Subject: Advisement of the Service Bulletin Number 1998-001 issued by VanRoll Tramways

Sent to: All Elevating Device Owners, Contractors and Consultants

1. BACKGROUND

Attached is the Service Bulletin number 1998-001 issued by VanRoll Tramways advising all the owners/contractors of passenger chair lifts manufactured by:

- Hall Ski Lifts, and
- VanRoll Tramways

The Service Bulletin gives the plan of action required by the maintenance contractors to:

(a) remove 549D grip inserts from 549E grip assemblies, and
(b) install 4660B inserts.

Reason: Wrong specification in the manufacturing of the inserts, at the time of their production, may result in development cracks in insert due to stress corrosion.

2. ORDER TO OWNERS & CONTRACTORS

Comply forthwith with the corrective actions numbered from 1 to 3 of the Service Bulletin number 1998-001 issued by VanRoll Tramways.

C. E. Vlahovic, Chief Engineer

J. Murphy, Chief Inspector
June 23, 1998

SERVICE BULLETIN NUMBER 1998-001 ACTION REQUIRED

TO: ALL OPERATORS OF HALL SKI LIFTS AND VON ROLL
TRAMWAYS PASSENGER CHAIRLIFTS

SUBJECT: 549E GRIP ASSEMBLIES WITH 549D GRIP INSERTS

As a result of a failure of a 549D grip insert and subsequent analysis of the failure mode, Von Roll Tramways requires all suspect two-passenger, 1 1/8" 549D grip inserts be removed from service.

The grip inserts in question have a single raised diamond on the back of the insert. They were supplied with 549E grip assemblies, and have a serial number between 11700 and 13000.

From metallurgical studies, we confirmed the chemical make-up of this particular batch of inserts does meet the required specifications for the type of stainless steel used. X-ray diffraction examination has revealed chloride, sulfide, and hydrogen molecules present on the surface of the failed pieces. The chloride and sulfide combine with the stainless steel to create what is commonly known as "Stress Corrosion Cracking".

It is our opinion that the inserts supplied in grips by Hall Ski Lift with serial numbers between 11700 and 13000 for the assembled 549E two-passenger grip were manufactured to a Brinell hardness between 340 - 400. Von Roll specifications now require a maximum Brinell of 285.

At the time these inserts were manufactured, Hall Ski Lift required a minimum hardness, but did not set an upper limit. The higher Brinell hardness is the only difference between those subject to stress corrosion cracking and our present supply. The introduction of sulfides and chlorides are considered outside contaminants. When the stress corrosion cracking develops, the inserts with a higher Brinell hardness (more brittle) are susceptible to fatigue cracking and impact cracking (ie. chair swing, bullwheel misalignment, impact during de-icing, and sharp impacts during maintenance).
Corrective Action

To be taken within 30 days

1) Visually check all two passenger 1 1/8" 549E grips for inserts displaying a single raised diamond marker with a grip serial number between 11700 and 13000.

2) Replace inserts with the Von Roll Tramways current 4660B insert. Destroy and discard all inserts, as described, to prevent accidental use.

3) Provide Von Roll Tramways with a written notice that your grips/inserts were inspected for this condition, and any inserts found within the serial numbers 11700 - 13000 have been removed from service.

All data in our possession suggests that the problem is limited to serial numbers 11700 through 13000. However, no documentation exists to confirm that grip inserts manufactured prior to serial number 11700 or after serial number 13000 are immune from this problem. At the present time, we are conducting surveillance testing of other serial numbers to determine if the problem is more extensive than data suggests.

Any indication that the condition may exist outside of these parameters will be addressed by a subsequent service bulletin.

Thank you for your continued effort in providing safe and reliable transportation to your guests.

Sincerely,

VON ROLL TRAMWAYS INC.

[Signature]

Red Blomer
President

RE: a/kc