Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
WOL	**12/20/2008**	**SA-08-021 Wolfurt KD08003E**	

SAFETY ALERT BULLETIN

Lift manufacturer / *Fabricant :*	**Hall, VonRoll, Thiokol, CTEC, Garaventa CTEC, Doppelmayr, Doppelmayr CTEC**	**Fab. Group / *Groupe de fabrication :***	**FAB GROUP 25 – Tower Equipment**
Lift type / *Type de remontée :*	**All lifts**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**December 20, 2008**

Title: **Tower Failure Due to Water Intrusion**

1. Generalities

1.1 Abstract of issue (summary)

In direct response to a recent incident, the Doppelmayr main office in Wolfurt, Austria has released the attached Safety Alert Bulletin KD08003E.

1.2 Reason for release (summary)

See attached Doppelmayr Wolfurt Safety Alert Bulletin KD08003E.

2. Scope

See attached Doppelmayr Wolfurt Safety Alert Bulletin KD08003E.

3. Action to be taken and completion date

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)

All actions prescribed by attached Doppelmayr Wolfurt Safety Alert Bulletin KD08003E must be completed and documented by all customers.

4. Detail of issue

Text, drawings, schematics

See attached Doppelmayr Wolfurt Safety Alert Bulletin KD08003E.

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		CH/HS/LAK	20.12.2008	KD08003E	1 / 5

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
--	--		Towers
Abgeleitet von / Based on:	SA-06-022 Safety Alert Bulletin		
Classification Code:	x OS	O	IS	I

Tower failure due to water intrusion

1. General

1.1 Abstract of issue (summary)

Accumulated water within tower tubes and other hollow sections that have a sealed base or clogged drainage (including but not limited to terminal structures, crossarms, carriers, etc.) can have catastrophic effects upon structural integrity.

1.2 Reasons for release

Recently, accumulated water within a tower tube froze and resulted in a complete failure of the tower splice plate weld. The failure occurred during operation on an 8MGD installation built in 1994 in Canada. The affected tower design was a two-section tower of which the lower section had an opening for concrete fill in the top plate. The lower section was filled approximately 70% with concrete. The remaining space within the tower tube filled up with water which froze and expanded causing the upper section of the tower to separate and fall.

Inspections subsequent to the event, have reported that water or ice has been discovered in towers and other structural members. In some instances, damage to structure members has been noted.

2. Scope

2.1 Affected model, type, parts

While the noted failure involved a 1994 Doppelmayr two-piece tower on a detachable gondola, any tower design or other hollow structures that have a sealed base or clogged drainage could be similarly affected if there is a pathway for water intrusion or an opening for air to enter and cause condensation.

This bulletin specifies describes tower inspections but also applies to terminal masts and other hollow structures with a sealed base. If the presence of water/ice is found or suspected within other hollow structures, consult with the nearest Doppelmayr office for review and recommended procedures.

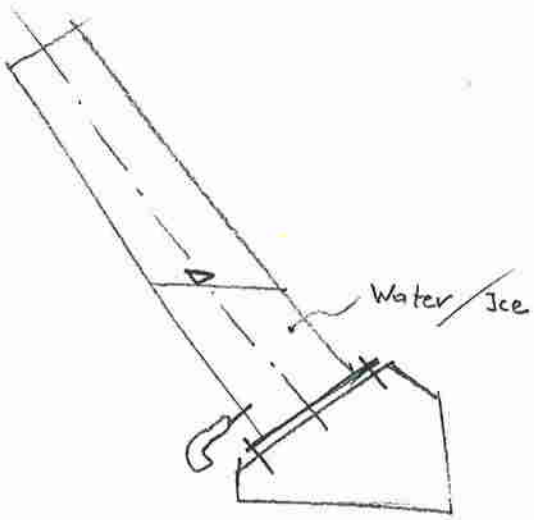
3. Action to be taken / Completion date

3.1 Required Actions: inspections ASAP but at the latest within the next 30 days
ASAP / no later than within the next 30 days, a resonance check and visual inspection of each tower tube or other hollow structure with a sealed base must be completed.

3.1.1 Resonance check: Each tower tube or other hollow structure with a sealed base must be checked for the presence of internal water/ice. When struck with a hammer in several ascending points from the base, a change in the resonating tone of the tower may indicate the presence of water/ice (a tower with water/ice or concrete tends to exhibit a solid "dead" sound compared to a more normal bell-like tone). Some tone differences may be noted due to proximity to base gussets or the presence of internal concrete (see additional information within Section 3.1.2) and will not necessarily indicate the presence of water.

If with a resonance check, water/ice is suspected to be present within the tower but further than 4" (100 mm) from the top plate, a small hole 3/8" - 1/2" (10 - 12 mm) must be drilled near the tower base at the downhill side of the tower along the centerline of the lift 2" to 4" (50 – 100 mm) from the tower base to provide a pathway for water to escape. See illustration below.

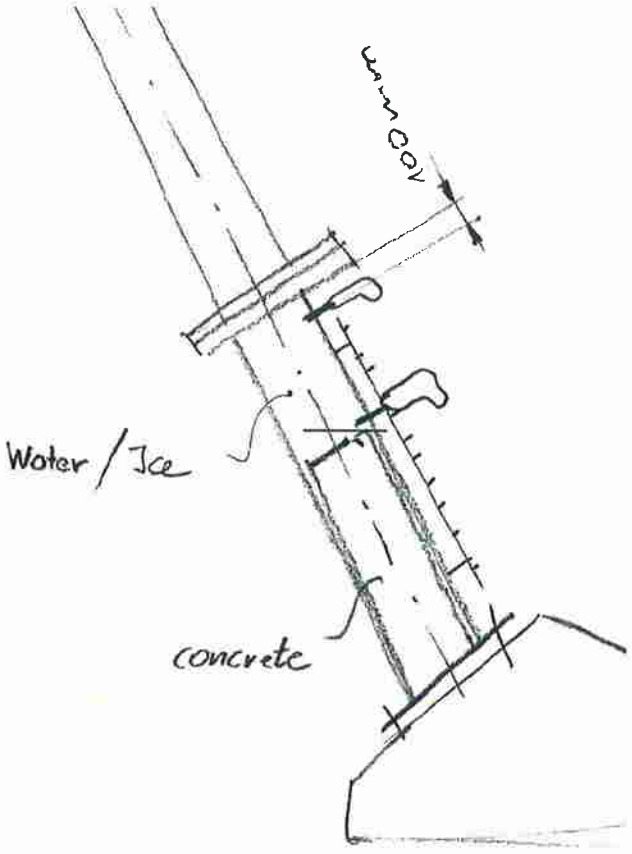
If with a resonance check, water/ice is found or suspected inside the tower within 4" (100 mm) of the top plate (see Section 3.1.2) **this shall be cause for immediate and continued closure of the lift to public transportation** and must be reported to the nearest Doppelmayr representation office for review and recommended repair procedures.



3.1.2 Concrete-filled shafts / shaft sections

For tower shaft sections partially filled with concrete through the top plate, check the tower section with the hammer method as described previously. If water/ice is suspected, drill a small hole 3/8" - 1/2" (10 - 12 mm) approx. 2 inches (50 mm) below the top plate on the uphill side of the tower (behind the ladder). Tower shafts with a cover for concrete fill on the outside of the shaft already have a drain hole and the cover can be removed for inspection purposes. **If ice is found in this section, this shall be cause for immediate and continued closure of the lift to public transportation** and must be reported to the nearest Doppelmayr representation office for review and recommended repair procedures.

A small drain hole 3/8" - 1/2" (10 - 12 mm) is required to eliminate the water above the concrete level. See illustration below.



Required Actions: 30 day inspections (continued)

3.1.3 Visual inspection: Each tower tube or other hollow structure with a sealed base must be checked for signs of fatigue or deformation caused by ice. Any suspected indication noted visually must be confirmed by magnetic particle examination. The presence of any confirmed indication must be reported to the nearest Doppelmayr representation office for review and recommended repair procedures. Any confirmed indication greater than 1 inch (25 mm) **shall be cause for immediate and continued closure of the lift to public transportation** until repairs are authorized by Doppelmayr and implemented.

3.2 Required Actions: Annual Inspections

Routine annual maintenance must include a close visual inspection of all tower components including the tower bases and splice connection plates. Signs of fatigue due to freeze / thaw cycles of cyclic loading may present themselves as indications (cracks) during the early stages, therefore, all welds, gussets and tower tubes should be subjected to close visual inspection annually. Any suspected indication noted visually must be confirmed by magnetic particle examination. The presence of any confirmed indication must be reported to the nearest Doppelmayr representation office for review and recommended repair procedures.

A small hole 3/8" - 1/2" (10 - 12 mm) must be drilled near the tower base at the downhill side of each tower along the centerline of the lift 2" to 4" (50 – 100 mm) from the tower base to provide a pathway for water to escape. This hole must be inspected annually and kept clear of debris. Where there are upper tower sections that are not open to the base section, a hole must also be drilled along the centerline of the lift 2" to 4" (50 – 100 mm) above the tower section base plate. This hole may be drilled on the ladder side of the tower.

4. Detail of issue

Text, drawings, schematics

Tower with 2 x 6T/2FR assemblies; 16,7m tall; 9,7m of 30" tube spliced to 7m of 24" tube.

Lower tower section filled approx. 5m with concrete, the remainder with ice.

Temperature approx. -12°C/10°F.

Bottom tower section top flange plate was pushed off the shaft by ice and caused top tower section to separate and fall.

The comm. line and the haul ropes supported the tower head so the upper section came to rest in a more or less vertical position on the ground.

Doppelmayr CTEC inc

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TO:		
	Crystal Mountain, WA	Scott Bowen
	Durango Mountain, CO	Dickie Jones
	Kirkwood, CA	Jeff Walters
	Mammoth, CA	Heimo Ladinig
	Sun Valley, ID	Robb Thomas
	Telluride, CO	Kenny King
	Terry Peak, SD	Mike McGuckin
	Timberline, OR	Bill Brett
	Whiteface, NY	Jay Rand
	Yellowstone, MT	Keil Thompson

DATE: 13-MAY-2003

SUBJECT: Bulletin No. SB-03-006

Enclosed please find Bulletin No. SB-03-006 regarding peeling problems on some chair number plates during production (years 2000, 2001 and 2002). We are pleased to offer you a retrofit program free of charge based on the following conditions:

- Complete the attached application form
- Send photos or samples of defective chair number plates
- Return the application form before June 30, 2003

Should you have any questions, please contact me.

Best regards,

DOPPELMAYR CTEC, INC.

Mark Emery
Field Service Representative

ME:iam

Attachment: 2 pages

Golden Office • 14452 W. 44th Avenue • Golden, CO 80403 • Ph: 303-277-9476 • Fx: 303-277-9759

Doppelmayr CTEC ltée / ltd, 800 St-Nicolas, St-Jérôme, Québec, Canada J7Y 4C8. Tel. 450-432-1128 Fax. 450-432-6043

Doppelmayr CTEC	Auteur / *Author*: SAC	Date émission *Release date* 05-05-2003	No. de doc. / *Doc. no.*: **SB-03-006**

BULLETIN DE SERVICE / *SERVICE BULLETIN*

Fabriquant / *Lift manufacturer*: Doppelmayr Type de remontée / *Lift type : Production 2000,2001,2002*	Groupe de fabrication / *fab. Group :220* Code bulletin / *code* ☐ OS ☒ O ☐ IS ☐ I

CHAIR NUMBER PLATES

Since the year 2000, peeling problems have occurred on some chair number plate production.

The technical investigation conclusions combined with new product research has resulted in a new generation of stainless steel chair number plates with a laminated Doppelmayr CTEC logo and replaceable chair numbers (3M stickers).

Therefore, if you have peeling problems with some chair number plates, we are pleased to offer you a retrofit program free of charge[1] based on the following conditions:

- Complete the attached application form
- Send photos or samples of defective chair number plates
- Return the application form before June 30th 2003[2]

Note: If you have already sent us an official Warranty Request Form, please contact us and confirm the quantity of replacement number plates required. This retrofit program will apply to your warranty request.

Important

Only those completed application forms returned before June 30th 2003 will be considered and processed according to the free of charge retrofit program.[3]

For any additional information on this Bulletin, please do not hesitate to contact the Doppelmayr CTEC Customer Service Department.

Doppelmayr CTEC Ltd

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[1] Defective steel number plates from production year 2000, 2001 and 2002.

[2] Attn : Doppelmayr CTEC Ltd, Customer Service Dept.
800 St-Nicolas
St-Jerome, QC
Canada
J7Y 4C8

[3] Late applications or warranty requests sent after the June 30 th 2003 retrofit program expiration date will be accepted at 50% discount of the regular spare parts price without conditions.

Doppelmayr CTEC ltée / ltd, 800 St-Nicolas, St-Jérôme, Québec, Canada J7Y 4C8. Tel. 450-432-1128 Fax. 450-432-6043

Doppelmayr CTEC	Auteur / *Author* : SAC	Date émission *Release date* 05-05-2003	No. de doc. / *Doc. no.* : **SB-03-006**

BULLETIN DE SERVICE / *SERVICE BULLETIN*

Fabriquant / *Lift manufacturer* : Doppelmayr Type de remontée / *Lift type : Production 2000,2001,2002*	Groupe de fabrication / *fab. Group :220* Code bulletin / *code* ☐ OS ☒ O ☐ IS ☐ I

CHAIR NUMBER PLATES RETROFIT PROGRAM APPLICATION FORM

(Please complete one form per lift)

Please specify front of chair: "-F", back of chair: "-B" or pair: "-P" (Ex: #2-F, #19-B, #177-P)

Ski Area: _____

Address: _____

_____

_____

_____

Lift name and contract number: _____

Year of installation: _____

Hours on Meter: _____

Total chairs on lift: _____

Total quantity of stickers required: _____

Sequential numbers: from # **to #** _____

Or specific numbers: _____

_____

_____

_____

_____

Form completed by: _____

_____

Date: _____

Phone: ( ) _____

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		RCH/KW/dk	2002-10-01	KD02011	1/1

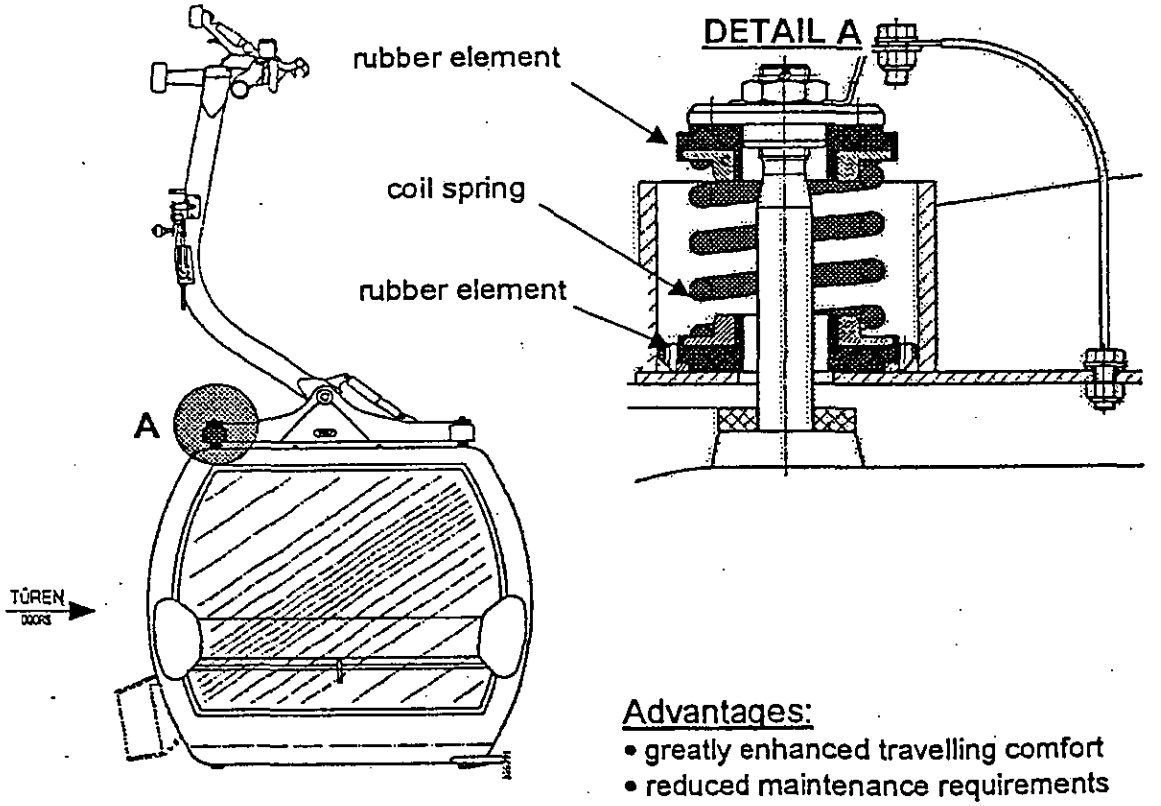
Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
–	–	MGD	Cabins

Abgeleitet von / Based on: Techn. Info #Do-306 ☐ OS ☒ O ☐ IS ☐ I

Comfort Suspension for Cabins

Since 2001, the cabin hangers feature comfort suspension (coil spring and rubber elements).

Design:



Advantages:

- greatly enhanced travelling comfort
- reduced maintenance requirements
- long service life

Upgrading of older designs:

Most hangers of an older design (dampening by means of hollow rubber spring or sylomer elements) are suitable for upgrading with the new type of damping. Each request for upgrading must be reviewed individually by the technical department.

→ **Send requests to DOPPELMAYR After Sales Service – Peter Thurner.**

Doppelmayr CTEC ltée / ltd

Doppelmayr CTEC	Auteur / *Author* : QA	Date / *Date* : 2002-10-15	No. de doc. / *Doc. no.* : **SB-02-008**
BULLETIN	☒ OS ☐ O ☐ IS ☐ I		

Remplace / *Supersedes* : N/A	Remplacé par / *Replaced by* :	Type / *Type* : CLF/CLD	Groupe d'assemblage / *Assembly group* : 220 - Carriers

Corrosion in Doppelmayr chair bails made of square tubing

(see also the reminder for other models and lift components concerned)

1. Generalities:

Recently, a case of severe corrosion has been found in a few chair bails of a triple chairlift in service since 1980. The corrosion went trough the bottom wall of the square tube of the chair bail at the lowest point of the chair (when installed on the cable). The corrosion appeared to the inspector as a small rust point and have been confirmed with a hammer (went trough).

We have observed that those chairs didn't have draining holes at the bottom of the chair bail, and that there was a lack of inside galvanized coating.

2. Action to be taken

- Ensure that all carriers have the appropriate draining holes allowing water to drain out and that those holes are free from any accumulation of dirt or any other material preventing the water to drain out.
- Ensure that there is no evidence of corrosion at the bottom of the chair bail or in any other location of the carrier (visual examination and thickness measurement in case of doubt).
- Ensure that, during storage of the chairs on the ground, water can't penetrate into the tubes and that draining holes or openings are still efficient in the storage position.
- If the presence of water is known or detected into a carrier structure, allow the water to drain by swinging or flipping the carrier. Proceed to the next step or contact your Doppelmayr CTEC representative if other actions are necessary.

3. Corrections

If you find a lack of draining holes, or blocked holes, at the bottom of a carrier with square tubes, please proceed to the next steps;

- **Drill a 8 mm diameter draining hole at each side of the bottom of the chair bail as per figure beside.**

- **Once the hole is done, or unblocked, check the thickness of the remaining material, which should not reach the minimum value stated in table 1.**

Thickness can be measured with a caliper or a depth gage trough the hole. In case of doubt, accurate thickness measurement is also possible by mean of an ultrasonic thickness gage.

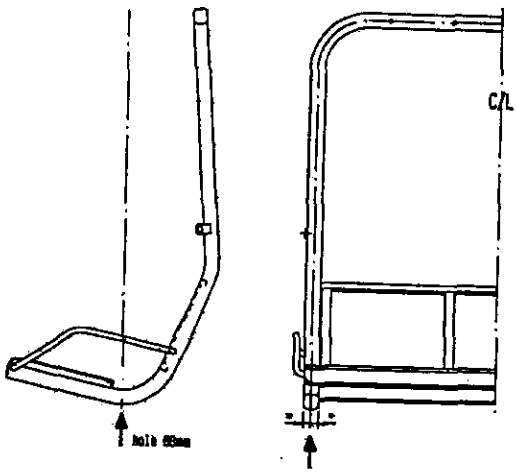


Table 1

Chair model	Chair bail square tube dimension	Tube nominal thickness	Minimum material thickness allowed*
2er	1½" X 1½" (38 mm X 38 mm)	0.188" (4.8 mm)	0.152" (3.9 mm)
	*40 mm X 40 mm	*4 mm	*3.2 mm
3er	1½" X 1½" (38 mm X 38 mm)	0.188" (4.8 mm)	0.152" (3.9 mm)
	2" X 2" (51 mm X 51 mm)	0.188" (4.8 mm)	0.152" (3.9 mm)
	*50 mm X 50 mm	*4 mm	*3.2 mm
4er	2" X 2" (51 mm X 51 mm)	0.188" (4.8 mm)	0.152" (3.9 mm)
	*50 mm X 50 mm	*4 mm	*3.2 mm

The minimum thickness is the minimum material fabrication tolerance reduced by 10 %.
Metric material for chairs manufactured in Austria

Chair frames with a material thickness below the minimum allowed, shall be removed from service. Contact your Doppelmayr representative for further treatment.

4. Reminder

Even if this bulletin focuses mainly on chair frames made with square tubing (manufactured prior to 1989), draining and corrosion problems may occur on all kind of carriers and lift components.

We ask you to pay a particular attention about draining and corrosion problems during your periodic visual inspections and non destructive examination, especially on critical components.

Avoiding water to go into steel structures and assuring their proper venting and draining is a general good practice for all kind of components of a ski lift, whether they are brand new or 20 years old. Presence of water may lead to corrosion and cracking due to expansion when freezing.

Contact your Doppelmayr CTEC representative if you face a draining and/or internal corrosion problem.

Components showing evidence of severe corrosion shall be removed from service until a thorough evaluation has been conducted.

See also the bulletin SB.97-003 issued in 1997 "Damage by water leak" concerning all structural components.

Should you have any question, please, don't hesitate to contact your Doppelmayr CTEC local representative.

Doppelmayr CTEC ltée / ltd

Doppelmayr CTEC	Auteur / *Author* : QA	Date / *Date* : 2002-10-16	No. de doc. / *Doc. no.* : **SB-02-009**
BULLETIN	☒ OS ☐ O ☐ IS ☐ I		

Remplace / *Supersedes* : N/A	Remplacé par / *Replaced by* :	Type / *Type* : ALL	Groupe d'assemblage / *Assembly group* : 25 - Tower equipment

Doppelmayr towers and cross arms inspection

1. General Information:

Recently, cracking was observed in the cross arm of a negatively loaded tower. The crack started at the end of the angle gusset welded on the attachment plate and progressed into the cross arm tubing. It was also observed that the lift in question was (or had been) equipped with **urethane after-market sheave liners**.

Towers and cross arms are considered critical components and periodic visual inspections are required as per Doppelmayr maintenance manuals and applicable local regulations.

Negative or combination loaded towers and adjacent towers are more susceptible to fatigue cracking due to unavoidable vibration and shock loading induced by grips passing under sheaves. Doppelmayr original equipment sheave liners are the product of many years of research and development, taking into account vibration damping, long life, electrical conductivity and other factors. **After-market sheave liners may not include these important features. DOPPELMAYR CTEC DOES NOT CONDONE THE USE OF AFTER-MARKET COMPONENTS, AND ACCEPTS NO RESPONSIBILITY FOR NEGATIVE CONSEQUENCES ARISING FROM THE USE OF SUCH PRODUCTS.**

2. Action to be taken

- Ensure that periodic inspections by qualified personnel have been properly conducted as per Doppelmayr CTEC manuals and applicable local regulations.
- Ensure that inspections included the critical areas mentioned in this bulletin (see Figure 1). If not, perform a thorough visual inspection of all towers and cross arms and pay special attention to the critical areas shown in Figure 1.
- In case of doubt during visual inspection, perform a magnetic particle inspection of the suspect areas.
- Replace any **urethane or similar after-market liners installed on your line.**

3. Correction

- If you detect a crack during your inspection, contact your Doppelmayr CTEC representative for repair procedure or replacement. **Do not operate a lift with defective components.**

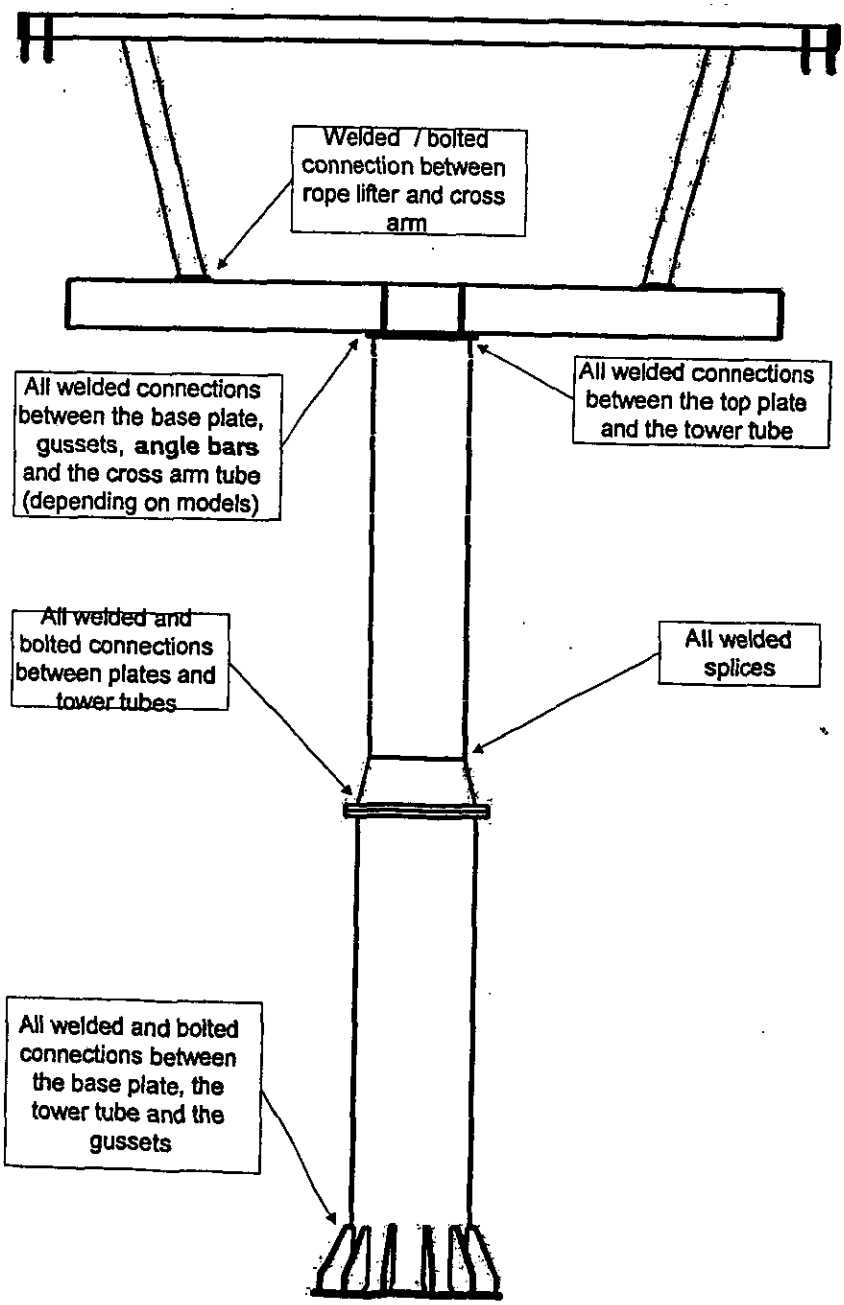


Fig. 1 Critical areas of towers and cross arms

Doppelmayr CTEC ltée / ltd

Doppelmayr CTEC	Auteur / *Author* : QA	Date / *Date* : 2002-10-21	No. de doc. / *Doc. no.* : **SB-02-007**
BULLETIN	☒ OS ☐ O ☐ IS ☐ I		

Remplace / *Supersedes* : N/A	Remplacé par / *Replaced by* : N/A	Type / *Type* : CLF / CLD	Groupe d'assemblage / *Assembly group* : 220 - Carriers

Longitudinal cracks in Doppelmayr chair bails made with square tubing

1. General Information:

In the past years, some cases of longitudinal cracking have been found in fixed and detachable chair bails made of square tubing.

Those defects originate mainly from three causes, which may be combined;

- Build up of water in the tube and expansion when freezing
- Propagating cracks originating from the short inner radii inside the tubing
- Propagating cracks originating from the tube weld seam

Until now, repair of those defects according to the repair procedure **IN-05-093** was permissible under certain conditions.

Experience has shown us that the repair by welding may not be 100 % effective, allowing the crack to grow internally and appear again.

Poor quality repairs could also initiate transverse cracks, which could lead to the failure of the chair bail.

2. New instructions effective immediately

Doppelmayr CTEC **no longer permits welding repair of longitudinal cracks** in Doppelmayr chair bail tubing.

Any other repair involving the chair frame or any other critical component of the chair shall be specifically approved by a Doppelmayr CTEC representative and shall be performed according to an approved welding repair procedure.

3. Action to be taken for previously repaired chair frames

Any in service chair bail which has previously been repaired by welding for longitudinal cracks shall be 100 % examined by the wet magnetic particle method against the following acceptance criteria **prior to opening to the public.**

- No cracks or *transverse linear indication is allowed.
- No linear *longitudinal indication greater than 1/8" or 3.2 mm is allowed.

**Transverse indication : Indication perpendicular to the length or main axis of the tubing*
**Longitudinal indication : Indication parallel to the length or main axis of the tubing*

This examination shall be repeated **every year or every 1200 hours of operation, whichever comes first.**

If a defect is found, repair is not permitted.

4. Additional Inspection

- We would like to remind you that, in addition to the specific examination required in this bulletin, nondestructive testing and visual examination of carriers shall be performed as per the applicable Doppelmayr procedures (listed below) and locally applicable regulations (whichever governs).
-

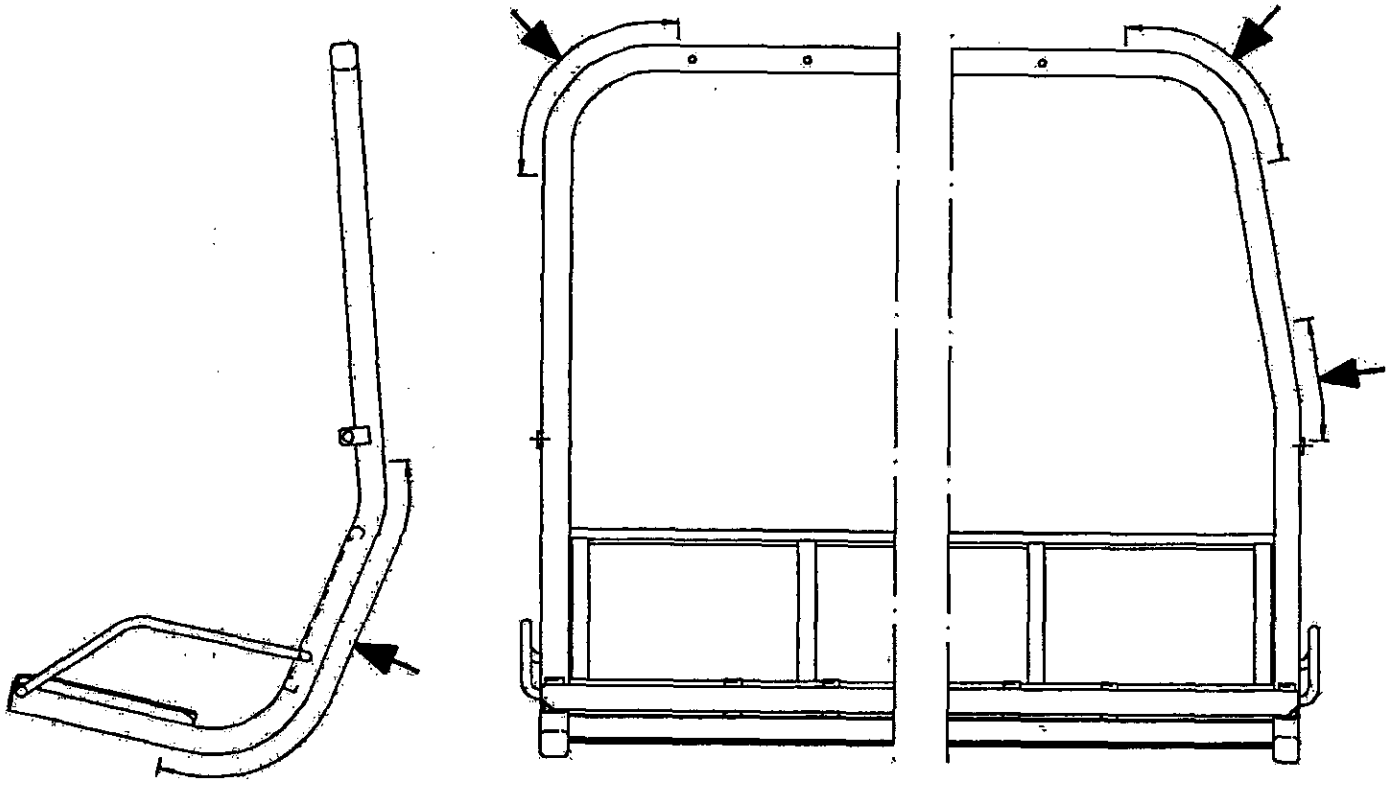
Document REF.	Titre / Title	Révision Issue	Date d'émission Issue date	Remplace replaces
N/A	Test Procedure for NDT of Fixed Grip Carriers	4	27-05-99	#3 / 95-10-18
N/A	Test Procedure for NDT of Detachable Carriers with DS Series Grips	9	20-05-99	#8/23-10-95
N/A	Test Procedure for NDT of Detachable Carriers with DSA / TCA series Grips	2	26-05-99	N/A

- Build up of water in the tube and freezing expansion shall be prevented by storing chairs in the proper position and by keeping the drain holes open.

Doppelmayr CTEC	Auteur / *Author* : QA	Date / *Date* : 2002-10-21	No. de doc. / *Doc. no.* : **SB-02-007**
BULLETIN	☒ OS ☐ O ☐ IS ☐ I		

Remplace / *Supersedes* : N/A	Remplacé par / *Replaced by* : N/A	Type / *Type* : CLF / CLD	Groupe d'assemblage / *Assembly group* : 220 - Carriers

- Longitudinal cracks appear mainly in the bent area of the chair bail (see sketch below) Pay particular attention to those areas when performing your periodic examinations.



Should you have any question, please don't hesitate to contact your local Doppelmayr CTEC representative.

Doppelmayr CTEC ltée / ltd, 800 Saint-Nicolas, Saint-Jérôme (Québec), Canada J7Y 4C8. Tél.: (450) 432-1128 télécopieur: (450)-432-6043

Doppelmayr CTEC	Auteur / *Author*	Date émission / *Release*	No. de doc. / *Doc. no.*
	Saint-Jérôme / Q.A.	2003-01-13	**SB-03-001**

SAFETY ALERT BULLETIN

Fabriquant / *manufacturer*: **Doppelmayr (STJ)**	Groupe de fab. / *fab. Group*: **35, Balanciers / Sheave assemblies**
Type de remontée / *Lift type*: **CLF / CLD / MGF / MGD**	Môts clés / *key words*: **Poulies, roulements / Sheaves, bearings**
Remplace / *Supersedes*: **N/A**	Date d'effet / *Effective date*: **2003-01-20**

Title : Ball Bearings and Steel Housings of Line Sheaves

1. Generalities

1.1 Summary

We have been informed of an incident on a **1989** 4 passenger detachable chairlift involving a 400 mm aluminium sheave. The steel bearing housing had worked out of the aluminium hub of a sheave. The sheave stopped turning and was partially sawn through by the haul rope. The lift was stopped by a mechanic. The primary cause of the incident could be a bearing failure and/or a gradual movement of the steel bearing housing in the aluminium hub due to a lack of adherence.

After 1989, the design of the steel housing was modified such that it is no longer possible for the housing to move out of the aluminum hub casting.

1.2 Reason for release

A blocked sheave will be damaged by the haul rope. The resulting abnormal position of the haul rope in the sheave could interfere with a grip passing and/or cause a deropement.

2. Scope

2.1 General

Prevent the occurrence of such a problem by performing preventive inspections and maintenance.

2.2 Affected model, type, parts

For bearing failure: All line sheaves.
For steel housing failure: 400 aluminium sheaves with a steel bearing housing with a thickness of 4-5 mm instead of 8-9 mm for the newer design (see figure page 4).

2.3 Affected Production dates

For bearing failure: All production years.
For steel housing failure: Year **1989 and before.**

Doppelmayr CTEC ltée / ltd, 800 Saint-Nicolas, Saint-Jérôme (Québec), Canada J7Y 4C8. Tél.: (450) 432-1128 télécopieur: (450)-432-6043

Doppelmayr CTEC	Auteur / *Author*	Date émission / *Release*	No. de doc. / *Doc. no.*
	Saint-Jérôme / Q.A.	2003-01-13	**SB-03-001**

SAFETY ALERT BULLETIN

Fabriquant / *manufacturer*: **Doppelmayr (STJ)**	Groupe de fab. / *fab. Group*: **35, Balanciers / Sheave assemblies**
Type de remontée / *Lift type*: **CLF / CLD / MGF / MGD**	Môts clés / *key words*: **Poulies, roulements / Sheaves, bearings**
Remplace / *Supersedes*: **N/A**	Date d'effet / *Effective date*: **2003-01-20**

3. Action to be taken and completion date

3.1 During inspection and maintenance, pay attention to the condition of line sheave ball bearings and to "old style" steel bearing housings.
Hubs showing a housing which has moved out shall be rejected.

3.2 In addition to the recommendations in your manuals, previous bulletins and applicable local regulations, perform the inspection and maintenance of line sheaves as per the followings:

- During the daily test run:	Check for unusual running properties (i.e. flat on the liner) and noises.
- Every month:	Check for sheaves position, haul rope position and passing of grips.
- Every 1000 hours: *(not to exceed 1 year)*	Grease ball bearings *(if you have half sealed bearings).*
- Every year *:	Check with the haul rope lifted off, the smooth running of bearings and the axial play and deflection of sheaves across the lift axis. Grease ball bearings *(if you have half sealed bearings).*
- Every 6 years: *(not to exceed 9000 hours)*	We recommend the replacement of sheave bearings at intervals not to exceed 9000 hours, or any time a sheave liner is replaced, or anytime there is an indication of abnormal bearing operation (noise, roughness in operation, heat, etc.). If premature bearing failure is observed on any sheave assembly because of lubrication problems, moisture, dirt, or other unknown causes, we recommend that other sheaves be examined immediately according to the monthly check procedure.

** Yearly inspection shall also be performed every time a sheave is removed from the lift for service*

Estimated life expectancy for line sheaves ball bearings is approximately 12 000 hours. It may vary depending on operating conditions, your maintenance schedule and the quality of bearings and grease used. Some bearings may fail at intervals of less than 12 000 hours and therefore we recommend replacement of bearings after 9000 hours of operation.

Maintenance log and history will help you to determine the useful life of bearings on your equipment. When determining bearing replacement, always keep in mind that the failure of sheave components may have important consequences for the safety of passengers and the operation of your lift.

3.3 For sheaves **with an "old style" steel bearings housing** *(thickness of the steel housing is 4 to 5 mm),* the next **time you service a line sheave, secure the steel housing according to the procedure described in section 4.**

Doppelmayr CTEC ltée / ltd, 800 Saint-Nicolas, Saint-Jérôme (Québec), Canada J7Y 4C8. Tél.: (450) 432-1128 télécopieur: (450)-432-6043

Doppelmayr CTEC	Auteur / *Author*	Date émission / *Release*	No. de doc. / *Doc. no.*
	Saint-Jérôme / Q.A.	2003-01-13	**SB-03-001**

SAFETY ALERT BULLETIN

Fabriquant / *manufacturer* : Doppelmayr (STJ)	Groupe de fab. / *fab. Group* : 35, Balanciers / Sheave assemblies
Type de remontée / *Lift type* : CLF / CLD / MGF / MGD	Môts clés / *key words* : Poulies, roulements / Sheaves, bearings
Remplace / *Supersedes* : N/A	Date d'effet / *Effective date* : 2003-01-20

Reject and replace any sheave aluminium hub showing a steel housing which has moved out and is no more flush with the aluminium hub.

IMPORTANT:
Any irregularities found during the inspection must be remedied before the installation is opened to the public.

4. Procedure to secure the steel housing *(for "old style" steel bearing housing until 1989)*

Procedure if sealed bearings are installed (sealed on both sides):
- Remove the snap rings, bearings and the spacer sleeve from the hub;
- Remove the grease nipple 1/8 NPT;
- Drill a 8.5 mm hole in the existing 5 mm hole through the steel bearing housing *;
- Tap M10 x 1.5 throughout the aluminium and the steel;
- Remove any burr with a file and a sand paper inside the steel housing;
- Clean the hole with a carburator cleaner or equivalent and allow to dry;
- Apply Loctite 242 in the hole and on the set screw;
- Screw the hexagon set screw M10 x 20 Din 916 (part number CCC40059) until the cup point of the set screw is flush with the inner surface of the steel housing;
- Install Doppelmayr sealed bearings Id. number 10420192 (special low temp grease and grease filling);
- Pay attention to the set screw the next time you will service the sheave and press out the bearings.

**If you don't want to use sealed bearings, you may drill a new hole 180° from the existing grease hole.*

Alternate Repair Procedure
- Remove the grease nipple 1/8 NPT;
- Enlarge the existing hole in the steel bearing housing wall to a max diameter of 6 mm*;
- Remove any burr with a file and a sand paper inside the steel housing;
- Clean the hole with a carburator cleaner or equivalent and allow to dry;
- Apply Loctite 242 in the hole and on the Spirol pin;
- Insert a 6 x 14 mm Spirol pin Din 7344 / ISO 8748 ID. number CCC40060 into the greasing hole until the end of the spring pin is flush with the inner surface of the steel housing;
- Re-install the grease nipple 1/8 NPT;
- Pay attention to the pin the next time you will service the sheave and press out the bearings.

* If the hole is bigger than 6 mm and the Spirol pin is loose, then you have to use the normal procedure.

See sketch with the information on page 4.

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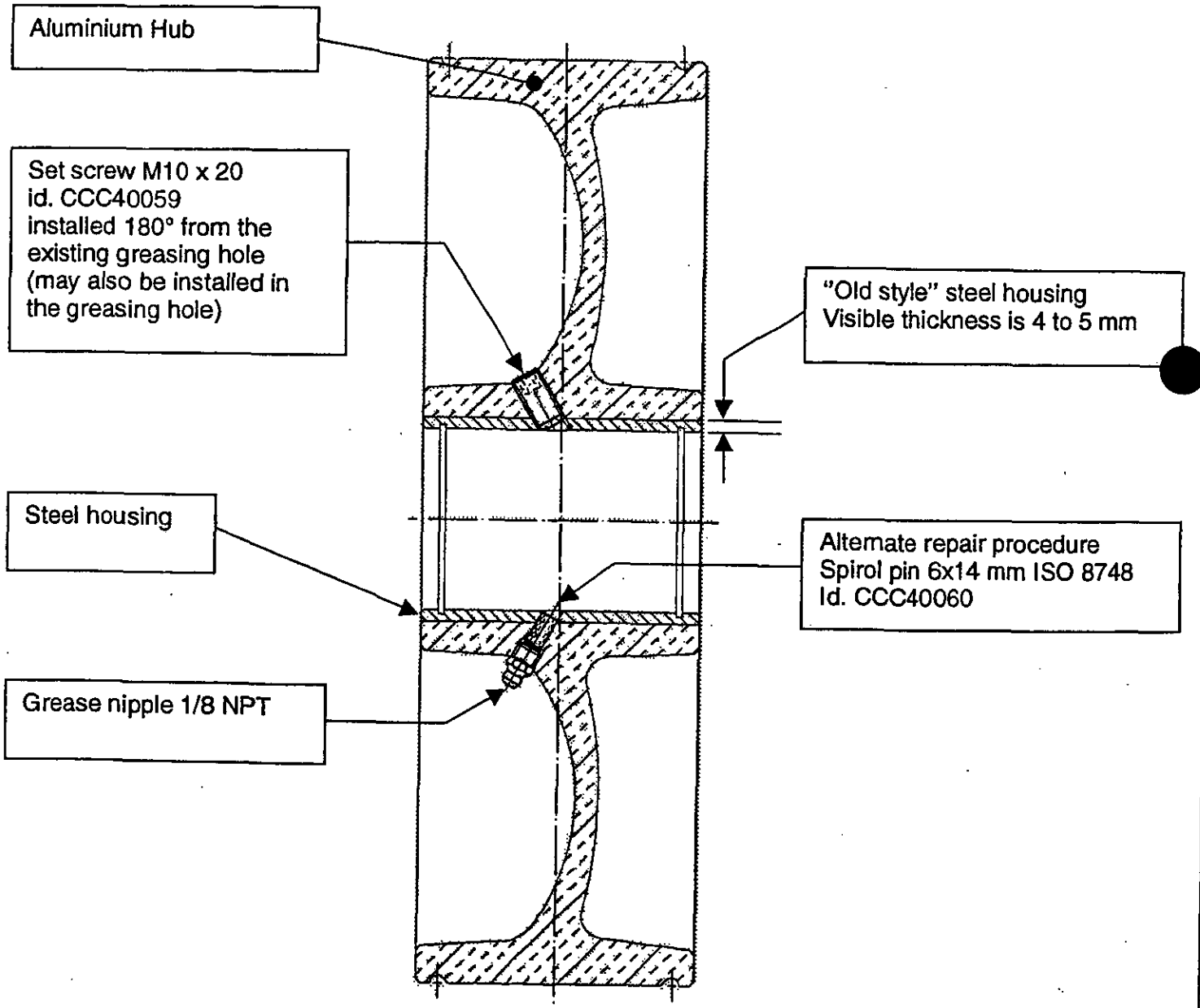
Doppelmayr CTEC	Auteur / *Author*	Date émission / *Release*	No. de doc. / *Doc. no.*
	Saint-Jérôme / Q.A.	2003-01-13	SB-03-001

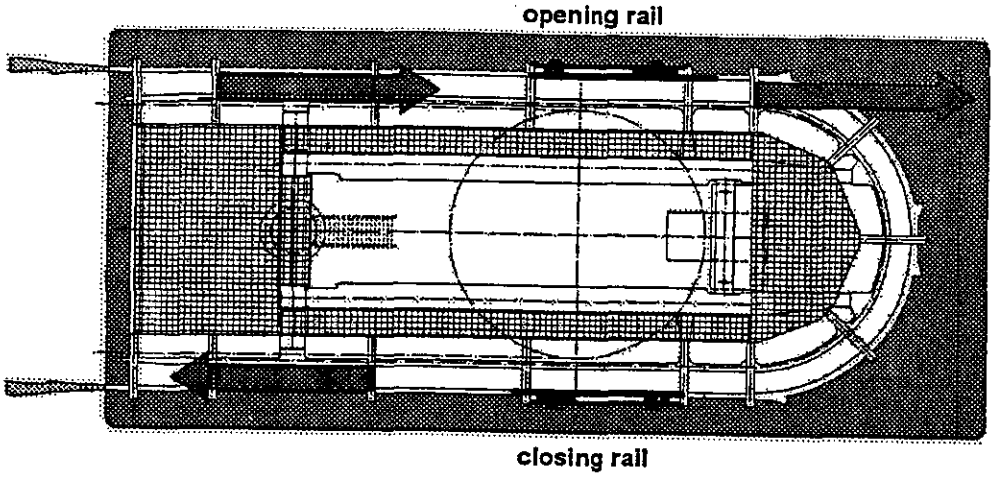
SAFETY ALERT BULLETIN

Fabriquant / *manufacturer* : Doppelmayr (STJ)	Groupe de fab. / *fab. Group* : 35, Balanciers / Sheave assemblies
Type de remontée / *Lift type* : CLF / CLD / MGF / MGD	Môts clés / *key words* : Poulies, roulements / Sheaves, bearings
Remplace / *Supersedes* : N/A	Date d'effet / *Effective date* : 2003-01-20

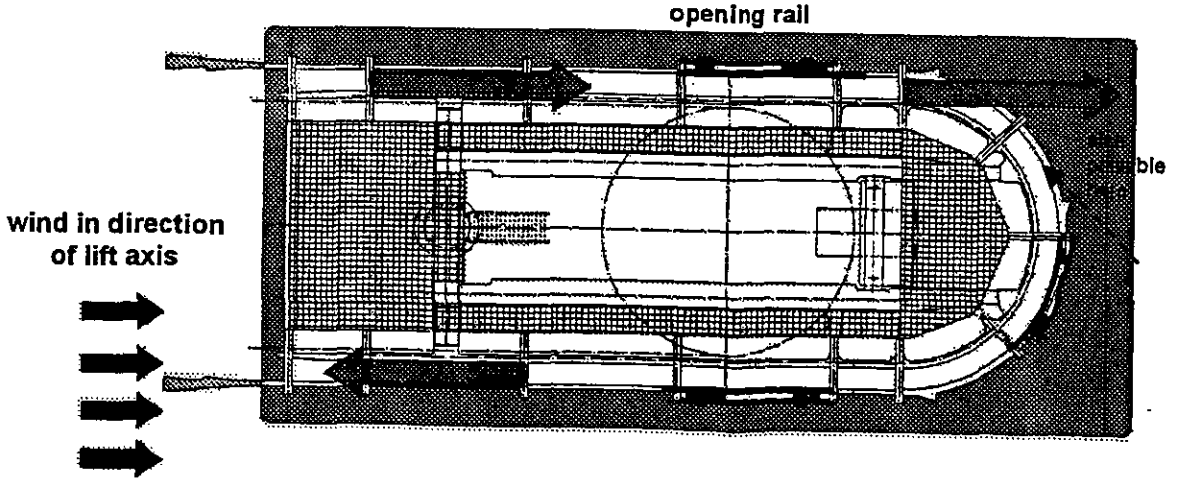


Measures for windy conditions

Standard opening / closing rails:



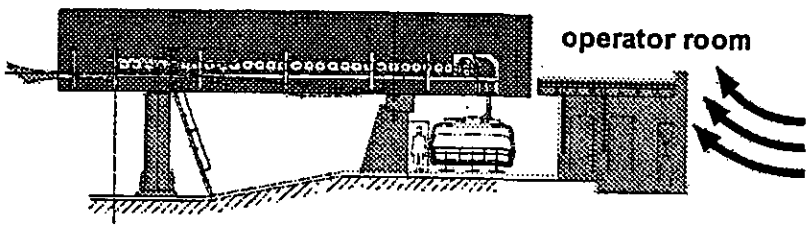
Measure 1– Additional closing rail in horse-shoe

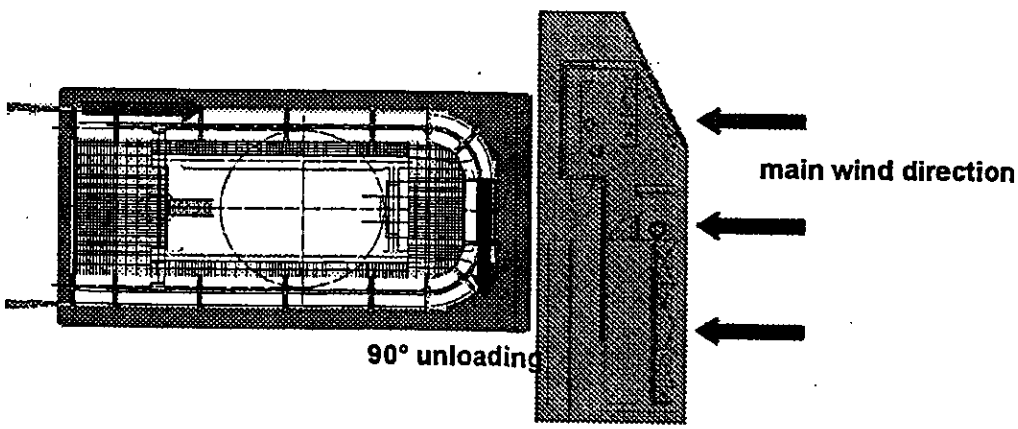


If the wind blows against the direction of travel, the bubble is closed in the horse-shoe (i.e. not against the wind). This measure greatly reduces the required closing force and retention forces when accelerating the chairs.

Measure 2 - Create wind shelter by positioning the operator room against the main wind direction:

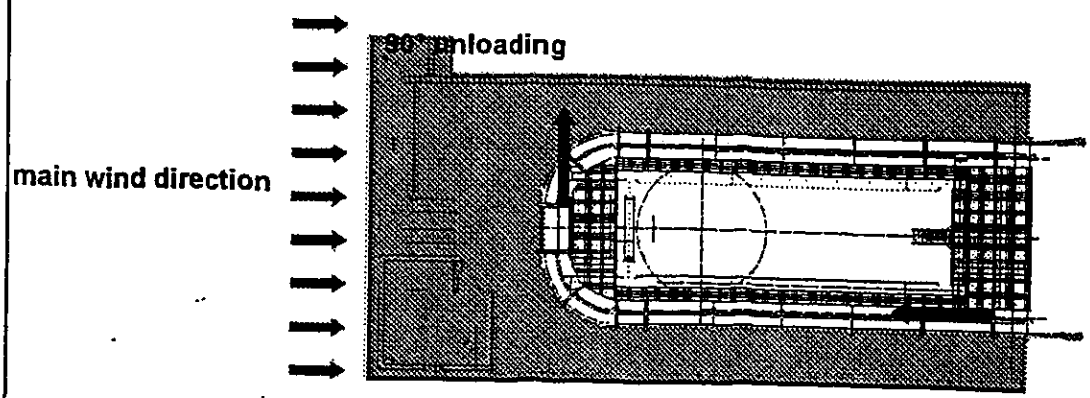
Examples: 6CLD Zeblasbahn, Ischgl; 6CLD Sonnenkar, Kaprun



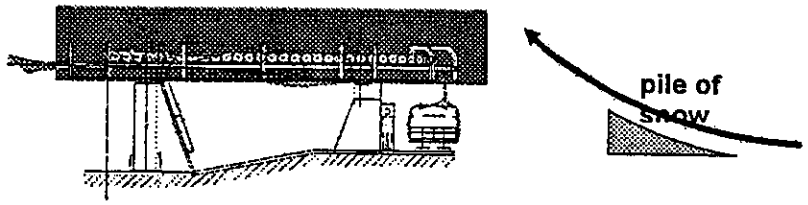


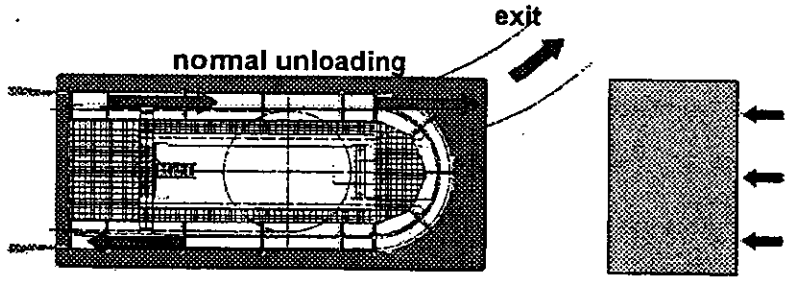
Measure 3 - Building provides wind shelter:

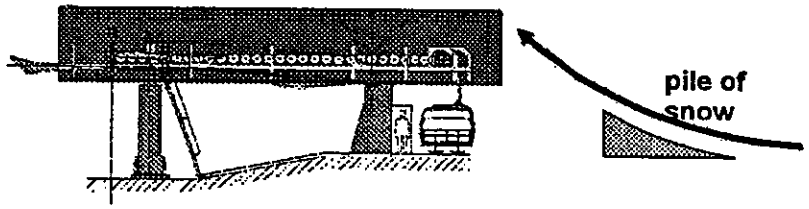
Examples: 6CLD Kriegerhorn, Lech; 6CLD Fernau, Stubai glacier

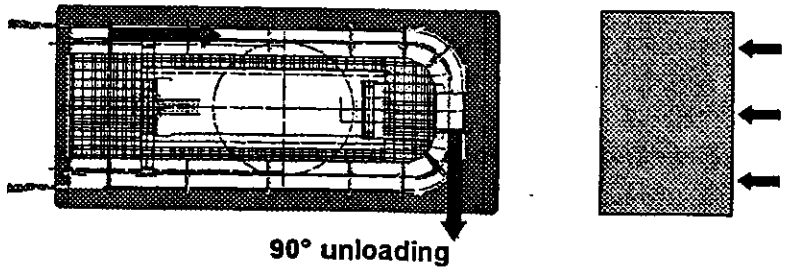


Measure 4 - Create wind shelter by piling up snow (on existing installations):



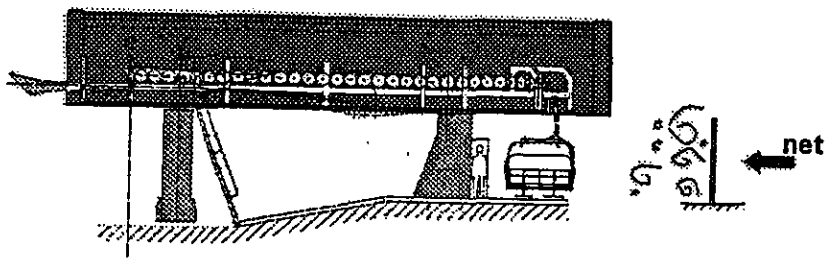


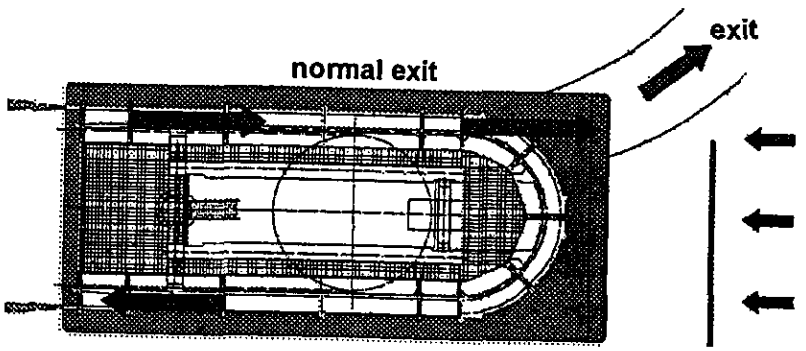




Measure 5 - Create wind shelter by putting up nets (on existing installations):

Examples: 6CLD Rätikonbahn, Golm





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Doppelmayr CTEC	Auteur / *Author* :	Date émission / *Release date* :	No. de doc. / *Doc. no.* :
	SAC	05-15-2003	**SB-03-004**

BULLETIN D'INFORMATION / *NOTIFICATION BULLETIN*

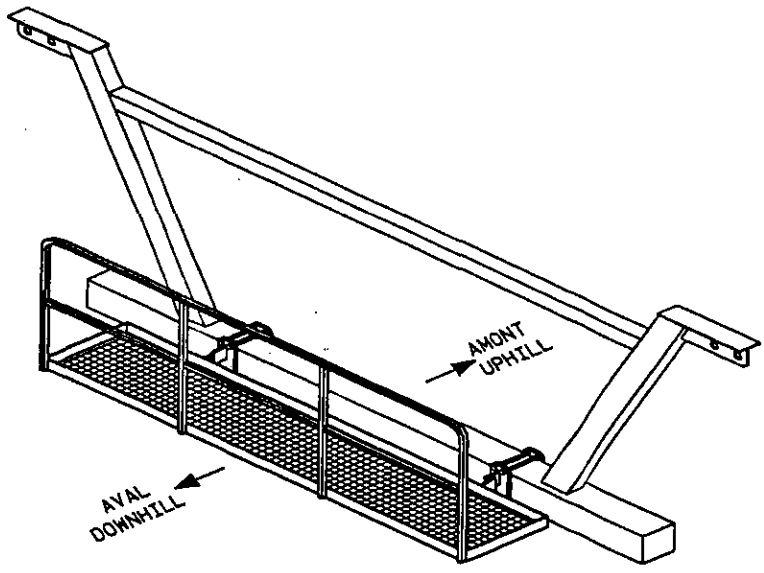
Fabriquant / *Lift manufacturer* : Doppelmayr	**Groupe de fabrication / *fab. Group* : 25**
Type de remontée / *Lift type* : Doppelmayr	**Code bulletin / *code* :** ☐ OS ☒ O ☐ IS ☐ I

CHAIRLIFT TOWER WALKWAYS

Following several requests from our customers, Doppelmayr has designed an adjustable walkway that can be installed on most Doppelmayr lift towers, or others[1]. This galvanised walkway is safe and easy to install. It is designed for towers with rope lifting beams on the cross arms.[2].

We can offer the best pricing on larger combined orders that can be incorporated into our production schedule; therefore, we request that you evaluate your tower walkway requirements and return the attached dimension sheet before July 15, 2003. Please consult the following sheet for pricing.

If you need further information, don't hesitate to contact your local Doppelmayr CTEC representative.



[1] For some lift towers, major modifications may be required to adapt this type of walkway in order to comply with actual code requirements.

[2] For towers without cross arm lifting beams, it is possible to install this walkway by adding a cross arm lifting beam (available at Doppelmayr CTEC), or by the addition of a hand-rail and secured anchor point for workers (special order only).

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Doppelmayr CTEC	Auteur / *Author* :	Date émission / *Release date* :	No. de doc. / *Doc. no.* :
	SAC	05-15-2003	SB-03-004

BULLETIN D'INFORMATION / *NOTIFICATION BULLETIN*

Fabriquant / *Lift manufacturer* : Doppelmayr **Type de remontée / *Lift type* : Doppelmayr**	**Groupe de fabrication / *fab. Group* : 25** **Code bulletin / *code* :** ☐ OS ☒ O ☐ IS ☐ I

PRICE LIST IN US DOLLARS

Less than 10 walkways:	**$ 975.00 each**
10 to 19 walkways:	**$ 795.00 each**
20 walkways and more:	**$ 715.00.00 each**

Note: Further discounts may be available on combined orders of 100 walkways and more.

Feasibility study / engineering: **$ 80.00 / hour**

Note: The estimated time for a feasibility study on a Doppelmayr chair lift is about 3 hours. Other manufacturers' models may require more time for research and study. Certain towers may require modification of the communication cable anchor point.

Walkway assembly includes:

- 1 full size galvanised walkway with handrail (according to lift)
- 2 fastening supports with hardware for 8 "x 8 " standard tower tubing.
- Communication cable anchor point (may not be suitable on certain installations)

Prices are F.O.B. Doppelmayr CTEC St. Jérôme, Quebec. Delivery, installation, taxes and any technical modifications required beyond standard walkway installation are excluded.

Please send your purchase order by fax to your local Doppelmayr CTEC Customer Service Department.

We remind you that we require all significant identification information about your chair lift along with the measurements requested on the following dimension sheet for each tower you wish to retrofit with walkways.

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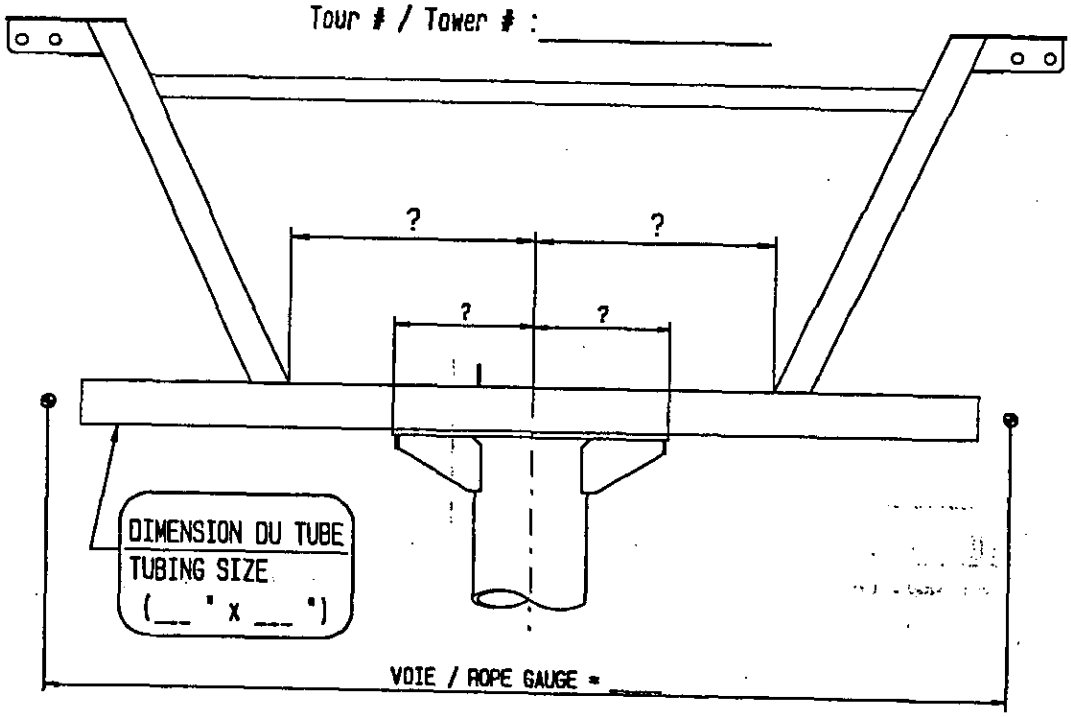
Doppelmayr CTEC	Auteur / *Author*:	Date émission / *Release date* :	No. de doc. / *Doc. no.* :
	SAC	05-15-2003	**SB-03-004**

BULLETIN D'INFORMATION / *NOTIFICATION BULLETIN*

Fabriquant / *Lift manufacturer* : Doppelmayr	**Groupe de fabrication / *fab. Group* : 25**
Type de remontée / *Lift type* : Doppelmayr	**Code bulletin / *code* :** ☐ OS ☒ O ☐ IS ☐ I

EXISTING TOWER DIMENSIONS
(please use one sheet per tower)



If you need information or assistance, please contact your local Doppelmayr CTEC office or the Doppelmayr CTEC Customer Service Department in Saint-Jérôme at (450) 432-1128.

Type: 2 CLF ☐ 3-CLF ☐ 4-CLF ☐ 4-CLD ☐

Ski Area: _____

Year of installation: _____

Lift Name and Contract number: _____

Measured by: _____

Doppelmayr CTEC ltée / ltd, 800 St-Nicolas, Saint-Jérôme, Québec, Canada J7Y 4C8 Tel. 450-432-1128 Fax. 450-432-6043

Doppelmayr CTEC	Auteur / *Author* : SAC	Date émission *Release date* : 2003-07-03	No. de doc. / *Doc. no.* : **SB-03-007**

BULLETIN DE SERVICE / *SERVICE BULLETIN*

Fabriquant / *Lift manufacturer* : Doppelmayr Type de remontée / *Lift type* : all	Groupe de fabrication / *fab. Group* : 25 Code bulletin / *code* ☐ OS ☒ O ☐ IS ☐ I

SUPPORTS ASSEMBLY FOR FALL ARREST SYSTEM ON TOWER LINES

Doppelmayr CTEC, as a partner of the industry, has designed an adjustable support that can be installed at the crosspiece of the rope lifters[1] in order to install a fall arrest system[2] on the line towers of your ski lifts.

On the following page, you will find the parts offered by Doppelmayr CTEC and suggested mounting diagram.

The support assembly for fall arrest system CCC41291 is available for $325.00 and includes:

- One main support to be installed on rope lifter's crosspiece. This support is adapted to receive a fall energy absorber[3] (see view A) or a cable with permanent loop[4] (see view B);
- One fastener to be installed on upright of ladder. This adjustable fastener allows you to install the fall arrest system on the side or in the middle of ladder (see detail C);
- One turnbuckle with fittings, wire-strainer type (see detail C);
- All fasteners to install the supports.

Please contact a safety equipment supplier to complete your fall arrest system.

For any additional information don't hesitate to contact our DoppelmayrCTEC Customer Service.

Doppelmayr CTEC ltd
Customer service

[1] Modification/adaptation can be made upon request at our regular fees.
[2] Fall arrest system not available at Doppelmayr CTEC. Please consult specialised vendors.
[3] Our basic support assembly is suitable to use with a fall energy absorber DBI SALA model 6116261.
[4] Please consult your local authorities to validate if some restrictions or requirements apply.

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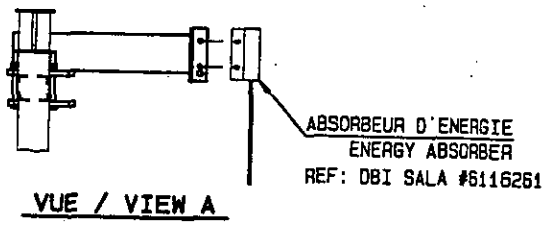
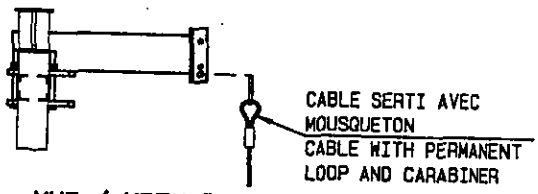
Doppelmayr CTEC	Auteur / *Author* : SAC	Date émission *Release date* : 2003-07-03	No. de doc. / *Doc. no.* : **SB-03-007**

BULLETIN DE SERVICE / *SERVICE BULLETIN*

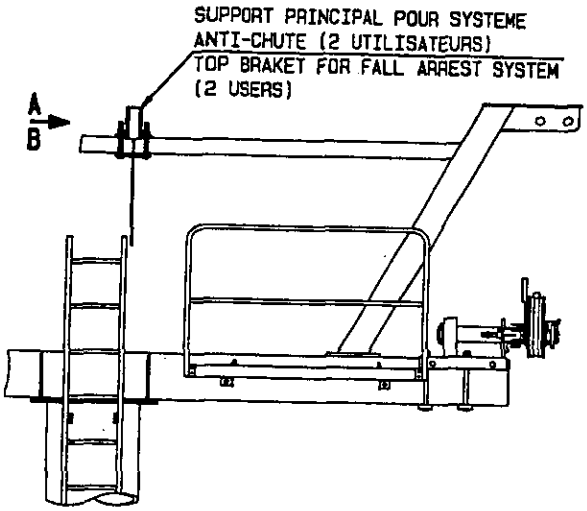
Fabriquant / *Lift manufacturer* : Doppelmayr	**Groupe de fabrication / *fab. Group* : 25**
Type de remontée / *Lift type* : all	**Code bulletin / *code*** ☐ OS ☒ O ☐ IS ☐ I

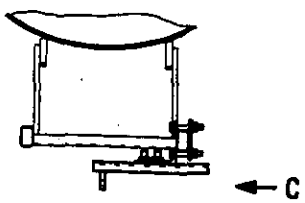


VUE / VIEW A

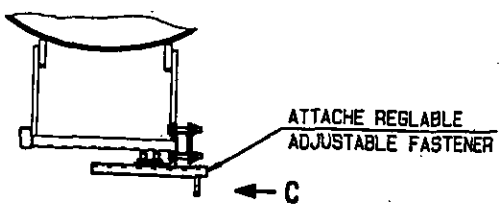


VUE / VIEW B

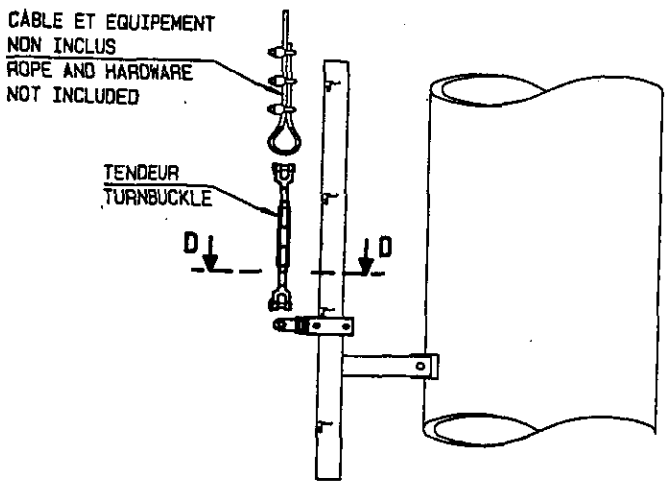




SECTION D-D
CENTRE/CENTRAL



SECTION D-D
LATERALE/LATERAL



VUE / VIEW C

The installation on the lateral part of the ladder shall be done on the downhill side of the lift.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/CAA	**16-01-2006**	**NB-06-001**	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	**Doppelmayr CTEC**	**Fab. Group / *Groupe de fabrication :***	**105 - Electric controls & wiring**
Lift type / *Type de remontée :*	**Uni-GS & fixed grip PLC control systems**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**January 16, 2006**

Title / *Titre :* **Factory recall of *Allen-Bradley Series "A" Panelview Plus Controlnet Module***
Modèle pour les bulletins d'information en Amérique du Nord 2005

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
Allen Bradley has identified a potential failure mode of the Series "A" Panelview Plus Controlnet Module causing the Panelview to shutdown. The failure mode identified does not present an operational safety concern.

1.2 Reason for release (summary) / *But*
Control systems used on detachable Uni-GS and some fixed-grip installations (Genesis / FCS) utilize this Allen-Bradley Series "A" Panelview Plus Controlnet Module.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
The failure mode identified with the Allen-Bradley Series "A" Panelview Plus Controlnet Module does not present an operational safety concern. Series "B" modules are not affected by this recall.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
Both the Uni-GS return terminal Panelview (Versaview CE700) and fixed grip drive terminal (Versaview CE 700) may be affected.

2.3 Affected Production dates / *Dates de fabrication affectées*
Production year 2004 ~ present.

2.4 Affected Serial number / *Numéros de série affectées*
Allen-Bradley Series "A" Panelview Plus Controlnet Module, catalog number 2711P-RN15S, Series "A", Rev "A". (Series "B" modules are not affected by this recall.)

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/CAA	**16-01-2006**	**NB-06-001**	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	**Doppelmayr CTEC**	**Fab. Group / *Groupe de fabrication :***	**105 - Electric controls & wiring**
Lift type / *Type de remontée :*	**Uni-GS & fixed grip PLC control systems**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**January 16, 2006**

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

If you identify the presence of an Allen-Bradley Series "A" Panelview Plus Controlnet Module, please contact Doppelmayr CTEC Customer Service. A Return Materials Authorization from Customer Service is required to return the defective device. The new replacement unit will be provided free of charge - pending your return of the defective device prior to May 1, 2006.

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas

The back of the Allen-Bradley Series "A" Panelview Plus Controlnet Module displays the following nomenclature. Please note Series "A". (Series "B" modules are not affected by this recall.)

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**02-22-2006**	**SB-06-004**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Doppelmayr CTEC**	**Fab. Group / *Groupe de fabrication :***	**FAB GROUP 085**
Lift type / *Type de remontée :*	**3-CLF & 4-CLF Sprint Terminal**		
Supercedes / *Remplace :*	**NUMBER OF BULLETIN**	**Effective date / *Date en vigueur :***	**February 22, 2005**

Title / *Titre :* **Sprint II Terminal Potential Carriage Stop Interference**

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
The potential for interference exists between the forward carriage stops and the carriage mounted guide sheave beam on the Sprint II style drive / tension terminal.

1.2 Reason for release (summary) / *But*
As the drive / tension carriage moves backward due to normal stretch of the haul rope the carriage mounted guide sheave beam also moves backward. If care is not exercised to reposition the *forward* carriage stop relative to the carriage, the carriage mounted guide sheave beam could interfere with the side of the forward carriage stops.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
The potential for interference between the fixed forward carriage stop and the carriage mounted guide sheave beam is easily managed by properly maintaining the distance between the carriage and the carriage stops and the rear carriage travel trip point.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
2005 3-CLF & 4-CLF drive / tension Sprint II terminals. (3 installations)

2.3 Affected Production dates / *Dates de fabrication affectées*
Production year 2005 only.

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)
The position of the rear carriage travel trip point must be maintained to prevent the distance between the stop block on the front of the carriage and the front carriage stop from exceeding 33" (approximately 84cm) including allowance for daily carriage travel movement.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	02-22-2006	SB-06-004	

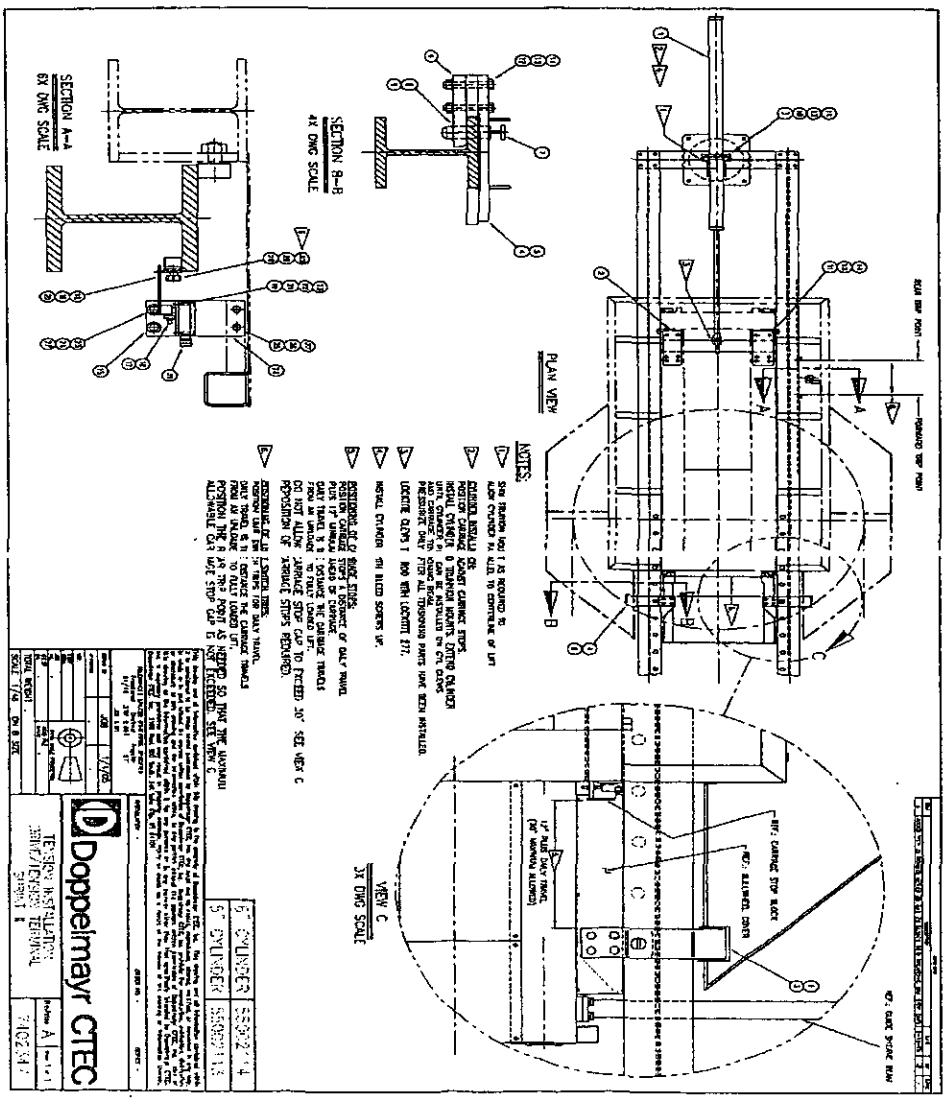
SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	Doppelmayr CTEC	Fab. Group / *Groupe de fabrication :*	FAB GROUP 085
Lift type / *Type de remontée :*	3-CLF & 4-CLF Sprint Terminal		
Supercedes / *Remplace :*	NUMBER OF BULLETIN	Effective date / *Date en vigueur :*	February 22, 2005

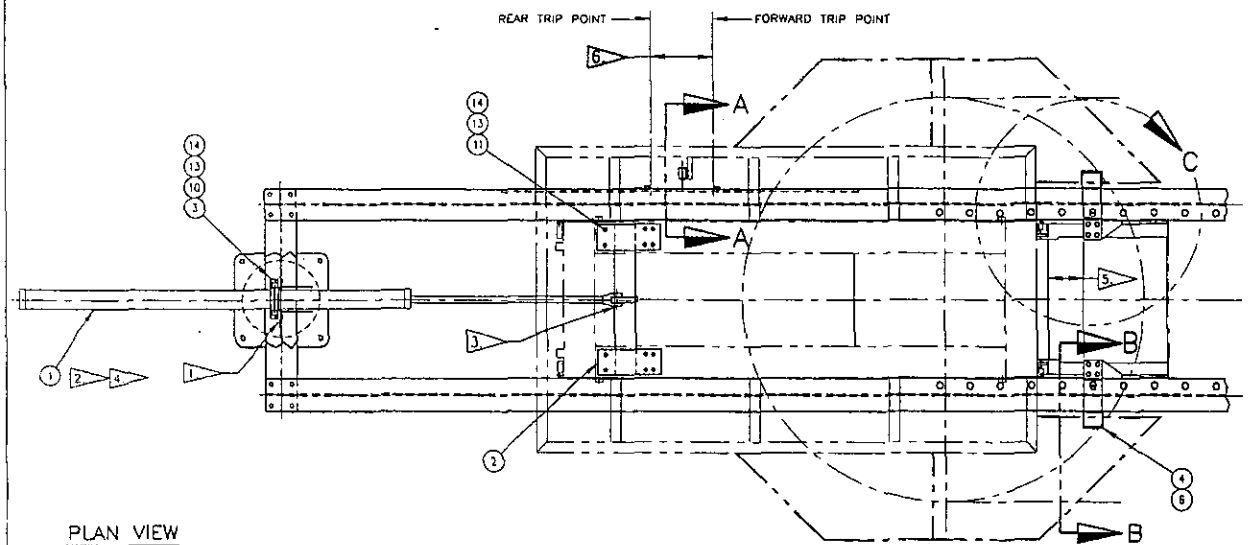
4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas

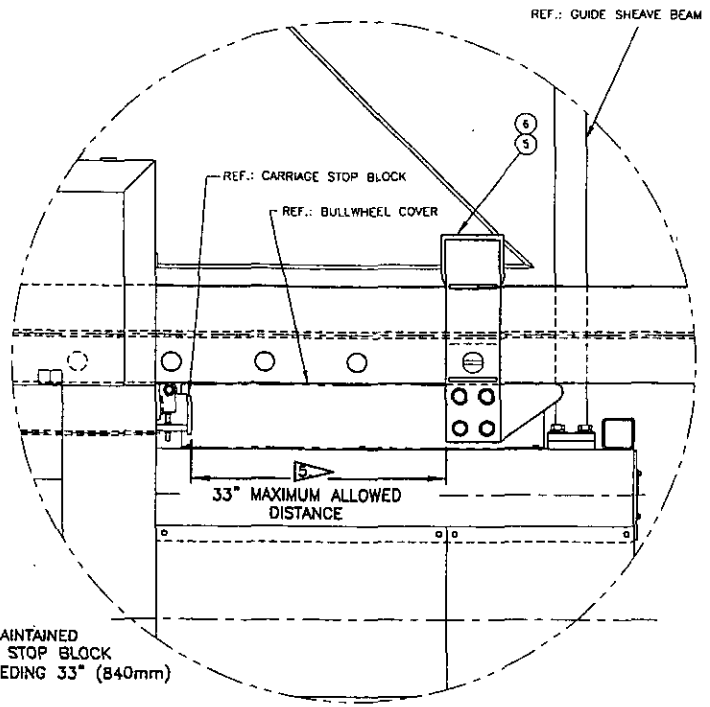
See enlarged detail View C and Notes #5 & #6 on drawing 7402347 Rev. A attached



REVISIONS				
REV	DESCRIPTION	DATE	BY	APPR.
A	ADDED VIEW C. REVISED NOTES 5 AND 6 (ADDED INFO REGARDING MAX STOP GAP).	2-15-06	JF	-



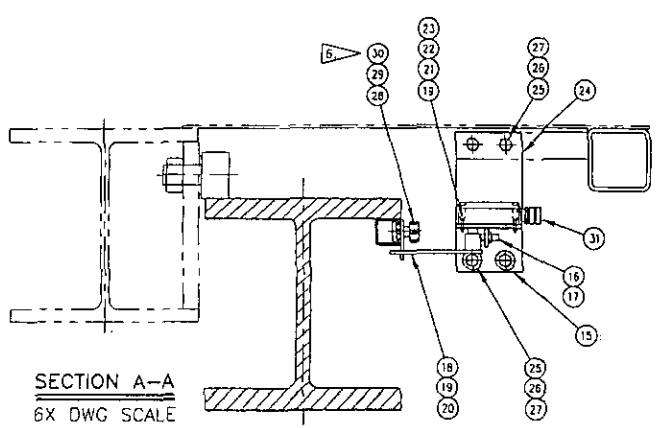
PLAN VIEW



VIEW C
3X DWG SCALE

NOTES:

1. SHIM TRUNION MOUNT AS REQUIRED TO ALIGN CYLINDER PARALLEL TO CENTERLINE OF LIFT.
2. CYLINDER INSTALLATION:
   POSITION CARRIAGE AGAINST CARRIAGE STOPS.
   INSTALL CYLINDER TO TRUNNION MOUNTS. EXTEND CYLINDER UNTIL CYLINDER PIN CAN BE INSTALLED ON CYL CLEVIS AND CARRIAGE TENSIONING BEAM.
   PRESSURIZE ONLY AFTER ALL TENSIONING PARTS HAVE BEEN INSTALLED.
3. LOCKTITE CLEVIS TO ROD WITH LOCKTITE 277.
4. INSTALL CYLINDER WITH BLEED SCREWS UP.
5. POSITIONING OF CARRIAGE STOPS:
   POSITION CARRIAGE STOPS A DISTANCE OF DAILY TRAVEL PLUS 12" MINIMUM AHEAD OF CARRIAGE.
   DAILY TRAVEL IS THE DISTANCE THE CARRIAGE TRAVELS FROM AN UNLOADED TO FULLY LOADED LIFT.
   THE POSITION OF THE CARRIAGE STOPS MUST BE MAINTAINED TO PREVENT THE DISTANCE BETWEEN THE CARRIAGE STOP BLOCK AND CARRIAGE STOP (TYP BOTH SIDES) FROM EXCEEDING 33" (840mm) SEE VIEW C
6. POSITIONING OF LIMIT SWITCH TRIPS:
   POSITION LIMIT SWITCH TRIPS FOR DAILY TRAVEL.
   DAILY TRAVEL IS THE DISTANCE THE CARRIAGE TRAVELS FROM AN UNLOADED TO FULLY LOADED LIFT.
   THE POSITION OF THE LIMIT SWITCH REAR TRIP POINT MUST BE MAINTAINED TO PREVENT THE DISTANCE BETWEEN THE CARRIAGE STOP BLOCK AND CARRIAGE STOP (TYP BOTH SIDES) FROM EXCEEDING 33" (840mm), INCLUDING ALLOWANCE FOR DAILY CARRIAGE TRAVEL.SEE VIEW C



SECTION A–A
6X DWG SCALE

TOLERANCES UNLESS OTHERWISE SPECIFIED
Fractional ±1/16 | Decimal .XXX ±.003, .XX ±.01 | Angular ±1°

DRAWN BY	JOB	1/4/05
APPROVED		
MFG.		
NEXT ASSY.		
JOB NO.		
GROUP NO.		

THIRD ANGLE PROJECTION
ACAD FILE NAME:

INSTALLATION -
ORDER NO. -
COPIES -

Doppelmayr CTEC

6" CYLINDER	55002114	TENSION INSTALLATION	Revision A	Sheet 1 of 1

Author	Release date	Doc. no.	Doppelmayr CTEC
SAC	03-13-2006	SA-06-005	

SAFETY ALERT BULLETIN / *BULLETIN DE SÉCURITÉ*

Lift manufacturer:	Doppelmayr CTEC	Fab. Group :	220
Lift type :	4CLF / 4CLD		
Supersedes:	N/A	Effective date :	03-13-2006

Title **QUAD CHAIRS MODEL "E" – CHAIR BAIL**

1. General

A transverse crack has been found in a chair bail tube on a 1998 Doppelmayr quad chair model E. This crack originated at the end of the weld of the reinforcement gusset at the top of the chair bail (see sketch next page).
This crack has been visually detected and the chair was put out of service without any further consequences.

2. Scope

All quad chairs, E model, may be affected (see sketch next page).

3. Action to be taken and completion date

In addition to routine periodic inspections, **all concerned chairs shall be visually inspected in the affected area within the next five days** (see sketch and reminder next page).

Criteria for rejection
Any transverse crack is unacceptable. No repair allowed. Smooth sanding to investigate an indication is permitted as long as the finish surface has no grinding marks.
In case of any doubt, a non-destructive test by magnetic particle method is mandatory.

Inform your Doppelmayr representative if you find any indications of cracks or if you need more information.

4. Inspection Procedure

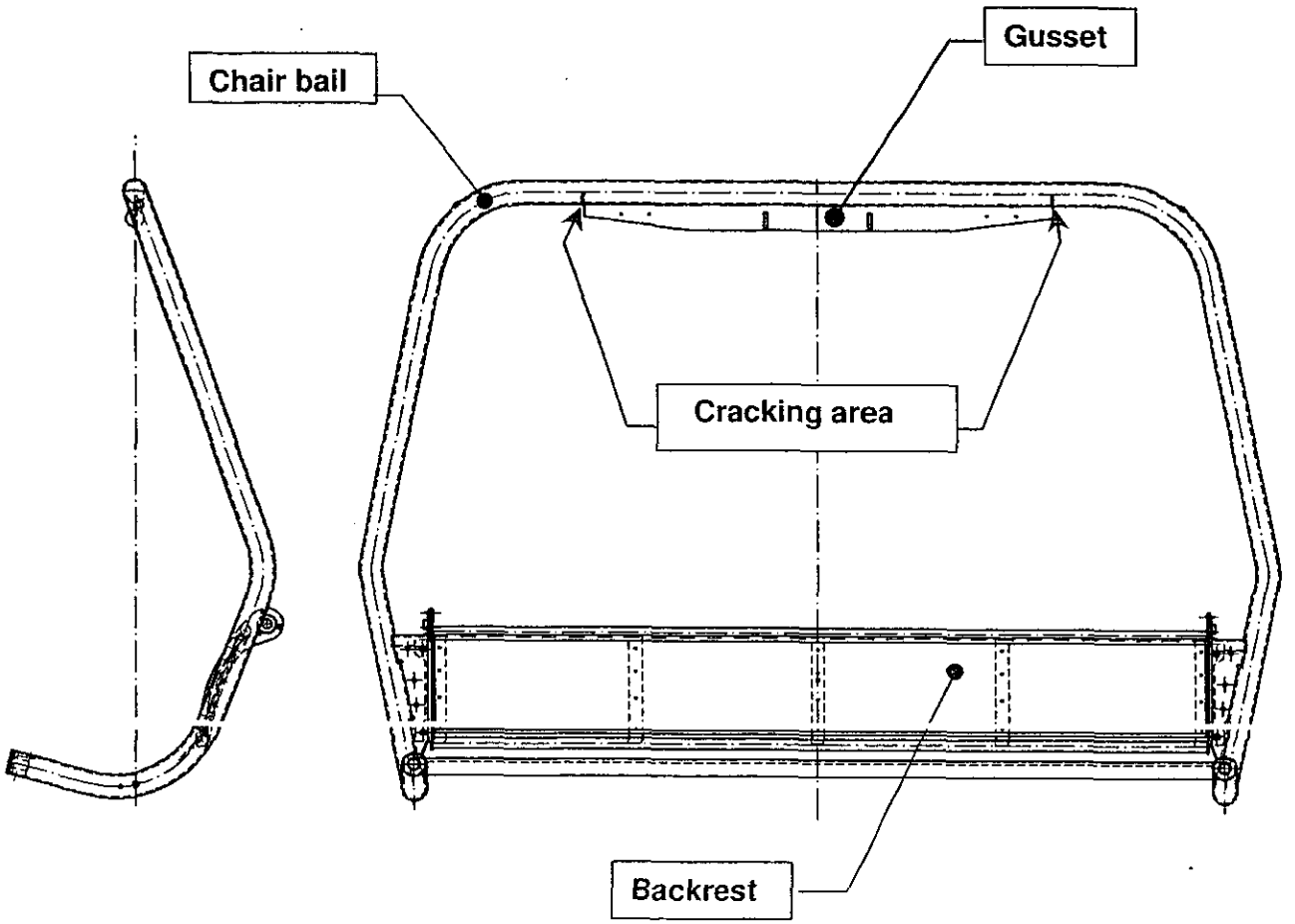
The area to be inspected shall be cleaned to remove all grease or dirt.
Adequate lighting of all surfaces to be inspected shall be provided.

Author	Release date	Doc. no.	Doppelmayr CTEC
SAC	03-13-2006	SA-06-005	

SAFETY ALERT BULLETIN / *BULLETIN DE SÉCURITÉ*

Lift manufacturer:	Doppelmayr CTEC	Fab. Group :	220
Lift type :	4CLF / 4CLD		
Supersedes:	N/A	Effective date :	03-13-2006

5. Chair bail sketch



6. Reminder

Routine visual inspections and non-destructive testing, as recommended in our manuals, bulletins and by your local regulations, allow the detection of such defects and may prevent any catastrophic failure. Make sure that your personnel or subcontractors performing such inspections have the proper knowledge and information and are aware of the type and location of defects they may find.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	**05-31-2006**	**SB-06-009**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Hall, Stadeli, Thiokol, CTEC, Garaventa CTEC, Doppelmayr, Doppelmayr CTEC, Von Roll**	**Fab. Group / *Groupe de fabrication :***	**FAB GROUP** **Grips & Carriers**
Lift type / *Type de remontée :*	**Fixed Grip & Detachable Grip Chairlifts**		
Supercedes / *Remplace :*		**Effective date / *Date en vigueur :***	**May 31, 2006**

Title / *Titre:* **Sampling Plan for the NDT Inspection of Grips & Carriers (Fixed & Detachable)**

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*

Effective immediately, Doppelmayr CTEC has adopted a *Sampling Plan for the NDT Inspection of Grips & Carriers* similar to the Canadian Code CSA-Z98-01.

1.2 Reason for release (summary) / *But*

A more frequent *Sampling Plan for the NDT Inspection of Grips & Carriers* provides a greater opportunity - especially for aging equipment - to identify potential fatigue conditions before those conditions become a safety risk. Adoption of this sampling plan standardizes the minimum NDT inspection requirement of the entire Doppelmayr CTEC product line throughout North America.

2. Scope / *Objet*

2.1 Generalities / *Généralités*

Every year or after a maximum of 2000 hours of operation (whichever comes first), 20% of the total number of grips and carriers (to include at least 10 grips and 10 carriers) shall be tested in accordance with the manufacturer's most current NDT inspection standard.

2.2 The sampling plan shall ensure that within a 5-year period every grip and carrier has been tested at least once.

2.3 The *Sampling Plan for the NDT Inspection of Grips & Carriers* applies to both fixed and detachable style grips and carriers.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	**05-31-2006**	**SB-06-009**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Hall, Stadeli, Thiokol, CTEC, Garaventa CTEC, Doppelmayr, Doppelmayr CTEC, Von Roll**	**Fab. Group / *Groupe de fabrication :***	**FAB GROUP Grips & Carriers**
Lift type / *Type de remontée :*	**Fixed Grip & Detachable Grip Chairlifts**		
Supercedes / *Remplace :*		**Effective date / *Date en vigueur :***	**May 31, 2006**

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

3.1 Any grip or carrier that does not have written documentation of *NDT inspection* within the 5 years immediately prior to this Service Bulletin release date of May 31, 2006 – in other words, any grip or carrier without a written NDT inspection record since May 31, 2001 - must be tested in accordance with the manufacturer's most current NDT inspection standard inspected by December 31, 2006. Annual NDT inspections shall sample a minimum of 20% of all grips and carriers per Section 2.1 (above).

3.2 Per the *Sampling Plan for the NDT Inspection of Grips & Carriers,* all 2006 and future annual NDT inspections must be increased to sample a minimum of 20% of all grips and carriers per Section 2.1 (above).

4. Detail of issue / *Details*

Text, drawings, schematics / *Textes, dessins, schémas*

4.1 This bulletin replaces any previous documents or publications referencing NDT sampling plans or frequency of NDT inspection for all Hall, Stadeli, Thiokol, CTEC, Garaventa CTEC, Doppelmayr, and Doppelmayr CTEC grips and carriers.

4.2 Every year or after a maximum of 2000 hours of operation (whichever comes first), 20% of the total number (to include at least 10 grips and 10 carriers) shall be tested in accordance with the manufacturer's most current NDT inspection standard. The sampling plan shall ensure that within a 5-year period every grip and carrier has been tested at least once.

4.3 The owner/operator must implement a plan to NDT any grip or carrier that does not have written documentation of NDT inspection within the 5 years immediately prior to this Service Bulletin release date of May 31, 2006 – in other words, any grip or carrier without a written NDT inspection record since May 31, 2001 - in accordance with the manufacturer's most current NDT inspection standard inspected by December 31, 2006.

4.4 Testing of any grip or carrier must be conducted in accordance with the manufacturer's most current NDT inspection standard.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	**05-31-2006**	**SB-06-009**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Hall, Stadeli, Thiokol, CTEC, Garaventa CTEC, Doppelmayr, Doppelmayr CTEC, Von Roll**	**Fab. Group / *Groupe de fabrication :***	**FAB GROUP** **Grips & Carriers**
Lift type / *Type de remontée :*	**Fixed Grip & Detachable Grip Chairlifts**		
Supercedes / *Remplace :*		**Effective date / *Date en vigueur :***	**May 31, 2006**

4. Detail of issue *continued*

Text, drawings, schematics / *Textes, dessins, schémas*

4.5 Doppelmayr CTEC must be notified if a tested component reveals propagating discontinuities outside the acceptance criteria. If the original sampling yields a rejection rate of 20% or higher, Doppelmayr CTEC requires an additional sample of equivalent size. If the second sample yields a rejection rate of 10% or higher, a 100% inspection is required.

4.6 Records of NDT inspection shall be maintained by the owner/operator for a minimum of 10 years.

4.7 Customers and inspectors should note that the Doppelmayr CTEC required Sampling Plan for NDT Inspection of Grips and Carriers is more restrictive than the current ANSI B77.1 standard which allows for a yearly inspection of a minimum of 10 or 10% or, alternatively, 6 years or 6,000 hours, whichever comes first.

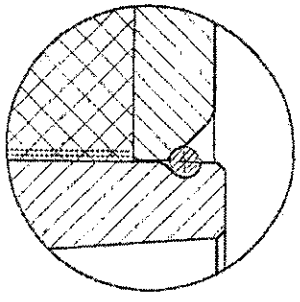
Author / *Auteur*	Release date / *Date émission*	Doc. no. / *No. de doc.*	Doppelmayr CTEC
QA	12-06-2006	SA-06-020	

SAFETY ALERT BULLETIN / *BULLETIN DE SÉCURITÉ*

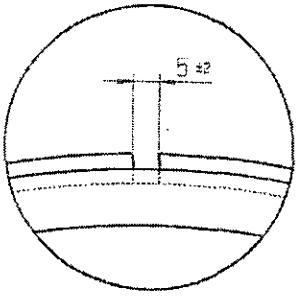
Lift manufacturer / *Fabricant :*	DOPPELMAYR	Fab. Group / *Groupe de fabrication :*	35 - Sheaves
Lift type / *Type de remontée :*	CLF, some CLD		
Supersedes / *Remplace :*	N/A S/O	Effective date / *Date en vigueur :*	12-06-2006

4. Detail of issue

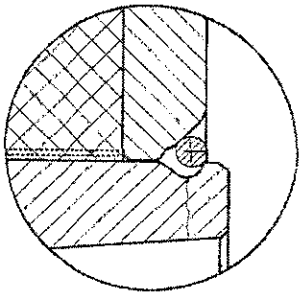
As already mentioned in all Doppelmayr CTEC manuals, it is very easy to check the 320 steel hubs you have in stock or in operation by checking the **gap** of the snap ring mounted on the hub (see sketch below). **If the gap is not within the required dimension (3 mm to 7 mm), the hub may not stay in service** and the cause must be investigated (see also the note).



Snap ring correctly fitted into both grooves (Hub and side plate)



Correct gap



20002727B991000

Snap rings not properly fitted may come out of the groove and / or break the hub.

Note: *Same acceptance criteria as for all 320 and 400 mm Doppelmayr / Doppelmayr CTEC sheaves.*

5. Correction

320 drop sheaves hubs with improper machined groove, but still **in good condition** may be sent to Doppelmayr CTEC for re-machining. Steel hubs sent to Doppelmayr CTEC must be free of bearings and snap rings and need to be cleaned. The name of the ski area must be marked with a permanent paint marker on each hub. All hubs will go through a receiving inspection and magnetic particle inspection to determine if they are free of flaws and if the bore is within tolerances before machining. **Hubs in poor condition will not be repaired. Inspection and re-machining of the hub will be free of charge..**
(Defective sheave hubs must be sent pre-paid for repair. Return shipping charges will be invoiced to the customer's account)
Contact your Doppelmayr CTEC representative for turn around time between receiving and shipping.

6. Reminder

The inspections mentioned in this safety bulletin are already part of the periodic inspections required in our maintenance manuals and previous Doppelmayr and Doppelmayr CTEC bulletins. Make sure to update your inspection program if necessary to meet these requirements.
Routine periodic inspections as well as inspections following a bulletin must always be documented.

Contact your Doppelmayr CTEC representative if you have any questions.

Author / *Auteur*	Release date / *Date émission*	Doc. no. / *No. de doc.*	Doppelmayr CTEC
QA	12-06-2006	SA-06-020	

SAFETY ALERT BULLETIN / *BULLETIN DE SÉCURITÉ*

Lift manufacturer / *Fabricant :*	DOPPELMAYR	Fab. Group / *Groupe de fabrication :*	35 - Sheaves
Lift type / *Type de remontée :*	CLF, some CLD		
Supersedes / *Remplace :*	N/A *S/O*	Effective date / *Date en vigueur :*	12-06-2006

Title: **DOPPELMAYR DROP SHEAVES DIAMETER 320**

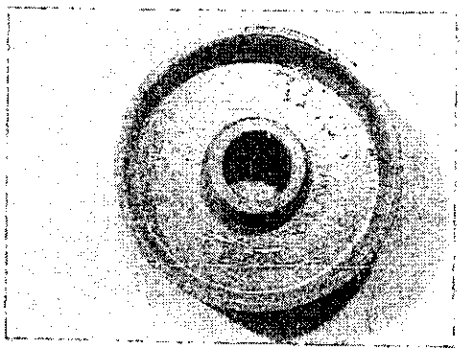
1. General

Recently, a customer noticed a problem during the assembly of a **Doppelmayr 320 drop sheave with steel side plates**. The grooves machined in the **steel hub** were not deep enough, preventing the snap ring from fitting properly into the groove of the **steel side plate**.

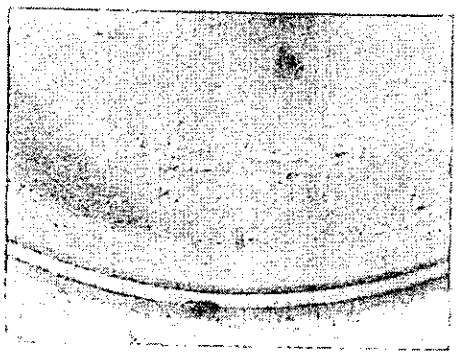
This problem creates additional compression of the rubber liner and additional pressure on the hub itself, which is not designed to accept such a load. Additionally, as the snap ring is not correctly installed, it could accidentally come out of the groove, or break the hub, which could cause an accident.

2. Scope

- This problem affects the **320 steel hubs used for drop sheaves.**
- **Only model 320 steel hubs (id. CCC12155)** with the letter **P320** on one side **and no production date** on the other side are affected (*see picture 1 below*).
- 320 steel hubs **with production date** appearing on one side (*see picture* 2) **do not seem to be affected.**



Picture 1.
320 drop sheave hub with marking P320 on one side



Picture 2
320 drop sheave hub with marking of the production date on the other side

Picture 3.
Typical snap ring gap within tolerances (5mm ± 2)

3. Action to be taken and completion date

The following actions are to be completed **before December 15th, 2006.**
Check all 320 drop sheaves with steel hubs for the snap ring gap (*see picture 3 and following sketch*).
All sheaves showing improper mounting dimensions (snap ring gap and position) shall be removed from service.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	12-31-2006	SA-06-022	

SAFETY ALERT BULLETIN / *BULLETIN DE SÉCURITÉ*

Lift manufacturer / *Fabricant :*	THIOKOL, STADELI, HALL, VON ROLL, CTEC, GARAVENTA CTEC, DOPPELMAYR, DOPPELMAYR CTEC	Fab. Group / *Groupe de fabrication :*	025 – TOWERS
Lift type / *Type de remontée :*	CHAIRLIFT		
Supercedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	December 31, 2006

Title / Titre : **Tower failure due to water intrusion**

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
Accumulated water within tower tubes can have catastrophic effects upon structural integrity.

1.2 Reason for release (summary) / *But*
Recently, accumulated water within a tower tube froze and resulted in a complete failure of the tower tube. The failure occurred on a closed, unloaded lift at night after daily operations were complete.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
The affected tower design had an open center splice ring connecting a larger diameter lower tube to a smaller diameter upper tube. The design of the splice ring had connecting bolts passing through the upper ring and threading into the lower ring. The threaded holes for the connecting bolts in the lower ring were inside the lower tube diameter. Typical assembly instructions for this type splice connections call for the use of mastic or caulking to inhibit water intrusion.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
While the noted failure involved a 1992 Von Roll two-piece tower on a fixed grip double chair, any tower design that has a sealed base could be similarly affected if there is a pathway for water intrusion.

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

Routine annual maintenance activities must include a close visual inspection of all tower components including the tower base. Signs of fatigue due to freeze / thaw cycles or cyclic loading may present themselves as indications (cracks) during the early stages, therefore, all welds,

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	**12-31-2006**	**SA-06-022**	

SAFETY ALERT BULLETIN / *BULLETIN DE SÉCURITÉ*

Lift manufacturer / *Fabricant :*	THIOKOL, STADELI, HALL, VON ROLL, CTEC, GARAVENTA CTEC, DOPPELMAYR, DOPPELMAYR CTEC	Fab. Group / *Groupe de fabrication :*	025 – TOWERS
Lift type / *Type de remontée :*	CHAIRLIFT		
Supercedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	December 31, 2006

gussets and tower tubes should be subject to close visual inspection annually. Any suspected indication noted visually should be confirmed by magnetic particle examination. The presence of any confirmed indication must be reported to Doppelmayr CTEC Engineering Department for review and recommended repair procedures.

Signs of weeping may indicate the presence of additional water within a tower. When struck with a dead-blow hammer in several ascending points from the base, a change in the resonating tone of the tower may indicate the presence of water (a tower with water tends to exhibit a solid "dead" sound compared to a more normal bell-like tone). Some tone differences may be noted due to proximity to base gussets and will not necessarily indicate the presence of water. Care should be taken to eliminate or minimize any obvious source of water intrusion.

Unless water is suspected to be collecting inside the tower, it is neither necessary nor recommended to provide a drain hole. Sealed towers have historically exhibited very little internal corrosion.

- If water is suspected to be present, a small hole (⅜" ~ ½") may be drilled near the tower base at the side of the tower (90° to the haul rope) to provide a pathway for water to escape. This is a recommended action only where the presence of water is suspected. Holes should not be installed purely as a preventative measure or in lieu of annual inspection. Periodic cleaning of drain holes may be required to maintain their functionality.

Required action

If tower base inspections have not routinely been included and documented in annual maintenance activities, a visual inspection of each tower base for signs of fatigue must be completed within the next 30 days. Any suspected indication noted visually should be confirmed by magnetic particle examination. The presence of any confirmed indication must be reported to Doppelmayr CTEC Engineering Department for review and recommended repair procedures.

Any confirmed indication greater than 1 inch (25 mm) in length shall be cause for immediate and continued closure of the lift to public transportation until repairs are authorized by Doppelmayr CTEC and implemented.

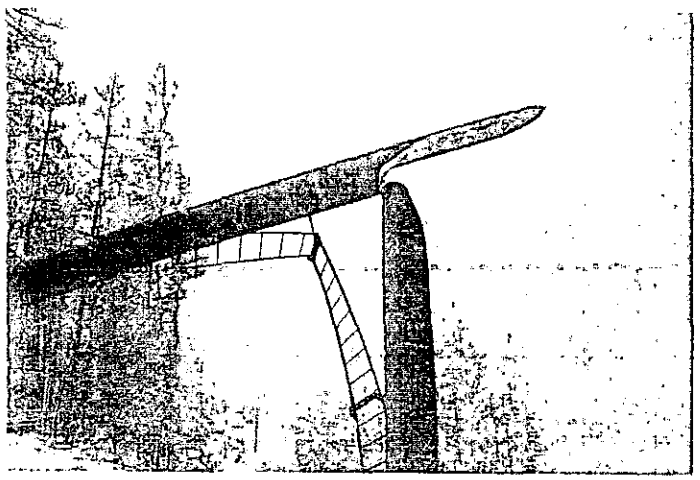
Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	12-31-2006	SA-06-022	

SAFETY ALERT BULLETIN / *BULLETIN DE SÉCURITÉ*

Lift manufacturer / *Fabricant :*	**THIOKOL, STADELI, HALL, VON ROLL, CTEC, GARAVENTA CTEC, DOPPELMAYR, DOPPELMAYR CTEC**	**Fab. Group / *Groupe de fabrication :***	**025 – TOWERS**
Lift type / *Type de remontée :*	**CHAIRLIFT**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**December 31, 2006**

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas



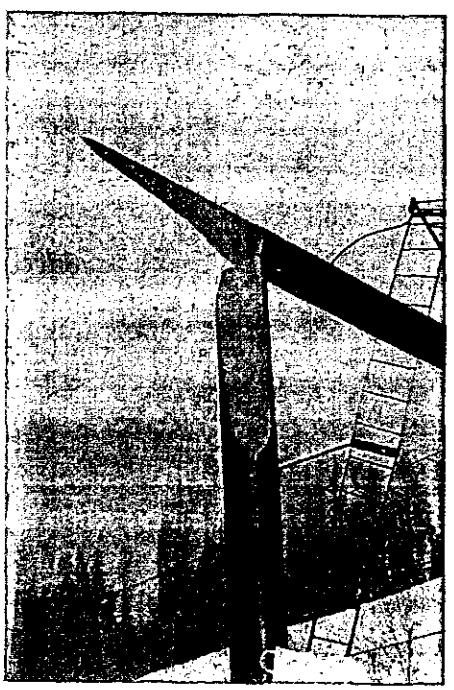
Tower: 6S/4S; 46' tall; 30' of 20" tube spliced to 16' of 16" tube. Ice filled to 30' position.

Weather conditions at failure:
Night; ~-5° F.; Wind ~ 57 mph.

Tower split vertically from base then hinged at approx. 18-1/2' and fell toward heavy side (uphill) line in the direction of prevailing wind.

Haul rope was trapped on both HS & LS assemblies.

Horizontal tower base crack 10-1/2" long, 14" up from base.



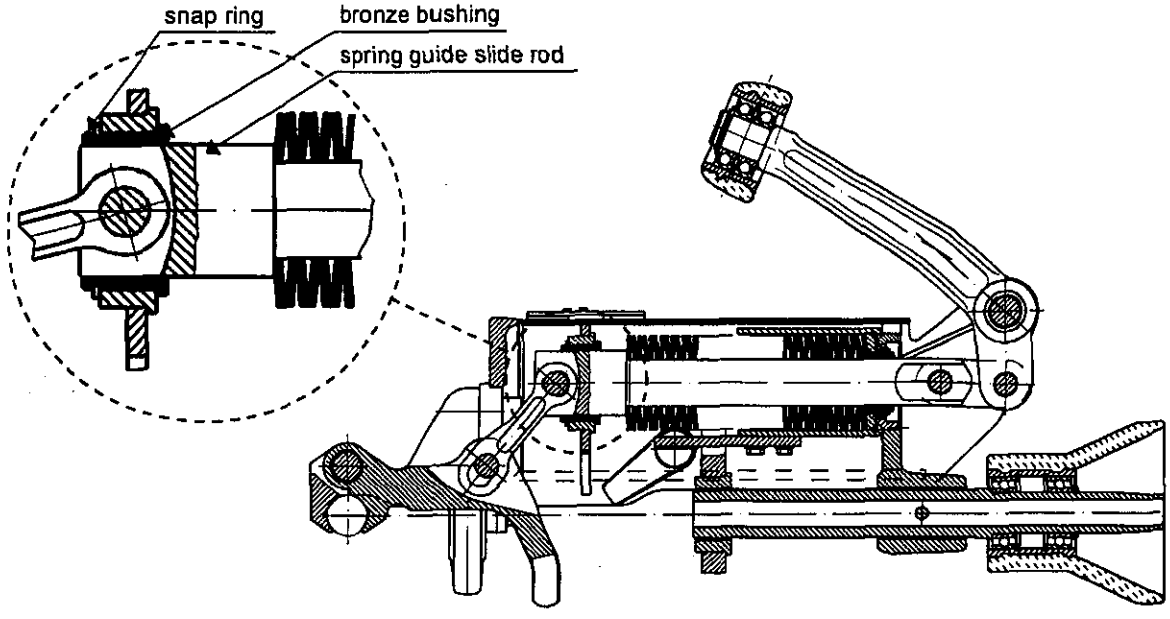
DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc. ID	Seite/ Page
		SJ/RCH/KW/dk	21.11.2005	KD05007	1 / 2

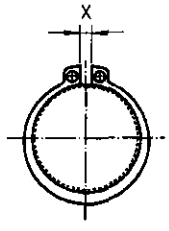
Ersatz für/ Supersedes: --	Ersetzt durch/ Replaced by: --	Type: CLD/MGD	Baugruppe/ Assembly group: DS Grips
Abgeleitet von / Based on:	--		
Classification Code:	X OS	O	IS	I

DS Grip
Locking the Bronze Bushing in Position

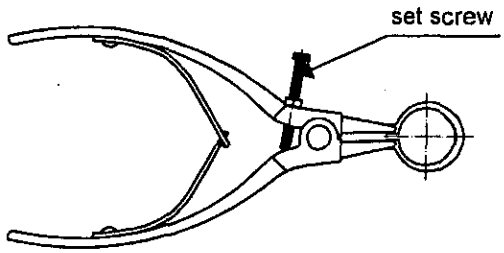
Because of current events we urgently recommend to pay special attention to the correct fastening of the bronze bushing of DS grips by means of the snap ring.



Check if the snap ring sits properly simply by turning it and checking the space between the ends of the snap ring.
If the snap ring is not fitted correctly it can not be turned or only with difficulty. The space between the ends of the snap ring (dimension x) is significantly bigger than in the case of a correctly fitted snap ring.

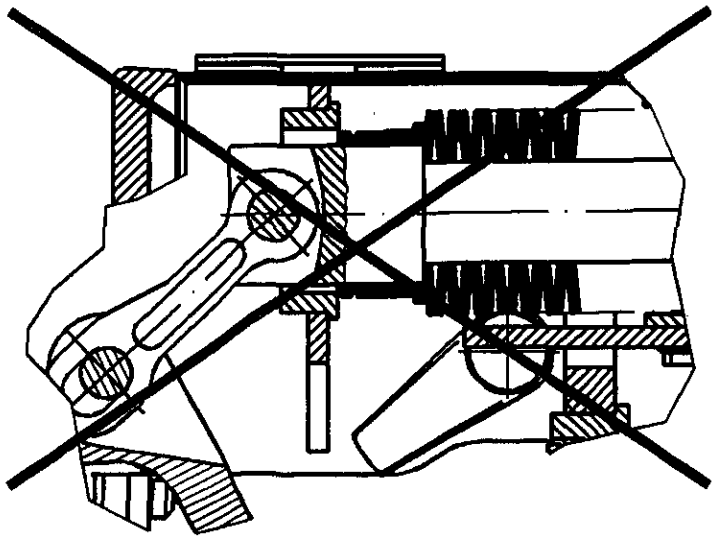


When fitting the snap ring, make sure that it will not be over-tensioned by excessive opening. Therefore it is advisable to use adjustable circlip pliers with a set screw.



If the snap ring is **not fitted correctly** or **missing**, the bronze bushing may creep and as a result the **grip may be blocked during the closing procedure!**

This means that the grip leaves the station without being completely closed!



Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	**06-01-2006**	**SB-06-012**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Drive Bullwheel**
Lift type / *Type de remontée :*	**Detachable**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**June 1, 2006**

Title / *Titre :* Inspection Requirement for Kissling VKE 340 / V116 Gearboxes

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
Doppelmayr CTEC requires NDT inspection of the torsion shaft splines, sun gear, planet gearing, and ring gear on all Kissling V116 bullwheel planetary gearboxes used in combination with Kissling VKE 340 right angle gearboxes. The inspection method shall be wet-fluorescent magnetic particle examination.

1.2 Reason for release (summary) / *But*
Three failures have occurred on Kissling V116 bullwheel planetary gearboxes used in combination with Kissling VKE 340 right angle gearboxes. Garaventa CTEC employed this design on a total of 22 installations within North America.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
The failures of the three Kissling V116 bullwheel planetary gearboxes occurred on high tension installations approaching the upper end of the design parameters. Operational hours at the time of failure ranged from approximately 10,000 hours to approximately 25,000 hours. None of the remaining installations approach the design parameters of the failed units but Doppelmayr CTEC believes that it would be prudent to inspect all remaining installations with this drive configuration for any indication of fatigue.
The failure mode on two units involved complete failure of the ring gear and subsequent damage to the V116 main housing. One of these units also showed fatigue indications in the torsion shaft. The failure mode on one other unit involved failure of the torsion shaft upper spline connection and subsequent damage to the VKE 340 output shaft.
Each failure resulted in a loss of drive input to the bullwheel and a rope evacuation of passengers. Extended downtime was also experienced due to a limited availability of replacement parts from Europe.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
Only those installations utilizing a Kissling VKE 340 right angle gearbox in combination with a Kissling V116 bullwheel planetary gearbox are affected by this bulletin.

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Drive Bullwheel**
Lift type / *Type de remontée :*	**Detachable**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**June 1, 2006**

2. Scope / *Objet continued*

2.3 Affected Production dates / *Dates de fabrication affectées*
The Kissling VKE 340 right angle gearbox in combination with a Kissling V116 bullwheel planetary gearbox was used on installations during the production years of 1992 through 2001.

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

Prior to the next winter period of public operation, each installation employing the combination of Kissling VKE 340 right angle gearbox and Kissling V116 bullwheel planetary gearbox must subject the torsion shaft splines, sun gear, planet gears, and ring gear to a thorough NDT inspection. The inspection method shall be wet-fluorescent magnetic particle examination.

The inspection requires the following procedures but *does not require detensioning of the lift or removal of the haul rope*:

- Removal of the Kissling VKE 340 right angle gearbox from the drive platform.
- The torsion shaft upper spline must be completely cleaned and NDT inspected. The entire length of each spline is subject to inspection. No indications are allowed. Any indication noted will require component replacement or additional inspection by an authorized Kissling representative.
- Draining of all oil from the Kissling V116 bullwheel planetary gearbox.
- Removal of the Kissling V116 bullwheel planetary gearbox main lower cover – see Note!
  - Note: Extreme care must be taken as the Kissling V116 internal planet carrier and planet gears will remain with the main lower cover as it is removed! (A snap ring beneath the upper spline retains the torsion shaft.) The entire cover/planet carrier assembly may be lowered with the assistance of a minimum of three 3' lengths of metric all-thread evenly spaced in place of three main lower cover bolts until the load may be transferred to a piece of mechanical heavy equipment.
- The main lower cover plate and planet carrier must be completely removed to allow for complete inspection of the planet gears and ring gear.
- The sun gear must be removed to allow inspection of both the sun gear teeth and the torsion shaft lower spline.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	06-01-2006	SB-06-012	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Drive Bullwheel**
Lift type / *Type de remontée :*	**Detachable**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**June 1, 2006**

3. Action to be taken and completion date *continued*

- The sun gear, planet gears, and ring gear must be completely cleaned and NDT inspected. The entire length of each gear tooth is subject to inspection. No indications are allowed. Any indication noted will require component replacement or additional inspection by an authorized representative of Kissling.
- The torsion shaft lower spline must be completely cleaned and NDT inspected. The entire length of each spline is subject to inspection. No indications are allowed. Any indication noted will require component replacement or additional inspection by an authorized Kissling representative.
- Re-assembly of the torsion shaft upper splines and Kissling VKE 340 spline connections must include lubrication with Mobil Mobilith AW2 grease.
- Use only Kissling approved oil products within the Kissling VKE 340 right angle gearbox or the Kissling V116 bullwheel planetary gearbox.
- Annual maintenance should include regular analysis of the oil of both the Kissling VKE 340 right angle gearbox and the Kissling V116 bullwheel planetary gearbox.
- This inspection should be repeated approximately every five years (approximately 6,000 operating hours).

Following inspection, each customer is requested to complete the attached form and return the information to the Doppelmayr CTEC Customer Service Department.

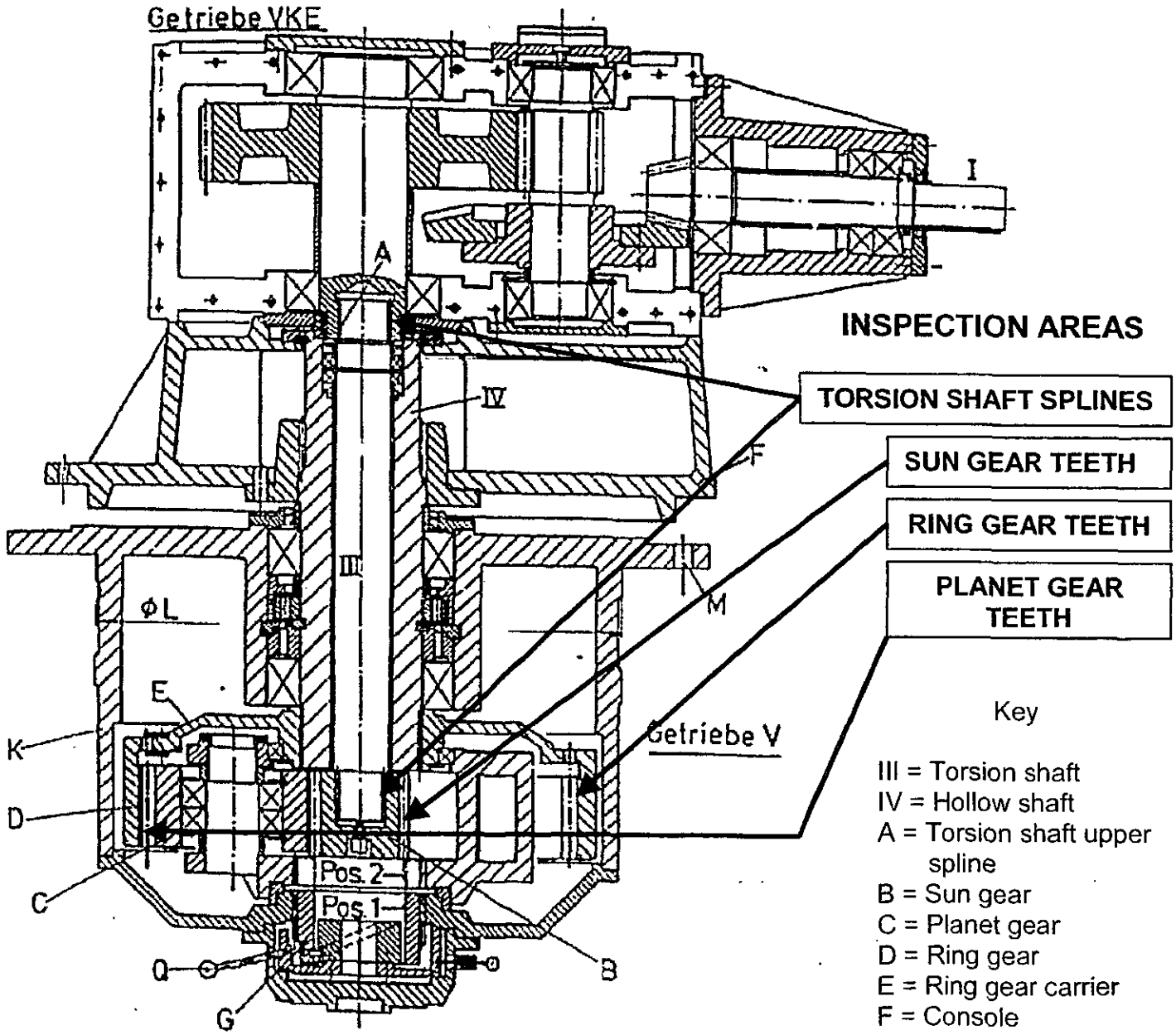
Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	06-01-2006	SB-06-012	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Drive Bullwheel**
Lift type / *Type de remontée :*	**Detachable**		
Supercedes / Remplace :	**N/A**	***Effective date / Date en vigueur :***	**June 1, 2006**

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas



Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**01-18-07**	**SA-07-001**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Grips -225**
Lift type / *Type de remontée :*	**6-CLD**		
Supercedes / *Remplace :*	**SB-05-013**	**Effective date / *Date en vigueur :***	**01-18-07**

Title / *Titre :* AK 680 series detachable grip indications

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
This bulletin replaces previous bulletin SB-05-013.

Indications have been noted during routine NDT inspection of the AK 680 series detachable grip.

The indications have been found upper spring axle (Item 10) and spring guide rod (Item 12). The indications have been in the hardened surface treatment in the small radius below the threaded portion of these components.

1.2 Reason for release (summary) / *But*
This bulletin replaces previous bulletin SB-05-013.

On-going analysis by Garaventa has resulted in additional recommendations relative to the treatment of indications noted on the upper spring axle (Item 10) and the spring guide rod (Item 12). Their experience has been that the indications are a result of the surface treatment hardening process in the area of a very small radius. Typically the indications have been found to be .1 mm or less in depth and easily removed by reworking the component on a lathe.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
During routine NDT inspections care should be taken to inspect the affected areas for indications.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
Affected models are six passenger lifts utilizing the Garaventa AK 680 series detachable grip.

2.3 Affected Production dates / *Dates de fabrication affectées*
Affected production dates are from 1995 through 2000.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	01-18-07	SA-07-001	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Grips -225**
Lift type / *Type de remontée :*	**6-CLD**		
Supercedes / *Remplace :*	**SB-05-013**	**Effective date / *Date en vigueur :***	**01-18-07**

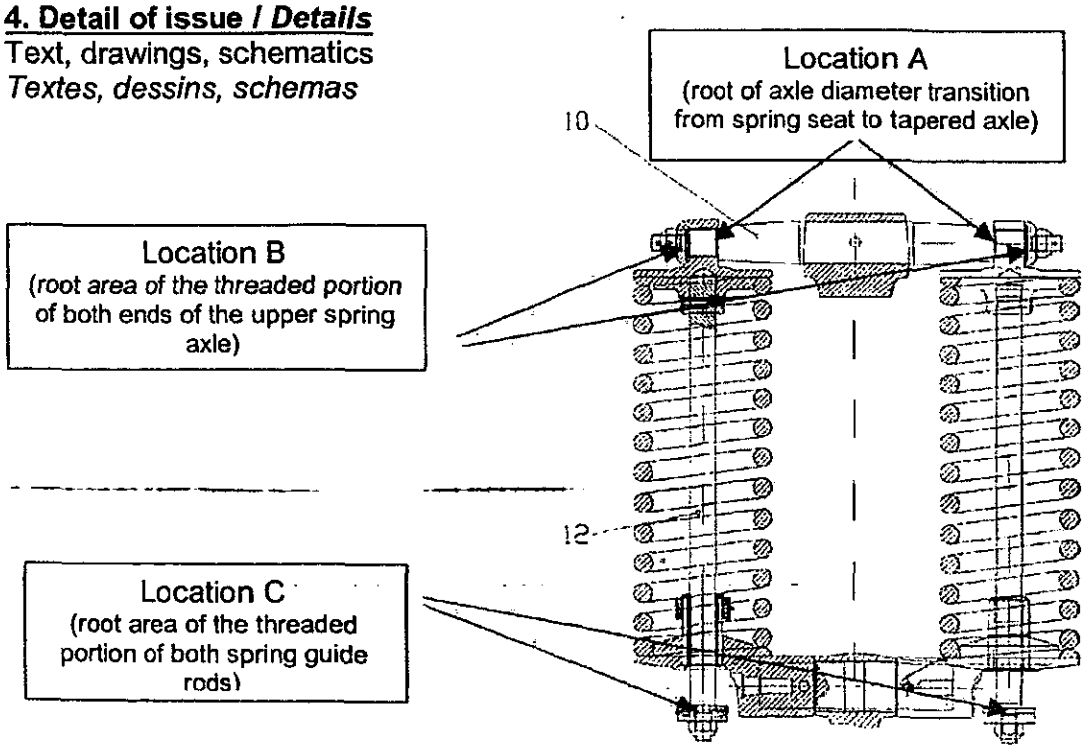
3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

- During routine NDT inspection, care should be taken to inspect the affected areas with the assistance of wet fluorescent magnetic particles. See Locations A, B, & C on the accompanying drawing.
- Indications noted in Location A (Item 10 – upper spring axle) are cause for immediate rejection of the component. No rework of material in Location A is allowed.
- Indications noted in Location B (Item 10 – upper spring axle) have been determined to be non-critical and need only to be documented in the grip inspection record. No rework of material in Location B is required.
- Indications noted in Location C (Item 12 - spring guide rod) must be removed. Garaventa has authorized the reworking of material in Location A to a minimum diameter of 12.5 mm. Indications remaining in Location C once the minimum diameter of 12.5 mm has been reached are cause for rejection of the component.

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schemas



Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SAC	01-26-2007	SB-07-002__	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	Doppelmayr CTEC	Fab. Group / *Groupe de fabrication*	NCD05
Lift type / *Type de remontée :*	Detachable wirh 3 piece bullwheels		
Supercedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	01-26-2007

Title: **3-PIECE BULLWHEEL INSPECTION FOLLOW UP**

1. General:

Further to the release of **Bulletin SB-06-002 "Doppelmayr 3-piece Bullwheel inspection"**, we would like to provide you with the latest information and guidelines for the 2007 season.

No other cracks were reported since the issue of Bulletin SB-06-002 on February 02, 2006.

2. Scope:

All 3-piece drive and return bullwheels with a diameter of 5.2 m to 6.1 m, manufactured since 2000 may be affected.

3. Action to be taken and completion date:

In conformity with Bulletin SB-06-002, we ask you to continue to perform monthly inspections of these welds until final measures are put in place. Please document these inspection results in your lift maintenance logbook. Additional inspections by a Doppelmayr CTEC technician may be required to determine if preventative repairs are necessary after the current season.

Feel free to contact your local Doppelmayr CTEC Customer Service representative if any additional information is required.

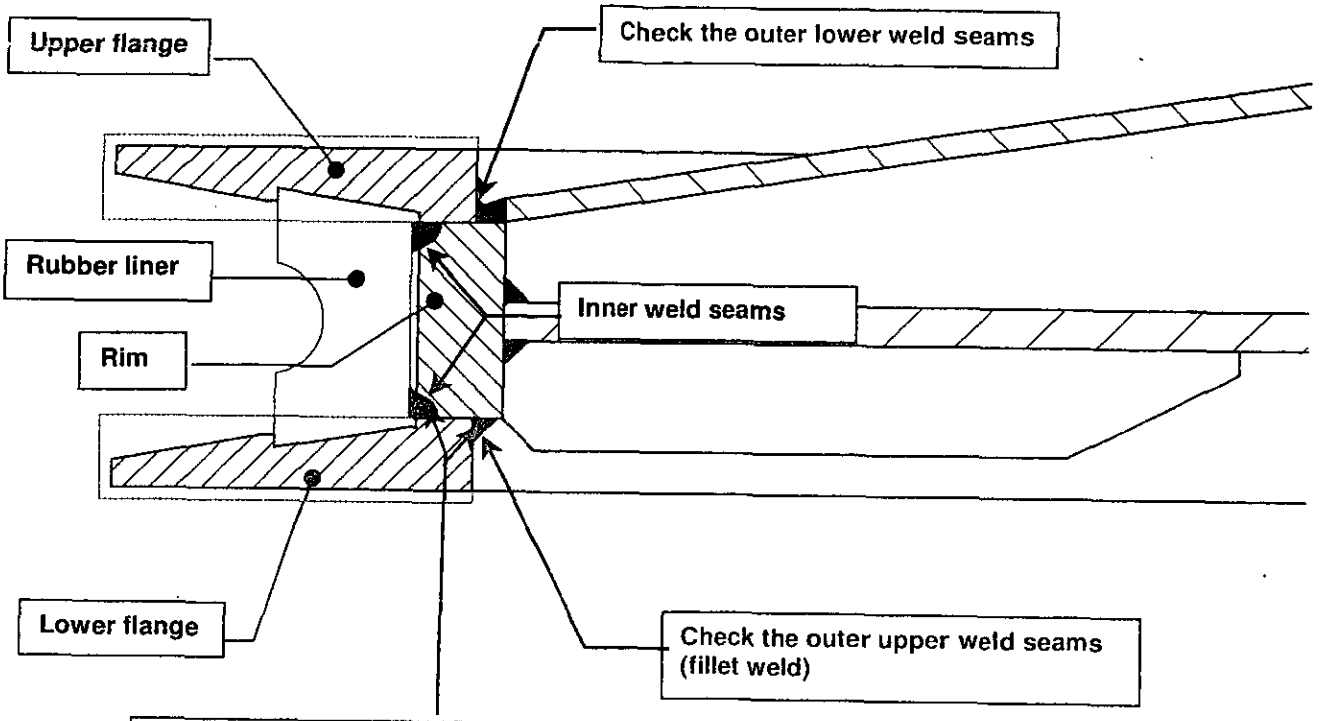
Doppelmayr CTEC
Customer Service

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SAC	01-26-2007	SB-07-002	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	Doppelmayr CTEC	Fab. Group / *Groupe de fabrication*	NCD05
Lift type / *Type de remontée :*	Detachable wirh 3 piece bullwheels		
Supercedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	01-26-2007

4. Detail of issue:



5. Inspection Procedure:

- The area to be inspected shall be cleaned to remove all grease or dirt.
- Provide adequate lighting for inspection of all surfaces.

BW 3 PIECES 2000 - 2005

	CONTRACT	GR	BW DIA.	ID #	COUNTRY	URGENCY-AREA
2000	LAA0000006	95	6.1m	CC290037	USA	2- MAMMOTH
	LAA0000023	95	6.1m	CC290037	USA	2- DURANGO
2001	KAA0000008	95	6.1m	CCC26489	SPAIN	2- SPAIN
	LAA0000047	95	5.2m	CC336832	CANADA	2- LE MASSIF
2002	LAA0000054	85	5.5m	CC338562	CANADA	1- ALPINE
		95	6.1m	CC290037		2
	LAA0000070	85	5.5m	CC338562	USA	1- MAMMOTH
		95	6.1m	CC290037		2
	LAA0000074	85	5.2m	CCC33282	USA	1- WHITEFACE
		95	5.2m	CC336832		2
	LAA0000080	95	5.2m	CC336832	USA	2- TERRY PEAKS
	LAA0000088	95	5.2m	CC336832	CANADA	2- SUN PEAKS
2003	AAA0001048	95	6.1m	CC344192	COREA	2- COREA
	AAA0001105	95	6.1m	CC344192	COREA	2- COREA
	LAA0000094	85	5.5m	CCC41738	CANADA	1- ORFORD
		95	6.1m	CC344192		2
	LAA0000105	95	5.2m	CC336832	CANADA	2- PANORAMA
	LAA0000128	95	5.2m	CC336832	CANADA	2- BROMONT
	SAA0001091	85	5.2m	CCC40761	USA	1- BEAVER CREEK
		95	5.2m	CC388186		2
	SAA0001116	85	5.2m	CCC40761	USA	1- HEAVENLY
		95	5.2m	CC388186		2
	SAA0001137	85	5.2m	CCC40761	USA	1- DIAMOND PEAK
		95	5.2m	CC388186		2
2004	LAA0000176	85	5.2m	CCC40761	CANADA	1- LE MASSIF
		95	5.2m	CC388186		2
	SAA0001190	85	5.2m	CCC40761	USA	1- BEAVER CREEK
		95	5.2m	CC388186		2
	SAA0001191	85	5.2m	CCC40761	USA	1- BEAVER CREEK
		95	5.2m	CC388186		2
2005	SAA0001201	85	5.2m	CCC40761	USA	1- BEAVER CREEK
		95	5.2m	CC388186		2

Distribution by St-Jerome **Distribution by SLC**

Doppelmayr CTEC

January 29, 2007

Doppelmayr CTEC, Inc.
3160 West 500 South
Salt Lake City, UT 84104
T: 801-973-7977
F: 801-973-9580

Dear Customers & Authorities,

In spite of repeated review prior to printing and mailing, an error has been identified in the original distribution of Service Bulletin SB-07-001 and has prompted the release of Service Bulletin SB-07-001 Rev.1.

The error occurred on Page 2, Section 3, fourth bullet point. The **Incorrect Wording** (as per SB-07-001) read:

- Indications noted in Location C (Item 12 – spring guide rode) must be removed. Garaventa has authorized the reworking of material in **Location A** to a minimum diameter of 12.5 mm...

The **Correct Wording** (as per SB-07-001 Rev. 1) now reads:

- Indications noted in Location C (Item 12 – spring guide rode) must be removed. Garaventa has authorized the reworking of material in **Location C** to a minimum diameter of 12.5 mm...

Please take note of this change on the accompanying copy and update your records accordingly. We apologize for any confusion that this error may have caused.

Thank you,

Gary Mayo

Customer Service Manager

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**01-29-07**	**SA-07-001 Rev 1**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Grips -225**
Lift type / *Type de remontée :*	**6-CLD**		
Supercedes / *Remplace :*	**SB-05-013 & SB-07-001**	**Effective date / *Date en vigueur :***	**01-29-07**

Title / *Titre :* AK 680 series detachable grip indications

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
This bulletin replaces previous bulletin SB-05-013 & SB-07-001.

Indications have been noted during routine NDT inspection of the AK 680 series detachable grip.

The indications have been found upper spring axle (Item 10) and spring guide rod (Item 12). The indications have been in the hardened surface treatment in the small radius below the threaded portion of these components.

1.2 Reason for release (summary) / *But*
This bulletin replaces previous bulletin SB-05-013 & SB-07-001.

On-going analysis by Garaventa has resulted in additional recommendations relative to the treatment of indications noted on the upper spring axle (Item 10) and the spring guide rod (Item 12). Their experience has been that the indications are a result of the surface treatment hardening process in the area of a very small radius. Typically the indications have been found to be .1 mm or less in depth and easily removed by reworking the component on a lathe.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
During routine NDT inspections care should be taken to inspect the affected areas for indications.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
Affected models are six passenger lifts utilizing the Garaventa AK 680 series detachable grip.

2.3 Affected Production dates / *Dates de fabrication affectées*
Affected production dates are from 1995 through 2000.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**01-29-07**	**SA-07-001 Rev 1**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Grips -225**
Lift type / *Type de remontée :*	**6-CLD**		
Supercedes / *Remplace :*	**SB-05-013 & SB-07-001**	**Effective date / *Date en vigueur :***	**01-29-07**

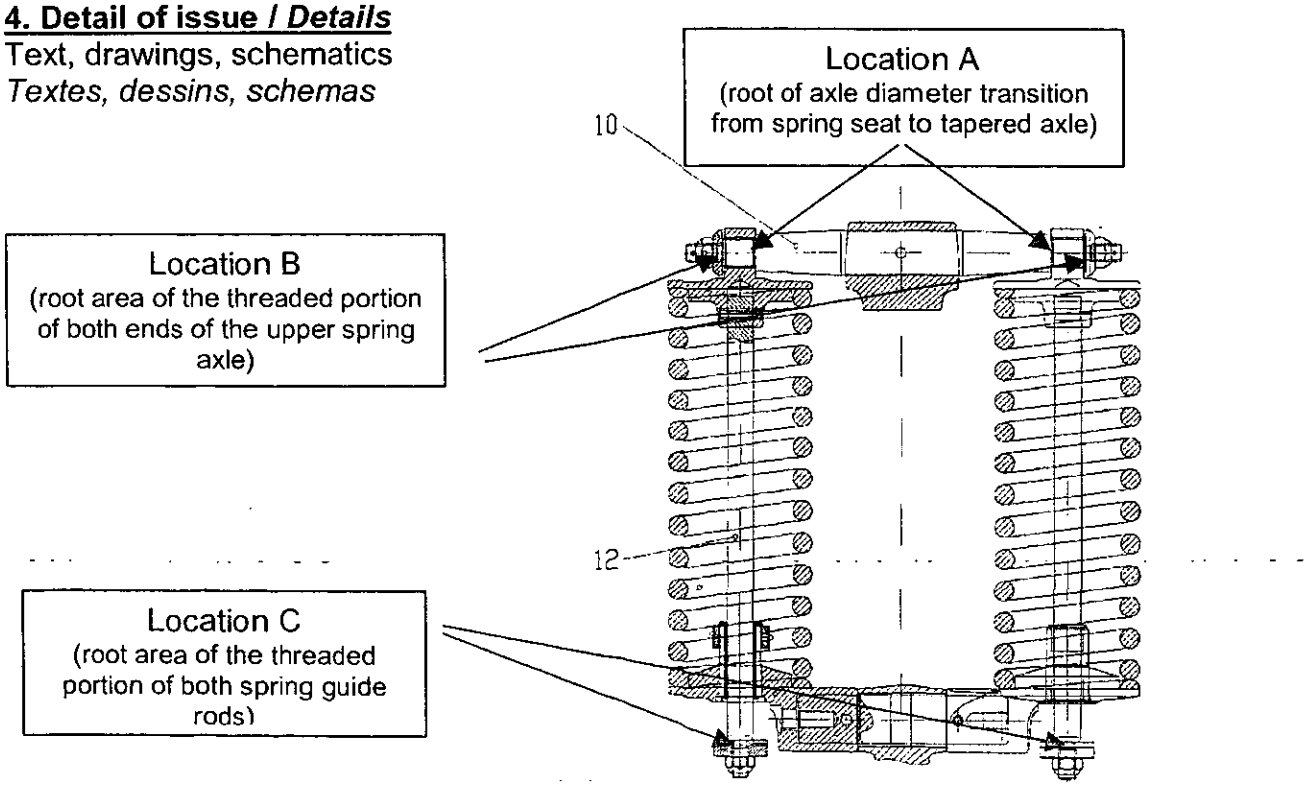
3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

- During routine NDT inspection, care should be taken to inspect the affected areas with the assistance of wet fluorescent magnetic particles. See Locations A, B, & C on the accompanying drawing.
- Indications noted in Location A (Item 10 – upper spring axle) are cause for immediate rejection of the component. No rework of material in Location A is allowed.
- Indications noted in Location B (Item 10 – upper spring axle) have been determined to be non-critical and need only to be documented in the grip inspection record. No rework of material in Location B is required.
- Indications noted in Location C (Item 12 - spring guide rod) must be removed. Garaventa has authorized the reworking of material in Location C to a minimum diameter of 12.5 mm. Indications remaining in Location C once the minimum diameter of 12.5 mm has been reached are cause for rejection of the component.

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schemas



Doppelmayr®

06-Nov-01

TO: (See Attached Sheet)

RE: 1996 To 2000 Detachable Chairs

Enclosed please find the repair drawings for the chair seat straps, and the seat latch. If you have experienced fatiguing in these areas, contact us with the number of repair kits required and the CCC Id. number. The price of each kit is as follows. The seat strap kit, CCC36153 is $5.17 and the seat latch kit, is $2.27 each. Any chairs covered under warranty, components will be furnished free of charge. Please direct all orders and inquiries to the Golden office:

Doppelmayr USA, Inc.
14452 W. 44th Avenue
Golden, CO 80403

Should you have any questions, please contact us.

Best regards,

DOPPELMAYR USA, INC

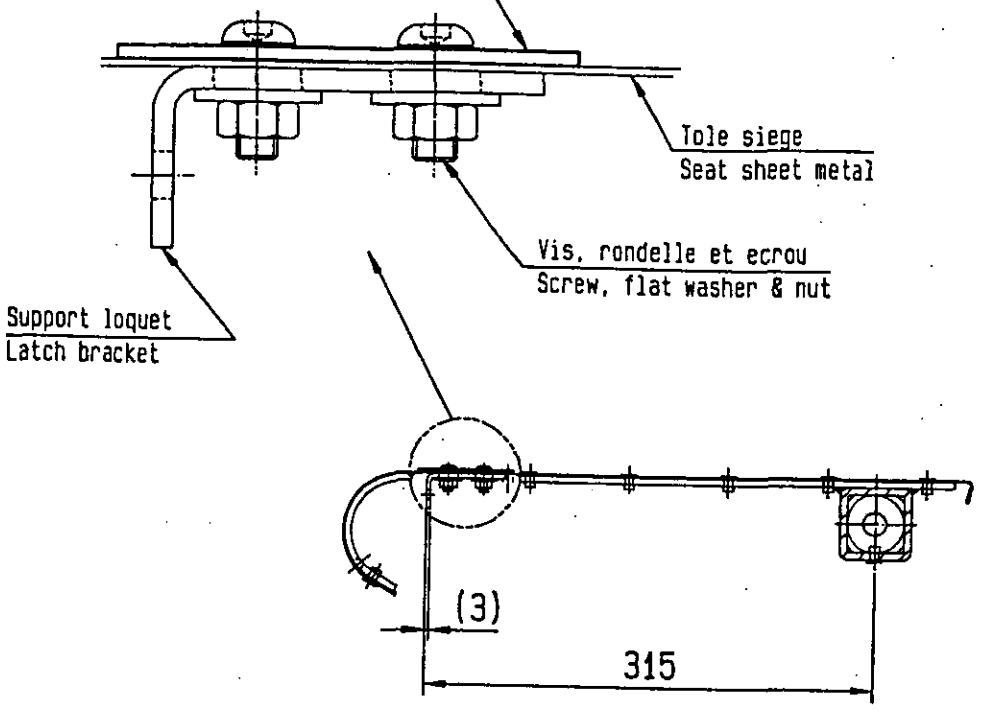
Mark P. Emery
After Sales Service
Field Service Representative

Enc.

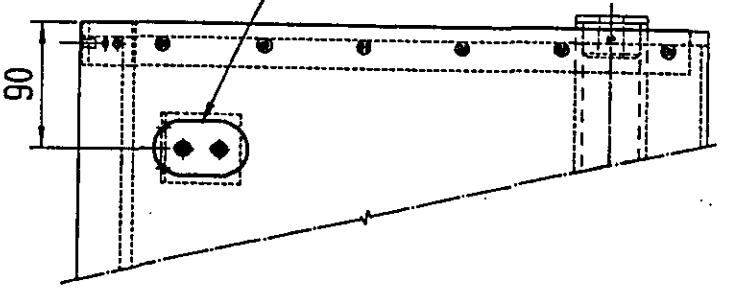
1996 To 2000 Detachable Chairs

Big Sky, MT	Steve Durham
Bogus Basin, ID	Brad Bybe
Bromley, VT	Rick Goddard
Camelback, PA	Rich Wiseman
Cascade Mountain, WI	John Pierce
Crystal Mountain, WA	Scott Bowen
Heavenly Valley, CA	Gary Burch
Keystone, CO	Jeff Ray
Mammoth, CA	Heimo Ladinig
Mountain High, CA	Chuck Muir
Mt. Bachelor, OR	Rick Brooks
Mountain Creek, NJ	Kevin Mulligan
Schweitzer Mountain, ID	Jim Robertson
Sierra at Tahoe, CA	Rob Buts
Snowbasin, UT	Ralph Clifton
Squaw Valley, CA	Peter Hipp
Steamboat, CO	Doug Allen
Sun Valley, ID	Robb Thomas
Sunday River, ME	Dan Wheeler
Sunrise, AZ	Dennis Feigler
Telluride, CO	Kenny King
Terry Peak, SD	Mike McGuckin
The Canyons, UT	Joe Rider
Timberline, OR	Bill Brett
Vail, CO	Clyde Wiessner
Wachusett, MA	Dominic Baggio
Waterville Valley, NH	Parker Uhlman
White Pass, WA	Kevin McCarthy
Wildcat, NH	Steven Eurenius
Yellowstone Club, MT	Keil Thompson

Plaque renfort Id.CCC36257
Patch plate



Plaque renfort
Patch plate



Indice	Modifications / Revision	Date	Nom/Name	Protection / Realization	Ident

Tolerances Generales ISO 1302 (Longueurs et Angles) — Tolerances Generales ISO 1302 (Forme et Position) —
General tolerances as per ISO 1302 (lengths a. angles) — General tolerances as per ISO 1302 (form + position) —

Tolerances Generales ISO 1302 (Longueurs et Angles) — Tolerances Generales ISO 1302 (Forme et Position) —
General tolerances as per ISO 1302 (lengths a. angles) — General tolerances as per ISO 1302 (form + position) —

Echelle / Scale		Date	Nom/Name
1/5	Dessiné drawn	2001-10-16	ab
	Approuvé approved		

Installation

N°Commande/Order — Nb.Copies / Copies — X

Moule / Model — Outillage / Tool

Dessin original / Original drawing no.

INSTALLATION PLAQUE RENFORT

LOQUET SIEGE -STJ
PATCH PLATE MOUNTING/ SEAT LAT

CAD

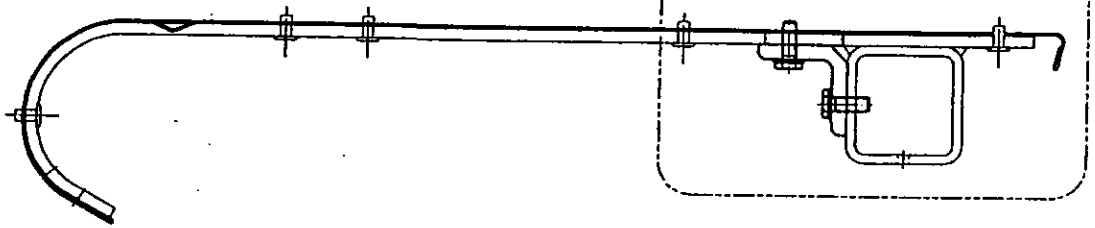
Dessin n° / Drawing no. — Indice

60003159NCJ000298

-VUES EUROPEENNES
-EUROPEAN VIEWS

Classe/

Detail A

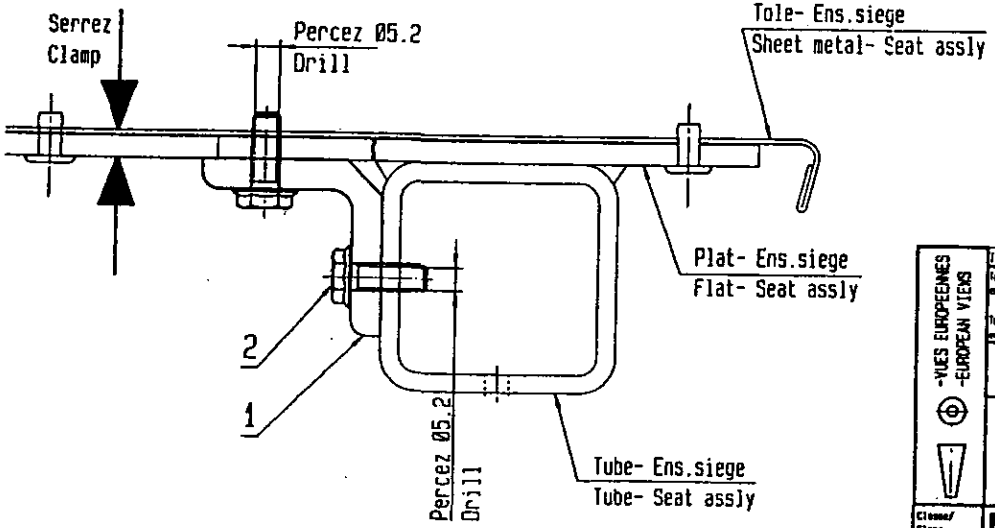


NOTE:

-Retirez tous rivets qui pourraient etre dans la zone de reparation de l'ensemble siege.
-Remplacez tous rivets endommages ou laches.
-Pressez la tole sur le plat avec une serre pres de la zone de reparation.
-Contre-percez avec foret Ø5.2mm le tube, le plat et la tole de l'ensemble siege a l'aide de l'angle support (Item 1).
-Fixez d'abord l'angle support contre le tube avec une vis auto-taraudeuse (item 2), pour ensuite le fixer sur le plat de l'ensemble siege.

NOTICE:

-Remove any rivets which could be in the repair area of the seat assembly.
-Replace any damaged or loose rivets.
-Press the sheet metal against the flat bar near the repair area.
-Use the support angle(item 1) as a gage to drill Ø5.2mm holes thru tube, flat bar and sheet metal.
-Fix at first the support angle against the tube with self tapping screw (Item 2), and then onto flat bar and sheet metal.



CCC36153

Ident

Indice	Modifications / Revision	Date	Nom/Name	Protection / Realisation
K				

Echelle / Scale 2/1

	Date	Nom/Name
Dessiné / drawn	2001-09-27	MB
Approuvé / approved		

Installation

N°Commande/Order

Nb.Copies / Copies X

Outillage / Tool

Dessin original / Original drawing no.

ENS.ANGLE SUPP.1 1/2x1 1/2x1/4

REPARATION LATTE SIEGE - EC

KIT-SUPP.ANGLE 1 1/2x1 1/2x1/4

CAD

Dessin n° / Drawing no 60003155NCJ000261 Indice

Classe/ Class

VUES EUROPEENNES - EUROPEAN VIEWS

Doppelmayr

La Cie. de Remonte Pente Doppelmayr Ltee., 800,St.Nicholas St.Jerome,CANADA,J7Y4C8

A3

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		KW/dk	2002-07-10	KD02005	1 / 4

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
–	–	CLD/MGD	VARIOUS (TOOLS)

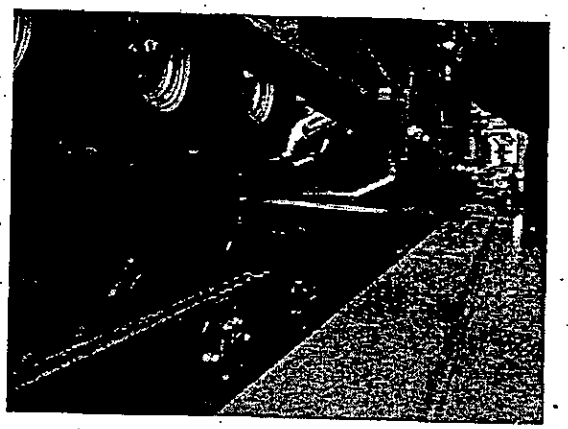
Abgeleitet von / Based on: Do-295, 296, 297	☐ OS	☒ O	☐ IS	☐ I

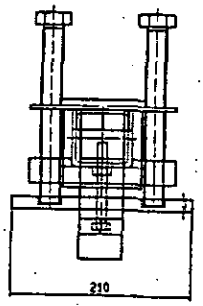
New tools for detachable installations

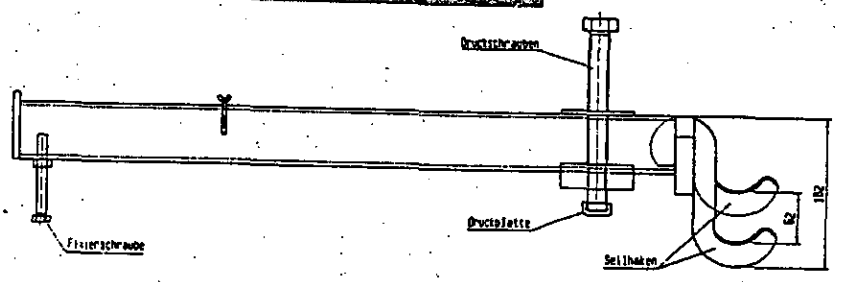
In order to simplify the work of our customers we have developed some new tools which can be ordered from Doppelmayr Wolfurt:

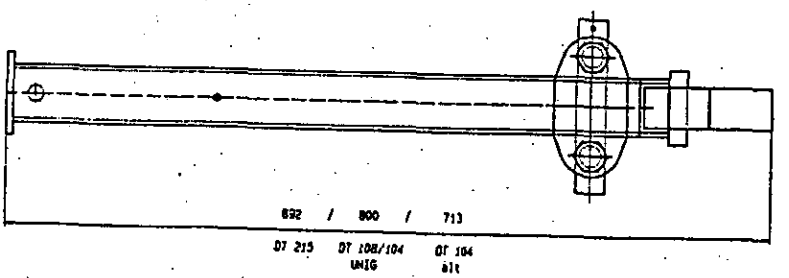
For their use and the possible areas of application please refer to the enclosed pages.

Rope Lifter for PTO and station sheaves:









- For DT 215 (ID.# 10386379)
- For DT 108/104 UNIG (ID.# 10365321)
- For DT 104 old (ID.# 10376815)

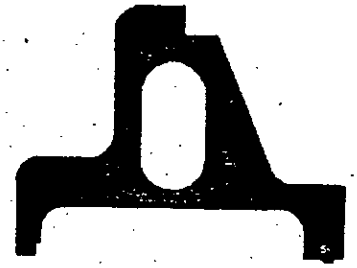
Instructions:

- Position the hook underneath the rope.
- Clamp the rope lifter to the outer guide rail with the fixing bolt.
- Place the thrust plate in the running rail and lift the rope lifter together with the rope by means of the thrust bolts.

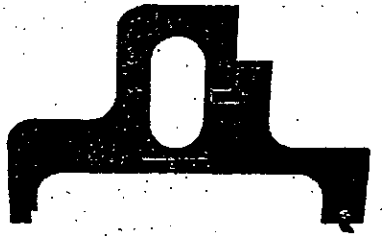
Templates for adjustment of safety devices for grips DT 108 / 104:

(**Important:** not suitable for old UNI installations!)

Template for adjustment of
"Grip closed before launch"
switching flag:
DT 108 (ID.# 10348688)
DT 104 (ID.# 10354127)

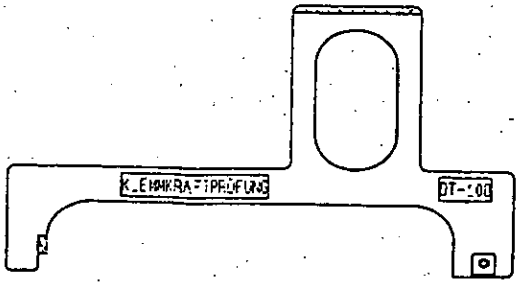


Template for adjustment of
"Grip not open" limit switch:
DT 108 (ID.# 10348720)
DT 104 (ID.# 10354125)



Template for adjustment of
"Grip not closed" limit switch:
DT 108 (ID.# 10348619)
DT 104 (ID.# 10354118)

Template for adjustment of
electronic grip force testing limit switch:
DT 108 (ID.# 10369711)
DT 104 (ID.# 10365325)



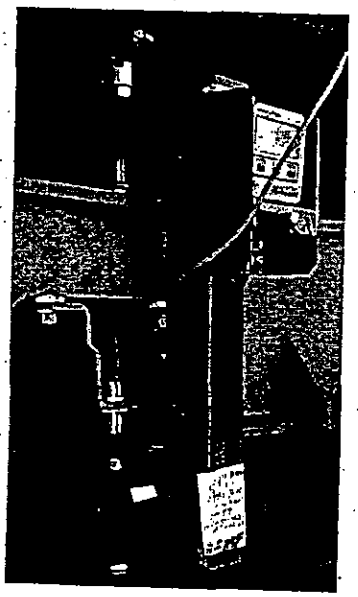
Grip Force Calibrating Device for Electr. Grip Force Tester

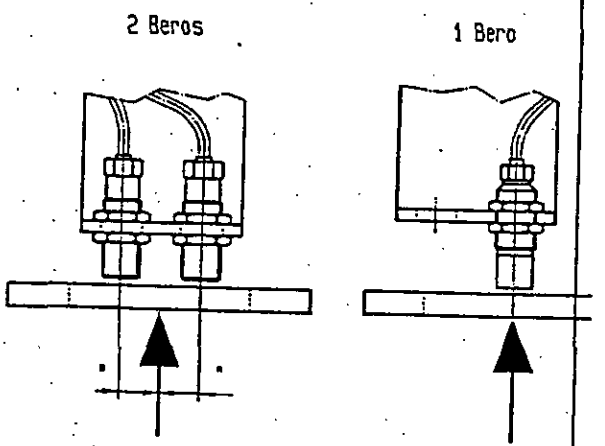
The measuring sensors for the electr. grip force tester must be calibrated once a year with the **grip force calibrating device** in accordance with the instructions given in the operating and service manual.

Note: This new calibrating device **cannot** be used for old UNI 4-CLD installations, but it can be used for old UNI installations with DT 106 and DT 108 grips!

Types:

- Grip force calibrating device UNIG DT (ID.# 10366124)
- Grip force calibrating device UNIG AGA (ID.# 10366305)





Rolling force centred on track of grip operating roller

To fit the grip force calibrating device:

- Set the two horizontal spacer screws so that the pressure screw contacts the track between the two measuring sensors (or in the centre of the individual sensor), and the device is at right angles to the track.

IMPORTANT!
The measuring accuracy of the grip force calibrating device must be inspected annually by the respective authority (e.g. Department of Weights and Measures).

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		KW/dk	2002-11-07	KD02013	1 / 1

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
--	--	CLD/MGD	Grips

Abgeleitet von / Based on: --

☒ OS ☐ O ☐ IS ☐ I

Operating Rollers, Guide Rollers and Running Wheels on Detachable Grips

After a long period in service (approx. 10,000 hours) there have been individual instances of cracks being found in the plastic running surface of the above rollers/wheels on detachable grips, although the permitted minimum diameter had not yet been reached.

This fault has occurred almost exclusively in regions exposed to large variations in temperature.

These cracks can cause breakage of the plastic running surface and therefore constitute another criterion for removing the rollers/wheels from service, in addition to the minimum diameter shown in the operating manual.

Providing that the bearings are still in proper working order, they can of course still be used.

This means that the inspections of rollers/wheels at the intervals stated in the operating manual must now also include visual checks for any signs of cracks in the running surface.

If such cracks are discovered during the course of maintenance, please check the entire installation and replace the rollers/wheels affected immediately.

In the case of cracks discovered between maintenance inspections, the affected rollers/wheels can also be replaced during the next inspection - provided that they have not caused the running surface to break off.

DOPPELMAYR CTEC inc
Golden Office - 14452 W. 44th Avenue, Golden, CO 80403
Ph: 303-277-9476 - Fx: 303-277-9759 - info@doppelmayrctec.com

Doppelmayr CTEC	Author: MB	Date: 2002-11-27	Doc. no.: D-29
SERVICE BULLETIN	☒ OS ☐ O ☐ IS ☐ I		

Supersedes:	Replaced by:	Type:	Assembly group:
N/A	N/A	Doppelmayr Detachables	Prior to 1998

SERVICE BRAKE

Abstract of Issue (Summary of Information)

During a normal stop, the service brake sets at a lift speed of approximately 0.3 m/sec and the drive is disconnected. In the unlikely event the service brake fails to set, the drive stays engaged at a speed less than 0.3 m/sec and no other brake sets. It is not possible to restart (accelerate) the lift until the service brake is engaged and the stop sequence is completed. This condition is not present on lifts built after 1997 or lifts built during 1997 that include the "3-channel" control system.

Reason for Release (Summary)

If in the unlikely event the service brake fails to actuate during a normal stop, the lift may come to a complete stop or may slow to a creep speed of less than 0.3 m/sec. In this situation the operator will need to activate an emergency stop to engage a brake and disconnect the drive. The primary concern is that an operator may not be aware that the drive has not disengaged and the brakes have not set. A secondary concern is that continued application of a normal stop without the application of the service brake could lead to premature commutator or brush wear on the motor.

Recommended Action

(Inspection, Modification, Part replacement, Nondestructive testing, Procedural change, Operational revisions, etc.)
All Operators of Doppelmayr detachable lifts manufactured prior to 1998 (not including 1997 lifts with the "3-channel" control system) shall inform all operations and maintenance personnel that the failure of a service brake to set during a normal stop may not automatically engage the drive sheave (emergency) brake and the operator may be required to manually set a brake by pressing the emergency stop button. Doppelmayr CTEC, Inc., is studying the various generations of lifts to identify a retrofit and will advise operators as soon as a suitable retrofit is identified.

Detail of Issue (Text, Drawings, Schematics)

On Doppelmayr detachable lifts manufactured prior to 1998 (excluding those lifts with the "3-channel" control system), the control logic does not automatically call for the application of the emergency brake if the service brakes fails to set during a normal stop. The drive will stay engaged and the lift will slow to stop or a creep speed of less than 0.3 m/sec. In this condition it is not possible to accelerate the lift to a higher speed by selecting the "Fast" speed until the service brake application has been satisfied.

In order to complete the stop sequence and disengage the drive, the control logic must see that the service brake has been applied. Failure of the service brake to apply will prevent the operator from accelerating the lift. The operator must select the emergency stop to disengage the drive and apply the drive sheave brake, and must repair the fault in the service brake before the lift can run.

The primary concern is that an operator may not be aware of the fact that the drive has not disengaged and the brakes have not applied. However, the emergency stop and all maintenance lockouts will disengage the drive and apply the emergency brake. All operations and maintenance personnel should be reminded to set an emergency stop or a maintenance lockout before working on the machinery.

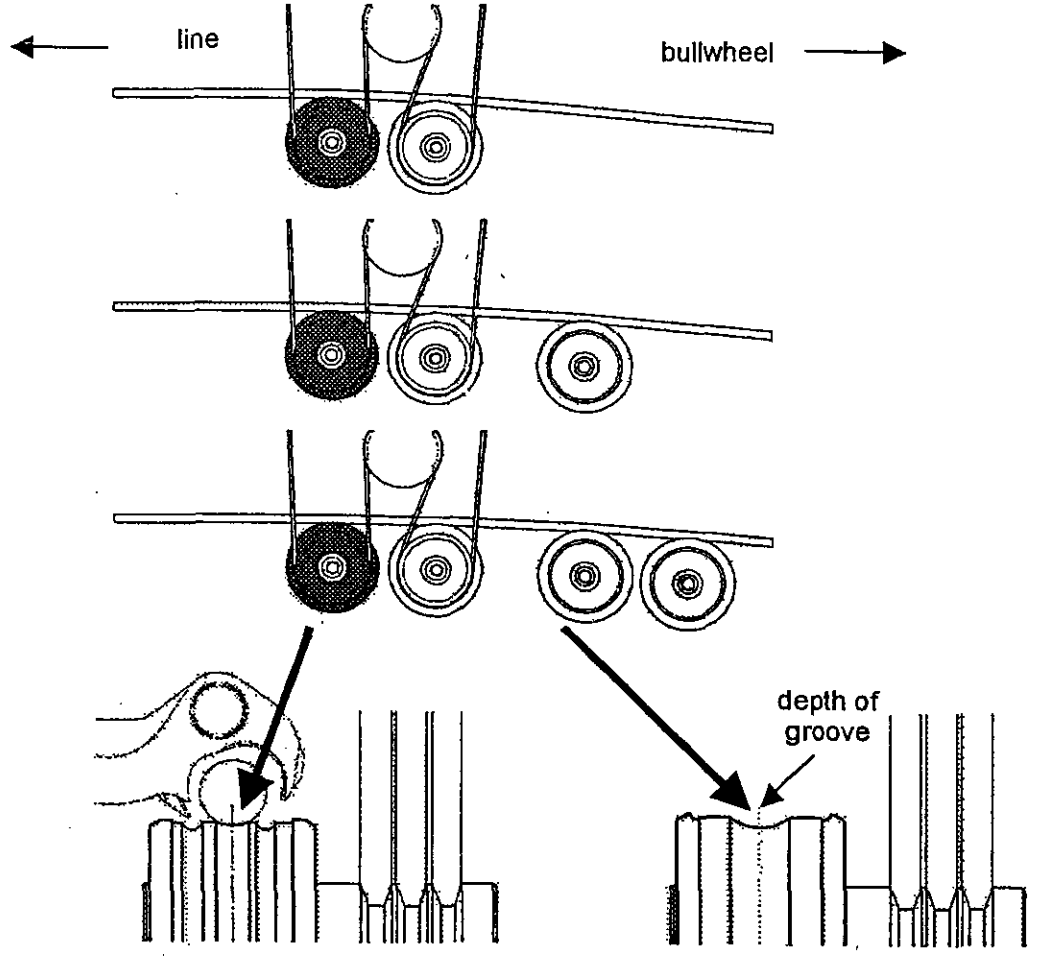
DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		BEC/KW/dk	2003-03-04	KD03004	1 / 1

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
–	–	CLD / MGD	Stations

Abgeleitet von / Based on:	Techn. Info #Do-315			
Classification Code:	X OS	O	IS	I

Three-grooved rubber liners for friction sheaves and deflection sheaves (station entry and exit side):

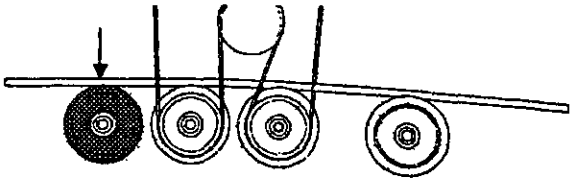


Important:
Only the **first friction sheave** on the station entry side **and the last one** on the station exit side may be fitted with the three-grooved rubber liner with flat groove.

All other sheaves leading up to the bullwheel (where applicable also horizontal sheaves) must be fitted with liners with deep groove, otherwise safe rope guidance is **no longer guaranteed**.

Installations with deflection sheaves installed in front of the station sheaves:

e.g. counting sheave



On installations with deflection sheaves (e.g. counting sheave D500) in front of the station sheaves **only this deflection sheave** may be fitted with the three-grooved rubber liner!

Doppelmayr CTEC inc

Main Office • 3160 West 500 South • Salt Lake City, Utah 84104 • Ph: 801-973-7977 • Fax 801-973-9580 • info@doppelmayrctec.com

TO: DOPPELMAYR CUSTOMERS

DATE: JULY 9, 2004

SUBJECT: Service Bulletin SB-04-007 for DT Detachable Lifts

Enclosed please find copy of the following bulletin:

- **Bulletin SB-04-007** **Movement of Hanger Axle on DT Grips**
  Doppelmayr DT Grip Customers
  (1994 – 2000)

Please report any movement to your Doppelmayr CTEC Service Representative.

Best regards,

DOPPELMAYR CTEC, INC.

Werner Auer
Customer Service Manager

WA:iam

Enclosure

Golden Office • 14452 W. 44th Avenue • Golden, CO 80403 • Ph: 303-277-9476 • Fx: 303-277-9759

Doc. no. : SB-04-007	Author : Customer Service Golden: WA	Release date : 2004-07-15	Doppelmayr CTEC

SERVICE BULLETIN

Lift manufacturer : Doppelmayr Lift type : Carrier with DT grips	Fabrication group :225 Code : ☐ OS ☒ O ☐ IS ☐ I

MOVEMENT OF HANGER AXLE ON DT GRIPS

On a few installations in North America (mainly in regions with high humidity and strong temperature fluctuations) there has been isolated cases where movement of the hanger axle in the fixed jaw has been detected due to condensation building in the bore of the fixed jaw.

The cavity behind the axle may collect water until the cavity is full. This could take several years. Once the cavity is full, with freezing conditions, micro movement may occur. Once movement has occured, the enlarged cavity will fill with additionnal water and with freezing conditions, may cause further micro movements.

ACTION REQUIRED

Check all carriers with DT grips this summer for more than usual lateral play in the hanger head assembly (3mm maximum). If movement is detected or suspected, a control measurement should be performed according to drawing on next page. Every summer thereafter, the same check should be performed. Please amend your maintenance manual accordingly.

Please report any movement to your Doppelmayr CTEC Service Representative. Do not attempt to pull hanger axle from fixed jaw by yourself as a specific procedure with specialized tooling with high forces (6 to 8 tons) is required or irreparable damage may occur.

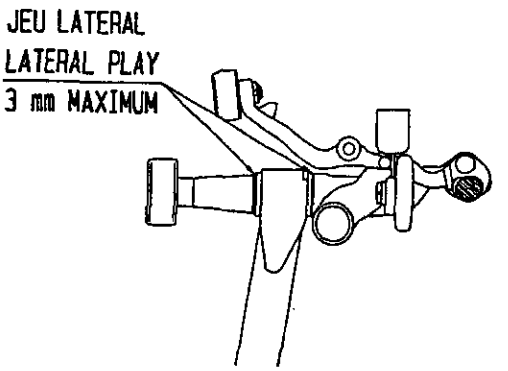
Doppelmayr CTEC
Customer Service

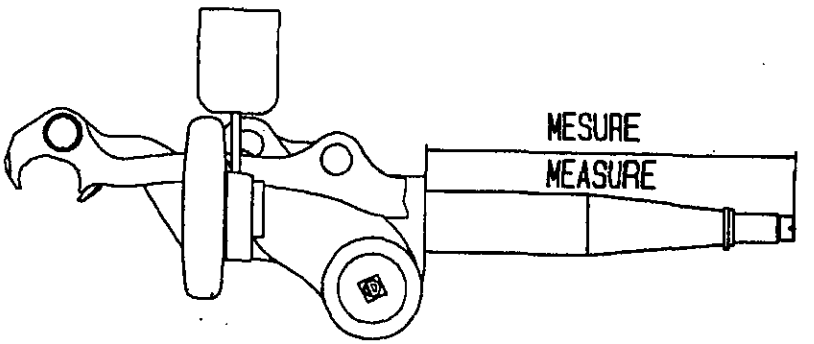
Doc. no. : SB-04-007	Author : Customer Service Golden: WA	Release date : 2004-07-15	Doppelmayr CTEC

SERVICE BULLETIN

Lift manufacturer : Doppelmayr Lift type : Carrier with DT grips	*Fabrication group :225* Code : ☐ OS ☒ O ☐ IS ☐ I

MOVEMENTOF HANGER AXLE ON DT GRIPS





	Required value	Limit value
Length of hanger axle DT104	394.5 mm	397.5 mm
Length of hanger axle DT104G	489 mm	492 mm
Length of hanger axle DT106	395 mm	398 mm
Length of hanger axle DT108	395 mm	398 mm

Doppelmayr CTEC, Inc.
14452 W. 44th Avenue
Golden, CO 80403
T: 303-277-9476
F: 303-2779759

14-MAR-05

TO: ALL DOPPELMAYR CUSTOMERS WITH DETACHABLE (DT-SERIES) GRIPS

RE: NDT TEST PROCEDURE FOR CARRIERS WITH DT-SERIES (DETACHABLE) GRIPS

Enclosed please find NDT Test Procedure for Carriers with DT-Series (detachable) Grips.

Please discard PSKL0104 dated 25.09.2001 and replace with the enclosed NDT Procedure (PSKL0104 dated 10.11.2004) in your Service and Maintenance Manuals.

Should you have any questions, please contact us.

Best regards,

DOPPELMAYR CTEC, INC.

Werner Auer
Customer Service Manager

WA:iam

Enclosure

NDT - Procedure
Detachable DT- Series Grips

Doppelmayr CTEC

Contents:

1. Foreword

This test procedure describes the non-destructive testing of DOPPELMAYR DT- series grips in compliance with national regulations listed in **Appendix A**.

Non-destructive testing in accordance with this test procedure enables the detection and characterization of type and size of surface discontinuities.

All forged grip parts have been thoroughly tested during production (see **Appendix F**).
The hot working process of forging can produce a number of surface discontinuities. Most of them can be easily detected by magnetic particle inspection. However, forging laps are difficult to detect by any non-destructive testing methods. They are at only slight angles to the surface and may be fairly shallow. Different magnetizing techniques and/or slight grinding, wire brushing, sandblasting or other surface preparation might enhance the detect ability of such forging laps. Therefore, it might be possible that, despite of the non-destructive testing performed during production, indications are found during the servicing inspection. However, undetected shallow indications are not detrimental as long as they are not propagating cracks, which can be revealed by the inspection.

2. General Requirements

The non-destructive tests must be performed in addition to physical measurements, visual inspection and service/maintenance work described in national regulations and the DOPPELMAYR CTEC maintenance manual and bulletins. For example, procedures for non-reusable parts and assembly/disassembly instructions for bolts must be observed.

Deviations from this test procedure are permissible only with the written authorization from DOPPELMAYR Wolfurt, QA-Department.

Important: This specification is only applicable for inspection and servicing parts in the field!
For a further evaluation of rejected parts, send them to your local Doppelmayr representative.

3. Other Applicable Standards and Documents

- DOPPELMAYR CTEC Maintenance Manual
- DOPPELMAYR / DOPPELMAYR CTEC Bulletins

4. Sampling Plan for USA

Every year, **10 %** of the total number or at least 10 grips shall be tested. The sampling plan shall ensure that within a **10-year** period every grip has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional **10 %** sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than **10%** of the identical components on an installation, an inspection of **100%** of this specific component must be performed.

Alternatively, all grips may be tested every **6 years**, or after **maximum 6000 hours** of operation (whichever comes first).

5. Sampling Plan for Canada, Australia, and New Zealand

Every year or after a **maximum of 2000** hours of operation (whichever comes first), **20 %** of the total number or **at least 10 grips** shall be tested. The sampling plan shall ensure that within a **5-year period** every grip has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional **20 %** sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than **10%** of the identical components on a installation, a inspection of **100%** of this specific component must be performed.

6. Test Procedure

The grip components to be inspected, the test methods applicable and the acceptance criteria are indicated in **Appendix D.**

7. Inspection Personnel

The person with the over-all responsibility for NDT inspection and the persons performing accept/reject evaluations must meet the requirements defined in **Appendix B1** (= responsible persons).

Personnel who meet the requirements defined in **Appendix B2** *may perform NDT inspections,* provided that the inspection is performed in accordance with this procedure and the inspection results are interpreted and evaluated by responsible persons as defined in **Appendix B1.**

8. Preparation and Post-Test Processing of Test

Prior to inspection, the test samples shall be disassembled and cleaned using a residue free cleaner. Bushings and bearings must be removed or carefully masked to prevent contamination during the inspection process.

Note: Care should be taken to prevent parts from different grips or hangers from being mixed up!

After cleaning, the test sample should be free of oil, grease, rust, loose paint or any other contaminant that might interfere with the proper performance of the test.

In critical areas, as indicated in **Appendix D,** the original paint must to be removed by a suitable process (i.e. with a rotating steel brush). Pickling is forbidden due to the risk of hydrogen embrittlement. If the original paint was removed during a former inspection and these areas were repainted with a thinner layer of paint, this new paint can remain if the thickness of the layer is less than **0.05 mm (2 mils).**

Dacromet coatings enable detection of discontinuities and need not to be removed before testing.

Note: Care must be taken to avoid unnecessary material loss or heating due to grinding!

After inspection the parts released for re-use shall be cleaned with a residue free solvent to remove all trace of the inspection medium. The dry and clean parts shall be re-lubricated according to the DOPPELMAYR CTEC maintenance manual. Additionally, the areas where the original paint has been removed for inspection should be recoated with an appropriate protection, i.e. paint.

9. Test Methods and Testing Equipment for Magnetic Particle Inspection

Magnetic particle inspections shall be carried out in compliance with the Standards defined in **Appendix C1.** The wet testing method shall be used.

During the inspection of the first item of each batch of identical components, the tangential surface magnetic field strength must be confirmed with a recognized flux indicator. Field strength must not be less than **16 A/cm** and shall not exceed **50 A/cm**.
Instead of using a flux indicator, a "Magnetic Particle Field Indicator" according to **ASME Sec. V, Art. 25** can be used to confirm the adequacy and direction of the magnetic field.

After inspection all components shall be left in a condition that iron filings will not be attracted.

Note: Attracted metallic particles can lead to excessive wear of components during operation.

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters (if applicable):

1) Test equipment (manufacturer's name, model, serial number and date of last calibration)
2) Type of magnetization to be used
3) Type of ferromagnetic particles to be used (manufacturer, description, colour, type of floating agent)
4) Duration of magnetization, direction of magnetic field and magnitude of current
5) Details of demagnetization process
6) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

10. Test Methods and Testing Equipment for Penetrant Inspection

Penetrant inspections have to be carried out in compliance with standards defined in **Appendix C2.**

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters:

1) Penetrant family type (manufacturer's name, sensitivity classification)
2) Method of penetrant application
3) Dwell time
4) Method of penetrant removal
5) Method of developer application
6) Development time
7) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

11. Test Methods and Testing Equipment for Ultrasonic Inspection

Ultrasonic inspections have to be carried out in compliance with the standards defined in **appendix C3**.

Ultrasonic inspection shall only be carried out in the critical area (**see graph 4**) of the hanger axle. The hanger axle shall be tested in an assembled condition.

Prior to inspection, the test method shall be defined by determining in writing the following minimum test parameters:

1) Test equipment (manufacturer's name, model, serial number and date of last calibration)
2) Probe
3) Couplant
4) Reference blocks
5) Details of pre-test and post-test treatment of test samples.

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

12. Disposition of defective parts

If components have indications that do not fall within the acceptance criteria, a responsible person (**see 7**) must carefully decide on how to proceed with these components.
Possible actions include reworking (e.g. grinding), repairing, rejection/replacing, sending to a Doppelmayr representative for evaluation, or re-using without rework or repair.

Parts with indications that cannot be removed under conditions stated in the Appendix must be rejected. Rejected parts should be sent to Doppelmayr CTEC for further investigations.

Important: For maximum depth of grinding, **previous reworks by grinding** shall be determined and ***taken into account*** for further allowable grinding. If not possible, such parts must be sent to Doppelmayr for further investigations.

If components with indications that do not fall within the acceptance criteria are re-used without rework or repair, they must be subjected to a further NDT test after a reasonable period of time to make sure that the fault observed has not worsened.

If components are reworked (e.g. by grinding), they have to be re-inspected and assessed in accordance with the accept/reject criteria.

If components are repaired, they have to be re-inspected and assessed in accordance to the acceptance/rejection criteria.
After a reasonable period of operation they must undergo a further NDT inspection to ensure the enduring success of the repair procedure.

If components are rejected they shall be marked with lift name, number of carrier, serial number and date of inspection. They shall be held for possible further evaluation by DOPPELMAYR or its agents.

13. Documentation, Records

The lift owner or owner's representative is responsible for correct performance of tests. The test records shall be kept for a minimum of **10 years.**

If parts had to be reworked, repaired or rejected, a test report shall be sent to DOPPELMAYR CTEC within 4 weeks of completion of the test.

Test records, as a minimum, shall contain the following information:

1) Name and order no. of lift, date of start of operation
2) Name and address of lift owner/operator
3) Name and address of inspection agency
4) Name and qualification (date and no. of certificate) of inspector(s) in charge
5) Date of inspection
6) Operating hours at time of inspection
7) Test method and procedure
8) Total number of grips inspected
9) Serial numbers of grips
10) Description and total number of individual components inspected
11) For each individual component: Number of acceptable parts, number of rejected parts
12) For each rejected part:
    - Serial number of grip
    - Description of fault
    - Decision as to treatment of rejected unit
13) Signature of the person responsible

APPENDIX A: NATIONAL REGULATIONS FOR INSPECTION AND TESTING

Australia:	CSA-Z98-01*
Canada:	CSA-Z98-01*
New Zealand:	CSA-Z98-01*
USA:	AMERICAN NATIONAL STANDARD B77.1* CPTSB Rules and Regulations* Railway Act part XI rule #26*

**Last editions with updates are applicable*

APPENDIX B: QUALIFICATION OF PERSONNEL

B1. Personnel responsible for testing

Australia:	AINDT Level II Technician or Level III Technologist with relevant experience to non-destructive testing
Canada:	CGSB Level II or III
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level II or III
USA:	ASNT TC 1A Level II or III, American Society for NDT Qualification of Inspection Personnel

B2. Supervised personnel

Australia:	AINDT Level I
Canada:	CGSB Level I (MT and PT)
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level I
USA:	ASNT TC 1A Level I, American Society for NDT Qualification of Inspection Personnel

APPENDIX C: OTHER APPLICABLE DOCUMENTS FOR TESTING

C1. Other applicable Documents for Magnetic Particle Testing

Australia:	AS 1171-1998 Non-destructive testing – Magnetic particle testing of ferromagnetic products, *components and structures*
New Zealand:	BS 6072 or ASTM E709 Standard Guide for Magnetic Particle Examination
USA / Canada:	ASTM E709 Standard Guide for Magnetic Particle Examination ASTM E1444 Standard Practice for Magnetic Particle Examination

C2. Other applicable Documents for Penetrant Testing

Australia:	AS 2062-1997Non-destructive testing – Penetrant testing of products and components
New Zealand:	ASTM E165 Standard Test Method for Liquid Penetrant Examination ASTM E1417 Standard Practice for Liquid Penetrant Examination
USA / Canada:	ASTM E165 Standard Test Method for Liquid Penetrant Examination ASTM E1417 Standard Practice for Liquid Penetrant Examination

C3 Other applicable documents for ultrasonic testing

Australia:	AS 1065-1988 Non-destructive testing - Ultrasonic testing of Carbon and low alloy steels
New Zealand:	AMSE-Code Sec. V, Article 4 + 5
USA / Canada:	AMSE-Code Sec. V, Article 4 + 5

APPENDIX D: TESTING OF DETACHABLE GRIP

D1 Grip components to be tested

D1.1 Grip components to be visually inspected

- All grip parts

D1.2 Grip components to be magnetic particle inspected

- Movable jaw
  (material: quenched and tempered steel, R_m = 1000 ÷ 1150 N/mm²)
- Fixed jaw
  (material: quenched and tempered steel, R_m = 1000 ÷ 1150 N/mm²)
- Torsion tube
  (material: quenched and tempered steel, R_m = 1000 ÷ 1150 N/mm²)
- Jaw tongue axle
  (material: stainless steel, ferromagnetic)
- Hanger axle
  (material: quenched and tempered steel, R_m = 1000 ÷ 1200 N/mm², nitro carburized)

D1.3 Grip components to be ultrasonic tested

- Hanger axle
  (material: quenched and tempered steel, R_m = 1000 ÷ 1200 N/mm², nitro carburized)

D2 Test methods

D2.1 Visual Inspection

Prior to any other NDT-inspection the whole part has to be visually inspected.

D2.2 Magnetic Particle Inspection

For critical areas as indicated in the following chapter ***wet magnetic particle testing*** *is* ***mandatory****.*

Penetrant testing can be additionally used for confirmation of MT-indications.

D2.3 Ultrasonic Inspection

The critical area of the hanger axle, as indicated in **graph 4**, must be ultrasonically tested. The hanger axle shall remain pressed into the fixed grip jaw during the test.

D3 Acceptance Criteria: Movable Jaw, Fixed Jaw and Torsion Tubes

D3.1 Dimensional and Visual Inspection

Critical dimension(s), as per **graph 1, graph 2, and graph 3**, must be checked.

Wear shall be checked according to the Doppelmayr maintenance manual.

D3.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D3.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D3.2.2**
- **Marks, nicks**, and **rusty, non-linear indications** on **machined surfaces** with a **depth > 0.2 mm**
  - Parts with indications with a depth > 0.2 mm must be rejected.
  - Indications with a depth < 0.2 mm (only localized!) be further treated according to **D3.3.**
- **Marks, nicks** (except forging marks), and **rusty, non-linear indications** on **all other surfaces** with a **depth > 1.0 mm**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D3.2.2**

D3.2 Magnetic Particle Inspection

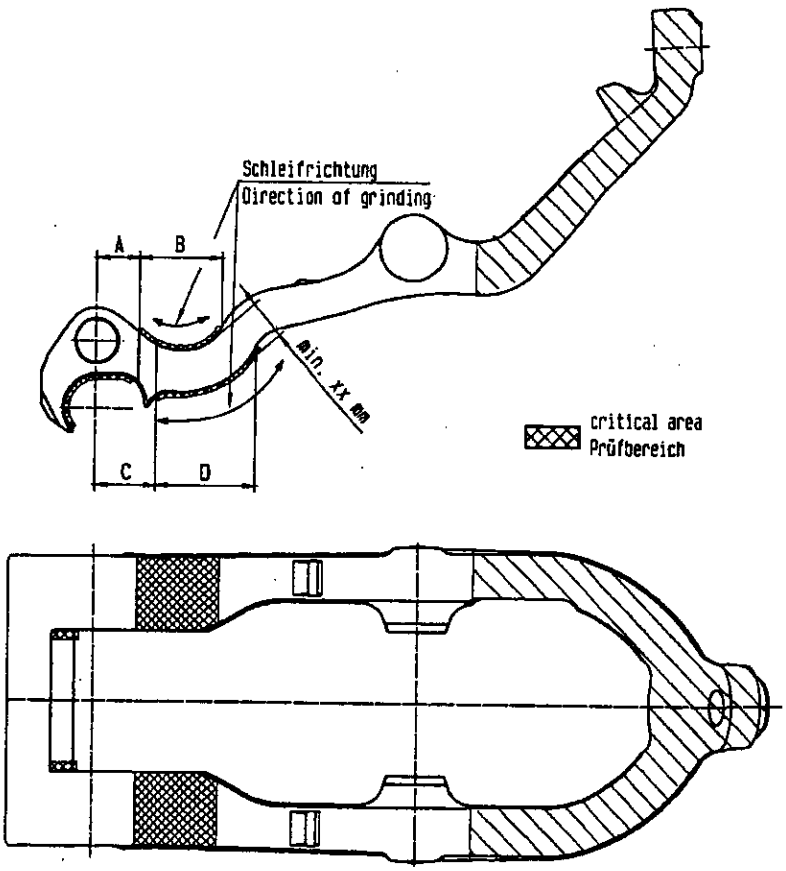
D3.2.1 Inspection area

- Magnetic particle inspection is **mandatory** in **critical areas.**
  For critical areas (crosshatched areas) see **graph 1, graph 2, and graph 3.**
- Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per **D3.1.2.**

	DT 104	DT 106	DT 108
A	32 mm	22 mm	36 mm
B	30 mm	50 mm	70 mm
C	45 mm	40 mm	45 mm
D	35 mm	45 mm	80 mm
XX	27 mm * 31.6 mm°	27 mm	34 mm

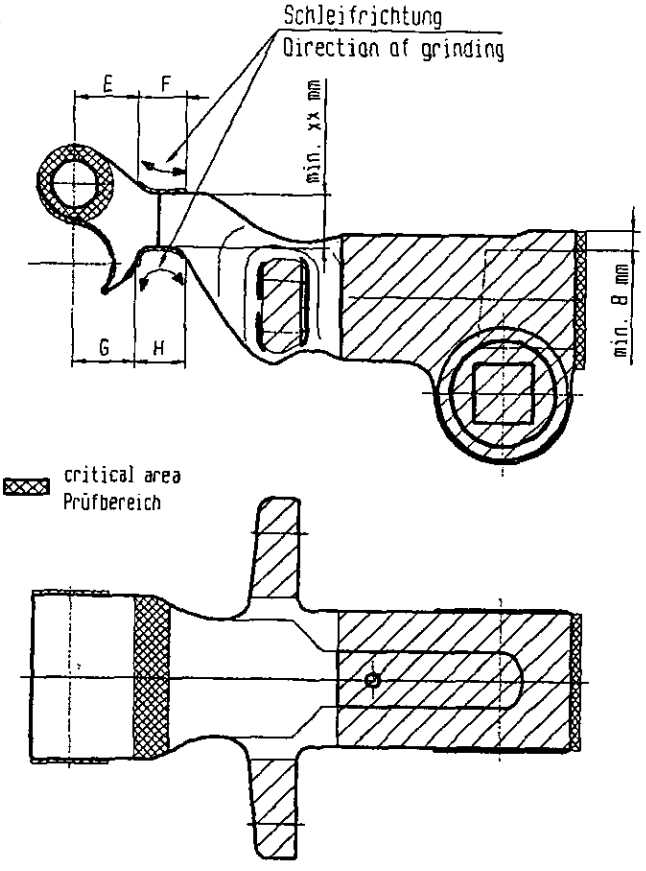
* Grip jaw width: 162 mm

° Grip jaw width: 250 mm



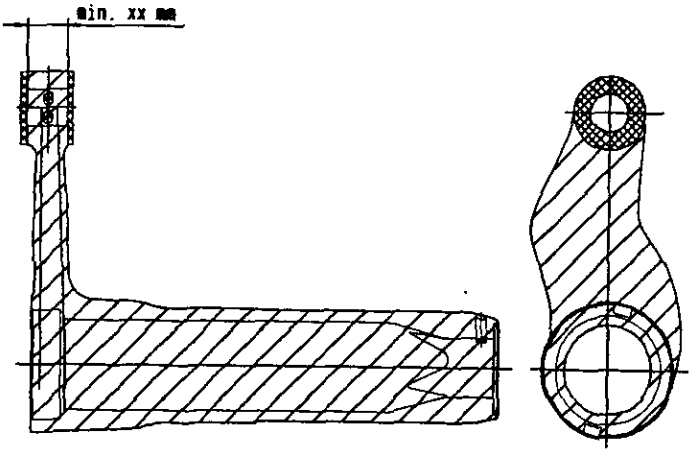
Graph 1: Critical areas and critical dimensions, movable jaw

	DT 104	DT 106	DT 108
E	28 mm	26 mm	50 mm
F	35 mm	50 mm	45 mm
G	34 mm	40 mm	45 mm
H	30 mm	37 mm	36 mm
XX	29 mm	33 mm	38 mm



Graph 2: Critical areas and critical dimensions, fixed jaw

	DT 104	DT 106	DT 108
XX	25 mm	29,5 mm	29.5 mm



Graph 3: Critical areas and critical dimensions, torsion tube

D3.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear indications in critical areas** (crosshatched areas) with a **length > 2 mm**
  - Unacceptable indications must be further treated according to **D3.3**
- **Linear indications in critical areas** (crosshatched areas) in the **area of corners, edges or radii**
  - Unacceptable indications must be further treated according to **D3.3**
- **Linear indications in non-critical areas** with a **length > 4 mm**
  - Unacceptable indications must be further treated according to **D3.3**

D3.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected.
Rejected parts should be sent to Doppelmayr for further investigations.

D3.3.1 Un-machined surface

Unacceptable indications may be removed by grinding under following conditions:

- In ***hatched areas (not cross-hatched areas)***, as stated in **graph 1, 2, and 3**, the max. depth of grinding is 2 mm.
- In **all other areas**, as stated in **graph 1, 2, and 3**, the max. depth of grinding is 1.0 mm.
- **Critical dimensions** stated in **graph 1, 2, and 3**, must be considered.
- Ghost lines or tool marks must not be perpendicular to the main stress direction. Required directions for ghost lines or tool mark, as indicated in **graph 1 and Graph 2** must be considered.
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
  Local hardening and hardening cracks due to grinding must be avoided!
- Diameter of grinding exceeds 25 times depth

D3.3.2 Machined surface

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 0.2 mm (only localized!).
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
  Local hardening and hardening cracks due to grinding must be avoided!

D3.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their **location, nature** and **grinding depth**:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D4 Acceptance Criteria: Jaw Tongue Axle

D4.1 Visual Inspection

Wear shall be checked according to the Doppelmayr maintenance manual.

D4.1.1 Visual Inspection Area

Before and after cleaning the complete axle must be visually inspected.

D4.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D4.2**
- **Marks, nicks, and rusty, non-linear indication** with a **depth > 0.2 mm**
  - Parts with indications with a depth > 0.2 mm must be rejected.
  - Parts with indications with a depth < 0.2 mm must be further treated according to **D4.3**

D4.2 Magnetic Particle Inspection

D4.2.1 Inspection area

Magnetic particle inspection is **mandatory** on the **whole length** of the axle.

D4.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear indications** with a **length > 1 mm**

  Exception: - The indication is exactly parallel to the longitudinal axis
  - A penetration test performed to confirm the MT-indications shows no indications

  - Unacceptable indications must be further treated according to **D4.3**

D4.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected.
Rejected parts should be sent to Doppelmayr for further investigations.

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 0.2 mm.
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Care is taken on bearing and bushing seats.
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
  Local hardening and hardening cracks due to grinding must be avoided!

D4.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their **location, nature** and **grinding depth**:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D5 Acceptance Criteria: Hanger Axle (assembled with fixed jaw)

D5.1 Visual Inspection

Wear shall be checked according to the Doppelmayr CTEC maintenance manual.

D5.1.1 Visual Inspection Area

Before and after cleaning, the complete (accessible area of the) axle must be visually inspected.

D5.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D5.2**
- **Marks, nicks,** and **rusty, non-linear indication** with a **depth > 0.3 mm**
  - Parts with indications with a depth > 0.3 mm must be rejected.
  - Parts with indications with a depth < 0.3 mm must be further treated according to **D5.3**

D5.2 Magnetic Particle Inspection

D5.2.1 Inspection area

- Magnetic particle inspection is **mandatory** in **critical areas.**
  For critical areas (crosshatched areas) see **graph 4.**
- Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per **D5.1.2.**

D5.2.2 Reject Criteria (indications)

Following indications are unacceptable:

- **Linear indications** with a **length > 1 mm**

  Exception: - The indication is exactly parallel to the longitudinal axis
  - A penetration test performed to confirm the MT-indications shows no indications

  - Unacceptable indications must be further treated according to **D5.4**

D5.3 Ultrasonic Inspection

D5.3.1 Inspection area

- Ultrasonic inspection is **mandatory** in **critical areas**.
- For critical areas and scanning surfaces see **graph 4.**

D5.3.2 Calibration of Ultrasonic Device

- Sound beam angle of transducer unit: 45°
- Setting the distance:

  Distance must be set to 125 mm with the aid of calibration block K2 (European standard EN 27 963) or a suitable reference block.
  Using the calibration K2 and calibrating the distance on the 25 mm radius, the two echoes are at 2 and 8 scale markings.

- Setting the sensitivity:

  The sensitivity is set with the aid of the special „hanger axle" reference block with 0.5 mm reflector (see graph 4).
  Setting the distance to 125 mm, the echo of the notch is between 5.5 and 8 scale markings, depending on the type of grip.
  The echo of the notch must be set to 80 % Full Screen Height (FSH).

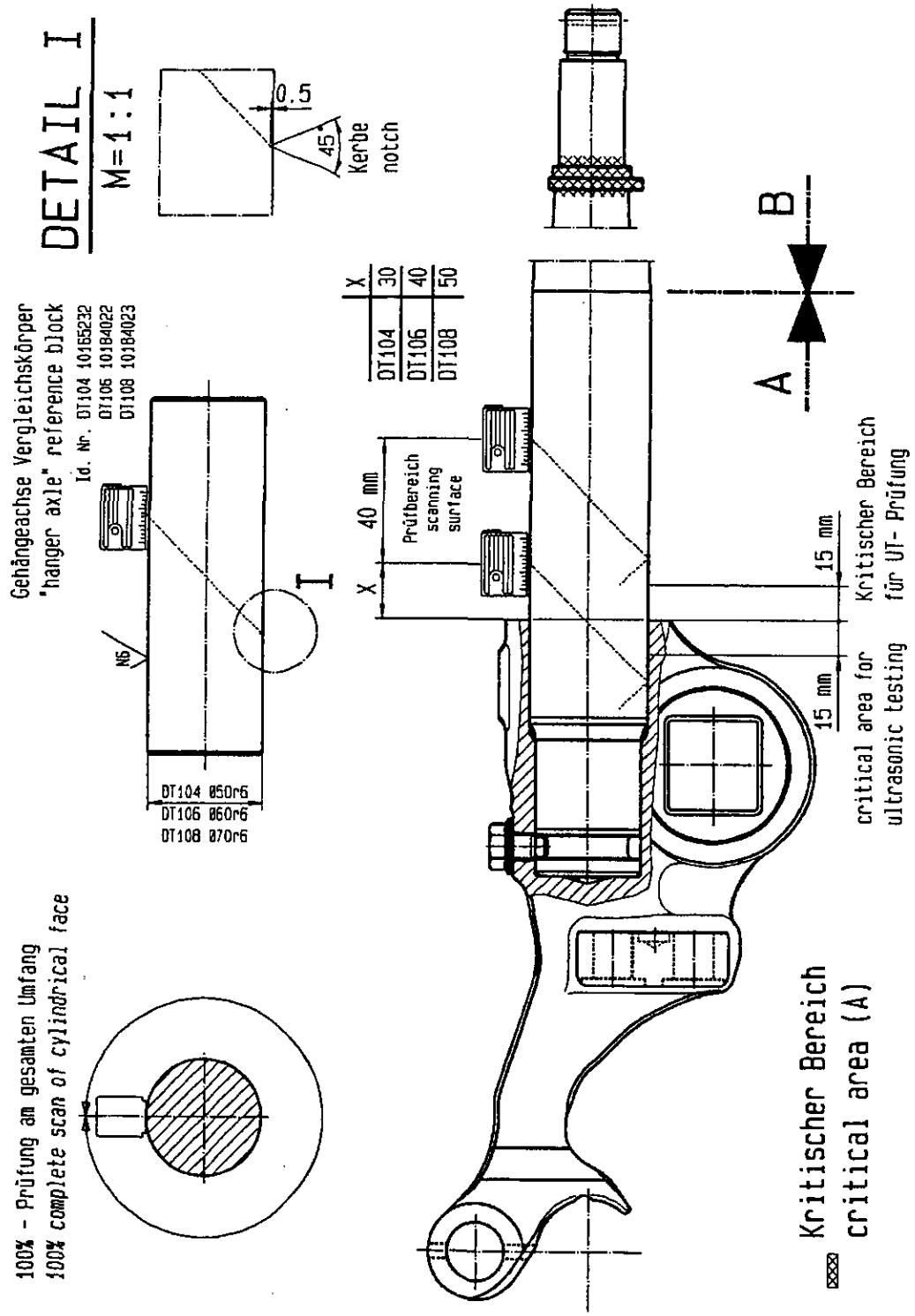
- Checking the settings:

  The distance and sensitivity settings must be checked at least once during continuous testing (> 4 hours) or if the person performing the test has been replaced.
  If there are deviations of > 10 % in the distance setting or > 20 % in sensitivity setting, the settings shall be corrected and all scans performed since the last checked setting must be repeated.

D5.3.3 Acceptance criteria:

- **Indications** up to **40 % FSH** between scale markings 6 and 8 are **permitted**.
- In the case of indications **above 40 % FSH**, the hanger axle must be removed and subjected to **magnetic particle testing** in critical area as indicated on **graph 4** (for acceptance criteria, see **D5.2**).

Important: Outside the critical area (+/- 15 mm from the end of the fixed jaw), indications between scale markings 6 and 8 can be found. These indications derive from reflections on edges inside the fixed jaw and must not be considered.



Graph 4: Critical areas for MT- and UT-inspection, hanger axle

D5.4 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to Doppelmayr for further investigations.

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 0.3 mm.
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Care is taken on bearing and bushing seats.
- *Grinding must be smooth (surface finish minimum* ***N6 to ISO 1302****) and free of nicks.* Local hardening and hardening cracks due to grinding must be avoided!

D5.5 Documentation of Visual, Magnetic Particle, and Ultrasonic Inspection

Following indications must be documented with their location, nature and grinding depth:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear
- Results of the UT-inspection

D6 Acceptance Criteria: All other Grip Parts

D6.1 Visual Inspection

D6.1.1 Visual Inspection Area

Before and after cleaning, the complete part must be visually inspected.

D6.1.2 *Visual Reject Criteria (indications)*

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be further treated according to **D6.2**
- **Marks, nicks** and **rusty, non-linear indications** on **unmachined** surfaces with a **depth > 1.0 mm**
  - Unacceptable indications must be rejected
- **Marks, nicks**, and **rusty, non-linear indications** on **machined** surfaces with a **depth > 0.2 mm**
  - *Parts with indications with a depth > 0.2 mm must be rejected.*
  - Indications with a depth < 0.2 mm (only localized!) must be further treated according to **D6.2.1**

D6.2 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to Doppelmayr for further investigations.

D6.2.1 Unmachined surface

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 1.0 mm.
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!

D6.2.2 Machined surface

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 0.2 mm (only localized!).
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!

D6.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their location, nature and grinding depth:

- All unacceptable indications (also indications which have been removed successfully)

APPENDIX E: ACCEPTANCE CRITERIA FOR INSPECTION OF FORGED PARTS AT DOPPELMAYR
(FOR INFORMATION ONLY)

E1 Acceptance Criteria for Magnetic Particle Inspection

Forgings normally belong to grade of quality 3 according to table 1. Inspection segments with another grade of quality (grade of quality 4) are marked in the drawings (crosshatched areas).

Table 1: Grades of Quality, Limits of Record and Criteria of Acceptance:

	Grade of Quality	
	3	4
Limit of record: length of reading [mm]	≥ 2	≥ 1
Maximum permitted length of joined or individual readings [mm]	4	2 [1)]
Maximum permitted length of cumulative readings [mm] (reference area: format A 6)	24	5 [1)]
Maximum permitted number of readings in the reference area	7	5
[1)] *Readings must not run over edges, radii or roundings.*		

E2 Acceptance Criteria for Incoming Inspection

The inspection segments are indicated on the drawing. Samples are shown in graph 5.

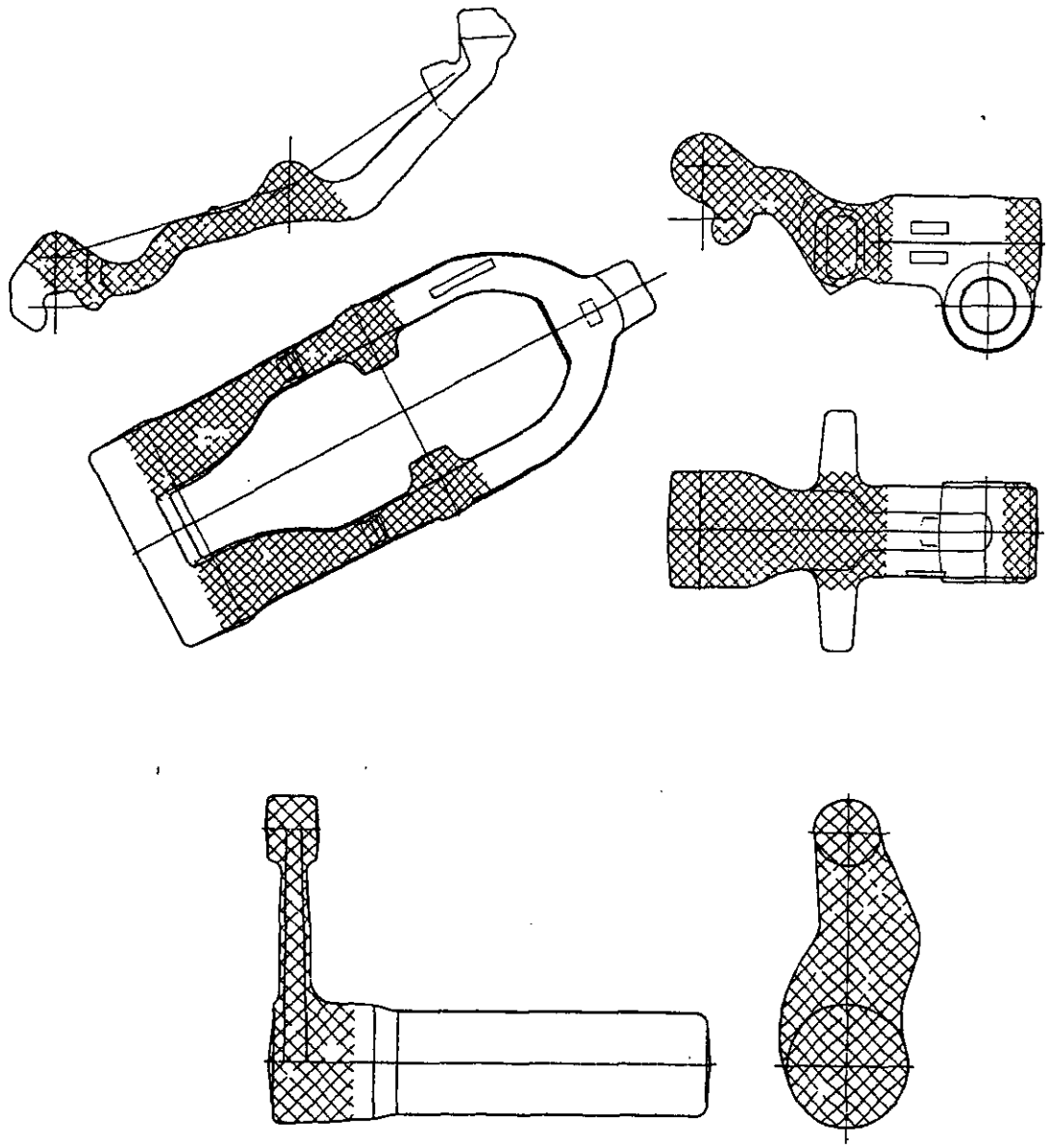
Percentage of incoming inspection: 10 % (Final inspection at the forge: 100 %)

E3 Acceptance Criteria for Final Inspection

Critical are all machined areas on the forged parts.

Critical areas will be tested according to quality grade 4.

Percentage of final inspection: 100 %



Graph 5: Inspection segments on forged parts

Doppelmayr CTEC, Inc.
14452 W. 44th Avenue
Golden, CO 80403
T: 303-277-9476
F: 303-2779759

25-FEB-05

Via Mail

TO: DOPPELMAYR CUSTOMERS

RE: Test Procedure for NDT of Detachable Carriers with DS Series Grips (PSKL0112 – 12-14-2004)
Test Procedure for NDT of Fixed Grip Carriers (PSKL0105 – 12-14-2004)
Test Procedure for NDT of Hanger Arm and Chair - 4-Point Suspension (PSFB0107 -12-14-2004)
Service Bulletin SB-04-015 – Sheave Assembly Access Rails (All Chairlifts)
Service Bulletin SB-05-002 – Line Sheaves Model 400 (All Chairlifts)
NB 04-008 – Towing with Detachable Chairs (Detachable Lifts)
Bulletin KD04001 – Leaving Track on Surface Lifts (Surface Lifts)
Bulletin KD04002 – Brake Disk Type C (Surface Lifts)
Notification Letter Regarding Backrest to Chair Bail Connection (Quad Chairs Model E)

Enclosed you will find items that pertain to your ski area installations. Please insert new NDT procedures in all your Service and Maintenance Manuals and discard existing procedures.

Should you have any questions regarding the enclosed NDT Test Procedures, Bulletins or letter, please contact your local Doppelmayr Representative.

Best regards,

DOPPELMAYR CTEC, INC.

Werner G. Auer
Customer Service

WA:iam

Enc.

NDT - Procedure
Detachable DS- Series Grips

Doppelmayr CTEC

Contents:

1. Foreword

This test procedure describes the non-destructive testing of DOPPELMAYR **DS- series grips** in compliance with national regulations listed in **Appendix A.**

Non-destructive testing in accordance with this test procedure enables the detection and characterization of type and size of surface discontinuities.

All forged grip parts have been thoroughly tested during production. The hot working process of forging can produce a number of surface discontinuities. Most of them can be easily detected by magnetic particle inspection. However, forging laps are difficult to detect by any non-destructive testing methods. They are at only slight angles to the surface and may be fairly shallow. Different magnetizing techniques and/or slight grinding, wire brushing, sandblasting or other surface preparation might enhance the detect ability of such forging laps. Therefore, it might be possible that, despite of the non-destructive testing performed during production, indications are found during the servicing inspection. However, undetected shallow indications are not detrimental as long as they are not propagating cracks, which can be revealed by the inspection.

2. General Requirements

The non-destructive tests must be performed in addition to physical measurements, visual inspection and service/maintenance work described in national regulations and the DOPPELMAYR CTEC maintenance manual and bulletins. For example, procedures for non-reusable parts and assembly/disassembly instructions for bolts must be observed.

Deviations from this test procedure are permissible only with the written authorization from DOPPELMAYR Wolfurt, QA-Department.

Important: This specification is only applicable for inspection and servicing parts in the field!
For a further evaluation of rejected parts, send them to your local DOPPELMAYR representative.

3. Other Applicable Standards and Documents

- DOPPELMAYR CTEC Maintenance Manual
- DOPPELMAYR CTEC Bulletins

4. Sampling Plan for USA

Every year, **10 %** of the total number or at least **10 grips** shall be tested. The sampling plan shall ensure that within a **10-year** period every grip has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional **10 %** sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than **10%** of the identical components on an installation, an inspection of **100%** of this specific component must be performed.

Alternatively, all grips may be tested every **6 years**, or after maximum **6000 hours** of operation (whichever comes first).

5. Sampling Plan for Canada, Australia, and New Zealand

Every year or after a maximum of **2000 hours** of operation (whichever comes first), **20 %** of the total number or **at least 10 grips** shall be tested. The sampling plan shall ensure that within a **5-year period** every grip has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional **20 %** sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than **10%** of the identical components on a installation, a inspection of **100%** of this specific component must be performed.

6. Test Procedures

The grip components to be inspected, the test methods applicable and the acceptance criteria are indicated in **Appendix D.**

7. Inspection Personnel

The person with the over-all responsibility for NDT inspection and the persons performing accept/reject evaluations must meet the requirements defined in **Appendix B1** (= responsible persons).

Personnel who meet the requirements defined in **Appendix B2** may perform NDT inspections, provided that the inspection is performed in accordance with this procedure and the inspection results are interpreted and evaluated by responsible persons as defined in **Appendix B1.**

8. Preparation and Post-Test Processing of Test

Prior to inspection, the test samples shall be disassembled and cleaned using a residue free cleaner. Bushings and bearings must be removed or carefully masked to prevent contamination during the inspection process.

Note: Care should be taken to prevent parts from different grips or hangers from being mixed up!

After cleaning, the test sample should be free of oil, grease, rust, loose paint or any other contaminant that might interfere with the proper performance of the test.

If necessary (i.e. if the thickness of the paint interferes with the formation of indications), the paint has to be removed in critical areas, as indicated in **Appendix D.**

Note: Care must be taken to avoid unnecessary material loss or heating due to grinding!
Pickling is forbidden for the forged steel parts due to the risk of hydrogen embrittlement!

After inspection the parts released for re-use shall be cleaned with a residue free solvent to remove all trace of the inspection medium. The dry and clean parts shall be re-lubricated according to the DOPPELMAYR CTEC maintenance manual. Additionally, the areas where the original paint has been removed for inspection should be recoated with an appropriate protection, i.e. paint.

9. Test Methods and Testing Equipment for Magnetic Particle Inspection

Magnetic particle inspections shall be carried out in compliance with the Standards defined in **Appendix C1**. **The wet testing method shall be used.**

During the inspection of the first item of each batch of identical components, the tangential surface magnetic field strength must be confirmed with a recognized flux indicator. Field strength must not be less than **16 A/cm** and shall not exceed **50 A/cm**.
Instead of using a flux indicator, a "Magnetic Particle Field Indicator" according to **ASME Sec. V, Art. 25** can be used to confirm the adequacy and direction of the magnetic field.

After inspection all components shall be left in a condition that iron filings will not be attracted.

Note: Attracted metallic particles can lead to excessive wear of components during operation.

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters (if applicable):

1) Test equipment (manufacturer's name, model, serial number and date of last calibration)
2) Type of magnetization to be used
3) Type of ferromagnetic particles to be used *(manufacturer, description, colour, type of floating agent)*
4) Duration of magnetization, direction of magnetic field and magnitude of current
5) Details of demagnetization process
6) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

10. Test Methods and Testing Equipment for Penetrant Inspection

Penetrant inspections have to be carried out in compliance with standards defined in **Appendix C2.**

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters:

1) Penetrant family type (manufacturer's name, sensitivity classification)
2) Method of penetrant application
3) *Dwell time*
4) Method of penetrant removal
5) Method of developer application
6) Development time
7) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

11. Disposition of defective parts

If components have indications that do not fall within the acceptance criteria, a responsible person (**see 7**) must carefully decide on how to proceed with these components.
Possible actions include reworking (e.g. grinding), repairing, rejection/replacing, sending to a DOPPELMAYR representative for evaluation, or re-using without rework or repair.

Parts with indications that cannot be removed under conditions stated in the Appendix must be rejected. Rejected parts should be sent to DOPPELMAYR CTEC for further investigations.

Important: For maximum depth of grinding, **previous reworks by grinding** shall be determined and **taken into account** for further allowable grinding. If not possible, such parts must be sent to a DOPPELMAYR representative for further investigations.

If components with indications that do not fall within the acceptance criteria are re-used without rework or repair, they must be subjected to a further NDT test after a reasonable period of time to make sure that the fault observed has not worsened.

If components are reworked (e.g. by grinding), they have to be re-inspected and assessed in accordance with the accept/reject criteria.

If components are repaired, they have to be re-inspected and assessed in accordance to the acceptance/rejection criteria.
After a reasonable period of operation they must undergo a further NDT inspection to ensure the enduring success of the repair procedure.

If components are rejected they shall be marked with lift name, number of carrier, serial number and date of inspection. They shall be held for possible further evaluation by DOPPELMAYR or its agents.

12. Documentation, Records

The lift owner or owner's representative is responsible for correct performance of tests. The test records shall be kept for a minimum of **10 years**.

If parts had to be reworked, repaired or rejected, a test report shall be sent to DOPPELMAYR CTEC within **4 weeks** of completion of the test.

Test records, as a minimum, shall contain the following information:

1) Name and order no. of lift, date of start of operation
2) Name and address of lift owner/operator
3) Name and address of inspection agency
4) Name and qualification (date and no. of certificate) of inspector (s) in charge
5) Date of inspection
6) Operating hours at time of inspection
7) Test method and procedure
8) Total number of grips inspected
9) Serial numbers of tested grips and carrier number.
10) Description and total number of individual components inspected
11) For each individual component: Number of acceptable parts, number of rejected parts
12) *For each rejected part:*
    - Serial number of grip number and number of carrier
    - Description of fault
    - Decision as to treatment of rejected unit
13) Signature of the person responsible

APPENDIX A: NATIONAL REGULATIONS FOR INSPECTION AND TESTING

Australia:	CSA-Z98-01*
Canada:	CSA-Z98-01*
New Zealand:	CSA-Z98-01*
USA:	AMERICAN NATIONAL STANDARD B77.1* CPTSB Rules and Regulations* Railway Act part XI rule #26*

**Last editions with updates are applicable*

APPENDIX B: QUALIFICATION OF PERSONNEL

B1. Personnel responsible for testing

Australia:	AINDT Level II Technician or Level III Technologist with relevant experience to *non-destructive testing*
Canada:	CGSB Level II or III
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level II or III
USA:	ASNT TC 1A Level II or III, American Society for NDT Qualification of Inspection Personnel

B2. Supervised personnel

Australia:	AINDT Level I
Canada:	CGSB Level I (MT and PT)
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level I
USA:	ASNT TC 1A Level I, American Society for NDT Qualification of Inspection Personnel

APPENDIX C: OTHER APPLICABLE DOCUMENTS FOR TESTING

C1. Other applicable Documents for Magnetic Particle Testing

Australia:	AS 1171-1998 Non-destructive testing – Magnetic particle testing of ferromagnetic products, components and structures
New Zealand:	BS 6072 or ASTM E709 Standard Guide for Magnetic Particle Examination
USA / Canada:	ASTM E709 Standard Guide for Magnetic Particle Examination ASTM E1444 Standard Practice for Magnetic Particle Examination

C2. Other applicable Documents for Penetrant Testing

Australia:	AS 2062-1997Non-destructive testing – Penetrant testing of products and components
New Zealand:	ASTM E165 Standard Test Method for Liquid Penetrant Examination ASTM E1417 Standard Practice for Liquid Penetrant Examination
USA / Canada:	ASTM E165 Standard Test Method for Liquid Penetrant Examination ASTM E1417 Standard Practice for Liquid Penetrant Examination

APPENDIX D: TESTING OF DETACHABLE GRIP

D1. Grip components to be tested

D1.1. Grip components to be visually inspected

- All grip parts

D1.2 Grip components to be magnetic particle inspected

- Grip housing
  (material: steel for general structural purposes: C≤ 0,2 %, R_m = 490 ÷ 630 N/mm²)
- Movable jaw
  (material: quenched and tempered steel, R_m = 1000 ÷ 1150 N/mm²)
- Fixed jaw
  (material: quenched and tempered steel, R_m = 1000 ÷ 1150 N/mm²)
- Hanger axle
  (material: quenched and tempered steel, R_m = 1000 ÷ 1200 N/mm², nitro carburized)
- Jaw tongue axle
  (material: stainless steel, ferromagnetic)
- Spring guide slide rod
  (material: quenched and tempered steel, R_m = 1000 ÷ 1200 N/mm², nitro carburized)

D2 Test methods

D2.1 Visual Inspection

Prior to any other NDT-inspection the whole part has to be visually inspected.

D2.2 Magnetic Particle Inspection

For critical areas, as indicated in the following chapters, **wet magnetic particle testing is mandatory.**

Penetrant testing can be additionally used for confirmation of MT-indications.

D3 Acceptance Criteria: Grip housing - Sheet metal and Forged Parts

D3.1 *Visual Inspection*

D3.1.1 Visual Inspection Area

Before and after cleaning the **complete part** must be visually inspected.

D3.1.2 *Visual Reject Criteria (indications)*

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D3.2**
- **Marks and nicks , and rusty, nonlinear indication with a depth > 0.2 mm, on machined surfaces:**
  - Parts with indications > **0.2 mm** must be rejected
  - Parts with indications < **0.2 mm** must be further treated according to **D3.3**
- **Marks, nicks, and rusty, nonlinear indication with a depth > 1 mm, on unmachined surfaces:**
  - Parts with indications > **1.0 mm** must be rejected
  - Parts with indications < **1.0 mm** must be further treated according to **D3.3**

Marks, nicks, and rusty, non-linear indications (on unmachined surfaces) **do not require** extending the sampling plan to **100%.**

Increasing the sampling plan to **100% is only necessary if similar indications** are found on various parts.

D3.2 Magnetic Particle Inspection

D3.2.1 Inspection area

Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per **D3.1.**

D3.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear indications with a length > 1 mm**
  - Unacceptable indications must be further treated according to **D3.3**

D3.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

D3.3.1 Unmachined surface

Unacceptable indications may be removed by grinding under following conditions:

- max. depth of grinding: **5%** of thickness, **max. 1.0 mm**.
- Ghost lines or tool marks must not be perpendicular to the main stress direction..
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
- Local hardening and hardening cracks due to grinding must be avoided!
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D3.3.2 Machined surface

On machined surfaces (i.e. holes, ..), marks, nicks, and rusty, nonlinear indications with a dept **< 0.2 mm** may be removed by grinding under following conditions:

- Max. depth of grinding is **0.2 mm** (only localized!).
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
- Local hardening and hardening cracks due to grinding must be avoided!
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D3.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their location, nature and grinding depth:

- All unacceptable indications (also indications which have been removed successfully)

D4 Acceptance Criteria: Grip housing – Weld seams

D4.1 Visual Inspection

D4.1.1 Visual Inspection Area

Before and after cleaning **all weld seams** must be visually inspected.

D4.1.2 Visual Reject Criteria (indications)

Following indications are unacceptable **on weld seams**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D4.2.**

Exception: o Indication is in the middle of the weld seam length (min. **15 mm** from weld end)
o Indication is due to a lack of fusion
o Indication is not in the base material

Increasing the sampling plan to **100%** is only necessary if similar indications are found on various parts.

D4.2 Magnetic Particle Inspection

D4.2.1 Inspection area

- The first **40 mm** of the **weld seam A** are mandatory (see **Graph 1**).
- The first **20 mm** of the **weld seam B** are mandatory (see **Graph 1**).
- The first **15 mm** of the **weld seam C** are mandatory (see **Graph 1**).
- Magnetic particle inspection is mandatory on **unacceptable visual indications**, as per **D4.1.**

D4.2.2 Reject Criteria (indications)

Following indications are unacceptable **on weld seams**:

- **Linear indications** with a **length > 1.5 mm**
  - Unacceptable indications must be further treated according to **D4.3**

Exception weld seam A:
o Indication is on the machined area in the center of the weld seam end
o No rusty indication were found in this area during visual inspection
o Indication is not at the edges of the weld seam end
o Indication is due to lack of fusion

Exception weld seam B:
o Indication is only at the weld seam end
o No rusty indication were found in this area during visual inspection
o Indication is due to lack of fusion or a crater crack

Exception weld seam C:
o No rusty indication were found in this area during visual inspection
o Indication is not at weld seam end
o Indication is due to lack of fusion

Increasing the sampling plan to **100%** is only necessary if similar indications are found on various parts.

D4.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected.
Rejected parts should be sent to Doppelmayr for further investigations.

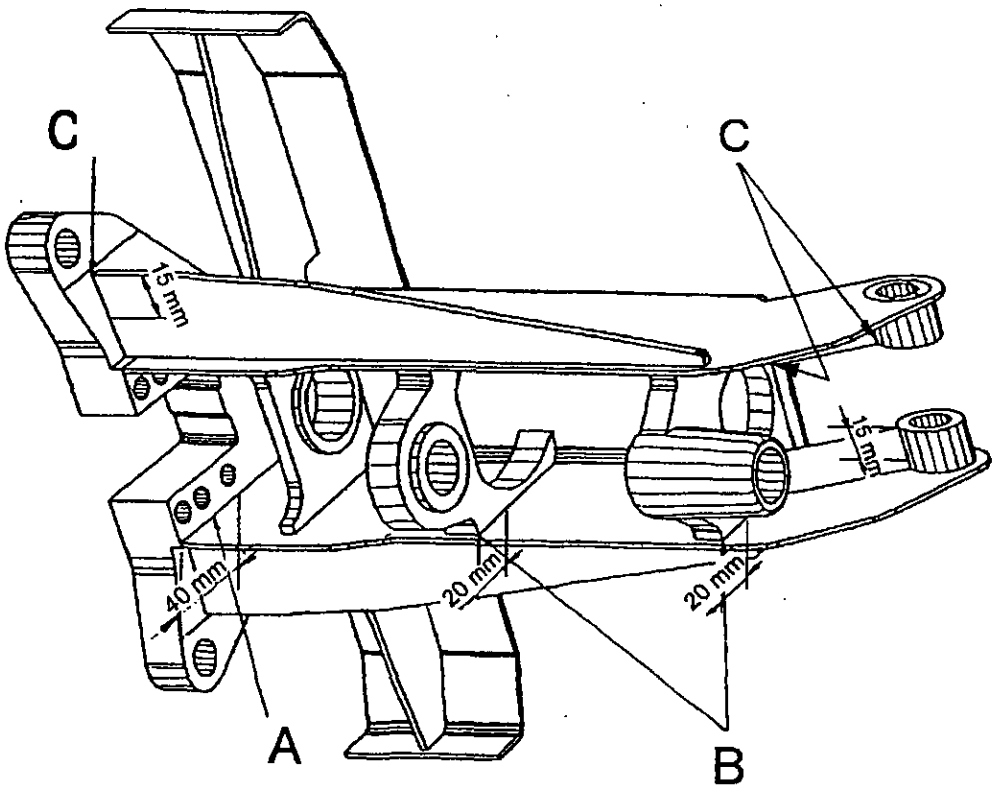
Unacceptable indications **on weld seams** may be removed by grinding under following conditions:

- max. depth of grinding: **1.0 mm.**
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
- Local hardening and hardening cracks due to grinding must be avoided!
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D4.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their location, nature and grinding depth:

- All unacceptable indications (also indications which have been removed successfully)



Graph 1

D5 Acceptance Criteria: Movable Jaw and Fixed Jaw

D5.1 Visual Inspection

Wear shall be checked according to the DOPPELMAYR CTEC maintenance manual.

D5.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D5.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D5.2**
- **Marks, nicks**, and **rusty, non-linear indications** with a **depth > 0.2 mm** on **machined surfaces** (i.e. holes)
  - Parts with indications with a depth **> 0.2 mm** must be rejected.
  - Indications with a depth **< 0.2 mm** (only localized!) be further treated according to **D5.3.**
- **Marks, nicks** (except forging marks), and **rusty, non-linear indications** with a **depth > 1.0 mm** on **all other surfaces**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D5.2**

D5.2 Magnetic Particle Inspection

D5.2.1 Inspection area

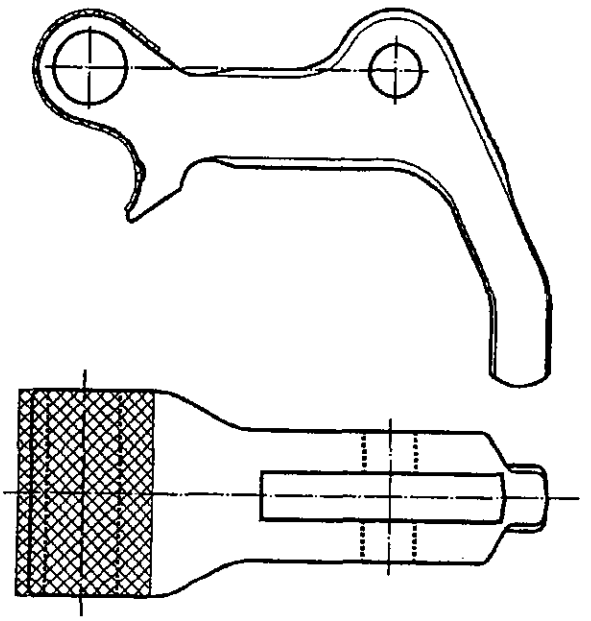
- Magnetic particle inspection is **mandatory** in **critical areas.**
  For critical areas (crosshatched areas) see **graph 2 and graph 3.**
- Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per **D5.1.**

D5.2.2 Reject Criteria (indications)

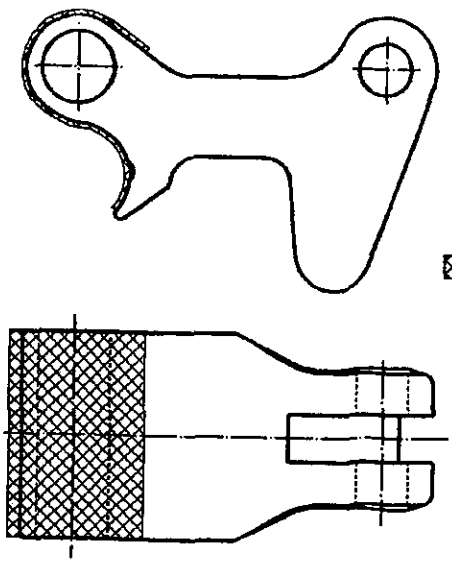
Following indications are **unacceptable**:

- **Linear indications in critical areas**
  - Unacceptable indications must be further treated according to **D5.3**

DS 104

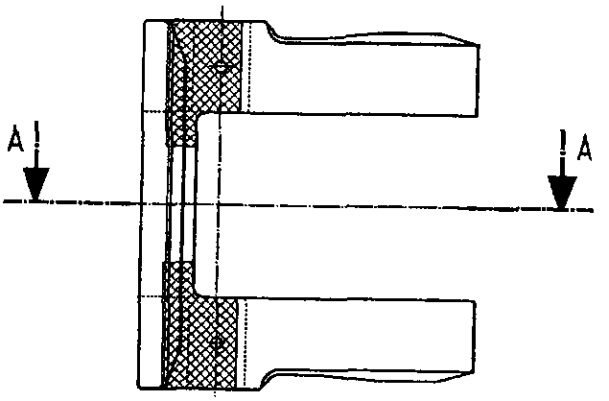


DS 106/108



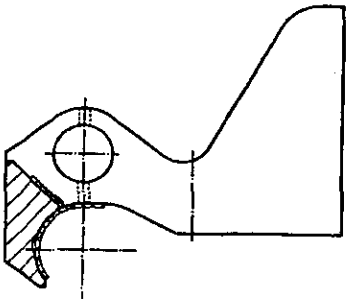
critical area

Graph 2



kritischer Bereich
critical area

SECTION A-A



Graph 3

D5.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

D5.3.1 Unmachined surface

Unacceptable indications may be removed by grinding under following conditions:

- Maximum depth of grinding: **5%** of thickness, **maximum 3.0 mm**
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
- Local hardening and hardening cracks due to grinding must be avoided!
- Diameter of grinding exceeds **25 times** depth.
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D5.3.2 Machined surface (i.e. holes)

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is **0.2 mm** *(only localized!)*.
- Length of grinding in longitudinal direction exceeds **25 times** depth.
- Width of grinding in transverse direction must not exceed **15 %** of diameter.
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D5.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their **location, nature** and **grinding depth**:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D6 Acceptance Criteria: Link Piece (Jaw link)

D6.1 Visual Inspection

D6.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D6.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D6.2**
- **Marks, nicks**, and **rusty, non-linear indications** with a depth **> 0.2 mm** on **machined surfaces**
  - Parts with indications with a depth **> 0.2** mm must be rejected.
  - Indications with a depth **< 0.2 mm** (only localized!) be further treated according to **D6.3.**
- **Marks, nicks** (except forging marks), and **rusty, non-linear indications** with a depth **> 1.0 mm** on **all other surfaces**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D6.2.**

D6.2 *Magnetic Particle Inspection*

D6.2.1 Inspection area

Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per **D6.1.**

D6.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear indications in critical areas**
  - Unacceptable indications must be further treated according to **D6.3**

D6.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected.
Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

D6.3.1 *Unmachined surface*

Unacceptable indications may be removed by grinding under following conditions:

- Maximum depth of grinding: **5%** of thickness, maximum **3.0 mm**
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
  Local hardening and hardening cracks due to grinding must be avoided!
- Diameter of grinding exceeds **25 times** depth.
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D6.3.2 Machined surface (i.e. holes)

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding: **0.2 mm** (only localized!).
- Length of grinding in longitudinal direction exceeds **25 times** depth.
  Width of grinding in transverse direction must not exceed **15 %** of diameter.
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
  Local hardening and hardening cracks due to grinding must be avoided!
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D6.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their ***location, nature*** and ***grinding depth***:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D7 Acceptance Criteria: Hanger Axle, Jaw Tongue Axle, Spring Guide Slide Rod

D7.1 Visual Inspection

D7.1.1 Visual Inspection Area

Before and after cleaning the complete axle must be visually inspected.

D7.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to **D7.2.2**
- **Marks, nicks,** and **rusty, non-linear indication**
  - Parts with indications with a depth **> 0.2 mm** must be rejected.
  - Parts with indications with a depth **< 0.2 mm** must be further treated according to **D7.3**

D7.2 Magnetic Particle Inspection

D7.2.1 Inspection area

- Magnetic particle inspection is **mandatory** in **critical areas**. For critical areas see **graph 4.**
- Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per **D7.1.**

D7.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear indications with a length > 1 mm**
  - Unacceptable indications must be further treated according to **D7.3**

Exception: o The indication is exactly parallel to the longitudinal axis

o A penetration test performed to confirm the MT-indications shows no indications

D7.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected.
Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

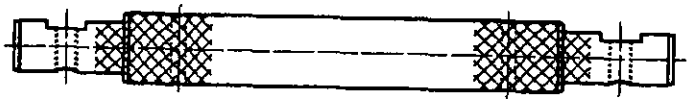
Unacceptable indications may be removed by grinding under following conditions:

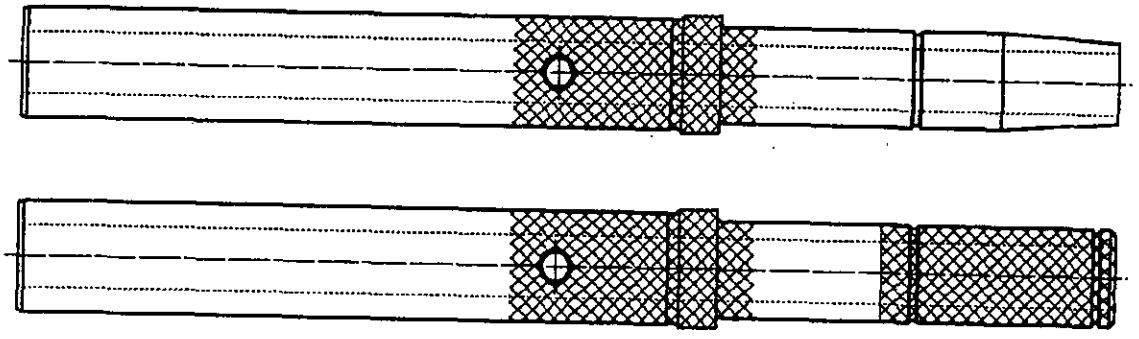
- Max. depth of grinding is **0.2 mm.**
- Length of grinding in longitudinal direction exceeds **25 times** depth.
  Width of grinding in transverse direction must not exceed **15 %** of diameter.
- Care is taken on bearing and bushing seats.
- Grinding must be smooth (surface finish minimum **N6 to ISO 1302**) and free of nicks.
  Local hardening and hardening cracks due to grinding must be avoided!

D7.4 Documentation of Visual and Magnetic Particle Inspection

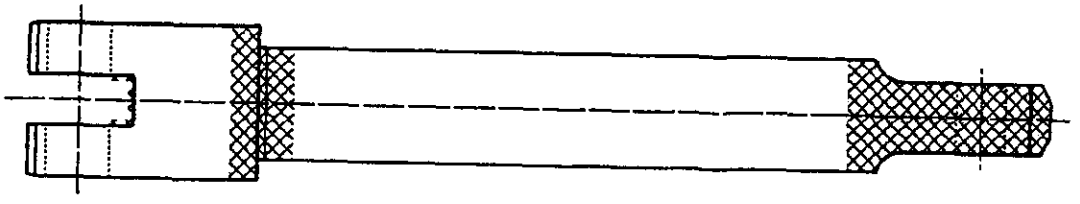
Following indications must be documented with their **location, nature** and **grinding depth:**

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear





▨ critical areas (A)



Graph 4

D8 Acceptance Criteria: Hanger axle retainer bolt

D8.1 Visual Inspection

D8.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D8.1.2 Visual Reject Criteria

Bolts with wear and/or damage must be replaced.

D8.2 Documentation

Following information must be documented

- All rejected retainer bolts

D9 Acceptance Criteria: All other parts

D9.1 Visual Inspection

D9.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D9.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **rusty indications**
  - Parts with rusty indications must be replaced

D9.2 Documentation

Following information must be documented

- All rejected parts

SB-04-016	Auteur / Author SAC Golden	Date émission Release date 12-17-2004	Doppelmayr CTEC

SERVICE BULLETIN

Lift manufacturer : Doppelmayr Lift type : UNI Detachable lifts	Fabrication. Group : 55-65

ABSTRACT OF ISSUE

A quad-chair derailed while entering the top terminal during operation in gusty wind conditions. Due to excessive chair swing, combined with lateral displacement of the haul rope, the leading grip running wheel contacted the outside edge of the flared entry to the running rail. The running wheel climbed up and over the outside flange of the running rail. The hanger axle contacted the guide rail wall causing the grip to twist and decouple from the haul rope.

Service Bulletin SB-04-012 was issued on 9/17/04 to address this issue. Further investigation has indicated a need for additional corrective action and clarification. This Service Bulletin SB-04-016 replaces Service Bulletin SB-04-012.

Four elements were indicated as contributors to this incident:

1) The shape and form of the entry section of the running rail
2) Excessive swing of the carrier as the running wheel was entering the running rail
3) The rope alignment and loading on the three-sheave assemlby at the entry to the terminal
4) Excessive lateral gap between the end of the hanger axles and the vertical face of the trumpet.

RECOMMENDED ACTION

The following corrective actions shall be completed within 30 days of receipt of this Service Bulletin.

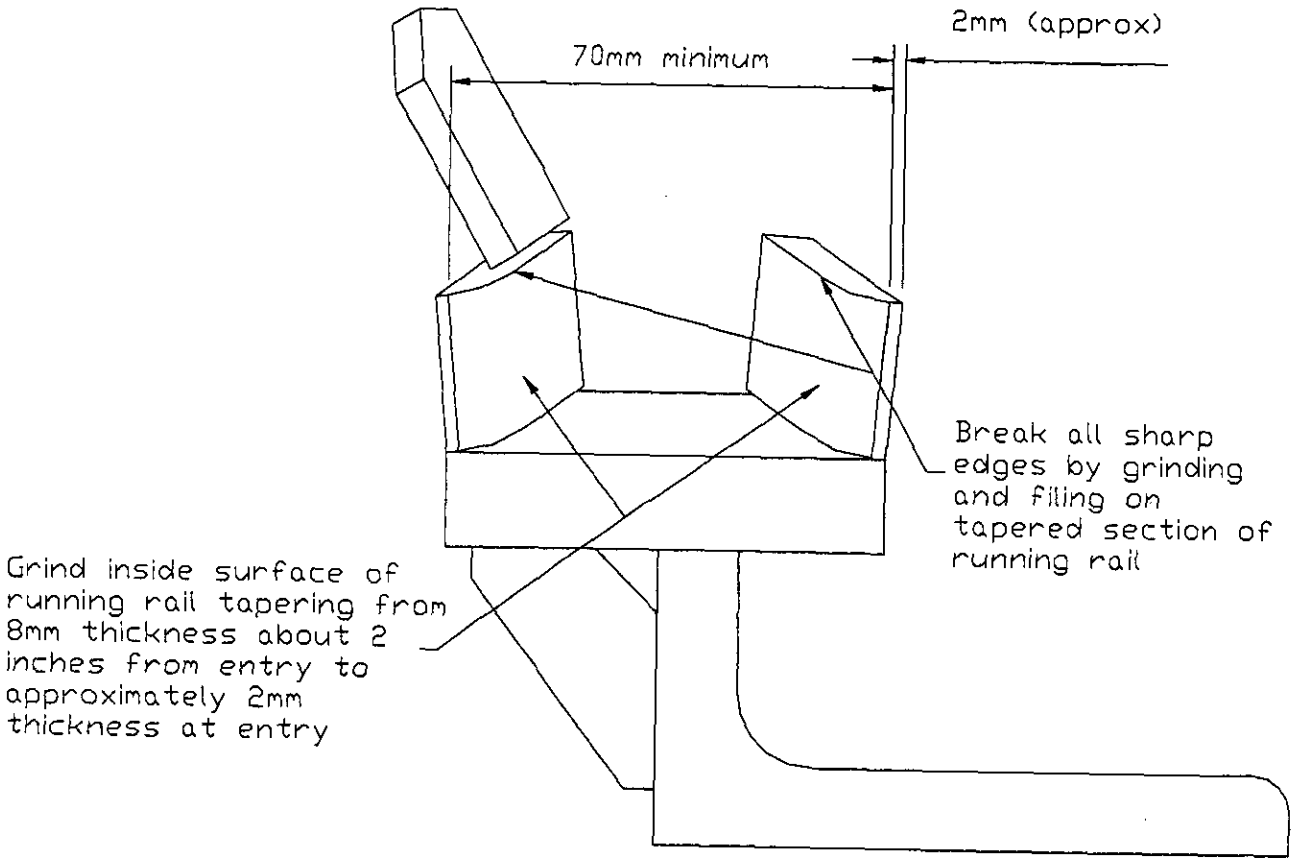
1) Modifications to the Entry Section of Running Rail :

The entrance mouth of the running rail on all UNI terminal (entrance side only) shall be tapered by grinding and filing as shown in the sketch on page 2. Starting at the entry of the running rail, grind the inside surfaces of the inner and outer side flange. The grinding should reduce the wall thickness at the entry to approximately 2mm tapering back to a wall thinkness of about 8mm about two inches back from the entry of the running rail. All sharp edges on the top of the outer side flange and around the entry of the running rail shall be smoothed by grinding for the entire length (400mm) of the tapered section of the running rail. After grinding, the surfaces shall be smoothed by filing. After grinding the width at the entry of the running rail shall be a minimum of 70mm.

SB-04-016	Auteur / Author SAC Golden	Date émission Release date 12-17-2004	Doppelmayr CTEC

SERVICE BULLETIN

Lift manufacturer : Doppelmayr Lift type : UNI Detachable lifts	Fabrication. Group : 55-65



2) Add Travel Stop to Limit the Upward Travel of the Trumpet.

The upward travel of the trumpet must be limited to prevent excessive swing of the carrier/grip as the running wheel is entering the running rail. Currently, the upward travel is limited by the shock absorber. An upward travel stop must be added similar to the lower travel stop.

Place a carrier so that the grip is positioned at the second sheave (section A-A of drawing number 60006044NCE001301). Place a smart level on the traction plate of the grip to measure the tilt. Pull the carrier outward (away from the centerline of the lift) until the angle on the traction plate measures 5 degrees. Mark the position of the upper trumpet guide roller (item number 26 on drawing number 60006412NCE001301) for the upper travel stop. Drill a hole for a 12mm bolt (see existing lower stop) and place a 12mm bolt through the trumpet guide and secure with a Ny-lock nut. Do not deform the guide channel by over tightening the bolt.

SERVICE BULLETIN

Lift manufacturer : Doppelmayr	Fabrication. Group : 55-65
Lift type : UNI Detachable lifts	

3) Verify Proper Rope Alignment on the three-sheave assembly at the entrace to the terminal.

The correct height for entering the running rail is controlled by the third sheave and adjusted as described in paragraph 3 of the adjusting procedure for DT opening and lcosing line in your operations and maintenance manual

The second and third sheaves should be positively loaded with no carrier in the span between the first/last tower and the terminal (the first sheave is the sheave closest to the first or last tower and the third sheave is the sheave that is closest to the running rai). If the second sheave is not positively loaded, please contact your Doppelmayr CTEC service representative for further direction.

The total wrap angle on the three-sheave assembly at the entrace of the terminal should be a minimum of 0.5 degrees. With no carrier in the span between the terminal and the first or last tower, measure the angle of the rope at least one lay length beyond the first sheave (toward the tower) and at least one lay length beyond the third sheave (towards the running rail).. The total wrap angle should not be less than 0.5 degrees. Contact your Doppelmayr CTEC service representative if the measured wrap angle is less than 0.5 degrees.

4) Verify/Adjust for Proper Trumpet Alignment

Please refer to drawing # 60006044NCE001301 and drawing #60006412NCE001301 in your drawing and parts catalogue. These drawings should also de added to section 17 in the maintenance manual. Particular attention should be given to the trumpet/guide rail adjustments at bracket "0" and "Section A-A" for the hanger axle clearance:

Bracket "0" = max. 20mm and "Section A-A" about 10mm, when making these adjustments please consider the play in vertical trumpet guide.The entrance trumpet should be able to move up and down freely and the shock absorber work properly.

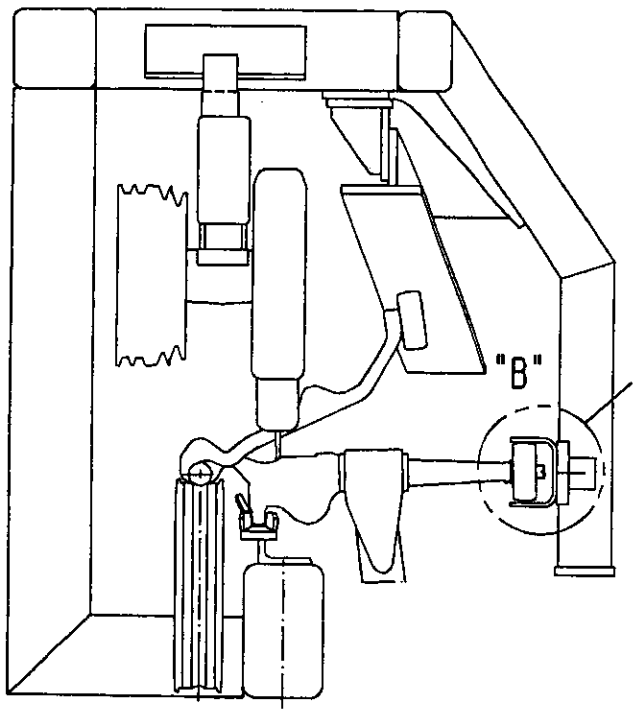
Also at "Section A-A" the grip body to safety/hold down rail clearance should be observed as well as the front running wheel has to be in the center of the running rail mouth. The coupling area adjustments as described in section 17 of your maintenance manual remain the same.
See following sketch :

SB-04-016	Auteur / Author SAC Golden	Date émission Release date 12-17-2004	Doppelmayr CTEC

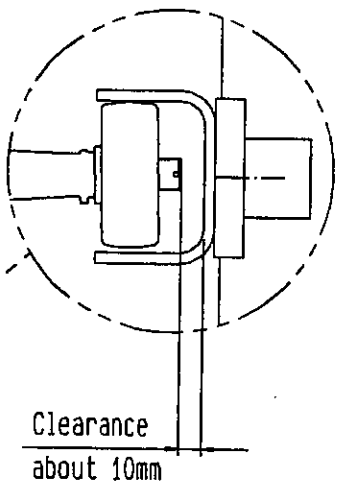
SERVICE BULLETIN

Lift manufacturer : Doppelmayr Lift type : UNI Detachable lifts	Fabrication. Group : 55-65

Section "A-A" as per drawing
60006044NCE001301



Detail "B"



If any additionnal information regarding this bulletin is required, do not hesitate to contact your local Doppelmayr CTEC service representative.

Document Number	Author	Release Date
NB-05-001	Salt Lake City	1-11-2005

Doppelmayr CTEC

NOTIFICATION BULLETIN

Lift manufacturer: Garaventa CTEC	Fabrication Group: N/A
Lift Model or Type: Detachable	Affected production dates: N/A

Supercedes Bulletin No: N/A

Effective date: 1-11-2005

BULLETIN TITLE

NB-05-001 - Notification of incident involving electronic eye stop gate

ABSTRACT OF ISSUE (Summary of information)

Recommendations for the safe operation of detachable chairlifts that utilize an electronic beam stop gate with manual override capabilities.

REASON FOR RELEASE (Summary)

An incident recently occurred involving an electronic eye stop gate. The chairlift control programming initiated a distinct warning alarm to the operator at the moment the passenger interrupted the electronic beam. A reset was initiated without confirming the nature of the alarm and the stop sequence was subsequently overridden. The entangled passenger continued to pass through the terminal until the operator recognized the situation and manually initiated a normal stop.

The programming intentionally allows the operator to override the stop gate alarm and interrupt the stop sequence if a "reset" is applied before a pre-determined impulse count is attained. If a reset is not initiated before the pre-determined impulse count is reached, the lift automatically stops with a "stop gate" annunciation on the display.

RECOMMENDED ACTION

(Inspection, Modification, Part replacement, Nondestructive testing, Procedural change, Operational revision, etc.)

Doppelmayr CTEC requires the following for areas utilizing electronic beams as stop gate devices:

- **The proper location of the transmitter/receiver components of the electronic beam stop gate must be confirmed daily as part of the pre-operational start-up of the chairlift. The location of the components must not allow a passenger to unintentionally fail to interrupt the stop gate beam.**

Document Number	Author	Release Date
NB-05-001	Salt Lake City	1-11-2005

Doppelmayr CTEC

NOTIFICATION BULLETIN

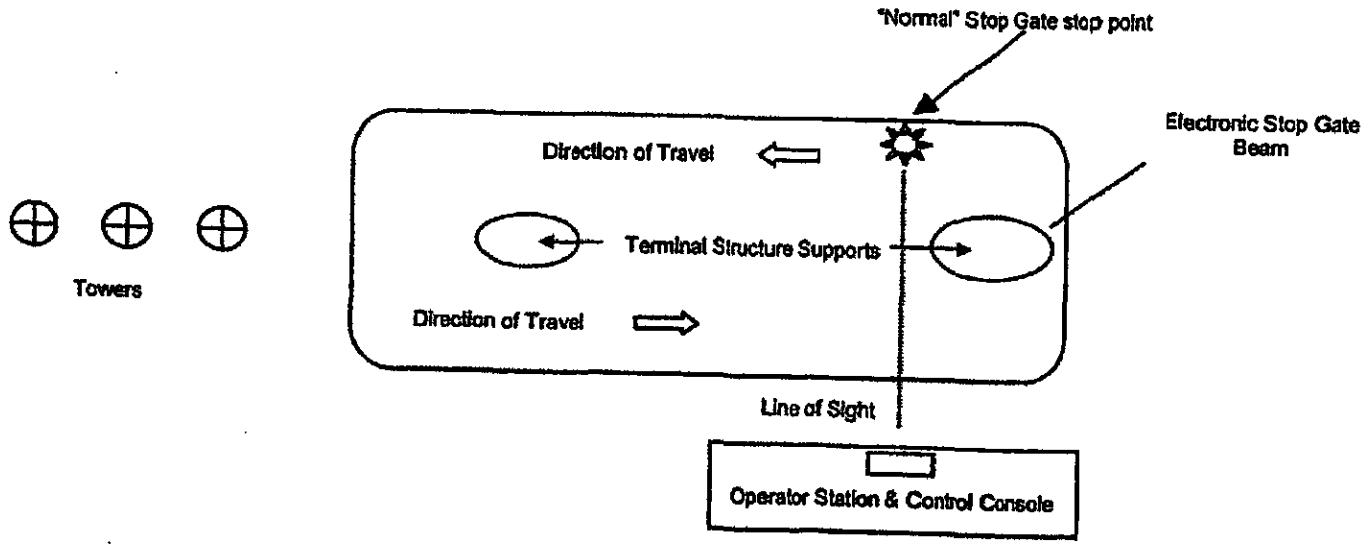
Lift manufacturer: Garaventa CTEC	Fabrication Group: N/A
Lift Model or Type: Detachable	Affected production dates: N/A

RECOMMENDED ACTION (continued)

(Inspection, Modification, Part replacement, Non-destructive testing, Procedural change, Operational revision, etc.)

- The proper function of the stop gate must be confirmed daily as part of the pre-operational start-up of the chairlift. It should be noted that the stopped location of the chair initiating a stop gate stop should allow for safe unload of the passenger(s) under the most adverse operating conditions.
- Operating personnel must be trained to differentiate between the alarms annunciating a stop gate or an arriving "marked" chair.
- Operating personnel must be trained to understand the function of the reset as it relates to either the stop gate or the chair arrival alarm.
- Operating personnel must be trained that only after confirmation through observation of the display and the actual situation can a stop gate alarm be overridden.

DETAIL OF ISSUE (Text, Drawings, Schematics)



(Non-scale plan view of typical top unload station. Right hand rotation shown.)

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		SJ/RCH/KW/dk	22/04/2005	KD05003	1 / 1

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
--	--	MGD	Vehicles
Abgeleitet von / Based on:	Techn. Info #Do-327		
Classification Code:	OS	X O	IS I

MGD GCS Hanger (GCS = Global Comfort Suspension)

Dear Customer,

In our endeavour to continually increase the comfort of our installations for the passengers, our engineers have made a further enhancement to the cabin suspension:

Area of application:
- 4-MGD, 6-MGD and 8-MGD

Technical data:
- ~ 10 kg excess weight compared to the hanger used so far

Installations built in 2004 using this hanger:
- 8-MGD Zwieselalmbahn, Gosau (A)
- 8-MGD Alpkogelbahn, Galtür (A)

Due to the very positive reactions to the implemented installations, starting with 2005 (year of construction) Doppelmayr will supply all markets with GCS hangers.

Advantages in comparison to the previous hanger:

- Almost imperceptible sway on entry into the station
- Reduced stress on grip and hanger
- Improved general travel comfort
- Significantly reduced sway movement in the loading and unloading area

Possible retrofitting must be examined on a case-to-case basis and depending on the age of the installation in question – please contact our Customer Service department.

Doppelmayr CTEC

Doppelmayr CTEC, Inc.
6452 Fig Street – Unit B
Arvada, CO 80004
T: 303-277-9476
F: 303-277-9759

TO:	Heavenly Resort, CA	Gary Burch
	Keystone, CO	Pete Lorenzen
	Loon Mt., NH	Tom Bentley
	Mammoth, CA	Heimo Ladinig
	Mountain Creek, NJ	Greg Pack
	Snowbasin, UT	Kyle Clark
	Steamboat, CO	Doug Allen
	Whiteface, NY	Ron Depo

DATE: 19-JUL-05

SUBJECT: Bulletin KD05003 – MGD GCS Hanger

For your information, enclosed please find Bulletin KD05003 regarding MDG GCS Hanger for detachable gondolas.

Should you have any questions, please contact us.

Best regards,

DOPPELMAYR CTEC, INC.

Jim Craig
Service Manager

JC:iam

Enc.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	08-07-2005	SB-05-013	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**GRIPS**
Lift type / *Type de remontée :*	**6-CLD**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**08-07-2005**

Title / *Titre :* **AK 680 series detachable grip indications**

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
Indications have been noted during routine NDT inspection of the AK 680 series detachable grip.

The indications have been on the hardened surface of the upper spring axle (Item 10) and spring guide rod (Item 12) on the edges of the small radius below the threaded portion of these components (see photo below).

1.2 Reason for release (summary) / *But*
Garaventa was contacted regarding the indications. Their experience has been that the indications are a result of the surface treatment hardening process in the area of a very small radius. Typically the indications have been found to be .1 mm or less in depth.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
During routine NDT inspections, care should be taken to inspect the affected areas for indications.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
Affected models are six passenger lifts utilizing the Garaventa AK 680 series detachable grip

2.3 Affected Production dates / *Dates de fabrication affectées*
Affected production dates are from 1995 through 2000.

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

- During routine NDT inspection, care should be taken to inspect the affected areas with the assistance of wet fluorescent magnetic particles.
- Components exhibiting indications shall have the indications removed through light surface polishing with the use of very fine sandpaper (220 grit or finer).

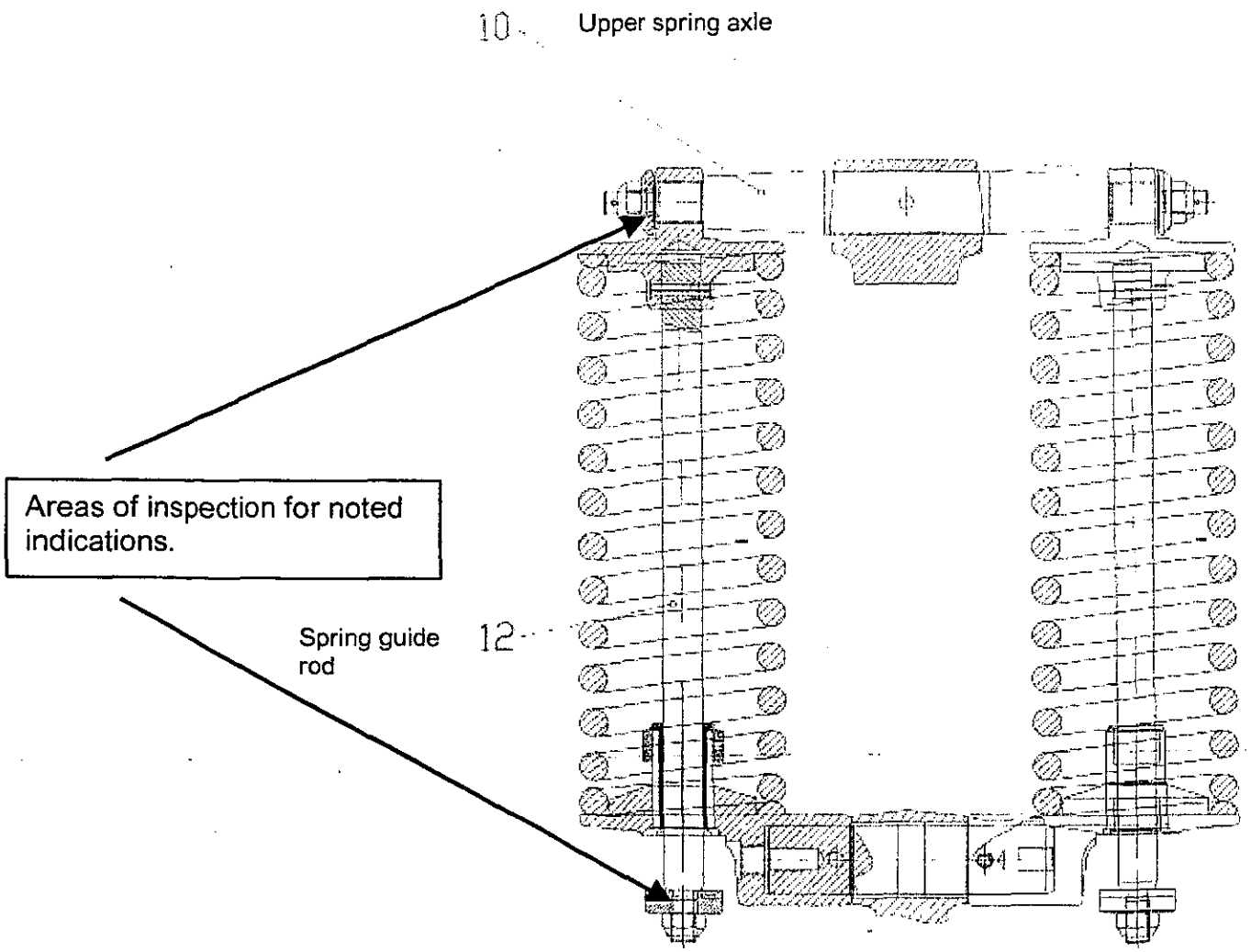
SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**GRIPS**
Lift type / *Type de remontée :*	**6-CLD**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**08-07-2005**

- Removal of the indication must be confirmed through re-inspection by wet fluorescent magnetic particle inspection
- Indications that exhibit depth not easily removed through light surface polishing shall be cause to reject and remove the component from continued service.
- Rejected components must be returned to Doppelmayr CTEC in Salt Lake City, UT for additional evaluation.

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas



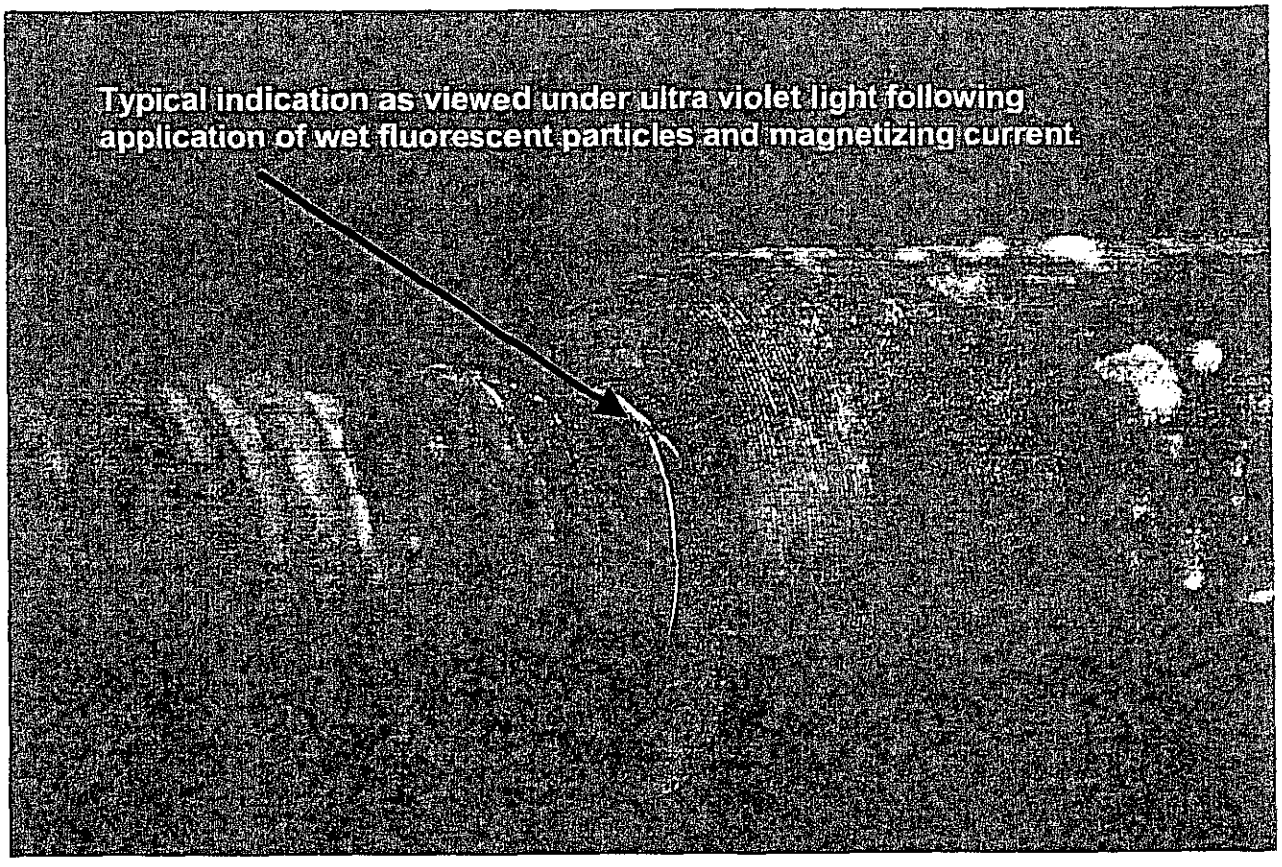
Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	08-07-2005	SB-05-013	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	Garaventa CTEC	Fab. Group / *Groupe de fabrication :*	GRIPS
Lift type / *Type de remontée :*	6-CLD		
Supercedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	08-07-2005

4. Detail of issue / *Details (continued)*

Text, drawings, schematics
Textes, dessins, schémas



Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**14-11-2005**	**SB-05-022**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**VonRoll**	**Fab. Group / *Groupe de fabrication :***	**Grips**
Lift type / *Type de remontée :*	**Detachable VH400 Grip**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**November 14, 2005**

Title / *Titre :* Special M20 Nut for VonRoll VH400 Detachable Grip

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
Garaventa has issued a bulletin (S+U05001) related to the M20 nuts used for the tension rods on the VH400 detachable grip.

1.2 Reason for release (summary) / *But*
The supporting face of the nuts must be machined to ensure uniform transmission of the load to the tension rods. Commercial nuts may have uneven supporting faces.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
The M20 nut should be considered as a safety component. Garaventa offers an M20 nut (P/N 20872123) that has been specifically machined for the application and should not be exchanged with commercially available nuts.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
VonRoll VH400 detachable grip.

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)
It is recommended that all nuts for the tension rods for the VH400 grip be exchanged during the next schedule maintenance or overhaul of the grip.

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas
Please see the attached bulletin as produced by Garaventa.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**14-11-2005**	**SB-05-022**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**VonRoll**	**Fab. Group / *Groupe de fabrication :***	**Grips**
Lift type / *Type de remontée :*	**Detachable VH400 Grip**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**November 14, 2005**

GARAVENTA **BULLETIN**	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
	ksm/hz/siw	09.11.2005	S+U05001	1 / 1

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
--	--	MGD, CLD / VH400	SEILKLEMME
Abgeleitet von / Based on:			
Classification Code:	X OS	O	IS	I

ROPE GRIP VH400
Nut M20 for Grip VH400

Dear customer

Up to now, we used commercial quality hexagon nuts, M20, DIN 934 for the tension rods as shown on the following sketch. These nuts are no more state of the art.

The nuts in question must now a days be considered as safety components with consequently required test certificates (Quality and cracks)

We now designed nuts, which comply to now a days requirements with respect to quality and safety. To avoid any mix up, the new nut differ in visual appearance from commercial nuts.

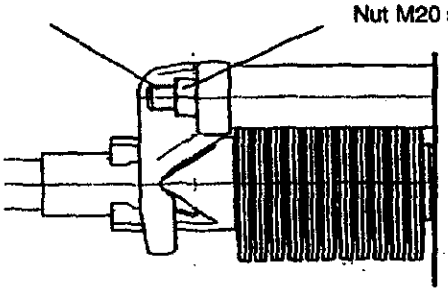
The supporting face of the nuts must now be machined to ensure uniform transmission of the load to the tension rods. Commercial nuts may have uneven supporting faces.

We recomend to exchange all nuts upon your next revision or overhaul of the rope grips.

Any questions you may have and orders of the new nuts may be directed to our office in Salt Lake City by contacting Mr. Greg Norrander.

Tension rod M20

Nut M20 spezial



Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SAC	07-12-2005	SA-05-023	

SAFETY ALERT BULLETIN / *BULLETIN DE SÉCURITÉ*

Lift manufacturer / *Fabricant :*	DOPPELMAYR	Fab. Group / *Groupe de fabrication :*	225-Grips
Lift type / *Type de remontée :*	CLD	Introduces / *introduit*	Bulletin KD05007
Supersedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	07-12-2005

Title / *Titre :* **DS Grip - Locking the bronze bushing in position**
Verroullage de l'entretoise de bronze

1. Generalities / *Généralités*

Dear Customer,

Please find enclosed safety bulletin KD05007 regarding the DS grip that requires your immediate attention. If any assistance is required regarding this bulletin, do not hesitate to contact your local Doppelmayr CTEC Customer Service.

Best regards

Cher Client,

Vous trouverez ci-joint le bulletin KD05007 *sur les attaches DS, nécessitant une attention immédiate (malheureusement disponible qu'en anglais).*

Si des informations vous étaient nécessaires, soit de traduction ou d'interpretation, n'hésitez pas a communiquer avec notre service à la clientèle Doppelmayr CTEC.

Meilleures Salutations

Doppelmayr CTEC ltée /ltd

Doppelmayr CTEC	Auteur / *Author*:	Date / *Date*:	No. de doc. / *Doc. no.*:
	MG	2002-09-06	**SB-02-002**
BULLETIN	ξ OS O O	O IS O I	

Remplace / *Supersedes*:	Remplacé par / *Replaced by*:	Type / *Type*:	Groupe d'assemblage / *Assembly group*:
KD-98-005		CLF	GRIPS

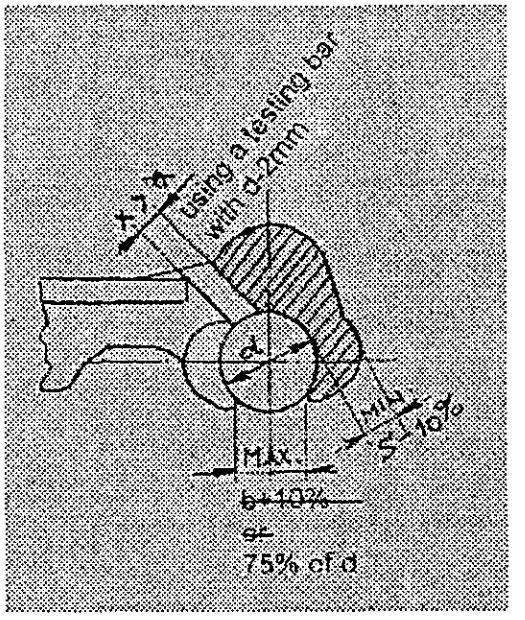
Inspection criteria to be applied to fixed grips installed on surface lifts and chair lifts

Please take notice of corrections done on the KD-98-005 bulletin.

This sketch concerning the distance between the 2 grip jaw tips had <u>two</u> criteria included:

◊ Please delete:
"b + 10% or".

◊ The following line remains unchanged:
"b max. = 75% of d".



The wording in paragraph 1.3 is still correct:

1.3 Distance between the tips of the two grip jaws:
The distance "b" between the two grip jaws should be max. 75% of the rope diameter.

Also the paragraph 3.2 and the note on the last page have been changed.

<u>Please replace KD-98-005 bulletin with this SB-02-002 bulletin in your files.</u>

If you have any questions or comments on this bulletin, please contact your local Doppelmayr Ctec representative.

Doppelmayr CTEC	Auteur / *Author* : MG	Date / *Date* : 2002-09-06	No. de doc. / *Doc. no.* : SB-02-002
BULLETIN	ξ OS O O O IS O I		

Remplace / *Supersedes* : SB-99-008	Remplacé par / *Replaced by* :	Type / *Type* : CLF	Groupe d'assemblage / *Assembly group* : GRIPS

Inspection criteria to be applied to fixed grips *installed on surface lifts and chair lifts*

As a lift operator, you will already be familiar with a whole series of rules and regulations set forth by both the supervisory authority and the manufacturers, in the form of permits, operating procedures and conditions of transport as well as the operating instructions specific to the lift.

As an additional help, we would like to inform you on the most frequent defects which experience has shown can develop on fixed grips and list below the criteria to be applied when deciding whether or not parts should be removed from service.

Keep in mind that while lift operators carry out visual inspections, they do not usually have the means available to perform magnetic particle testing.

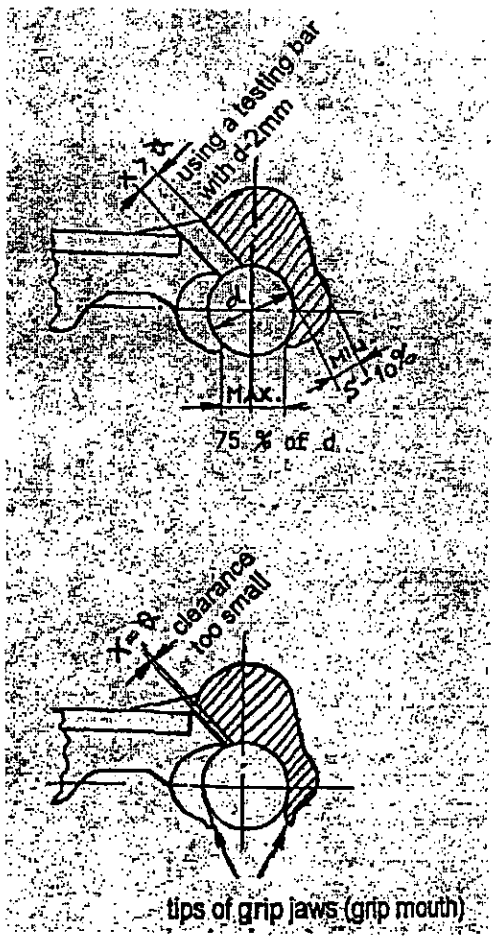
1. Geometry

1.1 Thickness of grip jaw:
As a rule of thumb, a 10% reduction in the thickness of the grip jaw compared to the required value stated on the drawing is acceptable.

1.2 Grip capability:
Wear on the grip jaws and/or in the grip mouth can lead to the grip jaws blocking each other (x=0) before sufficient grip force is applied to the rope.

1.3 Distance between the tips of the two grip jaws:
The distance "b" between the two grip jaws should be max. 75% of the rope diameter.

1.4 Tips of grip jaws bent outwards:
If the tips of the grip jaws become thinner through wear, then the jaws will no longer provide sufficient grip on the haul rope.
As a result the positive fit of the grip jaws around the rope will be reduced.



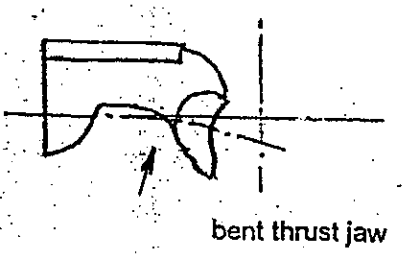
1.5 Bent thrust jaw:
Particularly in the case of surface lifts if a (high) torque is continually applied when tightening the grip (where there is contact between rope strands).

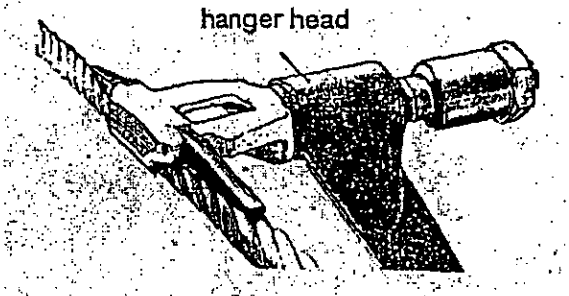
1.6 Play between grip shaft and hanger head bushing:
The clearance between the grip shaft and the bushing can be partly compensated by fitting new bushings. If the grip shaft is badly worn the grip must be replaced.

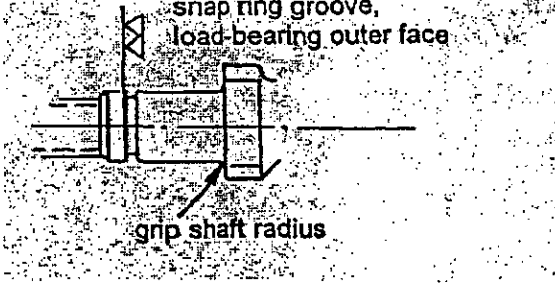
1.7 Shape of snap ring groove:
The outer contact surface for the snap ring in particular must be even and at right angles to the axis of the grip shaft.

1.8 Grip shaft radius too small (R<1.5 mm):
The radius of the transition between the grip shaft and the grip body has a decisive influence on the strength of this area and its resistance to fatigue failure.

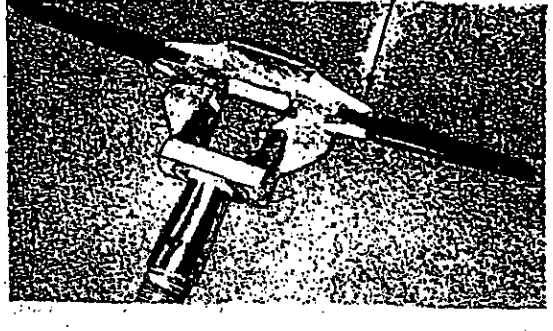
1.9 Play in the movable grip tongues:
Too much play in the pin/guide slot mounting will significantly increase the risk of the tongues becoming cracked or broken.







mounting for grip tongue, guide slot



2. Surface condition

2.1 Knocks and notches on main body of grip, thrust jaw, etc.:
In particular, damage to the surface with sharp edges will significantly increase the risk of fatigue failure.

2.2 Rope channel shows inadmissible imprints of wires and (in particular) strands:
Heavy imprints are a problem if it is no longer possible to even them out without reducing the thickness of the grip jaws below acceptable limits.

2.3 Wear, scoring or notching on the grip shaft:
Wear causes the surface to deteriorate, which in turn leads to a more rapid increase in the amount of play between the grip shaft and the hanger head bushing. The bushing or even the grip may then have to be replaced prematurely.

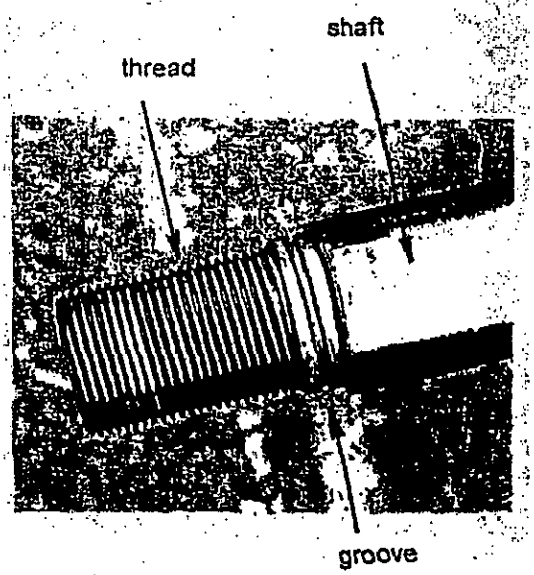
2.4 Grip shaft radius with scoring or notching:
This critical surface area must be inspected with particular care.

2.5 Damaged thread in/on grip shaft:
The thread is responsible for generating the grip force exerted on the rope. If the thread is damaged, stiff or has too much play, repair or replacement is necessary.

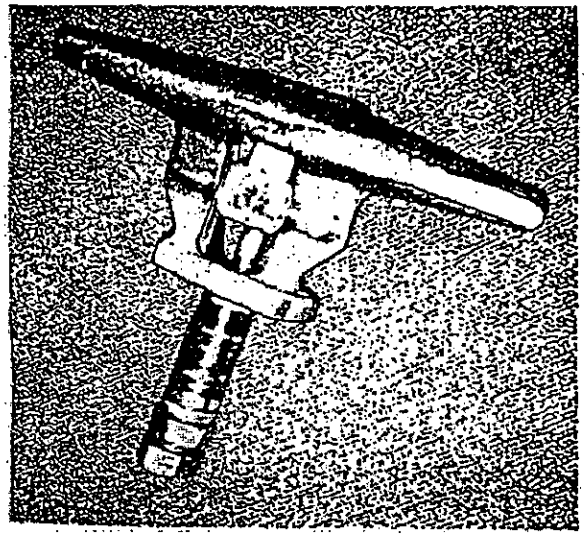
2.6 Outer shoulder of snap ring groove worn away:
If the shoulder (contact surface) no longer forms an adequate right angle, the snap ring may slip or even spring out.

GOOD → slight imprint from wires

BAD → pronounced imprint from strands



3. Inspection / Testing for surface flaws

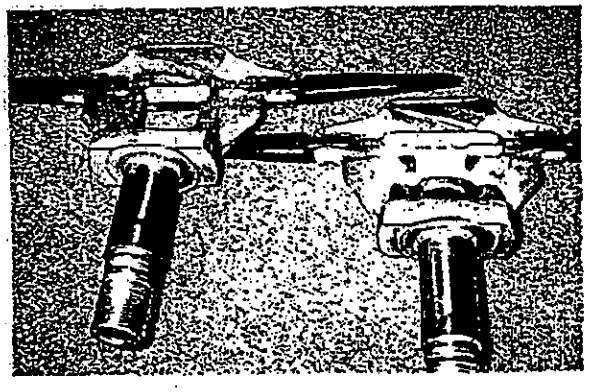


3.1 Visual inspection reveals crack indications:
If crack indications are found during visual inspection, it is advisable to have the grip subjected to the more precise magnetic particle testing.

3.2 Magnetic particle testing reveals inadmissible crack indications:
If inadmissible crack indications are found during magnetic particle testing then necessary action must be taken according to the NDT procedure and regulations.

Note: For inspection of grips, please follow the required instructions in our operating and service manuals and applicable NDT procedures.

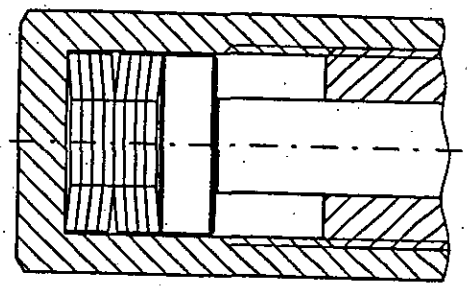
In this case or if one or several of the above mentioned criteria cannot be complied with, please contact the Customer Service at Doppelmayr CTEC in order to coordinate the necessary steps to be taken.



Spring Pack SW50

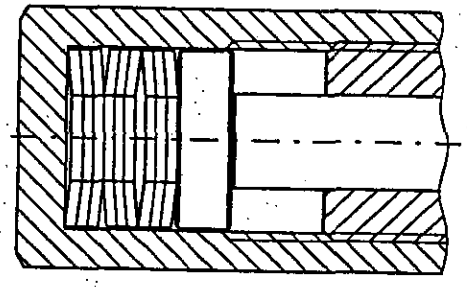
In view of the short movement of the spring mechanism in the case of spring pack SW50 it is particularly important to ensure that the cup springs are correctly packed.

Correct packing with 8 cup springs:



Packed in 2 sets of 4

Correct packing with 9 cup springs:



Packed in 3 sets of 3

Spring packs SW50 with 8 cup springs can be converted to 9 cup springs.

In the case of retrofitting a different spring pack (e.g. DS7) it is essential to check for proper clearance → longer grip!

The following points must be adhered to:

- Do not fit the rope grip to the splice tuck
- Tightening torque: 85 Nm
- Check torque wrench at least once a year
- Check the grip's sliding resistance on the rope
- Relocate the rope grips against travel direction as a regular practice
- Pay special attention to the condition of the haul rope. Once there is strand contact, the elasticity of the rope and hence the additional "spring" effect will be lost!

Doppelmayr CTEC inc

Main Office • 3160 West 500 South • Salt Lake City, Utah 84104 • Ph: 801-973-7977 • Fax 801-973-9580 • info@doppelmayrctec.com

TO: DOPPELMAYR CUSTOMERS

DATE: JULY 9, 2004

SUBJECT: Service Bulletin SB-04-006 for Fixed Grip Lifts

Enclosed please find copy of the following bulletin:

- **Bulletin SB-04-006**
  All Doppelmayr Fixed Grip Customers
  Inspection Criteria to be applied to Doppelmayr Fixed Grips Installed on Surface and Aerial Passenger Ropeways

This bulletin supersedes Bulletin SB-02-002. Please update your files.

Should you have any questions, please contact us.

Best regards,

DOPPELMAYR CTEC, INC.

Werner Auer
Customer Service Manager

WA:iam

Enclosure

Golden Office • 14452 W. 44th Avenue • Golden, CO 80403 • Ph: 303-277-9476 • Fx: 303-277-9759

No. de doc. / *Doc. no.* :	Auteur / *Author* :	Date émission *Release date* :	Doppelmayr CTEC
SB-04-006	AQ QA	2004-06-15	

BULLETIN DE SERVICE / *SERVICE BULLETIN*

Fabricant / *Lift manufacturer* : Doppelmayr	Groupe de fabrication / *fab. Group :225*
Type de remontée / *Lift type : Fixed grips*	Code bulletin / *code* ☐ OS ☒ O ☐ IS ☐ I

Inspection criteria to be applied to Doppelmayr fixed grips installed on surface and aerial passenger ropeways

This bulletin SB-04-006 supersedes bulletin SB-02-002. Please update your files.

1. General

As a lift operator, you will already be familiar with a whole series of rules and regulations set forth by both the supervisory authority and the manufacturers, in the form of permits, operating procedures and conditions of transport as well as the operating instructions specific to the lift.

As an additional help, we would like to inform you about the most frequent defects which experience has shown can develop on fixed grips and list below the criteria to be applied when deciding whether or not parts should be removed from service.

Keep in mind that complete visual and dimensional inspections are mandatory and shall be performed at the same time as non-destructive testing. Poor grip condition shall lead to increased frequency of inspections.

2. Scope

This bulletin applies to all types of Doppelmayr fixed grips installed on surface and aerial passenger ropeways.

If you have any questions or comments regarding this bulletin, please contact your local Doppelmayr CTEC representative.

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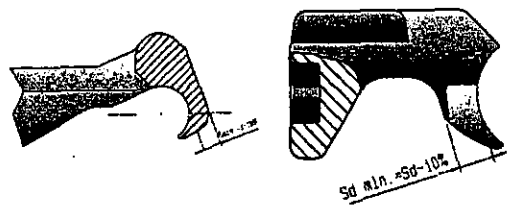
1. Geometry

1.1 Thickness of grip jaw:

A **10%** reduction in the thickness of the grip jaw compared to the required value stated on the drawing is acceptable.

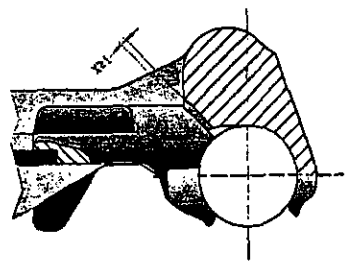


S min = S –10%

1.2 Grip capability:

Wear on the grip jaws and/or in the grip mouth can lead to the grip jaws blocking each other (**x = 0**) before sufficient grip force is applied to the rope.
The **distance X** between the grip jaw and the main body of the grip **shall never fall below 1 mm.**

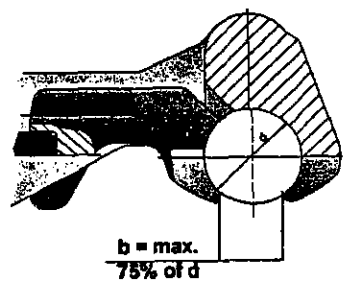
Grip capability shall also be assessed at least once a year when installed on the **haul** rope, as wire rope diameter reduction directly affects the grip capability.



Clearance too small if X < 1 mm

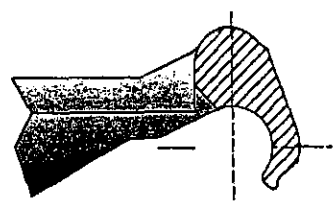
1.3 Distance between the tips of the two grip jaws:

The distance **"b"** between the two grip jaws **shall** be max. **75%** of the rope diameter.



1.4 Tips of grip jaws bent outwards:

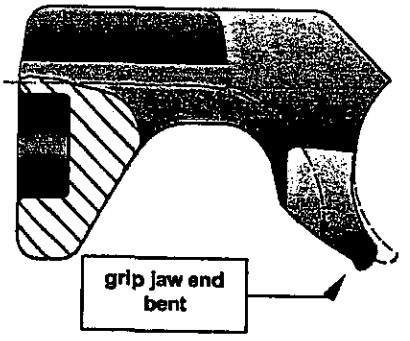
If the tips of the grip jaws become thinner through wear, then the jaws will no longer provide sufficient grip on the haul rope.
As a result the positive fit of the grip jaws around the rope will be reduced.
The distance **"b"** shall also be used for this evaluation.



BULLETIN DE SERVICE / *SERVICE BULLETIN*

Fabricant / *Lift manufacturer* : Doppelmayr	Groupe de fabrication / *fab. Group* :225
Type de remontée / *Lift type* : *Fixed grips*	Code bulletin / *code* ☐ OS ☒ O ☐ IS ☐ I

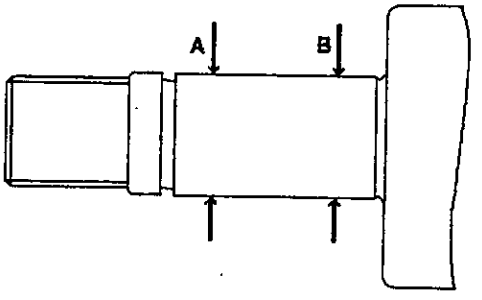
1.5 Bent thrust jaw:
Particularly in the case of surface lifts if a (high) torque is continually applied when tightening the grip (where there is contact between rope strands).



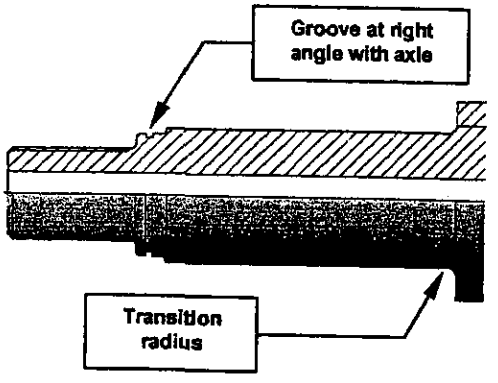
1.6 Play between grip shaft and hanger head bushing:
The clearance between the grip shaft and the bushing can be partly compensated by fitting new bushings. If the grip shaft is worn beyond the following criteria, the grip **shall** be replaced.

Actual shaft diameter A or B shall not be reduced by more than 0.5 mm from the nominal diameter*

**Nominal shaft diameter may be 40, 45, 50 or 55 mm for above surface ropeways.*
**A or B are located at the center of bushing working surface*



1.7 Shape of snap ring groove:
The outer contact surface for the snap ring in particular must be even and at right angles to the axis of the grip shaft. **There shall be no evidence of snap ring coming out of the groove.**



1.8 Grip shaft radius too small (R<1.5 mm):
The radius of the transition between the grip shaft and the grip body has a decisive influence on the strength of this area and its resistance to fatigue failure.

1.9 **Play in the movable grip tongues:**
Too much play in the pin/guide slot mounting will significantly increase the risk of the tongues becoming cracked or broken.

The play of each tongue, measured at the centre of its end, shall not be more **than 5 mm for steel tongues and 2 mm for plastic tongues** each side of an axis going through the center line of the grip rope channel.

For steel tongues

Contact your Doppelmayr CTEC representative to see if any repair or tongue replacement is available.
As there are many steel tongue models, allow between **6 to 10 weeks** for grip tongue replacement.

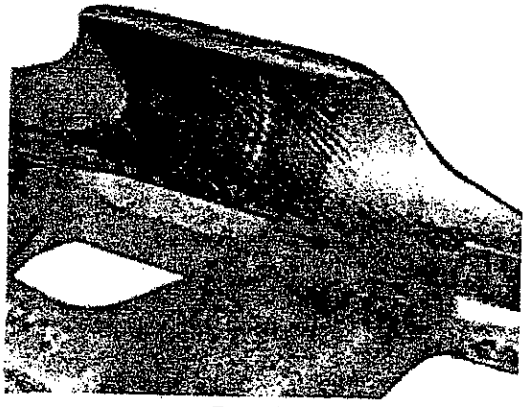
For plastic tongues

Note : *We recommend the conversion from steel tongues to plastic tongues when possible. Plastic tongues need to be replaced more often than steel tongues but cause no wear to the grip main body slot and are easily replaced by the customer. Contact your Doppelmayr CTEC representative to determine if grip tongue conversion (steel to plastic) is possible on your grips.*

2. Surface condition

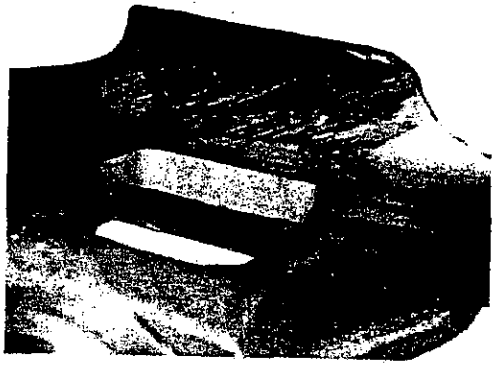
2.1 Knocks and notches on main body of grip, thrust jaw, etc.:
In particular, damage to the surface with sharp edges will significantly increase the risk of fatigue failure.

2.2 Rope channel shows inadmissible imprints of wires and (in particular) strands:
Heavy imprints are a problem if it is no longer possible to even them out without reducing the thickness of the grip jaws below acceptable limits.



Permitted
Slight imprint from wires

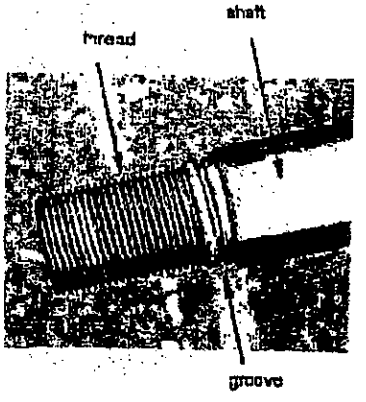
2.3 Wear, scoring or notching on the grip shaft:
Wear causes the surface to deteriorate, which in turn leads to a more rapid increase in the amount of play between the grip shaft and the hanger head bushing. The bushing or even the grip may then have to be replaced prematurely. Periodic bushing replacement and adequate greasing, along with proper line equipment and bullwheel maintenance are the best ways to extend shaft service life.



Not permitted
Pronounced imprint from strands

2.4 Grip shaft radius with scoring or notching:
This critical surface area must be inspected with particular care. **Scoring or notching may lead to premature failure of the grip and shall be taken into account when deciding on grip replacement.**

2.5 Damaged thread in/on grip shaft:
The **thread** is responsible for **generating the grip force** exerted on the rope. If the thread is damaged, stiff or has too much play, repair or replacement is necessary.



2.6 Outer shoulder of snap ring groove worn away:
If the shoulder (contact surface) no longer forms an adequate right angle, the snap ring may slip or even spring out. **Any evidence of snap ring coming out of the groove is a reason for rejection.**

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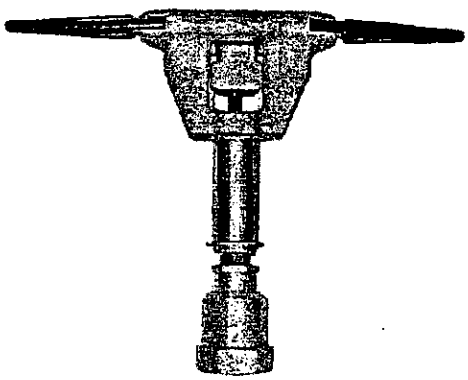
3. Inspection / Testing for surface flaws



3.1 Visual inspection reveals crack indications:
If crack indications are suspected during visual inspection, it is advisable to have the grip subjected to the more precise magnetic particle testing.

3.2 Magnetic particle testing reveals inadmissible crack indications:
If inadmissible crack indications are found during magnetic particle testing then necessary action must be taken according to the NDT procedure and regulations.

In this case or if one or several of the above mentioned criteria cannot be complied with, please contact the Customer Service at Doppelmayr CTEC in order to coordinate the necessary steps to be taken.

Note: For grip inspection frequency, please follow also the required instructions in our operating and service manuals and the applicable NDT procedure.

Complete evaluation of the condition of your grips as per this bulletin shall be performed at least at the same time as non destructive testing.
This evaluation shall be recorded in your maintenance book.

NDT - Procedure
Fixed Grips

Doppelmayr CTEC

Document-Nr. **PSKL0105**	Issued: GEH	Date: 14.12.2004	Page: 1 / 14
	Approved: SJ	Replaces Issue: NDT Fixed Grip	

Contents:

1. Foreword

This test procedure describes the non-destructive testing of DOPPELMAYR fixed grips in compliance with national regulations listed in Appendix A.

Non-destructive testing in accordance with this test procedure enables the detection and characterization of type and size of surface discontinuities.

All forged grip parts have been thoroughly tested during production.
The hot working process of forging can produce a number of surface discontinuities. Most of them can be easily detected by magnetic particle inspection. However, forging laps are difficult to detect by any non-destructive testing methods. They are at only slight angles to the surface and may be fairly shallow. Different magnetizing techniques and/or slight grinding, wire brushing, sandblasting or other surface preparation might enhance the detect ability of such forging laps. Therefore, it might be possible that, despite of the non-destructive testing performed during production, indications are found during the servicing inspection. However, undetected shallow indications are not detrimental as long as they are not propagating cracks, which can be revealed by the inspection.

2. General Requirements

The non-destructive tests must be performed in addition to physical measurements, visual inspection and service/maintenance work described in national regulations and the DOPPELMAYR CTEC maintenance manual and bulletins. For example, procedures for non-reusable parts and assembly/disassembly instructions for bolts must be observed.

Deviations from this test procedure are permissible only with the written authorization from DOPPELMAYR Wolfurt, QA-Department.

Important: This specification is only applicable for inspection and servicing parts in the field!
For a further evaluation of rejected parts, send them to your local DOPPELMAYR representative.

3. Other Applicable Standards and Documents

- DOPPELMAYR CTEC Maintenance Manual
- DOPPELMAYR CTEC Bulletins

4. Sampling Plan for USA

Every year, 10 % of the total number or at least 10 grips shall be tested. The sampling plan shall ensure that within a 10-year period every grip has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional 10 % sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than 10% of the identical components on an installation, an inspection of 100% of this specific component must be performed.

Alternatively, all grips may be tested every 6 years, or after maximum 6000 hours of operation (whichever comes first).

5. Sampling Plan for Canada, Australia, and New Zealand

Every year or after a maximum of 2000 hours of operation (whichever comes first), 20 % of the total number or at least 10 grips shall be tested. The sampling plan shall ensure that within a 5-year period every grip has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional 20 % sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than 10% of the identical components on a installation, a inspection of 100% of this specific component must be performed.

6. Test Procedure

The grip components to be inspected, the test methods applicable and the acceptance criteria are indicated in Appendix D.

7. Inspection Personnel

The person with the over-all responsibility for NDT inspection and the persons performing accept/reject evaluations must meet the requirements defined in Appendix B1 (= responsible persons).

Personnel who meet the requirements defined in Appendix B2 may perform NDT inspections, provided that the inspection is performed in accordance with this procedure and the inspection results are interpreted and evaluated by responsible persons as defined in Appendix B1.

8. Preparation and Post-Test Processing of Test

Prior to inspection, the test samples shall be disassembled and cleaned using a residue free cleaner. Bushings and bearings must be removed or carefully masked to prevent contamination during the inspection process.

After cleaning, the test sample should be free of oil, grease, rust, loose paint or any other contaminant that might interfere with the proper performance of the test.

Organic coatings

In critical areas, as indicated in Appendix D, the original paint must to be removed by a suitable process (i.e. with a rotating steel brush). Pickling is forbidden due to the risk of hydrogen embrittlement. If the original paint was removed during a former inspection and these areas were repainted with a thinner layer of paint, this new paint can remain if the thickness of the layer is less than 0.05 mm (2 mils)

Anorganic coatings

In critical areas, as indicated in Appendix D, anorganic coatings (i.e. electrogalvanizing) with a thickness over 0.1 mm (4 mils) must to be removed by a suitable process (i.e. with a rotating steel brush). Pickling is forbidden due to the risk of hydrogen embrittlement.

Note: Care must be taken to avoid unnecessary material loss or heating due to grinding!

After inspection the parts released for re-use shall be cleaned with a residue free solvent to remove all trace of the inspection medium. The dry and clean parts shall be re-lubricated according to the DOPPELMAYR CTEC maintenance manual. Additionally, the areas where the original paint has been removed for inspection should be recoated with an appropriate protection, i.e. paint.

9. Test Methods and Testing Equipment for Magnetic Particle Inspection

Magnetic particle inspections shall be carried out in compliance with the Standards defined in Appendix C1. The wet testing method shall be used.

During the inspection of the first item of each batch of identical components, the tangential surface magnetic field strength must be confirmed with a recognized flux indicator. Field strength must not be less than 16 A/cm and shall not exceed 50 A/cm.
Instead of using a flux indicator, a "Magnetic Particle Field Indicator" according to ASME Sec. V, Art. 25 can be used to confirm the adequacy and direction of the magnetic field.

After inspection all components shall be left in a condition that iron filings will not be attracted.

Note: Attracted metallic particles can lead to excessive wear of components during operation.

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters (if applicable):

1) Test equipment (manufacturer's name, model, serial number and date of last calibration)
2) Type of magnetization to be used
3) Type of ferromagnetic particles to be used (manufacturer, description, colour, type of floating agent)
4) Duration of magnetization, direction of magnetic field and magnitude of current
5) Details of demagnetization process
6) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

10. Test Methods and Testing Equipment for Penetrant Inspection

Penetrant inspections have to be carried out in compliance with standards defined in Appendix C2.

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters:

1) Penetrant family type (manufacturer's name, sensitivity classification)
2) Method of penetrant application
3) Dwell time
4) Method of penetrant removal
5) Method of developer application
6) Development time
7) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

11. Disposition of defective parts

If components have indications that do not fall within the acceptance criteria, a responsible person (see 7) must carefully decide on how to proceed with these components.
Possible actions include reworking (e.g. grinding), repairing, rejection/replacing, sending to a DOPPELMAYR representative for evaluation, or re-using without rework or repair.

If components with indications that do not fall within the acceptance criteria are re-used without rework or repair, they must be subjected to a further NDT test after a reasonable period of time to make sure that the fault observed has not worsened.

If components are reworked (e.g. by grinding), they have to be re-inspected and assessed in accordance with the accept/reject criteria.

If components are repaired, they have to be re-inspected and assessed in accordance to the acceptance/rejection criteria.
After a reasonable period of operation they must undergo a further NDT inspection to ensure the enduring success of the repair procedure.

If components are rejected they shall be marked with lift name, number of carrier, serial number and date of inspection. They shall be held for possible further evaluation by a DOPPELMAYR representative or its agents.

12. Documentation, Records

The lift owner or owner's representative is responsible for correct performance of tests. The test records shall be kept for a minimum of 10 years.

If parts had to be reworked, repaired or rejected, a test report shall be sent to a DOPPELMAYR representative within 4 weeks of completion of the test.

Test records, as a minimum, shall contain the following information:

1) Name and order no. of lift, date of start of operation
2) Name and address of lift owner/operator
3) Name and address of inspection agency
4) Name and qualification (date and no. of certificate) of inspector(s) in charge
5) Date of inspection
6) Operating hours at time of inspection
7) Test method and procedure
8) Total number of grips inspected
9) Serial numbers of grips
10) Description and total number of individual components inspected
11) For each individual component: Number of acceptable parts, number of rejected parts
12) For each rejected part:
    - Serial number of grip
    - Description of fault
    - Decision as to treatment of rejected unit
13) Signature of the person responsible

APPENDIX A: NATIONAL REGULATIONS FOR INSPECTION AND TESTING

Australia:	CSA-Z98-01, including Z98S1-02
Canada:	CSA-Z98-01, including Z98S1-02
New Zealand:	CSA-Z98-01, including Z98S1-02
USA:	AMERICAN NATIONAL STANDARD B77.1-1999, 3.3.4 CPTSB Rules and Regulations Railway Act part XI rule #26

APPENDIX B: QUALIFICATION OF PERSONNEL

B1. Personnel responsible for testing

Australia:	AINDT Level II Technician or Level III Technologist with relevant experience to non-destructive testing
Canada:	CGSB Level II or III
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level II or III
USA:	ASNT TC 1A Level II or III, American Society for NDT Qualification of Inspection Personnel

B2. Supervised personnel

Australia:	AINDT Level I
Canada:	CGSB Level I (MT and PT)
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level I
USA:	ASNT TC 1A Level I, American Society for NDT Qualification of Inspection Personnel

APPENDIX C: OTHER APPLICABLE DOCUMENTS FOR TESTING

C1. Other applicable Documents for Magnetic Particle Testing

Australia:	AS 1171-1998 Non-destructive testing – Magnetic particle testing of ferromagnetic products, components and structures
New Zealand:	BS 6072 or ASTM E709 Standard Guide for Magnetic Particle Examination
USA / Canada:	ASTM E709 Standard Guide for Magnetic Particle Examination ASTM E1444 Standard Practice for Magnetic Particle Examination

C2. Other applicable Documents for Penetrant Testing

Australia: AS 2062-1997Non-destructive testing – Penetrant testing of products and components

New Zealand: ASTM E165 Standard Test Method for Liquid Penetrant Examination
ASTM E1417 Standard Practice for Liquid Penetrant Examination

USA / Canada: ASTM E165 Standard Test Method for Liquid Penetrant Examination
ASTM E1417 Standard Practice for Liquid Penetrant Examination

APPENDIX D: TESTING OF FIXED GRIP

D1 Grip components to be tested

D1.1 Grip components to be visually inspected

- All grip parts

D1.2 Grip components to be magnetic particle inspected

- Grip body
  (material: quenched and tempered steel, R_m > 850 N/mm², electro galvanized)
- Moveable jaw
  (material: quenched and tempered steel, R_m > 850 N/mm², electro galvanized)
- Thrust Pin (starting with design 2004)
  (material: quenched and tempered steel, R_m = 1000 ÷ 1150 N/mm²)

D2 Test methods

D2.1 Visual Inspection

Prior to any other NDT-inspection the whole part has to be visually inspected.

D2.2 Magnetic Particle Inspection

For critical areas as indicated in the following chapter **wet magnetic particle testing** is ***mandatory***.

Penetrant testing can be additionally used for confirmation of MT-indications.

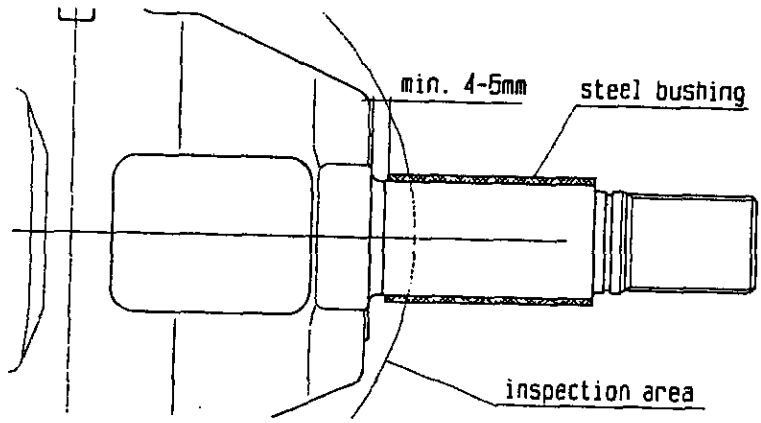
D3 Acceptance Criteria: Grip Body

D3.1 Dimensional and Visual Inspection

Wear shall be checked according to the DOPPELMAYR CTEC maintenance manual.

Important:

If a sleeve was added to increase the shaft diameter, the gap between the sleeve (steel bushing) and the grip shoulder (see graph) must be at least 4 to 5 mm.
Otherwise, it is not possible to perform a valid MT-inspection in this area!



D3.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D3.1.2 Visual Reject Criteria (indications)

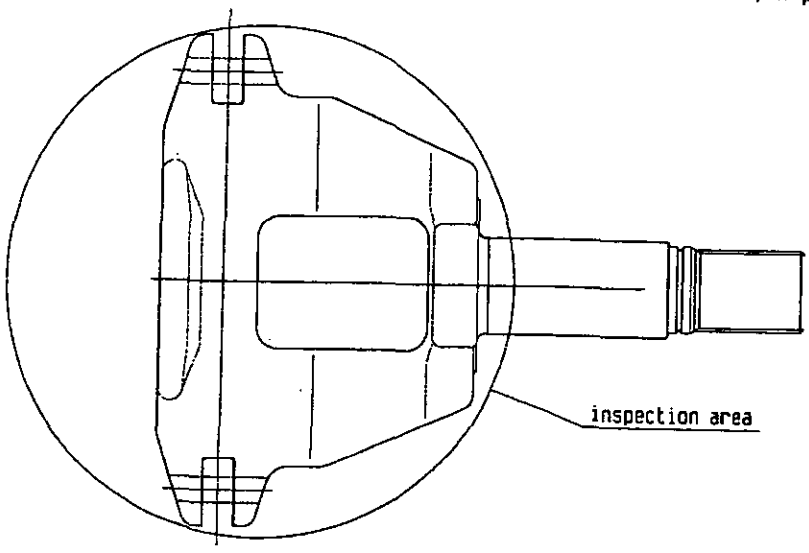
Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to D3.2.2
- **Marks, nicks**, and **rusty, non-linear indications** on **machined surfaces** with a **depth > 0.3 mm**
  - Parts with indications with a depth > 0.3 mm must be rejected.
  - Indications with a depth < 0.3 mm (only localized!) be further treated according to D3.3.
- **Marks, nicks** (except forging marks), and **rusty, non-linear indications** on **all other surfaces** with a **depth > 1.0 mm**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to D3.2.2

D3.2 Magnetic Particle Inspection

D3.2.1 Inspection area

- Magnetic particle inspection is **mandatory** in **critical areas.**
  For critical areas see graph below.
- Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per D3.1.2.



D3.2.2 Reject Criteria (Indications)

Following indications are ***unacceptable***:

- **Linear indications** with a **length > 2 mm**
  - Unacceptable indications must be further treated according to D3.3
- **Linear indications in critical areas** in the **area of corners, edges or radii**
  - Unacceptable indications must be further treated according to D3.3

D3.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected.
Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

D3.3.1 Unmachined surface

Unacceptable indications may be removed by grinding under following conditions:

- Maximum depth of grinding: 5% of thickness, max. 3 mm
- Diameter of grinding exceeds 25 times depth
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks.
- Local hardening and hardening cracks due to grinding must be avoided!

D3.3.2 Machined surface

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding: 0.3 mm (only localized!).
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks.
- Local hardening and hardening cracks due to grinding must be avoided!

D3.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their **location, nature** and **grinding depth**:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D4 Acceptance Criteria: Moveable jaw

D4.1 Visual Inspection

Wear shall be checked according to the DOPPELMAYR CTEC maintenance manual.

D4.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D4.1.2 Visual Reject Criteria (Indications)

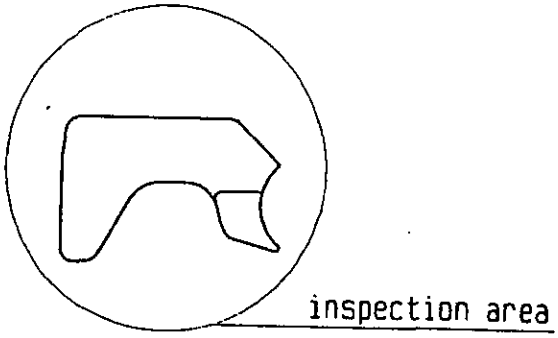
Following indications are **unacceptable**:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to D4.2
- **Marks, nicks** (except forging marks), and **rusty, non-linear indications** on **unmachined surfaces** with a **depth > 1.0 mm**
  - Parts with indications with a depth > 1.0 mm must be rejected.
  - Parts with indications with a depth < 1.0 mm must be further treated according to D4.3

D4.2 Magnetic Particle Inspection

D4.2.1 Inspection area

Magnetic particle inspection is **mandatory** on the **whole surface** of the moveable jaw.



D4.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear indications** with a **length > 2 mm**
  - Unacceptable indications must be further treated according to D4.3
- **Linear indications in critical areas** in the **area of corners, edges or radii**
  - Unacceptable indications must be further treated according to D4.3

D4.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

Unacceptable indications may be removed by grinding under following conditions:

- Maximum depth of grinding: 5% of thickness, max. 3 mm
- Diameter of grinding exceeds 25 times depth
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks.
- Local hardening and hardening cracks due to grinding must be avoided!

D4.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their **location, nature** and **grinding depth**:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D5 Acceptance Criteria: Thrust Pin and Spring Guide Slide Rod

D5.1 Visual Inspection

D5.1.1 Visual Inspection Area

Before and after cleaning, the complete part must be visually inspected.

D5.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**
  - *Unacceptable indications* must be further treated according to D5.3
    (thrust pins, starting with design 2004, must be magnetic particle (MT-) inspected according to D5.2)

- **Marks, nicks,** and **rusty, non-linear indication** with a **depth > 0.3 mm**
  - Parts with indications with a depth > 0.3 mm must be rejected.
  - Parts with indications with a depth < 0.3 mm must be further treated according to D5.3

D5.2 Magnetic Particle Inspection (only thrust pins, starting with design 2004)

D5.2.1 Inspection area

- Magnetic particle inspection is **mandatory** on the **whole surface** of the thrust pin.

D5.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear indications** with a **length > 2 mm**
  - Unacceptable indications must be further treated according to D5.3

- **Linear indications in critical areas** in the **area of corners, edges or radii**
  - Unacceptable indications must be further treated according to D5.3

D5.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding: 0.3 mm.
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Care is taken on bearing and bushing seats.
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!

D5.5 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their location, nature and grinding depth:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D6 Acceptance Criteria: All other Grip Parts

D6.1 Visual Inspection

D6.1.1 Visual Inspection Area

Before and after cleaning, the complete part must be visually inspected.

D6.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications** with a **length > 5 mm**
  - Parts with rusty indications must be replaced

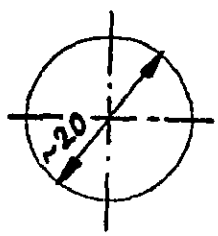
D7 Acceptance Criteria: Steel Grip Tongues and Welded Tongue Pins

D7.1 Field of Application

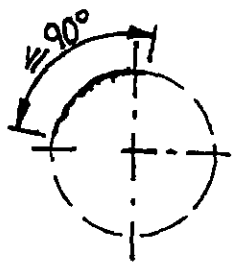
This supplement to the fixed grip NDT procedure is valid for fixed grips with steel grip tongues and welded tongues pins.

D7.2 Extension of the Acceptance Criteria

Front view onto welded tongue pin



A) Light, circular indications due to the transition from forged to welded material can be accepted.



B) Severe detectable indications over max. ¼ of the circumference due to a lack of fusion can be accepted. Indications of a larger extent must be subjected to further non-destructive test after a reasonable period of time (but maximum after 1000 hours of operation) to make sure that the fault observed has not worsened. If any enlargement of cracks can be detected, this part must be rejected and can be reworked according to the „Instruction for Welding and Testing DOPPELMAYR Rope Grips for Double Chairs", SPAN0001, dated 1991-09-13.

C) Severe detectable indications in the centre of the pin welding due to the transition from weld metal bead to tongue pin can be accepted.

Caution: Grip tongue and grip tongue moutings are to be visually checked for excessive wear on a regular basis so that the danger of loosing a grip tongue can be ruled out.

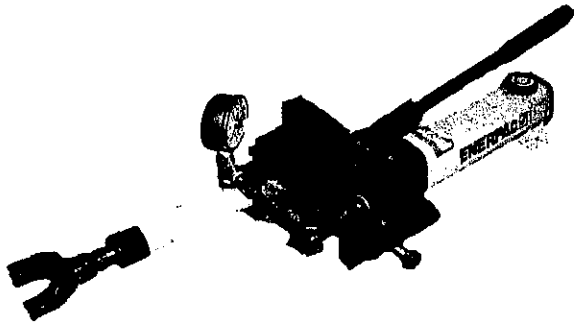
Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
CS / SAC	07-14-2005	NB-05-007	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	DOPPELMAYR	Fab. Group / *Groupe de fabrication :*	40
Lift type / *Type de remontée :*	FIXED LIFT / *REMONTÉE FIXE*		
Supercedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	07-14-2005

SLIP TEST TOOL FOR DOPPELMAYR FIXED GRIP

Doppelmayr CTEC has designed a new portable fixed grip slip tester. User friendly, this tool complies with the North american requirements of periodical proof testing as per code.
(ANSI 4.3.4.3 CSA Z-98-01, 11.23.21)



$3,225.00
($2,550.00 USD)

Part Number : 50012788 Grip slip tester

8 to 10 weeks delivery as per availability

The tool is provided with 3 rope jaws, adaptable on haul ropes with diameters from 28 mm to 45 mm, and an instruction manual.

This tool may be used with other types of grips. Please contact your local Doppelmayr CTEC Customer Service representative for more information.

Note :Doppelmayr CTEC provides, with instruction manual, a universal test value based on an inclination of 100% slope (45 degrees). Therefore, it is strongly recommended to have a specific slip value for each lift, based on the maximum inclination moment of chair and profile of the lift. If you do not have this value, we remind you that we offer the calculation service for grip slip testing.

Please contact your local Doppelmayr CTEC Customer Service for more details.

DOPPELMAYR CTEC
Customer Service

Doppelmayr CTEC

Doppelmayr CTEC, Inc.
6452 Fig Street – Unit B
Arvada, CO 80004
T: 303-277-9476
F: 303-277-9759

TO: DOPPELMAYR CUSTOMERS WITH FIXED GRIP INSTALLATIONS

DATE: 19-JUL-05

SUBJECT: Bulletin NB-05-007

For your information, enclosed please find Bulletin NB-05-007 regarding Slip Test Tool for Doppelmayr Fixed Grip.

Please contact us should you have any questions or require more information.

Best regards,

DOPPELMAYR CTEC, INC.

Jim Craig

Jim Craig
Service Manager

JC:iam

Enc.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SAC	**26-10-2005**	**SB-05-019**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	**DOPPELMAYR**	**Fab. Group / *Groupe de fabrication :***	**225**
Lift type / *Type de remontée :*	**MGD-4-CLD**		
Supercedes / *Remplace :*	**N/A *S/O***	**Effective date / *Date en vigueur :***	**26-10-2005**

BULLETIN KD050006e

Dear customer,

Please find enclosed Bulletin KD05006E concerning the bolt connections of the DS fixed grip jaw.

If any information should be required regarding this Bulletin, do not hesitate to contact your local Doppelmayr CTEC representative.

DOPPELMAYR CTEC

Customer Service

Cher Client ,

Vous trouverez ci-joint le Bulletin KD50006e concernant les vis des machoires fixes sur vos pinces détachables de modèle DS.

Nous sommes désolés, ce bulletin est disponible seulement qu'en anglais.

Si des informations supplémentaires vous sont nécessaires, n'hésitez pas à communiquer avec notre service à la clientèle.

DOPPELMAYR CTEC

Service à la clientèle.

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc. ID	Seite/ Page
		KW/SJ/dk	28.09.2005	KD05006E	1 / 1

Ersatz für / Supersedes:	Ersetzt durch / Replaced by:	Type:	Baugruppe / Assembly group:
--	--	MGD/CLD	DS grips

Abgeleitet von / Based on: --				
Classification Code:	OS	X O	IS	I

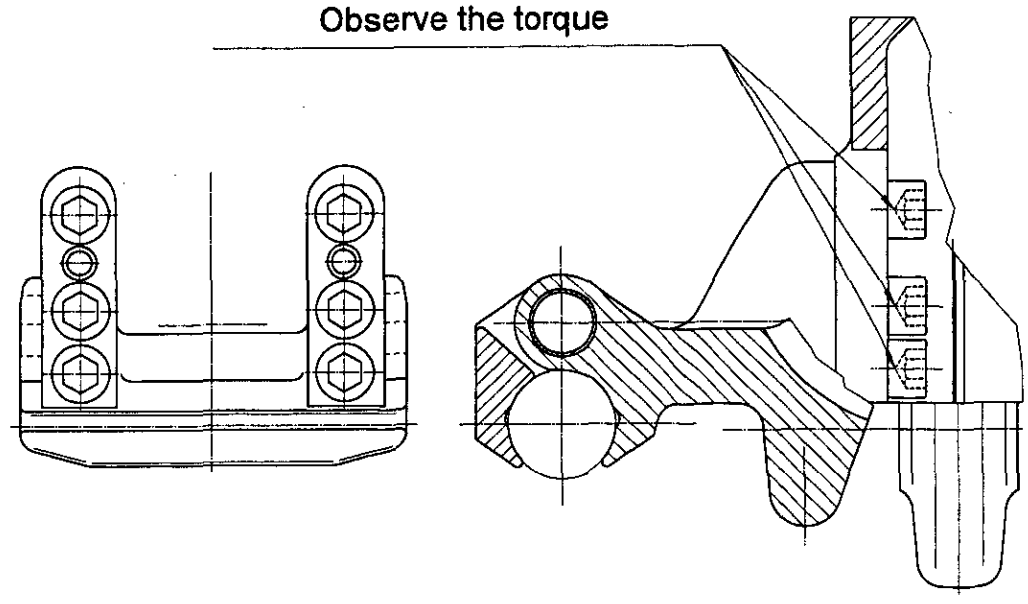
DS Grips – Bolt Connections of the Fixed Grip Jaw

On detachable DS grips, the fixed grip jaw is mounted on the grip housing by means of 6 Allen bolts. On some installations, some of these bolts have been found broken.

In order to prevent a possible fracture of such bolts and to detect any such damage at an early stage, we recommend to take the following measures:

- Check all grips before each season and once during the season for the completeness of the bolts.
- During the annual grip maintenance check the bolts for correct torque by means of a torque wrench (check on the grips to be stripped down). The required torque is 300 Nm unless a different torque applies for your specific installation.
- If the fixed grip jaw needs to be replaced, use new bolts for reassembly.
- If one of the bolts is broken on a grip, all bolts of this grip must be replaced immediately (before resuming operation).

Please add this bulletin to your copy of the Operation and Maintenance Manual.



DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		BEC/KWidk	2002-11-07	KD02015	1 / 1

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
–	–	CLD-S	Fahrzeuge / Stationen

Abgeleitet von / Based on: Techn.Info #Do-311	☒ OS	☐ O	☐ IS	☐ I

Chair Lift Operation with Empty Chairs and Open Bubbles:

Incidents have occurred on the 6-CLD lifts "Konrad" (991S0011 - Russia) and "Iselerbahn" (AAA0000032 – Oberjoch, Germany) where empty chairs with open bubbles on the line developed such a strong swinging movement that they impacted against towers.

In the case of the Konrad lift the chair in question was torn from the rope and crashed to the ground. On the Iselerbahn installation the chair derailed as it entered the bottom station.

The reason why these chairs generated a swinging motion can only be assumed as the events were not actually witnessed. The assumption is that a combination of unfavorable wind conditions and relatively low wind velocities in conjunction with the air stream during travel caused a build-up of swinging motion in the empty chairs with open bubbles (surface exposed to wind on a 6-seater bubble 5.7m²).

The lift managers of both installations state that at the time of the incidents the readings on the anemometers did not show unacceptably high values.

In both cases the incidents did not occur while the lift was in service but during preparations for parking (in a forward direction). The closing rails of both lifts were in the **"neutral"** position, i.e. all the chairs were empty with open bubbles and were on the line.

For the above reasons the following note will in future be included in our operating manuals:

IMPORTANT!
In the case of chairs with bubbles make sure that empty vehicles only leave the station with their bubbles closed and locked as vehicles with open bubbles offer a greater surface area which is exposed to wind and can therefore generate a strong swinging movement even at low wind velocities.

This important instruction also applies for all existing installations and has to be followed although this note is not included in the operating manuals.

Doppelmayr CTEC inc
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Ph: 303-277-9476 · Fx: 303-277-9759 · info@doppelmayrctec.com

Bulletin No:	*SA-04-009*
Release Date:	*20-Jul-04*
Effective Date:	*20-Jul-04*
Supercedes:	*Not Applicable*
Completion Date:	*See Safety Alert text*

SAFETY ALERT

Lift Manufacturer:	*Doppelmayr*	Affected Production Dates:	*See below*
Lift Model or Type:	*See below*	Affected Serial Numbers:	*Not applicable*
Lift Name:			

Recommended Action

(Inspection, Modification, Part replacement, Nondestructive testing, Procedural change, Operational revision, etc.)

Prior to public operation, or within the next 30 days for lifts that are presently in public operation, a visual inspection of the top plate weld shall be performed on all hold-down tower assemblies where the hold-down sheave has more than 8 rollers (i.e., 10D, 12D, 14D and 16D assemblies).

This required inspection applies only to tower assemblies with <u>all</u> the following characteristics:

1) ***No gussets are installed at the tower tube to tower top plate connection***
2) ***The tower top plate is 5/8 inch thick (or less)***
3) ***Hold-down towers only***
4) ***Towers with sheave assemblies having more than 8 rollers (i.e., 10D, 12D, 14D or 16D)***

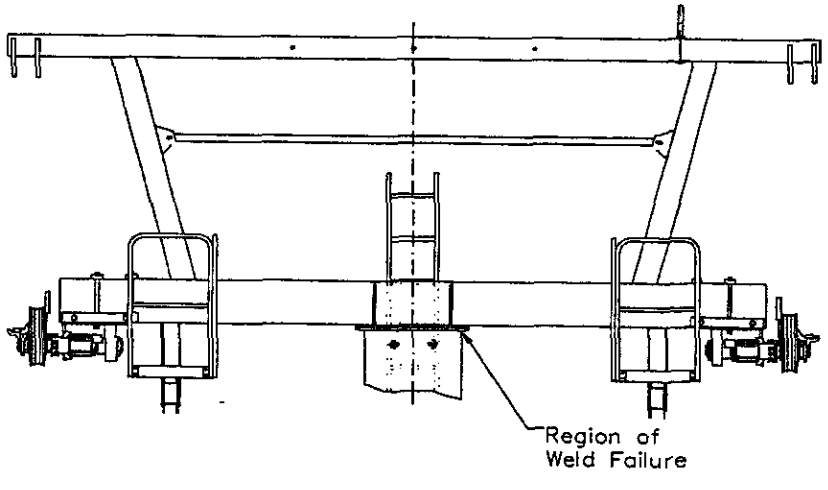
Notify Doppelmayr immediately if there are any signs of fatigue failure of the weld (separation of the weld from the base metal, rust stains in the vicinity of the weld, cracked paint, etc.)

Pending the outcome of ongoing investigations, further recommendations may be forthcoming.

Visual inspections of all welds should be performed annually in accordance with the Operations and Maintenance Manual.

Detail of Issue (Text, Drawings, Schematics)

The following schematic depicts the location of the weld that failed.



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Bulletin No: SA-04-009
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Supercedes: Not Applicable
Completion Date: See Safety Alert text.

SAFETY ALERT

Lift Manufacturer:	Doppelmayr	Affected Production Dates:	See below
Lift Model or Type:	See below	Affected Serial Numbers:	Not applicable
Lift Name:			

Abstract of Issue (Summary of Information)

On July 8th, 2004, a tower weld failure occurred on a Doppelmayr pulse gondola installation. The tower top plate almost separated from the tower tube and the cross-arm tilted about 15 degrees. The rope stayed on the sheave assembly and the lift was stopped by the derail circuit without further damage to the installation. There were no reported injuries. The tower that failed (tower #1) had a 12 roller depress sheave assembly (type 401, 12D)

Investigation is continuing as to the cause of the weld failure, but preliminary analysis suggests that the weld design may not have been adequate considering the unique loading conditions on a pulse gondola. The failure occurred at the joint between the tower tube and the top plate.

This particular tower design utilized a 1/2 inch wall tower tube and a 5/8 inch tower top plate with no gussets. The weld was an 8mm (5/16 inch) filet weld.

Doppelmayr has utilized several different designs over the years. Tower top plate connection designs that utilize gussets or full penetration welds are not a concern. Only tower top plate connections that utilize a filet weld and no gussets and with depress sheave assemblies with more than 8 rollers are the subject of this service bulletin.

With a visual examination it is not possible to determine whether the weld is a filet weld or a full penetration weld. However, we have reviewed all of our records and this bulletin is only being sent to operators where we know or suspect that the tower top plate connection is a filet weld with no gussets.

Reason for Release (Summary)

Examination and analysis of the failed weld raises concerns that this weld may not be adequate for long fatigue life. While the fatigue loading on a pulse gondola is unique (high variations in rope load), examination of the weld design raises concerns for other applications with large depress sheave assemblies (more than 8 rollers).

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SAC	16-02-2007	SB-07-003	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	Doppelmayr	Fab. Group / *Groupe de fabrication :*	35
Lift type / *Type de remontée :*	T-Bar Type A, C, OE		
Supersedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	16-02-2007

Title / *Titre :* **Combined sheave assemblies on Doppelmayr T- Bars**
Trains de poulie combinés sur les téléskis Doppelmayr

1. Generalities / *Généralités*

Dear Customer,

Please find enclosed safety bulletin KD007001regarding the Dopplemayr T-Bar type A, C, and OE combined sheave assemblies that requires your immediate attention. Please add this bulletin to your operation manual of lifts concerned. If any assistance is required regarding this bulletin, do not hesitate to contact your local Doppelmayr CTEC Customer Service.

Best regards

Cher Client,

Vous trouverez ci-joint le bulletin KD07001 concernant les trains de poulie combinés des téléskis (T-Bar) Doppelmayr de type A,C, et OE et nécessitant une attention immédiate (malheureusement disponible qu'en anglais).Veuillez insérer ce bulletin aux manuels d'opération concernés.

Si des informations ou support linguistique pour traduction ou interpretation de ce bulletin étaient nécessaires, n'hésitez pas a communiquer avec notre service à la clientèle Doppelmayr CTEC.

Meilleures Salutations

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

Bulletin	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc. ID	Seite/ Page
	SJ/LIM/KW/dk	16.02.2007	KD07001E.doc	1 / 3

Ergänzung zu/ Additionally to:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
--	--	Surface Lifts	Sheave Assemblies

Abgeleitet von / Based on: --				
Classification code:	X OS	O	IS	I

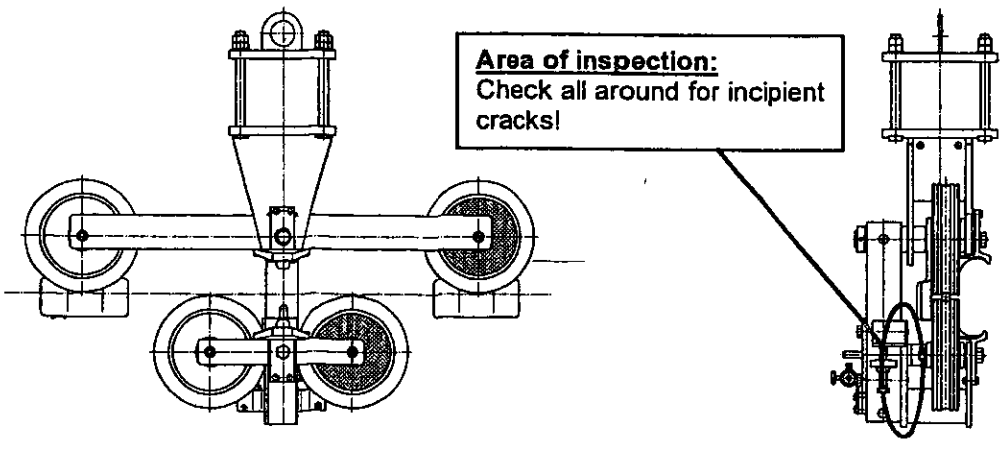
Please add this bulletin to the operation and service manual of the lifts concerned!

Check of Combined Sheave Assemblies Type A, C and OE on Surface Lifts

In the last 2 weeks we were informed about two incidents resulting from cracks on the frames of combined sheave assemblies.
The frames are subjected to dynamic stress. This stress is mainly dependent on the setting of the adjustable 2-wheeler evener frame.
In some cases we have found that the adjustable 2-wheeler evener frame was set (pre-tensioned) beyond the permissible range in order to increase the stability against rope displacement in windy conditions.
This, however, leads to impermissible stress.
Special influences on the individual installations, such as vibrations, can also lead to increased stress.

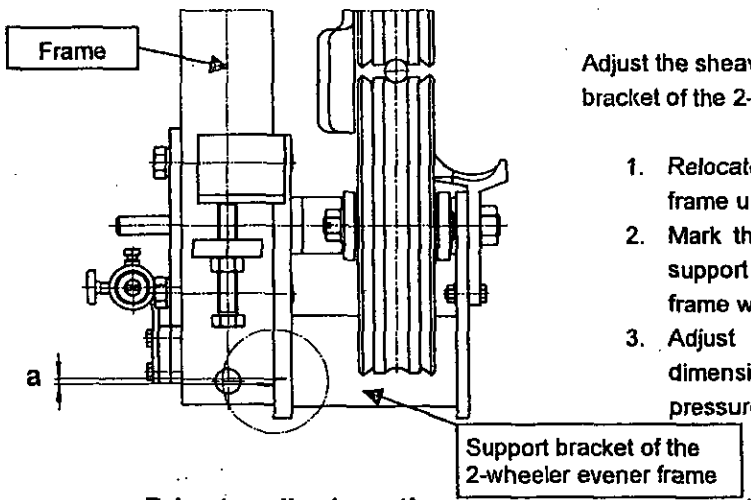
In order to detect any incipient cracks at an early stage, we would like to ask you to pay special attention to the indicated areas during the monthly visual inspection.
Furthermore, special attention shall also be paid to any possible changes during the daily test runs.

2T/2N sheave assembly



In addition, please also check the setting of the adjustable 2-wheeler evener frames of the combined sheave assemblies and readjust them if need be. For correct adjustment refer to the sketch.

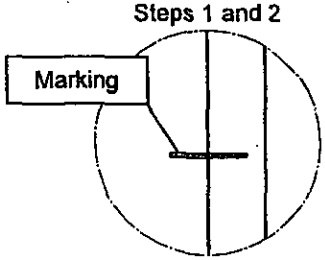
Adjustment of 2T/2N, 4T/2N, 4N/2T, 8T/4N and 8N/4T sheave assemblies of type A, C and OE



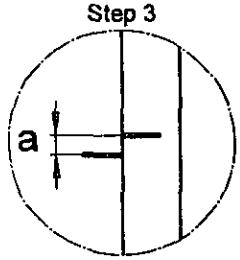
Adjust the sheave assembly by relocating the support bracket of the 2-wheeler evener frame:

1. Relocate the adjustable 2-wheeler evener frame until all sheaves contact the rope.
2. Mark the position on the frame and on the support bracket of the 2-wheeler evener frame with a coloured pen.
3. Adjust the 2-wheeler evener frame at dimension "a" to increase the sheave pressure.

Prior to adjustment!
(sheaves contact the rope)
Steps 1 and 2



Upon adjustment!
Step 3

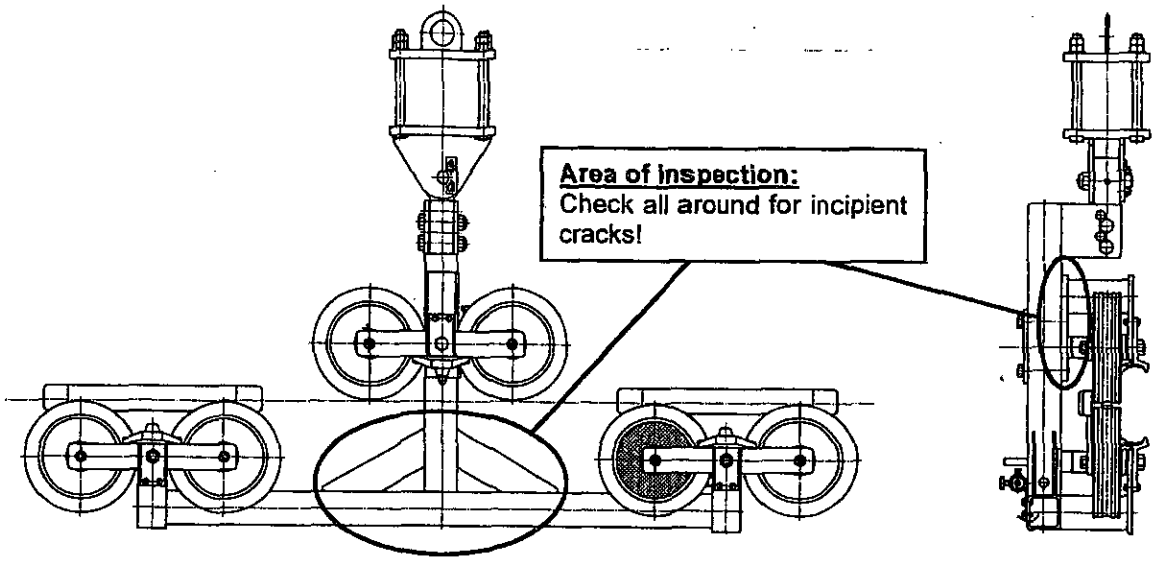


The information and instructions specific to each individual installation must also be taken into consideration during adjustment.

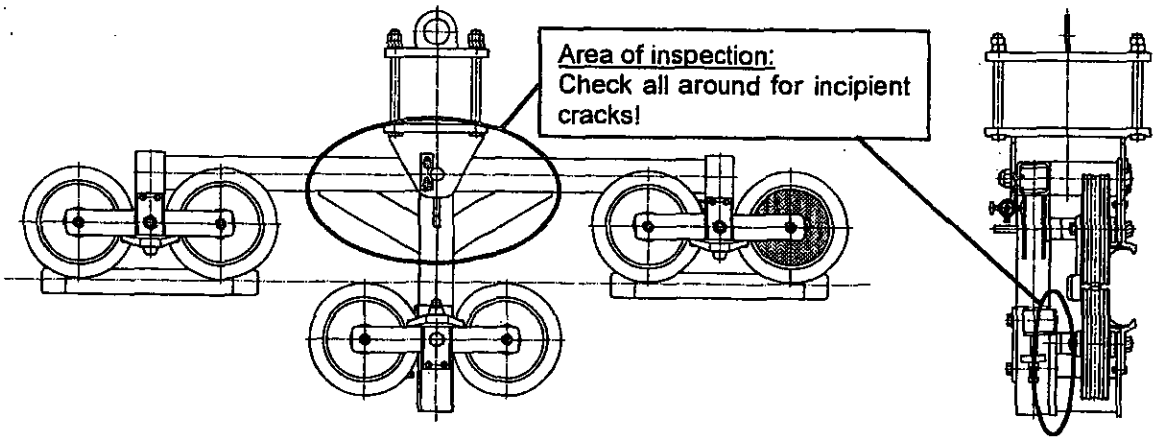
Maximum values:
a = 5 mm ..... for types OE and A
a = 3 mm ..... for type C

If dimension "a" is exceeded, the sheave pressure increases and leads to overstress of the components.

4T/2N resp. 8T/4N sheave assembly



4N/2T resp. 8N/4T sheave assembly



If you find any incipient cracks during the check or obvious vibrations during operation, please inform Doppelmayr immediately so that we can decide the further measures to be taken.

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		KW/FM/dk	2003-03-28	KD03005	1 / 1

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
--	--	SL, CLF, CLD/MGD	Hydraulic Equipment
Abgeleitet von / Based on:			
Classification Code:	X OS	O	IS	I

Check valves with aluminium body on hydraulic haul rope tensioning systems built prior to 1987

In the past season, a defect occurred on the aluminium body of the pipe failure lock valve of the hydraulic haul rope tensioning unit of an older installation in New Zealand. Consequently, the tensioning cylinder moved right forward to the stop, thus rendering haul rope tensioning inoperational.

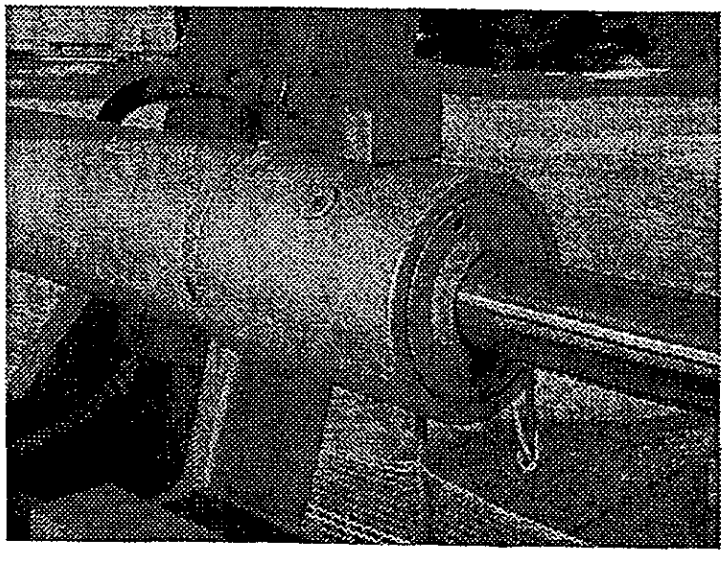
The installation concerned has been in operation for 17 years and was among the last ones to be fitted with this type of pipe failure lock valve.

We believe the defect was caused by knocking off great quantities of ice.

To fulfil our duty to inform, we herewith ask you to check all pipe failure lock valves with aluminium body fitted on your installation for possible cracks and escaping oil, or - and this might be easier - to simply exchange them with steel body ones.

The problem may affect installations built prior to 1987. Since then, pipe failure lock valves are generally fitted with steel bodies.

Should you require such conversion sets, please contact our After-Sales Service in Wolfurt.



DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		BEC/KW/dk	2002-10-01	KD02012	1/1

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
–	–	CLD/MGD	Stations

Abgeleitet von / Based on: Techn. Info #Do-307 ☒ OS ☐ O ☐ IS ☐ I

Fatigue breakage of suspension bolts (M20 x 180 - 8.8) in tyre conveyor support beam:

On older UNI stations (not, however, on UNIG) fatigue breaks were found in some suspension bolts in the tyre conveyor support beam.

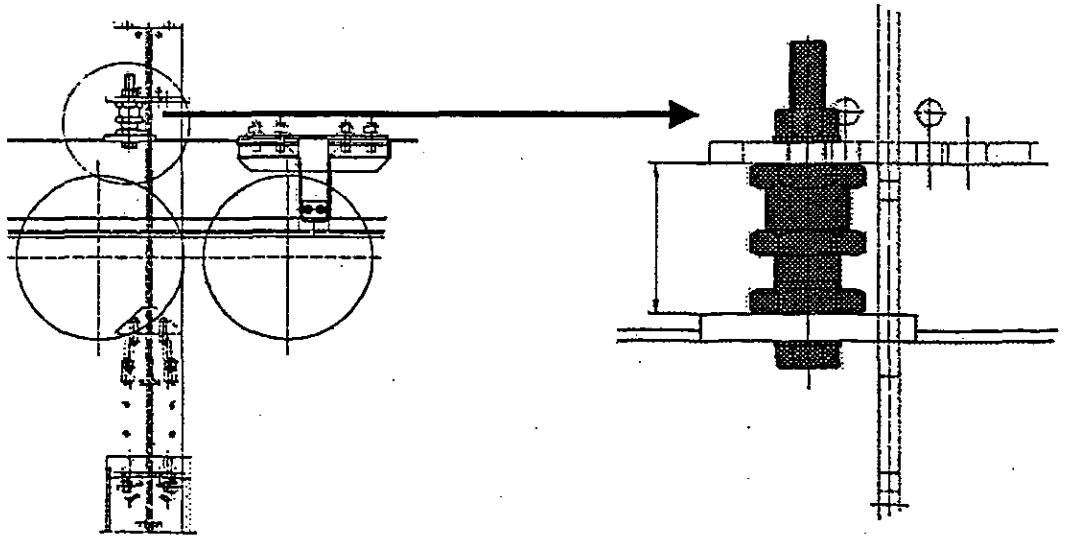
Reason:

- The suspension bolts were twisted because the mounting eyes had been distorted (i.e. bent upwards) during welding.
- Bolts had been used which were not pretensioned properly.

Remedy to avoid similar problems on UNIG station equipment:

- As of 2002, adjustable spacer sleeves (see below) are used for UNIG station equipment to enable pretensioning of the suspension bolts with a specific torque (see table of torques for M 20).

This solution may also be applicable on older UNI installations but must be discussed with the technical department for every individual case (different length of UNI and UNIG). Please address your inquiries to our After-Sales Service department.



Doppelmayr

BULLETIN D-24

To:	**Bogus Basin, ID**	**Steve Shake**
	Cascade Mountain, WI	**Phil Walz**
	Crystal Mountain, WA	**Scott Bowen**
	Heavenly Resort, CA	**Gary Burch**
	Keystone Resort, CO	**Jeff Ray**
	Mammoth Mountain, CA	**Heimo Ladinig**
	Mountain Creek at Vernon, NJ	**Al Paugh**
	Mountain High, CA	**J. R. Reinhardt**
	Snowbasin Ski Area, UT	**Gray Reynolds**
	Telluride, CO	**Mike Cusack**
	Terry Peak, SD	**Tom Marsing**
	Wachusett Mountain, MA	**Tim McGuire**
	Whiteface Mountain, NY	**Jay Rand**
	Yellowstone Mountain, MT	**Keil Thompson**

Date: **December 6, 1999**

Re: **Doppelmayr Electrical Maintenance Manual**

Enclosed please find the following pages:

-	PSS – CONTROL SYSTEM 1999 CHAIRLIFT	Page 51/165 (26.11.99)
-	PSS – CONTROL SYSTEM 1999 GONDOLA	Page 52/156 (26.11.99)

In the Section describing the stand-by drive operation, there was a misprint in the last paragraph under Low, "Motor RPM can be slowed down from maximum to standstill." This is incorrect and it should read , "Motor RPM can be slowed down from maximum to low speed." Low will only return to a preset low speed above torque proofing. Please exchange these pages in your manuals with the enclosed corrected information.

Should you have any questions, please contact me.

Sincerely,

DOPPELMAYR USA, INC.

Werner G. Auer

Werner G. Auer
Vice President
After Sales Service

The signal lamps "stop", "service stop" and "emergency stop" should go out and the "reset" lamp should light up. If one of the lamps does not go out, one of the circuits has been interrupted.

If the lamps "ready", "reset" and "zero position" light up, the lift can be started by pressing the "run" button.

If the lamp "run" lights up the chairlift must be run within 5 seconds, otherwise the service brake supervision switches off again.

When turning one of the speed control switches to "fast", the RPM of the stand by diesel can be adjusted up to max. RPM. At approximately 1100 RPM the speed control unit activates the contact "prove torque" and the relay 32K2 is activated. Relay 32K2 causes the service brake to open.

The positions of the speed control switch have the following functions:

Normal position (neutral position of the switch)

Preset RPM remains constant.

Fast

Motor RPM can be adjusted from low speed up to maximum speed.

Medium

Motor RPM reduces from maximum to a preset reduced speed.

Low

Motor RPM can be slowed down from maximum to low speed. With the speed control switches the RPM can be controlled from several locations, but in each case "low" has priority over "medium", and "medium" and "low" both have priority over "fast".

- The signal lamps "stop", "service stop" and "emergency stop" should go out and the "reset" lamp should light up. If one of the lamps does not go out, one of the circuits has been interrupted.

- If the lamps "ready", "reset" and "zero position" light up, the lift can be started by pressing the "run" button.

If the lamp "run" lights up the gondola must be run within 5 seconds, otherwise the service brake supervision switches off again.

When turning one of the speed control switches to "fast", the RPM of the stand by diesel can be adjusted up to max. RPM. At approximately 1100 RPM the speed control unit activates the contact "prove torque" and the relay 32K2 is activated. Relay 32K2 causes the service brake to open.

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Motor RPM can be slowed down from maximum to low speed. With the speed control switches the RPM can be controlled from several locations, but in each case "low" has priority over "medium", and "medium" and "low" both have priority over "fast".

Doppelmayr CTEC inc

Main Office • 3160 West 500 South • Salt Lake City, UT 84104 • Ph: 801-973-7977 • Fx: 801-973-9580 • info@doppelmayrctec.com

Via Certified Mail
Return Receipt Requested

BULLETIN D-28

TO:		
	Bogus Basin, ID	Steve Shake
	Cascade, WI	Phil Walz
	Crystal Mountain, WA	Scott Bowen
	Heavenly, CA	Gary Burch
	Keystone, CO	Jeff Ray
	Mammoth, CA	Heimo Ladinig
	Mountain Creek, NJ	Kevin Mulligan
	Mountain High, CA	J. R. Reinhardt
	Snowbasin, UT	Kyle Clark
	Sunday River, ME	Dan Wheeler
	Telluride, CO	Kenny King
	Terry Peak, SD	Mike McGuckin
	Wachusett, MA	Dom Baggio
	Whiteface, NY	Jay Rand
	Yellowstone, MT	Keil Thompson

DATE: 30-APRIL-2002

SUBJECT: GRIP FORCE TESTER UPGRADES

We are pleased to offer a one time opportunity to upgrade the grip force unit on detachable installations with Type PSS 3000 Low Voltage Control Systems built in 1997, 1998 and 1999 for a greatly reduced cost.

Included per lift:

- analog input card PSS AIU5I1
- central unit PSS SB CPU
- proximity switch GS Pulsor M18
- technical design and programming
- installation and wiring
- testing and commissioning

Total Amount Per Lift $ 5750.00

Excluded per lift:

- airfare
- reasonable travel expenses
- Doppelmayr CTEC will keep old CPO test units, proximity and amplifiers

This offer will expire on 14-Jun-02, therefore, please notify us if you are interested in this upgrade. If you are interested, we will notify you by 19-Jul-02 when you can expect your system to be modified.

Best regards,

DOPPELMAYR CTEC, INC.

Werner G. Auer

Werner Auer
Customer Service Manager

Golden Office • 14452 W. 44th Avenue • Golden, CO 80403 • Ph: 303-277-9476 • Fx: 303-277-9759

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		KW/dk	2002-07-05	KD 02004	1 / 2

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
–	–	CLD/MGD	STATIONS/PARKING

Abgeleitet von / Based on: Techn. Info No. Do-299	☐ OS	☒ O	☐ IS	☐ I

Linear actuators (spindle motors) with 24V drive and brake

During the last years linear actuators had to be replaced frequently because they were thought to be defective!
Linear actuators either failed to start or failed to produce the required power.

Possible reasons:

1. Incorrectly connected brake:

Brake and actuator may not be connected on the same power supply line!
The actuator requires more current than the brake → brake does not open → actuator cannot start as it is blocked by the brake!
The linear actuators are equipped with a slip clutch.
In the case of an overload, this clutch opens and the actuator slips instead of being stalled.

Important: Separate power feed for brake and actuator!

2. Power unit with insufficient capacity:

Actuator is not supplied with enough voltage and cannot produce the required power.

For appropriate capacity of power unit - see page 2 - max. current!

In the case of problems with linear actuators, therefore, always investigate these possible reasons.

Replacing the linear actuator does not always achieve the desired success. While replacement may be successful in the short term (new linear actuator with lower internal friction), it will nonetheless become more sluggish in time and thus the same problem will arise.

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		KW/dk	2002-07-05	KD 02004	2 / 2

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
–	–	CLD/MGD	STATIONS/PARKING

Abgeleitet von / Based on: Techn. Info No. Do-299 ☐ OS ☒ O ☐ IS ☐ I

Information provided by Servomech:

Servomech.

Performances at rated voltage:

	100 W	150 W	300 W	500 W	750 W
RATED SPEED [rpm]	3000	3000	3000	3000	3000
RATED VOLTAGE [V]	24	24	24	24	60
RATED TORQUE [Nm]	0.32	0.48	0.96	1.6	2.4
RATED CURRENT [A]	5.3	8	15.6	25	10.6
PEAK TORQUE [Nm]	1.6	2.4	4.8	5.7	12
PEAK CURRENT [A]	27	41	78	89	53
ARMATURE RESISTANCE [Ω]	0.4	0.29	0.16	0.1	0.71
INDUCTANCE [mH]	0.8	0.6	0.32	0.13	4.6
WEIGHT [kg]	2.9	3.5	5.3	8	9.4

MOTOR BRAKE: On request normally closed mechanical brake, activated by direct curr[illegible] electromagnet, is available. Brake with independent power supply line.

MOTOR	BRAKING	CURRENT
100 W	1.7	0.5
150 W	1.7	0.5
750 W	8	1

WARNING! The brake is normally closed: independent power supply line with the rated voltage is required to open it. With lower voltage the brake does not open completely.

BRAKE MOTOR: WHEN IT IS NECESSARY

- Series UBA Actuators: brake motor standard supplied
- Series BSA Actuators: brake motor available on request (always recommended)
- Series UAL Actuators: brake motor available on request
  - To ensure the stop position
  - To guarantee positioning accuracy
  - To sustain the static load with self-locking coefficient > 0,35
- Series ATL Actuators: brake motor available on request
  - To guarantee positioning accuracy
  - To sustain the static load with self-locking coefficient > 0,35

Max. current ATL 25

Max. current ATL 30

Brake connection

The problem

Doppelmayr CTEC ltée / ltd

Doppelmayr CTEC	Auteur / *Author* : MG	Date / *Date* : 2002-09-10	No. de doc. / *Doc. no.* : SB-02-003
BULLETIN	ξ OS O O O IS O I		

Remplace / *Supersedes* : SB-01-003	Remplacé par / *Replaced by* :	Type / *Type* : CLF / CLD	Groupe d'assemblage / *Assembly group* : SHEAVES / SHEAVE ASSEMBLIES

Sheaves

Following some misunderstanding in previous SB-01-003 bulletin, Doppelmayr CTEC has reviewed and produced this revised sheave inspection section.

This bulletin supersedes the bulletin SB-01-003 issued in October 2001.

Generalities:

Growing experience and technical developments combined with aging of components require us to continuously revise and up-date our **Operation and Service Manuals.** Attached are revised inspection and maintenance recommendations for sheaves. Please carefully read and insert this new sheave section in your manual.

Scope:

In these chapters, particular attention is paid to loose side plates. The pretension between the rubber liner and the side plates may decrease on sheave assemblies exposed to high loads, high speed and/or after a certain period of operation. Therefore, we ask you to apply our inspection recommendations and take the appropriate actions hereafter mentioned.

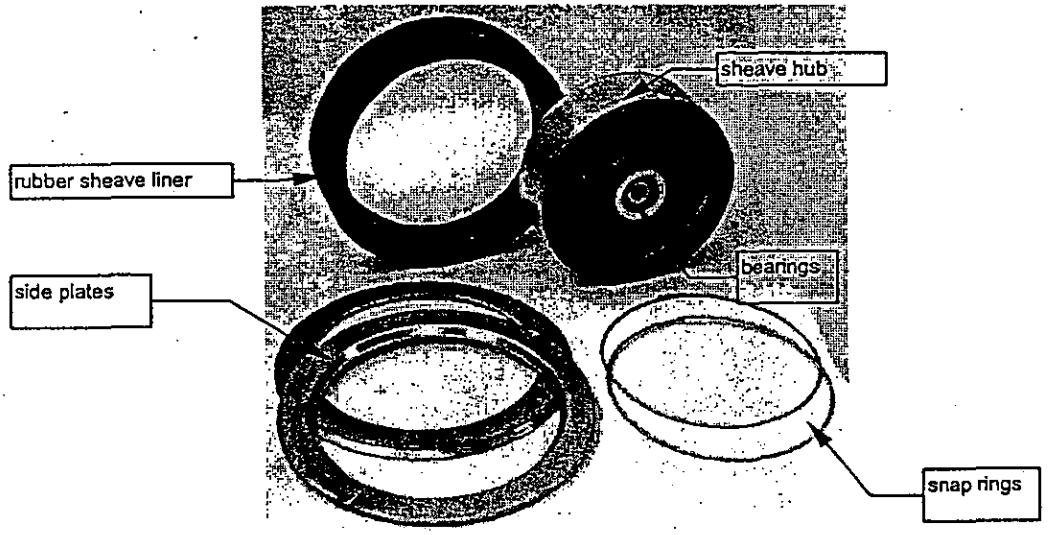
If loose side plates are found, this problem must be remedied by fitting new components, as required to ensure a correct liner pretension.

We remind you to carry out your inspections before the start of the season to prevent any incident and delivery delays on sheave components if spare parts are required.

If any sheave with evidence of severe rubber liner destruction is found, we ask that you to fill in the attached form (appendix 1) with all the relevant information and send it to your Doppelmayr CTEC representative.

1. Sheaves

1.1 Technical description



The sheaves are a boltless design and consist of:

- sheave hub with bearings
- rubber sheave liner
- steel or aluminium side plates and
- snap rings

Sheaves may be equipped with permanently lubricated and virtually maintenance free bearings (sealed on both sides and filled with special grease) or with half sealed bearings which require periodic greasing.

The rubber sheave liners can be exchanged and are fixed and axially compressed on the sheave hub by means of the side plates.

The side plates are axially fixed on the sheave hub by means of snap rings.

Storage recommendations

Spare sheaves should be stored indoors in a dry place. Water may penetrate into sheaves which are incorrectly stored out side. This will lead to corrosion and bearing damage.

1.2 Inspection and maintenance

IMPORTANT:
Any irregularities found during the inspection must be remedied before the installation is opened to the public.

1.2.1 Every day:

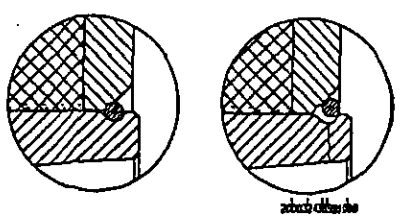
→ *See daily test run*

1.2.2 Every month:

- **Check the condition of the rubber liners**

- Damage caused by unsuitable cable lubricants (corroded rubber)
- Out-of-roundness
- Flattening (e.g. caused by blocked sheave)
- Wear in the rope groove (width, depth, lateral wear)
- Check for hardening, carbonisation (e.g. caused by overheating)

- **Visual inspection**
- The snap ring must sit snugly in the groove along the entire circumference of the sheave hub.



Snap ring correctly seated.

Danger of breakage! Loss of snap ring

- **Check for loose side plates. No loose side plates are permissible.**

The following may be indicators of loose side plates and a loss of liner compression:

a) axial play of side plates during operation (noise);
b) radial play of rubber liners during operation;
c) excessive rubber dust (abrasion) in the area of the side plate;
d) rubber liners with signs of hardening or carbonisation caused by overheating;
e) gap between rubber liner and side plate.

If any of the above indications are found, tap the side plates with a plastic hammer to detect loose side plates.

In case of doubt, lift off the cable to remove the pressure on the sheave, repeat the previous step and try to turn both side plates by hand in the opposite direction.

If a loose side plate is detected, remove the sheave from the line and, after a thorough cleaning, check individual components as per **1.3;**

- rubber liner dimensions as per 1.3.1;
- snap ring groove wear on the sheave hubs as per 1.3.2;
- snap ring contact area on the side plates for wear as per 1.3.3;
- check snap ring condition (out of roundness, wear, diameter etc.).

1.2.3 Every year:

- **Check with the haul rope lifted off:**
  - radial or axial play of components;
  - condition of bearings (listen for unusual noises, compare running properties with new bearings);
  - axial clearance;
  - **check sheaves for loose side plates (see 1.2.2 monthly inspection).**
- **Visual inspection:**
  - Check for cracks in the sheave hub in the area of the snap ring groove.
  - Check sheave hub and side plates for cracks and deformation.

Note: **Yearly inspection shall also be performed every time a sheave is removed from the line for service.**

1.3.1 Rubber liners dimensions

Doppelmayr rubber sheave liners are tested quality products.

IMPORTANT:

Doppelmayr sheaves are designed and tested for use with genuine TPC or Semperit Doppelmayr rubber liners only. **The use of other products is not permissible.**

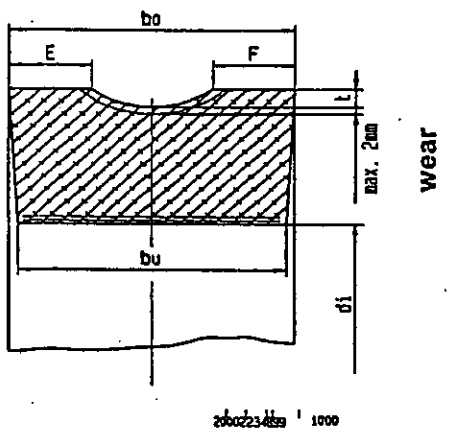
Condition of new rubber liners:

	b_o	b_u	d_i	t = new
Type 320	64 ± 1	60.5 ±1.2	252 $^{0}_{-4.0}$	3 ± 0.5 mm
Type 401	70 $^{+1.0}_{0}$	66 $^{+1.0}_{0}$	306 $^{0}_{-4.0}$	5 ± 0.5 mm
Type 403	93 $^{+1.0}_{0}$	86 $^{+1.0}_{0}$	320 $^{0}_{-4.0}$	7 ± 0.5 mm
Type 500/narrow	79 $^{+1.0}_{0}$	73 $^{+1.0}_{0}$	410 $^{0}_{-4.0}$	6 ± 0.5 mm
Type 501/wide	100 $^{+1.0}_{0}$	91.5 $^{+1.0}_{0}$	385 $^{0}_{-4.0}$	7.5 ± 0.5 mm

Permissible wear

Max. permissible wear in the groove 2 mm

Max. permissible eccentricity of groove 2 mm



The **permissible wear of 2 mm** indicated in the latest operation manuals assures that in the most unfavorable case (crosswinds, unevenly loaded carriers, etc.) the required swing clearances are being met and no contact of the grip main body on the sheave side plate exists.

In any case, it is this contact which is the decisive removal criteria for sheave liners for fixed and detachable installations.

The grip main body contacting the side plate will definitely result in damage to both components and in the case of aluminium side plates, this may even cause the side plate to break which could have serious consequences.

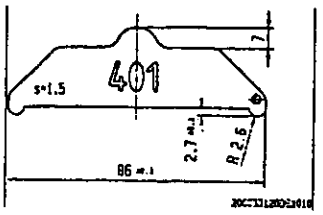
Should actual conditions in your area allow you to operate without experiencing this problem, then the allowable liner wear is 4 mm.

IMPORTANT:

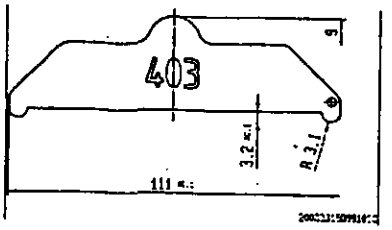
Rubber sheave liners which have been in operation and removed from the hub may not be reused, as the tight seat of the rubber on the sheave hub can no longer be guaranteed.

Check permissible groove depth

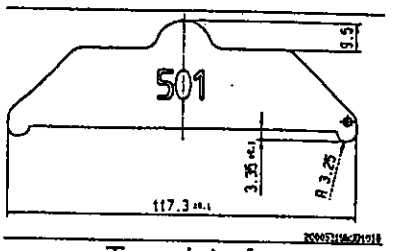
The correct groove depth can be established by means of a template.



Template for
Sheave type 401
Id. No. 10300204



Template for
sheave type 403
Id. No. 10333126



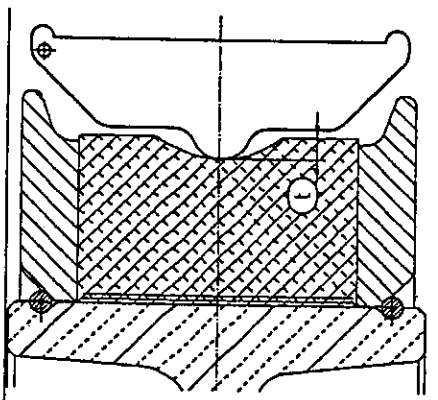
Template for
sheave type 501
Id. No. 10333134

- **A template for sheave type 320 is also available: Id. No CCC36473**

How to use the template

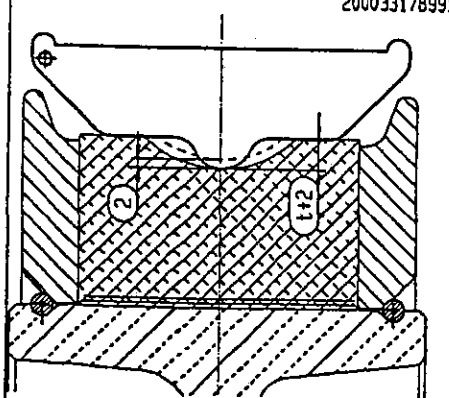
New sheave liner:

The template touches only the bottom of the groove.



200033178991010

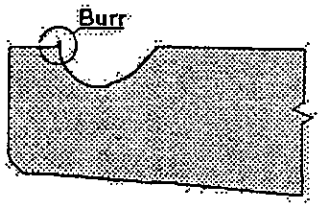
If the rope groove is worn by 2 mm, the template will contact the sheave liner. The rubber liner must be replaced.



200033138991010

1.3.2 Check the snap ring groove on the sheave hubs

- Check the grooves for any damage or cracks.
- Check the outside edge of both grooves for any build up of material forming a burr. A significant burr is an indication of wear.

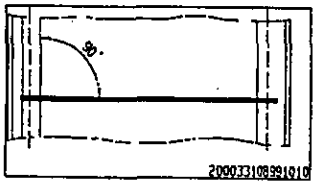


- **For 320, 400 and 500 series sheaves,** use the available template to check the snap ring groove on the sheave hubs. The template serves to establish the distance between the snap ring grooves.

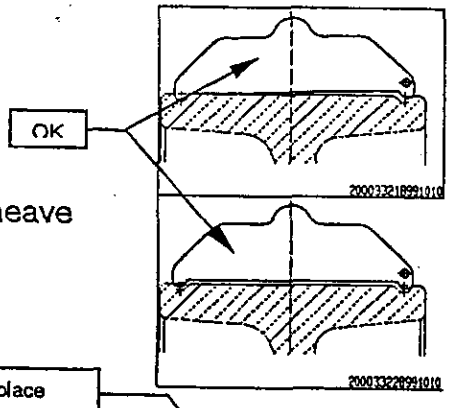
If the distance is not within the permissible value, correct pretensioning of the sheave liner can no longer be guaranteed. The sheave hub may not be reused.

How to use the template

Place the template at a right angle with the sheave hub.



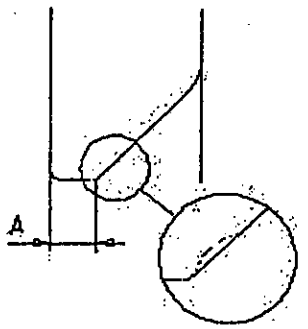
The template **shall not** contact the sheave hub.

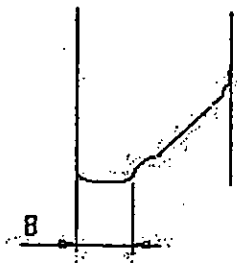


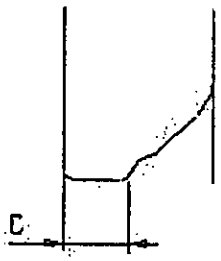
If the template contacts the sheave hub, the snap ring groove is worn beyond the permissible value. The sheave hub may not be reused.

1.3.3 Check side plates for wear in the area of the snap ring groove

Variant A – ***(manufactured until 1997)*** with 45° chamfer without machined groove	*Variant B –* ***(manufactured since 1997)*** with machined snap ring groove	***Variant C- (available since 1999)*** Position of the machined groove changed to increase pre-tensioning of the sheave liner. *(types 401 and 403 only)*







A **curved imprint** due to the snap ring is permitted as long as;

- The minimum dimension A is respected.
- The liner compression is met after re-assembly

A deep regular imprint may be an indication the side plate has turned around the hub and all components need to be checked thoroughly.

(see appendix 2, table 1, for compression values)

If dimension B or C (given below) falls below the permissible value, the side plate shall be replaced by a new one. (variant B or C).

400 / 401 variant C side plates shall be installed **only on aluminium hubs with a rim thickness of 12 mm and over (see picture 1, appendix 2)** or with the **appropriate** drop sheaves identified in table 2, appendix 2.
Variant C side plates are stamped either with the number 5.7 or 6.9.
(See flow chart in appendix 3)

You can measure dimension B or C with a snap ring fitted into the groove. Then, subtract the snap ring diameter and compare the result with the minimum dimensions given in the table below.

Sheave type	Dimension A		Dimension B		Dimension C	
	Nominal	Minimum	Nominal	Minimum	Nominal	Minimum
Type 320	3.3	3.7	4.6 mm	4.2 mm	N/A	N/A
Type 401	3.7	4	4.7 mm	4.3 mm	5.7	5.2 mm
Type 403	4.6	5	5.9 mm	5.5 mm	6.9	6.4 mm
Type 501	5.3	5.7	6.7 mm	6.2 mm	N/A	N/A

1.4 Replacement of defective parts

Use only genuine Doppelmayr parts.

- **Sheaves**

When a sheave liner has been found damaged by heat generation, replace with components in good condition and new **"variant C"** generation side-plates.

- **Side plates**

"Variant C" side plates shall be installed **only on 400 / 401 aluminium hubs with a rim thickness of 12 mm and over (see picture 1, appendix 2) or, when applicable, on drop sheaves identified in table 2, appendix 2.**

Note : All 403 series sheaves are compatible with "variant C" side plates

⚠ **When variant C side plates are required, always install them in pairs.**

- **Rubber Liners**

Replace by Doppelmayr Semperit or TPC liners within tolerances given in 1.3.1 .

- **Snap rings**

Snap ring must be in good condition and dimensions as per the following:

Diameter 5 mm, 6 mm or 6.3 mm for respectively 400, 403 and 500 series sheaves, roundness, maximum end gap 5 ± 2 mm when mounted.

⚠

IMPORTANT:

Both the necessary radial and the axial pretensioning of the rubber liner must be present, otherwise rolling and the resulting heat generation will prematurely destroy the rubber liner.

Cumulative wear from different sheave components still in the allowable range, may lead to improper liner compression.

When rebuilding sheaves, ensure the rubber liner is compressed as per minimum given in appendix 2, table 1, column 3 .

APPENDIX 1

DEFECTIVE SHEAVES INQUIRY FORM (One per lift. Use additional forms if necessary)	
Please return to your Doppelmayr CTEC representative.	
Ski area: ..... Contact:	
Equipment / name: ..... Year: .....Hours of operation:	
Defective sheave detected *(Description of the problem)*	Material description
	Tower # : ..... ! Uphill side ! downhill side Type of sheave assembly :..... Sheave # : (incoming sheave is # 1)..... ! Alum. side plates year:..... ! Steel side plates year:..... ! Aluminium hub year:..... ! Steel hub year:.....
	Tower # : ..... ! Uphill side ! downhill side Type of sheave assembly :..... Sheave # : (incoming sheave is # 1)..... ! Alum. side plates year:..... ! Steel side plates year:..... ! Aluminium hub year:..... ! Steel hub year:.....
	Tower # : ..... ! Uphill side ! downhill side Type of sheave assembly :..... Sheave # : (incoming sheave is # 1)..... ! Alum. side plates year:..... ! Steel side plates year:..... ! Aluminium hub year:..... ! Steel hub year:.....
	Tower # : ..... ! Uphill side ! downhill side Type of sheave assembly :..... Sheave # : (incoming sheave is # 1)..... ! Alum. side plates year:..... ! Steel side plates year:..... ! Aluminium hub year:..... ! Steel hub year:.....
	Tower # : ..... ! Uphill side ! downhill side Type of sheave assembly :..... Sheave # : (incoming sheave is # 1)..... ! Alum. side plates year:..... ! Steel side plates year:..... ! Aluminium hub year:..... ! Steel hub year:.....
	Tower # : ..... ! Uphill side ! downhill side Type of sheave assembly :..... Sheave # : (incoming sheave is # 1)..... ! Alum. side plates year:..... ! Steel side plates year:..... ! Aluminium hub year:..... ! Steel hub year:.....

APPENDIX 2

Table 1 Rubber liner compression

Sheave type	Side plates configuration	1 Nominal compression	3 Minimum liner compression to achieve
320	Variant A & B	4 mm	2.5 mm
401	Variant A & B	5 mm	3.5 mm
	Variant C	7 mm	5.5 mm
403	Variant A & B	7 mm	5.5 mm
	Variant C	9 mm	7.5 mm
500 / narrow	Variant A & B	7 mm	5.5 mm
501 / wide	Variant A & B	10 mm	8.5 mm

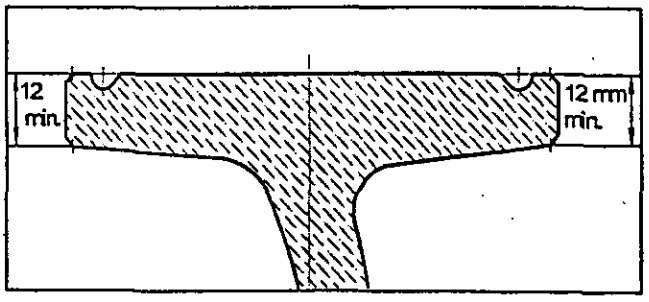
Rubber liner compression is checked during assembly of the sheave by comparing the width of the liner with both side plates before and after assembly.

NOTE: For used liners remaining on the hub during the liner compression measurements, the minimum liner compression to achieve can be reduced by 1 mm.

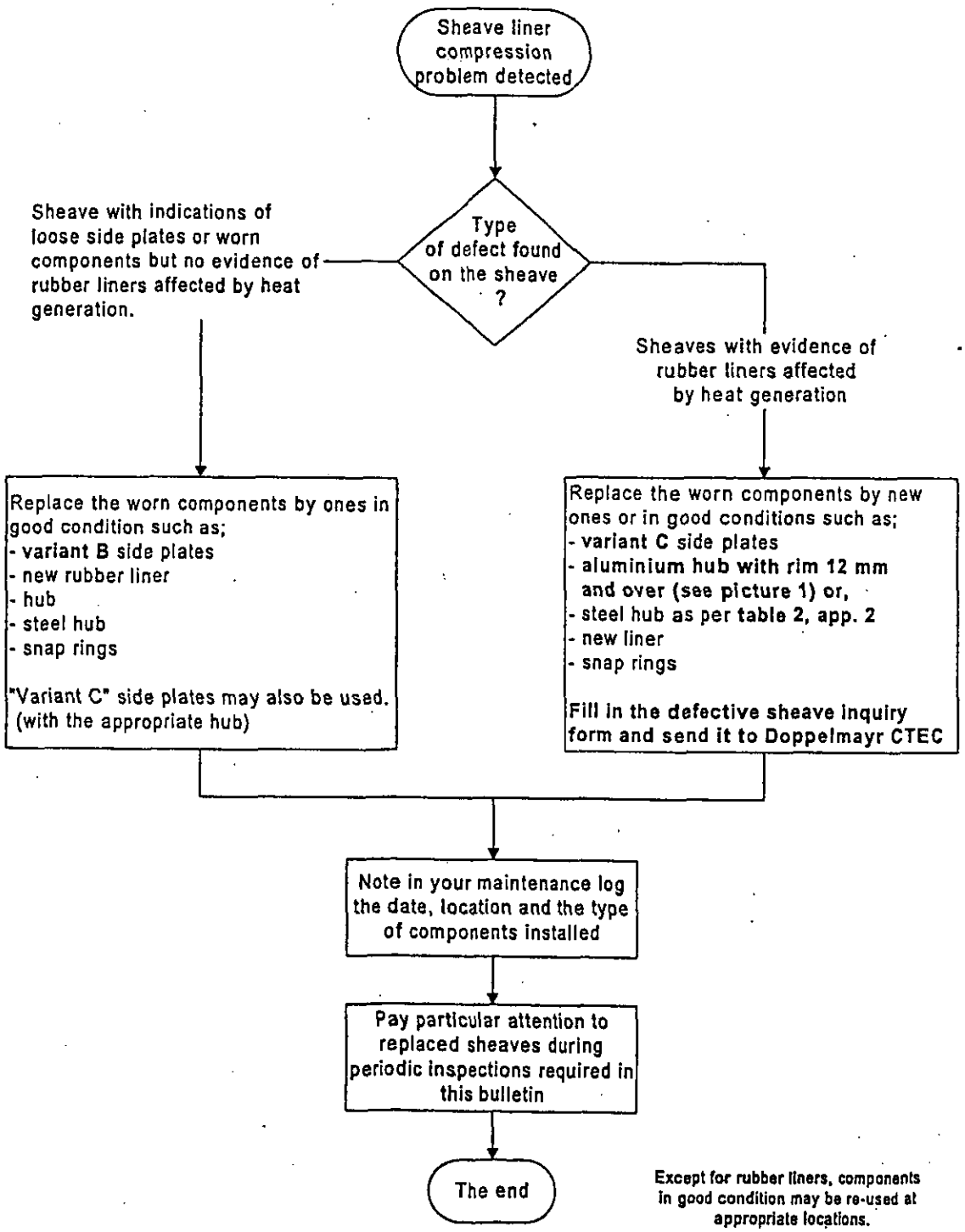
Table 2 Identification numbers and description of drop sheave hubs usable with "variant C" side plates.

Part description	ID. number	Marking on the hub
Type 400 / 401 drop sheave hub with grease nipple	10181280	5813-XX (XX for year)
Type 400 / 401 drop sheave hub	10186110	5813-XX (XX for year)
Type 403 drop sheave hub with grease nipple	10184231	5816-XX (XX for year)
Type 403 drop sheave hub	10186111	5816-XX (XX for year)

Picture 1



APPENDIX 3 TREATMENT OF SHEAVES WITH LINER COMPRESSION PROBLEMS



DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		FIH/KW/dk	2002-09-26	KD02009	1 / 1

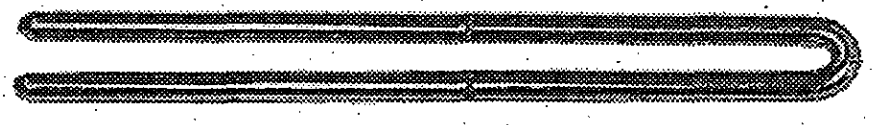
Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
--	--	SL, CLF, CLD/MGD	Sheave assemblies

Abgeleitet von / Based on: Techn. Info # Do-303 ☒ OS ☐ O ☐ IS ☐ I

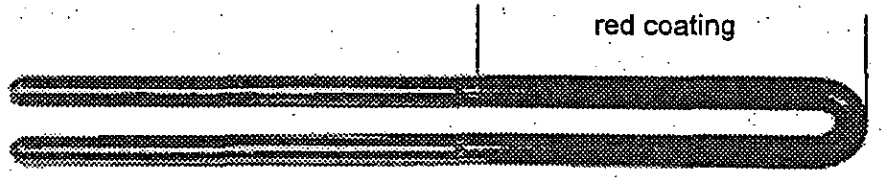
Break fork L = 122

Used on sheave assemblies

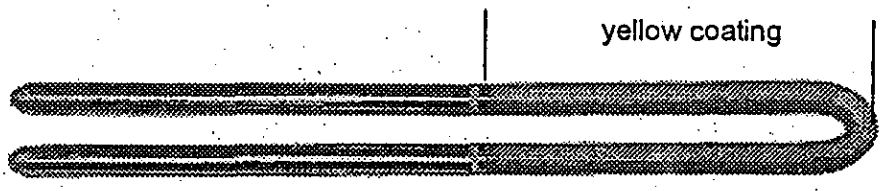
Surface treatment copper-plated and nickel-plated
Breaking load 60-100N Standard
Id.# 10006288



additionally with **red** coating (acts as an insulating layer)
Breaking load 60-100N
Id.# 10073524



with **yellow** coating (acts as an insulating layer and shows suitability for higher breaking load)
Breaking load 120-200N
Id.# 10206133



Yellow coated break fork shall **not** be used in combination with drop sheaves!

Used on installations with v > 5 m/s, detects blocked sheaves.

Doppelmayr CTEC inc

Main Office • 3160 West 500 South • Salt Lake City, Utah 84104 • Ph: 801-973-7977 • Fax 801-973-9580 • info@doppelmayrctec.com

31-OCT-02

Via Certified Mail
Return Receipt Requested

Mr. Bill Brett
Timberline Lodge
Timberline Lodge, OR 97028

Re: Bulletin SB-02-004

Enclosed please find copy of Bulletin SB-02-004 regarding CATWALKS (Doppelpass) on 4T/4D sheave assemblies.

Please insert this bulletin into your Service and Maintenance Manual for future reference.

Should you have any questions, please contact us.

Best regards,

DOPPELMAYR CTEC, INC.

Werner G. Auer

Werner Auer
Customer Service Manager

WA:iam

Enc.

Doppelmayr CTEC ltée /ltd

Doppelmayr CTEC	Auteur / Author:	Date / Date:	No. de doc. / Doc. no.:
	MG	2002-09-05	SB-02-004
BULLETIN	ξ OS O O O IS O I		

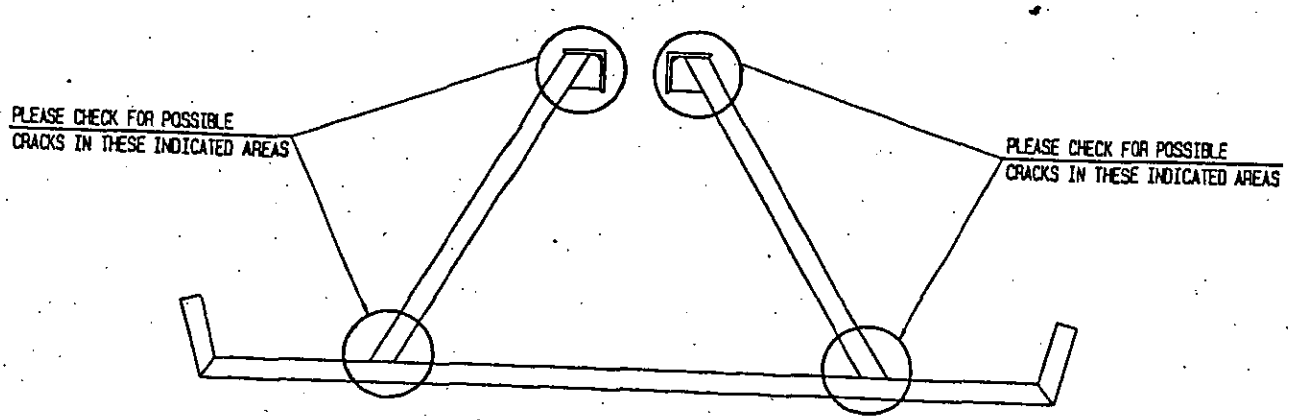
Remplace / Supersedes:	Remplacé par / Replaced by:	Type / Type: CLF / CLD	Groupe d'assemblage / Assembly group: WALKWAYS

CATWALKS (Doppelpass) on 4T/4D sheave assemblies

Dear customer,

During the last season, one of our customers found indication of cracks on a 4T/4D catwalk during his periodic visual inspection. The catwalk failed by natural vibration at the end of the season. According to our records, you have these types of catwalks on your Doppelmayr 4T/4D sheave assemblies. Therefore, we kindly ask you to inspect your catwalks in the areas as described in drawing below. In case of doubt, perform a non-destructive test by magnetic particles. If any indication of cracks is found, remove the catwalk and report immediately to your Doppelmayr CTEC representative. We thank you in advance for your collaboration on this matter.

Best regards



CATWALK 4T/4D

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		KW/dk	2003-03-04	KD03003	1 / 1

Ersatz für/ Supersedes:	Ersetzt durch/ Replaced by:	Type:	Baugruppe/ Assembly group:
--	--	CLD, MGD	Grips

Abgeleitet von / Based on:	--
Classification Code:	☒ OS ☐ O ☐ IS ☐ I

Overview of grip tongues for grips type DT and DS

In individual cases the reason for customer complaints was found to be that the wrong tongue types had been fitted to the grips.
Mistakes of this kind lead in particular to damage at the tongue fixing points (such as e.g. widening of the bore hole, cracks in the fastening element, etc.), which is associated with the premature failure of grip tongues.

Tongue types are as follows, depending on grip type and rope diameter:

Grips type DT:

Grip	Type	Rope diameter between:
DT104	1	34 – 37 mm
DT104	2	38 – 41 mm
DT104	3	42 – 45 mm
DT106	1	36 – 39 mm
DT106	2	40 – 43 mm
DT106	3	44 – 47 mm
DT108	1	41 – 47 mm
DT108	2	48 – 51 mm
DT108	3	52 – 56 mm

Grips type DS:

Grip	Type	Rope diameter between:
DS103, DS104, DS108	1	34 – 37 mm
DS103, DS104, DS108	2	38 – 41 mm
DS103, DS104, DS108	3	42 – 45 mm
DS118	1	46 – 48 mm
DS118	2	49 – 52 mm
DS118	3	53 – 56 mm

When replacing grip tongues it is essential to ensure that the right type of tongue is used.

Doppelmayr CTEC inc

Main Office • 3160 West 500 South • Salt Lake City, Utah 84104 • Ph: 801-973-7977 • Fax 801-973-9580 • info@doppelmayrctec.com

TO: DOPPELMAYR CUSTOMERS

DATE: MAY 23, 2003

SUBJECT: SERVICE BULLETINS

Enclosed please find copies of the following Service Bulletins:

- **Bulletin SB-03-004**
  All Doppelmayr Detachable/Fixed Customers
  Chairlift Tower Walkways
- **Bulletin KD03001**
  Vail, Alyeska, Steamboat, Yellowstone
  Measures for Windy Conditions (Lifts with Bubbles)
- **Bulletin KD03004**
  Doppelmayr Detachable Customers (1995 to present)
  Three-Grooved Rubber Liners for Friction Sheaves and Deflection Sheaves
- **Bulletin KD03005**
  Tensioning Systems Prior to 1987
  Check Valves w/Aluminum Body on Hydraulic Haul Rope Tensioning Systems Built Prior to 1987

Please insert these bulletins into the Service and Maintenance Manuals for your respective lifts.

Should you have any questions, please contact us.

Best regards,

DOPPELMAYR CTEC, INC.

Mark Emery
Field Service Representative

ME:iam

Enclosures

Doppelmayr CTEC inc

Main Office • 3160 West 500 South • Salt Lake City, Utah 84104 • Ph: 801-973-7977 • Fax 801-973-9580 • info@doppelmayrctec.com

TO: DOPPELMAYR CUSTOMERS

DATE: JANUARY 28, 2003

SUBJECT: SERVICE BULLETINS

Enclosed please find copies of the following Service Bulletins. Please insert these bulletins into the Service and Maintenance Manuals for your respective lifts.

- **Bulletin SB-02-007** — **Longitudinal Cracks in Doppelmayr Chair Bails Made with Square Tubing**
  (All Doppelmayr Detachable/Fixed Grip Customers)
- **Bulletin SB-02-008** — **Corrosion in Doppelmayr Chair Bails Made of Square Tubing**
  (All Doppelmayr Detachable/Fixed Grip Customers)
- **Bulletin SB-02-009** — **Doppelmayr Towers and Crossarms Inspection**
  (All Doppelmayr Customers)
- **Bulletin SB-03-001** — **Ball Bearings and Steel Housings of Line Sheaves**
  (All Doppelmayr Detachable/Fixed Grip Customers)

Should you have any questions, please contact us.

Best regards,

DOPPELMAYR CTEC, INC.

Werner C. Auer

Werner Auer
Customer Service Manager

WA:iam

Enclosures

Golden Office • 14452 W. 44th Avenue • Golden, CO 80403 • Ph: 303-277-9476 • Fx: 303-277-9759

SB-04-012	Auteur / Author SAC St-Jerome	Date émission Release date 09-17-2004	Doppelmayr CTEC

SERVICE BULLETIN

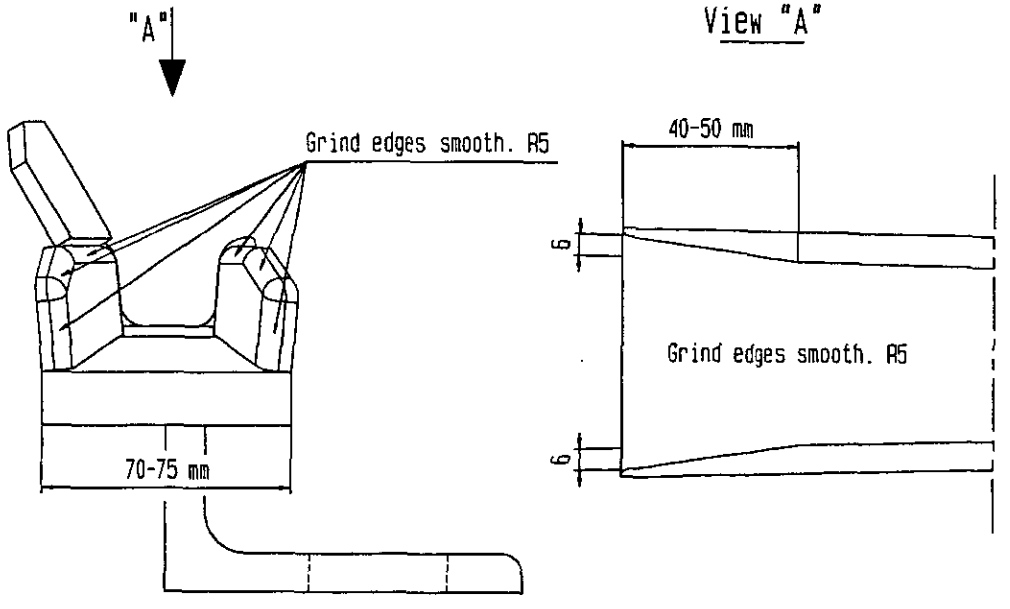
Lift manufacturer : Doppelmayr Lift type : UNI Detachable lifts	Fabrication. Group : 55-65

ABSTRACT OF ISSUE

A quad-chair derailed while entering the top terminal during operation in very high gusty wind conditions. Due to excessive chair swing, combined with lateral displacement of the haul rope, the leading grip running wheel contacted the outside edge of the flared entry to the running rail. The running wheel climbed up and over the outside flange of the running rail. The hanger axle contacted the outer guide rail vertical wall causing the grip to twist and decouple from the haul rope.

RECOMMENDED ACTION

The entrance mouth of the running rail on all UNI terminal have to be ground with a radius as shown in the drawing below. After grinding, the surface needs to be smoothened by either a fine file or a polishing disc. Check the overall outside dimension of the flared mouth, which should be 70-75mm.



Please refer to enclosed drawing # 60006044NCE001301 and drawing #60006412NCE001301 drawing. These drawings should also be added to section 17 in the maintenance manual. Particular attention should be given to the trumpet/guide rail adjustments at bracket "0" and "Section A-A" for the hanger axle clearances: Bracket "0" = max. 20mm and "Section A-A" about 10mm, when making these adjustments please consider the play in vertical trumpet guide. The entrance trumpet should be able to move up and down freely and the shock absorber work properly.

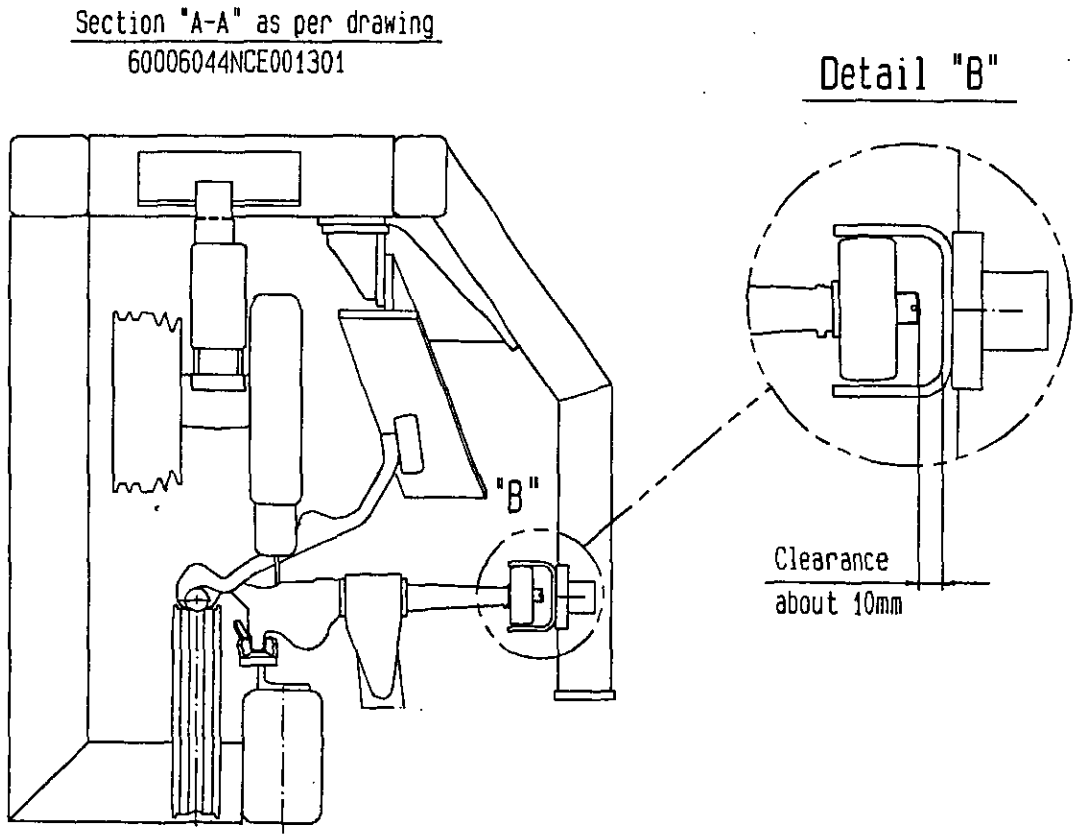
SB-04-012	Auteur / Author SAC St-Jerome	Date émission Release date 09-17-2004	Doppelmayr CTEC

SERVICE BULLETIN

Lift manufacturer : Doppelmayr Lift type : UNI Detachable lifts	Fabrication. Group : 55-65

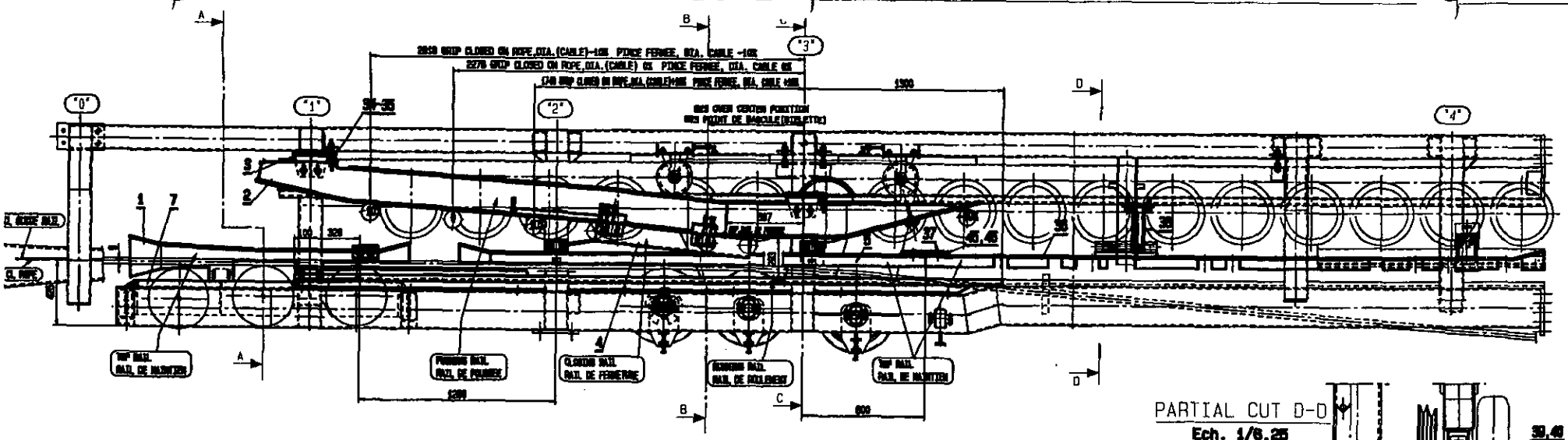
Also at "Section A-A" the grip body to safety/hold-down rail clearance should be observed as well as the front running wheel has to be in the center of the running rail mouth. The coupling area adjustments as described in section 17 of your maintenance manual remain the same.

See following sketch :

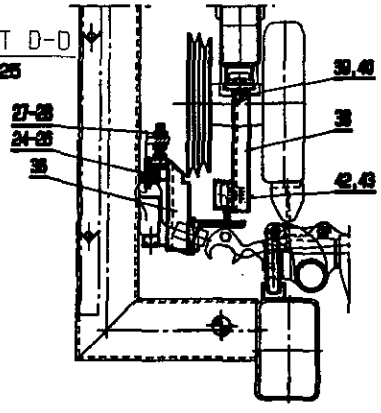


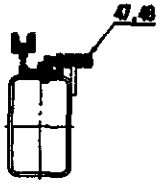
Safe entry into the terminal cannot be assured when the carrier is swinging in excess of 15 degrees laterally, longitudinally, or combined. Please refer to your operating manual for operation in high wind conditions.

If any additionnal information regarding this bulletin is required, do not hesitate to contact your local Doppelmayr CTEC representative.



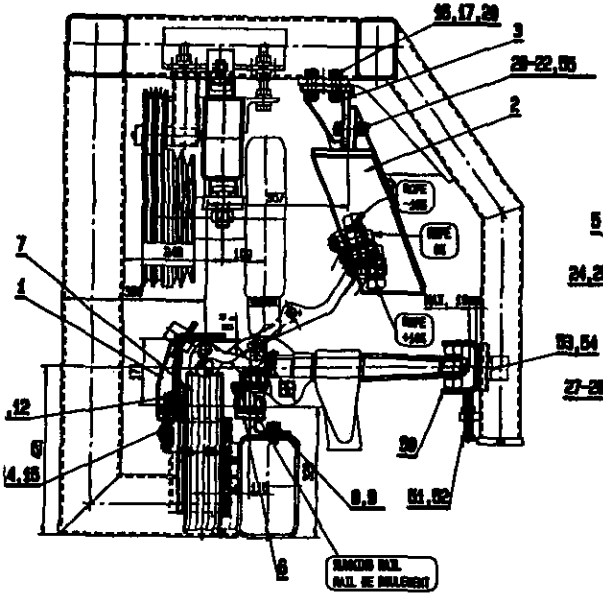
PARTIAL CUT D-D
Ech. 1/6.25



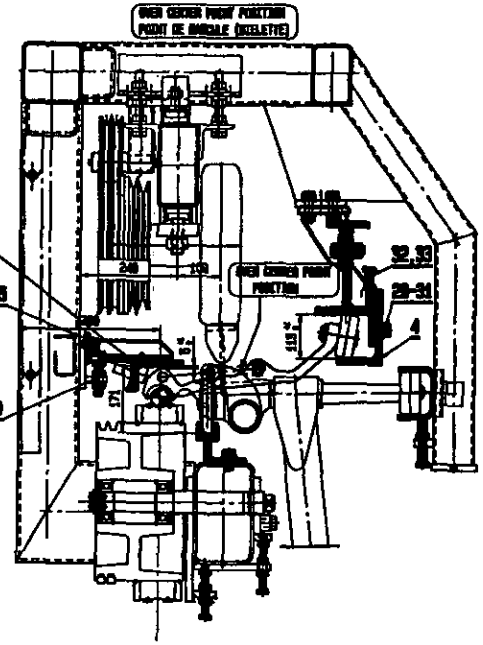


DETAIL AJUSTEMENT LATERAL
RAIL DE ROULEMENT

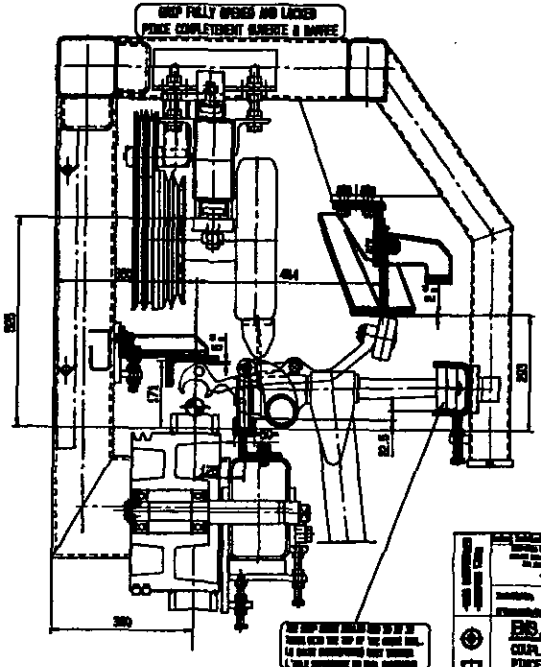
SECTION A-A
Ech. 1/6.25



SECTION B-B
Ech. 1/6.25



SECTION C-C
Ech. 1/6.25

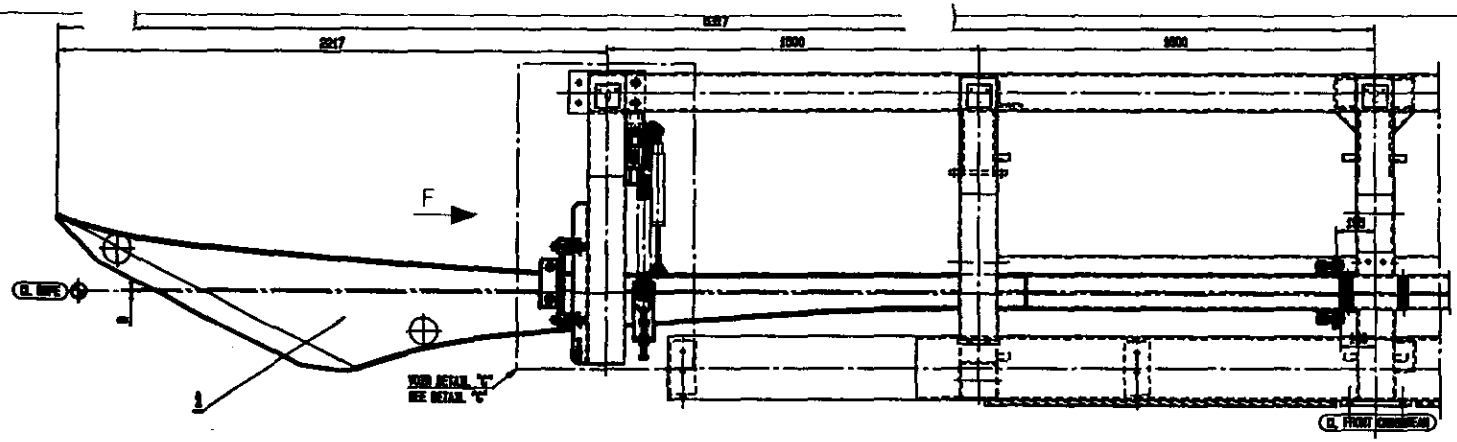


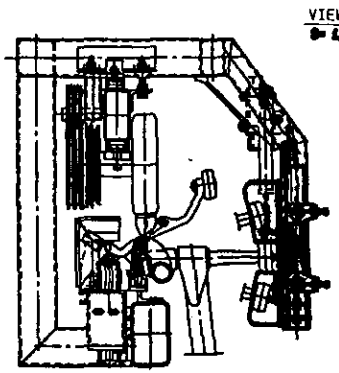
	CCC11964
	CCC11965

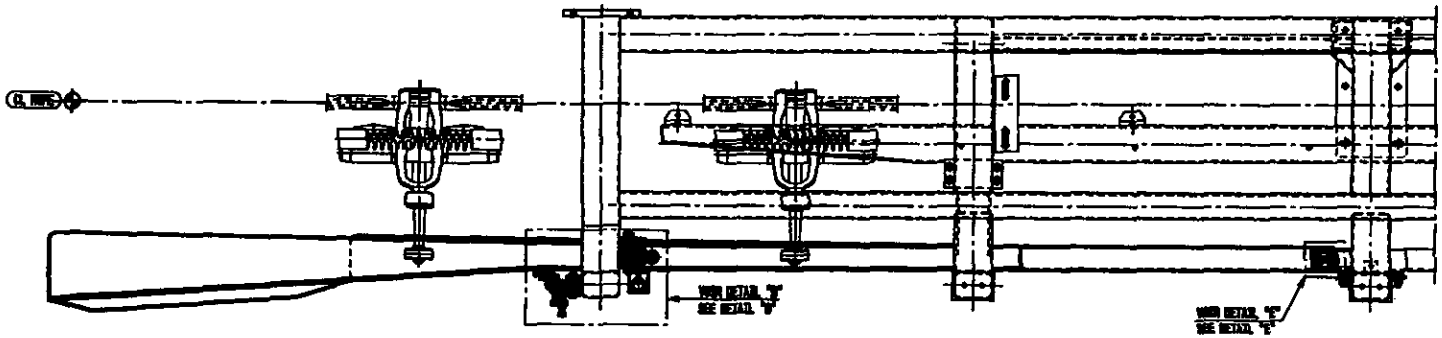
1/12.5

ENS. DAV./FERM. DE PINCE
COUPLING POINT ASSEMBLY
PINCE/GRIP DT-104

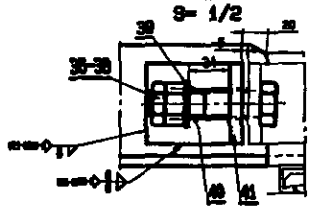
60006044NCE001301

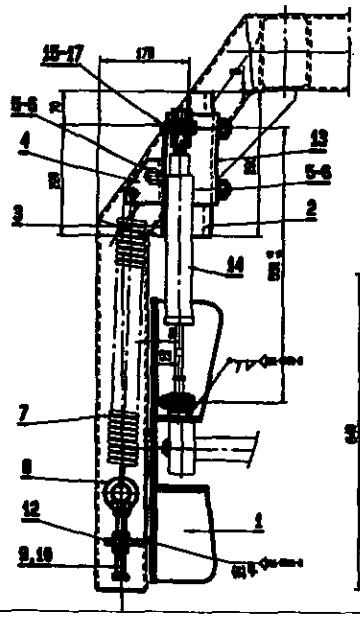




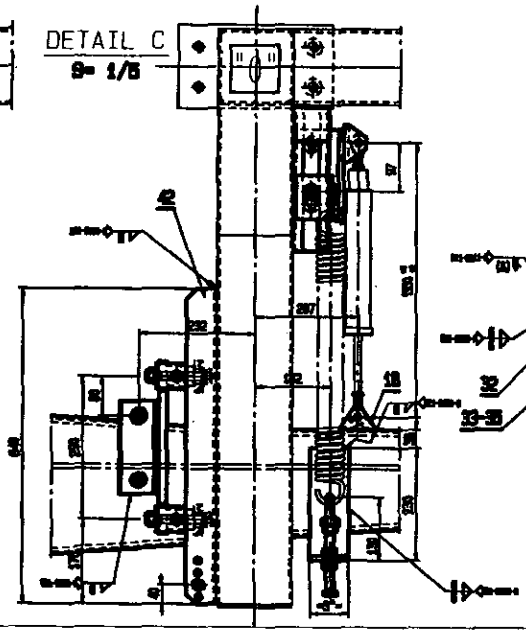


DETAIL E
S= 1/2

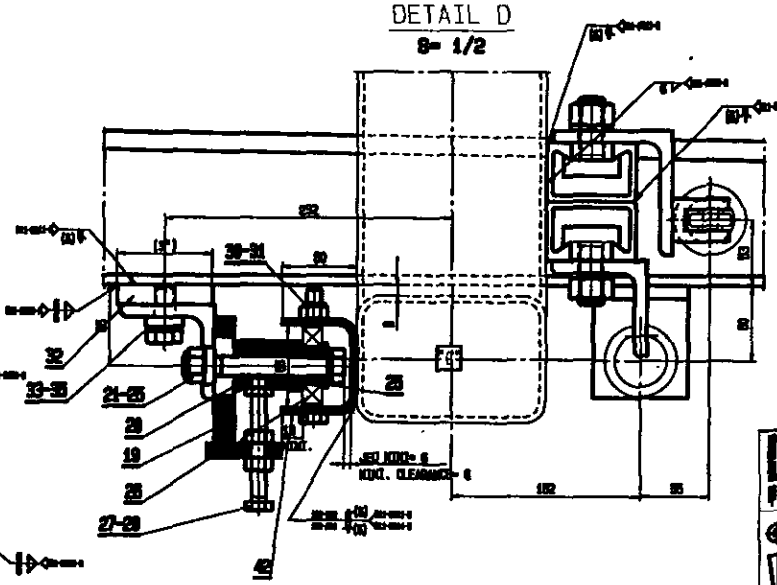




DETAIL C
S= 1/5



DETAIL D
S= 1/2



		CC207136
		CC207137
		1/10

ENS. TROMPETTE D'ENTREE
INTAKING TRUMPET ASSEMBLY
BT-104 / 4-CLD

8 60006412NCE001301

Doppelmayr

DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		PI/RUW/KWIdk	2004-10-01	KD04001	1 / 2

Ersatz für/ Supersedes: --	Ersetzt durch/ Replaced by: --	Type: Surface lifts	Baugruppe/ Assembly group: Towers
Abgeleitet von / Based on:	Techn. Info # Do-323		
Classification Code:	OS	X O	IS I

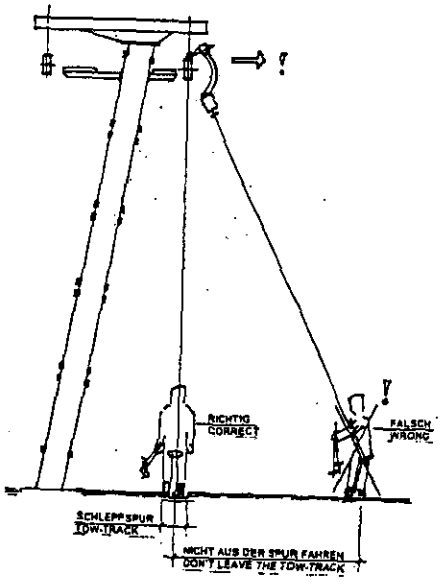
Leaving the Track on Surface Lifts
Danger of Accident

Incidents:

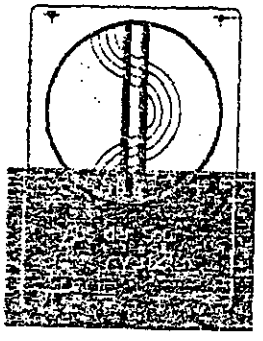
Lately, it happens more frequently that surface lift users move out of the track, leave the correct tow track (as a rule, situated vertically below the haul rope) and thus provoke an accident and endanger themselves and others.
Nowadays tow tracks are usually generously groomed with snow-grooming vehicles, which encourages lift users to leave the tow track or to zigzag.

Causes:

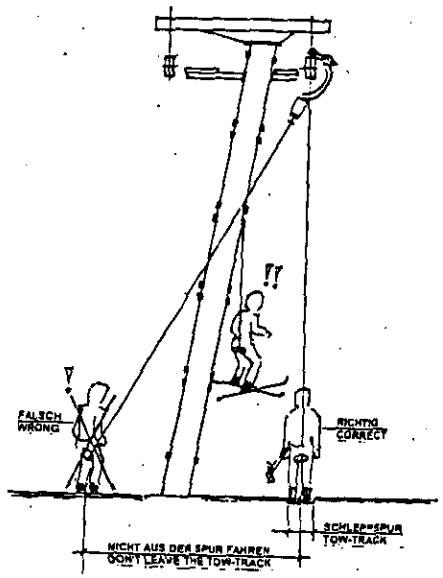
1) When a lift user leaves the tow track to the side away from the tower shaft, there is a risk that the resulting transverse pull leads to rope derailment from the sheave assembly. This can result in complete rope derailment.



1. Follow the instructions of the lift personnel at all times.
2. Stay in track when riding the lift.
3. Do not load or unload along the track.
4. Clear the track immediately after a fall.
5. Ski to the side immediately after unloading.
6. Do not cross the track unless where expressly indicated.



2) <u>When a lift user leaves the tow track to the side towards the tower shaft or beyond,</u> there is a risk of rope derailment as well.
If the towing cable becomes entangled on one of the ladder eyes on the downhill side of the tower, the lift user may be lifted up and as a result fall down from a height of several metres.



Measures:
- Post the Terms and Conditions of Transport and/or the 6 point information sign including the information "Stay in track when riding the lift".
- Put up the information sign "Stay in track" (Zigzagging prohibited).
- Do not groom the track too broad and provide for a tow track.
- An additional measure may be to remove the ladder eyes on the downhill side of the tower shafts.

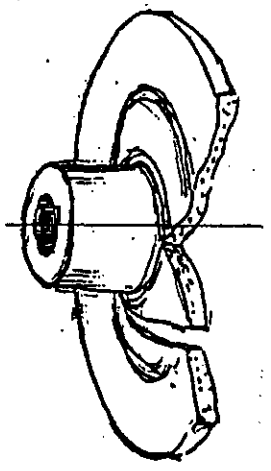
DOPPELMAYR SEILBAHNEN GmbH, WOLFURT

	BULLETIN	Ersteller/ Author	Datum/ Date	Dok.- Nr./ Doc.-ID	Seite/ Page
		PI/RUW/KW/DK	2004-10-01	KD04002	1 / 1

Ersatz für/ Supersedes: --	Ersetzt durch/ Replaced by: --	Type: Surface lifts, type C	Baugruppe/ Assembly group: Brakes
Abgeleitet von / Based on:	Techn. Info # Do-324		
Classification Code:	X OS	O	IS	I

Brake Disc Type C, Material GG25
Complementary Operating Manual

Incident:
On a surface lift with improperly set brakes, the brake liners did not have enough play to the brake disc during operation.
The brake liners chafed on the brake disc, which lead to frictional heat development.
As a result, the brake liners and the brake disc heated up, which was followed by a smell of burning and smoke development.
Upon cooling down and readjustment of the brake, operation was continued. Then, after approx. 30 minutes in operation, the brake disc suddenly broke.



Cause:
Examination has shown that the rupture of the brake disc was caused by overheating (dark discolouration) and remaining thermal residual stress (impeded deformation), along with the stress during operation (resulting from the braking force).

Complementary operating manual:
If the brake disc is overheating due to chafing brake liners (dark discolouration), contact Doppelmayr and then replace the brake disc.

No. de doc. / *Doc. no.* :	Auteur / *Author* :	Date émission *Release date* :	Doppelmayr CTEC
SB-04-015	SAC St-Jerome	2004-11-15	

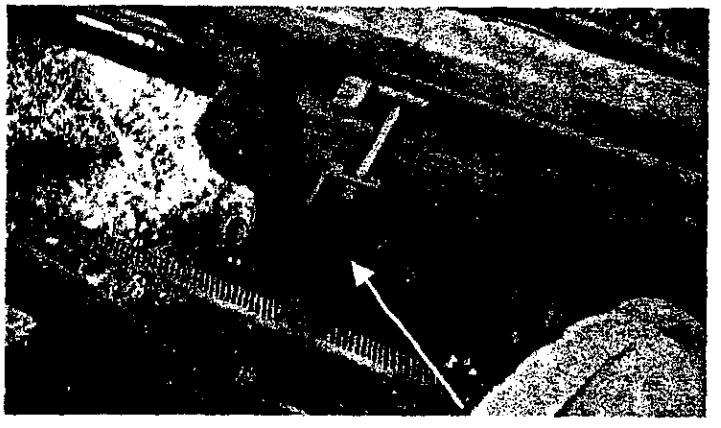
BULLETIN DE SERVICE / *SERVICE BULLETIN*

Fabricant / *Lift manufacturer* : Doppelmayr	Groupe de fabrication / *fab. Group : 35*
Type de remontée / *Lift type : Chair lifts*	Code bulletin / *code* ☐ OS ☒ O ☐ IS ☐ I

SHEAVE ASSEMBLY ACCESS RAILS

One of our customer informed us that it is possible to find cracks on the supports of access rails installed on sheave assemblies. Our customer found this crack on a 8-wheeler hold down sheave assembly.

See enclosed pictures:



AREA OF POSSIBLE CRACKING

Therefore, it is very important to always perform periodical inspections of welds on these components and other welded structures, as it is recommended in your Operation Manual.

If a crack is found on any welded structures please contact immediately your local Doppelmayr CTEC representative for a repair procedure.

We would also like to remind you that you always have to secure yourself with proper fall arrest systems when working on top of towers or other elevated points.

Never secure your fall arrest equipment on access rails or hand rails !

We recommend to apply these important rules in order to assure the safety of users.

Best regards

Doppelmayr CTEC

Doppelmayr CTEC

Doppelmayr CTEC, Inc.
14452 W. 44th Avenue
Golden, CO 80403
T: 303-277-9476
F: 303-2779759

14-MAR-05

Mr. George Hudspeth
Beaver Creek
P. O. Box 7
Vail, CO 86158

Mr. Ed Grice
Boyne Mountain
P. O. Box 19
Boyne Falls, MI 49713

Gentlemen,

RE: NDT TEST PROCEDURE FOR CARRIERS WITH AGAMATIC GRIPS

Enclosed please find NDT Test Procedure for Carriers with Agamatic Grips.

Please discard PSKL0109 dated 17.09.2003 and replace with the enclosed NDT Procedure (PSKL0109 dated 25.11.2004) in your Service and Maintenance Manuals.

Should you have any questions, please contact us.

Best regards,

DOPPELMAYR CTEC, INC.

Werner Auer
Customer Service Manager

WA:iam

Enclosure

NDT - Procedure

Detachable AGAMATIC- Series Grips

Doppelmayr CTEC

Document-Nr. **PSKL0109**	**Issued:** GEH	**Date:** 25.11.2004	**Page:** 1 / 15
	Approved: GEH	**Replaces Issue:** 17.09.2003	

Contents:

1. Foreword

This test procedure describes the non-destructive testing of DOPPELMAYR AGAMATIC- series grips in compliance with national regulations listed in Appendix A.

Non-destructive testing in accordance with this test procedure enables the detection and characterization of type and size of surface discontinuities.

All forged grip parts have been thoroughly tested during production.The hot working process of forging can produce a number of surface discontinuities. Most of them can be easily detected by magnetic particle inspection. However, forging laps are difficult to detect by any non-destructive testing methods. They are at only slight angles to the surface and may be fairly shallow. Different magnetizing techniques and/or slight grinding, wire brushing, sandblasting or other surface preparation might enhance the detect ability of such forging laps. Therefore, it might be possible that, despite of the non-destructive testing performed during production, indications are found during the servicing inspection. However, undetected shallow indications are not detrimental as long as they are not propagating cracks, which can be revealed by the inspection.

2. General Requirements

The non-destructive tests must be performed in addition to physical measurements, visual inspection and service/maintenance work described in national regulations and the DOPPELMAYR CTEC maintenance manual and bulletins. For example, procedures for non-reusable parts and assembly/disassembly instructions for bolts must be observed.

Deviations from this test procedure are permissible only with the written authorization from DOPPELMAYR Wolfurt, QA-Department.

Important: This specification is only applicable for inspection and servicing parts in the field!
For a further evaluation of rejected parts, send them to your local DOPPELMAYR representative.

3. Other Applicable Standards and Documents

- DOPPELMAYR CTEC Maintenance Manual
- DOPPELMAYR CTEC Bulletins

4. Sampling Plan for USA

Every year, 10 % of the total number or at least 10 grips shall be tested. The sampling plan shall ensure that within a 10-year period every grip has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional 10 % sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than 10% of the identical components on an installation, an inspection of 100% of this specific component must be performed.

Alternatively, all grips may be tested every 6 years, or after maximum 6000 hours of operation (whichever comes first).

5. Sampling Plan for Canada, Australia, and New Zealand

Every year or after a maximum of 2000 hours of operation (whichever comes first), 20 % of the total number or at least 10 grips shall be tested. The sampling plan shall ensure that within a 5-year period every grip has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional 20 % sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than 10% of the identical components on a installation, a inspection of 100% of this specific component must be performed.

6. Test Procedure

The grip components to be inspected, the test methods applicable and the acceptance criteria are indicated in Appendix D.

7. Inspection Personnel

The person with the over-all responsibility for NDT inspection and the persons performing accept/reject evaluations must meet the requirements defined in Appendix B1 (= responsible persons).

Personnel who meet the requirements defined in Appendix B2 may perform NDT inspections, provided that the inspection is performed in accordance with this procedure and the inspection results are interpreted and evaluated by responsible persons as defined in Appendix B1.

8. Preparation and Post-Test Processing of Test

Prior to inspection, the test samples shall be disassembled and cleaned using a residue free cleaner. Bushings and bearings must be removed or carefully masked to prevent contamination during the inspection process.

Note: Care should be taken to prevent parts from different grips or hangers from being mixed up!

After cleaning, the test sample should be free of oil, grease, rust, loose paint or any other contaminant that might interfere with the proper performance of the test.

In critical areas, as indicated in Appendix D, the original paint must to be removed by a suitable process (i.e. with a rotating steel brush). Pickling is forbidden due to the risk of hydrogen embrittlement. If the original paint was removed during a former inspection and these areas were repainted with a thinner layer of paint, this new paint can remain if the thickness of the layer is less than 0.05 mm (2 mils).

Dacromet coatings enable detection of discontinuities and need **not** to be **removed** before testing.

Note: Care must be taken to avoid unnecessary material loss or heating due to grinding!

After inspection the parts released for re-use shall be cleaned with a residue free solvent to remove all trace of the inspection medium. The dry and clean parts shall be re-lubricated according to the DOPPELMAYR CTEC maintenance manual. Additionally, the areas where the original paint has been removed for inspection should be recoated with an appropriate protection, i.e. paint.

9. Test Methods and Testing Equipment for Magnetic Particle Inspection

Magnetic particle inspections shall be carried out in compliance with the Standards defined in Appendix C1. The wet testing method shall be used.

During the inspection of the first item of each batch of identical components, the tangential surface magnetic field strength must be confirmed with a recognized flux indicator. Field strength must not be less than 16 A/cm and shall not exceed 50 A/cm.
Instead of using a flux indicator, a "Magnetic Particle Field Indicator" according to ASME Sec. V, Art. 25 can be used to confirm the adequacy and direction of the magnetic field.

After inspection all components shall be left in a condition that iron filings will not be attracted.

Note: Attracted metallic particles can lead to excessive wear of components during operation.

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters (if applicable):

1) Test equipment (manufacturer's name, model, serial number and date of last calibration)
2) Type of magnetization to be used
3) Type of ferromagnetic particles to be used (manufacturer, description, colour, type of floating agent)
4) Duration of magnetization, direction of magnetic field and magnitude of current
5) Details of demagnetization process
6) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

10. Test Methods and Testing Equipment for Penetrant Inspection

Penetrant inspections have to be carried out in compliance with standards defined in Appendix C2.

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters:

1) Penetrant family type (manufacturer's name, sensitivity classification)
2) Method of penetrant application
3) Dwell time
4) Method of penetrant removal
5) Method of developer application
6) Development time
7) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

11. Disposition of defective parts

If components have indications that do not fall within the acceptance criteria, a responsible person (see 7) must carefully decide on how to proceed with these components.
Possible actions include reworking (e.g. grinding), repairing, rejection/replacing, sending to a DOPPELMAYR representative for evaluation, or re-using without rework or repair.

Important: For maximum depth of grinding, **previous reworks by grinding** shall be determined and **taken into account** for further allowable grinding. If not possible, such parts must be sent to a DOPPELMAYR representative for further investigations.

If components with indications that do not fall within the acceptance criteria are re-used without rework or repair, they must be subjected to a further NDT test after a reasonable period of time to make sure that the fault observed has not worsened.

If components are reworked (e.g. by grinding), they have to be re-inspected and assessed in accordance with the accept/reject criteria.

If components are repaired, they have to be re-inspected and assessed in accordance to the acceptance/rejection criteria.
After a reasonable period of operation they must undergo a further NDT inspection to ensure the enduring success of the repair procedure.

If components are rejected they shall be marked with lift name, number of carrier, serial number and date of inspection. They shall be held for possible further evaluation by DOPPELMAYR or its agents.

12. Documentation, Records

The lift owner or owner's representative is responsible for correct performance of tests. The test records shall be kept for a minimum of 10 years.

If parts had to be reworked, repaired or rejected, a test report shall be sent to a DOPPELMAYR representative within 4 weeks of completion of the test.

Test records, as a minimum, shall contain the following information:

1) Name and order no. of lift, date of start of operation
2) Name and address of lift owner/operator
3) Name and address of inspection agency
4) Name and qualification (date and no. of certificate) of inspector(s) in charge
5) Date of inspection
6) Operating hours at time of inspection
7) Test method and procedure
8) Total number of grips inspected
9) Serial numbers of grips
10) Description and total number of individual components inspected
11) For each individual component: Number of acceptable parts, number of rejected parts
12) For each rejected part:
    - Serial number of grip
    - Description of fault
    - Decision as to treatment of rejected unit
13) Signature of the person responsible

APPENDIX A: NATIONAL REGULATIONS FOR INSPECTION AND TESTING

Australia:	CSA-Z98-01, including Z98S1-02
Canada:	CSA-Z98-01, including Z98S1-02
New Zealand:	CSA-Z98-01, including Z98S1-02
USA:	AMERICAN NATIONAL STANDARD B77.1-1999, 3.3.4 CPTSB Rules and Regulations *Railway Act part XI rule #26*

APPENDIX B: QUALIFICATION OF PERSONNEL

B1. Personnel responsible for testing

Australia:	AINDT Level II Technician or Level III Technologist with relevant experience to non-destructive testing
Canada:	CGSB Level II or III
New Zealand:	SMOCERT *Certification Board for Inspection Personnel Level II or III*
USA:	ASNT TC 1A Level II or III, American Society for NDT Qualification of Inspection Personnel

B2. Supervised personnel

Australia:	AINDT Level I
Canada:	CGSB Level I (MT and PT)
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level I
USA:	ASNT TC 1A Level I, American Society for NDT Qualification of Inspection Personnel

APPENDIX C: OTHER APPLICABLE DOCUMENTS FOR TESTING

C1. Other applicable Documents for Magnetic Particle Testing

Australia:	AS 1171-1998 Non-destructive testing – Magnetic particle testing of ferromagnetic products, components and structures
New Zealand:	BS 6072 or ASTM E709 Standard Guide for Magnetic Particle Examination
USA / Canada:	ASTM E709 Standard Guide for Magnetic Particle Examination ASTM E1444 Standard Practice for Magnetic Particle Examination

C2. Other applicable Documents for Penetrant Testing

Australia:	AS 2062-1997 Non-destructive testing – Penetrant testing of products and components
New Zealand:	ASTM E165 Standard Test Method for Liquid Penetrant Examination ASTM E1417 Standard Practice for Liquid Penetrant Examination
USA / Canada:	ASTM E165 Standard Test Method for Liquid Penetrant Examination ASTM E1417 Standard Practice for Liquid Penetrant Examination

APPENDIX D: TESTING OF DETACHABLE GRIP

D1 Grip components to be tested

D1.1 Grip components to be visually inspected

- All grip parts

D1.2 Grip components to be magnetic particle inspected

- Movable jaw
  (material: quenched and tempered steel, R_m = 1000 ÷ 1200 N/mm²)
- Fixed jaw (including hanger axle)
  (material: quenched and tempered steel, R_m = 1000 ÷ 1200 N/mm²)
- Jaw tongue axle
  (material: quenched and tempered steel, R_m = 1100 ÷ 1300 N/mm², nitro carburized)
- Axle on upper spring plates
  (material: quenched and tempered steel, R_m = 1000 ÷ 1200 N/mm², nitro carburized)
- Bolt for running wheel
  (material: quenched and tempered steel, R_m = 1100 ÷ 1300 N/mm², nitro carburized)
- Spring guide slide rod
  (material: quenched and tempered steel, R_m = 1100 ÷ 1300 N/mm², nitro carburized)

D2 Test methods

D2.1 Visual Inspection

Prior to any other NDT-inspection the whole part has to be visually inspected.

D2.2 Magnetic Particle Inspection

For critical areas as indicated in the following chapter **wet magnetic particle testing** is **mandatory**.

Penetrant testing can be additionally used for confirmation of MT-indications.

D3 Acceptance Criteria: Movable Jaw and Fixed Jaw

D3.1 Visual Inspection

Wear shall be checked according to the Doppelmayr CTEC maintenance manual.

D3.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D3.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**

  -Unacceptable indications must be magnetic particle (MT-) inspected according to D3.2

- **Marks, nicks**, and **rusty, non-linear indications inside** on **machined** surfaces

  -Parts with indications with a depth > 0.2 mm must be rejected.

  -Indications with a depth < 0.2 mm (only localized!) be further treated according to D3.3.

- **Marks, nicks** (except forging marks), and **rusty, non-linear indications** on **all other surfaces** with a **depth > 1.0 mm**

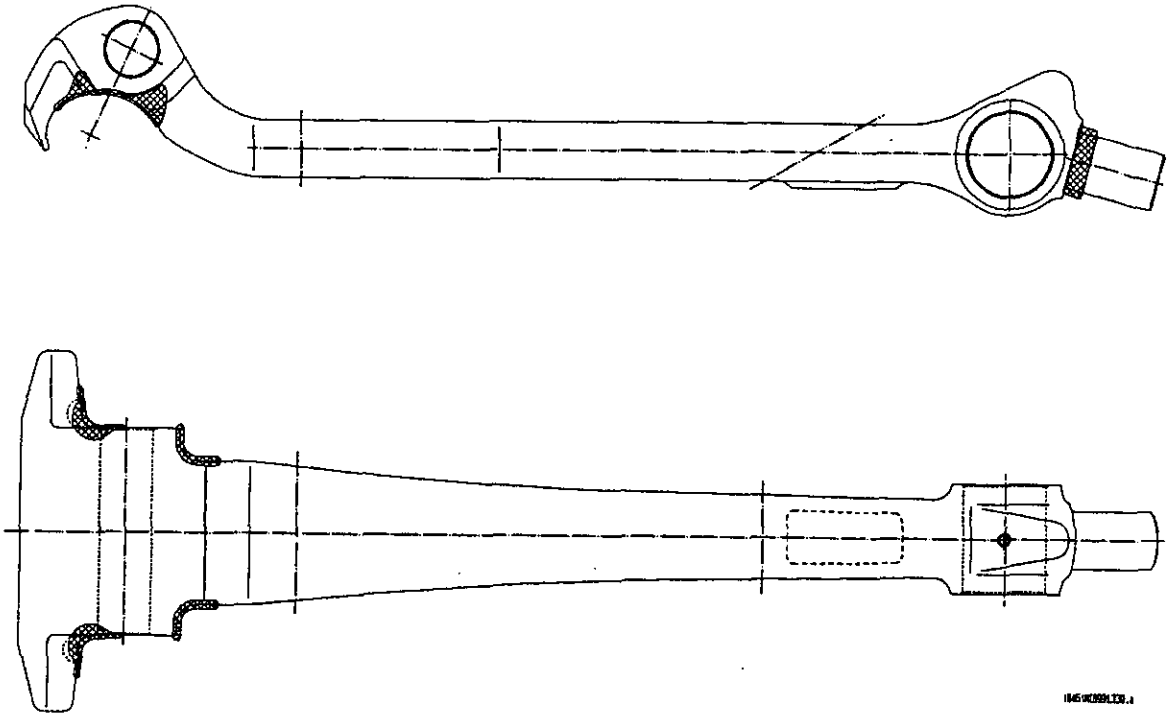
  -Unacceptable indications must be magnetic particle (MT-) inspected according to D3.2

D3.2 Magnetic Particle Inspection

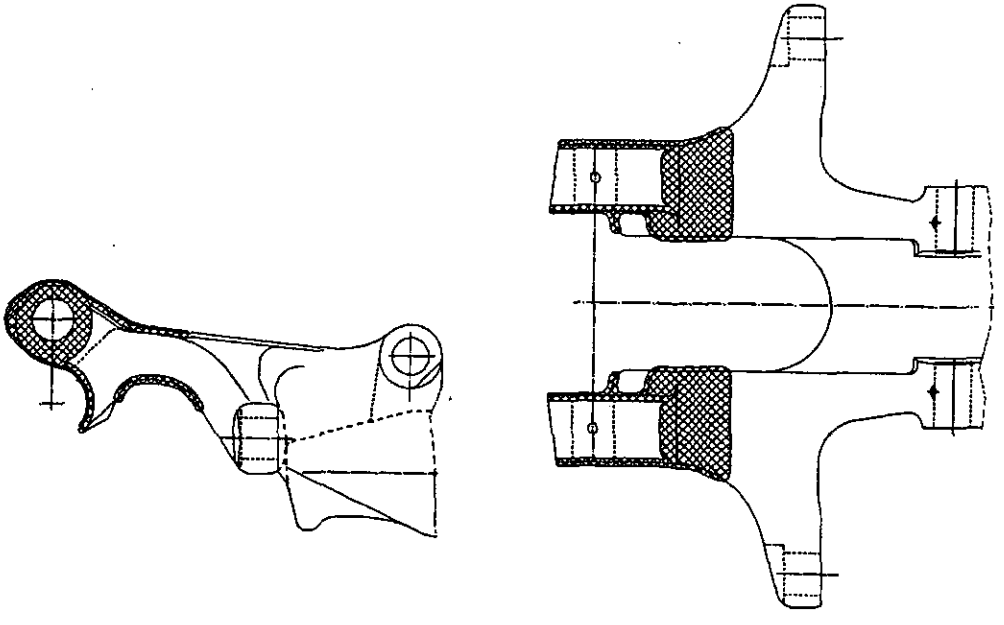
D3.2.1 Inspection area

Magnetic particle inspection is **mandatory** in **critical areas**.
For critical areas (crosshatched areas) see graph 1 and graph 2.

Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per D3.1.2.



Graph 1: Critical areas, movable jaw



Graph 2: Critical areas, fixed jaw

D3.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear indications in critical areas** (crosshatched areas) with a **length > 2 mm**
  - Unacceptable indications must be further treated according to D3.3
- **Linear indications in critical areas** (crosshatched areas) in the area of **corners, edges or radii**
  - Unacceptable indications must be further treated according to D3.3
- **Linear indications in non-critical areas** with a **length > 4 mm**
  - Unacceptable indications must be further treated according to D3.3

D3.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected.
Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

D3.3.1 Unmachined surface

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 1.0 mm.
- Ghost lines or tool marks must not be perpendicular to the main stress direction.
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!
- Diameter of grinding exceeds 25 times depth.

D3.3.2 Machined surface

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 0.2 mm (only localized!).
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!

D3.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their **location, nature** and **grinding depth**:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D4 Acceptance Criteria: Hanger Axle (connected to fixed jaw)

D4.1 Visual Inspection

Wear shall be checked according to the DOPPELMAYR CTEC maintenance manual.

D4.1.1 Visual Inspection Area

Before and after cleaning the complete axle must be visually inspected.

D4.1.2 Visual Reject Criteria (indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**

  -Unacceptable indications must be magnetic particle (MT-) inspected according to D4.2

- **Marks, nicks,** and **rusty, non-linear indication**

  -Parts with indications with a depth > 0.3 mm must be rejected.

  -Parts with indications with a depth < 0.3 mm must be further treated according to D4.3

D4.2 Magnetic Particle Inspection

D4.2.1 Inspection area

Magnetic particle inspection is **mandatory** in **critical areas.**
For critical areas (crosshatched areas) see graph 3.

Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per D4.1.2.

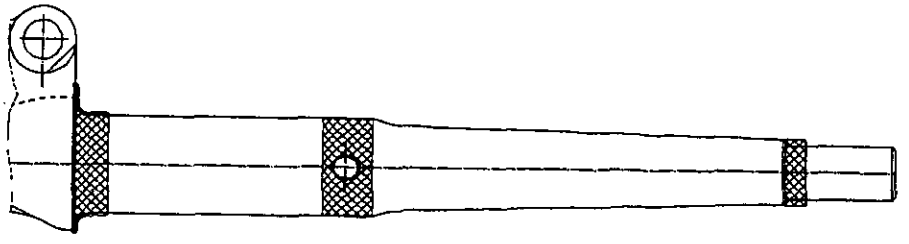
D4.2.2 Reject Criteria (indications)

Following indications are unacceptable:

- **Linear indications with a length > 1 mm**

  Exception: - The indication is exactly parallel to the longitudinal axis
  - A penetration test performed to confirm the MT-indications shows no indications

  -Unacceptable indications must be further treated according to D4.3



Graph 3: Critical areas for MT- inspection, hanger axle

D4.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 0.3 mm.
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Care is taken on bearing and bushing seats.
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!

D4.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their location, nature and grinding depth:

- All unacceptable indications (also indications which have been removed successfully)
- Unacceptable wear

D5 Acceptance Criteria: Axles and Bolts, Spring Guide Slide Rod

D5.1 Visual Inspection

Wear shall be checked according to the DOPPELMAYR CTEC *maintenance manual*.

D5.1.1 Visual Inspection Area

Before and after cleaning the complete axle must be visually inspected.

D5.1.2 Visual Reject Criteria (Indications)

Following indications are **unacceptable**:

- **Linear, rusty indications**

  -Unacceptable indications must be magnetic particle (MT-) inspected according to D5.2

- **Marks, nicks,** and **rusty, non-linear indication**

  -Parts with indications with a depth > 0.2 mm must be rejected.

  -Parts with indications with a depth < 0.2 mm must be further treated according to D5.3

D5.2 Magnetic Particle Inspection

D5.2.1 Inspection area

Magnetic particle inspection is **mandatory** in **critical areas.**
For critical areas (crosshatched areas) see graph 4, 5, 6, and 7.

Magnetic particle inspection is **mandatory** on **unacceptable visual indications**, as per **D5.1.2.**

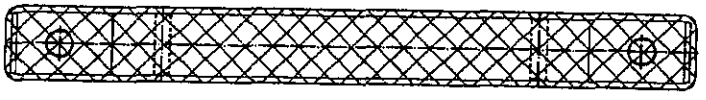
D5.2.2 Reject Criteria (indications)

Following indications are **unacceptable**:

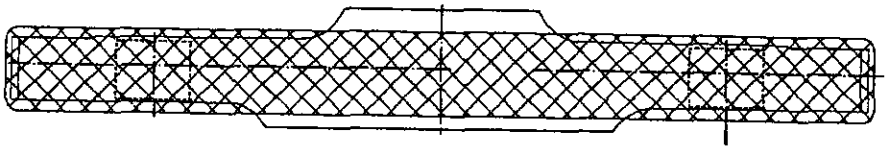
- **Linear indications** with a **length > 1 mm**

  Exception: - The indication is exactly parallel to the longitudinal axis
  - A penetration test performed to confirm the MT-indications shows no indications

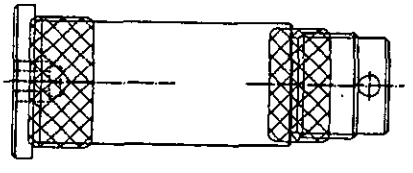
-Unacceptable indications must be further treated according to D5.3



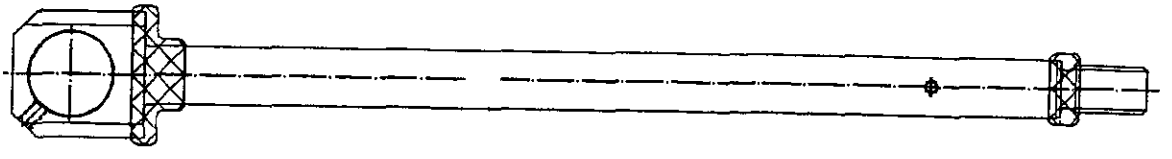
Graph 4: Critical areas for MT- inspection, jaw tongue axle



Graph 5: Critical areas for MT- inspection, axle on upper spring plate



Graph 6: Critical areas for MT- inspection, bolt for running wheel



Graph 7: Critical areas for MT- inspection, spring guide slide rod

D5.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 0.2 mm.
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Care is taken on bearing and bushing seats.
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!

D5.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their **location, nature** and **grinding depth**:

- All unacceptable indications (also indications which have been removed successfully)
- *Unacceptable wear*

D6 Acceptance Criteria: All other Grip Parts

D6.1 Visual Inspection

D6.1.1 Visual Inspection Area

Before and after cleaning the complete part must be visually inspected.

D6.1.2 *Visual Reject Criteria (indications)*

Following indications are **unacceptable**:

- **Linear, rusty indications**

  -Unacceptable indications must be further treated according to D6.2

- **Marks, nicks** and **rusty, non-linear indications** on **unmachined** surfaces with a **depth > 1.0 mm**

  -Unacceptable indications must be rejected

- **Marks, nicks**, and **rusty, non-linear indications** on **machined** surfaces with a **depth > 0.2 mm**

  -Parts with indications with a depth > 0.2 mm must be rejected.

  -Indications with a depth < 0.2 mm (only localized!) must be further treated according to D6.2.1

D6.2 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

D6.2.1 Machined surface

Unacceptable indications may be removed by grinding under following conditions:

-Max. depth of grinding is 0.2 mm (only localized!).

-Length of grinding in longitudinal direction exceeds 25 times depth.

-Width of grinding in transverse direction must not exceed 15 % of diameter.

-Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!

D6.3 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their location, nature and grinding depth:

- All unacceptable indications (also indications which have been removed successfully)

NDT - Procedure
Hanger Arm and Chair, 4-Point Suspension

Doppelmayr CTEC

Document-Nr. PSFB0107	Issued: GEH	Date: 14.12.2004	Page: 1 / 11
	Approved: SJ	Replaces Issue:	

Contents:

1. Foreword

This test procedure describes the non-destructive testing of DOPPELMAYR hanger arms and chairs, and 4-Point suspensions, in compliance with national regulations listed in Appendix A.

Non-destructive testing in accordance with this test procedure enables the detection and characterization of type and size of surface discontinuities.

2. General Requirements

The non-destructive tests must be performed in addition to physical measurements, visual inspection and service/maintenance work described in national regulations and the DOPPELMAYR CTEC maintenance manual and bulletins. For example, procedures for non-reusable parts and assembly/disassembly instructions for bolts must be observed.

Deviations from this test procedure are permissible only with the written authorization from DOPPELMAYR Wolfurt, QA-Department.

Important: This specification is only applicable for inspection and servicing parts in the field!
For a further evaluation of rejected parts, send them to your local DOPPELMAYR representative.

3. Other Applicable Standards and Documents

- DOPPELMAYR CTEC Maintenance Manual
- *DOPPELMAYR CTEC Bulletins*

4. Sampling Plan for USA

Every year, 10 % of the total number or at least 10 hanger arms and chair frames or 4-point suspensions shall be tested. The sampling plan shall ensure that within a 10-year period every hanger arm and chair frame or 4-point suspension has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional 10 % sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than 10% of the identical components on an installation, an inspection of 100% of this specific component must be performed.

Alternatively, all hanger arms and chair frames or 4-point suspensions may be tested every 6 years, or after maximum 6000 hours of operation (whichever comes first).

5. Sampling Plan for Canada, Australia, and New Zealand

Every year or after a maximum of 2000 hours of operation (whichever comes first), 20 % of the total number or at least 10 hanger arms and chair frames or 4-point suspensions shall be tested. The sampling plan shall ensure that within a 5-year period every hanger armand chair frame or 4-point suspension has been tested at least once.

If a tested component reveals **propagating discontinuities** (i.e. cracks) outside the acceptance criteria, an additional 20 % sample of this component shall be inspected.

If a specific type of fault that does not fall within the acceptance criteria is detected on more than 10% of the identical components on a installation, a inspection of 100% of this specific component must be performed.

6. Test Procedure for Hanger Arm, Chair Frame, and 4-Point Suspension

The hanger arm and chair frame or 4-point suspension components to be inspected, the test methods applicable and the acceptance criteria are indicated in Appendix D.

7. Inspection Personnel

The person with the over-all responsibility for NDT inspection and the persons performing accept/reject evaluations must meet the requirements defined in Appendix B1 (= responsible persons).

Personnel who meet the requirements defined in Appendix B2 may perform NDT inspections, provided that the inspection is performed in accordance with this procedure and the inspection results are interpreted and evaluated by responsible persons as defined in Appendix B1.

8. Preparation and Post-Test Processing of Test

Prior to inspection, the test samples shall be disassembled and cleaned using a residue free cleaner. Bushings and bearings must be removed or carefully masked to prevent contamination during the inspection process.

Note: Care should be taken to prevent parts from different grips or hangers from being mixed up!

After cleaning, the test sample should be free of oil, grease, rust, loose paint or any other contaminant that might interfere with the proper performance of the test.

Note: Care must be taken to avoid unnecessary material loss or heating due to grinding!

After inspection the parts released for re-use shall be cleaned with a residue free solvent to remove all trace of the inspection medium. The dry and clean parts shall be re-lubricated according to the DOPPELMAYR CTEC maintenance manual. Additionally, the areas where the original paint or zinc coating has been removed for inspection should be recoated with an appropriate protection, i.e. paint.

9. Test Methods and Testing Equipment for Magnetic Particle Inspection

Magnetic particle inspections shall be carried out in compliance with the Standards defined in Appendix C1. The wet testing method shall be used. Alternatively, the dry magnetic particle testing method is acceptable.

During the inspection of the first item of each batch of identical components, the tangential surface magnetic field strength must be confirmed with a recognized flux indicator. Field strength must not be less than 16 A/cm and shall not exceed 50 A/cm.
Instead of using a flux indicator, a "Magnetic Particle Field Indicator" according to ASME Sec. V, Art. 25 can be used to confirm the adequacy and direction of the magnetic field.

After inspection all components shall be left in a condition that iron filings will not be attracted.

Note: Attracted metallic particles can lead to excessive wear of components during operation.

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters (if applicable):

1) Test equipment (manufacturer's name, model, serial number and date of last calibration)
2) Type of magnetization to be used
3) Type of ferromagnetic particles to be used (manufacturer, description, colour, type of floating agent)
4) Duration of magnetization, direction of magnetic field and magnitude of current
5) Details of demagnetization process
6) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

10. Test Methods and Testing Equipment for Penetrant Inspection

Penetrant inspections have to be carried out in compliance with standards defined in Appendix C2.

Prior to inspection, the test method shall be defined by determining and documenting the following minimum test parameters:

1) Penetrant family type (manufacturer's name, sensitivity classification)
2) Method of penetrant application
3) Dwell time
4) Method of penetrant removal
5) Method of developer application
6) Development time
7) Details of pre-test and post-test treatment of test samples

The testing procedure can be commenced after these parameters have been investigated, signed and dated by the person issuing.

11. Disposition of defective parts

If components have indications that do not fall within the acceptance criteria, a responsible person (see 7) must carefully decide on how to proceed with these components.
Possible actions include reworking (e.g. grinding), repairing, rejection/replacing, sending to a DOPPELMAYR representative for evaluation, or re-using without rework or repair.

If components with indications that do not fall within the acceptance criteria are re-used without rework or repair, they must be subjected to a further NDT test after a reasonable period of time to make sure that the fault observed has not worsened.

If components are reworked (e.g. by grinding), they have to be re-inspected and assessed in accordance with the accept/reject criteria.

If components are repaired, they have to be re-inspected and assessed in accordance to the acceptance/rejection criteria.
After a reasonable period of operation they must undergo a further NDT inspection to ensure the enduring success of the repair procedure.

If components are rejected they shall be marked with lift name, number of carrier, serial number and date of inspection. They shall be held for possible further evaluation by a DOPPELMAYR representative or its agents.

12. Documentation, Records

The lift owner or owner's representative is responsible for correct performance of tests. The test records shall be kept for a minimum of 10 years.

If parts had to be reworked, repaired or rejected, a test report shall be sent to a DOPPELMAYR representative within 4 weeks of completion of the test.

Test records, as a minimum, shall contain the following information:

1) Name and order no. of lift, date of start of operation
2) Name and address of lift owner/operator
3) Name and address of inspection agency
4) Name and qualification (date and no. of certificate) of inspector (s) in charge
5) Date of inspection
6) Operating hours at time of inspection
7) Test method and procedure
8) Total number hanger arms and chair frames or 4-point suspensions inspected
9) For hanger arms: serial numbers hanger arms tested and number of carrier.
10) Description and total number of individual components inspected
11) For each individual component: Number of acceptable parts, number of rejected parts
12) For each rejected part:
    - Serial number of hanger and number of carrier
    - Description of fault
    - Decision as to treatment of rejected unit
13) Signature of the person responsible

APPENDIX A: NATIONAL REGULATIONS FOR INSPECTION AND TESTING

Australia:	CSA-Z98-01, including Z98S1-02
Canada:	CSA-Z98-01, including Z98S1-02
New Zealand:	CSA-Z98-01, including Z98S1-02
USA:	AMERICAN NATIONAL STANDARD B77.1-1999, 3.3.4 CPTSB Rules and Regulations Railway Act part XI rule #26

APPENDIX B: QUALIFICATION OF PERSONNEL

B1. Personnel responsible for testing

Australia:	AINDT Level II Technician or Level III Technologist with relevant experience to non-destructive testing
Canada:	CGSB Level II or III
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level II or III
USA:	ASNT TC 1A Level II or III, American Society for NDT Qualification of Inspection Personnel

B2. Supervised personnel

Australia:	AINDT Level I
Canada:	CGSB Level I (MT and PT)
New Zealand:	SMOCERT Certification Board for Inspection Personnel Level I
USA:	ASNT TC 1A Level I, American Society for NDT Qualification of Inspection Personnel

APPENDIX C: OTHER APPLICABLE DOCUMENTS FOR TESTING

C1. Other applicable Documents for Magnetic Particle Testing

Australia:	AS 1171-1998 Non-destructive testing – Magnetic particle testing of ferromagnetic products, components and structures
New Zealand:	BS 6072 or ASTM E709 Standard Guide for Magnetic Particle Examination
USA / Canada:	ASTM E709 Standard Guide for Magnetic Particle Examination ASTM E1444 Standard Practice for Magnetic Particle Examination

C2. Other applicable Documents for Penetrant Testing

Australia:	AS 2062-1997 Non-destructive testing – Penetrant testing of products and components
New Zealand:	ASTM E165 Standard Test Method for Liquid Penetrant Examination ASTM E1417 Standard Practice for Liquid Penetrant Examination
USA / Canada:	ASTM E165 Standard Test Method for Liquid Penetrant Examination ASTM E1417 Standard Practice for Liquid Penetrant Examination

APPENDIX D: TESTING OF HANGER ARM AND CHAIR FRAME OR 4-POINT SUSPENSION

D1 Components to be inspected.

D1.1 Components to be visually inspected

- hanger arm
  (material: steel for general structural purposes)
- chair frame or 4-point suspension
  (material: steel for general structural purposes)
- axle or bolts (depending on design) between hanger arm and chair frame or 4-point suspension
  (material: quenched and tempered steel)
- suspension bolts between 4-point suspension and cabin (if existing)
  (material: quenched and tempered steel)
- all other parts for damage and wear according to DOPPELMAYR Maintaince Manuals and Bulletins
  (material: steel for general structural purposes)

D1.2 Components to be MT inspected

- axle (if existent) between hanger arm and chair frame or 4-point suspension
  (material: quenched and tempered steel)
- hanger arm
  (material: steel for general structural purposes)
- chair frame or 4-point suspension (only components with unacceptable visual indications)
  (material: steel for general structural purposes)

Remarks: On hot dip galvanized components, the thick layer of zinc may impair the sensitivity of the MT inspection, especially in the hanger arm head area.
Based on our experience we consider this loss of sensitivity acceptable, provided that for MT inspection of unacceptable visual indications and in case of doubt during MT inspection, the zinc coating must be removed

D2 Test methods

D2.1 Visual Inspection

The whole part has to be visually inspected.

D2.2 Magnetic Particle Inspection

Wet or dry magnetic particle testing can be used.

Penetrant testing can be additionally used for confirmation of MT-indications.

D3 Acceptance Criteria: Hanger Arm, Chair frame or 4- point suspension

D3.1 Visual Inspection

D3.1.1 Visual Inspection Area

Before and after cleaning the **complete part** must be visually inspected, focusing special attention on the area of weld seams.

D3.1.2 Visual Reject Criteria (indications)

Following indications are unacceptable:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to D3.2
- **Marks and nicks perpendicular to the axis of the hanger arm**
  - Unacceptable indications must be further treated according to D3.2
- **Rusty, nonlinear indication** with a depth > 0.5 mm:
  - Unacceptable indications must be further treated according to D3.2

D3.2 Magnetic Particle Inspection

D3.2.1 Inspection area

- **Magnetic particle inspection is mandatory on weld seams between tube and hanger arm head**
- **Magnetic particle inspection is mandatory on unacceptable visual indications,** as per D3.1.2.

D3.2.1 Reject Criteria (indications)

Following indications are unacceptable **on weld seams**:

- **Linear indications** with a **length > 3 mm**
  - Unacceptable indications must be further treated according to D3.3.1

  Exception: - No rusty indication were found in this area during visual inspection
  - The indication is parallel to the weld seam
  - The indication does not run into base material
  - The total length of all indications is less than 10% of the weld seam length

Following indications are unacceptable **on base material**:

- **Indications** in the **tension area (inside area of hanger arm)**
  - Unacceptable indications must be further treated according to D3.3.2
- **Transverse linear indications** with a **length > 1 mm**
  - Unacceptable indications must be further treated according to D3.3.2
- **Linear indications parallel to the main axis with a length > 3 mm**
  - Unacceptable indications must be further treated according to D3.3.2

D3.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected.
Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

D3.3.1 Reworking on weld seams

Unacceptable indications **on weld seams** may be removed by grinding under following conditions:

- Max. depth of grinding is 0.3 mm.
- Grinding must be smooth and free of nicks.
- Diameter of grinding exceeds 25 times depth
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D3.3.1 Reworking on base material

Unacceptable indications **on base material** may be removed by grinding under following conditions:

- Max. depth of grinding is 0.5 mm.
- Grinding must be smooth and free of nicks.
- Ghost lines or tool marks must not be perpendicular to the main stress direction.
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D3.4 Documentation of Visual and Magnetic Particle Inspection

Following indications must be documented with their location, nature and grinding depth:

- All unacceptable indications (also indications which have been removed successfully)

D4 Acceptance Criteria: Axle (if existing) connecting Chair Frame / 4-Point Suspension

D4.1 Visual Inspection

D4.1.1 Visual Inspection Area

Before and after cleaning, the **complete part** must be **visually inspected**.

D4.1.2 Visual Reject Criteria (indications)

Following indications are unacceptable:

- **Linear, rusty indications**
  - Unacceptable indications must be magnetic particle (MT-) inspected according to D4.2
- **Marks, nicks,** and **rusty, non-linear indication** with a **depth > 0.2 mm**
  - Parts with indications with a depth > 0.2 mm must be rejected.
  - Parts with indications with a depth < 0.2 mm must be further treated according to D4.3
- **Wear** and **damage**
  - Parts with wear > 0.1 mm(localized: 0.2 mm) must be rejected.

D4.2 Magnetic Particle Inspection

D4.2.1 Inspection area

- **Magnetic particle inspection** is **mandatory** on **unacceptable visual indications**, as per D3.4.1.
- **Magnetic particle inspection** is **mandatory** on the **whole length** of the axle.

D4.2.2 Reject Criteria (indications)

Following indications are unacceptable:

- **Linear indications** with a **length > 1 mm**

  Exception: - The indication is exactly parallel to the longitudinal axis
  - A penetration test performed to confirm the MT-indications shows no indications

  - Unacceptable indications must be further treated according to D4.3

D4.3 Reworking

Parts with indications that cannot be removed under following conditions must be rejected. Rejected parts should be sent to a DOPPELMAYR representative for further investigations.

Unacceptable indications may be removed by grinding under following conditions:

- Max. depth of grinding is 0.2 mm (only local).
- Length of grinding in longitudinal direction exceeds 25 times depth.
- Width of grinding in transverse direction must not exceed 15 % of diameter.
- Grinding must be smooth (surface finish minimum N6 to ISO 1302) and free of nicks. Local hardening and hardening cracks due to grinding must be avoided!
- Inspection and Assessment of the reworked area with the same system of inspection agent, the same technique and the same criteria of acceptance.

D4.4 Documentation of Visual and Magnetic Particle Inspection

For ... indications must be documented with their location, nature and grinding depth:

... acceptable indications (also indications which have been removed successfully)

D5 Acceptance Criteria: Bolts (if existent) connecting Chair Frame / 4-Point Suspension, and Suspension Bolts of Cabin (if existing)

D5.1 Visual Inspection

D5.1.1 Visual Inspection Area

Before and after cleaning the **complete part** must be **visually inspected**.

D5.1.2 Visual Reject Criteria (indications)

Following indications are unacceptable:

- **Marks, nicks,** and **rusty, linear indications**
  - Parts with unacceptable indications must be replaced
- **Wear** and **damage**
  - In case of damage or wear the bolts must be replaced

Important: The suspension bolt must have a minimum radius of 3 mm (transition from round to rectangular cross section)

D5.2 Documentation of Visual Inspection

Bolts that are to be replaced must be documented with the type of defect and the carrier number.

Doc. no. : NB 04-008	Auteur/*Author* : SAC.	*Date d'émission* *Release date* 12/15/04	Doppelmayr CTEC

BULLETIN D'INFORMATION / *NOTIFICATION BULLETIN*

Fabricant / *Lift manufacturer* : Doppelmayr Type de remontée: Débrayable / *Lift type : Détachable*	Groupe de fabrication / *fab. Group : 220*

REMORQUAGE AVEC CHAISE DÉBRAYABLE

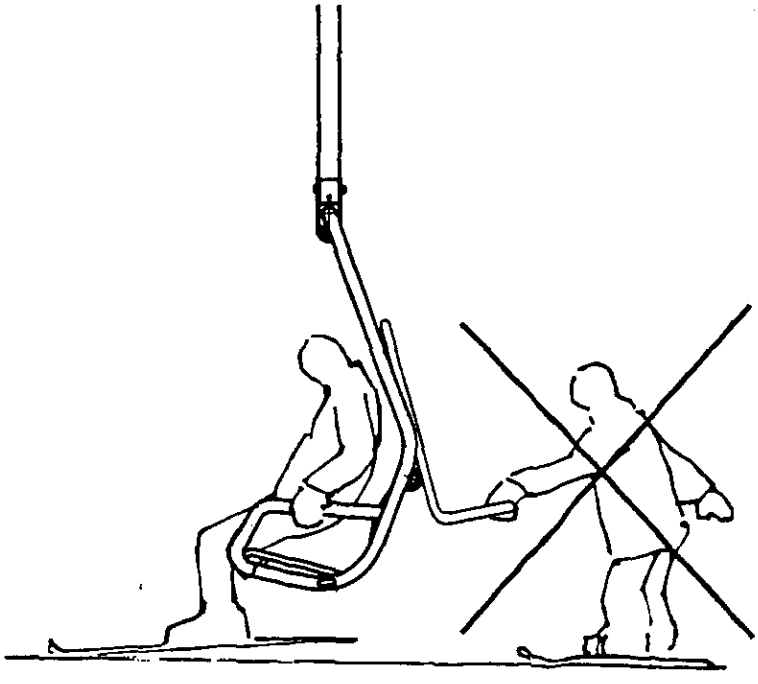
Le présent bulletin d'information est un rappel important. Il est strictement interdit aux skieurs, planchiste etc. de s'agripper à la barrière de sécurité de la chaise qui précède en gare pour se faire remorquer au point d'embarquement car les véhicules ainsi que le système de convoyeur ne sont pas conçus à cet effet et pourraient causer des bris d'équipement important. De plus il y a risque de blessures au(x) usagé(s).

Nous recommandons un affichage adéquat à cet effet à l'aire d'attente d'embarquement des terminaux de remontées débrayables.

TOWING WITH DETACHABLE CHAIR

This notification bulletin is a reminder. It is strictly forbidden for skiers, snowboarders, etc. to hold on the restraining bar frame of the preceeding chair to be towed to the loading point because the carriers and conveyor are not designed for this and could cause important damage. This can also be dangerous for injuries to the users.

We recommend to install a visible notice at all waiting point of terminals for detachable chairs.



SB 05-002	CUSTOMER SERVICE	DATE 02-15-2005	Doppelmayr CTEC

SERVICE BULLETIN

Lift manufacturer: Doppelmayr CTEC	Fab. Group : 35
Lift type : Chair lifts	Code ☐ OS ☒ O ☐ IS ☐ I

LINE SHEAVES MODEL 400

Two separate cases of line sheaves, Model 400, with the snap ring not properly installed has been brought to our attention.

On one chairlift, built in 2003, several line sheaves, Model 400, have been found with the snap ring not properly seated in the snap ring groove of the sheave hub.

On the second chairlift, also built in 2003, two sheaves, Model 400, with the same problem were found. In this case, the improper position of the snap ring caused the hub to crack in the snap ring groove. After inspection, It was determined that an improper mounting procedure of the sheave liner left rubber pieces in the snap ring groove preventing the snap ring from seating properly.

ONLY SHEAVES SUPPLIED IN 2003 SEEM TO BE AFFECTED BY THIS PROBLEM.

Special attention should be given to check for any material in the snap ring groove prior to installing snap ring onto the hub. Sheaves found with improperly seated snap rings shall be taken out of service and visually inspected for cracks and distortions in the hub. If the hub is found to be free of defects and the snap ring is seated correctly in the groove, the sheave may be put back into service.

Please add this bulletin to your Maintenance Manual (section "Sheaves") and advise your maintenance personnel to pay extra attention to this potential problem when changing sheave liners or performing line inspections.

Should you have any questions, please contact your Doppelmayr CTEC representative.

Best regards,

DOPPELMAYR CTEC

Doppelmayr CTEC

Doppelmayr CTEC, Inc.
14452 W. 44th Avenue
Golden, CO 80403
T: 303-277-9476
F: 303-2779759

TO:	Scott Swietanski	Alpine Meadows, CA
	Scott Bowen	Crystal Mountain, WA
	Heimo Ladinig	Mammoth, CA
	Gary Burch	Heavenly Resort, CA
	Kevin Mulligan	Mountain Creek, NJ
	Kyle Clark	Snowbasin, UT
	Ron Depo	Whiteface, NY

DATE: February 23, 2005

RE: Bulletin NB-05-004 – Entrance Sheave Assembly Suspensions

Gentlemen,

For your information, enclosed please find our Bulletin NB-05-004 regarding possible cracks on entrance sheave assembly suspensions.

Should you have any questions, please contact your local Doppelmayr CTEC Representative.

Sincerely,

DOPPELMAYR CTEC, INC.

Werner G. Auer

Werner G. Auer
Customer Service

WA:iam

Enc.

NB-05-004	Auteur / *Author* : SAC	Date émission *Release date* : 02-23-2005	Doppelmayr CTEC

BULLETIN D'INFORMATION / *NOTIFICATION BULLETIN*

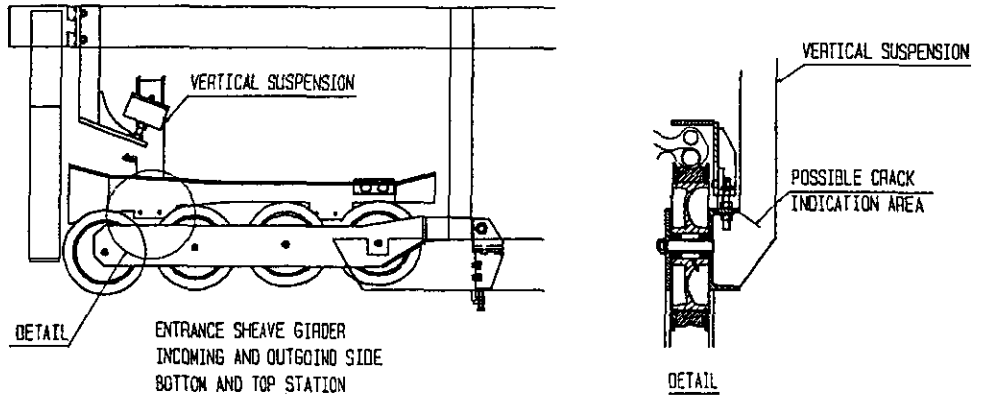
Fabricant / *Lift manufacturer* : DOPPELMAYR Type de remontée / *Lift type :6-CLD / 8-MGD*	Groupe de fabrication / *fab. Group : 55 / 65* *Code bulletin / code* ☐ OS ☒ O ☐ IS ☐ I

POSSIBLE CRACKS ON ENTRANCE SHEAVE ASSEMBLY SUSPENSIONS

Dear customer,

One of our customer informed us that a crack was found on the vertical suspension member of an entrance sheave assembly.

See sketch below:



According to our files, entrance sheave assemblies of this type are installed on your lift. We would kindly ask you to check the critical area (see sketch) for possible cracks.

According to your operation and service manual, the steel structures of your installation, among others, must be visually checked for possible crack indications every month.

Please include the inspection of this entrance sheave assembly suspension in the stations (incoming and outgoing side-shown on sketch) in your periodic inspections.

Should you need any further information or find any signs of cracks, please contact your local Doppelmayr CTEC Representative.

We would like to thank you for your cooperation and are looking forward to hearing from you.

Best regards

Doppelmayr CTEC
Customer Service

Doppelmayr CTEC

Doppelmayr CTEC, Inc.
14452 W. 44th Avenue
Golden, CO 80403
T: 303-277-9476
F: 303-2779759

25-FEB-05

Via Mail

TO: DOPPELMAYR CUSTOMERS WITH QUAD CHAIRS (MODEL E)

RE: Backrest to Chair Bail Connection

We have been informed of cracks developing in the connection-tab welded to both sides of the backrest that is bolted to the connection plate on the chair bail. In one instance, the tabs on one side of the backrest broke off.

Please perform a visual inspection of all carriers at this particular connection within the next 10 days. We are currently collecting information relative to this connection, which will aid us in providing the proper repair procedure/criteria.

Please contact us as soon as possible if any cracks are detected during your visual inspection.

Sincerely,

DOPPELMAYR CTEC, INC.

Werner G. Auer

Werner Auer
Customer Service

WA:iam

Enc.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM	**02-06-2005**	**SB-05-009**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabriquant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**220 (Carriers)**
Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**02-06-2005**

Title / *Titre :* Single-piece Quad Chair Repair Procedure

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
A procedure has been developed to address cracks that have been noted at the chair seat to bail tube attachment point on Garaventa CTEC single-piece quad chairs.

1.2 Reason for release (summary) / *But*
To effectively address the fatigue area on Garaventa CTEC single-piece quad chairs, Engineering has developed specific requirements related to welding and the addition of strengthening gussets.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
Prior to the 2005-2006 winter operating season, all Garaventa CTEC single-piece quad chairs exhibiting cracks in the affected area must be repaired by following the procedure as outlined below.
Prior to the 2006-2007 winter operating season, all Garaventa CTEC single-piece quad chairs must be repaired by following the procedure as outlined below.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
Affected models are all Garaventa CTEC single-piece quad chairs of design similar to attached drawing 9100036 through production year 1999.

2.3 Affected Production dates / *Dates de fabrication affectées*
Affected production dates are from 1993 to 1999.

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

Prior to the 2005-2006 winter operating season, all Garaventa CTEC single-piece quad chairs exhibiting cracks in the affected area must be repaired by following the procedure as outlined below.
Prior to the 2006-2007 winter operating season, all Garaventa CTEC single-piece quad chairs must be repaired by following the procedure as outlined below.

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabriquant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**220 (Carriers)**
Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**02-06-2005**

Strengthening gussets may be purchased through Doppelmayr CTEC, Salt Lake City for $2.50 each ($5.00/chair).

Repair and gusset installation procedure:

a. Reference the affected area from the attached drawing.

b. Disassemble chair from hanger to allow proper access and positioning for preparation and repair of the affected area.

c. Use a grinder to remove all weld material exhibiting indications. A die grinder with a "V" shape bit is recommended to grind the welds where access may be more difficult (typically inside corners).

d. Use a grinder to "V" parent material exhibiting indications.

e. Thoroughly remove the galvanized coating from all weld areas to be repaired.

f. Following the diagram of the affected area (attached), replace affected welds and repair cracked parent material using 7018 rod applied in a flat position. Adjust current and application technique to avoid undercut or lack of fusion to the parent material.

g. Wire brush or otherwise remove slag material from new weldments.

h. Once sufficiently cooled, apply a cold galvanizing compound to all areas that have been disturbed through the preparation and repair process.

Following crack repairs or solely as a preventative measure, all carriers must also have a strengthening gusset installed as per the following:

i. If not already done to address cracks in the identified area, disassemble chair from hanger to allow proper access and positioning for preparation and installation of strengthening gussets.

j. Reference the gusset positioning from the attached drawing.

k. Thoroughly remove the galvanized coating from area of new welds for installation of the strengthening gusset.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM	**02-06-2005**	**SB-05-009**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabriquant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**220 (Carriers)**
Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**02-06-2005**

l. Follow the welding instructions from the attached drawing and install the strengthening gusset using 7018 rod. Adjust current and application technique to avoid undercut or lack of fusion to the parent material.

m. Wire brush or otherwise remove slag material from new weldments.

n. Once sufficiently cooled, apply a cold galvanizing compound to all areas that have been disturbed through the preparation and repair process.

o. Re-assemble chair to hanger.

p. *Conduct routine monitoring of this area on all chairs of this design and repair as necessary* using this procedure as guideline.

Doppelmayr CTEC by this procedure is only providing guidance in the repair and in no way accepts responsibility for the actual repair or future performance of the carrier weldment.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
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SERVICE BULLETIN / *BULLETIN DE SERVICE*

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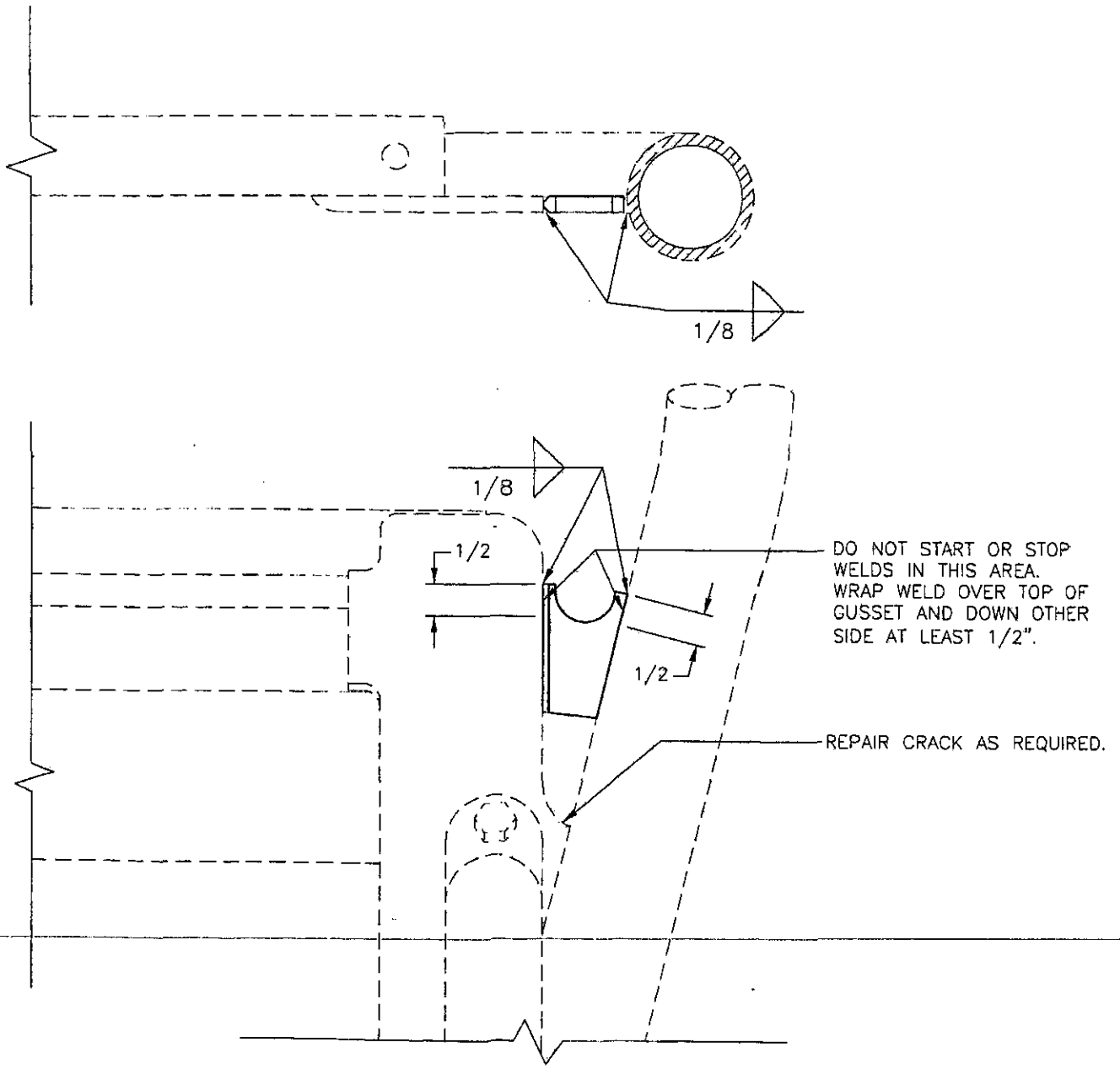
Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**02-06-2005**

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas



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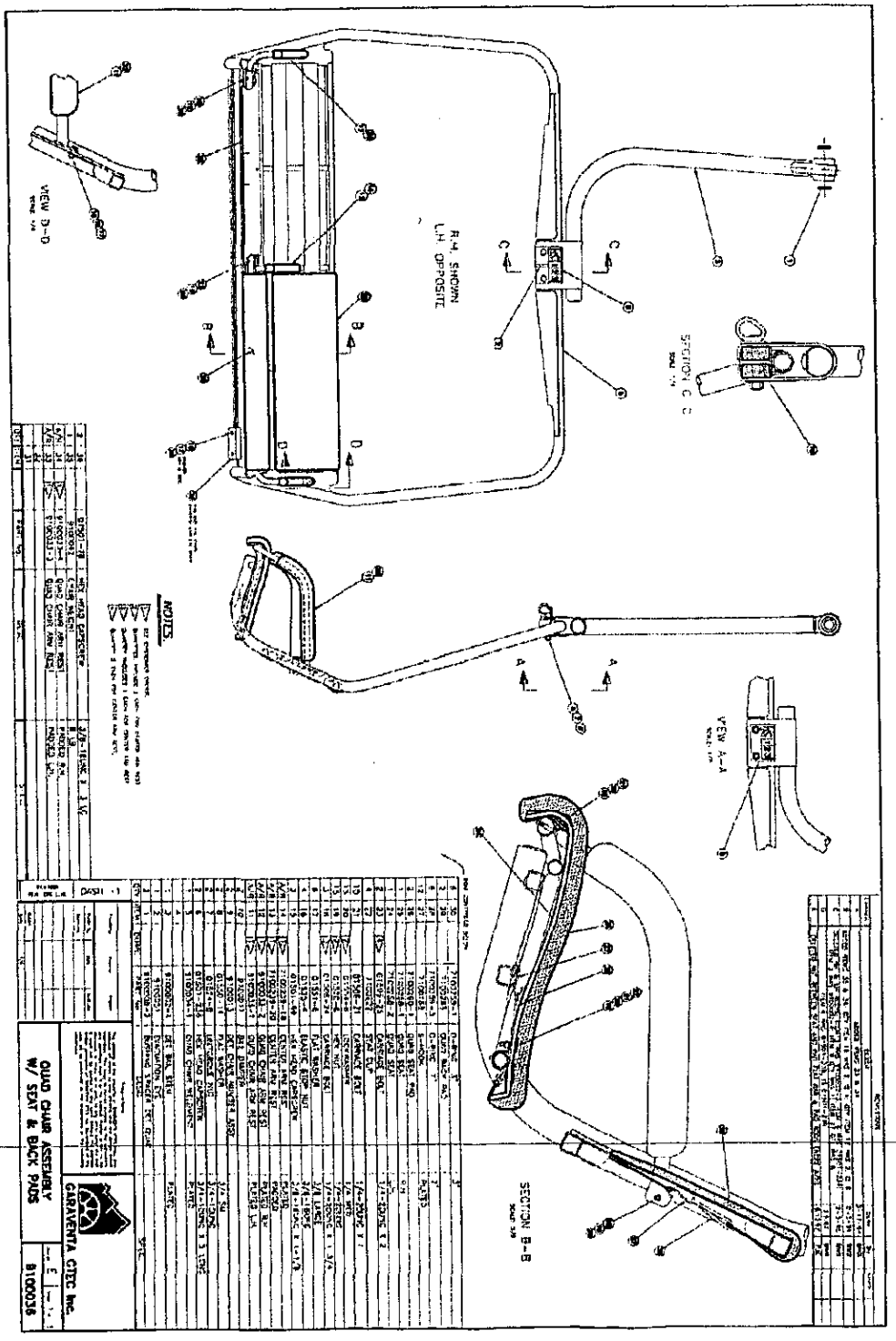
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**02-06-2005**



Doppelmayr CTEC inc

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Index of Notifications

Revised June 3, 2005

Doppelmayr CTEC inc
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ELECTRICAL COMPONENTS

1982	SB 82-003	Motor maintenance
1983	SA 83-006	82 lifts, tower detection wiring problem
1986	SA 86-003	85 lifts, thumbscrews may loosen, apply 290 loctite
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1988	NB 88-001	Derail breakboard replacement 1985, 86 lifts
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1995	NB 95-006	Efector II2010FRKG prox problem, detachable lifts
1997	NB 97-002	Sabina current and voltage feedback circuit fuses
1999	SA 99-004	Rollback prox problem on 1997 and 1998 detachable
2000	NB 00-001	Elimination of monitoring requirements imposed by SB 95-001
2001	NB 01-001	3-wire tower prox switches
2002	SA 02-001	Breakaway derail switch wiring alert
2002	SA 02-008	Schmersal lanyard stop switch alert
2003	SB-03-011	Recommended Brake Fault circuit rewire
2003	TB 08.04.03	New switch design "Faulty grip position before launch" (Internal Wolfurt)

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2002	NB 02-006	Grip coupling incident
2002	SB-02-008	Corrosion in Doppelmayr square tube chair bails (St. Jerome)
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2005	SB-05-003	Fixed Grips – Periodic inspection for surface flaws (Wolfurt KD04003)
2005	SB-05-005	Quad chairs Model "E" backrest to chair bail connection (St. Jerome)
2005	TB Do328_e	Carriers for 2-CLF and 4-CLF (Internal Wolfurt)
2005		MGD Global Comfort Suspension Hanger (Wolfurt KD05003)
2005	NB-05-007	Slip test tool for Doppelmayr fixed grip (St. Jerome)
2005	SA-05-008	Attachment of Hydraulic Longitudinal Sway Dampener (Garaventa)
2005	SB-05-009	Single-piece Quad Chair Repair Procedure (Salt Lake City)

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2002	NB 02-003	Detachable terminal cleaning
2002	NB 02-007	Revised notification format
2003	SB-03-003	Notification of closure for inventory (St. Jerome)
2003	SB-03-002	Canadian NDT Services (St. Jerome)
2003	SB-03-007	Availability of support assembly for fall arrest systems (Doppelmayr CTEC ltd release)
2003	NB-03-012	2003 Christmas Holidays (St. Jerome)
2004	NB-04-001	Customer Survey (St. Jerome – initially NB-04-015)
2004	NB-04-003	Canadian NDT Services (St. Jerome – initially SB-04-016)

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1983	SB 83-004	Passenger loading on triple and double chairs
1992	NB 92-002	Proper passenger seating in chair
2004	NB 04-008	Towing with detachable chair (St. Jerome)
2004	TB-04-013	Danger of Accident - Leaving the track on Surface Lifts (Wolfurt 8/16/04)
2005	NB-05-001	Notification of incident involving electronic eye stop gate (Salt Lake City)

SPARE PARTS AND CUSTOMER SERVICE

1980	NB 80-004	Sheave liner part #'s
1980	NB 80-005	Haul rope replacement
1981	NB 81-001	Bullwheel liners
1983	NB 83-003	Backstop upgrade, from band brake to drop dog
1983	NB 83-005	Customer service announcement
1984	NB 84-001	Sabina DC drive authorized service and spare parts centers
1984	NB 84-001A	Sabina spare parts prices
1984	NB 84-003	Sheave removal tool available
1984	NB 84-004	Spare parts orders
1986	NB 86-009	Electrical spare parts prices for 86 lifts
1986	NB 86-013	Electrical spare parts (revised)
1987	NB 87-001	Electrical spare parts (revised)
1987	NB 87-007	Electrical spare parts sale
1987	NB 87-012	87 lifts electrical spare parts list
1987	NB 87-012A	87 lifts electrical spare parts list (revised)
1987	NB 87-015	Service help available
1988	NB 88-003	CTEC NDT service
1988	NB 88-006	88 lift electrical spare part
1989	NB 89-002	89 electrical spare parts list
1990	NB 90-002	Spare parts ordering
1990	NB 90-007	After market sheave liners
1995	NB 95-008	PLC remote dial up feature for detachable lifts
1999	NB 99-001	R S Logix 500 PLC Software

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TENSION SYSTEMS

1985	SB 85-001	Tension carriage wheel bucket catchers
1986	SB 86-001	Torque and inspection of counterweight clamp plate
1986	NB 86-010	Tension pump modification, dual pressure relief
1987	SB 87-003	Carriage stop location
1995	SB 95-002	Tension cylinder clevis attachment
1995	SB 95-009	Weekly cycling of hydraulic tension systems
1999	SB 99-003	Carriage stops on light duty terminals
1999	SA 99-005	Split seal retainer cap modifications
2001	NB 01-002	Tension System available upgrades
2003	SB-03-009	Tension cylinder rod preventative maintenance

TERMINAL STRUCTURE

1985	SB 85-002	Bolt fatigue in bullwheel catcher
1986	SA 86-004	Collar welding, 85 lifts
1987	SB 87-006	Bullwheel catcher adjustments
1990	NB 90-004	Hydraulic tension start up procedure
1995	NB 95-004	Drain holes in longitudinal beams
2002	SB 02-002	Terminal pivot assembly inspection
2003	SB 03-003	Terminal underskin modification for swing clearance
2003	TB 08.04.03	Additional rope guidance in the area of the grip opening/closing lines (Wolfurt)
2004	TB 11.02.04	Cracked or broken angle brackets of trumpets w/spring suspension (Wolfurt)
2004	SB-04-012	Running rail entry modification on UNI terminal (St. Jerome)
2004	SB-04-016	Running rail entry modification on UNI terminal (Golden replaces SB-04-012)
2005	NB-05-004	Possible cracks on entrance sheave assembly suspensions (St. Jerome)

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TOWERS

1980	SA 80-002	Pivot shaft retaining bolt, Thiokol and 78 CTEC
1980	SB 80-003	Thiokol sheave train axle wear
1982	SA 82-001	Thiokol sheave train axle rework kit, refer to 80-003
1982	SA 82-001A	Thiokol sheave train axle rework kit additional information
1982	SA 82-004	79, 80 CTEC 4 sheave intermediate pivot on 6 &8 sheave beams
1982	SA 82-005	80, 81 CTEC terminal sheave main pivot shaft replacement
1985	SB 85-003	Thiokol rope catchers on depress towers
1986	SB 86-006	Sheave axle lock washer
1988	SA 88-002	Reissue of service bulletin # 80-002
1990	SB 90-003	Bolt on handrails for cross arms and sheave train walkways
1992	NB 92-001	Tower padding.
1994	SA 94-002	Breakaway switch on depress towers, 91 to 94 lifts with detach sheave trains
1996	SA 96-001	Hand rail mounting bolt failure Pre 1996 lifts
1997	NB 97-001	Detachable lifts, depress tower prox. setting instructions
1999	NB 99-002	Machined flanges on 1200 series detachable depress towers
2002	SA 02-010	1992-1994 Depress mounts and switches
2002	SB 02-012	Long trace vs. short trace brittle bar identification and use
2003	NB 03-001	Sheave liner wear criteria
2003	SB-03-001	Safety Alert – Ball bearings and steel housings of line sheaves (St. Jerome)
2003	SB-03-004	Available chairlift tower walkways (St. Jerome)
2003	SA-03-013	Swing clearance & guards for Doppelmayr 4T/4D on L/E fixed grips
2003	SA-03-014	Supercede of SA-03-013 (4T/4D swing clearance issue)
2004	SA-04-004	Stadeli sheave flange failure (Garaventa/SLC)
2004	NB-04-005	CTEC sheave liner wear depth & sheave hub gauges
2004	SA-04-009	Tower cap weld failure & inspection requirement (Golden)
2004	SA-04-010	Mis-machined line axle recall (St. Jerome)
2004	SB-04-015	Sheave assembly access rails (St. Jerome)
2005	SB 05-002	Sheave Model 400 snap ring seating (St. Jerome)

KEY

SA = SAFETY ALERT – IMMEDIATE ACTION REQUIRED, COLOR = RED

SB = SERVICE BULLETIN – FUTURE ACTION RECOMMENDED or REQUIRED, COLOR = BLUE (new), ORANGE (old)

NB = NOTIFICATION BULLETIN – INFORMATIONAL ONLY, COLOR = GREEN

TB = TECHNICAL BULLETIN

If you have any questions, please contact

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Salt Lake City, UT 84104
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Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**21-06-2005**	**SB-05-009 Addendum A**	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabriquant :*	**Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**220 (Carriers)**
Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace:SB-05-009*	**N/A**	**Effective date / *Date en vigueur :***	**02-06-2005**

Title / *Titre :* Single-piece Quad Chair Repair Procedure

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*
A procedure has been developed to address cracks that have been noted at the chair seat to bail tube attachment point on Garaventa CTEC single-piece quad chairs.

1.2 Reason for release (summary) / *But*
To effectively address the fatigue area on Garaventa CTEC single-piece quad chairs, Engineering has developed specific requirements related to welding and the addition of strengthening gussets.

2. Scope / *Objet*

2.1 Generalities / *Généralités*
Prior to the 2005-2006 winter operating season, all Garaventa CTEC single-piece quad chairs exhibiting cracks in the affected area must be repaired by following the procedure as outlined below.
Prior to the 2006-2007 winter operating season, all Garaventa CTEC single-piece quad chairs must be repaired by following the procedure as outlined below.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*
Affected models are all Garaventa CTEC single-piece quad chairs of design similar to attached drawing 9100036 through production year 1999.

2.3 Affected Production dates / *Dates de fabrication affectées*
Affected production dates are from 1993 to 1999.

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

Prior to the 2005-2006 winter operating season, all Garaventa CTEC single-piece quad chairs exhibiting cracks in the affected area must be repaired by following the procedure as outlined below.

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Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace:SB-05-009*	**N/A**	**Effective date / *Date en vigueur :***	**02-06-2005**

Prior to the 2006-2007 winter operating season, all Garaventa CTEC single-piece quad chairs must be repaired by following the procedure as outlined below.

Strengthening gussets may be purchased through Doppelmayr CTEC, Salt Lake City for $2.50 each ($5.00/chair).

Repair and gusset installation procedure:

a. Reference the affected area from the attached drawing.

b. Disassemble armrest and footrest from chair back (as applicable) to allow proper access and preparation for repair of the affected area.

c. Use a grinder to remove all weld material exhibiting indications. A die grinder with a "V" shape bit is recommended to grind the welds where access may be more difficult (typically inside corners).

d. Use a grinder to "V" parent material exhibiting indications.

e. Thoroughly remove the galvanized coating from all weld areas to be repaired.

f. Following the diagram of the affected area (attached), replace affected welds and repair cracked parent material using 7018 rod. Adjust current and application technique to avoid undercut or lack of fusion to the parent material. Care should be taken to completely fill the craters and to wrap corners. Welders shall be certified in structural and all position weld procedures and work shall be inspected under the supervision of a Level II magnetic particle inspector.

g. Wire brush or otherwise remove slag material from new weldments.

h. Once sufficiently cooled, apply a cold galvanizing compound to all areas that have been disturbed through the preparation and repair process.

Following crack repairs or solely as a preventative measure, all carriers must also have a strengthening gusset installed as per the following:

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Supercedes / *Remplace:SB-05-009*	**N/A**	**Effective date / *Date en vigueur :***	**02-06-2005**

i. If not already done to address cracks in the identified area, disassemble armrest and footrest from chair back (as applicable) to allow proper access for preparation and installation of strengthening gussets.

j. Reference the gusset positioning from the attached drawing.

k. Thoroughly remove the galvanized coating from area of new welds for installation of the strengthening gusset.

l. Following the diagram of the affected area (attached), replace affected welds and repair cracked parent material using 7018 rod. Adjust current and application technique to avoid undercut or lack of fusion to the parent material. Care should be taken to completely fill the craters and to wrap corners. Welders shall be certified in structural and all position weld procedures and work shall be inspected under the supervision of a Level II magnetic particle inspector.

m. Wire brush or otherwise remove slag material from new weldments.

n. Once sufficiently cooled, apply a cold galvanizing compound to all areas that have been disturbed through the preparation and repair process.

o. Re-assemble chair to hanger.

p. Conduct routine monitoring of this area on all chairs of this design and repair as necessary using this procedure as guideline.

Doppelmayr CTEC by this procedure is only providing guidance in the repair and in no way accepts responsibility for the actual repair or future performance of the carrier weldment.

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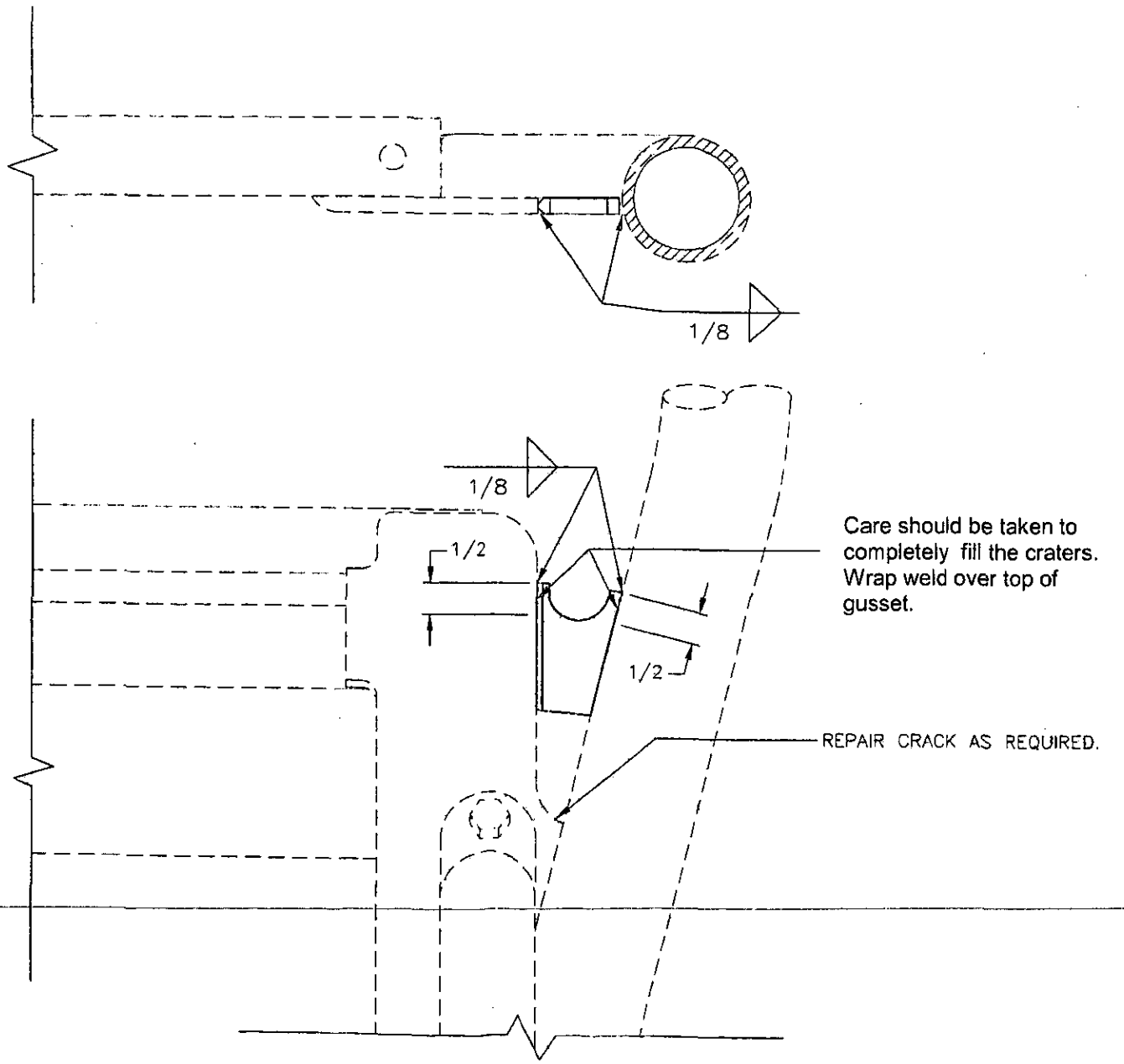
4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas



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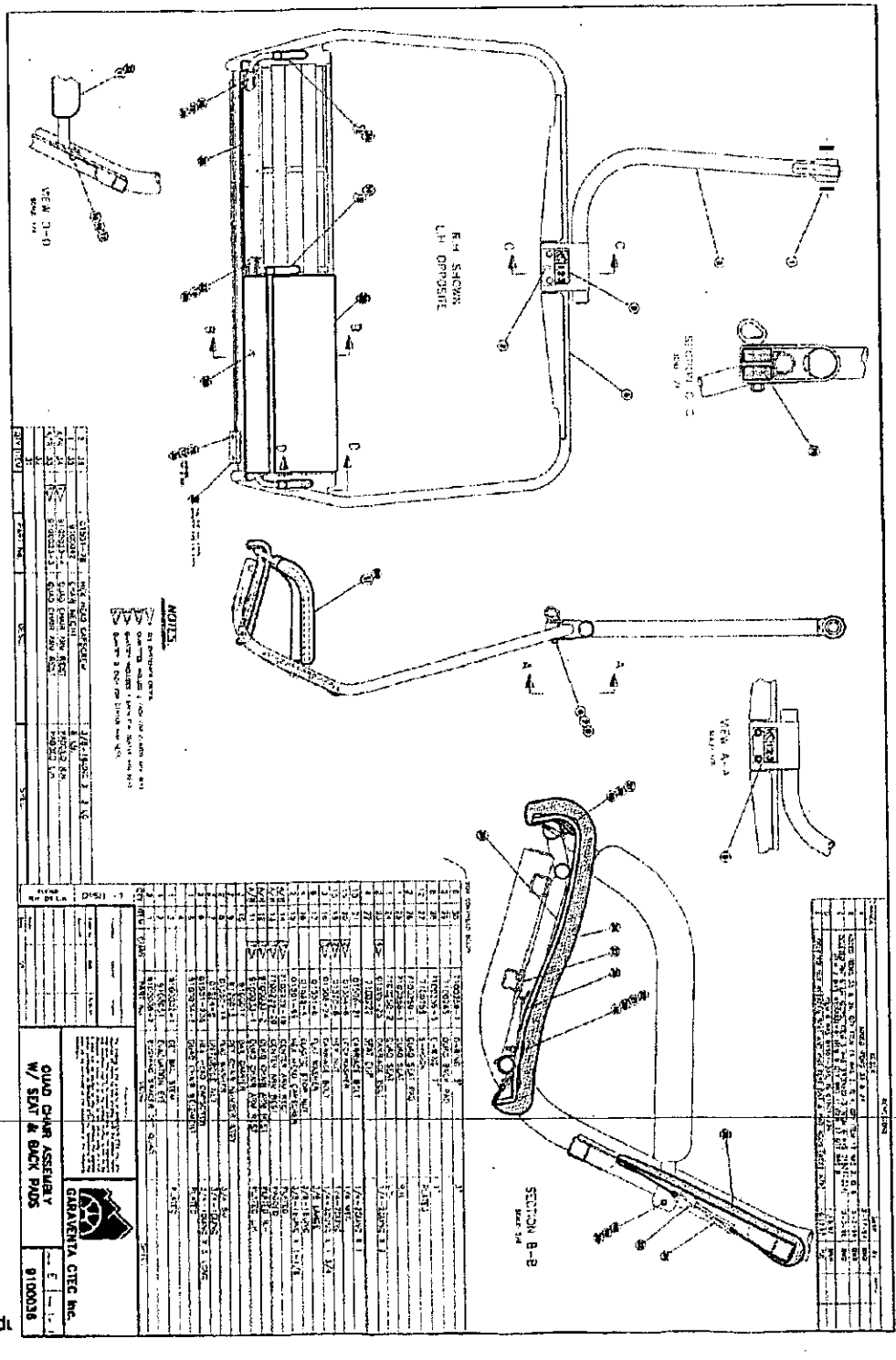

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AUXILIARY / STAND BY DRIVES

1987	SA 87-014	Operation of hydrostatic auxiliary drives
2001	SA 01-006	Cautionary operational advisement for snowcat hydrostatic drives
2005	TB Do-329-e	Hydraulic Unit for Brakes, Emergency Drive and Tensioning (Internal Wolfurt 6/6/05)

BRAKE SYSTEMS

1982	SB 82-002	Brake maintenance
1986	NB 86-008	Automatic E-brake up-grade.
1986	SB 86-012	86 lifts with service / E-brake units, general maintenance
1987	NB 87-005	Inverting Enerpac brake cylinders
1987	SB 87-010	Service brake relays and contactors
2002	D-29	Emergency stop application on Service Brake failure to set (Golden)
2003	SB-03-010	RINGSPANN Corporation backstop lubrication and maintenance
2004	KD04002	Brake Disc Type C, Material GG25 (Wolfurt 8/16/04)
2005	TB Do-329-e	Hydraulic Unit for Brakes, Emergency Drive and Tensioning (Internal Wolfurt 6/6/05)

CONVEYOR SYSTEMS

2004	SB-04-008	Maintenance recommendations for terminal tire conveyor cartridges (AK4.1)

DRIVE COMPONENTS MECHANICAL

1983	SA 83-001	Low speed and Cat shaft inspection
1983	SB 83-002	Bullwheel backstop maintenance
1986	SB 86-002	Chain coupling lubrication on main driveline
1987	NB 87-004	Lubrication of Morse backstops
1988	SA 88-004	84 lifts with Timken bearing style return bullwheels, cracked welds
1988	SA 88-005	84 lifts with spherical bearing style return bullwheels; cracked welds
1990	SA 90-001	Lohmann bullwheel retaining plate and shaft lubrication
1990	SB 90-005	87, 88 lifts with Cat 651 and Eurodrive KF-156, low speed coupling modification
1990	NB 90-006	Low speed coupling maintenance
1993	SA 93-001	Drive bullwheel to Cat unit, Thiokol and early CTEC 621, 631 Cat units
1994	NB 94-001	Right hand up Eurodrive gearboxes, locknut on intermediate shaft
2000	SB 00-002	Sew Eurodrive KF series gearbox inspection
2002	SB 02-011	Inspection for return tension bullwheel cracks
2003	SA 03-002	Inspection of disc type low speed couplings
2003	TB Do-320a-e	Assembly instructions: Sealing of return B/W bearing assemblies (Wolfurt)

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2001	NB 01-001	3-wire tower prox switches
2002	SA 02-001	Breakaway derail switch wiring alert
2002	SA 02-008	Schmersal lanyard stop switch alert
2003	SB-03-011	Recommended Brake Fault circuit rewire
2003	TB Do-319-e	New switch design "Faulty grip position before launch" (Internal Wolfurt 04/08/03)
2005	TB Do-335-e	Tacho Drives and Impulse Sheaves (Internal Wolfurt 05/18/05)

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2002	SB 02-005	Fixed grip retaining ring groove wear
2002	NB 02-006	Grip coupling incident
2002	SB-02-008	Corrosion in Doppelmayr square tube chair bails (St. Jerome)
2002	SB 02-009	AK400 & AK460 lower guide tube brass bushing
2003	SB 03-004	Restraining bar w/footrest inspection & repair procedure
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2005	SB-05-005	Quad chairs Model "E" backrest to chair bail connection (St. Jerome)
2005	TB Do328_e	Carriers for 2-CLF and 4-CLF (Internal Wolfurt 04/14/05)
2005	KD05003	MGD Global Comfort Suspension Hanger (Wolfurt 04/22/05)
2005	NB-05-007	Slip test tool for Doppelmayr fixed grip (St. Jerome)
2005	SA-05-008	Attachment of Hydraulic Longitudinal Sway Dampener (Garaventa)
2005	SB-05-009	Single-piece Quad Chair Repair Procedure (Salt Lake City)
2005	SB-05-009A	Addendum A Single-piece Quad Chair Repair Procedure (Salt Lake City)
2005	SB-05-013	AK 680 Series Detachable Grip Indications

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HAUL ROPE

1996	NB 96-003	Splice tolerance for detachable chair lifts
2005	TB Do-333-e	New Minimum Rope Diameters for Detachable Grips (Internal Wolfurt 05/13/05)

MISCELLANEOUS

1984	SA 84-002	83 sheave removal tool, faulty weld
1987	NB 87-002	Lubrication schedule
1991	NB 91-001	Suspect hardware
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2002	NB 02-007	Revised notification format
2003	SB-03-003	Notification of closure for inventory (St. Jerome)
2003	SB-03-002	Canadian NDT Services (St. Jerome)
2003	SB-03-007	Availability of support assembly for fall arrest systems (Doppelmayr CTEC ltd release)
2003	NB-03-012	2003 Christmas Holidays (St. Jerome)
2004	NB-04-001	Customer Survey (St. Jerome – initially NB-04-015)
2004	NB-04-003	Canadian NDT Services (St. Jerome – initially SB-04-016)
2005	TB Do-332-e	New Tools for UNI-G (Internal Wolfurt 05/18/05)
2005	NB-05-011	2005 Summer Vacation (St. Jerome)

OPERATIONS

1983	SB 83-004	Passenger loading on triple and double chairs
1992	NB 92-002	Proper passenger seating in chair
2004	NB 04-008	Towing with detachable chair (St. Jerome)
2004	KD04001	Danger of Accident - Leaving the track on Surface Lifts (Wolfurt 8/16/04)
2005	NB-05-001	Notification of incident involving electronic eye stop gate (Salt Lake City)

SPARE PARTS AND CUSTOMER SERVICE

1980	NB 80-004	Sheave liner part #'s
1980	NB 80-005	Haul rope replacement
1981	NB 81-001	Bullwheel liners
1983	NB 83-003	Backstop upgrade, from band brake to drop dog
1983	NB 83-005	Customer service announcement
1984	NB 84-001	Sabina DC drive authorized service and spare parts centers
1984	NB 84-001A	Sabina spare parts prices
1984	NB 84-003	Sheave removal tool available
1984	NB 84-004	Spare parts orders
1986	NB 86-009	Electrical spare parts prices for 86 lifts
1986	NB 86-013	Electrical spare parts (revised)
1987	NB 87-001	Electrical spare parts (revised)
1987	NB 87-007	Electrical spare parts sale
1987	NB 87-012	87 lifts electrical spare parts list
1987	NB 87-012A	87 lifts electrical spare parts list (revised)
1987	NB 87-015	Service help available
1988	NB 88-003	CTEC NDT service
1988	NB 88-006	88 lift electrical spare part
1989	NB 89-002	89 electrical spare parts list
1990	NB 90-002	Spare parts ordering
1990	NB 90-007	After market sheave liners
1995	NB 95-008	PLC remote dial up feature for detachable lifts
1999	NB 99-001	R S Logix 500 PLC Software

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TENSION SYSTEMS

1985	SB 85-001	Tension carriage wheel bucket catchers
1986	SB 86-001	Torque and inspection of counterweight clamp plate
1986	NB 86-010	Tension pump modification, dual pressure relief
1987	SB 87-003	Carriage stop location
1995	SB 95-002	Tension cylinder clevis attachment
1995	SB 95-009	Weekly cycling of hydraulic tension systems
1999	SB 99-003	Carriage stops on light duty terminals
1999	SA 99-005	Split seal retainer cap modifications
2001	NB 01-002	Tension System available upgrades
2003	SB-03-009	Tension cylinder rod preventative maintenance
2005	TB Do-329-e	Hydraulic Unit for Brakes, Emergency Drive and Tensioning (Internal Wolfurt 6/6/05)

TERMINAL STRUCTURE

1985	SB 85-002	Bolt fatigue in bullwheel catcher
1986	SA 86-004	Collar welding, 85 lifts
1987	SB 87-006	Bullwheel catcher adjustments
1990	NB 90-004	Hydraulic tension start up procedure
1995	NB 95-004	Drain holes in longitudinal beams
2002	SB 02-002	Terminal pivot assembly inspection
2003	SB 03-003	Terminal underskin modification for swing clearance
2003	TB Do-318-e	Additional rope guidance in the area of the grip opening/closing lines (Wolfurt)
2004	TB Do-322-e	Cracked or broken angle brackets of trumpets w/spring suspension (Wolfurt)
2004	SB-04-012	Running rail entry modification on UNI terminal (St. Jerome)
2004	SB-04-016	Running rail entry modification on UNI terminal (Golden replaces SB-04-012)
2005	NB-05-004	Possible cracks on entrance sheave assembly suspensions (St. Jerome)
2005	TB Do-334-e	Adjustment of the Rope Gauge with Horizontal Guide Sheaves (Internal Wolfurt 05/13/05)

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TOWERS

1980	SA 80-002	Pivot shaft retaining bolt, Thiokol and 78 CTEC
1980	SB 80-003	Thiokol sheave train axle wear
1982	SA 82-001	Thiokol sheave train axle rework kit, refer to 80-003
1982	SA 82-001A	Thiokol sheave train axle rework kit additional information
1982	SA 82-004	79, 80 CTEC 4 sheave intermediate pivot on 6 &8 sheave beams
1982	SA 82-005	80, 81 CTEC terminal sheave main pivot shaft replacement
1985	SB 85-003	Thiokol rope catchers on depress towers
1986	SB 86-006	Sheave axle lock washer
1988	SA 88-002	Reissue of service bulletin # 80-002
1990	SB 90-003	Bolt on handrails for cross arms and sheave train walkways
1992	NB 92-001	Tower padding
1994	SA 94-002	Breakaway switch on depress towers, 91 to 94 lifts with detach sheave trains
1996	SA 96-001	Hand rail mounting bolt failure Pre 1996 lifts
1997	NB 97-001	Detachable lifts, depress tower prox. setting instructions
1999	NB 99-002	Machined flanges on 1200 series detachable depress towers
2002	SA 02-010	1992-1994 Depress mounts and switches
2002	SB 02-012	Long trace vs. short trace brittle bar identification and use
2003	NB 03-001	Sheave liner wear criteria
2003	SB-03-001	Safety Alert – Ball bearings and steel housings of line sheaves (St. Jerome)
2003	SB-03-004	Available chairlift tower walkways (St. Jerome)
2003	SA-03-013	Swing clearance & guards for Doppelmayr 4T/4D on L/E fixed grips
2003	SA-03-014	Supercede of SA-03-013 (4T/4D swing clearance issue)
2004	SA-04-004	Stadeli sheave flange failure (Garaventa/SLC)
2004	NB-04-005	CTEC sheave liner wear depth & sheave hub gauges
2004	SA-04-009	Tower cap weld failure & inspection requirement (Golden)
2004	SA-04-010	Mis-machined line axle recall (St. Jerome)
2004	SB-04-015	Sheave assembly access rails (St. Jerome)
2005	SB 05-002	Sheave Model 400 snap ring seating (St. Jerome)

KEY

SA = SAFETY ALERT – IMMEDIATE ACTION REQUIRED, COLOR = RED

SB = SERVICE BULLETIN – FUTURE ACTION RECOMMENDED or REQUIRED, COLOR = BLUE (new), ORANGE (old)

NB = NOTIFICATION BULLETIN – INFORMATIONAL ONLY, COLOR = GREEN

TB = TECHNICAL BULLETIN

If you have any questions, please contact

Doppelmayr CTEC
Service Department
3160 W. 500 S.
Salt Lake City, UT 84104
(801) 973-7977

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**21-09-2005**	**NB-05-015**	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	**Doppelmayr CTEC, Doppelmayr, Garaventa CTEC, CTEC, Hall**	**Fab. Group / *Groupe de fabrication :***	**Carriers**
Lift type / *Type de remontée :*	**Detachable or Fixed chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**September 7, 2005**

Title / *Titre :* After-market Equipment Additions to Carriers

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*

Doppelmayr CTEC does not authorize the design or use of after-market equipment additions for its carriers.

1.2 Reason for release (summary) / *But*

Numerous companies and operators are offering or installing equipment to be mounted upon Doppelmayr CTEC carriers for the purpose of trail map advertisement, snowboard rests, or special equipment carriers (bicycles, sleds, carts, zip lines, etc.).

2. Scope / *Objet*

2.1 Generalities / *Généralités*

The addition of after-market equipment to Doppelmayr CTEC carriers *may*:

- Affect rope and sheave loads
- Pose a hazard from falling objects
- Affect restraint bar balance
- Interfere with the "down restraining bar" detection system in the loading area
- Affect wind, snow and ice loading
- Pose pinch point hazard
- Pose hazard for entanglement
- Affect carrier swing clearances
- Reduce attendant's ability to observe or respond
- Affect operations and maintenance procedures
- Interfere with evacuation methods
- Subject the carrier and components to premature fatigue or component failure

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
GSM/SLC	**21-09-2005**	**NB-05-015**	

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Lift manufacturer / *Fabricant :*	**Doppelmayr CTEC, Doppelmayr, Garaventa CTEC, CTEC, Hall**	**Fab. Group / *Groupe de fabrication :***	**Carriers**
Lift type / *Type de remontée :*	**Detachable or Fixed chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**September 7, 2005**

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

Doppelmayr CTEC does not authorize the design or use of after-market equipment upon its carriers. After-market equipment should be removed.

Failure to remove the after-market equipment may result in personal injury and/or premature fatigue or failure of the carrier components. Area operators continuing to utilize this equipment assume all associated responsibilities and liabilities.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SAC	01-11-2005	SB-05-020	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	DOPPELMAYR	Fab. Group / *Groupe de fabrication :*	220
Lift type / *Type de remontée :*	CHAIR LIFT		
Supercedes / *Remplace :*	N/A	*Effective date / Date en vigueur :*	*01-11-2005*

SAFETY BAR WITHOUT FOOTREST WITH ROLLER STOPPERS

We have been informed that some incidents have occurred on chairs with safety bar assemblies without footrests, equipped with roller stoppers. This happens especially with younger users who may place their fingers between the safety bar and roller stopper when closing the bar with hands on the side of the safety bar (see Figure 1).

Therefore, operators must be aware of this hazard especially with young users. Some areas have installed self adhesive "caution" tape (red or yellow) at this contact point (see Figure 1).

Following some requests from customers who would like to modify their safety bars, we are pleased to offer safety bar assembly ID number 50007584 that allows replacement of the "roller" type assembly with a model with back stopper (see detail B on drawing) and front seat stopper (see detail A on drawing).

This retrofit kit (safety bar assembly with bumpers and fasteners) is offered as a group purchase opportunity at a special price of $89.95 CAD if ordered before April 1, 2006 with the attached order form.

No order at this special price will be accepted after the application deadline and without the attached official order form.

Please contact your local Doppelmayr CTEC Customer Service representative for more information.

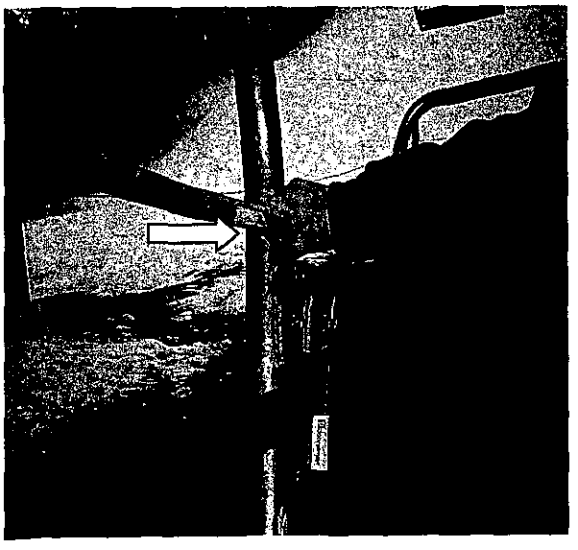
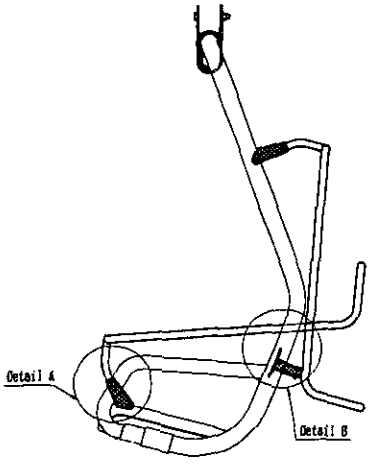


Figure 1



50007584 assembly

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SAC	01-11-2005	SB-05-020	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	DOPPELMAYR	Fab. Group / *Groupe de fabrication :*	220
Lift type / *Type de remontée :*	CHAIR LIFT		
Supercedes / *Remplace :*	N/A	Effective date / *Date en vigueur :*	01-11-2005

ORDER FORM FOR RESTRAINING BAR RETROFIT

AREA NAME_____

CONTRACT NUMBER_____

QUANTITY OF RETROFIT _____$89.95 CAD each .Taxes and shipping not included

PURCHASE ORDER NUMBER_____

AREA CONTACT_____

SHIPPING ADDRESS_____

_____

_____

Please select shipping instructions

CARRIER COLLECT

Carrier name_____Your account number_____

CARRIER PREPAID AND CHARGE

Shipping charges will be added on invoice as per Doppelmayr CTEC policy.

Please return to your local Doppelmayr CTEC Customer Service Office before April 1, 2006

Note: Delivery summer 2006 as per Doppelmayr CTEC's general production schedule.

Doppelmayr CTEC inc
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Revised February 23, 2006

AUXILIARY / STAND BY DRIVES

1987	SA 87-014	Operation of hydrostatic auxiliary drives
2001	SA 01-006	Cautionary operational advisement for snowcat hydrostatic drives

BRAKE SYSTEMS

1982	SB 82-002	Brake maintenance
1986	NB 86-008	Automatic E-brake up-grade.
1986	SB 86-012	86 lifts with service / E-brake units, general maintenance
1987	NB 87-005	Inverting Enerpac brake cylinders
1987	SB 87-010	Service brake relays and contactors
2002	SB D-29	Emergency stop application on Service Brake failure to set (Golden)
2003	SB-03-010	RINGSPANN Corporation backstop lubrication and maintenance
2004	KD04002	Brake Disc Type C, Material GG25 (Wolfurt 8/16/04)

CONVEYOR SYSTEMS

2004	SB-04-008	Maintenance recommendations for terminal tire conveyor cartridges (AK4.1)

DRIVE COMPONENTS MECHANICAL

1983	SA 83-001	Low speed and Cat shaft inspection
1983	SB 83-002	Bullwheel backstop maintenance
1986	SB 86-002	Chain coupling lubrication on main driveline
1987	NB 87-004	Lubrication of Morse backstops
1988	SA 88-004	84 lifts with Timken bearing style return bullwheels, cracked welds
1988	SA 88-005	84 lifts with spherical bearing style return bullwheels; cracked welds
1990	SA 90-001	Lohmann bullwheel retaining plate and shaft lubrication
1990	SB 90-005	87, 88 lifts with Cat 651 and Eurodrive KF-156, low speed coupling modification
1990	NB 90-006	Low speed coupling maintenance
1993	SA 93-001	Drive bullwheel to Cat unit, Thiokol and early CTEC 621, 631 Cat units
1994	NB 94-001	Right hand up Eurodrive gearboxes, locknut on intermediate shaft
2000	SB 00-002	Sew Eurodrive KF series gearbox inspection
2002	SB 02-011	Inspection for return tension bullwheel cracks
2003	SA 03-002	Inspection of disc type low speed couplings
2006	SB-06-002	Doppelmayr 3-piece bullwheel inspection (St. Jerome 2/9/06)

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ELECTRICAL COMPONENTS

1982	SB 82-003	Motor maintenance
1983	SA 83-006	82 lifts, tower detection wiring problem
1986	SA 86-003	85 lifts, thumbscrews may loosen, apply 290 loctite
1986	NB 86-007	Electrical overspeed modification
1986	NB 86-011	Maintenance of Sabina and other regulator boards
1987	SA 87-008	Sabina drive modification
1987	SB 87-009	Termination of DC motor leads
1987	NB 87-013	T6800 Sabina regulator board up-grade
1988	NB 88-001	Derail breakboard replacement 1985, 86 lifts
1992	NB 92-003	Detachable lift, wire wear on proximity switch wires
1995	NB 95-005	Efector II2010FRKG prox problem
1995	NB 95-006	Efector II2010FRKG prox problem, detachable lifts
1997	NB 97-002	Sabina current and voltage feedback circuit fuses
1999	SA 99-004	Rollback prox problem on 1997 and 1998 detachable
2000	NB 00-001	Elimination of monitoring requirements imposed by SB 95-001
2000	NB 00-001A	Clarifying supplement to NB 00-001
2001	NB 01-001	3-wire tower prox switches
2002	SA 02-001	Breakaway derail switch wiring alert
2002	SA 02-008	Schmersal lanyard stop switch alert
2003	SB-03-011	Recommended Brake Fault circuit rewire
2006	NB-06-001	Factory Recall of Allen-Bradley Series A Module (Salt Lake City)

Doppelmayr CTEC inc

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GRIPS, HANGERS, CHAIRS and CABINS

1979	7100-97	Thiokol grip shafts
1980	SA 80-001	Thiokol grip shafts
1983	SA 83-007	NDT of grips and hangers
1986	SA 86-005	84 triple chair bail welds
1987	NB 87-011	Seat pad installation
1989	SA 89-001	88 investment cast 1 1/8" grip hook
1990	SA 90-008	83 to 88 double and triple bail welds
1990	SA 90-009	83 to 88 double and triple bail welds
1994	SA 94-003	All detach lifts, loss of grip actuation wheel
1995	SB 95-001	All detach lifts, AK4.0 actuation wheel/snap ring inspection
1995	SA 95-003	Nut for use with hyd. detachable grip tool
1995	SB 95-007	Quad chair support tube, 92 and earlier chair basket cracks
1996	NB 96-002	Fixed grip hook maintenance
1997	NB 97-003	GLY-92 greasing of grip springs AK4.0/AK4.1
1997	SB 97-004	NDT of AK4.0/AK4.1 Grip Cases
1997	SA 97-005	1983 to 1988 double and triple chair bail welds
1997	SA 97-006	1988 to 1995 triple and quad chair basket welds
2001	SB 01-005	Assembly Instruction Grip 400/460, Revision B
2002	SB 02-000	Pendular Dampening for Carrier Suspension (Garaventa)
2002	SB 02-004	AK4.0 & AK4.1 Hanger pin retaining bolt orientation
2002	SB 02-005	Fixed grip retaining ring groove wear
2002	NB 02-006	Grip coupling incident
2002	SB-02-008	Corrosion in Doppelmayr square tube chair bails (St. Jerome)
2002	SB 02-009	AK400 & AK460 lower guide tube brass bushing
2003	SB 03-004	Restraining bar w/footrest inspection & repair procedure
2003	SB-03-006	Chair Number Plates (St. Jerome)
2003	SB-03-008	Revised NDT procedure for AK4.0 & AK4.1 grip cases
2004	SB-04-006	Doppelmayr fixed grip inspection criteria (St. Jerome – replaces SB-02-002)
2004	SB-04-007	Movement of hanger axle on DT grips (Golden)
2004	SA-04-011	New cabin fixation for MGD type 4/6-Giovanola & type 6-VH400 (Garaventa)
2005	SB-05-003	Fixed Grips – Periodic inspection for surface flaws (Wolfurt KD04003)
2005	SB-05-005	Quad chairs Model "E" backrest to chair bail connection (St. Jerome)
2005	KD05003	MGD Global Comfort Suspension Hanger (Wolfurt 04/22/05)
2005	NB-05-007	Slip test tool for Doppelmayr fixed grip (St. Jerome)
2005	SA-05-008	Attachment of Hydraulic Longitudinal Sway Dampener (Garaventa)
2005	SB-05-009	Single-piece Quad Chair Repair Procedure (Salt Lake City)
2005	SB-05-009A	Addendum A Single-piece Quad Chair Repair Procedure (Salt Lake City)
2005	SB-05-013	AK 680 Series Detachable Grip Indications (Salt Lake City)
2005	SB-05-009B	Addendum B Single-piece Quad Chair Repair Procedure (Salt Lake City)
2005	SB-05-014	NDT of Main Grip Jaw of AK30 (Goldau CH05001e)
2005	SB-05-015	After-market Equipment Addition to Carriers (Salt Lake City)
2005	SB-05-017	Cabins With Air Cushioned Hangers (St. Jerome)
2005	SB-05-019	DS Grips – Bolt Connections of the Fixed Grip Jaw (Wolfurt KD05006E)
2005	SB-05-020	Safety Bar without Footrest with Roller Stoppers (St. Jerome)
2005	SB-05-022	Special M20 Nut for VonRoll VH400 Detachable Grip (Goldau S+U050010)
2005	SA-05-023	DS Grip – Locking the Bronze Bushing in Position (Wolfurt KD05007)
2006	SB-06-003	T-bar Grips type GA & GBC without spring brake (Goldau CH06001)

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HAUL ROPE		
1996	NB 96-003	Splice tolerance for detachable chair lifts
MISCELLANEOUS		
1984	SA 84-002	83 sheave removal tool, faulty weld
1987	NB 87-002	Lubrication schedule
1991	NB 91-001	Suspect hardware
2001	SB 01-003	Pressure gauge failures on 6 passenger load gate systems
2001	NB 01-004	Fall protection mounting points and Garaventa CTEC equipment
2002	NB 02-003	Detachable terminal cleaning
2002	NB 02-007	Revised notification format
2002	KD02007	New Maintenance Tools & Devices (Wolfurt)
2003	SB-03-003	Notification of closure for inventory (St. Jerome)
2003	SB-03-002	Canadian NDT Services (St. Jerome)
2003	SB-03-007	Availability of support assembly for fall arrest systems (Doppelmayr CTEC ltd release)
2003	NB-03-012	2003 Christmas Holidays (St. Jerome)
2004	NB-04-001	Customer Survey (St. Jerome – initially NB-04-015)
2004	NB-04-003	Canadian NDT Services (St. Jerome – initially SB-04-016)
2005	NB-05-011	2005 Summer Vacation (St. Jerome)
2005	NB-05-016	2005-2006 Christmas Holidays (St. Jerome)
OPERATIONS		
1983	SB 83-004	Passenger loading on triple and double chairs
1992	NB 92-002	Proper passenger seating in chair
2004	NB 04-008	Towing with detachable chair (St. Jerome)
2004	KD04001	Danger of Accident - Leaving the track on Surface Lifts (Wolfurt 8/16/04)
2005	NB 05-001	Notification of incident involving electronic eye stop gate (Salt Lake City)

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1984	NB 84-001A	Sabina spare parts prices
1984	NB 84-003	Sheave removal tool available
1984	NB 84-004	Spare parts orders
1986	NB 86-009	Electrical spare parts prices for 86 lifts
1986	NB 86-013	Electrical spare parts (revised)
1987	NB 87-001	Electrical spare parts (revised)
1987	NB 87-007	Electrical spare parts sale
1987	NB 87-012	87 lifts electrical spare parts list
1987	NB 87-012A	87 lifts electrical spare parts list (revised)
1987	NB 87-015	Service help available
1988	NB 88-003	CTEC NDT service
1988	NB 88-006	88 lift electrical spare part
1989	NB 89-002	89 electrical spare parts list
1990	NB 90-002	Spare parts ordering
1990	NB 90-007	After market sheave liners
1995	NB 95-008	PLC remote dial up feature for detachable lifts
1999	NB 99-001	R S Logix 500 PLC Software

TENSION SYSTEMS

1985	SB 85-001	Tension carriage wheel bucket catchers
1986	SB 86-001	Torque and inspection of counterweight clamp plate
1986	NB 86-010	Tension pump modification, dual pressure relief
1987	SB 87-003	Carriage stop location
1990	NB 90-004	Hydraulic tension start up procedure
1995	SB 95-002	Tension cylinder clevis attachment
1995	SB 95-009	Weekly cycling of hydraulic tension systems
1999	SB 99-003	Carriage stops on light duty terminals
1999	SA 99-005	Split seal retainer cap modifications
1999	SB 99-006	4" Lin-Act Tension Cylinders
2001	NB 01-002	Tension System available upgrades
2003	SB-03-009	Tension cylinder rod preventative maintenance

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TERMINAL STRUCTURE

1985	SB 85-002	Bolt fatigue in bullwheel catcher
1986	SA 86-004	Collar welding, 85 lifts
1987	SB 87-006	Bullwheel catcher adjustments
1995	NB 95-004	Drain holes in longitudinal beams
2002	SB 02-002	Terminal pivot assembly inspection
2003	SB 03-003	Terminal underskin modification for swing clearance
2004	SB-04-012	Running rail entry modification on UNI terminal (St. Jerome)
2004	SB-04-016	Running rail entry modification on UNI terminal (Golden replaces SB-04-012)
2005	NB-05-004	Possible cracks on entrance sheave assembly suspensions (St. Jerome)
2006	SB-06-004	Sprint II terminal potential carriage stop interference (Salt Lake City)

TOWERS

1980	SA 80-002	Pivot shaft retaining bolt, Thiokol and 78 CTEC
1980	SB 80-003	Thiokol sheave train axle wear
1982	SA 82-001	Thiokol sheave train axle rework kit, refer to 80-003
1982	SA 82-001A	Thiokol sheave train axle rework kit additional information
1982	SA 82-004	79, 80 CTEC 4 sheave intermediate pivot on 6 &8 sheave beams
1982	SA 82-005	80, 81 CTEC terminal sheave main pivot shaft replacement
1985	SB 85-003	Thiokol rope catchers on depress towers
1986	SB 86-006	Sheave axle lock washer
1988	SA 88-002	Reissue of service bulletin # 80-002
1990	SB 90-003	Bolt on handrails for cross arms and sheave train walkways
1992	NB 92-001	Tower padding
1994	SA 94-002	Breakaway switch on depress towers, 91 to 94 lifts with detach sheave trains
1996	SA 96-001	Hand rail mounting bolt failure Pre 1996 lifts
1997	NB 97-001	Detachable lifts, depress tower prox. setting instructions
1999	NB 99-002	Machined flanges on 1200 series detachable depress towers
2000	SB 00-003	Sheave train guarding
2002	SA 02-010	1992-1994 Depress mounts and switches
2002	SB 02-012	Long trace vs. short trace brittle bar identification and use
2003	NB 03-001	Sheave liner wear criteria
2003	SA-03-001	Safety Alert – Ball bearings and steel housings of line sheaves (St. Jerome)
2003	NB-03-004	Available chairlift tower walkways (St. Jerome)
2003	SA-03-013	Swing clearance & guards for Doppelmayr 4T/4D on L/E fixed grips
2003	SA-03-014	Supercede of SA-03-013 (4T/4D swing clearance issue)
2004	SA-04-004	Stadeli sheave flange failure (Garaventa/SLC)
2004	NB-04-005	CTEC sheave liner wear depth & sheave hub gauges
2004	SA-04-009	Tower cap weld failure & inspection requirement (Golden)
2004	SA-04-010	Mis-machined line axle recall (St. Jerome)
2004	SB-04-015	Sheave assembly access rails (St. Jerome)
2005	SB 05-002	Sheave Model 400 snap ring seating (St. Jerome)

Doppelmayr CTEC inc

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Index of Notifications (Customer)

Revised February 23, 2006

KEY

SA = SAFETY ALERT – IMMEDIATE ACTION REQUIRED, COLOR = RED

SB = SERVICE BULLETIN – FUTURE ACTION RECOMMENDED or REQUIRED, COLOR = BLUE (new), ORANGE (old)

NB = NOTIFICATION BULLETIN – INFORMATIONAL ONLY, COLOR = GREEN

If you have any questions, please contact

Doppelmayr CTEC
Service Department
3160 W. 500 S.
Salt Lake City, UT 84104
(801) 973-7977

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	**05-31-2006**	**NB-06-010**	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	**Thiokol, CTEC, Garaventa CTEC, Doppelmayr CTEC**	**Fab. Group / *Groupe de fabrication :***	**Planetary Gearboxes**
Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**May 31, 2006**

Title / *Titre :* Recommended Oil for Caterpillar 600-series & D-series Final Drive Planetary Gearboxes on Ski Lift Applications

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*

Doppelmayr CTEC's recommended oil for all Caterpillar 600-series and D-series final drive planetary gearboxes when used within drive bullwheels of Doppelmayr CTEC ski lift applications is Shell Spirax® HD 80W-90 oil. (For Kissling bullwheel planetaries & gearboxes - see separate Bulletin.)

1.2 Reason for release (summary) / *But*

To provide direction to customers operating Caterpillar 600-series and D-series final drive planetary gearboxes, Doppelmayr CTEC specifies that the recommended lubricant for Caterpillar final drives when used within drive bullwheels of Doppelmayr CTEC ski lift applications is Shell Spirax® HD 80W-90 oil. (For Kissling bullwheel planetaries & gearboxes - see separate Bulletin.)

2. Scope / *Objet*

2.1 Generalities / *Généralités*

Shell Spirax® HD 80W-90 oil is a high performance multigrade extreme-pressure, multipurpose gear lubricant that meets the specific low-speed / high torque requirements of Caterpillar 600-series and D-series final drive planetary gearboxes used in Doppelmayr CTEC ski lift applications.

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*

Shell Spirax® HD 80W-90 oil is the recommended lubricant for Caterpillar final drives used within the drive bullwheels of Doppelmayr CTEC ski lift applications.

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

Shell Spirax® HD 80W-90 oil is the recommended lubricant for Caterpillar final drives when used within drive bullwheels of Doppelmayr CTEC ski lift applications. An independent lubrications engineer/specialist may assume the responsibility to approve other products.

To avoid compatibility problems, lubricants from various manufacturers should not be mixed. When changing oil types and/or manufacturers, care should be exercised to flush any remaining old product from the component before adding a replacement product.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	05-31-2006	NB-06-010	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	**Thiokol, CTEC, Garaventa CTEC, Doppelmayr CTEC**	**Fab. Group / *Groupe de fabrication :***	**Planetary Gearboxes**
Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**May 31, 2006**

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas

SHELL SPIRAX® HD

Heavy-duty gear oil for automotive differentials and manual transmissions

Product Description

Shell Spirax® HD oils are high performance multigrade extreme-pressure, multipurpose gear lubricants. They are suitable for heavy-duty truck and automotive differentials, manual transmissions and oil lubricated wheel bearings, drive-train gears of heavy-duty automotive, trucking and off-road equipment operated under high-speed/shock load, high-speed/low torque and low-speed/high torque conditions. They meet the requirements of API GL-5 and MIL-PRF-2105E and are available in two SAE viscosity grades: 80W-90 and 85W-140.

Applications

- heavy-duty and conventional differentials in heavy and light duty trucks as well as passenger cars
- conventional manual transmissions calling for API GL-5
- heavy-duty manual transmissions requiring API MT-1 (SAE 80W-90)
- hypoid, spur, bevel, helical, spiral-bevel and worm gears in differentials, transmissions, final drives and steering mechanisms
- industrial gears sets where extreme pressure gear oils are required

Note: cars equipped with limited-slip differentials may require a different lubricant, such as Shell Spirax LS specified by the manufacturer

Features/Benefits

- protects hypoid gears against wear and scuffing
- multi-viscosity for year round use over wide temperature range
- contains a sulfur/phosphorus additive system for excellent load carrying capacity
- contains additives to inhibit oil oxidation and keep lubricated parts clean
- contains inhibitors to protect against corrosion, rust and foaming
- compatible with other automotive gear oils

Approvals and Recommendations

- API Service GL-5 and MT-1
- Mack GO-J, GO-H, GO-G
- MIL-PRF-2105E, SAE J2360
- Meritor Automotive, Inc (formerly Rockwell) O-76-A (SAE 85W-140) and O-76-D (SAE 80W-90)
- Navistar B-22

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	05-31-2006	NB-06-010	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	**Thiokol, CTEC, Garaventa CTEC, Doppelmayr CTEC**	**Fab. Group / *Groupe de fabrication :***	**Planetary Gearboxes**
Lift type / *Type de remontée :*	**Chairlift**		
Supercedes / *Remplace :*	**N/A**	**Effective date / *Date en vigueur :***	**May 31, 2006**

4. Detail of issue / *Details*

Text, drawings, schematics

Textes, dessins, schemas

Typical Properties of Shell Spirax HD

	Test Method	SAE Grade	
		80W-90	85W-140
Product Code		59210	59212
Gravity, °API	D 1298	26.6	24.6
Viscosity:			
@ - 26°C, cP	D 2983	112000[1]	---
@ - 12°C, cP	D 2983	---	67000[1]
@ 40°C, cSt	D 445	145	323
@ 100°C, cSt	D 445	14.7	24.6
Viscosity Index	D 270	100	98
Flash Point, COC, °C (°F)	D 92	224 (435)	222 (432)
Pour Point, °C (°F)	D 97	-30 (-22)	-15 (+5)

1 -- MIL-PRF-2105E and SAE J306 specify that viscosities measured at these temperatures do not exceed 150,000 cP.

HANDLING & SAFETY INFORMATION

For information on the safe handling and use of this product, refer to its Material Safety Data Sheet at http://www.equivashellmsds.com. For more information and availability, call 1+800-782-7852 or visit the World Wide Web: http://www.shell-lubricants.com/.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	**05-31-2006**	**NB-06-011**	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	**CTEC, Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Gearboxes**
Lift type / *Type de remontée :*	**Chairlift with Kissling gearbox or planetary**		
Supercedes / *Remplace :*	**NUMBER OF BULLETIN**	**Effective date / *Date en vigueur :***	**May 31, 2006**

Title / *Titre :* Recommended Oil for Kissling VKE Model Gearboxes on Ski Lift Applications

1. Generalities / *Généralités*

1.1 Abstract of issue (summary) / *Résumé*

Kissling's recommended oil for all VKE-V model right angle and final drive planetary gearboxes can be found on Kissling's *Table of Lubricant Grades.*
(For Caterpillar bullwheel planetaries - see separate Bulletin.)

1.2 Reason for release (summary) / *But*

To provide direction to customers operating Kissling VKE-V model right angle and final drive planetary gearboxes, Kissling requires identification of the gearbox model within their *Lubricants Application Chart* and comparison to Kissling's *Table of Lubricant Grades.*
(For Caterpillar bullwheel planetaries - see separate Bulletin.)

2. Scope / *Objet*

2.1 Generalities / *Généralités*

Authorized lubricants for Kissling VKE-V model right angle and final drive planetary gearboxes are identified from Kissling's *Lubricants Application Chart* and Kissling's *Table of Lubricant Grades.*

2.2 Affected model, type, parts / *Modèle, type, pièces affectées*

Kissling VKE-V model right angle and final drive planetary gearboxes are affected by this information. Additional gearbox models and required lubricants must be identified from Kissling's *Lubricants Application Chart* and Kissling's *Table of Lubricant Grades.*

3. Action to be taken and completion date / *Actions à entreprendre et délais de réalisation*

(Inspection, modification, replacement, NDT, part, manual revision, procedural change)
(Inspection, modification, remplacement, END, révision du manuel, changement de procédure)

Only those lubricants specifically identified within Kissling's *Lubricants Application Chart* (for a particular model gearbox) are recommended for use within the gearbox. Use of specific lubrication products other than those listed on Kissling's *Lubricants Application Chart* must be approved by L. Kissling & Co. AG.

To avoid compatibility problems, lubricants from various manufacturers should not be mixed. When changing oil types and/or manufacturers, care should be exercised to flush any remaining old product from the component before adding a replacement product.

Author *Auteur*	Release date *Date émission*	Doc. no. *No. de doc.*	Doppelmayr CTEC
SLC/GSM	**05-31-2006**	**NB-06-011**	

NOTIFICATION BULLETIN / *BULLETIN D'INFORMATION*

Lift manufacturer / *Fabricant :*	**CTEC, Garaventa CTEC**	**Fab. Group / *Groupe de fabrication :***	**Gearboxes**
Lift type / *Type de remontée :*	**Chairlift with Kissling gearbox or planetary**		
Supercedes / *Remplace :*	**NUMBER OF BULLETIN**	**Effective date / *Date en vigueur :***	**May 31, 2006**

4. Detail of issue / *Details*

Text, drawings, schematics
Textes, dessins, schémas

Please consult the accompanying Kissling *Lubricants Application Chart* and the *Table of Lubricants Grades*.

Schmiermittel-Einsatzplan

Empfehlung für KISSLING-Getriebe

Lubricants Application Chart

Recommendations for KISSLING Gears

Plan d'utilisation des lubrifiants

Lubrifiants recommandés pour les réducteurs KISSLING

Schmiersystem *Lubrication System* Système de lubrification	Getriebebezeichnung	*Gear Type*	Désignation du réducteur	Typenbezeichnung *Gear Model* Type de réducteur	Wellenlage Antrieb *Position of Input Shaft* Position de l'arbre d'entrée	Wellenlage Abtrieb *Position of Output Shaft* Position de l'arbre de sortie	Einsatzgebiet *Area of Application* Domaine d'emploi	Schmiermittel-Position *Lubricant Item* No du lubrifiant	Umgebungstemperaturbereich *Ambient Temperature Range* Températures ambiantes et remarques
Fettschmierung *Grease Lubrication* Lubrification par graisse semi-fluide	Dichtungs-Zusatzschmierstellen	*Gasket Lubrication Points*	Joints à graisser	bei W/WU-Trommelgetrieben *for W/WU Barrel Type Gearmotors* pour engrenage à tambour W/WU	H	H	I	1	-25°C - +50°C im Freien *outdoor* ciel ouvert
	Wälzlager-Zusatzschmierstellen	*Roller-Bearing Lubrication Points*	Roulements à graisser	bei diversen Getrieben nach separater Wartungsvorschrift *for various Gear Types as per special maintenance instructions* pour diff. réducteurs suivant instructions d'entretien spéciales	-	-	I+S	1	-25°C - +50°C
	Schneckengetriebe Trommelgetriebe	*Worm Gears* *Barrel Type Gearmotors*	Réducteurs à vis sans fin Motoréducteurs à tambour	MS / RS / MSV / RSV / RSU / MVS / RVS	H / V	H / V	I	2	-20°C - +50°C im Freien *outdoor* ciel ouvert
	Stirnradgetriebe	*Helical Gears*	Réducteurs à engrenages hélicoïdaux	U / TU / QU / RU / RTU / RQU / AU / RAU / VU / VTU / VQU / RVU / RVTU / RVQU / VAU / RVAU	H / V	H / V	I	2	-20°C - +50°C
Tauchschmierung im Ölbad *Oil Splash Lubrication* Lubrification par immersion dans bain d'huile	Planetengetriebe	*Planetary Gears*	Réducteurs planétaires	P / RP / VP / RVP / VPA / RVPA / VPB / RVPB / RCVPA / RCVPB	H	H	I + S	4	-17°C - +50°C
	Planetengetriebe	*Planetary Gears*	Réducteurs planétaires	P / RP / VP / RVP / VPA / RVPA / VPB / RVPB / RCVPA / RCVPB	V	V	I + S	3	-22°C - +50°C
	Planetengetriebe	*Planetary Gears*	Réducteurs planétaires	P / RP / VP / RVP / VPA / RVPA / VPB / RVPB / RCVPA / RCVPB	H / V	H / V	I + S	7	-39°C - +50°C
	Stirnradgetriebe	*Helical Gears*	Réducteurs à engrenages hélicoïdaux	St / RSt / ER / ES / VSt / RVSt / VER / VES	H	H	I	4	-17°C - +50°C
	Stirnradgetriebe	*Helical Gears*	Réducteurs à engrenages hélicoïdaux	St / RSt / ER / ES / VSt / RVSt / VER / VES	H	H	I	3	-22°C - +50°C
	Stirnradgetriebe	*Helical Gears*	Réducteurs à engrenages hélicoïdaux	St / RSt	V	V	S	5	-25°C - +40°C
	Stirnradgetriebe	*Helical Gears*	Réducteurs à engrenages hélicoïdaux	VSt / RVSt / VER / VES / St / RSt / ER / ES	V	V	I	3	-22°C - +50°C
	Stirnrad-Grossgetriebe	*Heavy-duty Helical Gears*	Réducteurs à roues droites	DR / TR / ZDR	H	H	I + S	6	-16°C - +50°C
	Stirnrad-Schmalgetriebe	*Compact Spur Gears*	Réducteurs compacts à roues droites	D / T / Q / MD / MT / MQ / ZD / ZT / ZQ / ZMD / ZMT / ZMQ	H / V	H / V	I	5	-25°C - +40°C
	Kegelstirnrad-Schmalgetriebe	Compact Spur and Bevel Gears	Réducteurs compacts à roues droites et coniques	KE / KD / KT / MKE / MKD / ZKE / ZKD / ZKT / ZMKE / ZMKD / V-	H - V	H / V	I	5	-25°C - +40°C
	Kegelradgetriebe	*Bevel Gears*	Réducteurs à roues coniques	K / VK / OK	H / V	H / V	I + S	6	-16°C - +50°C
	Kegelstirnrad-Getriebe	*Bevel and Helical Gears*	Réducteurs à roues coniques et hélicoïdales	KS / KDS / ZKS / ZKDS	H	H	I + S	5	-16°C - +50°C
	Vertikal-Kegelstirnrad-Getriebe	*Vertical Bevel and Helical Gears*	Réducteurs à roues coniques et hélicoïdales	VKS / VKDS / VKE-V	H	V	S	5	-16°C - +50°C
	Schneckengetriebe	*Worm Gears*	Réducteurs à vis sans fin	MS / RS / MSV / RSV / RSU / MVS / RVS / ZMS / ZRS	H / V	H / V	I	4	-17°C - +40°C
	Schneckengetriebe	*Worm Gears*	Réducteurs à vis sans fin	MS / RS / MSV / RSV / RSU / MVS / RVS / ZMS / ZRS	H / V	H / V	I	3	-22°C - +40°C
	Stufen-Schaltgetriebe	*Gearboxes*	Boîtes à vitesses	SM / SMD	H	H	I	4	-17°C - +50°C
	Stufen-Schaltgetriebe	*Gearboxes*	Boîtes à vitesses	SM / SMD	H	H	S	5	-25°C - +40°C
	Reibrad-Variatoren	*Variable Speed Gears*	Motovariateurs-réducteurs	MSR / MAR	H	H	I	6	-10°C - +40°C
Tauch-Umlaufschmierung mit Einbaupumpe *Splash and Circulating Lubrication with built-in oil-pump* Lubrification par immersion et circulation, avec pompe incorporée	Stirnradgetriebe	*Helical Gears*	Réducteurs à engrenages hélicoïdaux	St / RSt / VSt / RVSt / VER / VES	H	H	I	4	-17°C - +50°C
	Stirnradgetriebe	*Helical Gears*	Réducteurs à engrenages hélicoïdaux	St / RSt / VSt / RVSt / VDR	V	V	S	5	-25°C - +40°C
	Stirnradgetriebe	*Helical Gears*	Réducteurs a engrenages hélicoïdaux	VSt / RVSt / VDR / St / RSt	V	V	I	3	-22°C - +50°C
	Vertikal-Kegelstirnrad-Getriebe	*Vertical Bevel and Helical Gears*	Réducteurs à roues coniques et hélicoïdales	VKS / VKDS / BKDS	H	V	I + S	6	-16°C - +50°C
	Vertikal-Kegelstirnrad-Getriebe	*Vertical Bevel and Helical Gears*	Réducteurs à roues coniques et hélicoïdales	VKS / VKDS / BKDS	H	V	I + S	5	-25°C - +40°C
	Stufen-Schaltgetriebe	*Gearboxes*	Boîtes à vitesses	SM / SMD	V	V	I + S	5	stets gleiches Öl wie Hauptgetriebe *always same oil as main gear* toujours la même huile que le réducteur principal
Umlaufschmierung mit Motorpumpe *Circulating Lubrication with motor pump* Lubrification par circulation, avec pompe à moteur	Vertikal-Stirnradgetriebe	*Vertical Helical Gears*	Réducteurs à roues hélicoïdales	VER	V	V	I	3	-22°C - +50°C
	Stirnrad-Grossgetriebe	*Heavy-duty Helical Gears*	Réducteurs à engrenages hélicoïdaux	DR / TR	H	H	S	5	-25°C - +40°C
	Stirnrad-Grossgetriebe	*Heavy-duty Helical Gears*	Réducteurs à engrenages hélicoïdaux	DR / TR	H	H	I	6	-16°C - +50°C
	Kegelstirnrad-Getriebe	*Bevel and Helical Gears*	Réducteurs à roues coniques et hélicoïdales	KS / KDS / KDR / KDR... HE / HW	H	H	I	6	-16°C - +50°C
	Kegelstirnrad-Getriebe	*Bevel and Helical Gears*	Réducteurs à roues coniques et hélicoïdales	KS / KDS / KDR / KDR.. HE / HW	H	H	S	5	-25°C - +40°C
	Kegel-Planetengetriebe	*Bevel and Planetary Gears*	Réducteurs à roues coniques et planétaires	KP	H	V	S	5	-25°C - +40°C

Zur Beachtung:
Important:
Attention:

Die Wartungsschilder an den Getrieben sind bezüglich Schmiermitteiqualität und Schmierfristen zu beachten.
Man verlange die spezifischen Montage-, Betriebs- und Wartungsvorschriften.
The maintenance plates on the gears must be observed with respect to grade of lubricant and lubricating schedule.
Ask for the specific assembly, operating and servicing instructions.
Respectez les indications sur les plaquettes d'entretien.
Exigez les prescriptions spécifiques de montage, de service et d'entretien.

Legende: / *Key:* / **Légende:**

a) **Wellenlage** / ***Position of shaft*** / **Position de l'arbre:**
H = horizontal / *horizontal* / horizontale
V = vertikal / *vertical* / verticale
H/V = horizontal od.vertikal / *horizontal or vertical* / horizontale ou verticale

b) **Einsatzgebiet** / ***Area of application*** / **Domaine d'emploi:**
I = Industrieantriebe / *Industrial drives* / Entraînements industriels
S = Seilbahn- und Skiliftantriebe / *Cableway and lift drives* / Entraînements pour téléphériques, télésièges et téléskis

KISSLING

L. KISSLING & CO. AG MASCHINENFABRIK GEAR WORKS FABRIQUE DE MACHINES SCHÄRENMOOSSTRASSE 76 CH-8052 ZÜRICH
TEL. 01/301 24 00 FAX 01/ 301 39 84 [redacted]

KISSLING

KSAG 6/90

Schmiermittel-Qualitätsübersicht

Empfehlung für KISSLING-Getriebe

Table of Lubricant Grades

Recommendations for KISSLING Gears

Tableau des qualités de lubrifiants

Recommandés pour réducteurs KISSLING

Pos. / *Item* / Pos.	Schmiermittelbenennung Viskosität in Centistokes (cSt) / *Designation of Lubricants Viscosity in Centistokes (cSt)* / Dénomination du lubrifiant Viscosité en centistokes (cSt)	Temperaturbereich in °C / *Temperature range in °C* / Plage de températures en °C	BP	Agip	ARAL	ASEOL	Esso	Mobil	MOTOREX	PANOLIN GARANTOL	Shell	VALVOLINE	wintershall
1	Mehrzweckfett für Wälzlager *Multipurpose Ball-Bearing Grease* Graisse à roulements universale	-25°/+120°	ENERGREASE LS-EP2	GR N U/EP 2	ARAL ARALUB *HLP2*	LITEA EP 6-077	BEACON EP2	MOBILUX EP2	UNIVERSAL MOTOREX 190 EP	EP GREASE LX2	ALVANIA GREASE R2	MULTILUBE EP-2	WINTERSHALL WIOLUB LFP2
2	Getriebefett *Transmission Grease* Graisse à engrenages	-15°/+100°	ENERGREASE HT-EP00	GR S LL	ARAL ARALUB FDP00	LITEA 6-109	FIBRAX EP370	MOBILPLEX 44	MOTOREX 174	EP GREASE LT00	GREASE S3655	ALUBA EP-00	WINTERSHALL WIOLUB GFW
3	Getriebeöl 135-165 cSt bei 40 °C *Gear Oil 135 to 165 cSt at 40 °C* Huile à engrenages 135-165 cSt à 40 °C ISO-VG 150	-22°/+100°	ENERGOL GR-XP150	BLAS IA 150	ARAL DEGOL BG150	MIPRESS 11-111 VG150 *TOPRESS* 11-308 VG100	SPARTAN EP150	MOBILGEAR 629 MOBIL SHC 629	GEAR COMPOUND BF150	MECANO ISO150	OMALA OIL150 MACOMA OIL R150	EPG150	WINTERSHALL ERSOLAN 150
4	Getriebeöl 198-242 cSt bei 40 °C *Gear Oil 198 to 242 cSt at 40 °C* Huile à engrenages 198-242 cSt à 40 °C ISO-VG 220	-17°/+100°	ENERGOL GR-XP220	BLAS IA 220	ARAL DEGOL BMB220 ARAL DEGOL BG220	MIPRESS 11-318 VG220 TOPRESS 11-118 VG220	SPARTAN EP220	MOBILGEAR 630 MOBIL SHC 630	GEAR COMPOUND BF220	MECANO ISO220	OMALA OIL220 MACOMA OIL R220	EPG 220	WINTERSHALL ERSOLAN 220
5	Hypoid-Getriebeöl 80-100 cSt bei 40 °C *Hypogear Oil 80 to 100 cSt at 40 °C* Huile à engrenages 80-100 cSt à 40 °C	-25°/+120°	HYPOGEAR EP80	ROTI A HY/C 3	ARAL GETRIEBEÖL HYP 80 W	TOPRESS 11-108 VG100	ESSO GEAR OIL GX 80 W	MOBILUBE *GX 80 W-A* MOBILUBE SHC	GEAR OIL *UNIVERSAL* SAE 80 W	SUPER DUTY *GL-5 SAE 80 W*	SPIRAX *HD 80 W*	VALVOGEAR *EP 80*	*WINTERSHALL* WIOLIN HYPOID-GETRIEBEÖL SAE 80 W-85
6	Hypoid-Getriebeöl 170-210 cSt bei 40 °C *Hypogear Oil 170 to 210 cSt at 40 °C* Huile à engrenages 170-210 cSt à 40 °C	-16°/+130°	HYPOGEAR EP90	ROTI A MP/C 3	ARAL GETRIEBEÖL HYP 85-W 90	TOPRESS 11-118 VG220	ESSO GEAR OIL GX-D 85 W-90	MOBILUBE GX 85 W-90-A HD 80 W-90 MOBILUBE SHC	GEAR OIL UNIVERSAL SAE 90	SUPER DUTY GL-5 SAE 90	SPIRAX HD 90	VALVOGEAR EP90	WINTERSHALL WIOLIN HYPOID-GETRIEBEÖL SAE 85 W-90
7	*Getriebeöl 25-40 cSt bei 40 °C* *Gear Oil 25 to 40 cSt at 40 °C* Huile à engrenages 25-40 cSt à 40 °C	-40°/+130°	AUTRAN DX II	ATF DEXR ON	ARAL GETRIEBEÖL ATF 22 ARAL GETRIEBEÖL SGF 84	HYDROVERT 16-711	ESSO ATF DEXRON II (D-21065)	ATF 220 MOBIL SHC 626	ATF DEXRON II ATF SUPER	ATF DEXRON II ATF DEXRON MULTI	DONAX TM	ATF Typ A DEXRON B	WINTERSHALL WIOLIN ATF 2543 A WINTERSHALL ATF DEXRON
8	Reibrad-Variatoren-Öl *Oil for Variable Speed Gears* Huile pour variateurs à éléments roulants	-25 °C/+150°	SANTOTRAC 50	Vorschrift des Herstellers *Prescription of producer* Prescription du producteur	ARTER REGELGETRIEBE AG, CH-8708 MÄNNEDORF								

Diese Empfehlungen basieren auf Angaben oben erwannter Schmiermittelproduzenten, wir übernehmen keine Gewähr für die Eignung der empfohlenen Schmiermittel.
Getriebeöle auf Mineralölbasis sollten thermisch nicht höher als 100 °C belastet werden, da bei höheren Temperaturen die Alterungsbeständigkeit eines Oles verringert wird; d. h. die Ölwechselintervalle verkürzt werden müssen.

These lubricants are recommended by the above mentioned lubricant manufacturers. We cannot take any responsability for the quality and suitability.
Mineral lubricating oils are applicable for temperature up to 100 °C only. Higher temperature promotes deteriorating of oil; viz. the intervals of oil change have to be shortened.

Ces recommandations sont basées sur les renseignements fournis par les fabricants de lubrifiants indiqués; nous déclinons toute responsabilité quant à la qualité des lubrifiants indiqués ci-dessus.
Les huiles pour engrenages à base d'huiles minérales ne doivent pas être soumises à des températures dépassant 100 °C car la resistance au vieillissement d'une huile diminue à ces températures; c'est-a-dire qu'il faut remplacer l'huile plus souvent.

Die neuen Viskositätsklassen
Die neue ISO-Viskositätsklassifikation definiert 18 Viskositätsklassen im Bereich von 2 bis 1500 mm²/s cSt) bei 40 °C. Sie lauten ISO-VG (Viscosity Grade) 2, 3, 5, 7, 10, 15, 22, 32, 46, 68, 100, 150, 220, 320, 460, 680, 1000 und 1500. Der Zahlenwert stellt die Mittelpunktsviskosität dar. Die zulässigen Grenzen sind ±10%. Die ISO-Klassifikation enthält keine Qualitätsbewertung, sondern liefert nur eine Aussage über die kinematische Viskosität einer Temperatur von 40 °C

The new viscosity classes
The new viscosity classification defines 18 viscosity classes in the range of 2 to 1500 mm²/s (cSt) at 40 °C. They read ISO-VG (Viscosity Grade) 2, 3, 5, 7, 10, 15, 22, 32, 46, 68, 100, 150, 220, 320, 460, 680, 1000 and 500. These values represent the average viscosity. The admissible tolerance is ±10%. The ISO classification contains no quality valuation, it solely informs about the kinematic viscosity at a temperature of 40 °C.

Nouvelles classes de viscosité
La nouvelle classification ISO définit 18 classes de viscosités dans l'échelle de 2 à 1500 mm²/s (cSt) à 40 °C. Celles-ci sont appelées ISO-VG (viscosity grade) 2, 3, 5, 7, 10, 15, 22, 32, 46, 68, 100, 150, 220, 320, 460, 680, 1000 et 1500. Ces valeurs représentent la viscosité moyenne. Les tolérances acceptables sont de l'ordre de ±10%. La classification ISO ne tient pas compte de la qualité et ne renseigne que sur la viscosité cinématique à la température de 40 °C.

Viskositätsklasse / *Viscosity class* / Classe de viscosité / ISO	Mittelpunkts-Viskosität bei 40 °C / *Average viscosity at 40 °C* / Viscosités moyennes à 40 °C / mm²/s (cSt)	Grenzen der kinematischen Viskosität bei 40 °C / *Limits of kinematic at 40 °C* / Limites des viscosités cinématiques à 40 °C / mm²/s (cSt)	
		minimal	maximal
ISO-VG 100	100	90	110
ISO-VG 150	150	135	165
ISO-VG 220	220	198	242
ISO-VG 320	320	288	352

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SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	Doppelmayr	Fab. Group / *Groupe de fabrication :*	220
Lift type / *Type de remontée :*	4CLF / 4CLD		
Supersedes / *Remplace :*	SA-06-005	Effective date / *Date en vigueur :*	2006-07-21

Title / *Titre :* **DOPPELMAYR QUAD CHAIRS MODEL E/EC – CHAIR BAIL**

1. General

This past ski season, a transverse crack was found in a chair bail tube on a 1998 Doppelmayr quad chair model E/EC in **Area C** (see sketch page 6). Safety Alert Bulletin **SA-06-005** was issued on March 13, 2006 and required that all operators of Doppelmayr model E/EC quad chairs perform a visual inspection. As a result of this inspection, two other operators discovered a crack on model E/EC quad chairs (two chairs placed in service in 1994 and four chairs placed in service in 1996). With over 12,000 model E/EC quad chairs in service in North America, the rate of occurrence of cracks is less than 1 in 1,000 chairs.

Crack propagation rates are gradual

To confirm the slow progression of the cracks, we have performed fatigue testing on chairs with existing cracks using actual loads that were measured on lifts in service. This fatigue testing revealed that the cracks propagate at a gradual rate and the recommended visual inspections of the critical areas will identify the existence of a crack well before the crack has reached a critical length where failure of the bail tube is imminent.

The causes of the cracking have been identified.

- **Area C** (see sketch page 6) is subjected to fatigue phenomena. Irregularities in the shape or in the integrity of the weld at the end of the gusset may become a site for the initiation of a crack which will progress very slowly with each cycle.

- We have found instances where the spacing between the seat back attachment mounting holes on the chair bail was too narrow (see sketch page 6). When the seat back is installed, the bail tube must be spread. The additional stress induced during installation of the backrest in a narrow chair bail may put Area C under tension. The additional stress may accelerate the formation and propagation of a crack.

2. Scope / *Objet*

All quad chair bails, E/EC models, (see sketch page 6) are concerned

3. Action to be taken and completion date

The following actions are to be completed prior to the start of the upcoming ski season. For lifts presently in service, these actions shall be completed within **60** days of the effective date of this bulletin.

3.1 Determine if chair bail is deformed

Each chair shall be examined to determine if the chair bail is deformed. When some bails were manufactured, variations in bending resulted in dimensional variations. On some chairs, the spacing between the mounting holes for the seat back is too narrow by up to 25mm (1"). When the seat back is installed, the bail must be spread to accommodate the seat back inducing higher stresses in the location where the cracks have formed.

In cases where the chair bail is deformed, the angle that supports the front of the seat is also deformed. By placing a straight edge or a string on the front surface of this angle and measuring the camber, it is possible to determine if the bail is deformed (see sketch page 6). The maximum allowable camber is **5mm (3/16")**. If the camber exceeds **5mm (3/16")**, the chair bail is considered to be "**deformed**" and subject to different inspection, rejection and corrective action criteria. If the camber is less than or equal to **5mm (3/16")**, the chair bail is considered to be "**conforming**".

3.1.1 Chairs with "conforming" bails:

These chairs shall be subject to a thorough annual visual inspection of **Area C**. The visual inspection shall be performed with good lighting and with a magnifying glass by an experienced technician. The area to be inspected shall be cleaned prior to inspection to remove any dirt or grease that may tend to hide the existence of a crack. If any indication is observed in **Area C**, the indication shall be tested using magnetic particle inspection as described in **section 5**. If magnetic particle inspection confirms the existence of a crack, and if the crack has propagated into the base metal of the chair bail tube (away from the weld), the chair bail shall be removed from service – no repairs are allowed. If the indication is confined to the region of the weld and has not propagated into the base metal of the tube, the chair may stay in service with the following conditions: Each chair with an observed indication shall be subject to continuing annual magnetic particle inspection. If during any annual magnetic particle inspection, the indication has propagated into the base metal of the chair bail tube, the chair bail shall be removed from service – no repairs are allowed.

The visual inspection shall be repeated each year. Annual magnetic particle inspections shall be performed on each chair where an indication was observed while performing the visual inspection.

All inspections must be documented in a permanent log.

3.1.2 Chairs with "deformed" bails:

Fatigue testing has shown that the rate of propagation of cracks with a deformed bail is faster than with a conforming bail.

Remove the seat back and measure the distance between the mounting holes (see sketch page 6). If one of the distances **A** or **B** is less than **2002 mm** (center of hole to center of hole), the chair bail is considered "deformed". If the distance is greater than or equal to **2002 mm**, the chair bail is considered to be "conforming" and is subject to the same inspection and rejection criteria as a conforming bail (see 3.1.1 above).

If the bail is "deformed", the operator has two choices:

1) Replace the seat back with a specially designed seat back that is narrower to relieve the stresses in the critical area that result from spreading of the bail. Once this is done, the chairs may be classified as "conforming" and subject to the same inspection and rejection criteria as a "conforming" bail (see 3.1.1 above).

- or -

2) Perform 100% magnetic particle inspection in Area C (as per **section 5)** on all chairs with "deformed" bails (see sketch page 6. If any indication is found in the base metal of the chair bail tube (away from the weld), this chair bail shall be removed from service – no repairs are allowed. The magnetic particle inspections shall be performed each year or until the seat back is replaced with a narrow seat back, thereby allowing the bail to be classified as "conforming" and subject to the same criteria as a conforming bail.

All inspections must be documented in a permanent log.

3.2 Chair bail replacement.

Doppelmayr CTEC will provide a discount from the normal selling price for bails less than 10 years old according to the following schedule based on the in-service date (initial public operation):

Less than 2 years old	Free replacement
2-5 years old	$427.65 each (50% discount)
5-10 years old	$598.71 each (30% discount)
Greater than 10 years old	$855.30 each

The ID number for a replacement bail is 50014749. The prices above are valid only for orders received prior to **October 1, 2006.**

The above discount will only apply to bails that have an indication that has propagated in the base metal of the chair bail tube (away from the weld).

Based on the results of the inspections that were performed after the SA-06-005 issued in March, we do not expect many bails to require immediate replacement. Please complete the inspections as soon as possible to assure timely delivery of replacement bails. If an order for a replacement bail is received by us on or **before August 15**, we will endeavour to provide a replacement bail on or before November 15. All orders will be shipped on a first-come-first-served basis.

3.3 Seat back replacement with narrow seat back

Doppelmayr CTEC will provide a discount from the normal selling price for all narrow seat backs ordered to replace existing seat backs on chairs with deformed bails according to the following schedule based on the in-service date (initial public operation):

Less than 2 years old	Free replacement
Greater than 2 years old	$108.64 each (50 % discount)

The ID number for the special narrow seat back kit (including mounting hardware and spacers for proper mounting of the restraint bar and without Icolan pad) is 50016887.

The above discount will only apply to the special narrow seat back that is designed to mount on a chair bail that is too narrow. This is a **one-time discount** and only applies to seat backs that are **ordered prior to October 1, 2006.**

Please complete the inspections as soon as possible to assure timely delivery of replacement seat backs. If an order for a replacement seat back is received by us on or **before August 15**, we will endeavour to provide a replacement seat back on or before November 15. All orders will be shipped on a first-come-first-served basis.

4. Preventive measures

Less than one in one thousand chair bails have been identified with cracks. While more indications may develop over time (especially in the case of the deformed bails); we do not expect to see a significant increase. However, once a crack has propagated into the base metal of the chair bail tube, the bail will eventually have to be removed from service as the crack will continue to propagate (it could take several years (2-5) for a 10mm crack to propagate to the point where the bail must be removed from service). In addition, once a crack has propagated into the base metal of the bail tube, **we do not authorize the repair of the bail tube** as it will most likely cause higher stresses and stress concentrations thereby reducing the integrity of the bail tube.

The cracks initiate at the location of the weld. If a small indication is found in the weld, and if appropriate repairs are made, it may be possible to prevent the indication from ever propagating into the base metal of the chair bail tube thereby extending the life of the bail. Detailed examination of welds on several lifts in service using magnetic particle inspection reveal that minor indications within the weld itself may exist, yet very few have propagated into the base metal of the bail tube. Therefore, we feel it is a costly and unnecessary action to repair all weld irregularities if only a small percentage will eventually propagate into the base metal of the bail tube.

However, more data from the field may indicate a different course of action in the future and we request that all operators submit their findings from the inspections outlined in this bulletin as follows:

Lift data (for each lift)

1. Name of lift
2. Year of installation
3. Total hours on installation
4. Total number of chairs on installation

For each chair with indications:

5. Chair number
6. Total length of indication (confirmed with magnetic particle inspection)
7. Was indication discovered using visual or magnetic particle inspection?
8. Was indication confined to the weld or has it propagated into the base metal of the chair bail tube?
9. Was bail conforming (yes or no)?
10. If bail was not "conforming" what was the center-to-center distance between the seat back mounting holes?

5. Magnetic Particle Testing Inspection Procedure

5.1 General

In addition to our standard NDT procedure for chairs (**PSFB0107**), the followings shall be respected;

- The **AC Wet Continuous** Magnetic Particle method is mandatory.
- The portable yoke poles' spacing is between **4 and 6 inches**.
- The duration of magnetization shall be longer than **4 seconds**.

Proof of Magnetization

Magnetization must be proven regularly prior to testing and at the latest after its completion (at least once a day) by one of the following methods. In the event that a check shows inadequate magnetization, all tests performed prior to the last check are invalid and must be repeated.

a) by measuring the tangential field strength as closely as possible to the surface on the basis of the Hall effect (the field strength must be between **2 kA/m (= 20 A/cm) and 6 kA/m (= 60 A/cm);**

b) by using a test object that shows small natural or artificial irregularities in the least favourable zones;

c) by using a "Magnetic Particle Field Indicator" (Pie –field indicator).

Notes: In case of doubt during the examination, the Zinc coating must be removed. A smooth sanding to investigate an indication is permitted as long as the finish surface has no grinding marks and no significant base material is removed (less than 0.2 mm or 0.01").

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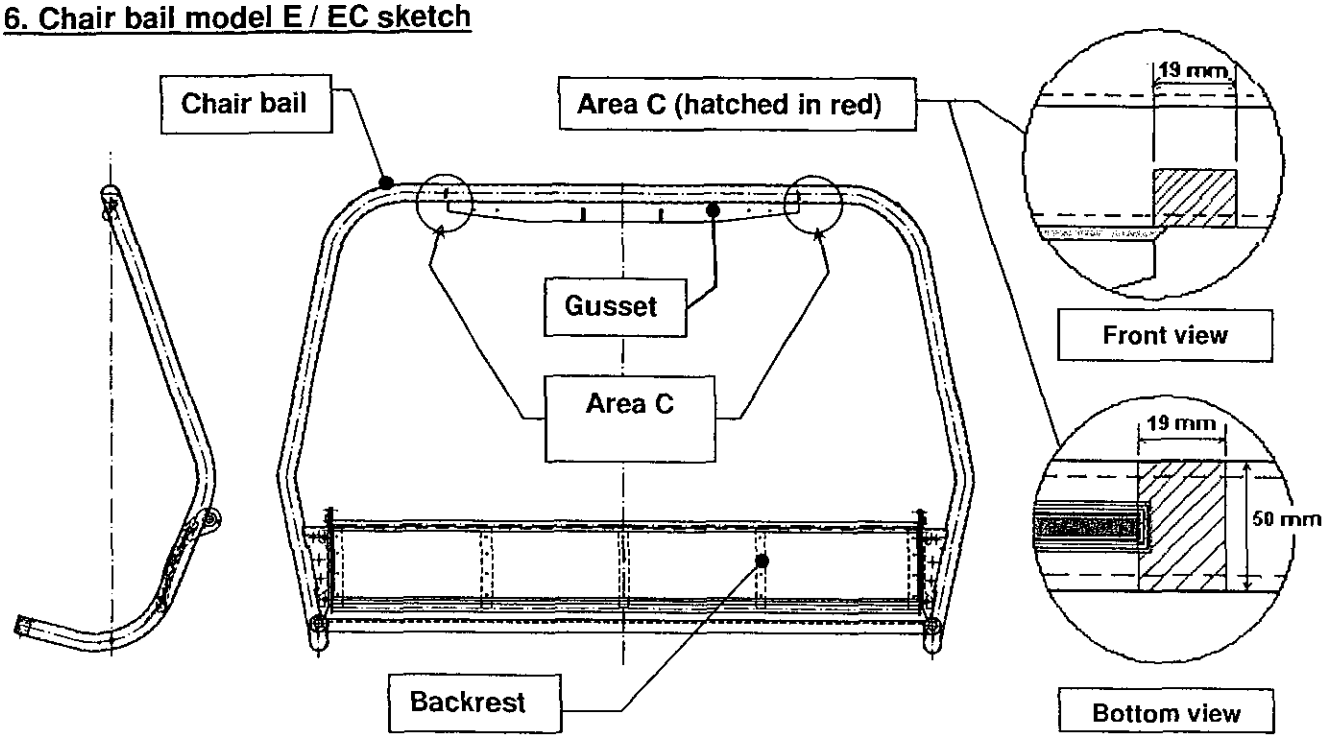
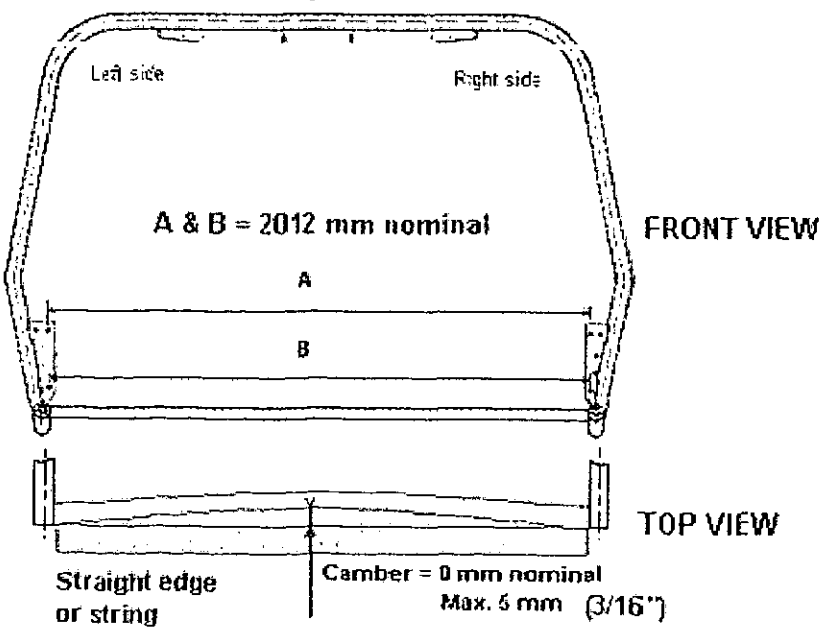
SERVICE BULLETIN / *BULLETIN DE SERVICE*

Lift manufacturer / *Fabricant :*	Doppelmayr	Fab. Group / *Groupe de fabrication :*	220
Lift type / *Type de remontée :*	4CLF / 4CLD		
Supersedes / *Remplace :*	SA-06-005	Effective date / *Date en vigueur :*	2006-07-21

6. Chair bail model E / EC sketch





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SERVICE BULLETIN / *BULLETIN DE SERVICE*

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Title: DOPPELMAYR QUAD CHAIRS MODEL E/EC – CHAIR BAIL

1. General

Following the bulletins **SA-06-005** and **SB-06-015** concerning the transverse cracks found in **Area C** of chair bails tubes of Doppelmayr quad chairs model E/EC (see **sketch page 3**), please find our final statement.

2. Scope

All quad chair bails, E/EC models, (see **sketch page 3**) ***manufactured until 2006*** *are concerned.*
Please note that **E95 & E98** chair bails provided by Doppelmayr Austria, and **without** a welded gusset, are not concerned.

3. Action to be taken and completion date

The following actions are to be completed prior to **November 2007**. For lifts in operation during this period, these actions shall be completed within **90** days of the effective date of this bulletin. **All inspections and results must be documented in a permanent log.**

3.1 Fixed grip chair lifts

Every Year : Perform a magnetic particle examination in **area C** as per **section 4**, of **20 %** of the chair bails, with a minimum of 10 bails.
If one bail or more of the sample does not meet the acceptance criteria mentioned in **section 4**, perform a magnetic particle examination in **area C** on **100 %** of the bails of the ropeway.

Every Year : All bails shall have a **thorough visual inspection in area C** by an experienced technician. If a defect is suspected, perform a magnetic particle examination to determine whether the bail is acceptable or not as per **section 4**.

3.2 Detachable grip chair lifts

All bails considered as **"conforming"** regarding the bail width (see **page 3**) shall be treated the same way as for a fixed grip chair lift.

All bails considered as **"deformed"** regarding the bail width (see **page 3**) shall be treated as follows;

- **Every year**, perform the magnetic particle examination in **area C** of **100 % of the "deformed" chair bails** as per **section 4.**
- **When performing periodic visual inspections, pay special attention to the area C of the chair bails.**

4. Inspection Procedure and Acceptance Criteria

4.1 Visual Inspection Procedure

The area to be inspected must be free of dirt, grease or other contaminant. Adequate lighting of all surfaces to be inspected must be provided. A magnifier (3 X and more) may be used.

4.2 Magnetic Particle Testing Inspection Procedure

In addition to our standard NDT procedure for chairs (**PSFB0107**), the followings shall be respected;

- The **AC Wet Continuous** (Fluorescent or Non fluorescent) Magnetic Particle method is mandatory.
- The portable yoke poles' spacing is between **4 and 6 inches**.
- The duration of magnetization shall be longer than **4 seconds**.

Proof of Magnetization

Magnetization must be proven regularly prior to testing and at the latest after its completion (at least once a day) by one of the following methods:

a) by measuring the tangential magnetic field strength as closely as possible to the surface of the specimen being tested. Field strength must be between **2 kA/m and 6 kA/m;**

b) by using a "Magnetic Particle Field Indicator" (Pie gauge field indicator).

Notes: In case of doubt during the examination, the zinc coating must be removed. A smooth sanding to investigate an indication is permitted as long as the finish surface has no grinding marks and no significant base material is removed (less than 0.2 mm or 0.01").

4.3 Acceptance Criteria

For Visual Examination :

Any linear indication in the transverse direction of the main axis of the bail tube shall be investigated with a magnetic particle examination.

For Magnetic Particle Examination :

Any crack, regardless of the length, which has propagated into the base metal of the chair bail tube **and away from the weld**, is a cause for rejection. The chair bail shall be removed from service – no repair allowed.
If the indication is confined in the weld seam and has not propagated into the base metal of the tube, the chair may stay in service

All inspections and results must be documented in a permanent log.

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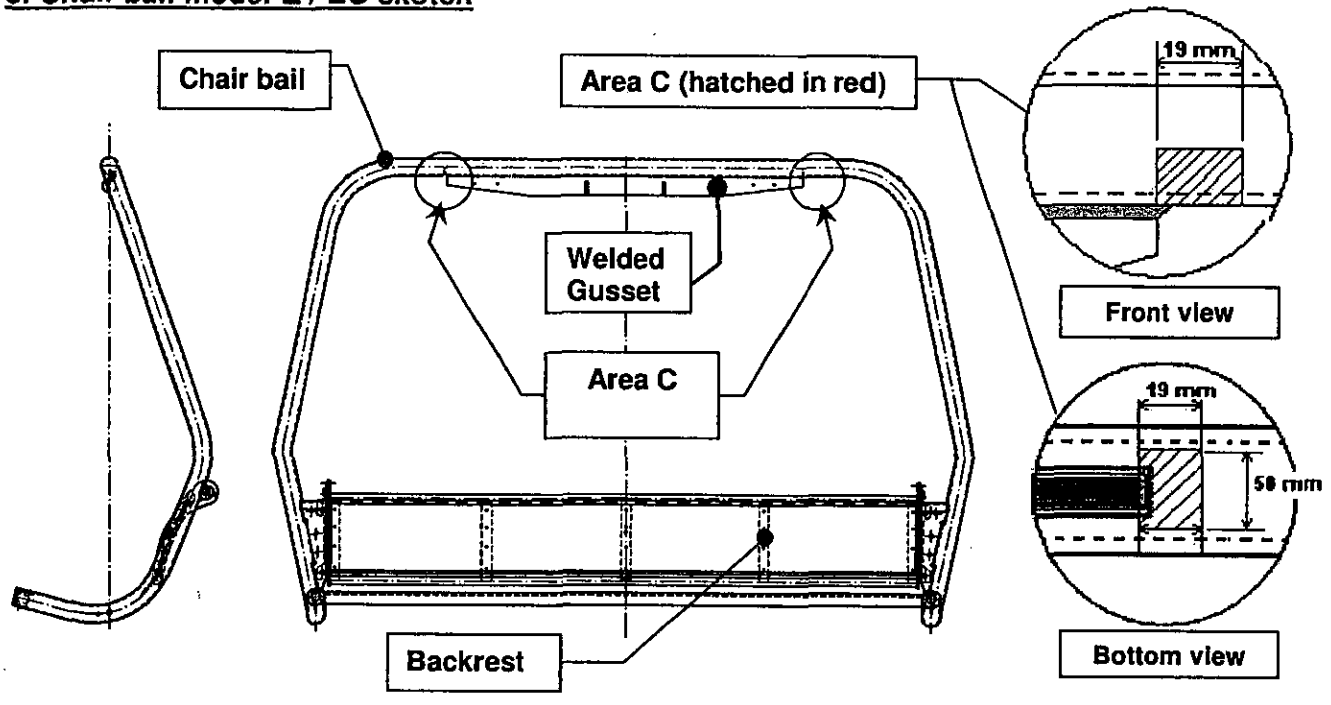
MB/FC	03-30-2007	SB-07-005	

SERVICE BULLETIN / *BULLETIN DE SERVICE*

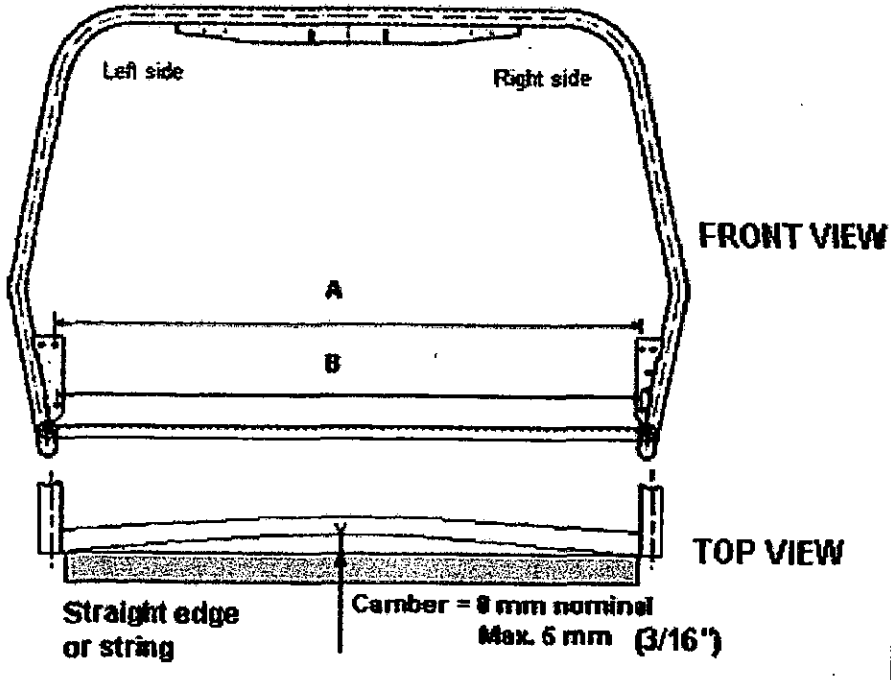
Lift manufacturer / *Fabricant :* Doppelmayr	Fab. Group / *Groupe de fabrication :* 220
Lift type / *Type de remontée :* 4CLF / 4CLD	
Supersedes / *Remplace :* SB-06-015	Effective date / *Date en vigueur :* 03-30-2007

5. Chair bail model E / EC sketch



To determine if the chair bail is deformed :

- Measure the camber of the angle bar in the front. If the camber is less than or equal to **5 mm (3/16")** the chair bail is considered to be **"conforming"**
- If the camber exceeds **5 mm (3/16")** remove the seat back and measure the dimensions **A and B.**
- If dimensions **A or B** are **less than 2002 mm**, the bail is considered as **"deformed"**
- If dimensions **A or B** are **equal or greater** than **2002 mm**, the bail is considered as **"conforming".**



6. Chair bail replacement.

For people who need to replace a bail, Doppelmayr CTEC will provide a discount from the normal selling price for bails less than 10 years old according to the following schedule based on the in-service date (initial public operation) and Mars 2006:

Less than 2 years old	Free replacement
2-5 years old	$427.65 USD/ ea (50% discount)
5-10 years old	$598.71 USD/ ea (30% discount)
Greater than 10 years old	$855.30 USD/ ea (100 and more $770.00 USD / ea)

The ID number for an upgraded replacement bail kit is **50017477 (Kit includes the bail and the new 19 mm seat pins and hardware).** The prices above are valid for a period of 30 days. After this period, Doppelmayr CTEC can modify these prices without further notice.

The above discount will only apply to bails that have an indication that has propagated in the base metal of the chair bail tube (away from the weld).

Based on the results of the previous inspections that were performed in 2006, **it is not expected that a significant quantity of bails will require** replacement. Please complete the inspections as soon as possible to assure timely delivery of replacement bails. All orders will be shipped on a first-come-first-served basis.

Note : *Due to the high number of safety bars configurations and some width limitations for the proper installation of the seats, the possibility for a retrofit of the backrest* ***with*** *a narrower one is no* ***longer*** *an option offered.*

Doppelmayr CTEC

Customer service