

WAC 296-96-24154 Driving machines and sheaves. (1) Winding drums, traction sheaves, overhead sheaves and deflecting sheaves shall:

- (a) Be made of cast iron or steel;
- (b) Have diameters at least 30 times the diameter of the wire hoisting ropes; and
- (c) Have machined rope grooves.

EXCEPTIONS:

- If 8 x 19 steel ropes are used, drum and sheave diameters are permitted to be reduced to 21 times the diameter of the hoisting rope.
- Existing incline lifts suspended by cables are not required to have machine grooves, except for the first row of cables wrapped on the drum and a tracking device shall be required to monitor the winding of the cable on the drum.
- On existing inclined lifts suspended by cables that do not have machine grooves on the drum, the first layer of ropes will be recognized as providing the same traction as grooves, provided that this layer remains on the drum at all times and is not allowed to wind out. Such lifts shall be provided with a rope tracking device to ensure that the rope does not wind over itself on the drum.

(2) The factor of safety, based on the static load (the rated load plus the weight of the car, ropes, counterweights, etc.) to be used in the design of driving machines and sheaves, shall be at least:

- (a) 8 For driving machines and sheaves built of wrought iron and steel; or
- (b) 10 For driving machines built of cast iron, cast steel or other materials.

(3) Set screw type fastenings shall not be substituted for keys or pins if connections are subject to torque or tension.

(4) Gears:

(a) When connecting drums or sheaves to the main driving gear, friction gears, clutch mechanisms or couplings shall not be used.

(b) Worm gears having cast iron teeth shall not be used.

(5) Brakes:

(a) Electric brakes shall be of the friction type set by springs and shall release electrically.

(b) All brakes shall be able to stop and hold an elevator carrying 125 percent of its rated load.

(c) At least one brake shall be mounted so that the drum will hold the rated load in the case of gearbox failure.

(d) If a single ground or short-circuit, a counter-voltage or a motor field discharge occurs and the operating device is set in the stop position, the brake magnet shall set the brake.

(6) Driving machines:

(a) A driving machine shall be permitted to be mounted on an elevator chassis or in a remote location. However, if mounted in a remote location, all sheaves and sprockets shall be guarded and positioned so the hoisting ropes and chains remain properly aligned while the elevator is in use.

(b) Screw type machines shall not be used.

(c) Hydraulic driving machines shall conform to ASME A17.1/CSA B44.

(d) Roped-hydraulic machines shall be permitted to be used.

[Statutory Authority: RCW 70.87.030. WSR 23-17-141, § 296-96-24154, filed 8/22/23, effective 10/2/23. Statutory Authority: Chapter 70.87 RCW. WSR 18-18-070, § 296-96-24154, filed 8/31/18, effective 10/1/18.]