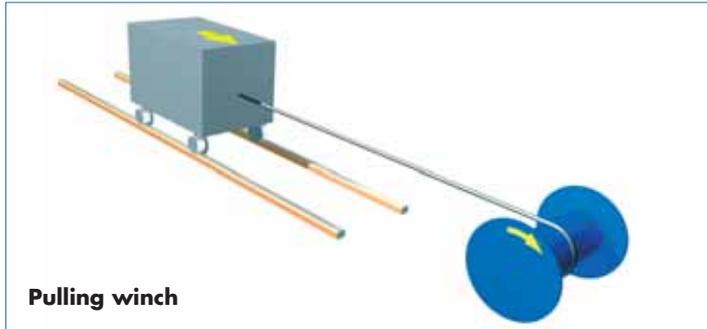


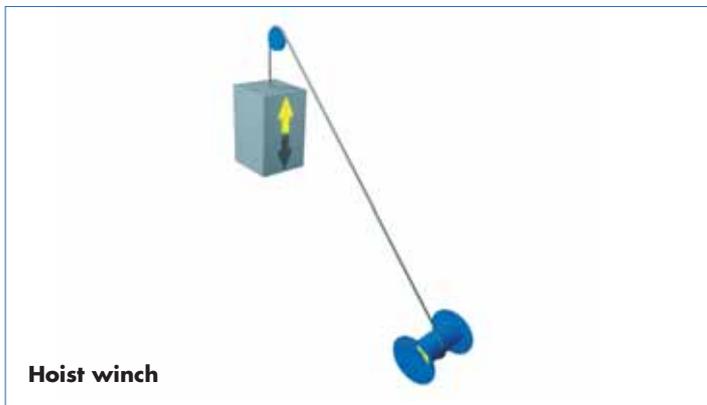
Mode of application and load bearing capacity

Pulling winches are designed to pull loads on a 100 % flat surface. The pulling force is calculated from the mass of the load to be pulled multiplied by the load's rolling resistance. The rolling resistances for the typical applications are around 0.150 for rubber wheels on concrete surfaces and around 0.005 for steel wheels mounted on an anti-friction bearing that are on tracks. If the load is hoisted on an angled surface, the cable winch must be designed as a hoist winch.



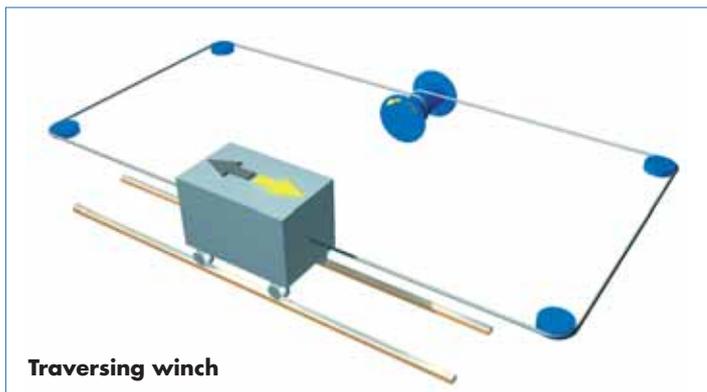
Pulling winch

Hoist winches must be used if a load is to be raised and held by the cable winch. This applies to hoisting vertically and also to pulling the load along an angled track. Cable winches for hoisting are equipped with spring-loaded brakes on the motor as standard and therefore guarantee that the load will be held securely. In addition, cable winches for hoisting are equipped with higher safety factors than cable winches that are used purely for pulling for example.



Hoist winch

A **traversing winch** can be used to move a load in two directions on a level. You can therefore move a carriage forwards and backwards for example. The cable drum is designed for two cables, is scored and winds in only one layer.



Traversing winch

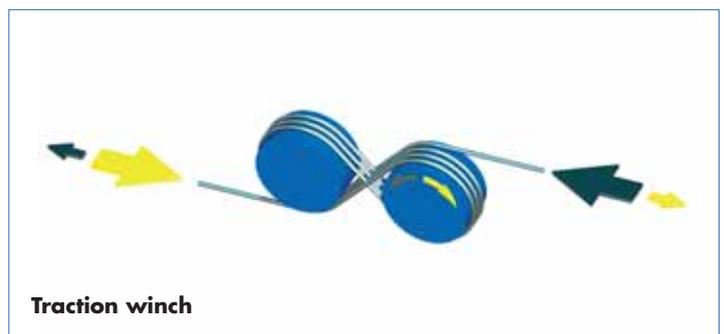
Capstan winches are endless winches that do not store the cable on a cable drum but allow the cable to run through "endlessly". A counterforce such as the operator's manual force is multiplied by winding the cable around the capstan head several times. In this way, a much larger pulling force can be achieved from manual force. For example, they stand on deck on a ship and are used to pull cables and ropes in many different directions.



Capstan winch

Traction winches are endless winches like the capstan winches. They work on the same principle of increasing force due to winding friction. The cable is better fed and protected thanks to their design with two traction sheaves and multiple scores.

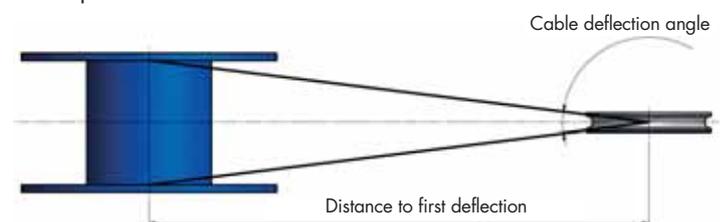
Traction winches are normally located on carriages that travel forwards and backwards. The pulling cable is stretched between the two ends of the guide rail.



Traction winch

Information for safe operation:

To ensure that the cable is wound onto the cable drum in an orderly manner, the cable's permitted angle of deflection must not be exceeded. For this reason, the cable is normally guided from the cable drum over a fixed deflection roller at first. This is aligned in the centre of the drum at a specified distance from the cable drum. This prevents the angle of deflection being exceeded. This distance mainly depends on the drum length and the relationship between the drum diameter and the cable diameter, and is specified in each quotation.



Drive type

Manually operated cable winches are operated by the operator's manual force via a crank handle. The power is therefore limited to a certain value which is mainly generated by the pulling force and the cable speed.

The higher the pulling force, the lower the cable speed if the power remains the same.

Electrically-operated cables are driven by three-phase motors or alternating current motors. Three-phase motor powers of up to 30 kW are available in our standard version. Higher powers are available on request.

Due to the mains-related limitations, the power is limited to 2.2 kW when using alternating current motors.

Hydraulically-operated cable winches are operated by orbital motors or radial piston motors depending on the power.

We will either work with your existing hydraulic supply or we will provide a unit. In the standard version, we install brake valves for a secure hold.

Pneumatically-operated cable winches are operated by multi-disc motors or radial piston motors depending on the power.

We can provide compressed air cable winches with power of up to 22 kW. Please specify your compressed air supply data. Depending on the design, we will equip the cable winches with pneumatic allyactuated spring-loaded brakes.

Cable speed

PLANETA cable winches normally have a constant cable speed. The PORTY, MC and SB PLANETA cable winches can be designed for virtually any cable speed.

Thanks to appropriate motors that can operate at two speeds or thanks to freely-programmable frequency converter controllers, multiple speeds can also be achieved.

Site of operation

Do you have a height restriction, such as a maximum distance to the first deflection? In that case, we can construct the cable winch to fit as well as possible. If the winch has to be protected against wind and weather, or even against salt water, we can provide motors with higher protection classes, special thick protective coatings or complete housings.

Load type

There are four different safety classes for PLANETA cable winches. These start with the standard cable winch according to DGUV norm 54 (D8) (German employers' insurance association), which you can use to transport or lift goods. You must prevent people standing in the region of or under the load. Next, we have the BGV D8+ cable winch designs, which guarantee safety for people under a suspended load if the cable winch is electrically shut down. Cable winches in accordance with DGUV norm 17 (C1) also allow people to remain under the suspended load safely. In the highest safety classes, people may also be carried.

Two or more cable outflows

In order to be able to lift long cross beams or frames with large bases, you require several lifting points on the load to ensure that the load does not tip.

We can equip our cable winches with multi-cable drums for this purpose. Please let us know the number of load points and the distance between them.

Explosion protection class

The PORTY, MC and SB cable winches can be designed for use in locations at risk of explosion.

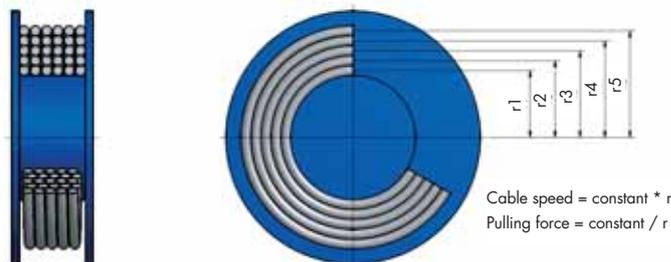
Please inform us of the explosion protection class required. For more information, see pages 24 and 25 of this brochure.

Information on multi-layer wound cable drums:

Cable drums are normally wound in multiple layers; i.e. the cable is wound around the cable drum layer by layer.

The lever that the cable uses to transfer the pulling force to the cable drum becomes larger with each cable layer.

However, the gear data such as the driving torque and the driving speed remain constant. Due to this, the cable speed increases and the pulling force decreases with each cable layer that is wound up.



4

Information on applicable law

The following applies according to the machinery directive:



-  Overrunning structural or required limits whose movement is generated by the cable winch must be prevented by limit switches. (Normally by spindle limit switches)
-  The cable drum and other moving parts must be inaccessible or protected against drawing in. (Normally by covers)
-  Cable winches with a lifting capacity of over 1.000 kg must be protected against an overload. (Normally by electrical overload protection in the switch cabinet)
-  The electrical controller must be able to be powered off. (Normally by a mains plug or a mains isolator)
-  The customer must ensure that the base to which the winch is fixed is structurally stable.