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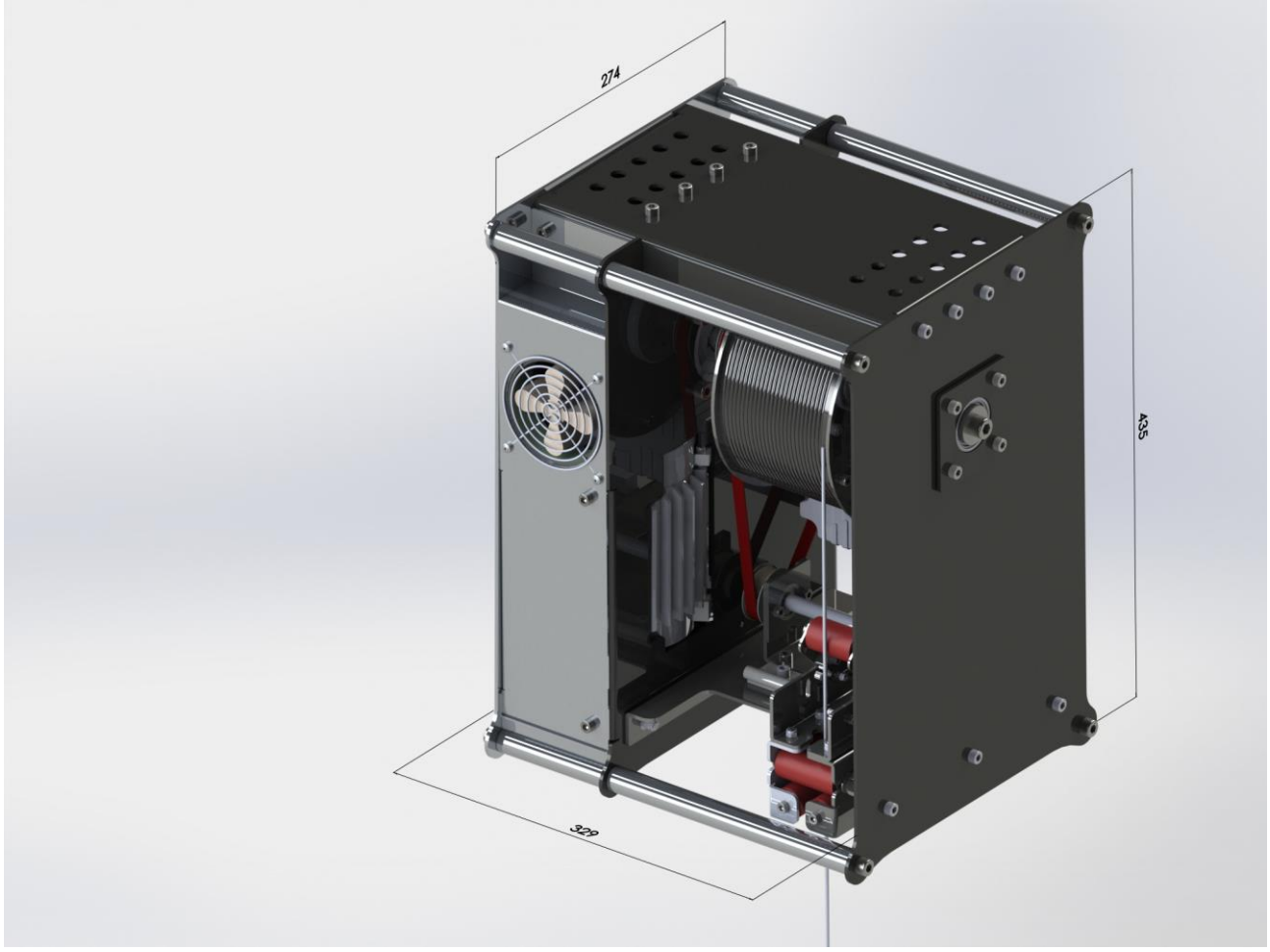
# Winch 50

**Item No .245**

# User Manual



# Safety Information

**WARNING!**
**Read the safety precautions in this section before installing, powering, operating or servicing this product.**

The following symbols are used to identify important safety information on the product an in this manual:

DANGER!
Safety hazard. Risk of severe injury or death.

DANGER!
Hazardous voltage. Risk of lethal or severe electric shock.

WARNING!
Fire hazard.

WARNING!
Burn hazard. Hot surface. Do not touch.

WARNING! Refer to user manual.

This product is for professional use only. It is not for household use.
This product presents risks for sever injury or death due to fire hazards, electric shock, and falls.

Read this manual before installing, powering or servicing the winch; follow the safety precautions listed below and observe all warnings in this manual and printed on the winch. If you have questions about how to operate the winch safely, please contact you Wahlberg Motion Design supplier or Wahlberg Motion Design.

PROTECTION FROM ELECTRIC SHOCK

- Disconnect the winch from AC power before removing or installing any cover or part and not when in use.
- Always ground (earth) the winch electrically.
- Use only a source of AC power that complies with local building and electrical codes and has both overload and ground-fault (earth-fault) protection.
- Before using the winch, check that all power distribution equipment and cables are in perfect condition and rated for the current requirements of all connected devices.
- Power input throughput cables must be rated 20 A minimum, have three conductors 1.5 $mm^2$ (AWG16) minimum conductor size and an outer cable diameter of 5-15 mm (0.2-0.6 inch). Cables must be hard usage type (SJT or equivalent) and heat-resistant to 90°C (194°F) minimum. In the EU the cables must be <HAR> approved or equivalent.
- Use only Neutrik powerCON TRUE1 NAC3FX-W cable connectors to connect to power input sockets. Use only Neutrik powerCON TRUE1 NAC3FX-W cable connectors to connect to power throughput sockets.
- Assembly power supply cables following the instructions in this manual only (see page 12).

- Isolate the winch from power immediately of the power plug or any seal, cover, cable, or other component is damaged, defective, deformed, wet, or showing signs of overheating. Do not reapply power until repairs have been completed
- Do not expose the winch to rain or moisture.
- Refer any service operation not described in this manual to a qualified technician.

PROTECTION FROM BURNS AND FIRE

- Do not operate the winch if the ambient temperature (Ta) exceeds 40° C (104° F).
- The exterior of the winch becomes warm during use. Avoid contact by persons and materials. Allow the winch to cool for at least 10 minutes before handling.
- Do not modify the winch in any way not described in this manual.
- Install only genuine Wahlberg parts.

PROTECTION FROM INJURY

- Fasten the winch securely to a fixed surface, rig, or structure when in use. The winch is not portable when installed.
- Ensure that any supporting structure and/or hardware can hold at least 10 times the weight of all the devices they support
- If suspending from a rigging structure, fasten the winch using the supplied 4× Manfrotto slim coupler according to the manual, see page 10.
- Always install the winch as described in this manual. If the winch is installed in a location where it may cause injury or damage if it falls, install as described in 10.
- If possible, allow enough clearance beneath the winch so it cannot cause any danger to personnel beneath it. Else, adjust the lower limit accordingly following the instructions in this manual.
- Check that all external cobblers and rigging hardware are securely fastened.
- Block access below the work area and from a stable platform whenever installing, servicing or moving the winch.
- Do not operate the winch with missing or damaged covers, shields, or wire.

**Intact wire**

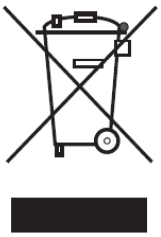
**Broken wire**

Inspection points

## Before each use

- Inspect the entire length of the **wire rope** for bends, damage, wear, cut cord, corrosion and abuse.
- Inspect the **wire ferrule crimp** and **thimble** for damage, wear, corrosion or abuse.
- Check all limit switches.
- Check the slack detection device
- Check the emergency stop (if enabled).
- Check that the wire is winded neatly on the drum.

**Warning! Do not use the winch if any damage or error is found!**



## Disposing of this product

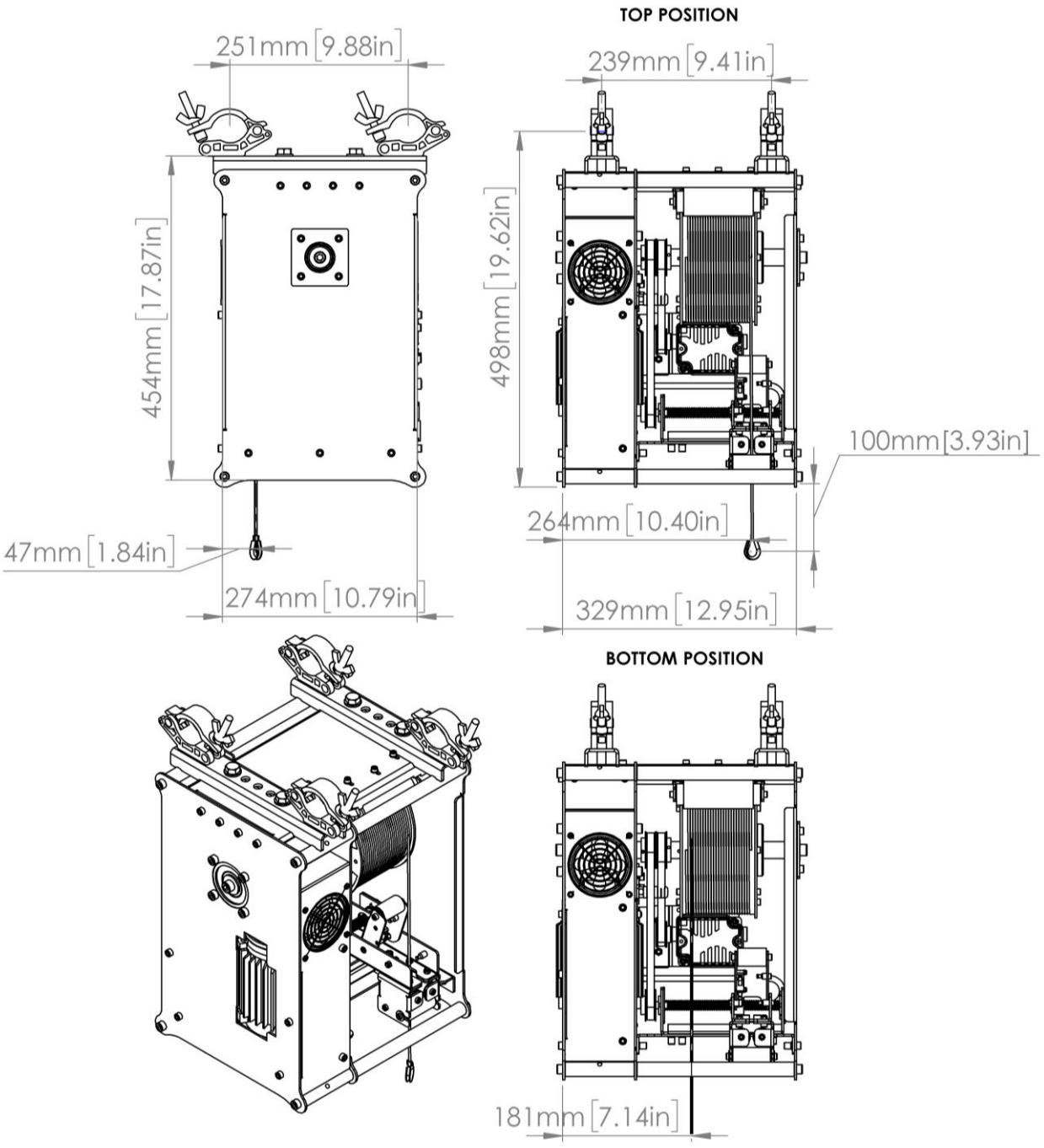
Wahlberg Motion Design products are supplied in compliance with Directive 2002/96/EC of the European Parliament and of the Council of the European Union on WEEE (Waste Electrical and Electronic Equipment), as amended by Directive 2003/108/EC, where applicable.

Help preserve the environment! Ensure that this product is recycled at the end of its life. Your supplier can give details of local arrangements for the disposal of Wahlberg Motion Design products.

# Index

# Technical specifications

| | |
|---|---|
| Model: | Winch 50 |
| Item no.: | 245 |
| Dimensions: | 329 × 298 × 445 mm / 12.9 × 11.7 × 17.5 in. (L×W×H) |
| Power supply: | 200-240V AC 50-60 Hz. |
| Power consumption: | 500 Watt. |
| Power plug: | Neutrik powerCON TRUE1 NAC3PX |
| DMX control signal: | DMX 512 1990 + DMX512A / 6 channels used. |
| DMX connection: | 5 pole XLR, male & female |
| Lifting height: | 12.5 m. (41 ft.) |
| Lifting capacity: | 50 kg. (110 lbs.) |
| Lifting speed: | Variable, 0.09-0.45 m/s (3.5-17.7 inch/sec.) |
| Lifting wire: | 3 mm galvanized steel wire (EN 12385-4) |
| Minimum breaking load (wire): | 589 kg |
| Wire fleet: | 83 mm (3.27 inch) |
| Wire fleet angle: | None |
| Duty cycle: | Maximum 30% at max load |
| Minimum load: | 3.5 kg (7.7 lb) |
| Maximum load: | 50.0 kg (110 lb) |
| Noise emission: | ~50 dB |
| Weight: | 30 kg (66.1 lb) |
| Mounting clamp: | 4 × Slim eye coupler (Max load: 300 kg)<br>Mounted 2×2. |
| Motor: | 230V AC, 0.55 kW 2800 rpm |


TOP POSITION
251mm [9.88in]
239mm [9.41in]
454mm [17.87in]
498mm [19.62in]
100mm [3.93in]
47mm [1.84in]
264mm [10.40in]
274mm [10.79in]
329mm [12.95in]
BOTTOM POSITION
181mm [7.14in]

# Introduction

Thank you for selecting the Winch 50, a DMX controlled winch from Wahlberg Motion Design. Before using the winch for the first time, please read this manual carefully. Failure in handling can cause injury of persons and/or damage the winch.

## Package content

1 × Winch 50
1 × PowerCon NAC3FX-W female plug for power cable
1 × Instruction manual

## Description

Winch 50 is a wire winch for stage use, mainly for use in theatres, shows and concerts.
It lifts props and small set pieces in and out of the stage sphere at maximum load of 50 kg up and down. The lifting height is 12.5 m. Contact Wahlberg Motion Design for extending your lifting height. The lifting speed is between 9 cm/s and 45 cm/s.

The winches are easily connected as a chain, allowing for advanced and creative ways of making dynamic

The control system ensures that the motor only is powered when:

- The control signal is reliable.
- The position and speed control is on.
- The motor position is calculated after witch a PID regulator calculates the motor speed and distance.
- No overload.

Winch 50 should only be operated by an experienced DMX-controlled-lighting-desk-operator.
The lighting desk has to be programmed according to the manual, so the winch will stop when the speed is put to 0 %. It is also possible for the user to stop the winch on the main. After power failure the start position of the winch needs to be reset before the winch can function again.

Manually operation of the winch is only intended for mounting, service, and tests.

## Area of use

The Winch is intended for indoor use only. It is designed for lifting and lowering material at the weight and speed stated in "Technical Data". Any other use of the winch may result in a risk of injury of persons or equipment damage.
Exceeding the load rating may cause failure of the equipment.
Use only approved rigging connectors to secure the load to the wire and do not wrap the wire around the load as this will damage the wire and result in a risk of injury of persons or equipment damage.
Do not modify the winch. For any modification of your winch, contact Wahlberg.

It is the customers' responsibility that any local restrictions concerning the use of the winch are complied with.

**For indoor use only!**

**Caution! To reduce the risk of electric shock or injury: use indoors only**

**Caution! To reduce the risk of electric shock, do not expose to rain: store indoors!**

## Using for the first time

**Important! The Winch 50 must be protected from environmental factors such as physical shocks and vibration during transportation and storage.**

**Warning! Read "Safety Information" on page 2 before installing, powering, operating, or servicing the winch. Before applying power to the winch:**

- Check the Wahlberg Motion Design website at www.wahlberg.dk for the most recent documentation and technical information about the winch 50. Wahlberg user manual revisions are identified by the revision number in the bottom of each page.
- Carefully review the "Safety Instructions" on page 2.
- Check that the local AC mains power source is within the winch power voltage and frequency ranges.
- See "Power cables and power plug" on page 2. Install a Neutrik powerCON TRUE1 NAC3FX-W power input connector on a suitable power cable. If drawing the power from a mains power outlet, install a suitable power plug on the power cable.

# Physical installation

**Warning! The Winch 50 must be either fastened to a flat surface such as a roof, or clamped to a truss or similar structure in such a way that the wire exit points downwards. Do not apply power to the Winch 50 if it is not securely fastened.**

## Fastening the winch to a flat surface

The Winch 50 can be fastened to flat surface such as a roof. Check that the surface can support at least 10 times the weight of all winches and equipment to be installed on it.

**Warning! The supporting surface must be hard and flat. Fasten the winch securely.**

## Mounting the winch on a truss

The Winch 50 can be clamped to a truss or similar rigging structure.

**Warning! Use only the supplied rigging clamps.**

**To clamp a Winch 50 to a truss:**

1. Check that the rigging clamps are undamaged and that the rigging structure can support at least 10 times the combined weight of all Winches and equipment to be installed on it.
2. Block access under the work area. Working from a stable platform, hang the winch on the truss with the wire downwards. Tighten the rigging clamp.
3. Use the supplied 4 slim couplers sitting on the top plate. It is important to use all for slim couplers for mounting because the load is not evenly distributed across the winch.

**Attention! Without all 4 mounting points the winch will hang at an angle and have a significantly reduced lifetime.**

# AC power

**Warning! Read “Safety Information” on page 2 before connecting the winch 50 to AC mains power.**

**Warning! For protection from electric shock, the Winch 50 must be grounded (earthed). The power distribution circuit must be equipped with a fuse or circuit breaker and ground-fault (earth-fault) protection.**

**Warning! Socket outlets or external power switches used to supply the Winch 50 with power must be located near the winch and easily accessible so that the winch can easily be disconnected from power.**

## Power voltage

**Warning! Check that the voltage range specified on the winch’s serial number label matches the local AC mains power voltage before applying power to the winch. Do not apply AC mains power to the fixture at any other voltage than that specified on the winch’s serial number label.**

## Power cables and power plug

The Winch 50 requires a power input cable with a Neutrik powerCON TRUE1 NAC3FX-W cable connector for AC mains power input. The cable must meet the requirements listed under “Protection from electric shock” on page 2.

Wahlberg Motion Design can supply the PowerCON input connector without a cable.

If you install a power plug on the power cable, install a grounding-type (earthed) plug that is rated 20 A minimum. Follow the plug manufacturer’s instructions. The Neutrik assembly guide below shows standard wire color-coding schemes and some possible pin identification schemes; if pins are not clearly identified, or if you have any doubts about proper installation, consult a qualified electrician.

By supplying power to the winch, the display will show a start-up screen and then change to

```
DMX CONTROL      .
START CHAN       1
```

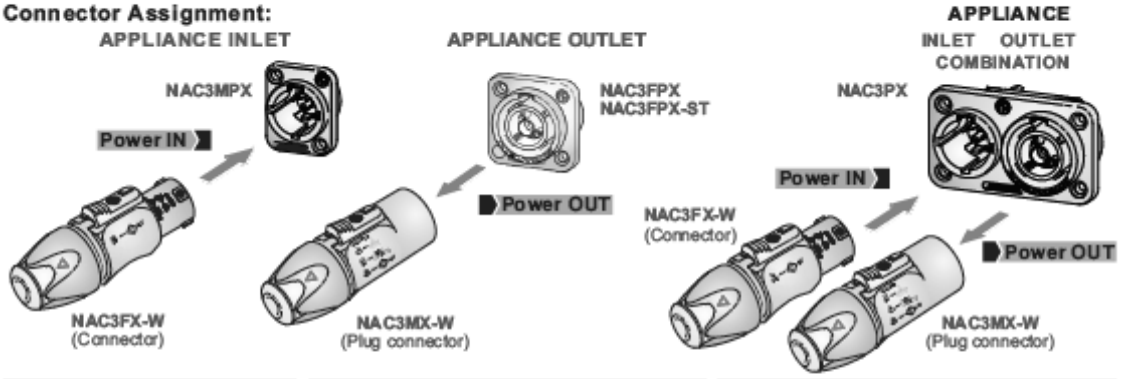
Installing a power input connector on a power cable

To install a Neutrik powerCON TRUE1 NAC3FX-W input connector on a power Cable, follow the original Neutrik instructions below:

## A. OPERATING INSTRUCTION

**Application:**
**The powerCON TRUE1 system is certified as connector with breaking capacity according IEC 60320, VDE 0625. It is intended for use as appliance couplers and interconnection couplers. It serves to supply power to an appliance and from an appliance to another equipment. To be installed by qualified person only.**

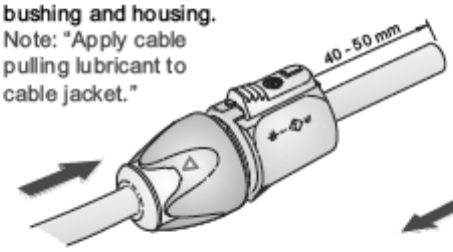
**Connector Assignment:**



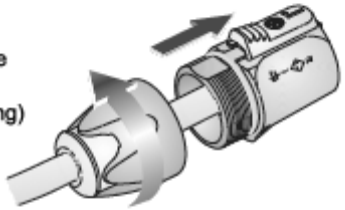

| Approval based: | VDE<br>EN 60320-1/EN60320-2-2 ✓ | UL<br>UL 498 / CSA C22.2 No. 182.3 ✓ |
|---|---|---|
| Rating: | 250 V ac / 16 A | 250 V ac / 20 A |
| Cable Type: | H05VV-F3G 1.0 mm², Length max. 2 m<br>H05VV-F3G 1.5 - 2.5 mm²<br>H07RN-F3G 1.5 mm² | SJTOW, SJOOW 3 x 12 AWG |
| Strain Relief: | White chuck | White chuck |
| Cable O.D.: | 6.0 - 12.0 mm | 6.0 - 12.0 mm |

## B. ASSEMBLY INSTRUCTION

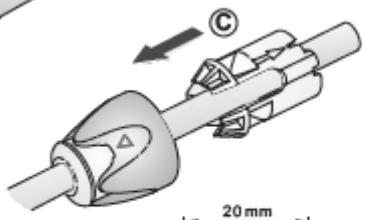
Ⓐ Insert cable into the bushing and housing. Note: "Apply cable pulling lubricant to cable jacket."



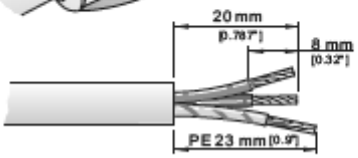

Ⓑ Separate the housing from the bushing (cable remain in bushing)

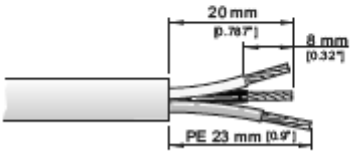


Ⓒ Place chuck over the cable.



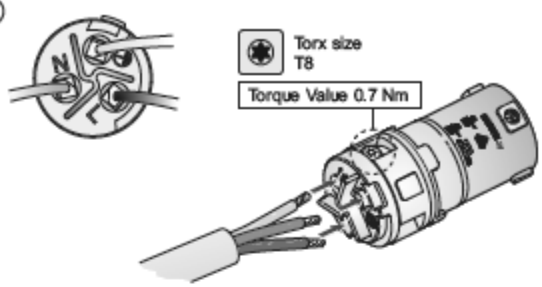

Ⓓ Prepare cable as shown.




**VDE** (EN 60320-1/EN60320-2-2) **UL** (UL 498 / CSA C22.2 No. 182.3)

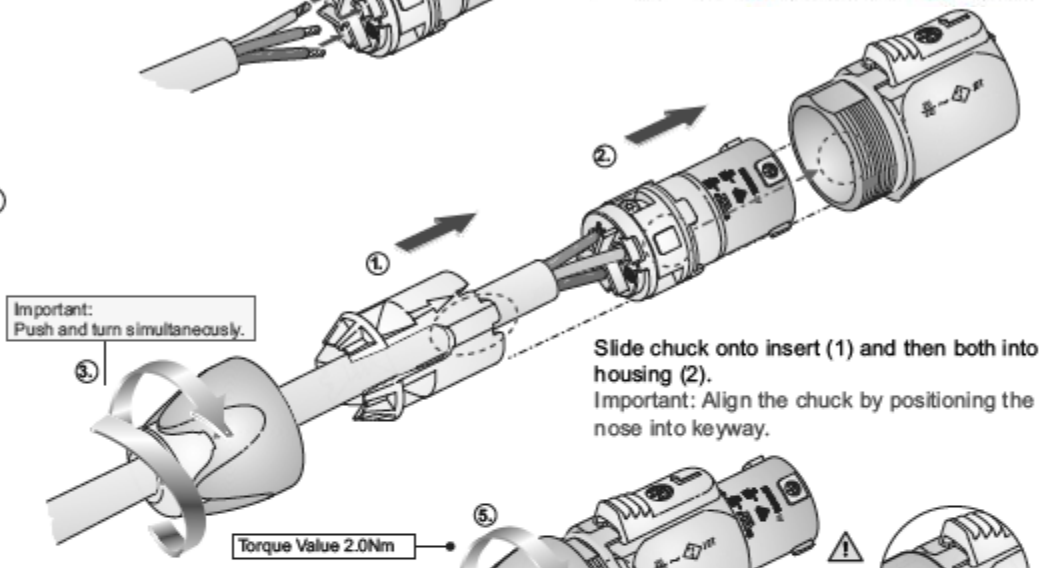
Ⓔ




Slide the cable into the contacts and clamp with the screw with Torx size T8.

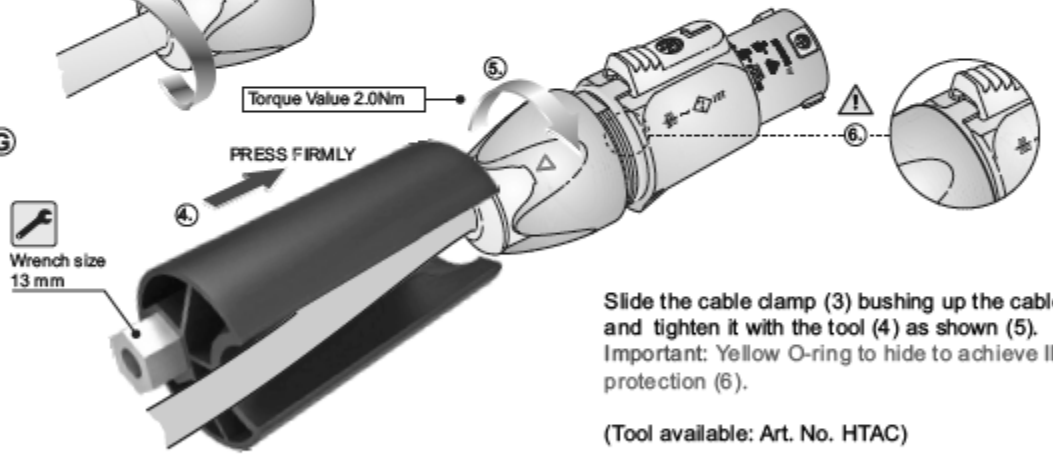
| Wiring | | VDE | UL |
|---|---|---|---|
| L | ⇒ | brown | black |
| N | ⇒ | blue | white |
| ⏚ | ⇒ | green/yellow | green |

Ⓕ




Slide chuck onto insert (1) and then both into housing (2).
Important: Align the chuck by positioning the nose into keyway.

Ⓖ




Slide the cable clamp (3) bushing up the cable and tighten it with the tool (4) as shown (5).
Important: Yellow O-ring to hide to achieve IP protection (6).

(Tool available: Art. No. HTAC)

**FOR DISASSEMBLY - OPEN TWIST LOCK!**

1. Press with screw driver to unlock
2. Turn bushing 360°.
3. Repat step①+②until bushing is unscrewed.



**CAUTION**

To ensure protection category, do not expose the connection to bending forces (e.g. do not attach loads to the cable, no free-dangling cable windings etc.).

**SAFETY WARNING**
For safety and certification reasons the connector must be replaced in case of any broken parts or serious damage.

# Data link

A DMX 512 data link is required in order to control the winch via DMX. The Winch 50 has 5-pin XLR connectors for DMX data input and output. The pin-out on all connectors is pin 1 = shield, pin 2 = Data (-), and pin 3 = Data (+). Pins 4 and 5 in the 5-pin XLR connectors are not used in the Winch 50 but are available for possible additional data signals as required by the DMX512-A standard. Standard pin-out is pin 1 = shield, pin 2 = data (-) and pin 3 = data (+).

| Pin | DMX IN | DMX OUT |
|---|---|---|
| 1 | GND | GND |
| 2 | Data - | Data - |
| 3 | Data + | Data + |
| 4 | NC | NC |
| 5 | NC | NC |

The Winch 50 is subject to the common limit of 32 devices per daisy-chained link. Note that if independent control of a winch is required, it must have its own DMX channels. Winches that are required to behave identically can share the same DMX channels. To add more winches or groups of winches when the above limit is reached, add a DMX universe and another daisy-chained link.

## Tips for reliable data transmission

- Use shielded twisted-pair cable designed for RS-485 devices: standard microphone cable cannot transmit control data reliably over long runs. 24 AWG cable is suitable for runs up to 100 meters (328 ft.).
- Never use both a winch's outputs to split a DMX link. To split the link into branches, use an opto-isolated RS-485 splitter/amplifier.
- Terminate the link by installing a termination plug in the output socket of the last winch. The termination plug, which is a male XLR plug with a 120 Ohm, 0.25 Watt resistor soldered between pins 2 and 3, "soaks up" the control signal so it does not reflect and cause interference. If a splitter is used, terminate each branch of the link.

## Connecting the data link

To connect the Winch 50 to data:

1. Connect the DMX data output from the DMX controller to the Winch 50's male 5-pin XLR DMX input connector (DMX 512 IN).
2. Connect the DMX output of the winch to the DMX input of the next winch and continue connecting winches output to input (DMX 512 OUT).
3. Terminate the last fixture on the link with a 120 Ohm resistor.

The DMX lamp is the green led, above the display.

- Glows constant, when the DMX connection is correct.
- Flash if the DMX signal is missing or wrongly connected.

# Emergency stop switch (Optional)

The Winch can be configured with an emergency stop
**Warning! By default the emergency stop is NOT enabled!**

If the emergency stop switch is activated (pin 1 and pin 4 are disconnected) the red ERROR LED will light.

The emergency stop switch is connected to the male 4 pole XLR connector.
Pin 1 and Pin 4 should be powered with 12-15 volt DC to enable the running of the motor

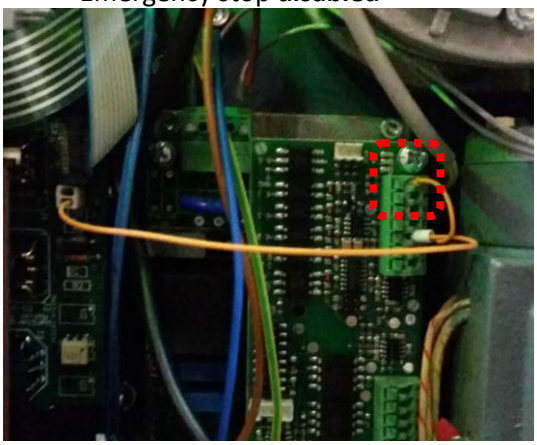
Pin out:
Pin 1 = GND
Pin 2 = NC
Pin 3 = NC
Pin 4 = 12 – 15 volt DC

Ready to use
When the Winch 50 has been connected to power, DMX, and an emergency stop switch, it is ready for use, and can be controlled from the lighting desk.

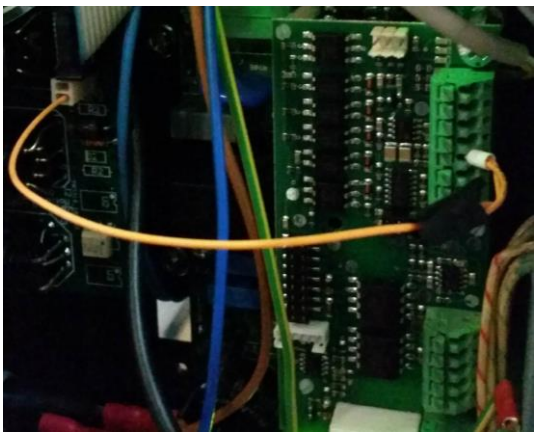
## Enable Emergency stop

To enable to emergency stop 2 steps are required. In the menu change E STOP to ON.
Then inside the unit there is an orange wire that needs to be set correctly for operation with/without emergency stop.

Emergency stop **disabled**



Emergency stop **enabled**



When the emergency stop is enabled and the little piece of orange wire is not connected it is recommended that it is secured in some way so it does not hit anything. Some electrical tape will be enough to keep it in place.

# Setup

**Warning! Read "Safety Information" on page 2 before installing, powering, operating, or servicing the Winch 50.**

**Warning! Before running the winch, it is important to put a counterbalance on the wire. This is necessary, as the slack detection switch otherwise will be activated and stop the winch.**

**Warning! Only experienced DMX users should operate the winch. Contact Wahlberg for further information and education on DMX protocol.**

## Counterbalance

When the winch has been mounted, it is important to hook on a counterbalance before running with it. This can be done by hanging some sort of weight in the snap hook at the end of the wire. The counterbalance is very important, because the winch will not run without it.

## Menu setting

The menu structure is divided into two different areas for safer motor control.

### Control mode

The display shows:

| | |
|---|---|
| DMX CONTROL | . |
| START CHAN | 1 |

### Menu navigation mode

The display shows:

| | |
|---|---|
| MENU NAVIGATE | . |
| . | . |

In menu navigate mode, the different parameters can be changed.
In menu navigate mode the motor is stopped and DMX input has no effect, the motor can be moved by the MAN UP/DWN menu though.

### Menu mode change

*MENU - NAVIGATE:*
The top line of the display is showing: DMX CONTROL .

Push the buttons UP & DOWN and hold them for 3 seconds.

Now the top line of the display should show: MENU NAVIGATE .

*MENU - DMX CONTROL:*
Go back to the starting position and activate DMX control

The top line of the display is showing: MENU NAVIGATE .

Push the buttons UP & DOWN and hold them for 3 seconds.

Now the top line of the display is showing: DMX CONTROL .

### Navigate the menu

The top line of the display is showing: MENU NAVIGATE .

Push the buttons UP or DOWN to go up and down in the menu choices.

The bottom line of the display is showing: DMX ADDR 1

### Adjusting menu parameters

The display shows:
MENU NAVIGATE .
DMX ADDR 1

Push ENT to change the *DMX ADDR* value.

The display shows:
EDIT MENU Values .
DMX ADDR 1

Use the arrows ↑ and ↓ to adjust the *DMX ADDR.*

### Save changed value

The display shows:
EDIT MENU Values .
DMX ADDR 1

Push ENT to change the top line to: SAVING 1-20
Then press and hold ENT

The top line of the display counts up to 20 then shows *OK*.

SAVING OK

The Value is now saved in the memory.

## DMX ADDRESS setting

The DMX address, also known as the start channel, is the first channel used to receive instructions from the controller. For independent control, each winch must be assigned its own control channels.
The DMX address is configured using the three DMX ADDRESS selectors on the winch. The selected DMX address states from which channels, on the lighting desk, the winch is controlled. The DMX address can be selected from 1 – 505. The Winch 50 uses 6× DMX channels.

**DMX channel 1 – Position rough:**
This channel controls the position of the winch, with the speed (DMX channel 3). This rough position works together with the fine position (DMX channel 2). The rough position and the fine position are multiplied in to a 16 bit channel. The rough position is the *MSB*.

**DMX channel 2 – Position fine:**
This channel controls the position of the winch, with the speed set on DMX channel 3. This fine position works together with the rough position (DMX channel 1). The fine position and the rough position are multiplied in to a 16 bit channel. The fine position is the *LSB*.

**DMX channel 3 – Speed:**
This channel controls the speed of the winch.

This channel defines the maximum speed. The winch runs with the set max speed, but slows down as closing in on the wanted position. This channel also works as a main brake; the motor does not run unless the channel is set above 0%. The speed-channel can also be used to make soft and slow movements or fast and sudden movements.

**DMX channel 4 – Motor Enable 50% and 55%, for the motor to turn:**
Channel 4 is used as an extra security channel.
The value on channel 4 needs to be between 50 and 55 %, for the motor to run.
All other values make the motor stop and activate the brake.
All other values will also reset any error shown.
All other values will save the current position before a power down.

**DMX channel 5 – Reset Up:**
There is a 3s delay on this channel to reduce risk of accidentally resetting the top position.
Channel 5 is used to manually move the wire up.
When channel 5 is in use it will run the motor Up until it hits the limit switch UP.
Setting DMX channel 5 to 0 resets the position.
10 – 100% makes the motor run up, at variable speed. (10% = low speed – 100% = full speed).

**DMX channel 6 – Manual DWN:**
There is a 3s delay on this channel to reduce risk of accidentally setting a new range.
Channel 6 is used to manually move the wire down.
When channel 6 is in use, it runs the motor in down, until the limit switch DWN is reached.
The position is reset and a new TAC RANGE is calculated. The new range is the tacho pulses, between top position set by channel 5 and bottom position set by channel 6.
The winch should be reset to the top position with channel 5 before the range is set with channel 6. 10 – 100% makes the motor run down, at variable speed. (10% = low speed – 100% = full speed).

**Table 1 - Overview of DMX addresses**

| DMX Channel | Function | Note |
|---|---|---|
| 1 | Position rough (Hi of a 16 bit DMX channel) | MSB |
| 2 | Position fine (Lo of a 16 bit DMX channel) | LSB |
| 3 | Set the maximum speed | |
| 4 | Motor Enable 50% and 55%, for the motor to turn | |
| 5 | Reset Up | |
| 6 | Manual Down | |

## Adjusting limit switches

Just under the drum there is a small black box. When you take the lid of this box the limits can be adjusted. The limits are adjusted by turning the screws.

1. Loosen the middle screw.
2. Bottom limit is adjusted by turning the screw with a 1 next to it.
3. The top limit is adjusted by turning the screw with a 2 next to it.

When adjustments are done tighten the middle screw again.

The limits are factory adjusted to stop 10 cm below the winch and have a travel length of 12.5m.

**Warning! There must be 2 rounds left on the drum when the winch is as the bottom limit.**

**Attention! Be careful that the top limit is not set in a position where the load can run into the winch itself, this might damage the winch.**

## Adjustable parameters

| Menu | Description | Range | Default |
|---|---|---|---|
| MAN SPEED | Speed for manual driving | 200 – 2500 | 800 |
| MAN UP/DWN | Run the motor manual from the menu | MOTOR UP / MOTOR DOWN | |
| DMX ADDR | DMX start address | 1-506 | 1 |
| TAC RANGE | Tacho range | 1-50,000 | N/A |
| SPEED MAX | Maximum speed | 500-3,500 | 3,500 |
| SP MIN UP | Minimum speed UP | 50-1,000 | 200 |
| SP MIN DWN | Minimum speed DWN | 50-1,000 | 200 |
| E STOP | Enable/disable emergency stop | ON/OFF | OFF |

MAN SPEED and MAN UP/DWN are used for manual control of the motor.

## Detailed explanation of parameters

**MAN SPEED** **Speed for manual driving** **Range** **200-2,500**
MAN SPEED sets the speed for manual driving the motor

**MAN UP/DWN** **Manually driving the motor**
MAN UP/DWN is used for manual control of the motor.
Pressing the *UP* button, makes the wire run up. Pressing the *DOWN* button, makes the wire run down, unless the limit switch or slack detection is activated.
The winch will stop if the Emergency Switch is activated.

**DMX ADDR** **DMX start address** **Range** **1-506**
DMX start address defines which DMX address the Winch 50 reacts on.
The Winch 50 uses minimum 6 DMX channels.

**TAC RANGE** **Tacho range** **Range** **1-50,000**
The tacho range is setting the maximum range of the Winch

**SPEED MAX** **Maximum speed** **Range** **500-3,500**
SPEED MAX sets the maximum speed.
If set to 1000, the motor run at 1000 RPM when DMX speed is set to full. SPEED MAX can be used to lower the maximum speed, if desired.

**SP MIN UP** **Minimum speed up** **Range** **50-1,000**
The motor minimum speed, for the up direction.
The motor is allowed to run at different minimum speed for each direction; this is to differentiate between different mechanical loads for up and down. See SP MIN DWN.
Set this value to a speed where the motor will still run up at full load.

**SP MIN DWN** **Minimum speed down** **Range** **50-1,000**
The motor minimum speed, for the down direction.
The motor is allowed to run at different minimum speed for each direction, this is to differentiate between different mechanical loads for up and down, see SP MIN UP.
Set this value to a speed where the motor will still run down at full load.

**E STOP** **Enable/disable emergency stop** **Range** **ON / OFF**
This enables/disables the emergency stop from the software. However, to get the full functionality of the emergency stop a wire has to be plugged in inside the winch. See section on how to change the wire setting for more details.

# Normal Operation

## Temperatures

If the surface temperature of the winch exceeds 90°C (194°F) there is a risk of damaging the winch.

## Duty cycle

The winch should not be operated at a duty cycle higher than 30% for longer periods of time.

## Lifting speeds and weight

The load of the winch impacts the minimum speed it can operate at. At high loads the minimum speed up must be increased to a point where the winch can still move.
If a lower load is used with high minimum speeds the winch might have problems with finding its position. Lower the minimum speeds if this is a problem.

The minimum speed can be adjusted from the menu.

## Wire fleet

Because of the way the winch rolls up the wire the place where the wire comes out of the winch changes depending on how much wire has been rolled out. The wire moves 83mm sideways from the top position to the bottom position during the movement.

# Synchronized movements of multiple winches

If several winches are installed to perform synchronized movements the best result is achieved by using a fading 16 bit position. By nature there is a slight deviation in performance of the motors so some motors have a slightly higher maximum speed than others.

Like when fading light, the positions of the different winches should be faded, and the winches will tend to follow that fade. When fading the positions:

1. The speed channel should be a set to 100 to gain the highest possible speed.
2. The position channel should be added as a 16 bit channel and not just the MSB on channel 1.
3. The speed of the fade needs to be slower than the maximum speed, so the motors have speed enough to perform the movement.

If the fade of the positions is too fast, the winches will move at the maximum speed, and you will see the difference in the motor speed.
If the fade is to slow the winches will move – stop – move – stop, when the position changes, thus giving a discontinuous movement.

# LED Functions

## DMX LED

The DMX lamp will be steady green when receiving a DMX signal.
The DMX lamp will flash green if no DMX signal is present.

## Error LED

The error LED will light red if there is an error.
Reset error is done by setting DMX channel 4 to 0.
When the Error LED lights red, there will also be an error description in the display.

## Error and error codes:

| **Error** | **Possible solution** |
|---|---|
| Winch will not start, display shows nothing. | Check if the winch is connected to mains power.<br>Check if the fuse in the winch is intact |
| Winch will not start, DMX lamp is blinking. | Check DMX signal |
| The wire is not wound up on the drum correctly. | Manually lower the wire totally off the drum, while controlling that the wire comes out of the winch evenly. Afterwards the wire is rolled back onto the drum.<br>Reset the top position afterwards. |
| Display says “Not in Pos” | The winch cannot move to its position, this usually occurs when the load is high. To solve this go into the menu and increase the Minimum speed up. |

## Power failure

The winch will stop at power failure. When the power is re-established, the winch has to be reset before it is ready to use.

It is advisable to set all the DMX channels on 0% before the power is re-established.

# Service and maintenance

**Warning! Read “Safety Information” on page 2 before servicing the Winch 50.**

**Warning! Disconnect the Winch from AC mains power and allow cooling down for at least 10 minutes before handling.**

**Warning! Refer any service operation not described in this user manual to a qualified service technician.**

**Attention! Interval of inspections should be determined according to the frequency of use and the working scenario of the winch.**

**Attention! If the wire runs in an angel the performance degrades and it causes the wire to wear down faster; and shortens the life time of the wire significantly! Wire damage caused by mounting the winch in an angle is not covered by the product warranty.**

**Attention! Signs of malfunction or poor operation should always lead to an inspection of the winch, and the winch should be taken out of operation until the error is eliminated.**

## Maintenance plan

The results of all the regular inspections are to be documented and kept available at the company. The written result of the last inspection must be kept available at the site of operation, e.g. by an inspection sticker on the winch showing the date of the inspection, the basis of the inspection and the name of the inspector.

**Before every use and weekly**

Every time when rigging the winch, before running the winch – and at least every week when the winch is in use:

- Check the entire length of the wire rope for bends, crushed areas, broken, or cut cord, corrosion and other damages.
- Check the wire ferrule crimp and thimble
- Check all limit switches.
- Check the slack detection device
- Check the emergency stop.
- Check that the wire is winded neatly on the drum.

**Monthly**

At regular intervals – but at least every month when the winch is in use:

- Check the mounting clamps for damages and proper fastening.
- Make sure the load is secured to the wire with approved fastening.
- Clean the grid of the ventilator and air outlet
- Change damaged parts according to this manual.

**Yearly**

The winch has to be inspected by a specialist every 12 months.

**Every 48 months**

The winch should be inspected by an authorised expert every 48 months.

## On-site service

On-site service and maintenance can be provided by the Wahlberg Motion Design, giving owners access to Wahlberg Motion Design's expertise and product knowledge in a partnership that will ensure the highest level of performance throughout the product's lifetime. Please contact Wahlberg Motion Design for details.

## Life of the wire

It is Wahlberg policy to apply the strictest possible calibration procedures and use the best quality materials available to ensure optimum performance and the longest possible component lifetimes. However, wires are subject to wear and tear over the life of the product, resulting in special attention to the state of the wire. The extent of wear and tear depends heavily on operating conditions and environment, so it is impossible to specify precisely whether and to what extent the wire performance will be affected.
The expected lifetime of the wire depends on the load and travel length as well as duty cycle.

## Spare parts

Only parts ordered at or approved by Wahlberg should be used in the winch to ensure product function and stability. Contact Wahlberg to inquire about spare parts.

| DMX channels | Function |
|---|---|
| 1 | Position rough (Hi of a 16 bit DMX channel) |
| 2 | Position fine (Lo of a 16 bit DMX channel) |
| 3 | Set the maximum speed |
| 4 | Motor Enable – between 50% and 55% to enable the motor output |
| 5 | Reset UP |
| 6 | Manual DWN |

# Winch 50 - Cheat Sheet

| DMX channels | Function |
|---|---|
| 1 | Position rough (Hi of a 16 bit DMX channel) |
| 2 | Position fine (Lo of a 16 bit DMX channel) |
| 3 | Set the maximum speed |
| 4 | Motor Enable – between 50% and 55% to enable the motor output |
| 5 | Reset UP |
| 6 | Manual DWN |

## How to get started

1. Place / Rig the winch high so there is space for the wire to move without hitting the floor.
2. Put on counterweight on the winch loop, minimum 3.5 kilo.
3. Connect to 230VAC – The display is now shows the start-up message
4. Set the DMX channel 4 between 50% and 55% - Motor is now enabled
5. Set the DMX channel 5 to 50%
   - Wait for the load to move to the top position (There is a 3s delay on this channel).
   - When the load is in the top position, set channel 5 to 0%.
6. Set DMX channel 6 to 50% wait for the wire loop to go 2 m down.
   - When the load is 2m out, set DMX channel 6 to 0% (There is a 3s delay on this channel).
   The travel range has now been set to: from the winch and 2 m down.
7. Set DMX channel 1 to 100% and DMX channel 3 to 20%
   The wire loop is now running to the top with 20 % speed.
8. Set DMX channel 1 to 50% and DMX channel 3 to 50%
   The wire loop is now running 1m down with 50 % speed.

## Emergency stop switch (Only when emergency stop is enabled)

The emergency stop switch is connected to the female 4 pin XLR connector.
Pin 1 and Pin 2 should be connected to each other; otherwise the motor will not run.

| **Pin out:** | | |
|---|---|---|
| Pin 1 | GND | Emergency stop input |
| Pin 2 | NC | |
| Pin 3 | NC | |
| Pin 4 | 12-15 volt DC | Emergency stop input |

**Intact wire**

**Broken wire**

Inspection points

## Before each use

- Inspect the entire length of the **wire rope** for bends, damage, wear, cut cord, corrosion and abuse.
- Inspect the **wire ferrule crimp** and **thimble** for damage, wear, corrosion or abuse.
- Check all limit switches.
- Check the slack detection device
- Check the emergency stop (if enabled).
- Check that the wire is winded neatly on the drum.

**Warning! Do not use the winch if any damage or error is found!**