

SLIDE RACKS ON SHORTENED ARRIVALS OF SURFACE LIFTS

André REVENANT¹

Abstract

It is no easy matter to let go of a towhanger at the end of track, especially for young skiers or beginners, because of several factors.

For example :

- The steep slope of the cable beyond the arrival which maintains the towhanger fully extended and requires a major effort on the skier's part to release his traction link, high speed (over 3.3 m/s, i.e. approximately 650 ft/min).

To help skiers to release their towhanger, a short slide has been installed at the arrival in order to detach the grip from the cable. The detached grip slides on a rail and is mechanically pulled, before being re-attached to the cable.

The new design of the grip detaching system gives a few extra seconds to help skiers and reinforces safety in areas where injuries can occur.

¹ André REVENANT, of POMAGALSKI Group
109 Rue Aristide Bergès, BP 47, 38340 VOREPPE (FRANCE)
(33) 476-28-7162, Fax (33) 476-28-7002, E-mail: andre.revenant @ poma.pomagroup.com

1) **PURPOSE :**

This mechanical device permits the detachable grip of a surface lift to be disconnected from the cable for a few seconds in the arrival zone. The initial speed of the skier allows him to overtake his towhanger which is then fully retracted, and encourages him to release it safely.

2) **FIELD OF APPLICATION :**

This slide rack applies to all surface lifts provided with detachable grips. However, the lifts built with fixed grips using pneumatic bars or springboxes are not concerned.

This device can be added to most of the 8000 surface lifts in operation worldwide, and for any manufacturers.

Generally, the slide rack makes up part of the return station located at the top of the lift, where a short arrival is required.

3) **SURFACE LIFTS WITH SHORT ARRIVALS :**

Generally speaking, the surface lifts with detachable grips are built with a drive station at the bottom, using a slide rack able to contain all the grips providing the capacity at a rated speed. Skiers unload at the last tower, and then the detachable grips, which are always connected to the cable, continue on to the return station, which is in most cases, a floating pulley equipped with a cable tensioning system.

This return station is placed at a distance from the unloading point which is equal to a value at least eight times the speed of cable. This distance is necessary to allow the towhanger to be fully retracted and stabilized from any swinging effects before reaching the station.

For several reasons, these “ occupied zones ” (between last line tower and return station) are nuisances to ski resorts where slope surfaces and clearance around arrivals are required.

This has naturally led to a shortening of the arrivals area by replacing conventional unloading at the last line tower with an unloading under the return bullwheel. These new return stations (generally provided with an integrated cable tensioning system) are of different size and length according to the tension and speed of the cable.

The higher the speed, the longer the return station should be in order to provide the necessary time to allow the skier to release his towhanger.

It has been accepted that a slide rack is necessary when the surface lift speed is over 3,5 m/sec (or 690 ft/min). It has also been proven that safety conditions of unloading are improved substantially when a slide rack is installed on return stations of lifts having a cable speed lower than 3,5 m/s (or 690 ft/min).

4) SLIDE RACK FUNCTIONING :

The grip is attached to the cable when the button is buttressed on it. This action is created either by the traction force of the skier or at least by the towhanger weight (on return cable for example).

The grip is detached from the cable in the slide rack of the return station by the same principle that it is used in the drive station, i. e. by releasing the force which is buttressing the button on the cable.

When this button is disconnected from the cable, it slides over a third of the length of the rail approximately 1,5 meters (or 5 feet) long. Then, the grip is motionless on this rail.

A chain with retractable cleats moves along the rail at a speed which is approximately one tenth of the cable speed.

The first cleat, which catches the button, draws the grip along the rest of the rail. Then, the weight of the towhanger re-attaches it to the cable before the next skier arrives at the front of the slide rack.

5) SAFETY DEVICES OF A SLIDE RACK :

To prevent malfunctions of the slide rack due frost or snow, this device is entirely covered.

Furthermore, electrical switches can stop the lift when certain functions of the slide rack are not fulfilled :

- lack of tension on the primary chain, at the point where motion is taken from the cable rolling on the support pulley at its entrance,
- lack of tension on the secondary chain with retractable cleats,
- over tension of the primary or secondary chains. A torque declutching device stops the next towhanger to be drawn if it is stuck.

6) **CONSTRUCTIONS TO-DATE:**

The first slide rack was installed on a surface lift in 1984. Since that date, over 250 unloading under/bullwheel return stations have been built by POMAGALSKI.

Not all of them require a slide rack, for instance if the speed of the cable is inferior to 2,5 m/s or 490 ft/min.

Around 35 % of such return stations are provided with a slide rack. This has been our experience over the last 15 years in this matter.