that lifting equipment properly maintained. This is an ongoing duty that falls on the user and a planned routine maintenance programme will be necessary.

In addition to the statutory thorough examinations by a Competent Person, regular in-service inspections should be made to find any faults and damage that might arise. If any are found they should be referred to the Competent Person.

The maintenance programme must meet the requirements of the manufacturers instructions and any special requirements due to the conditions of service. This may be combined with maintenance of other equipment used in association with the appliance, eg power feed system. Check the block and its associated equipment daily for obvious faults and signs of damage.

Further information is given in:

*LEEA Code of Practice for the Safe Use of Lifting Equipment

**HSE Guidance Note GS39 - Training of Crane Drivers and Slingers