EP1 OPERATOR MANUAL

CONFORMING TO
EN14492-1 Cranes – Power driven winches and hoists – Part 1: Power Driven Winches

CABLE PULLER

ON SITE CABLE HANDLING SOLUTIONS
110v or 240v x 1ph

WINCH INFORMATION

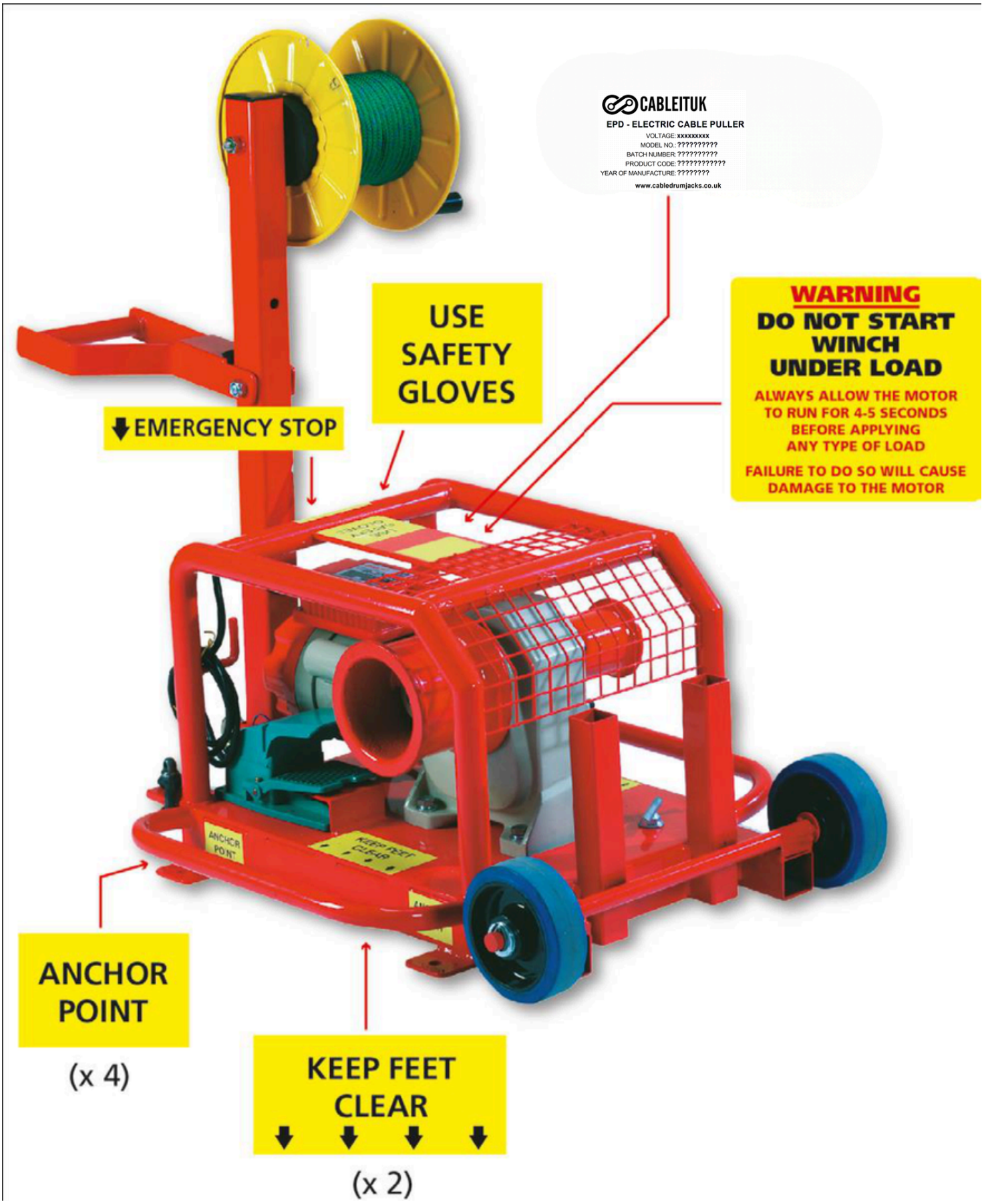
WINCH SPECIFICATIONS

Models	***No. 2018: 110v x 1ph, No. 2020: 240v x1ph.*** ***EN 14492-1 Compliant.***
Construction - Motor	Die cast aluminium housings with case hardened gear train. High powered induction motor. Heavy duty ball bearings on all running surfaces.
Frame	All round tubular steel frame on steel platform with impact resistant cage. Motor housing and protective cage is painted steel.
Other Features	Two sizes of 'capstan' drums, moveable lead roller assembly, fully rotational storage drum, lifting handle, removable wheels, ground anchor points, 'bumper' carry handles, anchor points with 'D' shackles.
Control	Foot operated pedal with 2m power lead, linked to winch control panel.
Drum Capabilities	Rolling load figures: Large capstan = 1500kg, Small capstan = 2500kg. Static line pull is respectively: 300kg (Large capstan) and 500kg (Small capstan) peak.
Brake	Electromagnetic spring applied failsafe.
Voltages	Either 110v (No. 2018) or 240v (No. 2020) x 1ph.
Motor Outputs	No 2018: 0.6kw / 8amp, No. 2020: 0.6kw / 4amp.
Rope Speeds	Large capstan: 4m/min, Small capstan: 2.5m/min.
Recommended Rope	Ropes are sold separately in variable lengths. A high strength double braid fibre soft rope is ideally suited to the Cable•Puller. 10mm x 8 strand polyester core with 16 plait cover. Minimum breaking strain 2000kg. (Available from SEB Ltd). Wire ropes can also be used, but must be suitable for wrapping around smallest capstan efficiently. (See notes on ropes, page 12).
Overall Size	655mm length x 550mm width x 440mm height.
Total weight	80kg.

Data shown is approximate and intended as a guide only.

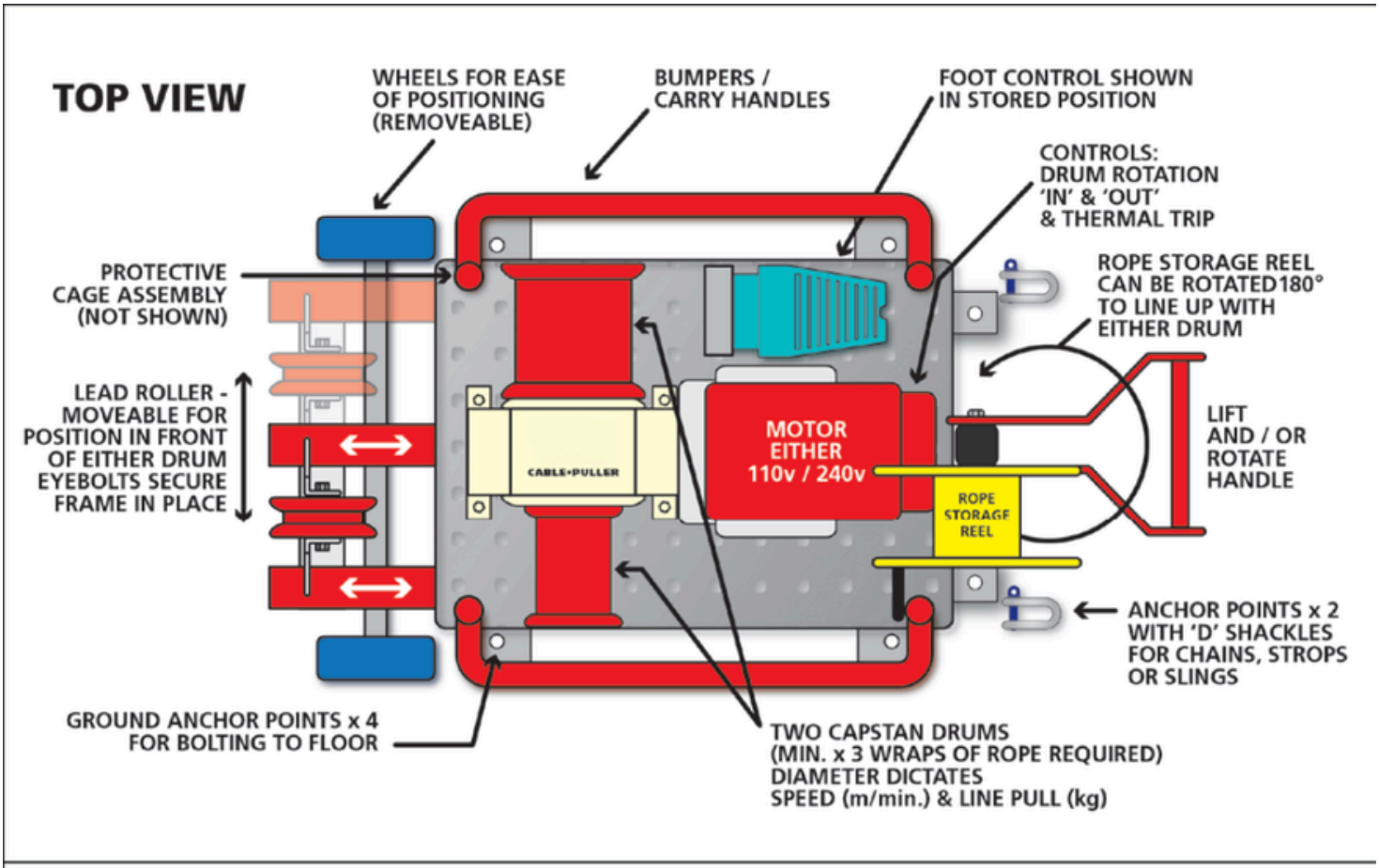
WINCH INFORMATION

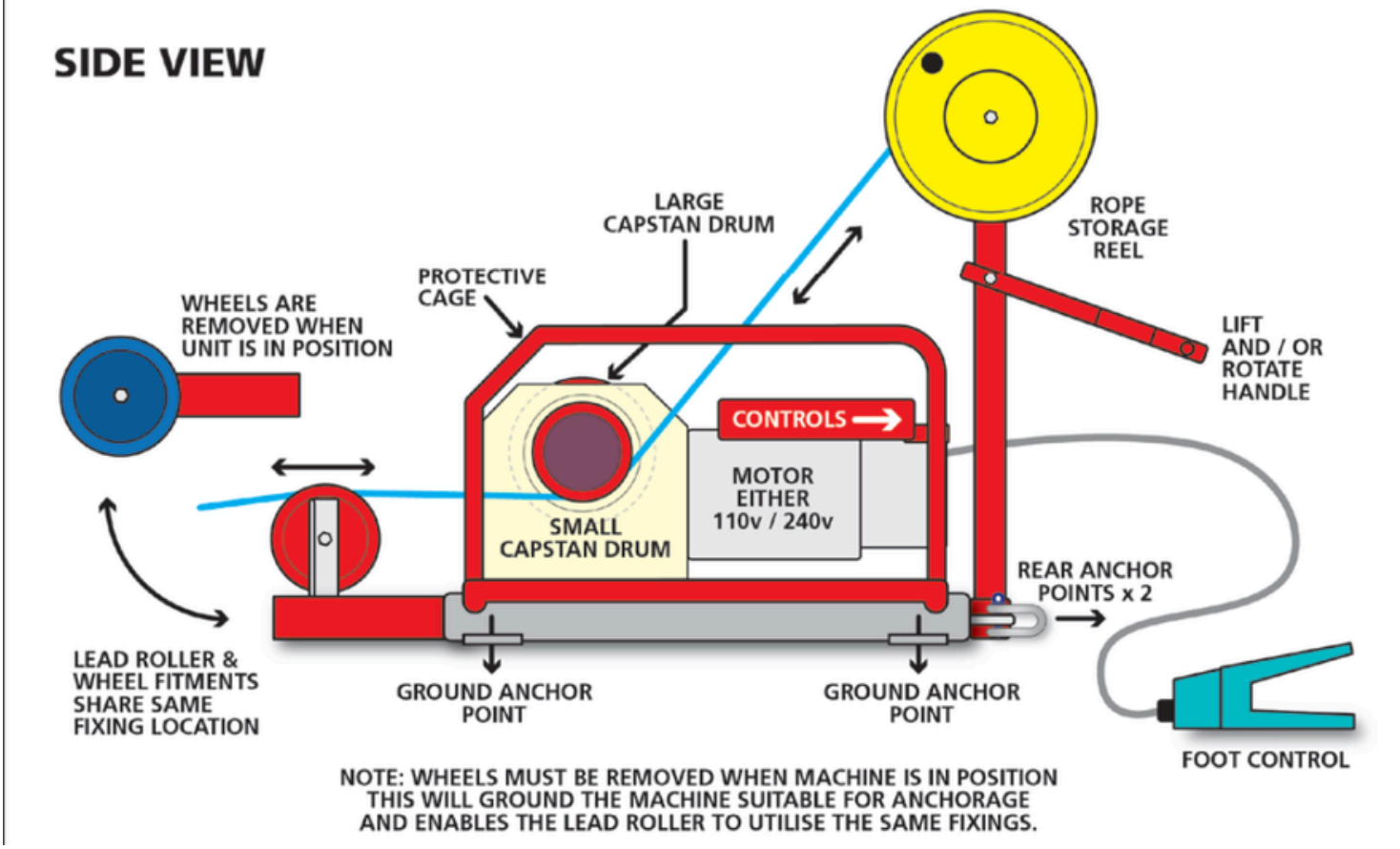
WINCH LABELS



WINCH INFORMATION

GENERAL INTRODUCTION





NOTE: WHEELS MUST BE REMOVED WHEN MACHINE IS IN POSITION THIS WILL GROUND THE MACHINE SUITABLE FOR ANCHORAGE AND ENABLES THE LEAD ROLLER TO UTILISE THE SAME FIXINGS.

BEFORE ANY OPERATION USING CABLE PULLER, THE UNIT MUST BE SECURELY ANCHORED. FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY AND DAMAGE TO THE MACHINE.

INSTALLATION & CONTROLS

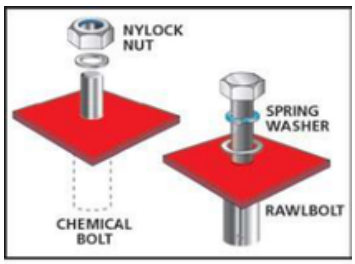
ANCHORAGE

There are two means of anchoring the Cable Puller machine. In both cases the transport wheels should be removed once the unit is in position, as this will ensure that the frame is firmly 'grounded'. The Lead Roller assembly uses two of the three fixing apertures as the wheel assembly.

SOLID FLOORS

Using the 16mm holes in the four anchor points shown in the diagram on the previous page, the unit can be secured to a solid floor using suitable steel bolts (i.e. Rawlbolts or chemical bolts). The transport wheels must be removed as the same fixings are used for the lead roller.

IT IS IMPORTANT THAT ALL FOUR ANCHOR POINTS ARE USED, REGARDLESS OF EXPECTED LINE PULL, AS THIS STABILISES THE UNIT.
THE CABLE PULLER MUST BE LEVEL AT ALL TIMES OF OPERATION, AND IN A STRAIGHT LINE WITH THE PROPOSED TASK.



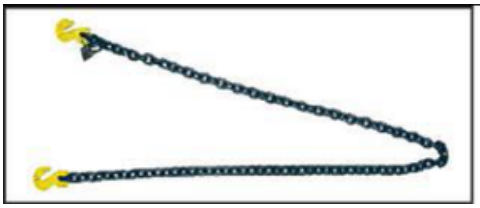
If the floor is uneven, secure three of the anchor points and use a shim under the fourth location to level.
All securing nuts or bolts should be captive using spring washers or Nyloc nuts.

REAR ANCHOR POINTS

Using the two anchor points with 'D' shackles provided (see diagram on previous page), to fix the frame of the Cable Puller to a suitable rearward anchor position. The transport wheels must be removed as the same fixings are used for the lead roller.

THE ANCHOR PROPOSED FOR THE TASK MUST BE CAPABLE OF TAKING AT LEAST 125% OF THE PROPOSED LOAD TO PREVENT ANCHOR FAILURE. THE UNIT SHOULD ALSO BE LEVEL TO ENSURE CORRECT LINE PULL.

For anchor lines use either Chains, strop brothers or round slings. Each attachment should be of equal length to ensure that the machine is presented square with the load.



Once the rear anchor points have been attached to the anchor, push the unit forwards to ensure that the connections are tight and that the machine is still presented square to the task.

Check that the frame is not sitting against any protrusions from the ground which could affect line pull when under load.

Do not anchor lines any more than 30 degrees away from the centre line of the anchor point.

Check that 'D' shackles are secure and pins are tight.

When the Cable Puller takes up the load using the rear anchor points, the unit will move to a 'seated' position when under tension. If the anchor lines are of unequal length, the whole unit will skew. If this happens, release the anchor lines and adjust to obtain an even pull.

ALWAYS WEAR PROTECTIVE CLOTHING, INCLUDING GLOVES AND SAFETY BOOTS.
KEEP FEET CLEAR OF ANCHORAGE AREA, SPARE ROPE AND ATTACHMENTS.

INSTALLATION & CONTROLS

ELECTRICAL SAFETY

According to the Health and Safety Executive, each year there are approximately 1000 work accidents involving electric shock or burns. Around 30 of these are usually fatal.

Even non-fatal shocks can cause severe or even permanent injury. Improperly installed electrical equipment can also cause related accidents.

Electricity at Work Regulations (1989) requires adequate precautions to be taken against the risk of death or injury from electricity during work, at or near electrical installations.

Installations in private dwellings must be certified by a fully qualified electrician and fully tested and certified. Failure to do so may invalidate insurances and warranties.

Please determine the electrical availability and type (110v / 240v) for the application prior to any work as insufficient operation standards will result in damage to the hoist and possibly put operatives in danger.

Always ensure the correct voltage corresponding to the hoist electrical system is used and its source is protected by suitable circuit breakers.

Itis ultimately the responsibility of the person operating the Cable•Puller to carry out a preliminary risk assessment to decide and if necessary provide any additional emergency stops, isolators or circuit restrictions suitable for the application.

MAKE SURE THERE IS A FUSED ISOLATION SWITCH OR CIRCUIT BREAKER
Itis important that there is a fused isolation switch or suitable contact breaker in the power supply to the winch.

CHECK ALL CONNECTIONS
It is important that all electrical connections are not only to the correct voltage supply, but also securely connected throughout. It is also recommended that electrical connections and wiring are checked on a regular basis for any faults.

INSTALLATION & CONTROLS

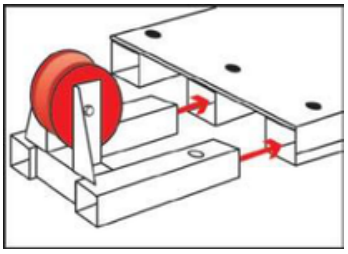
CABLE PULLER CONTROLS

The controls for the Cable Puller are designed to control line pull, provide winch motor protection and help with excess rope handling and storage.

YOU ARE RECOMMENDED TO FULLY READ AND UNDERSTAND THE SAFE OPERATION NOTES ON PAGE 9 BEFORE OPERATING THE WINCH.

ATTACHING THE LEAD ROLLER

After the unit is securely anchored, remove the transporter wheels assembly.
The Lead Roller assembly can then be located into two of the three the front fixing apertures, according to which Capstan Drum is being used.
The square sections are slotted into the frame and the eyebolts provided secure the assembly.



FOOT PEDAL

The heavy duty Foot Pedal controls the rotation of the drum '***ON***' or '***OFF***'.

Remove Foot Pedal from stowed position shown, place on a level working surface and plug into winch control panel.

Continuous pressure applied to the pedal will switch the winch '***ON***'.
Releasing the pedal will turn the winch '***OFF***'.

TWO WAY TRIGGER SWITCH

The Two Way Trigger Switch is located centrally on the motor console at the rear of the machine and dictates the drum direction when the Foot Pedal is used.

Choice of rotation direction should be made before operating the Foot Pedal, not when the winch is in operation as this may cause contacts damage to the motor.

THERMAL TRIP SWITCH

The Thermal Trip Switch is located to the right of the Trigger Switch on the winch console. This protects the winch motor from overheating.
Ifthe thermal switch does trip, allow the motor to cool down for a suitable time before resetting and continuing with the task.

EMERGENCY STOP

The Thermal Trip Switch is also used as an Emergency Stop for the Cable Puller. Using this switch will shut down the operation immediately.
The switch can also be reset when operation can recommence.

ROPE STORAGE REEL

The Rope Storage Reel is a manually operated reel, which can be positioned behind the Capstan Drum in use to collect excess rope when operating the winch. This is designed to keep the workspace clear of rope and prevent trip hazards. The adjustable thumbscrew on the reel allows for tension to be maintained on the rope.

The Rope Storage Reel also allows for easy drawing out of the rope to prepare for the next pull.

When the upright holding the reel is rotated to the desired position, all retaining points must be safely secured.

There are two sizes of Rope Storage Reels available, depending on rope length requirements.

OPERATIONS

OPERATIONAL SAFETY

NEVER START UP A CABLE PULLER ATTACHED TO A LOAD.

1. Always allow the motor to run for at least 4-5 seconds before applying a load. Failure to do so could damage the motor.

2. Always wear protective clothing and safety boots when setting up and operating the winch.

3. Always ensure that the guidelines for setting up and securing the unit (Page 7) are strictly adhered to.

4. Always use a suitable breaking strain rope and check its condition to ensure that is in good working order and free from breaks or fraying before use. If in doubt, replace the rope.

LEAD ROLLER

The Lead Roller should be positioned in front of the Capstan Drum being used for the task. (See page 7). Make sure that when the Lead Roller is in place, all eyebolts are secure and tight to retain the fitting.
The positioning of the Cable•Puller unit should create a straight line from the load to the Lead Roller and the designated Capstan Drum to ensure that rope wrapping on the drum does not overlap or crossover, as this will impede the pull.

HEAVY LOADS OR CONTINUOUS SERVICE

During heavy load pulls, or continuous service. if the winch needs to be restarted either for operator safety or because the machine has tripped out, the rope tension on the selected Capstan Drum should be released before recommencing the task. The winch should then be restarted and allowed to run for at least 4-5 seconds before reloading the rope and applying tension. This reduces current draw and reduces motor heating.

If the cause is the Thermal Trip Switch, allow the machine to cool down for a suitable time before restarting.

STORAGE REEL

The Rope Storage Reel is designed to manually collect excess rope and maintain tension on the rope. The fixture can be rotated 180˚ to align with the selected Capstan Drum.
Before use, ensure that the thumbscrew brake on the storage reel is wound on to the axle to create tension on the drum.
If the Rope Storage Reel is to be used to maintain tension on the Capstan Drum, ensure that the correct size storage reel is in use to save having to change over during operation.

Rope on to the Storage Reel can be over wound or under wound.

NEVER LET EXCESS ROPE ACCUMULATE IN THE WORKING FLOOR AREA.

OPERATOR POSITION

Always stand clear of the working load area of the winch – the Capstan Drums, the working rope and anchor lines.
Keep feet clear of rear anchor lines if in use.
Position the Foot Control Switch to allow the operator to stand clear of the operational area.

KEEP HANDS CLEAR OF THE CAPSTAN DRUMS AND LEAD ROLLER WHEN WINCH IS IN OPERATION.

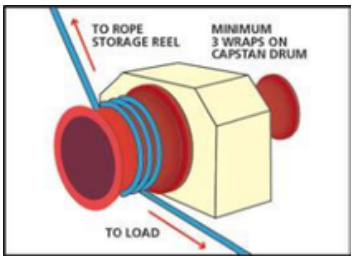
OPERATIONS

OPERATING CABLE PULLER

Please see the notes below on operation and then proceed to the operational checklist before putting Cable•Puller into action.

WRAPS ON THE CAPSTAN DRUM

A minimum of THREE wraps is required on the selected Capstan Drum to achieve the rated pulling force. The rope is underwound on to the selected Capstan Drum and subsequently fed on to the Rope Storage Reel.



ROPE CONTROL

For advice on ropes, please see 'Rope Recommendations' on page 12.

Polypropylene (fibre) ropes have an inbuilt elasticity. A fibre rope will therefore stretch to its full capacity before applying any force on to the cable being pulled. The diameter of the rope will also dictate how much it will stretch.
It is advised therefore to use low stretch ropes for Cable•Puller to minimise this effect.

After wrapping the rope around the Capstan Drum (see above) and feeding on to the in-line Rope Storage Reel, the winch, which should have been pre-started, can now be put into operation and take up the load under tension. Pressing on the Foot Pedal will start the action.

Care should be taken to ensure that the rope does not overlap on the Capstan Drum, and is safely collected on the Rope Storage Reel to avoid any trip hazard in the working area.

When the load is to be released, the winch should be reversed to release the load in a controlled manner. This is especially important if there are colleagues working with the installation cable further down the line.

Tension should be maintained on the rope at all times during operation to maintain winch pulling force.

WEAR PROTECTIVE GLOVES AT ALL TIMES.
NEVER RELEASE THE ROPE QUICKLY BY LETTING GO OR RELEASING THE STORAGE REEL.
ALWAYS POWER 'OUT' THE WINCH TO RELEASE TENSION ON THE ROPE.

PULL FAILURE

Should the Cable Puller fail to pull with a load retained on the Capstan Drum, the load can be released by very, very gradually easing back on the Rope Storage Reel until the wraps on the Capstan Drum are loosened and can be seen to remain static when the drum is turning. Continue to release gradually until the load is no longer under tension. The pulling operation can then be restarted, once reloaded.

DO NOT LET GO OF THE ROPE OR STORAGE REEL CONTROL.

USE THE POWER OF THE WINCH

DO NOT try to pull the load by applying any external force to the frame of the Cable•Puller.
DO NOT try to release the pulling rope by applying any external force to it.

OPERATIONS

PRE-OPERATION CHECKLIST

1. Wear protective clothing, heavy duty ‘rigger' gloves - and safety boots.

2. Ensure that the Cable Puller is suitably and securely anchored in position and that the anchorage is capable of taking the force of the load.

3. Set the Cable Puller with the Lead Roller in position for the preferred Capstan Drum, and the Rope Storage Reel in position to collect excess rope behind the selected Capstan Drum.

4. Check that the pulling rope to be used is of a suitable pulling capacity and in good order. If there is any damage to the rope, replace it.

5. Ensure all electrical controls are in good working order and free from any damage. Replace any damaged or worn parts.

6. Check that the correct power source is being used, according to whether the Cable•Puller is 240v or 110v. Use a constant power source of 3.5kw minimum.

7. Check that the motor will run in BOTH directions before applying any load. If the motor does not work, check the Thermal Trip Switch and reset as necessary. In the case of further motor failure, check all electrical connections. Also refer to ‘Trouble Shooting’ section in the back of this manual.

NOTES

Long power cable runs to provide supply may cause voltage drop and affect the performance of the machine and cause unnecessary heating.

If a long extension supply is necessary, use the largest mm^2 cable available. Don not use a reeled cable extension unless (a) fully unwound or at least (b) fully rated to take the power draw of the winch.

If the Thermal Trip Switch has been activated, allow the Cable Puller a cooling off period before recommencing the task.

ROPE RECOMMENDATIONS

FIBRE OR WIRE ROPES?

A fibre or wire rope can be used. Normal operations use a fibre rope.

MINIMUM BREAKING STRAIN

Ropes with a minimum breaking strain of at least 2000kg (2 Tonne) are recommended.

FIBRE ROPES

Fibre ropes of up to18mm diameter can be used on Cable Puller. The type of fibre rope is important. A good quality, low stretch fibre rope with low abrasion qualities is recommended such as Braid on Braid polyester is recommended.
A typical fibre rope for use with the Cable Puller is 10mm x 8 strand polyester core with 16 plait cover.

WIRE ROPES

If a wire rope is used, care should be taken that it is of sufficient strength, and of a suitable diameter.
Wire ropes cause more abrasion.

A wire rope diameter that is too big may affect wrap and grip on the capstan drums. The maximum recommended wire rope diameter is therefore 8mm,1960N/mm^2 grade 6 x 36 construction core.

MAINTENANCE

LOOK AFTER THE CABLE PULLER

Check that the winch, the capstan drums, the motor housings and any additional equipment is free from dirt and dust.

LUBRICATION

Cable Puller is fully lubricated at the time of assembly and does not require lubrication before use. If at a later stage lubrication is necessary, light grade oil on running parts should be used.

DO NOT GREASE CAPSTAN DRUM SURFACES AS THIS WILL CAUSE LOSS OF GRIP.

The winch framework is all steel. Any chips or scratches to the painted surface should be overpainted to prevent corrosion.

CARE OF THE ROPE

It is most important that the rope is inspected on a regular basis, for any damage or breaks. If the rope is damaged in any way, replace it.

REMEMBER – ALWAYS WEAR PROTECTIVE GLOVES WHEN HANDLING ROPES.
ROPES ARE NOT COVERED BY WARRANTY.

SERVICE & PARTS REPLACEMENT

Cable Puller units should be serviced after approximately every 350 hours of effective service, or once a year, whichever is the soonest.

TROUBLESHOOTING

CONDITION	POSSIBLE CAUSES	SOLUTIONS
Motor runs but drums will not rotate	1. Damaged armature or rotator 2. Damaged gearbox	1. Replace motor 2. Inspect and replace parts as necessary
Motor buzzes but will not turn the drums	1. Foot switch faulty 2. Centrifugal switch faulty 3. Centrifugal switch contactors faulty 4. Brake stuck on 5. Start up winding on motor burnt out 6. Brake rectifier faulty 7. Start capacitor faulty	1. Repair or replace 2. Replace 3. Replace 4. Clean, repair or replace 5. Replace motor 6. Replace 7. Replace
Winch will not pull load	1. Power starvation 2. Brake stuck on 3. Dry gearbox 4. Brake rectifier faulty	1. Check power supply is suitable 2. Clean, repair or replace 3. Strip gearbox, clean and re-grease 4. Replace
No action when connected to the power supply	1. Check power supply 2. Fuse has blown 3. Inoperative motor 4. Loose connections 5. Overload switch faulty 6. Start capacitor faulty	1. Repair or replace wiring 2. Replace fuse 3. Check for voltage at armature post, replace motor 4. Check all power leads are in a good condition, replace as necessary 5. Replace switch 6. Replace
Winch will not hold the load	1. Excessive load 2. Worn or damaged brake	1. Reduce the load 2. Repair or replace brake
Motor runs extremely hot	1. Long running period with high loading 2. Damaged motor 3. Damaged brake	1. Cooling off periods are essential to prevent overheating 2. Replace motor 3. Replace brake

WINCH PARTS DIAGRAM