

**THIS FOLDER WAS CHECKED BY
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21.3.03

**The checking process was to ensure that 3 identical
sets of each Volume of the Operating and
Maintenance Manuals existed**

**5-7 CARLTON GARDENS
LONDON SW1**

**OPERATING & MAINTENANCE
INSTRUCTIONS
for the
LIFT INSTALLATIONS**

**VOLUME 4
4.4 Lift Number 4**

*Collated By :
Commissioning Management Ltd
5, St Peters Court
Colchester
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Building Services Operating & Maintenance Instructions

5-7 Carlton Gardens, London SW1

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Building Services Operating & Maintenance Instructions
5-7 Carlton Gardens London SW1

Register of Book Nos.

Book No.	Lift ID No.	Lift No.
1 of 7	69654/01	Passenger Lift L1
2 of 7	69654/02	Passenger Lift L2
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7 of 7	69654/07-08	Vehicle Lifts L7 L8



THYSSEN AUFZUGSWERKE GMBH

• Operating Manual

Lifts

Date of issue: 02/1999

Operating Manual Lifts
english
60 000 02 86 0

Acknowledgement of operating manual

1

Note concerning copyright and propriety rights

Declaration of conformity (CE)

Data sheet

2

Logbook

Operating instructions

3

Rescue of passengers

4

Maintenance instructions

5

List of safety components

6

Maintenance instructions for safety components

7

General drawing

8

Schematic diagrams

9

Annexes: Notes for the use of the lift (notice)

10

Rescue of passengers and operating instructions ...

Emergency unlocking key



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Acknowledgement of Operating Manual

Installer THYSSEN LIFTS & ESCALATORS LTD

Telephone Number 0181 894 0055

Installation / Identification:

Factory No. 29 98 98 122

Manufacturer Thyssen Aufzüge GmbH
Postfach 23 03 70
70623 Stuttgart

Country Deutschland

Installation Location 5/7 CARLTON GARDENS
LONDON SW1Y 5AD

Country UK

Date of Handover 12/07/99

Customer:

Name Customer BENCHMARK CAPITAL LIMITED

Country UK

I confirm herewith the receipt of Customer Documentation consisting of:

- Declaration of conformity (CE)
- Data sheet
- Logbook
- Operating instructions
- Instructions for rescue of passengers
- Maintenance manual
- List of safety components
- Maintenance instructions
- General drawing
- Schematic diagrams
- Annexes

If the ownership of the building changes, the Customer Documentation has to be passed on.

Place / Date

Signature Owner

Signature Installer



Acknowledgement of Operating Manual

Installer

Telephone Number

Installation / Identification:

Factory No. **29 98 98 122**

Manufacturer **Thyssen Aufzüge GmbH**
Postfach 23 03 70
70623 Stuttgart

Country **Deutschland**

Installation Location

Country

Date of Handover

Customer:

Name Customer

Country

I confirm herewith the receipt of Customer Documentation consisting of:

- Declaration of conformity (CE)
- Data sheet
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- Maintenance instructions
- General drawing
- Schematic diagrams
- Annexes

If the ownership of the building changes, the Customer Documentation has to be passed on.

Place / Date

Signature Owner

Signature Installer



Set values

Order Data

Date 20.04.1999
Factory No. 29 98 98 122
Job name CARLTON GARDENS, TEL
Prepared by Wünsche
Modular lift type SU51A00

Counterweight compensation

In this lift there will be 50 % of the rated load $Q' = 630$ kg compensated by the counterweight.
The verification of the correct weight of the counterweight is done with a load of 315 kg in the car (so-called semi-load compensation).
In order to eliminate the influence of the suspension ropes, the car and the counterweight have to be positioned at the same shaft level.

Rated load	= 630	kg
Balance factor of rated load	= 50	%
Test load in car	= 315	kg

Adjustable Speed of the Motor

Controlled motorspeed	= 1343	1/min
-----------------------------	--------	-------

Max. Acceleration

Acceleration	= 0.5	m/s^2
--------------------	-------	---------

Order Data

Date 20.04.1999
 Factory No. 29 98 98 122
 Job name CARLTON GARDENS, TEL
 Prepared by Wünsche
 Modular lift type SU51A00
 Suspension 2:1

Technical Data

Rated load Q = 630 kg
 Maximum car weight Pmax = 1625 kg
 Minimum car weight Pmin = 1480 kg
 Operating speed vn = 1 m/s
 Travel height H = 30.995 m
 Travelling cable weight per meter STrav = 1.5 kg/m
 Additional load for loading Qadd = 0 kg
 Maximum counterweight ($P_{max} + 0.5 * Q + M_{Trav}/2$) Mcwtmax = 1952 kg
 Minimum counterweight ($P_{min} + 0.5 * Q + M_{Trav}/2$) Mcwtmin = 1807 kg

Rope Data

Number of ropes ns = 5
 Rope construction Drako 250T
 Diameter of ropes dr = 8 mm
 Minimum breaking load per rope BKmin = 37200 N
 Number compensating ropes/chains nc = 0
 Tensioning weight Mcomp = 0 kg

Traction Sheave Data

Diameter of traction sheave Dt = 640 mm
 Angle of wrap α = 195 °
 Angle of the undercut of bearing groove β = 70 °
 Hardened grooves = Yes

Pulley Data**Rope pulleys in general**

Number of pulleys Np = 7
 Average diameter of rope pulleys Dp = 360 mm

Rope pulleys between traction sheave and car side

Number of diverter pulleys with simple bends NPDScar = 1
 Number of diverter pulleys with reversed bends NPDRcar = 1
 Additional pulley on car for 2:1 or 3:1 suspension NP21car = 1
 Reduced mass moment of inertia of reeving pulleys mPcar = 15.43 kgm²/m²
 Reduced mass moment of inertia of diverter pulleys mPDcar = 15.43 kgm²/m²
 Reduced mass moment of inertia of counter pulley mPDWcar = 0 kgm²/m²

Rope pulleys between traction sheave and counterweight side

Number of diverter pulleys with simple bends NPDScwt = 3
 Number of diverter pulleys with reversed bends NPDRcwt = 0
 Additional pulley on car for 2:1 or 3:1 suspension NP21cwt = 0
 Reduced mass moment of inertia of reeving pulleys mPcwt = 15.43 kgm²/m²
 Reduced mass moment of inertia of diverter pulleys mPDcwt = 15.43 kgm²/m²
 Reduced mass moment of inertia of counter pulley mPDWcwt = 0 kgm²/m²

Order Data

Date 20.04.1999
 Factory No. 29 98 98 122
 Job name CARLTON GARDENS, TEL
 Prepared by Wünsche
 Modular lift type SU51A00
 Suspension 2:1

Proof Rope Traction

Car loading condition

Required traction $T_1/T_2 = 1.3211$
 Actual traction $e^{f\alpha} = 1.7899$

Emergency braking condition

Required traction $T_1/T_2 = 1.4689$
 Actual traction $e^{f\alpha} = 1.6244$

Car stalled condition

Admissible traction $T_1/T_2 = 100$
 Actual traction $e^{f\alpha} = 3.2037$

Proof Rope Safety

Equivalent number of pulleys $N_{equiv} = 102$
 Actual rope safety $S_{ist} = 16.21$

Minimum rope safety $SF_{min} = 12$

Limit value rope lifetime $SF = 15.04$

Minimum Diameter of Pulley

Minimum diameter of pulley $D_{min} = 320$

mm

Diameter of traction sheave $D_t = 640$

mm

Diameter of smallest pulley $D_{pmin} = 360$

mm



Declaration of conformity (CE)

Installer THYSSEN LIFTS & ESCALATORS LTD

Product Passenger Lift

Type SU51

Year of Construction 1998

Factory No. 29 98 98 122

Installation Location 5/7 CARLTON GARDENS
LONDON SW1 Y 5AD

Country UK

Identification Number CE 0088

Inspector TUV/LLOYDS

Address

Reference No.

Type Examination Certificate No.

We herewith declare that this product, as far as it is within our scope of influence and responsibility, meets the following EC Directives and harmonized EN Standards.

EC Directives 95/16/EC (lifts)

EN Standards EN81 / edition 1998
EN 12015 + 12016

Further Standards to which the Declaration Relates:

VBG 4

Use of the Installation:

According to name plate in the car and the operating manual

Place / Date

Name of Person Responsible

Signature



Data sheet

Lift **Passenger Lift**
Factory No. **29 98 98 122**

Location of Installation

Country

Owner

Country

Installer

Country

Layout Drawing No. **69 654 / 04 / 1**
Number of Landings **9**
No. Landings Entrance 1 **9**
No. Landings Entrance 2 **0**
Travel Height **30,995 m**
Rated Load **630 kg**
Operating Speed **1m/s**
Persons **8**

Mains Supply Data:

Mains Voltage **400 V**
Light Voltage **230 V**
Number of Phases **3 / TN (PE+N)**
Mains Frequency **50 Hz**
Rated Current **9,5 A**
Connected Load **6,6 kVA**

Number of Starts **180 1/h**
Arrangement of Machine **Below and adjacent of the shaft**
Kind of Drive **Worm-gear drive driven by electric motor (W149B),
with traction sheave,
regular three-phase A.C. motor drive.**

Record about Modernizations and Regular Inspections

The owner must ensure that the logbook is available during the entire service of the lift.

Lift Passenger Lift
Factory No. 29 98 98 122

Installation Location

Owner

Going into Operation

Maintenance Company

Start of Maintenance

Major Repairs and Modernizations

Description of Repair or
Modernization Works

Company Responsible

Date

Description of Repair or
Modernization Works

Company Responsible

Date

Regular Inspections

Name of Inspector

Name of Institution

Date

Name of Inspector

Name of Institution

Date

Name of Inspector

Name of Institution

Date

Further Useful Information Including Passenger Rescue and Accidents



Logbook

Page _____

Record about Modernizations and Regular Inspections

The owner must ensure that the logbook is available during the entire service of the lift.

To be copied for additional pages of logbook

Lift Passenger Lift
Factory No. 29 98 98 122

Installation Location

Owner

Going into Operation

Maintenance Company

Start of Maintenance

Major Repairs and Modernizations

Description of Repair or
Modernization Works

Company Responsible

Date

Description of Repair or
Modernization Works

Company Responsible

Date

Regular Inspections

Name of Inspector

Name of Institution

Date

Name of Inspector

Name of Institution

Date

Name of Inspector

Name of Institution

Date

Further Useful Information Including Passenger Rescue and Accidents



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Main works:
7303 Neuhausen a.d.F.
Telephone (07158) 12-0
Telex 722082/(17) 715814 · Telefax (07158) 12525

Description of the Lift System

Place of service:

(Place, street, house No., name of building)

Maker's No.: 299898122

Typ of lift¹)

Passenger lift

Name of owner:

Address:

Installation commencement date: Day, month, year:

Code: EN81-1/98

The technical description is attached.

(Total: 4 sheets)

, (date) 11.3.99
(date) 11.3.99

The Manufacturer of the Lift

THYSSEN AUFZÜGE GMBH

i.A. Keppler i.A. Breuer

, (date)

The Inspector:

¹ Passenger lift, goods lift, service lift, simplified service lift, underfloor goods lift, container lift, mill lift, warehouse lift, builders lift for passenger transport, facade lift.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

B THE INSTALLATION

B.1 PURPOSE OF THE INSTALLATION

of Passenger Lifts L1, L2, L3, L4 and L6. The vertical transportation passengers.

lift is Passenger Lift L4. The vertical transportation of passengers. This a Firefighting Lift.

and Passenger/Goods Lift L5. The vertical transportation of passengers goods.

Car lifts L7 and L8. The vertical transportation of private motor vehicles .

B.2 BASIS OF DESIGN

B.2.1 Building Occupancy

Based upon 1 person per 10 square metres over net floor area the estimated occupancy in office areas is 540 persons.

B.2.2 Performance

the maximum The main group of passenger lifts (L1 L2 L3) is designed to move building population within specified period and with a waiting interval of of 29 seconds.

Operational, maximum speed car and landing doors is -

Time to open 1.8 seconds

Time to close 2.3 seconds

B.2.2 Environmental Design Condition

Lift Machine Rooms

Electric lifts - Maintain between 05 and 35 degrees centigrade.

Hydraulic lifts - Maintain between 15 and 40 degrees centigrade.

Note: Specified environmental conditions provided within WP
????.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

B.2.3

Noise Levels

Average noise level in traction passenger lift cars .

Class A 50 dBA

Class B 55 dBA

Average noise level in hydraulic lift cars

Mean 55 dBA

B.2.4

Lift Ride Quality (Lateral Quaking)

Passenger Lifts

Front to back - average PK to PK 15milli(g)

Side to side - average PK to PK 15milli(g)

Vertical - average PK to PK 15-20milli(g)

Hydraulic Lifts

Front to back - average PK to PK 25milli(g)

Side to side - average PK to PK 25milli(g)

Vertical - average PK to PK 25-30milli(g)

2.5

Level of Illumination in Lift Cars

Not less than 200 lux at floor level.

B.2.6

Standby Generation

The diesel generator (WP????) has been designed to give sufficient output to operate the following,

The Firefighting Lift.

One passenger lift in each group of lifts.

Lift control provision to accept external signal directing each lift to return to main floor sequentially.

B2.7

Building Fire Alarm

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

Lift control provision to accept external signal directing each lift to return to main floor.

All lifts are automatically recalled to ground level and immobilised. However Firefighting Lift L4 can be changed to Fireman's duty by operation of a switch at ground floor level.

If the fire occurs at the ground floor level the lifts automatically terminate at first floor level.

B.2.8 Telecommunications

Each lift is fitted with the following.

Hands free autodialler activated by the alarm button.

Intercom between lift car, top of car, lift pit, machine room and Security Office. Activated by alarm button.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

B3

DESCRIPTION OF SYSTEMS

B.3.1

General

Standby generation available in the event of normal power failure to serve the lifts (and other essential services).

Passenger Lifts L1 L2 L3

Serve the offices with 1 lift (L1) serving basement car park. The control system is group directional collective and there is a dedicated landing call system on L1 for the car park.

Landing doors have been laboratory tested to 2 hours fire rating.

Passenger Lift L4

Serves the offices. The control system is simplex directional collective. It is designated a 'FIREFIGHTING LIFT' and incorporates the control and communications features required under BS5588.

A Fireman's control panel is located in the lift lobby at ground floor.

Landing doors have been laboratory tested to 2 hours fire rating.

Passenger/Goods Lift L5

Serves the offices. The control system is simplex directional collective.

Landing doors have been laboratory tested to 2 hours fire rating

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

B.3.1 (continued) Passenger Lift L6

Serves basement car park, ground floor and the apartments on floors 6 and 7. The control system is simplex directional collective.

There is an emergency access door to the lift well between ground and sixth floors.

Glazed landing doors have no fire rating.

Vehicle Lifts L7 L8

Serve basement car park. The automatic push button control system is radio controlled via hand held fobs. There is a key operated call switch at each landing together with a constant pressure 'Door Close' button.

CCTV cameras are installed in each lift car with VDUs at each landing and in the Security Room.

Basement landing doors have been laboratory tested to 1½ hours fire rating (Canadian Underwriter's Label).

Glazed ground floor landing doors have no fire rating.

B.3.2

Lift Well Lighting & Small Power

All lifts have permanent lift well lighting with emergency units at pit level, soffit level (except vehicle lifts) and at intermediate levels between standard units.

Power socket outlets are provided in lift pits and machine rooms.

Circuits powered from machine room consumer units.

B.3.3

CCTV

Co-axial trailing cables for future CCTV installations in passenger lift cars (L1 L2 L3 L6) is installed between cars and machine rooms.

Order Data

Date 20.04.1999
Factory No. 29 98 98 122
Job name CARLTON GARDENS, TEL
Prepared by Wünsche

1. General Data

Manufacturer: Thyssen Aufzugswerke

Rated load: 630 kg / 8 Persons **Year of construction:** 1998 **Travel height:** 30.995 m

Operating speed: 1 m/s

Number of entrances: 9

Number of landings: 9

There are no more lifts erected in the shaft

2. Lift Shaft - Landing Openings

Construction of lift walls: Concrete

Lower overtravel: 150 mm

Height lower safety space: 510 mm

Upper overtravel: 360 mm

Height upper safety space: 1825 mm

Enclosure of the counterweight path from the shaft pit up to 2500 mm height upper safety space.

Type of the mechanically operated landing door:

Type of the mechanically operated landing doors: 9 piece(s); Two panel sliding doors, from 200 mm Width and 2100 mm height

Vision panels are not available in the jambless doors.

3. Type of Suspension

Number and type of suspension:

Number and type of suspension:

Suspension: 2:1

Suspension of counterweight: 2:1

Lift system without compensation

4 Drive

Type of drive: Worm-gear drive driven by electric motor (W149B) with traction sheave regular three-phase A.C. motor drive

Arrangement of machine: Below and adjacent of the shaft

Order Data

Date 20.04.1999
 Factory No. 29 98 98 122
 Job name CARLTON GARDENS, TEL
 Prepared by Wünsche

5. Elevator Car / Counterweight

Car floor area: 1.637 m² Car height: 2300 mm

Number of car entrances: 1 - with mechanically operated car door

Car weight: 1625 kg

Counterweight: 1952 kg

6. Electrical Equipment

Type of current and voltage of power supply: Three-phase A.C. 400 V

Protection type of electrical equipment: minimum IP 20

Main switch arranged in the machine room

Type of control: TCM 6513/7

Automatic control / collective / selective

Emergency signal device available, according to Lift Regulation EN 81-2 14.2.3

Safety switches according to data sheet

7. Special Equipment

Car guide: roller guide

Progressive safety gear	Type	6071/1 RL 121
Manufacturer Thyssen Aufzugswerke	Test certificate	AFV 213/2
Progressive safety gear(C.W.)	Type	6071/1 RL 117
Manufacturer Thyssen Aufzugswerke	Test certificate	AFV 213/2
Door locks for sliding doors	Type	M2TS3
Manufacturer Thyssen Aufzugswerke	Test certificate	ATV 150/6
Overspeed governor	Type	6023
Manufacturer Thyssen Aufzugswerke	Test certificate	AGB 055/1
Overspeed governor(C.W.)	Type	6023
Manufacturer Thyssen Aufzugswerke	Test certificate	AGB 055/1
Oil buffer in shaft pit (car)	Type	O1 A
Manufacturer Thyssen Aufzugswerke	Test certificate	APV 001/002/003
Oil buffer in shaft pit (C.W.)	Type	O1 C
Manufacturer Thyssen Aufzugswerke	Test certificate	APV 001/002/003

This is to confirm that the used components are corresponding to the given types and the type test certificate.

Order Data	Date 20.04.1999
	Factory No. 29 98 98 122
	Job name CARLTON GARDENS, TEL
	Prepared by Wünsche

8. Special Features of Lift System

Levelling and re-levelling with doors open

Overspeed governor with remote tripping

9. Further Specifications

10. Enclosures

Layout drawing No.: 69 654 / 04 / 1

Traction drive lifts (runbys, height dimensions)

Circuit diagrams according to data sheet; abbreviations

Calculation:

- Guide rails
- Buffers
- Traction
- Traction sheave shaft
- Divertor axle
- Governor rope

Works certificate for suspension ropes and governor rope

Test certificate: Door lock

Test certificate: Safety gear

Test certificate: Overspeed governor

Test certificate: Oil buffer

Calculation of pulley beam

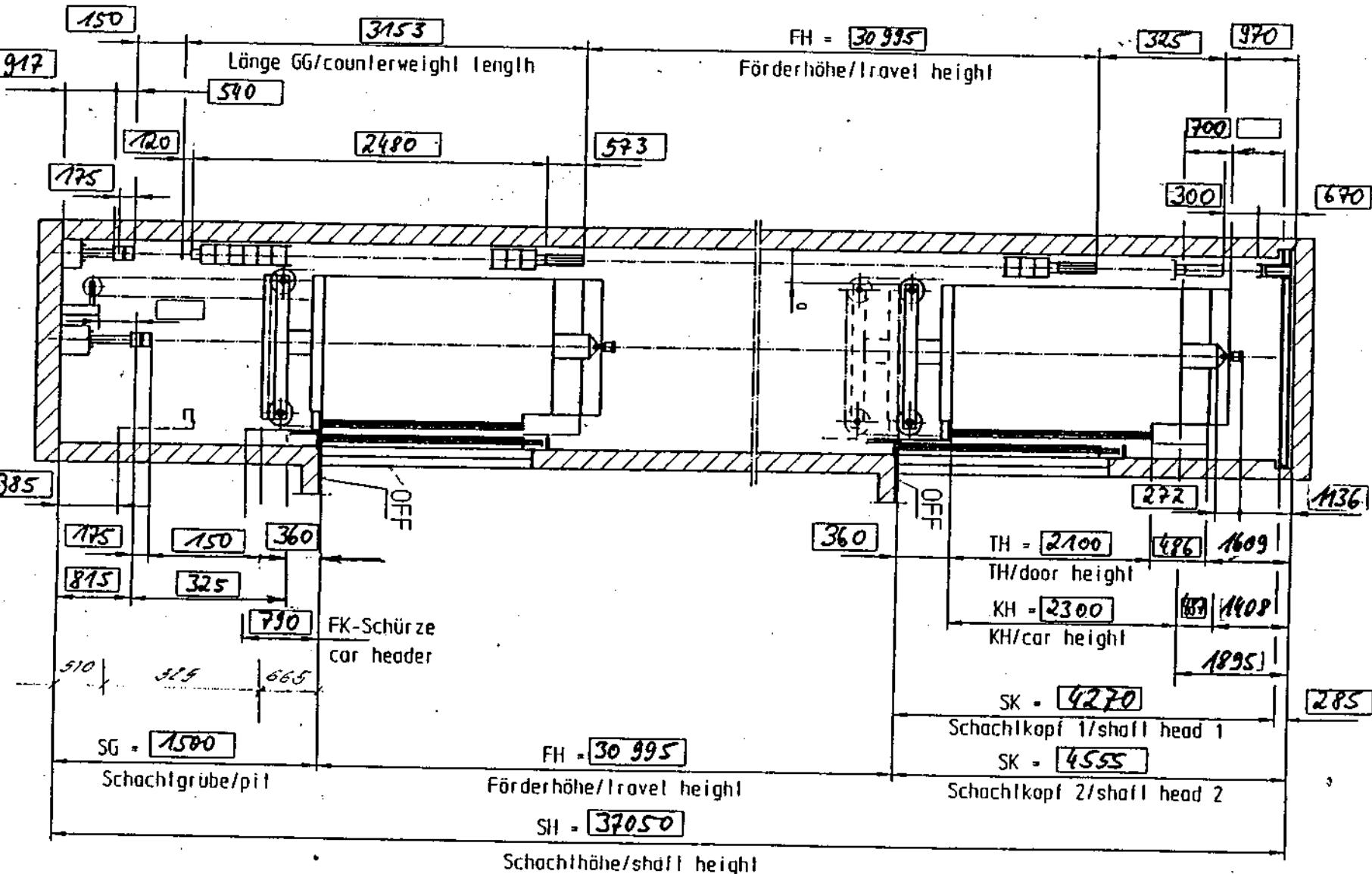
Änderung vom 30.08.90:
Maßkasten für K1 neu angeordnet.
(Kasten für K1 gilt jetzt für K3).

gez.:
gepr.:
Böhme

Ausgabedatum 13.08.90
Name : VfL

Fabrik - Nr. / Maker's - No.:

299898122



THYSSEN
AUFLÜGE

Flachdach - Sellaufzüge / flat-roof - traction drive lifts
Oberfahrwege / overtravel run by
Höhenbasis / height dimension

2 : 1

60 010 05 00
Norm

THYSSEN AUFZÜGE GmbH

Page: 1

* REFERENCE CARLTON GARDENS, TEL *
*
* ORDER NO. 299898122 21.09.98 Bär *
*

Type of lift: SU51A00 Year of manufacture: 1998
Rated load: 630 kg Persons: 8
Rated speed: v= 1.00 m/s Machine room positioned: lower
Gear: W149B Suspension: 2:1
Floor selection: Standard with zone in all landings
Type of control: 6513/7 TCM - STANDARD

DOORS
Well entr.side I: M2TS3R Car entr.side I: M2TK3F2R
Door safety: Light screen + electronic passenger detector

LOCKING MAGNETS
Door entr.side I: RM 180

TYPE OF PROTECTION
Machine room: >=IP 20 Well: >=IP 20

POWER SUPPLY
Power line: 400 V main line spezification: 3/N/PE
Light line separate: 230 V Frequency: 50 Hz
design current: 12.5 A

DRIVE
operating motor current: 16.4 A operating motor power: 4.9 kW
Operating incoming current: 9.5 A impulse per canal: 1024
Type of drive: J60/API 18 Brake: MB2.1
 geared 180/100V/In<=2,5A

THYSSEN AUFZÜGE GmbH

Page: 2

 * REFERENCE CARLTON GARDENS, TEL *
 *
 * ORDER NO. 299898122 21.09.98 Bär *
 *

Number of landings: n=9

Landing		1		2		3		4		5		6		7		8		9	
Designation		LG	G	1		2		3		4		5		6		7			
Home landing ;			X																
Firemen's entr.			X	(X													(X) = 2. evac. level		
Evacuation level																			
standby supply																			
Opening of door																			
entr.side I			X																
Pos.indicat.outs.																			
entr. side I			X																

ADDITIONALS

Car control panel

Pushbutton:

Position indicator in car:

Position indicator outside:

Song:

Continued travel indicator:

Door-close-button

Verbal announcement

Levelling with door opening

Re-levelling

Car priority

Remote release for governor

Firemen's operation:

Switching Components

5*7-Pkt. (30mm)

by TLE (GRAY-CODE)

in all landings entr.side I

on entr.side I

incandescent lamp version

Inspection end switch:

variant H1

Unauthorized use:

firemen's call station in entrance (TLE)
key switch

upper and lower

canceling of car commandes exceeding

the number of passengers of cabine

canceling of car commands

by empty cabine

Occupied device

Overload device

Standby supply:

Return command:

input (MP/X1:6)

THYSSEN AUFZÜGE GmbH

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* REFERENCE CARLTON GARDENS, TEL *
*
* ORDER NO. 299898122 21.09.98 Bär *
*

Further additionals

Safety circuit: final limit switch upper/lower S101F/S101B
buffer switch counterw./car S133/S134
speed governor rope switch S132
stop switch in well S100
stop switch in car S100
slack rope switch S131
governor switch car S102
governor switch counterweight S103
safety gear switch S140
Emergency trap door switch contact-secured S141
car door lock 158
Emergency call relay with potential free contact
Collective fault message
Out of order message
Fan and car light: automatic (K35)
Travel counter
number of adjusting runs before "standing still":
unlimited number
After inspection travel: door is opened and afterwards closed
Lift-blocked-monitoring time: 4 min 16 s
Zone switch S27: in all landings
Additional emergency lighting
Intercom unit: car to motor room by TAD (Siedle)
telephonsocket outlet on car roof
- car to reception intercom
- fire-fighting intercom
Travelling cable - intercom
Power restoration delay: adjustable
Slack rope switch: sound an alarm in the motor room
Emergency trap door switch contact: visual indicator in the car
Inspection: car top control unit to BS 7255 (by TLE)
Handlowering indicator and buzzer
Temperature supervision in machine room
Lift pit moisture sensor message
Installation: shaft-and travelling cable with the LSF cable

EXTRA PROGRAM (SOFTWARE): C_EZUS2

THYSSEN AUFZÜGE GmbH

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* REFERENCE CARLTON GARDENS, TEL *
*
* ORDER NO. 299898122 21.09.98 Bär *
*

ENCLOSURES

approval RB-95A223
for MS, MS1, MS2 and MQ
approval RB-97A128
for MQ1
approval EB-95A168
for safety circuit SR1



CIRCUIT DIAGRAMS

31 pages

1	K	2	K	3		4	K	5
6	K	6-1		7		8		8-1 K
8-4	K	8-5		9	K	9-1		10 K
11	K	12	K	12-1		13	K	13-2 K
14	K	14-1	K	15	K	16	K	17 K
18	K	19	K	21	K	22	K	22-1 K
23	K							



TERMINAL DIAGRAMS

23 pages

1		2		3		4		5
5.1		5.2		6		7		8
9		10		11		12		13
14		15		15.1		16		17
17.1		18		19				

THYSSEN AUFZÜGE GmbH

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* REFERENCE CARLTON GARDENS, TEL *
*
* ORDER NO. 299898122 21.09.98 Bär *
*

SPECIFICATIONS:

SPECIFICATION REQUIREMENTS, WHICH ARE REALIZED IN THE PROCESSOR

POS	TRA (EN 81 -1)	FUNCTION
1	260.32 (-)	Stopping of the landing control and the automatic re-call
2	260.421 (1-3)	The switching off of the car lighting does not become effective until the car has stopped in al landing and the entry of new calls is prevented. The return dispatch device is immediately effective.
3	262.62 (12.10)	Operation time control
4	266.12 (14.2.1.3a)	The inspection control must cancel the effect of the normal control including the movement of the independently power-operated doors.

Switchgears in safety circuit correspond to TRA 260.8, EN81-1 Pkt. 13.2

Min. holding current of contactors is > 6.7 mA

Routine test for control cabinets
according to DIN VDE 0660, part 500.

Table of contents

1	General	1.1 Purpose of the operating manual 1.2 Purpose of the operating instructions 1.3 Safety symbols and explanation of terms
2	Duties of the owner	2.1 Regular inspections 2.2 Maintenance and repairs 2.3 Return to normal operation 2.4 Modernizations 2.5 Shutdown 2.6 Information of the manufacturer
3	General safety information	3.1 Safety information for the user
4	Description of the installation	4.1 Intended use 4.2 Function of control 4.3 Overload indicator 4.4 Function of door control 4.5 Special run (optionally) 4.6 Switching off landing lift control (optionally) 4.7 Switching off control and lighting (optionally)
5	Operating of the installation	5.1 Landing calls 5.2 Choosing of destination from inside of car 5.3 Switches and buttons 5.4 Control panel
6	Cleaning	6.1 General 6.2 Cleaning of car and doors 6.3 Cleaning of pit 6.4 Cleaning of well incl. control cabinet and drive as well as car roof and external parts 6.5 Door thresholds and door grooves 6.6 Cleaning of the different materials (Laser-inscribed materials)
	Form	"Report to the manufacturer" (2-fold)

Address:

THYSSEN AUFZUGSWERKE GMBH
Bernhäuser Str. 45
73765 Neuhausen auf den Fildern

Telephone 07158 / 12-0
Telefax 07158 / 12-2585

Postal address:

THYSSEN AUFZUGSWERKE GMBH
P.O. Box 23 03 70
70623 Stuttgart



Operating instructions for passenger lifts

THYSSEN AUFZUGSWERKE GMBH

Sheet 2

1

General

THYSSEN AUFZUGSWERKE GmbH in Neuhausen brought in years of experience in lift manufacturing to design and manufacture extremely safe, economical and comfortable lifts.



Please read this document very carefully.

The tasks and duties of the owner are described here.

Please note that if the owner neglects these duties he loses his rights under a guarantee and undertakes the risk of being held liable.

Should you have any additional questions regarding safety, operation or maintenance of the installation, please contact "THYSSEN AUFZUGSWERKE GmbH".

1.1

Purpose of the operating manual

What is the reason for this operating manual ?

The European Directive for Lifts (95/16/EC) describes the basic requirements relating to lifts and their safety components.

These include the requirement that the installer must deliver the owner operating manual with every lift he installs from 1st July 1999.

1.2

Purpose of the operating instructions

The operating instructions gives the owner, the maintenance company, the trained persons important instructions for the safe use as intended of the lift, for the maintenance of the lift and the appropriate measures to be taken when failures or emergency calls occur.

Binding nature of the operating instructions and its intended use ?

The present operating instructions apply to the lift specified in the data sheet. When the lift is put into service the operating instructions become binding.

The lift specified in the data sheet is intended for the transport of persons and goods. Symbols and notices displayed in the lift have to be noted and observed.

The lift has been designed according to the use of the building specified at the time of the purchase. The corresponding number of travels per hour is indicated in the data sheet. If the installation is used more than this, excessive heat can cause the lift to become blocked or excessive wear can develop. Should this happen frequently (which affects the operation of the lift), the installation must be inspected, and, if necessary, modified. In this case the installer is to be informed.

If the lift is used outside the scope of the above definitions, it is no longer being used for its intended purpose. Neither the manufacturer nor the installer can be held liable for damage resulting from use outside the scope of intended purpose.

1.2.1

Operating instructions

The operating instructions are an integral part of the lift documentation. It describes the lift as designed at the time of the putting into service.

1.3

Safety symbols and definitions

To better understand the definitions and safety symbols are explained below.

1.3.1

Explanation of the symbols



Danger: This symbol draws attention to a high risk of injury to persons. It must always be observed.



Warning: This symbol draws attention to information, which, if it is not observed, can lead to injury to persons or extensive damage to property. The warnings must always be observed.



Caution: This symbol draws attention to information containing important instructions for operation. Failure to observe the instructions can lead to damage and threats.

1.3.2

Definitions

Installation: The installation consists of one or more lifts, including the well, the machine room / control panel and the entrances.

Inspection body: Trade board (in Germany)

Lift attendant: A person who is appointed for lift attendant must be at least 18 years of age and must have passed an inspector exam.

Notified body: A body which is appointed by the respective EU member state to carry out the respective inspections for going into operation of lifts.

Owner: The owner is an individual or a juridical person who is entitled to exercise authority over a lift installation, makes it available for use, and ensures that it is maintained.

Trained persons: Persons authorized by the owner, who have been trained by the maintenance company to perform specific tasks assigned to them.

Manufacturer: An individual or juridical person who is responsible for design, manufacturing and handing over of lift components or lift systems.

Installer:	An individual or juridical person who is responsible for the handing over of the lift.
Emergency call:	Persons trapped in the car can contact an always available emergency service. (Emergency service)
Repairs:	Replacement or repair of defective or worn components.
Inspector:	An individual or juridical person who is authorized to inspect and accept a lift installation.
Safety components:	Components which are defined as safety components in the EN 81 safety requirements and which were subject to a type test.
Failure:	A state of operation in which safe operation of the lift is restricted or impossible.
Technically competent persons:	Persons who have been trained to carry out the maintenance and who are also familiar with the respective lift system, who have the appropriate tools and auxiliary equipment available and who are aware of the possible dangers to themselves and to other persons. (Requirements for the prevention of accidents and instruction card 1ZH312 apply for Germany)
Handover of the lift:	The point in time at which the installer hands over or makes the lift available for the user for the first time.
Maintenance:	All maintenance works necessary to guarantee a fault free lift operation. These works include preventive maintenance, correction of failures and repairs.
Maintenance company:	A company which is given responsibility for carrying out company maintenance work, and which has technically competent persons at its disposal.
Regular inspections:	Regular inspections must not exceed the scope of the inspections before the first putting into service.

2

Duties of the owner

The owner ensures that the installation is used as intended.

The duties of the owner are laid down in the national statutory requirements.
The owner has to observe the respective requirements.

The owner is responsible for ensuring that these operating instructions are made available at any times and are freely accessible for technically competent persons and trained persons, who are recognized in accordance with EN 81.

If the lift installation is not used in accordance with the requirements the inspection body can put the installation out of service.

Access to the building and to the installation

In the case of emergency calls or to carry out maintenance works free access to the building and to the installation has to be ensured at any times. The key of the machine room / control panel is only to be made accessible for persons authorized by the owner. If access to one or several landing doors, resp. machine room / control panel is blocked the installation must be put out of service.

Passenger rescue

The owner has to ensure that trapped persons can be freed at any times. In accordance with the lift directive the owner must ensure that a voice communication system between car and an always available emergency service is provided.

2.1

Regular inspections

Regular inspections have to be carried out in accordance with the respective national statutory requirements. If there are no special requirements the owner has to ensure that the regular inspections have to be carried out by technically competent persons of a maintenance company in accordance with the requirements laid down in EN 81 annex E or with other requirements which apply.

2.2

Maintenance and repairs

The safe operation of the lift installation has to be maintained.

This is why technically competent persons have to carry out regular maintenance works and, if necessary, repairs.

THYSSEN AUFZUGSWERKE GmbH offers various maintenance contracts. Just contact the "maintenance people" of the sales office in your area resp. the headquarters in Neuhausen to get to know the solution which is the most suitable for you.

2.2.1

Works on the lift installation:

Works on the lift installation must only be carried out by technically competent persons.



Only the genuine spare parts from THYSSEN AUFZUGSWERKE GmbH are to be used.



In the case of spare parts from third parties design and manufacturing in accordance with the intended use cannot be guaranteed; in the case of safety components (with type examination test) the type approval of the installation becomes ineffective as soon as spare parts from third parties are used.

2.3

Return to normal operation

If the lift has been used as building lift / goods lift or if the lift has been put out of service the following works must be carried out by technically competent persons before the lift is put back into operation in accordance with its intended use:

- Check the safety elements
- Replace damaged components
- Clean and lubricate the installation
- Inspection to be carried out by inspector (applies for Germany)

2.4

Modernizations

Modernizations, modifications or additional installations in the car have to be carried out in cooperation with the manufacturer, since any change of the car weight has an effect on the operating characteristics of the installation.

2.5

Shutdown

In the case of defects which obviously impair the safe operation of the lift the installation must immediately be put out of service by the owner or by a person authorized by the owner (lift attendant).

2.6

Information of the manufacturer

In accordance with the product liability (guaranteed) regulations the manufacturer is obliged to keep track of its installations.

Keeping track of a lift installation is only possible if the owner immediately reports any fault and defects to the manufacturer THYSSEN AUFZUGSWERKE GmbH. This is why it is the duty of the owner to inform THYSSEN AUFZUGSWERKE GmbH irrespective of the company in charge of the maintenance works.

Any change in ownership must be reported to THYSSEN AUFZUGSWERKE GmbH. The form to notify any change in ownership is enclosed in the annex.

3

General safety instructions

The lift complies with the effective safety regulations for lifts.
Nevertheless inexpert handling or defects can cause dangerous operating states.

3.1

Safety instructions for the user

It is the duty of the owner to inform the user about the proper use of the lift and about possible dangers.

This particularly applies to parents of children as well as to old and infirm people.
If domestic animals or goods are transported special aspects are to be taken into consideration.

The following items (3.1.1 - 3.1.7) are listed on a separate sheet in the annex (index 10). We recommend to make this information an integral part of the house rules and to display it near the lift entrances.

3.1.1

Risks in the case of fire



In the case of fire the car can stop for reasons of power failure or another defect caused by fire.
Passengers can no longer leave the car

and they are exposed to the risk of **burning or suffocation!**

Never allow the use of the lift in the case of fire. Therefore display the respective pictographs or instruction notices on the landing doors.

(Contact THYSSEN AUFZUGSWERKE GmbH for supply of these labels).

In the case of damage in the building caused by water use of the lift must also be prohibited.

3.1.2

Risks due to loading



The data displayed in the car are to be observed. The load inside the car must be distributed evenly. It is to be secured against slipping to one side.

Dependent on the load the car can stop above or below the level of the landing floor (steps).
On entering or leaving the car pay attention to steps and mind the risk of tripping.

An (optional) re-levelling device ensures that the car is at the level of the landing in the case of steps.

When entering and leaving of the car pay attention to the gap between car and landing door threshold (be careful with high-heeled shoes !)

3.1.3

Risks due to defective landing doors



If a landing door is opened unless the car has stopped mind the risk of falling into the well.

If a landing door is defective mind the risk of crushing by the passing car. This particularly applies to a damaged or broken glass landing door.

Step aside, secure the danger area and mind the risk of grievous or lethal injuries !

Try to manually close the landing door. Switch the installation off by means of the main switch in the machine room / control panel.

3.1.4

Door thresholds and car floor

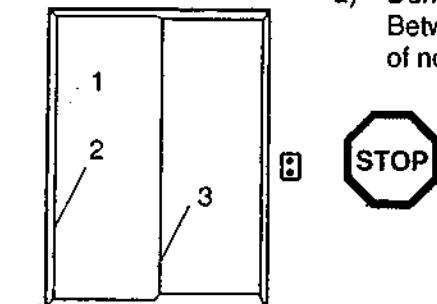
The door thresholds and car floor can be damaged by rollers of haulage cars due to excessive lumped load. The admissible threshold load of 280 kg wheel load must not be exceeded.

3.1.5

Risks due to door mechanism

a) During opening of door

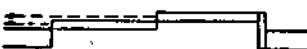
Between door panel (1) and architrave (2) resp. between the door panels a gap (3) of normally 6 mm in width is provided.



Mind the risk of crushing or jamming of fingers, clothes or other objects in the mentioned areas during opening of doors.

Mind the risk of fingers / hands etc. clinging on glass doors.

Step aside from doors and particularly see that the same applies to children and domestic animals !



Front view of door

b) On closing movement of doors

On entering or leaving the car immediately step aside from the doors, since they will close automatically !

The closing force amounts to max. 150 N (corresponds to a weight of 15 kg).



Consider that this force can lead to injuries of children or infirm people.

c) Light grid / photoelectric device

On entering through the door opening a light grid / photoelectric device prevents closing of the door when the light beam is interrupted.



If the lift is used and domestic animals are kept on the lead or if belts for children are used mind the risk of children resp. domestic animals running into the car while the parents resp. another authorized person are distracted. If the door closes, the lift starts and the lead/belt are squeezed a serious accident will happen !
Inform parents or owners of domestic animals who use the lift accordingly.

3.1.6

Operation by the user

Persons who do not understand the controls in the lift and / or who are unable to operate them, must only use the lift if accompanied by another person who can assist them.

3.1.7

Behaviour of the user

The passengers must stand still while the car is moving.

Jumping up and down, or rocking backwards and forwards is not allowed.

Instructions in the car (signs resp. displays) must be obeyed.

The lift must only be used if the car lighting is on.

Burning matches, cigarettes and other objects must not be thrown through the gap between the door and the landing threshold into the well or into the car.

4 Description of the installation

4.1 Intended use

A lift is a means of transportation and not a toy. Nevertheless it is the habit with children to use the lift as a toy for running upwards and downwards, in particular in apartment houses.

Prohibit such use for the reasons below:

- Automatically closing doors involve the risk of crushing.
- The lift is blocked for use by other users.
- Unnecessary energy consumption.
- Possible damage can result in extra costs.

4.2 Function of the control

All calls and operating states (position, run, safety devices) are registered by the main control. The main control determines run direction, deceleration and stop of the lift.

Collective control

Collective controls register commands and calls.

Command = Car call

Call = Landing call

As the car travels either up or down it serves the calls in their natural sequence, without reacting to hall calls for the opposite direction.

The car can change direction when all car calls / or all landing calls for this direction have been served. Hall calls for the direction of run are served in the same way as calls from the car operating panel.

The automatic control optimally adapts lift provision to changes in the traffic flow and ensures minimum waiting times.

4.3 Overload indicator

If the car is overloaded, the car remains at the landing with the doors open and a display in the car draws attention to the overload.

4.4 Function of door control

On arriving of the car in the landing the electrically operated door opens automatically.

The door remains open for some seconds and then closes automatically.

The door opening is secured by a light grid / photoelectric device. If the light beam is interrupted the door will immediately stop and re-open.

4.5 Special run (optionally)

The special run control is used to reserve the car for special purposes.

Special runs are operated by means of the key operated switch.

The key operated switch is used to switch the special run on. With the special run switched on, all car calls and landing calls will be cleared.

The car stops at the nearest landing and the display and the buzzer in the car draw attention to special run. The car runs to the landing from where the car was called. There it stops with doors open for some time to allow a car call being given.

Special runs are normally activated by means of the key operated switch.

**4.6****Switching off landing lift control (optionally)**

The landing lift control can be switched off by means of the key operated switch in the car as well on the control. Landing calls will no longer be registered and the door remains open until a car call is issued. Mind that the car will not move until a car call is given. The key in the car for switching off the landing lift control cannot be turned off in this position.

4.7**Switching off control and light (optionally)**

Control and light can be switched off by a key-operated switch which can be placed in any landing, at the reception, in the control room or at a central location in the building. The installation can be turned off by this switch.

Immediately before and after switching off the installation check if there are any passengers trapped in the car.

5

Operation of the installation

Buttons in the landings resp. in the car are provided for operating the installation.
(Step-Modul button).

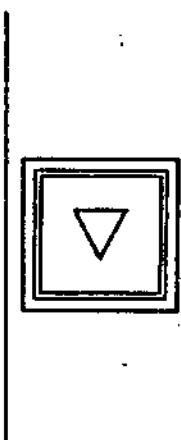
5.1

Call car

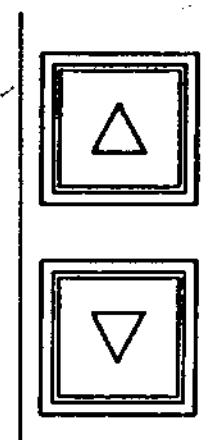
In every landing call buttons are provided (landing calls).
Every call will be registered immediately and accepted by means of an optical signal in the button.

There are two different call types

Version 1
Single-button-collective-control



Version 2
Two-button-collective-control



Only operate the button
of the desired run
direction

On arrival of the car the registered call will be cleared and the optical signal switched off.

5.2

Choosing of desired destination in the car

All indicating and operating elements are an integral part of the car control panel (optionally an additional horizontally mounted control panel can be provided for handicapped persons).
A button for each individual landing is provided which can be operated at any times. Every command will be registered immediately and accepted by means of an optical signal in the button.

On arrival of the car in the destination landing the registered call will be cancelled and the optical signal in the respective button will be switched off.

The car serves each landing of the respective run direction provided that a car call or landing call has been given.

The car will only change direction when all car calls for the direction of the terminal landing have been served resp. if no further car call has been given.

5.3 Switches and buttons

5.3.1 Key-operated switch and button



Use:

- On the control panel for landings, which are restricted to use by authorized persons.
- At the entrance as priority landing call e.g. in a hospital if a lift is urgently needed (special run) (ambulance lift)
- As direct run without intermediate stop for use by authorized persons.

Location:

- On the control panel,
- At the landing entrance,
- In a pre-determined landing or at the reception

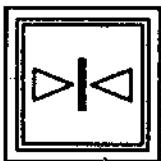
Appliation:

- Priority switch,
- Switching off of control and light,
- Case of fire key,
- Fireman's switch

Versions:

- Key-operated switch with acceptance,
- Key-operated switch with / without acceptance

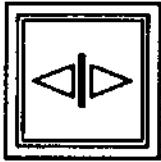
5.3.2 Door-close-button



The door-close-button can be used to close the door immediately after a car call is given, which reduces the waiting time.

The photoelectric device / light grid, however, remains active.

5.3.3 Door-open-button



The door-open-button can be used to open the door or to hold the door open.

On operating the door-open-button the closing movement will be stopped and the door will be re-opened. After some seconds the door will close.

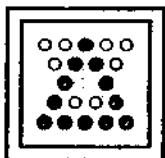
5.3.4 Alarm button



On operating the alarm button the alarm device will be activated and a voice communication with the emergency service established.

The alarm button serves as emergency light which remains active by means of standby-power even in the case of power failure.

5.3.5 Hall lantern



The hall lantern indicates the registered run direction.

5.3.6 Fan button



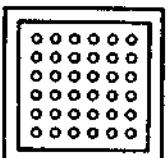
The fan button switches the fan in the car on / off.

5.3.7 Overload indicator



The overload indicator gives an optical and / or acoustic signal to indicate that the car is overloaded. If the car is overloaded, it will remain at the floor with doors open. The signal stops automatically as soon as overload is removed. Then normal operation can be continued.

5.3.8 Intercom system



The intercom system consists of a microphone and a loudspeaker. It serves as two-way voice communication between car and an always available emergency service.

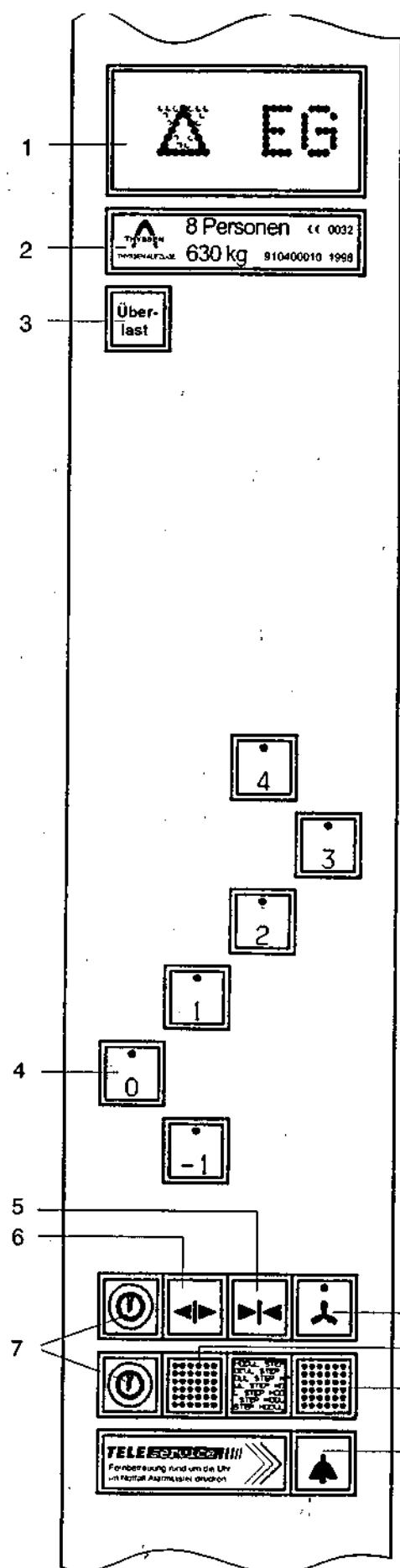
5.3.9 Car position indicator / direction indicator



The car position indicator permits the floor to be read on which the car is located at the moment or displays special information, e.g. inspection operation.

5.4

Car control panel



- 1 Car position indicator / direction indicator
- 2 Name plate with CE marking
- 3 Overload indicator
- 4 Button with optical acceptance
The buttons can be used for selecting the destination landing.
- 5 Door-close-button (optionally)
- 6 Door-open-button
- 7 Key-operated switch for special control functions (optionally)
- 8 Alarm button (in combination with item 9 + 10)
(in addition an alarm button is provided on the car roof and below the car on the control panel each).
- 9 Two-way voice communication loudspeaker
- 10 Two-way voice communication microphone
- 11 Fan button

On pressing the yellow alarm button the alarm device will be operated and the two-way voice communication activated.

The button and the alarm device are battery-powered to ensure the operability of the alarm device in the case of power failure.

An auxiliary lighting is accommodated in the button or in the car. In the event of power failure of the car lighting this lighting will be switched on automatically.



HYSSSEN AUFZUGSWERKE GMBH

Operating instructions for passenger lifts

Sheet 16



6 Cleaning

6.1 General

6.1.1 Scope:

The areas to be cleaned are the inside of the car, including buttons and displays, the car door and car sills, the outside of the car, landing doors and landing door sills, pit, rails and machine room.

6.1.2 Responsibility:

Cleaning may only be carried out by competent or trained persons. A technically competent person must be present when the cleaning of the well (glass enclosure), pit and rails is carried out.

6.1.3 Safety precautions:



When electrical cleaning equipment is used in the car, care must be taken to ensure that the car doors cannot close while the cleaning equipment is connected to the electricity supply.

6.1.4 Instructions:

The following rules must be observed when cleaning:

- Never use cleaning materials containing strong solvents or abrasives,
- All materials can be cleaned without problem using soapy water,
- When cleaning several different materials always proceed by taking into account the method of cleaning with the most sensitive material.

6.2 Cleaning of car and doors

Only use cleaning materials as for normal household cleaning and do not use any cleaning powders. For supply of special cleaning materials for stainless steel contact THYSSEN AUFZUGSWERKE GmbH.

Aggressive materials and cleaning powder can damage the surface (cleaning powder damages the metal surface which results in a dull metal surface)

Materials with a structured surface, or which show finishing marks (brushed, grained, etc.) must be cleaned in the direction of the surface finish to prevent surface damage.



Neither water nor cleaning material must not be allowed to flow into the well.



The instructions for the use of the cleaning materials are to be observed. The cleaning of the glass surfaces inside the well or outside the car requires extreme care! Contact the service department of THYSSEN AUFZUGSWERKE GmbH for further information.

6.3 Cleaning of pit



The dirt falling into the pit must be removed regularly.

Access to the pit is admissible provided that the installation is shut down and supervised by a technically competent person.

6.4 Cleaning of the well, the control cabinet, the drive and the car roof as well as external car parts

Regularly remove sediments and dust in the well and on the external car parts.



Cleaning must be supervised by a technically competent person.

6.5 Door thresholds and door sills

Clean door sills with a vacuum cleaner. Use slow vaporizing solvents such as white spirit or kerosine to loosen solidified dirt then brush or scratch out as necessary.



Mind the risk of fire !

6.6 Cleaning of the different materials

Use commercially available cleaning materials and observe the instructions of the manufacturers.

Material	Cleaning material	Method of cleaning
Stainless steel	stainless steel cleaner	clean off, rub dry
Lighting	soapy water	
Plastic tiles	plastic cleaner	
Buttons, indicators, displays	dampened cloth	
Glass / mirror	glass cleaning liquid	spray, clean off, rub dry
Synthetic / rubberized floor coverings	household cleaners	wipe
Stone / tiles	soapy water	wipe
Threshold and tread plates	vacuum cleaner, soapy water	remove loose dirt and dust from grooves, rub dry
Laser-inscribed materials	water and washing-up liquid	wipe, rub dry



Report for the Manufacturer

THYSSEN AUFZUGSWERKE GMBH

Quality department
P.O. Box 23 03 70

70623 Stuttgart

According to the product liability (guaranteed) regulations, THYSSEN AUFZUGSWERKE GmbH as manufacturer must keep track of its lift installations. Therefore, we must ask that you, as building owner, report all major defects of the installation to us.

Any change in ownership must also be reported to THYSSEN AUFZUGSWERKE GMBH.

Lift identification No. _____

Owner _____
Name _____

Street _____ Postal Code _____ Place of residence _____

Installation location _____
Street _____ Postal Code _____ Installation location _____

Change in ownership

New owner _____
Name _____

Street _____ Postal Code _____ Place of residence _____

Description of defects / faults (copy of inspector's report enclosed).
For further description please turn over.

Date _____

Signature of owner _____



Operating instructions for passenger lifts

THYSSEN AUFZUGSWERKE GMBH

Sheet 20

Further description



Report for the Manufacturer

THYSSEN AUFZUGSWERKE GMBH
Quality department
P.O. Box 23 03 70

70623 Stuttgart

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Street _____ Postal Code _____ Place of residence _____

Installation location _____
Street _____ Postal Code _____ Installation location _____

Change in ownership:

New owner _____
Name _____

Street _____ Postal Code _____ Place of residence _____

Description of defects / faults (copy of inspector's report enclosed).
For further description please turn over.

Date _____

Signature of owner _____



Operating instructions for passenger lifts

THYSSEN AUFZUGSWERKE GMBH

Sheet 22

Further description:

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

B.3.4.2 PASSENGER/FIREFIGHTING LIFT L4

FACTORY REF: 29 98 98-121

LIFT ID REF: 69654/04

Lift type	Electric passenger/firefighting lift
In compliance with	BS 5655 EN 81-2: 1998
Load/capacity	08 persons/630kg
	1.00 mps (nominal)
Drive system	Variable frequency microprocessor
Power supply	400 v 3 ph 50 hz + neutral
Motor starts/hour	240
Control system	Simplex collective microprocessor
Control features	Advanced door opening
	Homing
	Full load by-pass
	Fire alarm interface
	Intercom system
	Alarm autodialler
	Emergency power control
	Door nudging
	BMS interface
Landing designations	LG G 1 2 3 4 5 6 7
Entrance position	Front

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

B.3.4.2 (continued)

No. of stops	9
No. of landing entrances	9
Travel height 31.2m	31.2m
Machine room location	Basement
Well dimensions	2025mm wide x 1900mm deep
Pit depth	1600mm
Nominal internal car dimensions	1100mm wide x 1400mm deep
	x 2300mm high
Clear opening (nominal)	900mm wide x 2100mm high
Door type	Two panel side opening
	Power operated
Entrance protection	Multi beam light curtain
	Optical detector
Car operating panel	Push buttons for each floor
	Alarm button
	'Door open/close' button
	Car preference key switch
	Car light key switch
	Overload indicator
	Intercom/autodialler

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

B.4.3.2 (continued)

Car operating panel (cont)	Speech synthesiser
Indicators	Position indicator in car
	Hall lanterns
Landing control stations	Micro-movement push buttons
	LED illumination

ADDITIONAL FEATURES
Pit ladder
Machine and governor guards
Permanent well lighting incorporating emergency lighting
Handwinding indicator and buzzer in machine rooms
Emergency car lighting
Battery operated alarm sounder
Pit moisture sensor
LSF wiring
Hooks for protective drapes and 1 set of drapes

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

Supplier	Equipment	Order no. / Suppldate
Thyssen Aufzuge GMBH PO Box 23 03 70 70623 Stuttgart	Passenger Lifts L1 L2 L3 & L6 excluding car platforms, car bodywork and (L6 only) car and landing door panels.	12/98 - 03/99
Tel: 0049 7158 122593 Fax: 0049 7158 122148	Passenger/Firefighting Lift L4 & Passenger/Goods Lift L5.	
UK contact -	Complete installations (except where indicated) including hoisting units, hoisting ropes, control systems, machine room and shaft equipment, car frames, safety gears, overspeed governors, counterweights, door operators, door frames and door panels.	
Thyssen Lifts & Escalators Ltd Traffic Street Nottingham NG2 1NF	Car platforms & bodywork L1 L2 L3 L6 L7 L8.	04/99 - 05/99
Tel: 0115 986 8213 Fax: 0115 986 1549	Landing entrance architraves L1 L2 L3 L4 L5 & L6.	05/99 - 06/99
Thyssen Lifts & Escalators Ltd Traffic Street Nottingham NG2 1NF	Glass car and landing door panels L6 only.	05/99 - 06/99
Tel: 0115 986 8213 Fax: 0115 986 1549	Ground floor entrance frames L7 L8	04/99
Beringer Hydraulics 79 Station Road Quainton Nr. Aylesbury Buckinghamshire HP22 4BX	Hydraulic pump units, cylinder/ram assemblies, oil coolers & pipework. Vehicle lifts L7 L8.	098/001603/83554-5 02/99
Tel: 01296 655611 Fax: 01296 655741		

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

Supplier	Equipment	Order no. / Suppldate
Complus Lift Ltd Carlton House Hemnall Street Epping Essex CM16 4NQ	Intercom, autodialler, CCTV and traffic light systems.	T26645/ 05/99
Tel: 01992 579500 Fax: 01992 579501		
A&A Electrical Distributors Ltd 134-162 Maybank Road South Woodford London E18 1ET	Conduit, trunking, wiring and cables.	T48506 02/99
Tel: 0181 550 7000 Fax: 0181 550 7007	Lift shaft light fittings.	T26649 02/99
Liftech Engineering Ltd Unit 12d Tower Workshops Riley Road London SE1 3DG	Shaft steelwork and division screens.	T26644 12/98 03/99
Tel: 0171 237 6580 Fax: 0171 252 3785		
Kollmorgen 1 Gladlys Court Llaness Nr. Holywell Flintshire North Wales CH8 9LY	Controllers L7 L8	04/99
Tel: 01745 888511 Fax: 01745 888511		

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

Supplier	Equipment	Order no. / Suppl date
The Peele Company Ltd 7415 Torbram Road Mississauga Ontario L4T 1G8 Canada	Single panel car and landing doors complete with operators and running gear.	098/001454 04/99
Switching Components Unit 18 Charlwoods Industrial Estate Charlwoods Road East Grinstead West Sussex RH19 2HL	Car operating panel components. Landing control stations and indicators.	T26650 T49354 03/99



THYSSEN AUFZUGSWERKE GMBH

**Rescue of passengers
for traction - and hydraulic lifts
(with machine room)**



How to rescue trapped passengers from cars

THYSSEN AUFZUGSWERKE GMBH

Sheet 2



1	General	
1.1	The lift warden must observe the measures described below for the rescue of trapped persons from lift cars which are used for passenger transportation.	
1.2	<p>Dependent on the lift type, the different drive systems and equipment are subject to different measures.</p> <p>The paragraphs below comprise the individual, different measures to be taken in accordance with the different features mentioned above.</p>	
1.3	<p>The measures partly comprise accesses which may lead to a risk to persons.</p> <p>This is why they may only be carried out by competent persons (lift warden, trained personnel from maintenance companies) provided that the necessary care is taken.</p>	
2	Electro-mechanically driven lifts	Electro-hydraulically driven lifts
2.1	Without mains supply and for lift installations without electrical emergency control applies:	For direct acting hydraulic lift installations the applies:
2.1.1	Establish contact with trapped persons, ask for injured persons.	
2.1.2	<p>Switch off main switch in the machine room.</p> <p>Manually operating of contactors provided in the control cabinet involves danger to life and is thus prohibited !</p>	
2.1.3	<p>If there are car doors, have them closed by the trapped persons.</p> <p>If no car doors are provided instruct trapped persons to step back from car entrances.</p> <p>Inform trapped persons about possible car movements.</p>	
2.1.4	Operate brake release lever and move car into desired direction by operating the hand-wheel (for instruction see machine).	Move car downwards by operating the manual lowering valve.
	<p>Attention!—Move car slowly,</p> <ul style="list-style-type: none"> —do not overrun next landing —therefore always be ready to operate brake — therefore operate manual lowering valve only very slowly 	
2.1.5	If the car reached the nearest landing, (can be recognized for example by rope marks) let go of brake release lever.	If the car reaches the next landing (can be recognized by position indicator) let go of resp. close manual lowering valve.
2.1.6	<p>If there are car doors have them and the landing doors closed by the trapped persons;</p> <p>if possible assist from outside.</p> <p>Instruct trapped persons to leave the car.</p>	
2.1.7	<p>If the failure could not be eliminated after carrying out the rescue measures (e.g. operated emergency limit switch after overrun of terminal landing), keep main switch switched off and inform the maintenance company (trouble-shooting service).</p> <p>Check if all landing doors are closed and locked.</p> <p>Secure damaged landing doors against access.</p>	
2.1.8	<p>If you cannot move the car by operating the manually operated devices or the manual lowering valve, proceed as follows:</p>	
2.1.8.1	Track exact location of car.	
2.1.8.2	Open the nearest landing door above the car bottom by emergency unlocking, push open car door (if provided) and have trapped persons leave the car towards the top.	
2.1.8.3	<p>If the distance between the threshold of the nearest landing door above the car bottom and the car ceiling is too small, rescue trapped persons by emergency unlocking of nearest landing door below the car bottom.</p> <p>Attention! There may be a gap below the car bottom, which involves the risk of falling down into the well. Carry out safety measures.</p>	
2.1.9	<p>If the trapped passengers can neither be rescued by the manually operated devices or the manual lowering device, nor by unlocking the landing doors or if injured persons require special measures inform the maintenance company.</p> <p>Inform the trapped persons accordingly.</p> <p>Maintain voice contact to the trapped persons until the rescue personnel arrives.</p>	



How to rescue trapped passengers from cars

	Electro-mechanically-driven lifts	Electro-hydraulically
2.2	For lifts with electrical emergency control applies:	For indirect acting hydraulic lifts applies:
2.2.1	Establish voice contact with trapped persons, ask for injured persons.	
2.2.2	Switch off main switch in the machine room. Manually operating of contactors provided in the control cabinet involves danger to life and is thus prohibited!	
2.2.3	If there are car doors have them closed by the trapped persons. If no car doors are provided instruct trapped persons to step back from car entrances. Inform trapped persons about possible car movements.	
2.2.4	Switch on main switch.	Switch on pressure gauge.
2.2.5	Switch on electrical emergency control.	Operate hand pump, observe increase of pressure on pressure gauge. If you keep on pumping and the pressure does not increase stop pumping.
		Move car downwards by operating the manual lowering valve.
2.2.6	Move car into desired run direction by operating the respective push-button of the electrical emergency control. Attention! – Do not overrun next landing.	If the ropes slack, which can be recognized by a strong pressure decrease on the pressure gauge or by lightening of slack rope indicator (if provided) let go of or close manual lowering valve immediately. Operate hand pump once again until the initial pressure level is reached. Keep on pumping until the trapped persons confirm that the car moves upwards. Afterwards move car downwards again by operating the manual lowering valve. Attention! – Watch out for slack ropes – move car slowly – do not overrun next landing – therefore move manual lowering valve only very slowly
2.2.7	If the car reaches the next landing (can be recognized by rope marks for example) stop pressing the push-buttons of the electrical emergency control.	If the car reaches the next landing (can be recognized by the position indicator) let go of or close manual lowering valve.
2.2.8	If car doors, if provided, do not open automatically, have them and also the landing doors opened by the trapped persons; if possible assist from outside. Instruct the trapped persons to leave the car.	
2.2.9	Switch off electrical emergency control.	
2.2.10	If the failure could not be eliminated after carrying out the rescue measures (e.g. operated emergency limit switch after overrun of terminal landing) switch off main switch and contact maintenance company (trouble-shooting service). Check if all landing doors are closed and locked. Secure damaged landing doors against access.	
2.2.11	If you cannot move the car by operating the electrical emergency control, proceed for rescue as follows:	
2.2.11.1	Check if all landing and car doors are closed and locked. Afterwards try to re-operate electrical emergency control (see item 2.2.5 to 2.2.9). If you do not succeed proceed as follows with installations equipped with a manually operated device:	

How to rescue trapped passengers from cars



THYSSEN AUFZUGSWERKE GMBH

Sheet 5

	Electro-mechanically driven lifts	Electro-hydraulically driven lifts
2.2.11.2	<p>Switch off main switch in the machine room.</p> <p>Manually operating of contactors provided in the control cabinet involves danger to life and is thus prohibited !</p>	
2.2.11.3	<p>Operate brake release lever and move car into desired direction by operating the hand-wheel (for instruction see machine).</p> <p>Attention !— Move car slowly</p> <ul style="list-style-type: none"> – do not overrun next landing – therefore always be ready to operate the brake 	
2.2.11.4	If the car reaches the next landing (e.g. can be recognized by rope marks), let go of brake release lever.	
2.2.11.5	If there are car doors, have them and the landing doors closed by the trapped persons; if possible assist from outside. Instruct trapped persons to leave the car.	
2.2.11.6	If the failure could not be eliminated after carrying out the rescue measures (e.g. operated emergency limit switch after overrun of terminal landing), keep main switch switched off and inform maintenance company (trouble-shooting service).	
2.2.12	If you can neither move the car by electrical emergency operation nor by manually operated device, proceed for rescue as follows:	If you can neither move the car by hand pump nor by operating the manual lowering valve proceed for rescue as follows:
2.2.12.1	Track exact location of car.	
2.2.12.2	Open the nearest landing door above the car bottom by emergency unlocking, push open car door, if provided, and have trapped persons leave the car towards the top .	
2.2.12.3	<p>If the distance between the threshold of the nearest landing door above the car bottom and the car ceiling is too small, rescue trapped persons by emergency unlocking of nearest landing door below the car bottom.</p> <p>Attention ! There may be a gap below the car bottom, which involves the risk of falling down into the well. Carry out safety measures.</p>	
	<p>If the trapped persons can neither be rescued by electrical emergency control, nor by the manually operated device, nor by emergency unlocking – or by hand pump, or by operating the manual lowering valve, or by emergency unlocking – of landing doors or if trapped, injured persons require special measures inform the maintenance company. Inform the trapped persons accordingly. Maintain voice contact to the trapped persons until the rescue personnel arrives.</p>	
<p>Inform the service engineer of THYSSEN AUFZUGSWERKE about all defects and irregularities observed.</p>		



How to rescue trapped passengers from cars

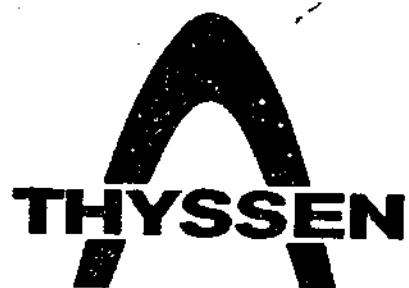
THYSSEN AUFZUGSWERKE GMBH

Sheet 6



THYSSEN AUFZUGSWERKE GMBH

Sheet 1



THYSSEN AUFZUGSWERKE GMBH

**Rescue of passengers –
passenger lift NC
(without machine room)**

1 Measures for rescue of passengers

A control panel is available in the upper landing outside the well for the rescue of passengers trapped in the car.



This control panel must always be locked during absence of the lift attendant or the maintenance personnel.

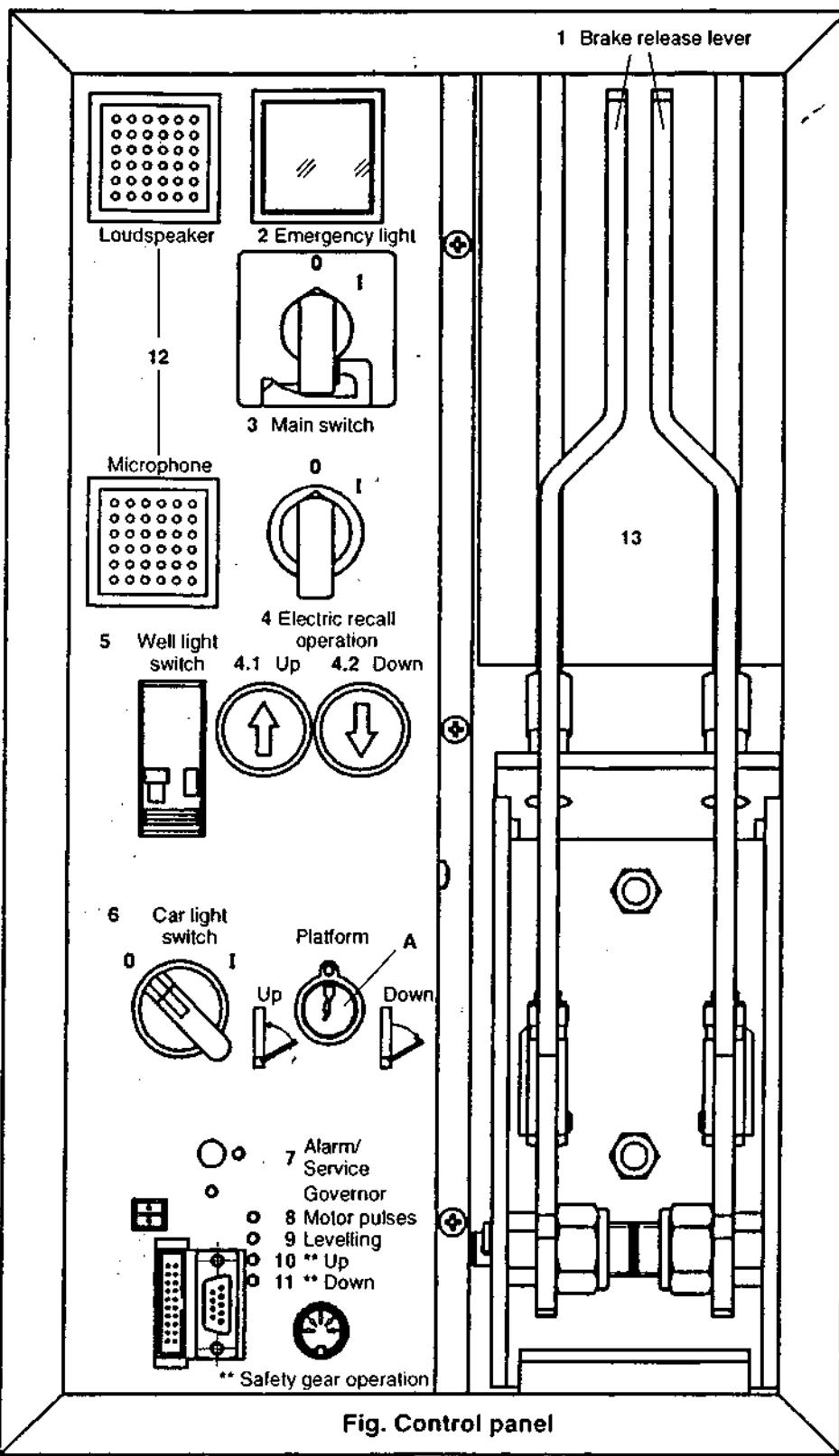


Fig. Control panel

- 1 Brake release lever, each for separate release of brake
- 2 Emergency light (battery-powered)
- 3 Main switch I on / 0 off
- 4 Electric recall switch I on / 0 off
 - 4.1 Electric recall operation button UP
 - 4.2 Electric recall operation button DOWN
- 5 Well light switch I on / 0 off
- 6 Car light switch I on / 0 off
- 7 Alarm / service pilot lamp
- 8 Motor pulses pilot lamp "Motor rotates" indicator
- 9 Level pilot lamp Landing reached indicator
- 10 Safety gear operation UP pilot lamp * Indicator lights Braking system engaged
- 11 Safety gear operation DOWN pilot lamp * Indicator lights Safety gear engaged
- 12 Optionally: Two-way voice communication to car
- 13 Vision opening to well



* Maintenance company to perform rescue of passengers if indicators 10 or 11 light

A Key-operated switch for maintenance platform (maintenance company only)

1.1

How to proceed for rescue of passengers

- a) Establish contact with the persons trapped in the car and ask for injured persons.
- b) Check all landings doors for locked condition, secure defective landing doors against access by third persons.
- c) Reset alarm (7)



d) If indicator 10 or 11 lights **passengers must be rescued by maintenance company**. Observe item "r"!

- e) If the car door is open have it closed by trapped persons.
- f) Instruct trapped persons to step back from car door.
- g) Inform trapped persons about possible car movements.

- h) Check level indicator (9) on control panel for whether car is within level range. This is a prerequisite for a rescue of passengers.

This is a prerequisite for a rescue of passengers.

Level – No – continue with item i

Level – Yes – continue with item o

1.2

Level position with electric recall operation

- i) Main switch (3) and car light (6) must be switched on. Turn on reset switch (4) = switching position I
- j) Move to nearest landing with electric recall switch UP (4.1) or DOWN (4.2). If the landing is reached, level indicator (9) will light up. Indicator (8) "Motor rotates" must be watched. If the landing is not reached after 30 seconds, the maintenance company will have to be notified.
- k) If the landing is reached level, continue with item o.
- l) If it is not possible to approach the landing under electric recall operation (e.g. for reasons of power failure), continue with item m.

1.3

Level position by disengagement of brake

- m) The switching position described in item i must be maintained. Open one brake release lever (1) by hand and carefully open the second brake release lever by hand, paying attention to indicator (8) "Motor rotates". Depending on the loading condition involved car will either move upwards or downwards. Indicator (8) "Motor rotates" may blink only, signalling that the car is moving. If the display lights permanently, the car moves too quickly, in this case let go both brake release levers immediately.



Keep one brake lever open with one hand, open and close the lever alternately and stop the car as soon as lever indicator (9) lights up.

- n) If the landing is reached level, continue with item o.

1.4

Rescue of trapped persons by opening the door in the landing

- o) Turn off main switch (3), close control panel. Find out the car position by instructing the trapped persons accordingly. Unlock landing door with emergency unlocking key, and slide it cautiously open together with the car door.

**"Caution: Risk of falling down"**

If the wrong landing door may have been opened, close it immediately and check its locking.

- p) Instruct the trapped persons to leave the car, after completion of the rescue of persons close the landing door and check that it is locked correctly.
- q) After completion of the rescue of persons switch on main switch (3) and move electric recall switch to position 0. Then make run attempts by calling the car to two different floors (landing calls); if these run attempts are unsuccessful turn off main switch (3).
- r) If rescue measures are not possible or if injured persons require special intervention, notify the maintenance company. Inform trapped persons to that effect. Maintain voice contact to trapped persons until the required helpers arrive.

Note for maintenance company: For "Release car after safety gear operation" see item 1.5

1.5

Release of car after safety gear operation

Attention: The works described below may only be carried out by technically competent personnel of the maintenance company.



Note: For arrangement and function of the controlling elements see fig. control panel.

If the indicator 10 or 11 lights up on the control panel, the braking system or the safety gear will be activated. Switch on main switch (3) and car light switch (6) for the tasks described below.

If the indicator 10 "Safety gear UP" lights up release car after safety gear operation by moving the car downwards. Turn on switch 4 "electric recall" (position 1) and release car after safety gear operation by operating button 4.2 "Down".

For further proceeding see "rescue of passengers" item 1.2 "j".

If the indicator 11 "Safety gear DOWN" lights up release car after safety gear operation by moving the car upwards. Turn on switch 4 "electric recall" (position 1) and then release car after safety gear operation by operating button 4.2 "Up". On pressing the button the car will move in upwards direction. Watch the indication (8) "Motor rotates". If the car does not move on pressing the button, the car must be released after safety gear operation from the maintenance platform by means of a rope grip device.

The maintenance platform is in the well near the uppermost landing (see maintenance instructions part 5 "Access to control cabinet"). On operating the key-operated switch platform 'A' in down direction, the maintenance platform must be turned towards **working position**. The maintenance platform will have reached the working position if it is supported by the thrust bearing (easily detectable from outside the well by railing braces being in horizontal position). After support of the maintenance platform (audible !) carefully open the uppermost landing door with emergency unlocking key.

**Mind the risk of falling down !**

Check if the maintenance platform is supported correctly, if required, continue turning the maintenance platform.

If the car is above the terminal landing, the platform cannot be moved. In this case install the rope grip device from the car roof.

A fastening screw is provided on the motor top for the nesting of the rope grip device with the lifting eye nut. Release clamp screws of rope grip, centrally adjust ropes in the grooves between the two terminal parts. Use screws and tense the two parts of the terminal, then use ring spanner SW24 for further pressing together.

Tense turnbuckle of rope grip device approx. 40 mm with the lengthening lever, then **cautiously move car upwards with push button switch 4.1**

**Attention: maximum lifting distance 15 cm !**

With longer travel distance the threaded rod of the rope grip device may bend. If the car does not move after pressing the push-button switch tighten the turnbuckle once more and once again try to move the car in upwards direction.



If the car can be moved with the motor, **immediately dismount and remove the rope grip device**.

Continue with "Rescue of passengers"

1.6

Special situation

1.6.1

Safety gear operation downwards in the area of the uppermost landing



In the case of safety gear operation of the car in down direction in the area of the uppermost landing, access both to maintenance platform and to car roof is impossible for reasons of space problems. In this case release the car after safety gear operation by pulling the counterweight.

1.6.2



Safety gear operation upwards in the area of the uppermost landing

In the case of safety gear operation of the car in the area of the uppermost landing in up direction, access both to maintenance platform and to car roof is impossible for reasons of space problems. In this case release the car after safety gear operation by pulling the counterweight and putting additional weight in the car.



Rescue of passengers – passenger lift NC

THYSSEN AUFZUGSWERKE GMBH

Sheet 6

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A.3 EMERGENCY INFORMATION

1. Thyssen Lifts & Escalators Ltd
304 Ewell Road
Surbiton
Surrey
KT6 7AQ
Telephone : (020) 8390 5411
Faximile : (020) 8390 0208
Regional Manager - D Hansell
Branch Manager - G Rains

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A.3 EMERGENCY INFORMATION

1. Thyssen Lifts & Escalators Ltd
304 Ewell Road
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Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A.4 CONTRACTUAL AND LEGAL DETAILS

- 1. Design and Collateral Warranties are bound within the Trade Contract.**

Lift equipment is guaranteed against faulty materials and workmanship for a period of 12 months immediately following practical completion. This guarantee does not extend to faults or damage resulting from misuse or remedial works to decorative finishes.

Preventative, regular maintenance is included in the Trade Contract during the 12 months guarantee period. This comprises 12 visits at monthly intervals to inspect, adjust and lubricate the lift equipment.

Expiry date: TBA

Contact -

**Thyssen Lifts & Escalators Ltd
304 Ewell Road
Surbiton
Surrey KT6 7AQ**

**Telephone : (020) 8390 5411
Facsimile : (020) 8390 0208**

- 2. Initial and subsequent Insurance Inspections are the Client's responsibility.**
- 3. Lift Test and Type Test Certification. Refer to Volume (1) 4 Section I.**
- 4. It is the Client's responsibility to ensure that PM7 inspections are carried out by a competent person at the intervals recommended by HSE. These are summarised hereunder.**

Landing and car door interlocks - At intervals not exceeding 12 months.

Main drive system components including gears, sheaves and pulleys -At intervals not exceeding 10 years.

Overspeed governors - At least every 5 years.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A4 (continued)

4. (continued)

Safety gears - At least every 5 years and when rope is replaced.

Hydraulic cylinder/ram assemblies - At intervals not exceeding 10 years.

**Note for maintenance personnel****Emergency alarm device:****Rescue of persons trapped in the well**

In accordance with EN 81 the car must be equipped with additional emergency alarm devices for establishing voice contact with persons trapped in the headroom or in the pit. The emergency alarm systems are designed as push-buttons and connected in parallel to the alarm push-button in the car. Voice contact is established by an intercom unit in the car.

The push-buttons are located:

- on the control panel of the car roof, next to the inspection switch.
- below the car bottom on the control panel.



The following maintenance instructions imply that maintenance is carried out by technically competent persons of a maintenance company. Those works which are generally assumed to be basic general knowledge are not listed.

Scan board MQ1
(Safety device)

See maintenance instructions "Scanning of switch conditions in safety circuits of lifts"

Controlling and
indicating elements

Check proper operation of components.

Brake for gear drive

Check the proper operation.
See maintenance instructions "Brake for gear drive"

Braking system
(Safety device)

See maintenance instructions "Braking system"

Progressive safety gear
(Safety device)

See maintenance instructions "Progressive safety gear"

Electric installation

Check for possible defects
Note moisture-proof requirements (protection type).
Check earth-continuity conductor

Electric safety circuit

Check correct functioning during operation
Check stoppage of the lift when an earth is created on the safety chain.
Check fitting of correct fuses and quality of earth circuits.

Electric safety circuit SR1
(Safety device)

See maintenance instructions "Electric safety circuit SR1"

Car

Check car walls, floor and ceiling for defects
Test alarm device and emergency light



Car front end boundary door	Check all parts for fastening, condition and functioning Check closing force limit
Car roof	Ensure that area is clean and dry Remove any foreign objects Check alarm switch
Car, counterweight and piston guides	Check for possible defects, correct fastening and adjustment
Car, counterweight and piston guide rails	Check for undamaged (with piston guide rails) oiled guide surface Check for safe fastenings
Sling	Check sling junction and link to car Check diverter pulleys for wear of bearings and rope groove
Counterweight	Check fastening parts, check diverter pulley, rope grooves and bearings
Speed governor (Safety device)	See maintenance instructions "Speed governor"
Gear / drive motor	Check oil level, refill, if necessary Check gear, bearings, gears and coupling for wear
Levelling accuracy	Check levelling position in landing for respective drive type
Machine frame	Check for defects and shifting of position
Oil buffer (energy dissipation type) (Safety device)	See maintenance instruction "oil buffer"
Buffer (Safety device) (energy accumulation type)	See maintenance instruction "buffer"
Well lighting	Check correct functioning of lighting
Pit	Remove oil from pit Keep pit clean and dry Check for correct functioning of alarm switch
Sliding landing doors (Safety device)	See maintenance instructions "Sliding landing doors" (For door type see data sheet)
Rope suspension	Check for wear and safety

Ropes	Check for wear and even tension Note elongation and runby Rope protection as required
Instantaneous safety gear (Safety device)	See maintenance instructions "Instantaneous safety gear"
Control cabinet	Ensure that control cabinet is clean and dry Check earth-continuity conductor connections Measure resistance of insulation and loop
Floor board MS2 (Safety device)	See maintenance instructions "Scan board for switch conditions in the safety circuit of lifts"
Traction sheave	Check rope grooves for wear Check traction sheave for fastening
Machine room	Check all switches and indicators
Overload device	Check the correct functioning
Diverter / deflection pulley	Check rope grooves and bearings for wear



HYSSSEN AUFZUGSWERKE GMBH

General maintenance instructions for passenger lifts

Sheet 4

In addition for hydraulic lifts

Pressure relief valve	Check adjustment
Hand pump	Check for correct functioning
Hydraulic unit	Check oil level of unit Check oil condition Check unit and valve block for impermeability
Hydraulic piston	Check for excessive leakage
Hydraulic telescopic piston	Check for excessive leakage Check for synchronization
Re-levelling	Check
Manual lowering	Check
Rupture valve (safety device)	Check for correct functioning and correct adjustment
Pipe / hoses	Check for impermeability and defects
Pit	Check piston unit, hose and pipe for impermeability
Oil cooler	(optionally)



THYSSEN AUFZUGSWERKE GMBH

General maintenance instructions for passenger lifts

Sheet 6

In addition for NC lifts

Drive brake (Safety device)	See maintenance instructions "Drive brake"
Control panel	Check all switches and indicating elements
Travel limiter	Travel limiter is active as soon as maintenance platform is installed Check bearings and thrust bearings of maintenance platform Check switches
Maintenance platform	Platform control located in control cabinet Check all parts for safe conditions and correct functioning
Access to control cabinet	The control cabinet is located in the uppermost landing in the well. Works to be performed on the control cabinet are carried out by standing on the folded down control cabinet door which serves as maintenance platform. Electric and mechanical safety devices ensure normal and electric emergency lift operation in the landings below the folded-down maintenance platform. Move the maintenance platform up and down with the key-operated switch in the control cabinet. Operate the travel limiter of the counterweight at the same time. The car, however, must not be in the area above the last to one landing. If the maintenance platform is lowered while the car is in the area of the uppermost landing, the maintenance platform is supported on the car and the travel limiter is supported on the counterweight. As long as this condition is maintained no car movement is possible. On switching off the maintenance platform with the key-operated switch the condition will be terminated. Persons must not be on the car roof. The well light must be switched on and the maintenance platform must be moved in down direction by means of the key-operated switch. A vision opening in the well allows to observe whether the protective railing still moves. When it stops the maintenance platform is in its terminal position. On operating the emergency unlocking switch the uppermost landing door will be unlocked and opened cautiously. Attention Risk of falling down ! Check whether the maintenance platform is lowered completely and supported on the thrust bearing. If this is the case access to the maintenance platform is possible. Attention ! Pay attention to headroom height. Close the landing door while performing any works. On terminating the maintenance works move the maintenance platform (upwards) by means of the key-operated switch.

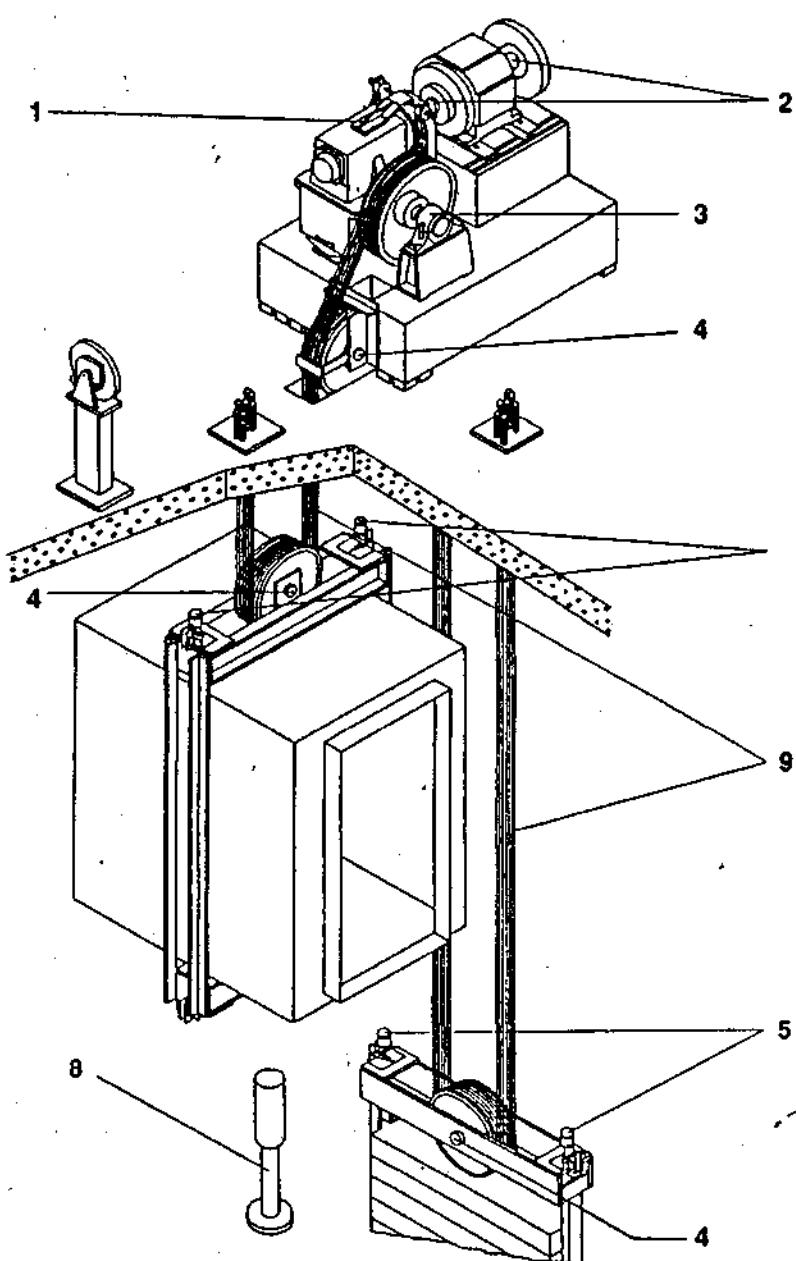


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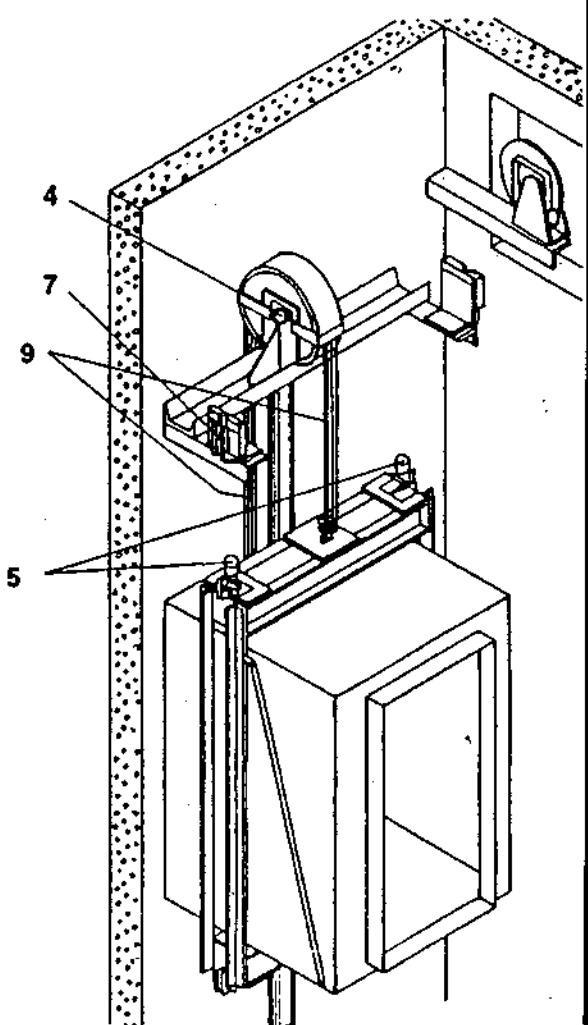
General maintenance instructions for passenger lifts

Sheet 8

Traction lift

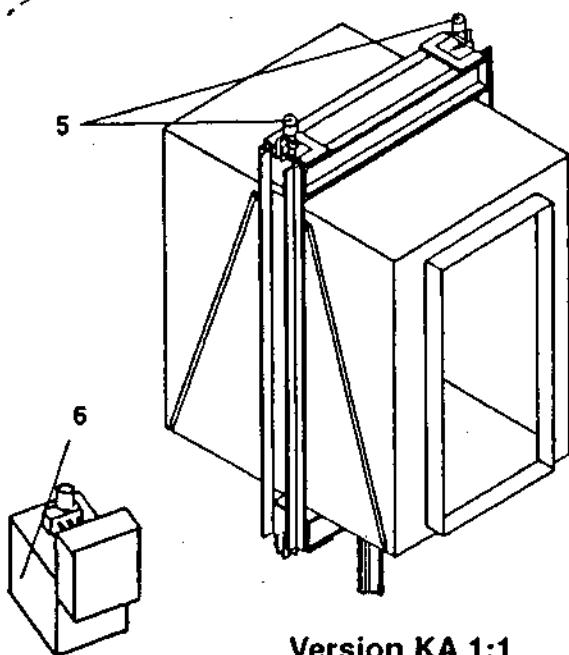
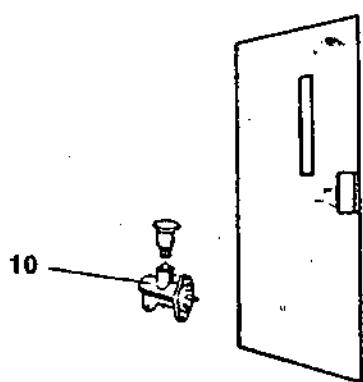


Hydraulic lift



Version KAS 1:2

Swing door



Version KA 1:1

signed: Friedl	Date issued	03.11.97					
appr.: Scholz	Name	Sche					

How to lubricate**Lubricator**

(In-house ~

THYSSEN AUFZUGSWERKE definition)

Refill oil tanks on car and counter-weight guides
as well as piston guiderails oiler
every three months

Machine oil M2

Suspension rope and speed governor rope
must be lubricated with rope protecting agents

Lubricator S4

Gear oil
(For gear type see data sheet)

For TW gears
After first installation replace after 3 years then every 6 years

Gear oil SM1

For all the other gear types
replace every 3 years

Gear oil M1

Hydraulic oil

Check oil quality every 5 years

Hydraulic oil H1 + H2

Buffer oil

Check oil level annually

Buffer oil P1



When working with lubricators observe the requirements of the National Water Act and the Water Resources Act.



Disposal of the lubricators in accordance with the Waste Disposal Law.



THYSSEN AUFZUGSWERKE GMBH

General maintenance instructions for passenger lifts

Sheet 10

OPERATING, MAINTENANCE & TECHNICAL MANUAL

The following maintenance is required to be carried out in order to ensure satisfactory working.

INSPECTION, LUBRICATION AND ADJUSTMENTS

refer to the following :

- a) maintenance activity schedule
- b) lubrication instructions

SPARE PARTS

All spare parts normally required for routine maintenance and inspection are held in stock at our servicing address (refer section 1).

MAINTENANCE ACTIVITY SCHEDULE

Visits p.a.	WORK CODES
2	A B
3	C D E
4	C F G H
6	C F G H G F
8	C F G H G F G F
9	C F G H G F G H G
12	C F G H G F G H G F G H
24	C F G H G F G H G H G F G H G F G H G F G H

Work phases		Work codes	A	B	C	D	E	F	G	H
1	Motor room and machine			✓		✓		✓		
2	Machine / hydraulic unit		✓		✓					✓
3	Lift motor and brushes		✓			✓			✓	
4	Generator and brushes		✓			✓			✓	
5	Controller		✓			✓		✓		
6	Overspeed governor / safety gear		✓		✓			✓		
7	Floor selector			✓			✓	✓		
8	Car top			✓			✓			✓
9	Car frame equipment			✓			✓			✓
10	Car entrance equipment		✓		✓				✓	
11	Ropes & divertor wheels			✓	✓		✓		✓	
12	Counterweight			✓			✓			✓
13	Hoistway / limits / pit equipment			✓			✓		✓	
14	Pit			✓		✓		✓		
15	Landing entrance / locks		✓		✓					✓
16	Signal / pushes			✓			✓		✓	
17	Door gaps		✓	✓	✓	✓	✓	✓	✓	✓
18	Fuses		✓		✓					
19	Lock annual PM7		✓		✓					

OPERATING, MAINTENANCE & TECHNICAL MANUAL

DETAILED TASK DESCRIPTION

PHASE ONE - MOTOR ROOM AND MACHINE

Clean : Motor room and machine

PHASE TWO - HYDRAULIC UNIT

Electrical machine

Clean : Motor brush gear

Check : Motor clearances

Electrical connections

Motor bearings

Oil levels and top up as necessary

Worm and wheel, bearings and gland packing

All sheaves for wear and rope slip

Brake for correct adjustment

Brake couplings, linings, fixing bolts and eyes

Brakes pins and lubricates as necessary

Hydraulic machine

Check : Oil level in tank

Oil pressure on pressure gauge

For oil leaks

Electrical connections

PHASE THREE - LIFT MOTOR AND BRUSHES

Check : Brushes for wear and correct spring tension

Motor commutators and undercutting or burning

PHASE FOUR - GENERATOR AND BRUSHES

Clean : Generator

Check : Armature and rotor clearances

Electrical connections

Bearings and lubricate

Commutators for undercutting and burning

Brushes for wear and correct spring tension

PHASE FIVE - CONTROLLER

Clean and adjust controller

Check : Relay and switches connectors for tightness and flexibility
Operation of overloads
Electrical connections
Air gaps on switches
Correct rated fuses

PHASE SIX - OVERSPEED GOVERNOR / SAFETY GEAR

Clean and lubricate as necessary

Check : Switches, cams, rollers and sheaves
Governor cover is secure

PHASE SEVEN - FLOOR SELECTOR

Clean cell, flag, and adjust and lubricate as necessary

PHASE EIGHT - CAR TOP

Clean : Car top

PHASE NINE - CAR FRAME EQUIPMENT

Clean : Car frame equipment

Check : Safety operated switch
All car limits / stop switches
Load weighing switches (on hydraulics)
Car guide shoes
Safety gear
Trailing flexes for wear
2:1 rope sheaves and lubricate as necessary
Tape anchorages
Isolation rubbers

OPERATING, MAINTENANCE & TECHNICAL MANUAL

PHASE TEN - CAR ENTRANCE EQUIPMENT

Clean : Car entrance equipment

Check : Top track and hanger rollers
Kicking rollers
Aircords or chains for wear and tension
Bottom track
Leaves and pickets on manual gates
Operator and control switches
Flexible cables to reversal devices
Door operators
Electrical interlocks

PHASE ELEVEN - ROPES DIVERTOR TOP WHEELS

Examine ropes for wear, broken wires and unequal tension.
Lubricate ropes when necessary

Check : Ropes hitches
Top wheels bearings and lubricate as necessary

PHASE TWELVE - COUNTERWEIGHT

Clean : Counterweight

Check : Guide shoes for wear
2:1 sheaves and lubricate as necessary
Safety gear
Buffer

PHASE THIRTEEN - HOISTWAY / LIMITS / PIT EQUIPMENT

Clean : Guides and brackets
Limit switches
Lubricate guides as necessary
Upper limit switches
Guide fixings and vanes
Compensating rope sheaves
Lower limits
All pit emergency stop switches
For worm ram seals

Empty overflow bottle if necessary
Shaft lighting

PHASE FOURTEEN - PIT

Clean : Pit

PHASE FIFTEEN - LANDING ENTRANCE / LOCK

Clean : Landing entrance equipment

Check : Top track and hanger rollers
Kicking rollers
Aircords or chains for wear and tension
Lock contacts for condition and follow up
Lock latching mechanism
Lock rollers for wear and clearance
Door closers/weights
Bottom door guides
Leaves and pickets on manual gates
Doors operators

PHASE SIXTEEN - SIGNALS / PUSHES

Check : Indicators and replace lamps
Hall lanterns and gongs
Firemen's switch
Hospital emergency service switch
Operation of landing and car pushes
Replace lamps as required

PHASE SEVENTEEN - CAR AND LANDING DOOR GAPS

Check : With the aid of your door gap gauge, check the clearance is less than six millimetres.

PHASE EIGHTEEN - FUSES

Clean and check fuses for correct type and rating, fuse holders and electrical connections.

PHASE NINETEEN - LOCK ANNUAL PM7

OPERATING, MAINTENANCE & TECHNICAL MANUAL

Carry out the annual LOCK INSPECTION REPORT PM7 procedure and provide documentation of the inspection.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A.2

HEALTH AND SAFETY AT WORK

It is the duty of every employer:

- a) to ensure, so far as is reasonably practicable, the health, safety and welfare at work not only of all his employees but of other people who use his premises or are affected by his undertaking.
- b) to provide the information necessary for (a) above.

It is the duty of every employee while at work:

- a) to take reasonable care for the health and safety of himself and of other people who may be affected by his acts or omissions at work.
- b) to co-operate with his employer or any other person so far as is necessary for the provisions of the various As relevant Acts to be complied with.

A.2.1

Permit to Work System

A 'permit to work' system must be adopted to meet and satisfy the legal requirements of the present legislation.

The 'permit to work' system should incorporate the following:-

- a) To give authority to maintenance staff to commence inspection of plant, or work on plant.
- b) To explain and outline the approach required to carry out the work in a way that no personnel or plant hazard to the working environment is created.
- c) The system should be devised so that maintenance may be carried out safely and that starting up or running of plant presents no environmental hazard.
- d) Co-ordination of staff requirements in relation to maintenance procedures and operations to eliminate exposure of the workforce to any hazard.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

- e) Correct shutting down of systems must be observed and no electrical work on equipment where removal of guards or housings has taken place must be undertaken without satisfactory clearance that the plant is now safe for work to proceed.
- f) Members of the maintenance staff must only carry out work within their discipline and job description.
- g) Where it is necessary to provide staging scaffolding, towers and ladders to examine or carry out replacement of components then these must comply in all respects with the latest legislation.

All safety precautions are to be observed when using replacement products. All electric circuit diagrams, and manufacturers spares lists must be checked against the existing equipment to determine it is the correct arrangement or equipment for the specific application.

Any item used must comply with the correct British Standard specification and where tests are carried out on these, they must be in compliance with relevant British Standard Specifications or Codes of Practice.

Starting up of all plant must be acted upon in conjunction with plant manufacturer's commissioning and starting up manuals, so that the correct setting of switches, valves and their sequence of operations is correct for each individual piece of equipment.

CAUTION - Remotely Controlled Plant

Do NOT put hands or objects on any item of stationary rotating machinery as the equipment may start automatically and cause injury or damage.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A.2.2

Warning and Safety Notices

At all times warning and safety notices must be maintained and properly displayed and worded to give clear instructions.

Notices covering First Aid and Resuscitation from Electric Shock must be displayed in all plant-rooms.

Proper fire precautions must be observed within the plant-rooms and building.

Smoking will not be allowed in any plant-rooms or service space.

Notices must be displayed stating "NO SMOKING" and "SMOKING PROHIBITED IN THIS AREA".

All fire fighting equipment must be clearly marked and available for use.

A.2.3

Fire Protection/Alarms

Fire fighting equipment, hose reels, sprinkler systems, etc. must be provided, regularly tested, maintained and kept readily available.

Fire alarm systems must be regularly checked, and kept in working order.

Care must be taken, and adequate protection provided, to prevent fire when welding or carrying out similar operations involving the application of heat. Arc welding demands protective screens. Precautions against explosions are laid down for working on tanks or containers which have held explosive or flammable substances.

All extinguishers must be periodically examined and contents renewed as required.

Each extinguisher should be numbered and a log kept of inspections and action.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A.2.4

Escape Routes

Periodic inspection of all escape routes and exits should be made to confirm that doors open freely and routes are clear of obstructions.

Should oil be spilt on bases or floors the area must be thoroughly cleaned and sanded.

A.2.5

Identification Labels

All items of plant and equipment are labelled. Refer to description of the installation (section B), description of operation (section D) plant schedules (section C) and valve schedule for functions.

A.2.6

Lighting

In all plant-rooms and service areas lighting must be maintained at a high level to enable inspections to be carried out and prevent accidents due to badly lit areas.

A.2.7

Portable Tools and Hand Lamps

Where power operated hand held tools or hand lamps are used these items together with their power supply must conform to the regulations applying to the use of this type of apparatus.

A.2.8

Plant-rooms

A high degree of cleanliness both of rotating machinery and static equipment is of the utmost importance. Floors and machinery must be protected from spilt lubricants. Loose materials, containers and papers must not be allowed to accumulate.

A.2.9

Drains and Sumps

All drains must be cleared of silt or any refuse to ensure that these are free and unobstructed at all times. Sumps must be inspected, drained regularly and cleaned.

A.2.10

Keys

Access to all plant-rooms and equipment contained there in must be controlled and restricted to authorised personnel only.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A.2.11

Drive Guards and Housings

It is important that after maintenance has been carried out on any piece of equipment on which drive guards or housings have been removed, that these are replaced immediately the work has been completed.

Ensure that at all times, when guards and housings are removed, that the electrical supply to the unit is isolated and fuses removed.

Starting up of plant, replacing of guards and housings, any further disconnection and restoring of plant into full service is carried out by authorised personnel only.

Caution - Remotely Controlled Plant

Do NOT put hands or objects on any item of stationary rotating machinery as the equipment may start automatically and cause injury or damage.

A.2.12

Pollution

Anyone in control of industrial or commercial premises must render inoffensive any potentially harmful emissions into the atmosphere.

A.2.13

Protective Equipment

Where appropriate to the work, protective equipment (e.g. goggles, screens, respirators, protective clothing, safety belts) must be provided and used.

A.2.14

Dangerous Substances

Battery acid, water treatment, and all other chemicals must be stored and handled carefully. They are poisonous and can damage the skin and particularly the eyes.

Adequate ventilation must be provided. Special precautions must be taken in atmosphere where there is steam, smoke, asbestos or other unhealthy or dangerous contaminants, or in confined spaces.

Refrigerant gas should not be inhaled and must never be exposed to a naked flame.

Building Services Operating and Maintenance Instructions
5-7 Carlton Gardens, London SW1

A2.15

First Aid

First Aid boxes or cupboards of the prescribed standard, must be provided in accessible positions, and kept clean and in good repair. The minimum quantity and quality of dressings etc. has been laid down according to the number of persons employed. Where it is required by the Regulations, a responsible and readily available person, trained in First Aid treatment, must be named, and placed in charge of the equipment during working hours.



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Safety devices

Component	Type	Test certificate
Scan board for scanning of switch conditions in the safety circuits of lifts	MS2	RB-95 A223
Scan board for scanning of switch conditions in the safety circuits of lifts	MQ1	RB-97 A128
Electric safety circuit	SR1	EB-95 A168
Safety gear	6071/0 6071/1 6071/2 6071/3	AFV 345/1 AFV 213/2 AFV 212/1 AFV 214/3
Instantaneous safety gear	OR 0 OR 1 UR 4	AFV 197 AFV 046 AFV 194
Braking system	6071/0 6071/1 6071/2 6071/3	ABV 345/1 ABV 213/2 ABV 212/1 ABV 214/3
Speed governor	6023	AGB 055/1
Spring type buffer	P 1 P 2 P 2 - SA1	AP 001/300384 AP 001/300383 AP 001/300449
Oil buffer	O1 A O1 B O1 C O2 A O2 B O2 C O3 A O3 B O3 C O4 A O4 B O4 C O5 A O5 B O5 C	APV 001 APV 002 APV 003 APV 004 APV 005 APV 006 APV 007 APV 008 APV 009 APV 010 APV 011 APV 012 APV 013 APV 014 APV 015
Rupture valve	Giehl	

For order-specific components see name plate



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Page 2

Safety devices

Component	Type	Test certificate
Sliding landing door	M2T S3	ATV 150/6
	M2Z S3	ATV 202/5
	M2T S4	ATV 300/3
	M2Z S4	ATV 309/2
	M2T S5	ATV 395/1
	M2Z S5	ATV 396/1
	M2T S6	ATV 545
	M2Z S6	ATV 546
	M2T S7	ATV 466/1
	M2Z S7	ATV 468/1
	M2T S8	ATV 570
	M2Z S8	ATV 571
	M4TZ S3	ATV 203/5
	M4TZ S5	ATV 397/2
	M4TZ S7	ATV 462/1
	M4TZ S8	ATV 572
	T3 S1	ATV 255/3
	T6 S1	ATV 256/3

Rope test certificate PFEIFER DRAKO

Factory certificate 2.1 acc. to EN 10204

Suspension rope	Drako 250H Drako 250T Drako 300T 8 x 19 Warrington
Governor rope	6 x 19 Warrington 8 x 19 Warrington

T O V (Technical Inspectorate) RHINELAND e.V.
Industrial and building system division
Lifts and handling systems section

T O V
Rhineland

Certificate
on the
Result of a Type Test

Test mark:

RB-95A223

Test item:
Interrogation circuit for control states in the safety circuit of lifts

Manufacturer/supplier: Thyssen Aufzüge GmbH
Bernhäuserstr. 45
73765 Neuhausen a.d.F.

Manufacturer's designation:
4 assemblies: MS, MS1, MS2 and a central interrogation module MQ

Range of application:
INTERROGATION and/or MONITORING of control states in the safety circuit of lift installations for functions without relevance with regard to safety.

Test based on:

1. TRA 200 (technical rules for lifts) /
May 1992:
Technical rules for lifts
(Test of components).
2. DIN EN 81:
Safety rules for the construction and installation of lifts and service lifts
 - Part 1: Electric lifts
/October 1986
 - Part 2: Hydraulic lifts
/July 1989

(each using the "Interpretation 162-D")

Serial No.

T O V (Technical Inspectorate) RHINELAND e.V.
Industrial and building system division
Lifts and handling systems section

T O V
Rhineland

T O V (Technical Inspectorate) RHINELAND e.V.
Industrial and building system division
Lifts and handling systems section

T O V
Rhineland

3. In accordance with:

TRA 101 / July 1980:
Technical rules for lifts
(Test of components).

Scope of inspection:

According to TRA 263.2 (technical rules for lifts) and/or DIN EN 81, parts 1/2, clause 14.1.2.1.3, no other electric equipment shall be connected in parallel with safety switches, apart from exceptions permitted in the rules. In the event of interruption of the return conductor (N conductor) to the inputs of the interrogation circuit on the circuit board, however, components of the interrogation inputs are in parallel with specific safety devices. Moreover, a non-permissible service condition of the lift must not arise by the interrogation circuit in the safety circuit, particularly in the event of failure of components in the circuit. Consequently, in accordance with TRA 101 (technical rules for lifts), section 8, the interrogation circuit is subject to specific tests.

Test result: TYPE TEST PASSED.

Special conditions: There are no objections against the use of the component in lift controls, if the following "special conditions" are satisfied:

1. The component must be protected from water, conductive dusts and moisture condensation. Consequently, the component must at least conform to degree of protection IP 33 or it must be built into a suitable enclosure or in a suitable cabinet.

For assemblies MS, MS1 and MS2, this requirement is deemed to be fulfilled, if the enclosure used is according to "annex A2" and if the "assembly conditions according to annex A2" (see enclosure) are fulfilled. The enclosure must be assembled according to "annex A2" in such a way that the wires enter the enclosure from beneath it. Other mounting and assembly instructions which are at least equivalent are permissible, as well.

Documents:

2. The identity of the component agreeing with the specimen must be ensured (e.g.: providing it with the "test mark" RB-95A223).

3. The return conductor for the contactors relevant to safety must be led ("looped") via the board according to the terminal diagram and must not have any further connection to the return conductors of the remaining control.

The following documents must at least accompany the above component (or the lift control equipped with this component):

- Copy of this certificate with the annotation of the manufacturer that the component conforms to the test item.
- Description of the test item, e.g.:
"Arrangement and connection of the assemblies MS; MS1, MS2 and MQ",
dated 13.12.1995 - EAE 3/B6
... see enclosure

1. This inspection certificate is based on the test report No. 947/S95/223 of the "Sicherheit und Umweltschutz GmbH" in the TÜV Rhineland.
2. This "component test certificate" is valid up to 01.01.2002.
3. Retests are required whenever a change is made, however, every five years at the latest.

T O V (Technical Inspectorate) Rhineland e.V.

Central industrial and building system department
Handling systems section

- Components testing agency for electrical safety circuits with electronic components

Cologne, 20.12.1995
ZA-AT-Je/m
Signature: Jende

Enclosures

Test instructions for the assemblies MS, MS1, MS2 and MQ
Designations for DIN circuit diagrams are enclosed in parentheses.

Test of MS, MS1 and MS2

Worst case of an N-conductor interruption to an assembly MS..:

The smallest bridging resistance in the safety circuit via the door and locking device switches results for:
- Breakage of the neutral conductor in F1, F2 or F3 (see equivalent circuit) and
- opening of the locking device switch in the middle landing.

How to proceed?:

1. Disconnect the wire going downwards at terminal N3.
Note: Several wires may be involved in more than 32 landings and/or with front and rear entrances. In this case, the test will have to be performed separately for each downgoing N-conductor.
2. Move the car to the middle landing.
3. Enter car call to another landing.
4. Emergency unlocking after starting.
Run contactors to drop out immediately.
5. Connect wire to terminal N3 again.

Note: In this case, the run contactors are deactivated through the resistors of the input circuits of the MS assemblies.

Test of MQ

Worst case of an N-conductor interruption to assembly MQ:

The smallest resistance in this part of the safety circuit results for:
- Breakage of the neutral conductor in F4 (see equivalent circuit) and
- opening of the safety circuit short of terminal ZK (X1:110).

How to proceed?:

1. Move car to the upper terminal landing.
2. Enter DOWN car call.
3. Disconnect neutral conductor at the first terminal N2 on top.
(Pulling off the plug at assembly MQ is not possible).
Run contactors to drop out immediately.
4. Make intervention undone again.

Note: Disconnecting the neutral conductor causes switching off by the computer. Deactivation of the contactors through the resistor chain of the input circuits would require complex interventions in the electronic equipment.

Sufficient evidence of the resetting of the contactors despite bypass current through the effective resistor chain in the event of N-conductor interruption is already produced through the test of MS.

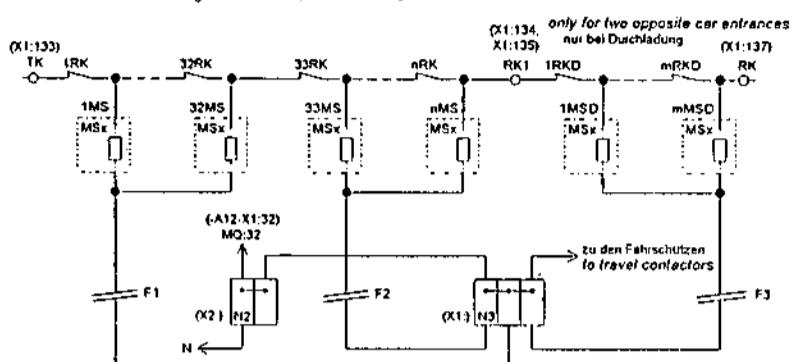
Anordnung und Beschaltung der Baugruppen MS, MS1, MS2 und MQ

Layout and interconnections of subassemblies MS, MS1, MS2 and MQ

Bezeichnungen für DIN-Schaltpläne sind in Klammern gesetzt.
Designations for wiring diagrams acc. to DIN in brackets.

Betriebsmittelkennzeichnung Equipment designation	weiter up to now	DIN
xRK bzw. xRD	xRK bzw. xRD	*Sx-S139 bzw. xSD-S139
xMS bzw. xMSD	xMS bzw. xMSD	*Sx-A30 bzw. xSD-A30

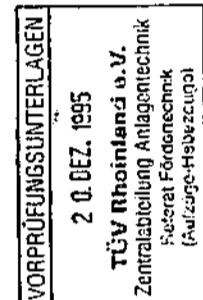
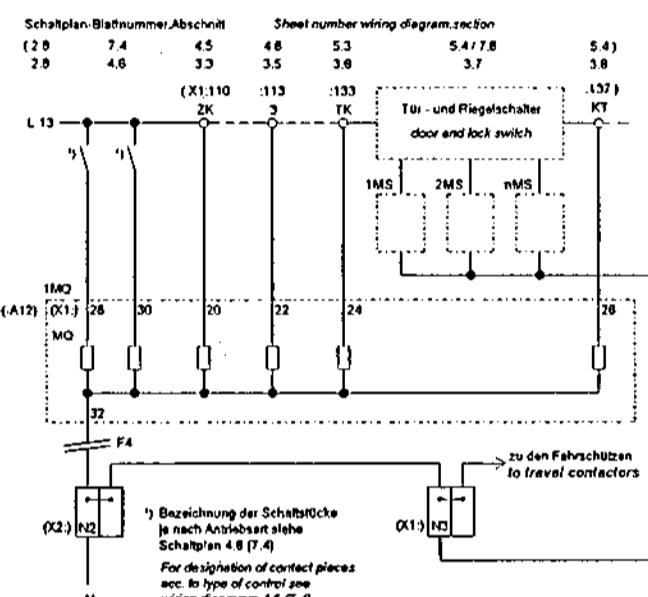
Ersatzschaltung für Baugruppen MSx
MSx steht stellvertretend für die Ausführungsarten MS, MS1 und MS2.
Equivalent circuit of subassemblies MSx
MSx stands for the following versions: MS, MS1 and MS2.



An die von den Klemmen N3 nach unten abgehenden N-Leitungen dürfen jeweils maximal 32 Baugruppen MS angeschlossen werden.
Do not connect more than 32 subassemblies to the N-conductors outgoing from the terminals in down direction.

Ersatzschaltung für Baugruppe MQ

Equivalent circuit of subassembly MQ



Functional description of the assemblies MS, MS1, MS2 and MQ

Designations for DIN circuit diagrams are enclosed in parentheses.

1. General

Circuit boards MS, MS1, MS2 and MQ have the task of interrogating the switching states of safety switches and of conditioning them for the control of the computer program.

For so doing, high-resistance interrogation circuits are connected to the safety circuit. Optocouplers ensure the required electrical separation of the interrogation circuit and the microprocessor input signal circuit.

2. The assemblies MS, MS1 and MS2 process the information such as call entry, call acceptance, boarding arrows, etc. to be input and output at each landing door.

Moreover, the assemblies MS... have a high-resistance interrogation input with optocoupler separation for interrogation for the locking device switch. This interrogation is intended for diagnosis only. It permits a fault in the door lock to be indicated.

The neutral conductor N3 is the reference conductor for the interrogation inputs of the assemblies MS... If there are more than 32 assemblies MS..., a separate N conductor will have to be laid for every 32 assemblies max.

3. The assembly MQ is connected to the safety circuit at the following connecting points:

Connection 20: Terminal ZK (X1:110) - Interrogation for the operationally not actuated safety switches

Connection 22: Terminal 3 (X1:113) - Interrogation for the emergency brake switch

Connection 24: Terminal TK (X1:133) - Interrogation for the door switches

Connection 26: Terminal KT (X1:137) - Interrogation for the locking device switches

Connections 28 and 30 are intended for checking back of the run contactors.

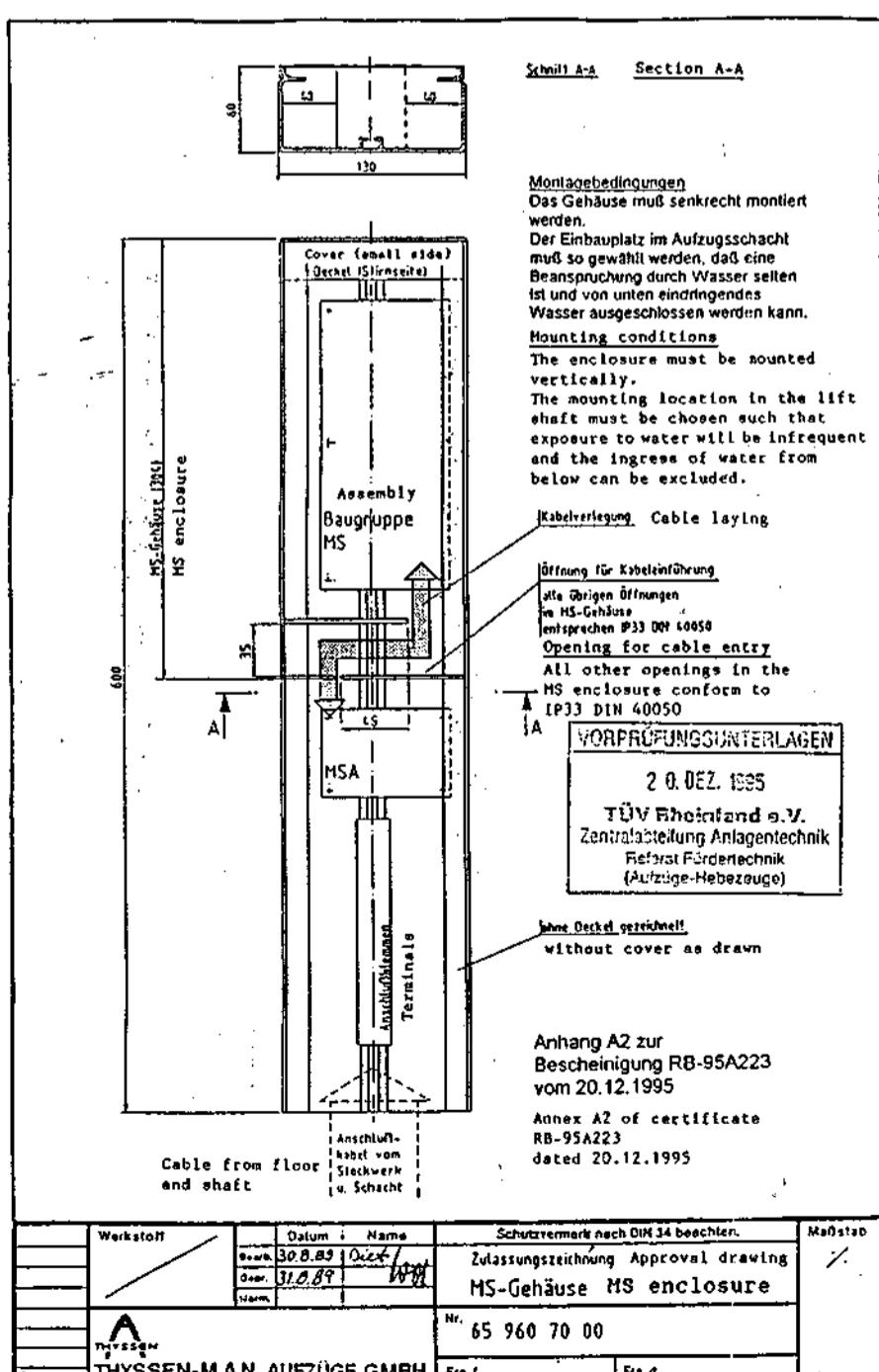
The neutral conductor N2 at connection 32 is the reference conductor for the interrogation inputs of assembly MQ.

All interrogation signals are used for program control only and are not relevant to safety.

Manufacturer's certification

We certify that the electronic interrogation circuit with test mark RB-95A223 conforms to the tested component in type and design.

THYSSEN AUFZÜGE GMBH
Signatures: ppa. Eisenbeis ppa. Selig



Type test certificate

Test mark: RB-97A128

Test item/component: Inquiry circuit via switching states in the safety circuit of lifts

Manufacturer's designation: Assembly MQ1

Manufacturer/supplier: Thyssen Aufzüge GmbH
Bernhäuser Str. 45
73765 Neuhausen a.d.F.

Range of application:

According to „TRA“ (technical rules for lifts) 263.2 or DIN EN 81-1/2, clause 14.1.2.1.3, apart from exceptions permitted in the standards mentioned, no electric equipment shall be connected in parallel with electric safety devices. Therefore, it must be checked whether non-permissible operating states arise due to the inquiry circuit also in the event of one of the errors mentioned in the standards specified. Hence, the electric circuit was subjected to special tests pursuant to „TRA“ (technical rules for lifts) 101, section 8.

Tests based on:

1. „TRA“ (technical rules for lifts) 101/July 1980:
‘Technical rules for lifts’
(„Testing of components“).
2. „TRA“ (technical rules for lifts) 200/May 1992:
‘Technical rules for lifts’
(„Passenger lifts, goods lifts, service lifts“).
3. DIN EN81:
„Safety rules for the construction and installation of lifts and service lifts“,
- Part 1: „Electric lifts“/October 1986
- Part 2: „Hydraulic lifts“/July 1989
....(“Interpretation 162-D“ is applicable for both parts)

Test result: THE TYPE TEST HAS BEEN PASSED.

Page - 1 -

TÜV (German Technical Inspectorate) Rhineland
Systems engineering

TÜV (German Technical Inspectorate) RHINELAND
Systems engineering

Special conditions:

- There are no objections against the use of the COMPONENT in lift controls, if at least the following „special conditions“ are satisfied:
1. In using the inputs X1.4, X1.10, X1.6, X1.12 and X1.14 on assembly MQ1 for inquiries in the safety circuit of lifts, it is mandatory to observe the block diagram shown in annex A1 (see enclosure) of this report. Moreover, the assembly must be incorporated in an enclosure with a degree of protection of at least IP33.
 2. Fusing of the safety circuit must not exceed 4 A.
 3. The protection requirements pursuant to Art. 4, para. 1, EMC law, must be met.
 4. The identity of the COMPONENT agreeing with the test specimen must be ensured (e.g.: by applying the „test mark“ RB-97A128).
 5. If the COMPONENT is located in a more complex configuration (e.g. on a circuit board), the tested area shall be marked especially.

Remarks:

1. This test certificate is based on the test report with the No. 947/S97/128 of „Sicherheit und Umweltschutz GmbH“ within the TÜV (German Technical Inspectorate) Rhineland.
2. This „type test certificate“ is valid until 01.01.2007.
3. Retests shall be required whenever an alteration is made, but every five years at the latest.

TÜV (German Technical Inspectorate) e.V. (registered association)
Systems engineering
- Lifts + hoisting gear section
- Testing agency pursuant to Art. 17(1) of the „Aufzugsverordnung“ (lift regulations) for „electrical safety circuits with electronic components“

Cologne, 22 April 1997 - ZA-AT-041-Je/m

Signed: Jende

Enclosures:

- A1 Mandatory connection conditions for inquiry inputs on assembly MQ1
A2 Functional description of the inquiry inputs on the safety circuit and test instructions

Documentation:

The following documents must at least accompany the above COMPONENT (or the lift control equipped with this COMPONENT):

1. A copy of this certificate with a note by the manufacturer to the effect that the given COMPONENT agrees with that tested.
2. Description of the test item:
 - A1 Connection conditions for the inquiry inputs on assembly MQ1 (see enclosure) whose compliance is mandatory.
 - A2 Functional description of inquiry inputs on safety circuit and test instructions (see enclosure).

Page - 3 -

Manufacturer's certification

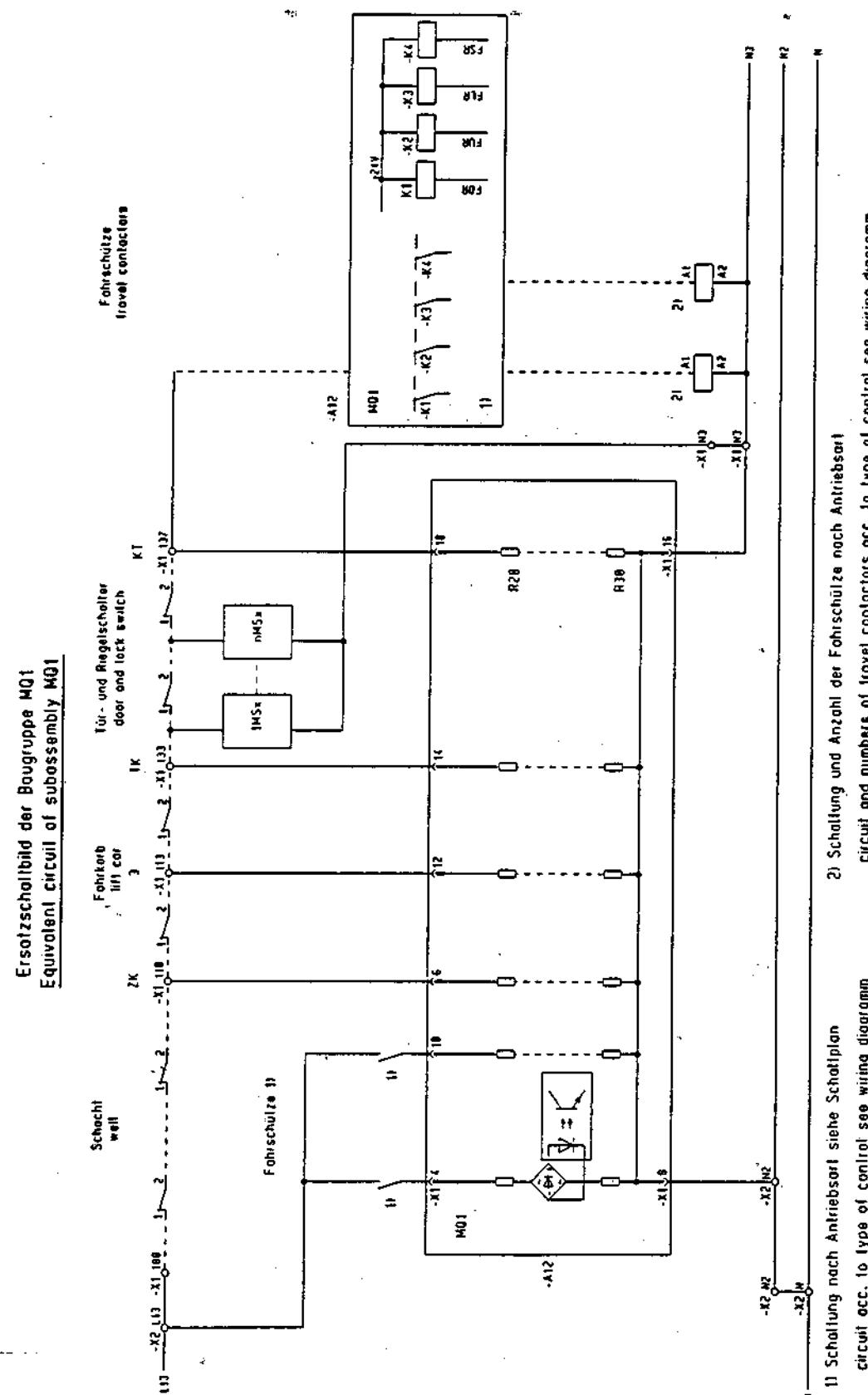
This is to certify that the inquiry circuit for switching states in the safety circuit of lifts with the designation MQ1 and the test mark RB-97A128 agrees with the tested component in type and design.

Thyssen Aufzüge GmbH

Signatures: Selg Eisenbeis

Annex A1: Mandatory connection conditions for the inquiry inputs on assembly MQ1

(Source: Thyssen Aufzüge GmbH)



TÜV Rheinland (German Technical Inspectorate) Rhineland

Annex A2: Functional description of the inquiry inputs on the safety circuit and test instructions

Functional description of the inquiry inputs on the safety circuit

The switching states of travel contactors and contacts in the safety circuit are inquired via inputs X1.4, X1.10, X1.6, X1.12, X1.14 and X1.18 on assembly MQ1. These inquiries are intended only for functions with contents not relevant to safety. With the exception of the common return conductor, the inquiry inputs are constructed safely separated. The tapping of the switching state information for further processing in the electronic control is effected through optocouplers which meet the requirements made on safe separation of the safety circuit from the power circuits of the electronic control.

To have control over an otherwise critical conductor interruption in the return conductor of the inquiry inputs (bridging of safety switches), the conductor path of the return conductor on the circuit board of the assembly is especially carried between terminal X1.8 and terminal X1.16.

Due to the connection of the return conductor of the contactors relevant to safety (drive contactors, travel contactors) with the return conductors of the inquiry inputs - according to annex A1 - each return conductor interruption will inevitably lead to shutting down the drive. An additional connection of the return conductors (contactors, inquiries) with the N conductor or PE (protective earth) conductors - deviating from annex 1 - is not permissible.

The fuse with a nominal value of 4 A max. to be connected in the safety circuit on the line side also serves for protection of the return conductor path on the circuit board.

Instructions for testing the correct installation and operation of the inquiry inputs

The correct connection of the return conductor terminals of the inquiry inputs on the MQ1 assembly and the shutting down function of the drive in the event of interruptions in the return conductor path must be tested.

The following steps are suggested for performing this test:

1. The connection of the N conductor with X1.8 (MQ1) must be interrupted (see annex A1).
 2. Due to the release of the drive contactors, the interruption of this connection must lead to the safe shutting down of the drive. However, as the electronic control also trips or can trip a (not safe) shutting down of the drive, the release of the contactors alone is not a suitable criterion.

Due to the interruption mentioned in 1. Above, the return conductor terminals **X1.8**, **X1.16** (MQ1) and terminal **X1.N3** (outside MQ1) must no longer have a low-resistance connection with the N conductor or PE (protective earth).

To be verified by voltage measurement on terminals X1.8, X1.6 (MQ1) and at terminal X1.N3 and - in the event of isolation from supply - measurement of the ohmic resistance.

3. Then restore proper connections.

Documents:

the following documents must at least accompany the above component (or the lift control equipped with this component):

- Copy of this certificate with the annotation of the manufacturer that the respective component conforms to the test item.
- Description of the test item, e.g.:
 - ... Circuit diagram of the safety circuit SR 1
 - ... Functional description and test instruction for the safety circuit SR 1
 - ... Information on the operating sequence/operating ranges of the encoders.

Notes:

1. This inspection certificate is based on the test report No.: 947/S95/160 of the "Sicherheit und Umweltschutz GmbH" in the TÜV Rhineland.
 2. This "component test certificate" is valid up to 01.09.2000.
 3. Retests are required whenever a change is made, however, every five years at the latest.

TUV (Technical Inspectorate) Rhineland e.v.

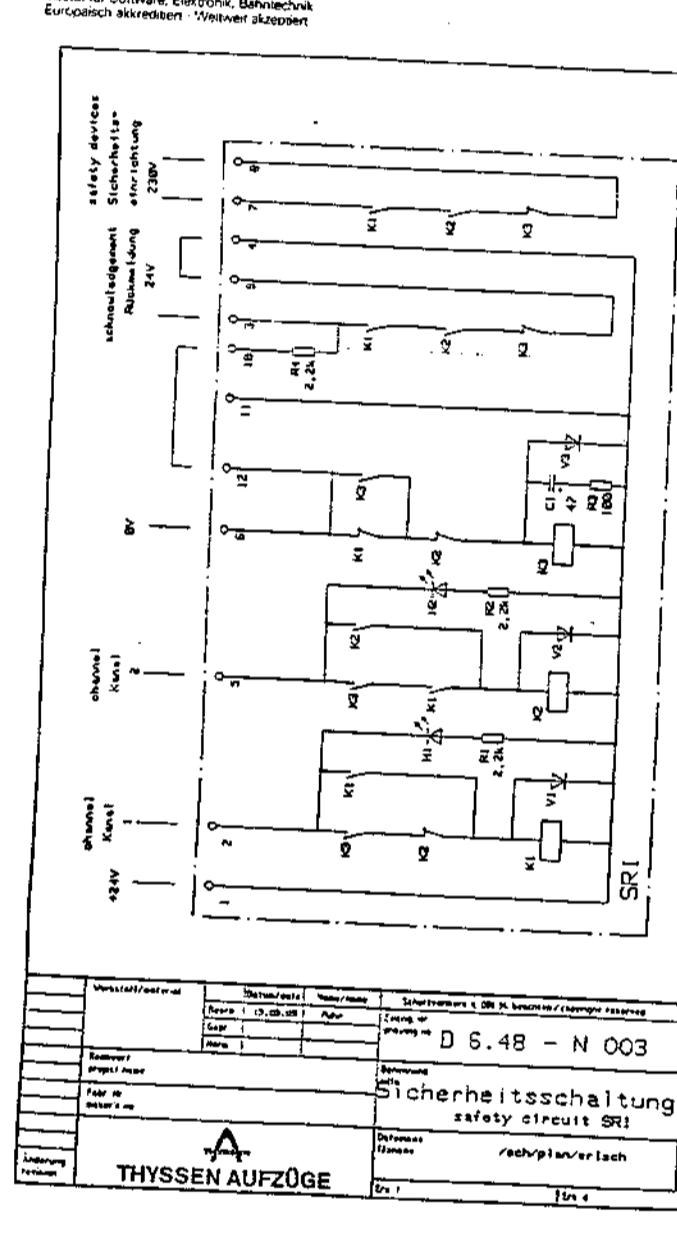
Central industrial and building system department
Handling systems section
- Components testing agency for electrical
safety circuits with electronic components

ZA-AT-Je-mt
Signature: Jende

ENCLOSURES:

1. Safety circuit SR1 (report No. 947/S95/168: Annex A1)
 2. Safety circuit SR1 (report No. 947/S95/168: Annexes A2.1-2.3)

Page 5 of 5



Anhang A

Seite 6 von

THYSSEN AUFZÜGE	Safety Circuit Type SRI Description and Test Instructions	Page 1
1 Use		
The safety circuit can be used in the following cases:		
1.	As electrical safety device according to the technical rules for lifts TPA 200 and DIN EN 81 instead of mechanical positive switches.	
2.	In circuits with safety function such as for bridging the door and locking device switches on levelling and re-levelling with the landing door and the car door opened.	
2 Technical data		
Dimensions (LxWxH) mm	:	130 x 125.4 x 99
Degree of protection	:	Enclosure: IP 50 Terminals: IP 20
Ambient temperature	:	-25° C to +65° C
Mounting	:	on supporting rails according to EN 50022 and EN 50035
Cross-sectional areas of connecting cables	:	single wire : 4 mm ² , flexible : 2.5 mm ²
Power supply	:	DC 24 V + 10% - 15% (terminals 1 and 6)
Output circuits		
Terminals 3 and 9	:	DC 24 V, 1 A
Terminals 7 and 8	:	max. switching voltage: AC 230 V max. continuous current: AC 4 A max. switched current: AC 4 A, cos = 1 Rated values as to DIN EN 81, part 1, appendix F: AC 3.6 A, cos = 0.7
Fusing: Circuit breaker 2 A, tripping characteristic C or fuse 1 A, fast.		
3 Layout		
A circuit board is equipped with three safety relays and terminals. The circuit board is accommodated in a plastic casing. The relays and the remaining components, except the terminals, are covered with a hood.		
Casing:	Insulating casing type UM 108	
	Manufacturer: Phoenix Contact GmbH & Co.	
Relays:	Safety relays with positive-action contacts	
	Manufacturer: Hengstler Baulemente GmbH	
	Type : HO2-03462/24 - 13j6 - 4xA/2xR (4G) 59	
	Order-No.: BV.462 - 1334 (crown contact)	
	Approval licence of TÜV Rhineland No. R9319014	
Alternative:		
Aufgestellt: EAE 3/BG	Ausgabe - Datum: 12.05.95	Änderung Datum: 26.07.1995
Ausgeb. Stelle		

THYSSEN AUFZÜGE	Safety Circuit Type SRI Description and Test Instructions	Page 2
	Manufacturer: E. Dold & Söhne KG Type : OA 5602.54/2003 Li Approval licence of TUV Rhineland No. R 9319012	
Circuit board:	Base material : Epoxy resin glass-reinforced laminate Type 249-2-5-FVO-EC-EP-6C-Cu according to DIN-IEC 249	
	Minimum creepage distances according to DIN VDE 0110, part 1, table 4, pollution degree 3, insulating material III a/b for the circuit between terminals 7 and 8 : 4 mm for 250 V for the other circuits : 2 mm for 63 V	
4	Circuit	
	The circuit is specified in circuit diagram D 6.48 - N 003.	
5	Functional description	
	The safety circuit is designed as a two-channel circuit. It monitors the synchronous operation of two encoders independent of each other. The output of an error within the circuit.	
	The state of the safety circuit can be sensed for other control purposes (DC 24 V) at terminals 3 and 9. In applications in which the check-back from terminal 3 is led to electronic circuits with a very small input current, bridges can be inserted between terminals 4 and 9 as well as 10 and 12 for increasing the contact stability for inserting a resistor through which an additional current of approx. 10 mA will flow.	
	The two encoders are connected to terminal 2 (channel 1) and terminal 5 (channel 2). Relay K3 will pick up first by applying the supply voltage (DC 24 V) to terminals 1 and 6. This cannot happen unless relays K1 and K2 are dropped out. Consequently, all three switching devices will be opened in the output circuit to the safety circuit (AC 230 V), between terminal 7 and terminal 8.	
	If input signals are present, the same switching sequence will be predefined, independent of their time of arrival. Relay K1 will pick up first and prepares the activation of relay K2. Picking up of relay K2 causes relay K3 to drop out and closes the output circuit.	
	The disappearance of an input signal causes the associated relay to drop out and, thus, opens the output circuit. This relay cannot be restarted unless the initial switching condition is reached. This requires the dropping out of the relay associated with the other channel. Only then can relay K3 pick up again and release the activation of relays K1 and K2.	
	In normal operation, the described switching sequence is always passed through cyclically. On occurrence of an error, the output circuit will be opened and the circuit prevents a re-start. Thus, no critical operating state can arise.	
	If the encoder of channel 2, e.g., emits a continuous signal or if the armature of relay K2 does no longer drop out, this error will be detected by a change of the state of channel 1. Relay K1 will drop out and open the safety circuit. With relay K3 dropped out and with the input signal applied	
Bestell-Nr.: EAE/80	Ausgabe - Datum 16.03.95	Änderung
o. Stelle:		

 THYSSEN AUFZÜGE	Safety Circuit Type SRI Description and Test Instructions	Page 3

Testing		Levelling and relevelling speed		Standard	
				65 000 11 00 0 Sheet 1	
1 Basic considerations					
The "SRI" safety circuit is activated in the door area by 2 sensors.					
- Channel 1 which is generated in the control computer and contains two information elements "zone" and "levelling speed" or "relevelling speed" as follows:					
During levelling the zone 1 signal is activated by coding stops in the exit areas.					
During relevelling, on leaving the zone the zone 1 signal is switched off by the pulse generator.					
Zone 1 is also switched off:					
1. when starting up					
2. when passing an exit					
3. when levelling speed > 0.5 m/s					
4. when relevelling speed > 0.3 m/s					
- Channel 2 which is activated directly by the ZS sensor on the car.					
The "SRI" safety circuit was tested by the Rheinland TÜV (test-ID EB-95A168).					
A safety test for computer channel 1 can be undertaken in 2 steps:					
1. Testing zone recognition					
2. Testing whether levelling or relevelling speeds which fall short are recognized.					
Note: When switching on the system or resuming normal operations the channel 1 signal is generated for approx. 1 hour during which period no runs can be made.					
2 Testing the computer exit's zone dependence					
2.1 Testing whether the zone is not switched on too early					
Checking that channel 1 and 2 LED's light up virtually simultaneously when levelling under normal conditions					
2.2 Testing whether the zone is switched off					
2.2.1 Testing on systems without relevelling capabilities:					
The car travels normally and flush to an exit. Following this, by releasing the brake or operating the emergency relief valve on hydraulic systems the system is moved out of flush levelling until the zone channel 1 LED on the SRI safety circuit goes off. After this, the car position may be checked.					
2.2.2 Testing on systems with relevelling capabilities:					
The car travels normally and flush to an exit. To prevent relevelling, the bridge for the door and locking device switches is removed by the SRI safety circuit. To do this, channel 2 (ZS switch) is briefly disconnected and subsequently reconnected. The ensuing check sequence can be carried out in accordance with 2.2.1.					
signed: Bauer	Date issued: 5.11.90	Dec. 94	20.11.95		
appr.: Böckle	Name: EAS-N	Sche	Sche		

EC type-examination certificate

Certificate no.: AFV 213/2

Notified body: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München
(Kennnummer 0635)

**Applicant/
Certificate holder:** Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a. d. F.

Date of submission: 1997-12-11

Manufacturer: Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a. d. F.

Product, type: Progressive safety gear, type 6071/1

Test Laboratory: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zentralabteilung Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München

**Date and
number of test report:** 1998-03-31
213/2/F

EC-directive: 95/16/EC

Statement: The safety component conforms to the directive's safety requirements for the respective scope of application stated on page 1 of the annex to this EC type-examination certificate.

Certificate date: 1998-03-31

Zertifizierungsstelle
für Aufzüge und Sicherheitsbauteile

Peter Tkalec



Registriernummer: ZLS-ZE-126/97

Annex to the EC type-examination certificate No. AFV 213/2

1. Scope of Application

- 1.1 Permissible total mass of car and rated load or counterweight in using one pair of safety gears, depends on maximum tripping speed of the overspeed governor, manufacture and condition of the guide rail running surface

Max. tripping speed (m/s)	Manufactured by and condition	Total mass (kg) min. - max.
3,22	drawn oiled*	1020 - 2860
3,22	machined oiled*	1588 - 5420
5,06	machined dry	1350 - 3740

*Mineral oils without additives (e. g. lubricating oils C according to DIN 51517 part 1)

- 1.2 Maximum tripping speed of overspeed governor and maximum rated speed

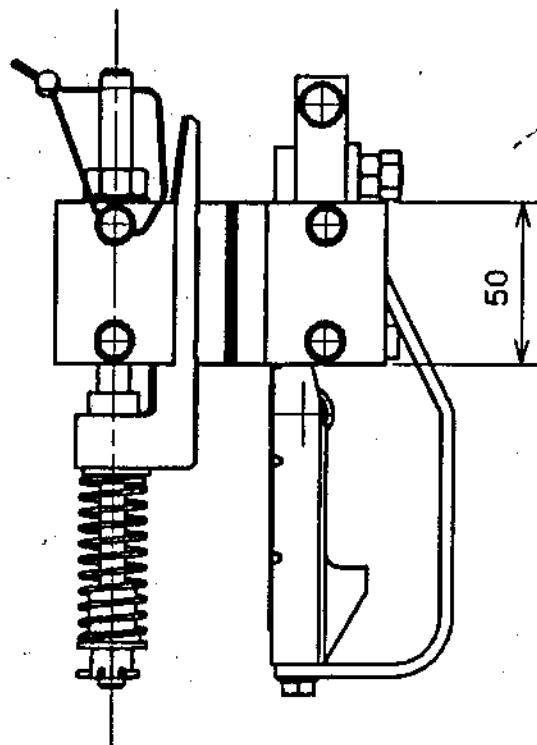
Maximum tripping speed (m/s)	3,22	5,06
Maximum rated speed (m/s)	2,80	4,40

- 1.3 Guide rails to be used

1.3.3 Minimum running surface width	28 mm
1.3.4 Blade width	9 - 16 mm

2. Remarks

- 2.1 Pursuant to the standard DIN EN 81, annex F, paragraph 3, section 3.4. a) 2) the total mass determined for adjustment purposes may be 7,5 % higher or lower.
- 2.2 In order to provide identification and information about the basic design and its functioning, drawing No. 60 710 75 00 0 dated 13 January 1998 is to be enclosed with the EC type-examination certificate and the annex thereto. The environmental conditions and connection requirements of the safety gear are presented or described in separate documents (e. g. installation instructions).
- 2.3 The EC type-examination certificate may only be used in connection with the pertinent annex.



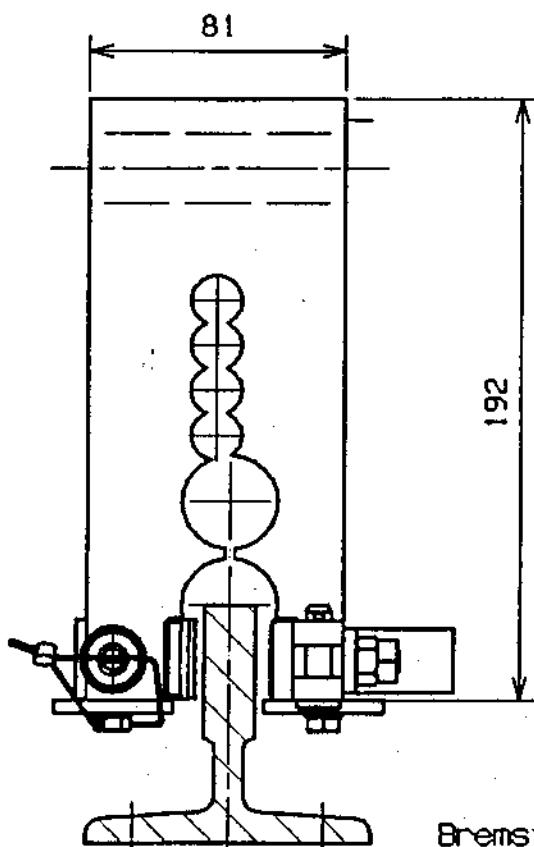
31. MRZ. 1998

- GEPRÜFT -

TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Region Bayern

Zentralabteilung Aufzüge und Sicherheitsbauteile
Der Sachverständige

Römer



Bremsfangvorrichtung L - Ausführung
Rechtsausführung spiegelbildlich
Progressive safety gear l.h. version
R.h. version reflected

Werkstoff / material	Datum/date	Name/name	Schutzvermerk nach DIN 34 beachten / copyright reserved	Maßstab/scale
Bearb.	13.01.98	Friedl	Zeilch.Nr. drawing no.	1:2.5
Gepr.	13.01.98	Scholz		
Norm			60 710 75 00 0	
Kennwort project name	*		Benennung title	
Fabr. Nr. maker's no.	*		Bremsfangvorrichtung Typ 6071/1 Progressive safety gear	
Änderung revision			Dateiname filename	Blatt page ... von of ...
			- *-*	
			Ers. f.	Ers. d.



THYSSEN AUFWÄGE



THYSSEN AUFZÜGE GmbH

EG - Konformitätserklärung nach Richtlinie 95/16/EG, Anhang II, A

Hiermit erklären wir, daß das Sicherheitsbauteil

Art : Bremsfangvorrichtung
Typ : 6071/1
Baujahr : siehe Typenschild am Bauteil
Hergestellt von : Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a.d.F.

in der gelieferten Ausführung dem geprüften Sicherheitsbauteil und der
Richtlinie 95/16/EG - Aufzugsrichtlinie - entspricht.

Angewendete harmonisierte Norm : EN 81
Bescheinigungs-Nr. : AFV 213/2
Gemeldete Stelle : TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zentralabteilung Aufzüge und Sicherheitsbauteile
Westendstraße 199
D-80686 München
(Kennnummer 0635)

Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a.d.F.

Herr Josef Selg
(Konstruktionsleiter)

Herr Rolf Eisenbeis
(Produktionsteiler)

EC type-examination certificate

Certificate no.: AGB 055/1

Notified body: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München
(Kennnummer 0635)

**Applicant/
Certificate holder:** Thyssen Aufzüge GmbH
Bernhäuser Str. 45
73765 Neuhausen a. d. F.

Date of submission: 1998-01-13

Manufacturer: Thyssen Aufzüge GmbH **Thyssen Boetticher S.A.**
Bernhäuser Str. 45 Cifuentes s/n
D-73765 Neuhausen a. d. F. E-28021 Madrid

Product, type: Overspeed governor, type 6023

Test Laboratory: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zentralabteilung Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München

**Date and
number of test report:** 1998-03-31
055/1

EC-directive: 95/16/EC

Statement: The safety component conforms to the directive's safety requirements for the respective scope of application stated on page 1 of the annex to this EC type-examination certificate.

Certificate date: 1998-03-31

Zertifizierungsstelle
für Aufzüge und Sicherheitsbauteile


Peter Tkalec



Annex to the type-examination certificate No. AGB 055/1

1. Scope of Application

- 1.1 Permissible tripping speed depending on the diameter of the traction groove and adjustment device (rocker with weight or spring)

Diameter of the traction groove (mm)	Permissible tripping speed (m/s) - rocker with weight	Permissible tripping speed (m/s) - rocker with spring
300	0,60 - 0,70	0,70 - 3,13
250	0,50 - 0,58	0,58 - 2,60
212*	0,42 - 0,49	0,49 - 2,21

*also possible in the form of a second and/or additional traction groove on the governor wheel with a traction groove diameter of 300 mm.

- 1.2 Permissible rated speed $\leq 2,72 \text{ m/s}$

- 1.3 Driving rope

- 1.3.1 Type Round strand rope made of steel wire

- 1.3.2 Rope diameter depending on the diameter of the traction groove

Diameter of the traction groove (mm)	300	250	212
Rope diameter (mm)	6 - 8	6 - 8	6 - 7

- 1.4 Minimum tensioning force (force produced by the tensioning weight, acting on the axis of rope deviation pulley)

- 1.4.1 Tensioning force determined in the test (new rope and new groove) 275 N

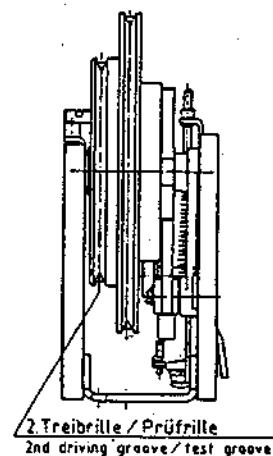
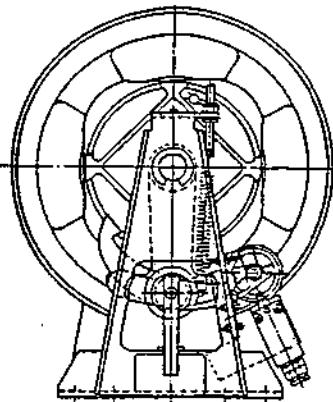
- 1.4.2 Tensioning force determined by calculation (coefficient of friction $\mu = 0,09$) 466 N

- 1.5 Tensile force in downwards direction at minimum tensioning force 300 N

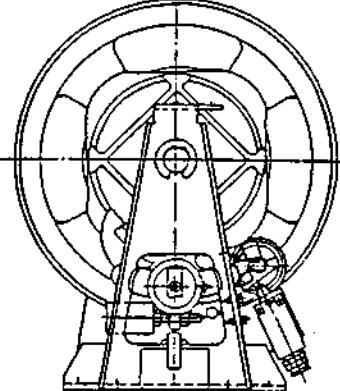
2. Remarks

- 2.1 The adjusted tripping speed and the safety switch must be sealed against unauthorized adjustment (safety switch, for example, by color sealing of the fastening screws and only if switching off is required prior to achieving the tripping speed).
- 2.2 In addition to the standard data the diameter of the respective traction groove must be given on the overspeed governor
- 2.3 With a governor wheel having a traction groove diameter of 250 mm, the additional traction groove with a diameter of 170 mm is only intended as a test groove
- 2.4 Retraction of the safety gear in both directions of rotation permissible
- 2.5 Rope deflection optional (but at least 180° angle of wrap)
- 2.6 Design with and without preliminary switch off intended
- 2.7 Design with remote release permissible
- 2.8 Design with locking device acting on both directions permissible
- 2.9 Installation suspended in pit permissible (requirements see expert opinion dated May 2, 1984, D2-FTB-ku-sch)
- 2.10 In order to provide identification and information about the basic design and its functioning and to show the environmental conditions and connection requirements pertaining to the tested and approved type and to define which parts have been tested, drawing No. 60 230 71 00 0 (page 1 and 2) dated 21 January 1998 is to be enclosed with the EC type-examination certificate and the annex thereto.
- 2.11 The EC type-examination certificate may only be used in connection with the pertinent annex.

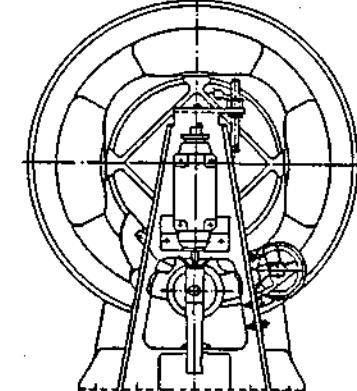
Ausführung federbelastet
Version spring loaded



Ausführung gewichtsbelastet
Version weight-loaded



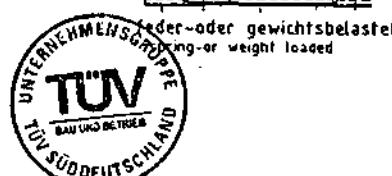
Ausführung ohne Vorabschaltung
Version without pre-disconnection



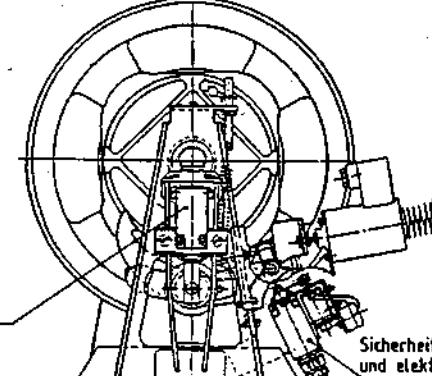
3.1. MRZ 1998

- GEPRÜFT -

TÜV Bau und Betriebsicherheit GmbH
Unternehmensgruppe TÜV Süddeutschland
Region Bayern
Zentralabteilung Aufzüge und Sicherheitsbauteile
Der Sachverständige
[Signature]



Ausführung mit Fernauslösung
Version with remote release

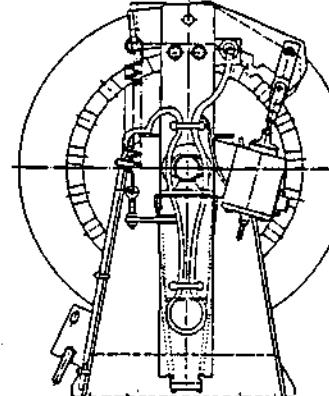


Sicherheitsschalter ohne
Vorabschaltung
Safety contact without
pre-disconnection

feder- oder gewichtsbelastet
spring- or weight loaded

Sicherheitsschalter mit Vorabschaltung
und elektrischer Rückstellung
safety contact with pre-disconnection
and electrical reset

Ausführung beidseitig wirkende Sperreinrichtung
Version double-sided acting interlock



3.1. MRZ 1998

- GEPRÜFT -

TÜV Bau- und Betriebsicherheit GmbH
Unternehmensgruppe TÜV Süddeutschland
Region Bayern
Zentralabteilung Aufzüge und Sicherheitsbauteile
Der Sachverständige
[Signature]

Werkstoff/Material	Datum/date	Nummer/nr.	Schutzvermerk n. DIN 31 beachten/copyright reserved	Maßstab/stk.
Bearb. 21.01.98	<i>[Signature]</i>	Zeich. Nr. drawing no	60 230 71 00 0	/
Gebr. 22.1.98				
Norm.				
Kennwert project name		Benennung Name		
Fabr. Nr. maker's no.		Geschwindigkeitsbegrenzer Typ 6023 Overspeed governor type 6023		
Aenderung revision		Datenum Mendate	Blatt 1 page von of	
THYSSEN AUFZÜGE	Ers. 1		Ers. d.	

Werkstoff/Material	Datum/date	Nummer/nr.	Schutzvermerk n. DIN 31 beachten/copyright reserved	Maßstab/stk.
Bearb. 21.01.98	<i>[Signature]</i>	Zeich. Nr. drawing no	60 230 71 00 0	/
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THYSSEN AUFZÜGE	Ers. 1		Ers. d.	



THYSSEN AUFZÜGE GmbH

EG - Konformitätserklärung nach Richtlinie 95/16/EG, Anhang II, A

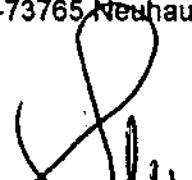
Hiermit erklären wir, daß das Sicherheitsbauteil

Art	: Geschwindigkeitsbegrenzer
Typ	: 6023
Baujahr	: siehe Typenschild am Bauteil
Hergestellt von	: Thyssen Aufzüge GmbH Bernhäuser Str. 45 D-73765 Neuhausen a.d.F.
	Thyssen Boetticher S.A. Cifuentes s/w E-28021 Madrid

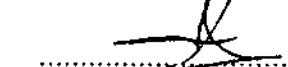
in der gelieferten Ausführung dem geprüften Sicherheitsbauteil und der
Richtlinie 95/16/EG - Aufzugsrichtlinie - entspricht.

Angewendete harmonisierte Norm	: EN 81
Bescheinigungs-Nr.	: AGB 055/1
Gemeldete Stelle	: TÜV Bau- und Betriebstechnik GmbH Unternehmensgruppe TÜV Süddeutschland Zentralabteilung Aufzüge und Sicherheitsbauteile Westendstraße 199 D-80686 München (Kennnummer 0635)

Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a.d.F.


Herr Josef Selg
(Konstruktionsleiter)


Herr Rolf Eisenbeis
(Produktionsleiter) Thyssen Aufzüge GmbH


Herr Ramon Fayos Martinez
(Produktionsleiter) Thyssen Boetticher S.A.

PFEIFER DRAKO

DRAHTSEILEREI
GUSTAV KOCKS

GMBH & CO.

Drahtseilerei Gustav Kocks GmbH & Co. • Postfach 10 04 51 • D-45404 Mülheim an der Ruhr

Verwaltung: Mühlenberg 20
Werk: Tunnelstraße 38
D-45479 Mülheim an der Ruhr
Telefon: (02 08) 4 29 01-0
Telefax: (02 08) 4 29 01 43
Internet: <http://www.drako.de>

Werksbescheinigung 2.1 nach EN 10204

Test certificate 2.1 according to EN 10204

Certificat 2.1 selon EN 10204

DRAKO Spezial-Aufzugseile

DRAKO Special Elevator Ropes

DRAKO Câbles d'ascenseur spéciaux

Auftrags-Nr./Order/commande:									
Tragseile/Hoist ropes/Câbles de suspension:									
Seilnenn-Ø: Nominal rope diameter Diamètre nominal du câble			6,5 mm	8 mm	10 mm	11 mm	12 mm	13 mm	16 mm
Seilkonstruktion Construction Construction	DRAKO 250 T mit Drahtseilseide integrated steel core avec âme centrale métallique	Rechnerische Bruchkraft F _r : Nominal breaking load charge de rupture nominale Mindestbruchkraft F _{mn} : Minimum breaking load/ charge de rupture minimale Längengewicht: Weight/poids		47,4 kN 37,2 kN	75,8 kN 59,5 kN	90,0 kN 70,6 kN	105,7 kN 83,0 kN	124,0 kN 97,0 kN	188,0 kN 148,0 kN
	6x 19 Warrington + Fasereinlage Fibre core Âme textile	Rechnerische Bruchkraft F _r : Nominal breaking load charge de rupture nominale Mindestbruchkraft F _{mn} : Minimum breaking load/ charge de rupture minimale Längengewicht: Weight/poids		30,1 kN 26,5 kN	0,27 kg/m 0,42 kg/m	0,51 kg/m 0,61 kg/m	0,61 kg/m 0,71 kg/m	0,71 kg/m 1,08 kg/m	
Drahtnennfestigkeit: Nominal tensile strength/résistance nominale des fils			1770 N/mm ²	1570 N/mm ²					
Oberfläche der Drähte: Surface of wires/surface des fils			blank	bright/clair					
Begrenzersetil/Governor rope/Câble limiteur: Seilnenn-Ø: 6,5 mm, techn. Daten wie Tragseile mit 6,5 mm Ø Rope nominal dia: 6,5 mm, technical data see hoist ropes with 6,5 mm dia. Dia nominal du câble: 6,5 mm caractéristiques techniques voir câbles de 6,5 mm dia									

Die Drahtseile entsprechen den technischen Lieferbedingungen DIN 2078 und 3051.

The wire ropes are in accordance with the technical directions of DIN 2078 and 3051.

Les câbles en acier correspondent aux spécifications techniques DIN 2078 et DIN 3051.

Normangaben beziehen sich auf die jeweils letzte gültige Fassung.

Quoted standards relate to the respective latest valid version.

Spécifications mentionnées correspondent aux dernières éditions.

Mülheim an der Ruhr, den 15.03.1999

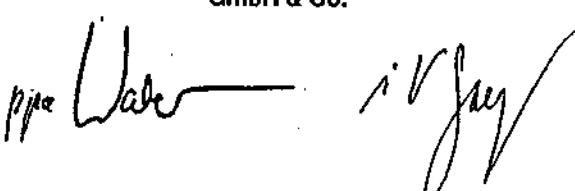
DRAHTSEILEREI GUSTAV KOCKS

GmbH & Co.

Fabrik-Nr.:

Maker's-No.:

N°d'usine:





THYSSEN AUFZUGSWERKE GMBH

Maintenance instructions safety devices

Component	Maintenance instruction
Spring-type buffer	60 210 01 86 0
Oil buffer	60 210 02 86 0
Speed governor	60 230 02 86 0
Braking system of gear drive	60 300 02 86 0
Rupture valve	
Progressive safety gear type 6071 /0; /1; /2; /3	60 710 01 86 0
Braking system type 6071 /0; /1; /2; /3	60 710 02 86 0
Instantaneous safety gear	60 790 01 86 0
Sliding landing doors M2T S6 / M2Z S6	60 900 01 86 0
Sliding landing doors M2T S4 / M2Z S4	60 900 02 86 0
Sliding landing doors M2T / M2Z / M4TZ S3; S5; S7; S8	60 900 03 86 0
Sliding landing doors T3 / T6 S1	60 900 04 86 0
Drive brake (only NC lift)	61 490 09 86 0
Scan board MS2 for scanning of switch conditions in the safety circuits of lifts	65 000 03 86 0
Electric safety circuit	65 000 04 86 0
Scan board MQ1 for scanning of switch conditions in the safety circuits of lifts	65 000 05 86 0
Check of levelling and re-levelling speed in connection with SR1 safety circuit	65 000 06 86 0
Check of unlocking zone in connection with SR1 safety circuit	65 000 07 86 0
Declaration check and "Reduced overtravel"	65 000 08 86 0

For order-specific components see name plate

Spring-type buffer

Make: THYSSEN AUFZUGSWERKE GmbH

Type: P 1 / P 2 / P 2 - SA1

Maintenance:
Check joint to baseplate
Inspect general condition (visual examination, ageing)

Attention:
If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.
Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Oil buffer

Make: THYSSEN AUFZUGSWERKE GmbH

Type: O1 A, B, C
O2 A, B, C
O3 A, B, C
O4 A, B, C
O5 A, B, C

Maintenance:

Oil level check: completely screw in oil dipper stick (note notch on oil dipper stick indicating maximum oil level)
Check rubber element for fitting and condition
Check safety switch for safe functioning
Check general condition (visual examination, mechanical defects, fastening and oil leakage)
For oil quality see lubrication instruction

Attention:

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Speed governor

Make: THYSSEN AUFZUGSWERKE GmbH

Type: 6023

Maintenance:

Visually examine the surface of the rope groove
The hardened groove flanks must not show any signs of wear
Check if all movable parts can easily work

Attention:

The speed governor is an adjusted and sealed and
type-approved component
Any changes or adjustments are prohibited.

If (type approved) safety devices are replaced by parts of third
parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

1

Adjusting and checking of brake shoe stroke and armature base plate

Before first startup and during regular inspection check the working stroke of the brake shoes and the pre-tension and movability of the armature base plates.

At the factory the brake shoe stroke is measured at the centre of the brake disk and adjusted to 0,3 mm by regulating the anchor bolt and the armature base plate.

During brake release see to it that both brake shoes work with the same stroke.

To adjust the stroke unscrew the counternut of the anchor bolt and adjust the required stroke by turning the screw. After a long time of use the rubber disk between armature base plate and brake shoe may sink and the pretension of the armature base plate may be too low. The same applies to major regulations of the anchor bolt. To restore the pretension shift the (0,5 mm thick) compensating washers under the counternut between brake shoes and rubber disk. The pretension is correct if the armature base plate slightly clings on the anchor bolt and can be turned.

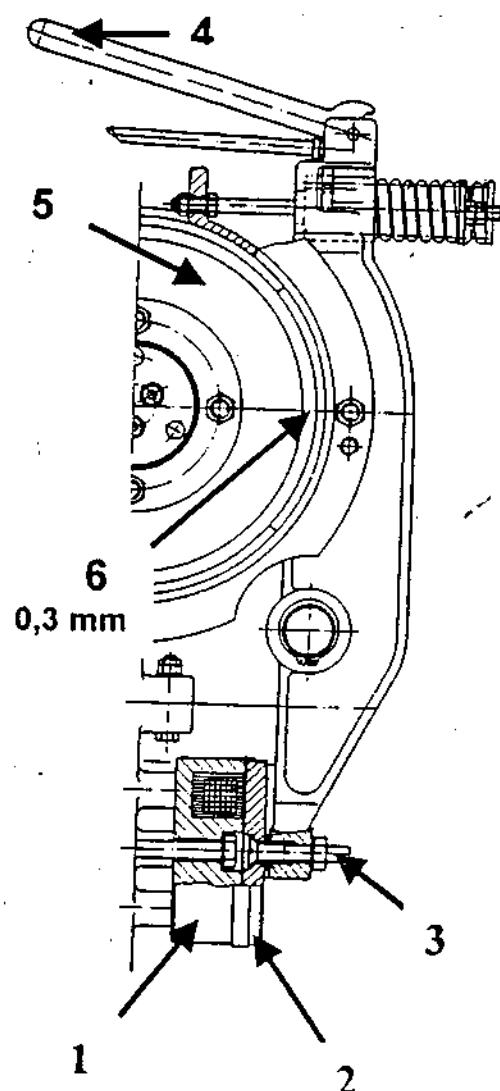


Fig. brake adjustment

1	magnetic clamp
2	armature base plate
3	anchor bolt
4	brake release lever
5	brake disk
6	working stroke 0,3 mm



Note:

Check or re-adjust existing brake test switches SA3 after brake adjusting.
See installation of brake test switch SA3.

2

How to replace brake shoes



- With remaining brake lining 3 mm or with glazed linings the linings must be replaced.



- Before you start working secure counterweight and car and switch off power supply.

- Remove one brake shoe, then re-mount brake linkages and armature base plate on new brake shoe.
- Mount the pre-assembled brake shoe and adjust to centre of brake disk. Observe alignment of brake linkages.
- Adjust brake shoe stroke. Measure brake shoe stroke 0,3 mm to centre of brake disk.
- Pre-tension springs by approx. 20,5 mm.
- Proceed for re-mounting, replacing and adjusting of second brake shoe in the same way.
- After replacing move in electrical emergency operation and check if both brake shoes are released evenly during braking.
- Check stroke distances and re-adjust, if necessary.

3

How to adjust braking deceleration

Only adjust brake with **one acting brake shoe each** and while moving fully loaded car downwards or empty car upwards in accordance with the deceleration values stated in the table below.

The brake torque adjustment must be carried out by pre-tensioning the brake springs for each lift type individually and at both brake shoes evenly.

Braking deceleration values

		Machine with flywheel mass		Machine with handwheel		
		≤	≤	≤	≤	>
v	m/s	0,63	1,25	0,63	1,25	1,25
-a (full – down)	m/s ²	0,2	0,3	0,3	0,4	0,5
-a (empty - up)	m/s ²	0,4	0,5	0,5	0,6	0,75



Attention: Check or re-adjust existing brake test switches SA3 after brake adjusting. See installation of SA3 brake test switch mounting.

Only use original replacements from THYSSEN AUFZUGSWERKE GmbH.

4

Special version SA3 Brake checking circuit

Design for use in TCI, TCM, I16M controls.

The brake checking circuit is designed for checking the brake shoes.

It prevents motor motions if the brake is partly or fully closed.

It helps to detect wear of brake linings at an early stage.

Switches (sensors) are used to check if the brake shoes are closed, open or worn-out.

For better evaluation the run signal sent from the travel contactor is used.

Light-emitting diodes on the sensors and on the brake checking (BRC) device in the control cabinet are used as indicators.

If a Teleservice device is connected the error will be indicated on display.

4.1

Prerequisite for retrofitting:

Brake shoes with integrally cast surfaces for fastening of adjusting screws are necessary. Should such brake shoes not be available, replace them or provide a mechanical mounting for the screw fastening.

4.1.1

Mounting:

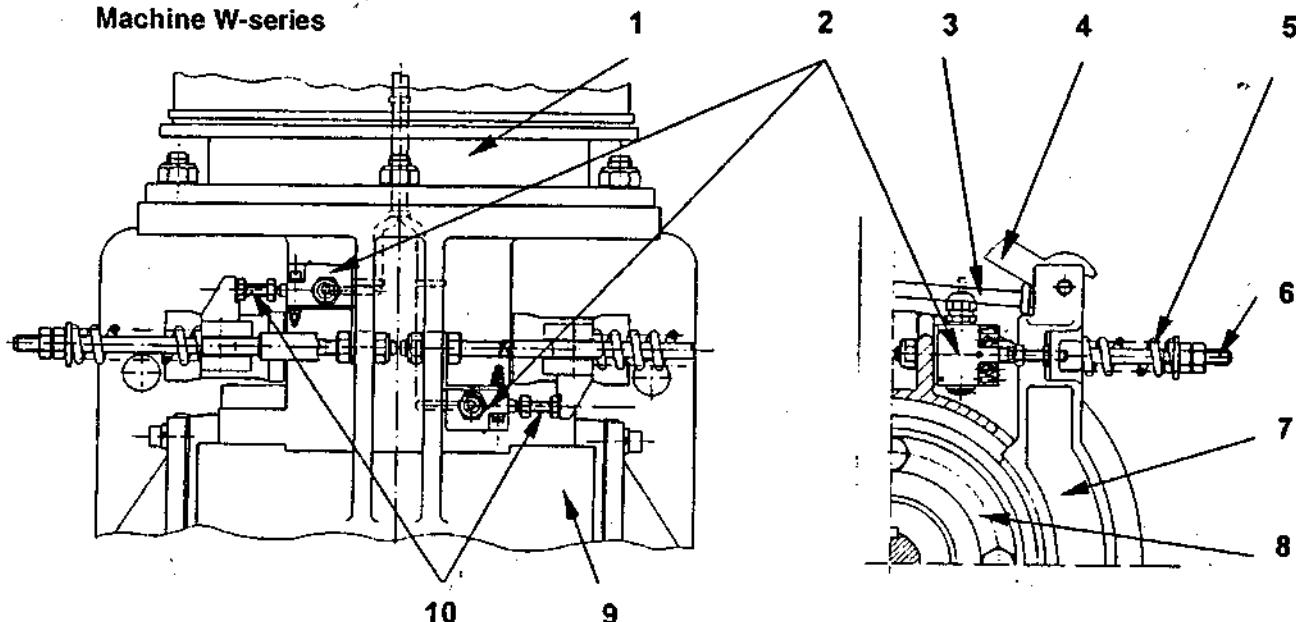
1. Manufacture 2 cables ($0,3 + 0,75\text{mm}^2$ with PVC sheath) if they are not part of the supply schedule, for direct connection of sensors to control and connect sensors.
- 2.a With gears of W-series (W 149, W 191, W 263, W 332)
Fasten sensors on the plunger rod of brake spring.
See fig. SA3 – W-series
- 2.b With TW 160
Fasten sensors on the bore holes for the transportation strap by means of angle.
See fig. SA3 – TW 160
3. Screw with enclosed hexagon screws, counternuts and screw in thread of integrally cast surface on the brake shoe.
The plunger on the switch must be opposite but not in contact to the adjusting screw.

4.1.2

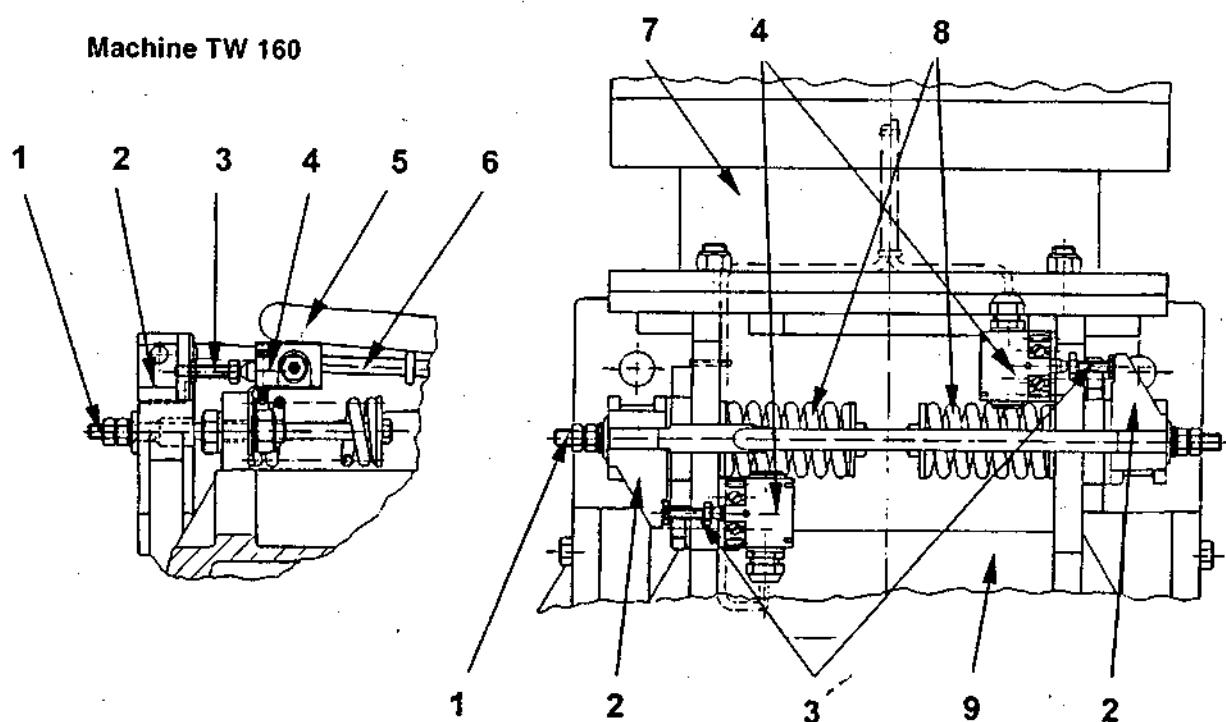
Adjusting:

Adjust brake shoe stroke before setting the sensors !

1. Switch on electrical emergency operation switch and lift control.
2. Turn adjusting bolt towards switch until LED lights.
3. Slowly turn back the adjusting bolt until LED will just go out.
4. Then turn the adjusting bolt by one fourth of a rotation (equivalent to approx. 0.3 mm) towards the switch and lock it. LED lights constantly.
5. Supply motor with power, then release and close brakes and check at the same time that switching of the sensors changes between engaged and disengaged brake.

SA3 Mounting of sensors for brake checking
Machine W-series


1	Motor	6	Spring-tightening screw
2	Control switch (sensor)	7	Brake shoe
3	Plunger rod	8	Brake disk
4	Brake release lever	9	Machine
5	Compression spring	10	Adjusting screw

Machine TW 160


1	Spring-tightening screw	6	Plunger rod
2	Brake shoe	7	Motor
3	Adjusting screw	8	Compression spring
4	Control switch (sensor)	9	Machine
5	Brake release lever	10	

4.2

SA 3 special version brake checking circuit BRC

Version for third-party and older controls (not TCI, TCM !)

The brake checking circuit is a retrofit electronic device designed for checking of brake shoes. It prevents motor motions if the brake is partly or fully closed. It helps to detect wear of brake lining at an early stage.

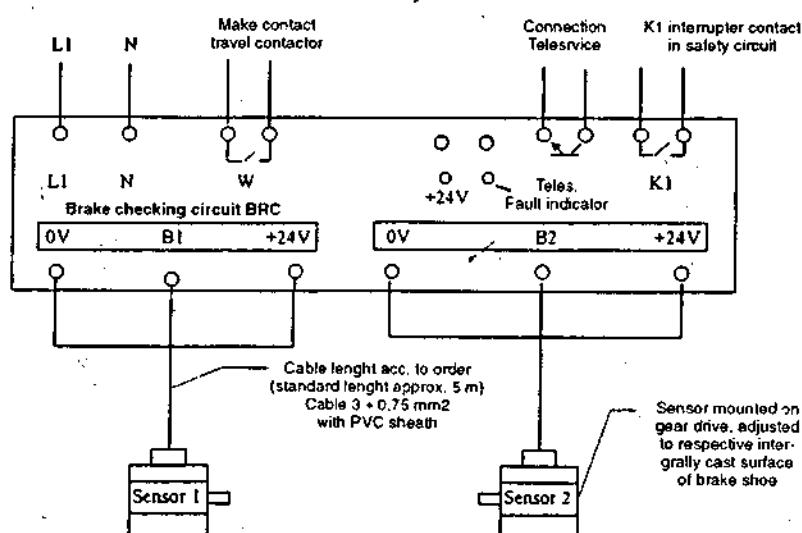
Switches (sensors) are used to check if the brake shoes are closed, open or worn-out. For better evaluation the run signal sent from the travel contactor is used.

Light-emitting diodes on the sensors and on the brake checking (BRC) device on the control cabinet are used as indicators.

If a Teleservice device is connected the error will be indicated on display.

4.2.1

Schematic diagram for brake checking circuit
valid for third-party and older controls (not TCI, TCM)

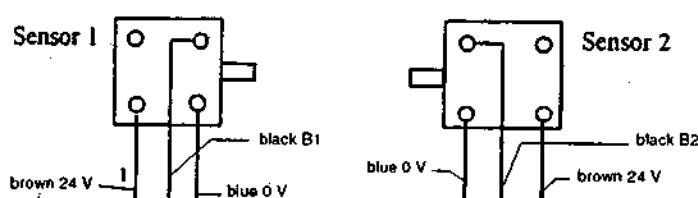


Connections:

- L1 and N for mains 230 V
- W for make contact to W contactor
- B1 sensor 1 with voltage supply 24 V / 0 V
- B2 sensor 2 with voltage supply 24 V / 0 V
- K1 make contact for evaluation
(for example link to safety circuit)
- Teles. for connection to Thyssen Teleservice device
(remote monitoring of lift)

4.2.2

Connection plan sensors



Progressive safety gear

Make: THYSSEN AUFZUGSWERKE GmbH

Type: 6071/0 ; /1 ; /2 ; /3 left and right

Maintenance:

All parts must be easy to move

A vertical clearance of 0,5 mm must remain between jaw body and abutment

Pre-tension resetting spring (1) max. 10 mm to ensure mobility in horizontal direction

In neutral position the fork piece (2) of the grip wedge must rest on the jaw body

Check the safety gear equipment after every release after safety gear operation for mobility and correct functioning (visual examination). If necessary, flatten guide rails in the area of safety gear operation.

Attention:

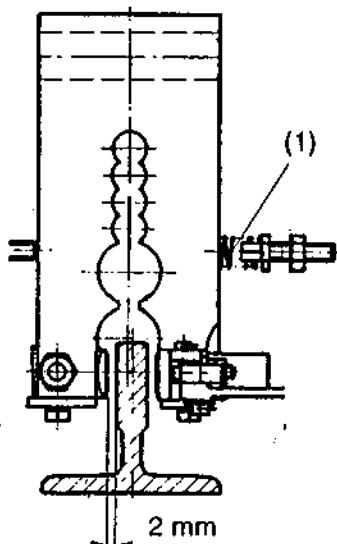
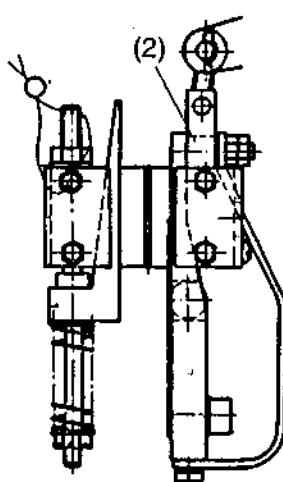
The progressive safety gear is an adjusted, sealed and type-approved component.

Any changes of the progressive safety gear adjustment are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH.

Always indicate the data on the name plate in the case of replacements orders. The safety jaws may only be changed in pairs.



Braking system

Make: THYSSEN AUFZUGSWERKE GmbH

Type: 6071/0 ; /1 ; /2 ; /3 left and right

Maintenance:

All parts must be easy to move
A vertical clearance of 0,5 mm must remain between jaw body and abutment
Pre-tension resetting spring (1) max. 10 mm to ensure mobility in horizontal direction
In neutral position the fork piece (2) of the grip wedge must rest on the jaw body
Adjust grip wedge by means of fastening screw in parallel to rail

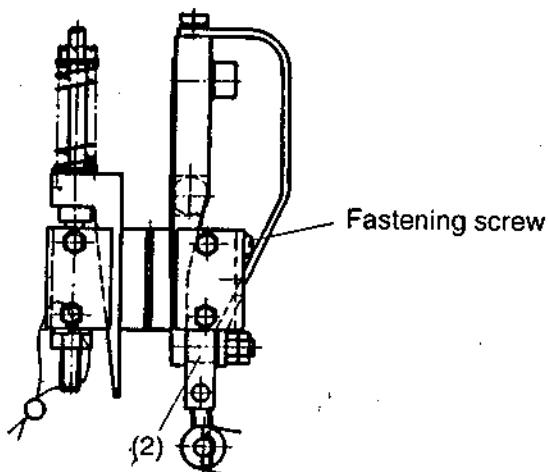
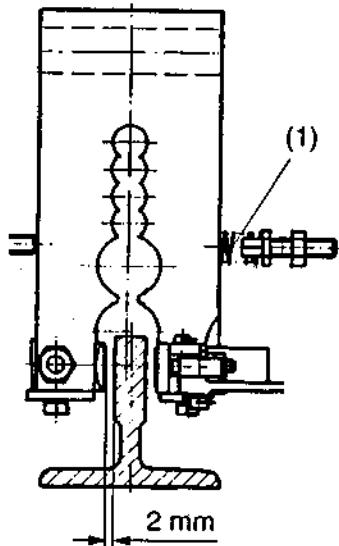
Check the braking system equipment after every release after safety gear operation for mobility and correct functioning (visual examination). If necessary, flatten guide rails in the area of safety gear operation.

Attention:

The braking system is an adjusted, sealed and type approved component
Any changes of the braking system adjustment are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH
Always indicate the data on the name plate in the case of replacements orders. The safety jaws may only be changed in pairs.



Instantaneous safety gear

Make: THYSSEN AUFZUGSWERKE GmbH

Type: 6079/1 UR 4
6179/8 OR0 / OR1

Maintenance:

All parts must be easy to move

The distance between guide rails and safety blocks must be equal on both sides

Check the safety gear equipment after every release after safety gear operation for mobility and correct functioning (visual examination). If necessary, flatten guide rails in the area of safety gear operation.

Attention:

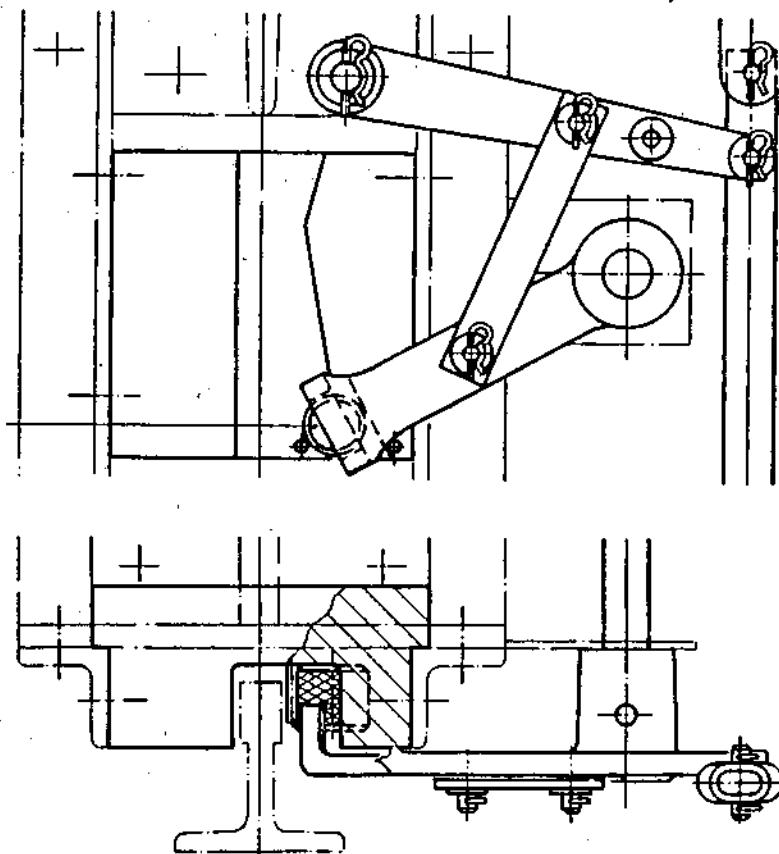
The instantaneous safety gear is a type-approved component.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Always indicate the data on the name plate in the case of replacements orders.

**Functional principle
of Instantaneous safety gear**



Sliding landing doors

Make: THYSSEN ASCENSEURS S.A.S.

Type: M2T S6 / M2Z S6

Maintenance:

Lock switch closes at a depth of 8 mm
Distance hook to locking device 2 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Sliding landing doors

Make: THYSSEN AUFZUGSWERKE GmbH and
THYSSEN ASCENSEURS S.A.S.

Type: M2T S4 / M2Z S4

Maintenance:

Lock switch closes at a depth of > 7 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third
parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH.

Sliding landing doors

Make: THYSSEN AUFZUGSWERKE GmbH

Type: M2T / M2Z / M4TZ gereration S3; S5; S7; S8

Maintenance:

Lock switch closes at a depth of > 7 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Sliding landing doors in Ex-version

Make: THYSSEN AUFZUGSWERKE GmbH

Type: M2T S7 / M2Z S7 / M4TZ S7 (in Ex -version)

Maintenance:

Lock switch closes at a depth of > 10 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Sliding landing doors

Make: THYSSEN AUFZUGSWERKE GmbH

Type: T3 / T6 Bauart S1

Maintenance:

Lock switch closes at a depth of > 7 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Sliding landing doors in Ex-version

Make: THYSSEN AUFZUGSWERKE GmbH

Type: T3 / T6 Bauart S1 (in Ex -Version)

Maintenance:

Lock switch closes at a depth of > 10 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Drive brake

Make: Mayr

Type: 892.010.0 size 500 ROBA-stop

The dual-circuit braking system is resistant to wear in normal operation.

Maintenance:

Check dual-circuit braking system:

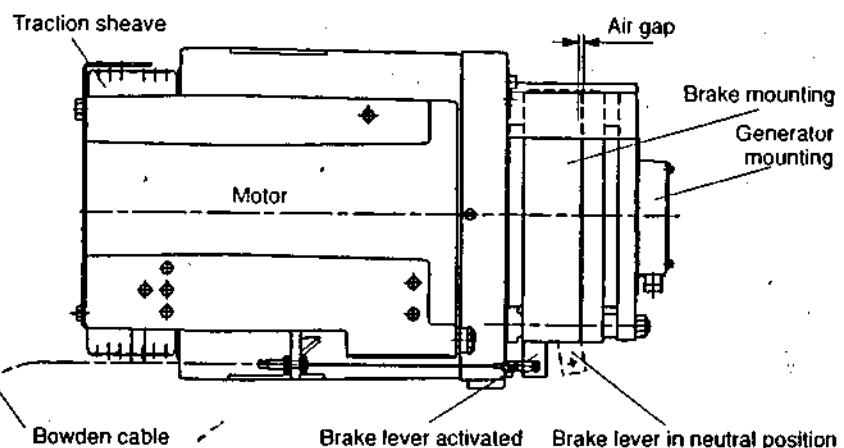
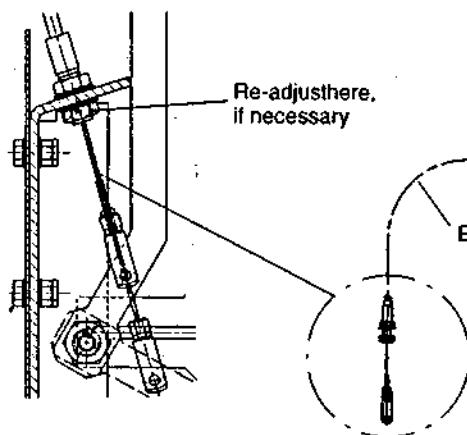
- Listen to the switching operation of the brake backplane from the control panel with door opened
- Measure braking deceleration for every brake circuit
 - Connect deceleration meter
 - Pull and thus release manual release lever
 - Release second brake release lever for some time until car moves, then close brake. Check measured value on device.
Repeat procedure with 2. manual release lever (2. brake circuit).
If the brake cannot be released sufficiently re-adjust the Bowden cable in the control panel.
With full load DOWN deceleration must be min. 0,7 m/s²
- Use feeler gauge to check air gap between spool and brake backplane with closed brake acc. to table (at least every two years)

Motor size	Rated air gap brake applied, total	Max. air gap brake applied, total	Deceleration downwards	Deceleration upwards
DAF 210 M	0,5 mm +0,15	1,3 mm	0,7 m/s ²	1,0 m/s ²
DAF 210 L	0,6 mm +0,15	1,6 mm	0,7 m/s ²	1,0 m/s ²

If max. air gap is reached (see table), replace complete motor.
Repairs must only be carried out in the factory.

Fig.
Gearless-drive
with brake and generator mounting

Adjustment in control panel



Attention:

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Maintenance instructions
**Scan board for switch conditions in
the safety circuit of lifts**

Scan board for switch conditions in the safety circuit of lifts

Make: THYSSEN AUFZUGSWERKE GmbH

Type: Sub-assembly MS2

Maintenance:

A number of tests are to be carried out in the control cabinet in the framework of maintenance works

Test procedure:

1. Disconnect the wire at terminal + TS – X1N3
(disconnect additional connection with open-through)
2. Move to mid-landing
3. Press car calls to other landing
4. Emergency unlocking after start
The travel contactors must separate immediately
5. Re-connect wire/wires to terminal + TS – X1N3

Comments:

Disconnect the travel contactors via the resistors of the input circuits at the MS sub-assemblies

Attention:

The type approved MS2 scan board must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Maintenance instructions
Electric safety circuit

Electric safety circuit

Make: THYSSEN AUFZUGSWERKE GmbH

Type: SR1

Maintenance: Apply spurious signals to test safety circuit for correct functioning:

Test procedure:

1. Continuous signal of generator or non-separation of relay

Apply 0 V signal to channel 1 or channel 2 via bridge to terminals 2 after 6 resp. 5 after 6

2. Failing generator signal resp. non-atraction of relay

Disconnect connection to channel 1 or channel 2 at terminal 2 resp. 5

Apply the test signals at a moment when they match with the currently applied input signals, i.e. insert bridge after 1. when the respective LED of safety circuit lights and disconnect supply line after 2. when LED goes out. At the end of the switching cycle at the latest the output of the safety circuit must be kept disconnected.

Comments: If the safety circuit is used for bridging the door and locking device switch during levelling and re-levelling with door open and you apply a 0V signal to channel 1. (terminal 2) during stop at a landing shortly de-energize acknowledgement to CPU at terminal 3 to initiate start of the lift

Attention: The type approved electric safety circuit SR1 must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Scan board for switch conditions in the safety circuit of lifts

Make: THYSSEN AUFZUGSWERKE GmbH

Type: Sub-assembly MQ1

Maintenance:

Test procedure:

1. Interrupt the connection of neutral conductor with X1.8 (MQ1)
2. The interruption of this connection must immediately stop the lift – for reasons of release of travel contactors.
As the electronic control also (but not reliably) activates or possibly activates switching-off of the drive release of contactors is not the only criterion to rely on.

For reasons of the interruption mentioned in 1. see to that no low-resistance connection between return conductors X1.8, X1.16 (MQ1), terminal X1.N3 (outside MQ1) and neutral conductor N or PE (earth) exists.

Meter voltage at connections X1.8, X1.16 (MQ1) and at terminal X1.N3 and – in the case of isolation from supply – meter ohmic resistance.

3. Then re-establish correct connection.

Attention:

The type approved MQ1 scan board must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Maintenance instructions
Test of levelling and re-levelling speed in connection with SR1 safety circuit

Test of levelling and re-levelling speed in connection with SR1 safety circuit

Make: THYSSEN AUFZUGSWERKE GmbH

Maintenance:

Test of speed dependence can only be made in the electric recall mode.
Change electric recall speed with TCI tester.

Test procedure:

- Turn on electric recall switch
- Turn on test switch (bottom-most switch) on MZ1 board or + TS - A13
- Select test speed with test switch S3 (third switch from bottom) on MZ1 board or + TS - A13:
Test switch S3 = OFF: V < 0,3 m/s
Test switch S3 = ON: V < 0,5 m/s
- set electric recall speed < test speed
- move with electric recall operation
result:
LED channel 1 of SR1 resp. + TS - A 27 lights
- set electric recall speed > test speed
- move with electric recall operation
result:
LED channel 1 of SR1 resp. + TS - A27 must not light
- Reset test switch S3 and S5 as well as electric recall

Attention:

The electric circuit must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Test of unlocking zone in connection with SR1 safety circuit

Make: THYSSEN AUFZUGSWERKE GmbH

Maintenance:

With zone-switch on control the LEDs of channel 1 and 2 must light up operational levelling at approximately the same time

With zone-switch off control:

- Disconnect and re-connect wire of channel 2 to SR1 at the landing
- Cautiously release brake. Car moves away from levelling zone. Stop as soon as LED of zone channel 1 at SR1 goes out.
- **Attention !** Supervise landing area of car
 Check car level

Attention:

The electric circuit must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Verification of deceleration

Make: THYSSEN AUFZUGSWERKE GmbH

Maintenance:

Verification of deceleration only possible in electrical mode
Change electrical recall speed with TCI tester or parameter-entry panel

Test procedure:

- Turn on electrical recall switch
- Turn on test switch 6S1 (bottom-most switch) on MZ1 board or + TS – A13
- Use TCI tester or parameter-entry panel to set electrical recall speed = rated speed
- Move to upper-most and/or bottom-most landing with electrical recall speed
- Speed control switches must release
- Emergency stop will be activated

With "Reduced Overtravel"

For proceeding see above

Notice:

The electric circuit must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH



THYSSEN AUFZUGSWERKE GMBH

Maintenance instructions safety devices

Component	Maintenance instruction
Spring-type buffer	60 210 01 86 0
Oil buffer	60 210 02 86 0
Speed governor	60 230 02 86 0
Braking system of gear drive	60 300 02 86 0
Rupture valve	
Progressive safety gear type 6071 /0; /1; /2; /3	60 710 01 86 0
Braking system type 6071 /0; /1; /2; /3	60 710 02 86 0
Instantaneous safety gear	60 790 01 86 0
Sliding landing doors M2T S6 / M2Z S6	60 900 01 86 0
Sliding landing doors M2T S4 / M2Z S4	60 900 02 86 0
Sliding landing doors M2T / M2Z / M4TZ S3; S5; S7; S8	60 900 03 86 0
Sliding landing doors T3 / T6 S1	60 900 04 86 0
Drive brake (only NC lift)	61 490 09 86 0
Scan board MS2 for scanning of switch conditions in the safety circuits of lifts	65 000 03 86 0
Electric safety circuit	65 000 04 86 0
Scan board MQ1 for scanning of switch conditions in the safety circuits of lifts	65 000 05 86 0
Check of levelling and re-levelling speed in connection with SR1 safety circuit	65 000 06 86 0
Check of unlocking zone in connection with SR1 safety circuit	65 000 07 86 0
Declaration check and "Reduced overtravel"	65 000 08 86 0

For order-specific components see name plate

Spring-type buffer

Make: THYSSEN AUFZUGSWERKE GmbH

Type: P 1 / P 2 / P 2 - SA1

Maintenance:

Check joint to baseplate
Inspect general condition (visual examination, ageing)

Attention:

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Oil buffer

Make: THYSSEN AUFZUGSWERKE GmbH

Type: O1 A, B, C
O2 A, B, C
O3 A, B, C
O4 A, B, C
O5 A, B, C

Maintenance:

Oil level check: completely screw in oil dipper stick (note notch on oil dipper stick indicating maximum oil level)
Check rubber element for fitting and condition
Check safety switch for safe functioning
Check general condition (visual examination, mechanical defects, fastening and oil leakage)
For oil quality see lubrication instruction

Attention:

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Speed governor

Make: THYSSEN AUFZUGSWERKE GmbH

Type: 6023

Maintenance:

Visually examine the surface of the rope groove
The hardened groove flanks must not show any signs of wear
Check if all movable parts can easily work

Attention:

The speed governor is an adjusted and sealed and
type-approved component
Any changes or adjustments are prohibited.

**If (type approved) safety devices are replaced by parts of third
parties the type approval of the installation becomes ineffective.**

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

1

Adjusting and checking of brake shoe stroke and armature base plate

Before first startup and during regular inspection check the working stroke of the brake shoes and the pre-tension and movability of the armature base plates.

At the factory the brake shoe stroke is measured at the centre of the brake disk and adjusted to 0,3 mm by regulating the anchor bolt and the armature base plate.

During brake release see to it that both brake shoes work with the same stroke.

To adjust the stroke unscrew the counternut of the anchor bolt and adjust the required stroke by turning the screw. After a long time of use the rubber disk between armature base plate and brake shoe may sink and the pretension of the armature base plate may be too low. The same applies to major regulations of the anchor bolt. To restore the pretension shift the (0,5 mm thick) compensating washers under the counternut between brake shoes and rubber disk. The pretension is correct if the armature base plate slightly clings on the anchor bolt and can be turned.

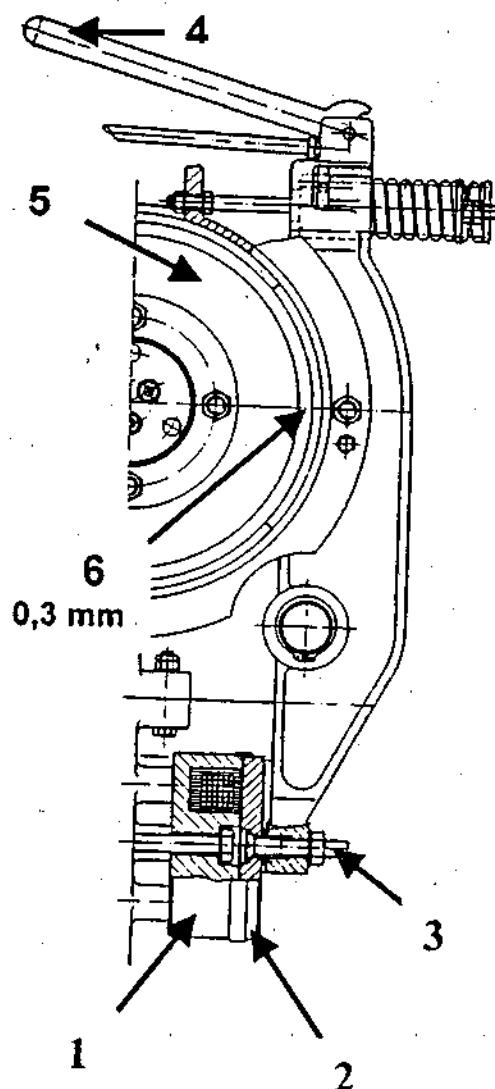


Fig. brake adjustment

1	magnetic clamp
2	armature base plate
3	anchor bolt
4	brake release lever
5	brake disk
6	working stroke 0,3 mm



Note:

Check or re-adjust existing brake test switches SA3 after brake adjusting.
See installation of brake test switch SA3.



How to replace brake shoes



- With remaining brake lining 3 mm or with glazed linings the linings must be replaced.



- Before you start working secure counterweight and car and switch off power supply.
- Remove one brake shoe, then re-mount brake linkages and armature base plate on new brake shoe.
- Mount the pre-assembled brake shoe and adjust to centre of brake disk. Observe alignment of brake linkages.
- Adjust brake shoe stroke. Measure brake shoe stroke 0,3 mm to centre of brake disk.
- Pre-tension springs by approx. 20,5 mm.
- Proceed for re-mounting, replacing and adjusting of second brake shoe in the same way.
- After replacing move in electrical emergency operation and check if both brake shoes are released evenly during braking.
- Check stroke distances and re-adjust, if necessary.

How to adjust braking deceleration

Only adjust brake with one acting brake shoe each and while moving fully loaded car downwards or empty car upwards in accordance with the deceleration values stated in the table below.

The brake torque adjustment must be carried out by pre-tensioning the brake springs for each lift type individually and at both brake shoes evenly.

		Machine with flywheel mass		Machine with handwheel		
		≤	≤	≤	≤	>
v	m/s	0,63	1,25	0,63	1,25	1,25
-a (full - down)	m/s ²	0,2	0,3	0,3	0,4	0,5
-a (empty - up)	m/s ²	0,4	0,5	0,5	0,6	0,75



Attention: Check or re-adjust existing brake test switches SA3 after brake adjusting. See installation of SA3 brake test switch mounting.

Only use original replacements from THYSSEN AUFZUGSWERKE GmbH.

4**Special version SA3 Brake checking circuit**

Design for use in TCI, TCM, I16M controls.

The brake checking circuit is designed for checking the brake shoes.

It prevents motor motions if the brake is partly or fully closed.

It helps to detect wear of brake linings at an early stage.

Switches (sensors) are used to check if the brake shoes are closed, open or worn-out.

For better evaluation the run signal sent from the travel contactor is used.

Light-emitting diodes on the sensors and on the brake checking (BRC) device in the control cabinet are used as indicators.

If a Teleservice device is connected the error will be indicated on display.

4.1**Prerequisite for retrofitting:**

Brake shoes with integrally cast surfaces for fastening of adjusting screws are necessary. Should such brake shoes not be available, replace them or provide a mechanical mounting for the screw fastening.

4.1.1**Mounting:**

1. Manufacture 2 cables ($0,3 * 0,75\text{mm}^2$ with PVC sheath) if they are not part of the supply schedule, for direct connection of sensors to control and connect sensors.
- 2.a **With gears of W-series (W 149, W 191, W 263, W 332)**
Fasten sensors on the plunger rod of brake spring.
See fig. SA3 – W-series
- 2.b **With TW 160**
Fasten sensors on the bore holes for the transportation strap by means of angle.
See fig. SA3 – TW 160
3. Screw with enclosed hexagon screws, counternuts and screw in thread of integrally cast surface on the brake shoe.
The plunger on the switch must be opposite but not in contact to the adjusting screw.

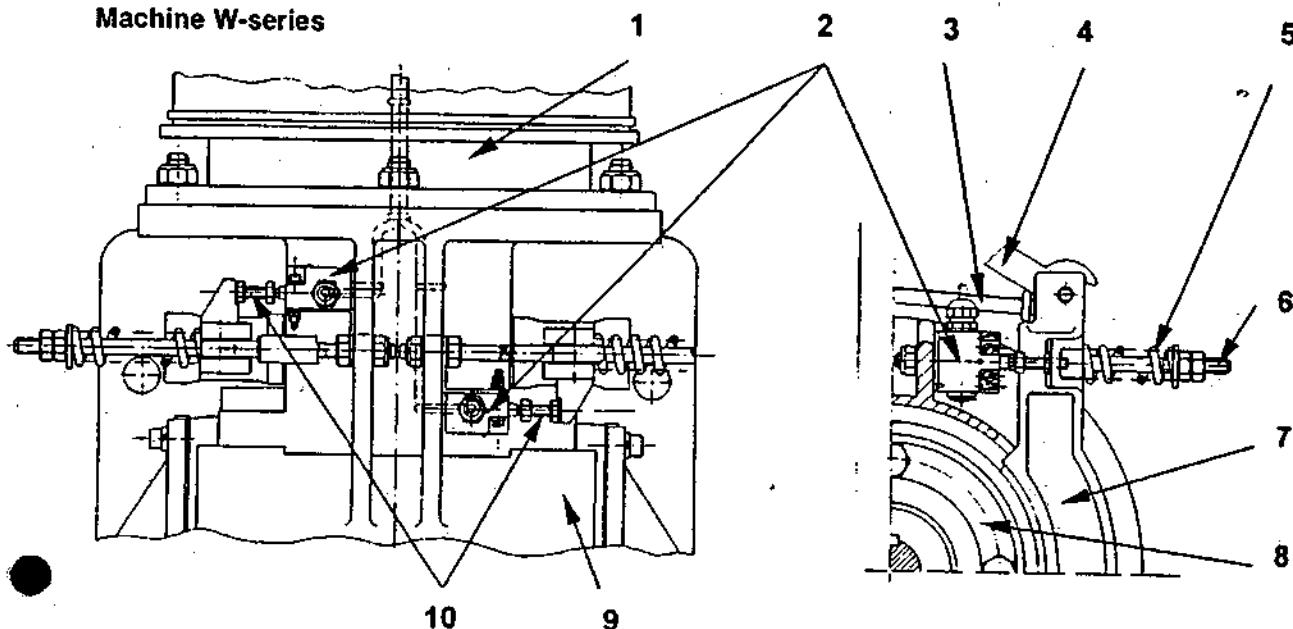
4.1.2**Adjusting:**

Adjust brake shoe stroke before setting the sensors !

1. Switch on electrical emergency operation switch and lift control.
2. Turn adjusting bolt towards switch until LED lights.
3. Slowly turn back the adjusting bolt until LED will just go out.
4. Then turn the adjusting bolt by one fourth of a rotation (equivalent to approx. 0.3 mm) towards the switch and lock it. LED lights constantly.
5. Supply motor with power, then release and close brakes and check at the same time that switching of the sensors changes between engaged and disengaged brake.

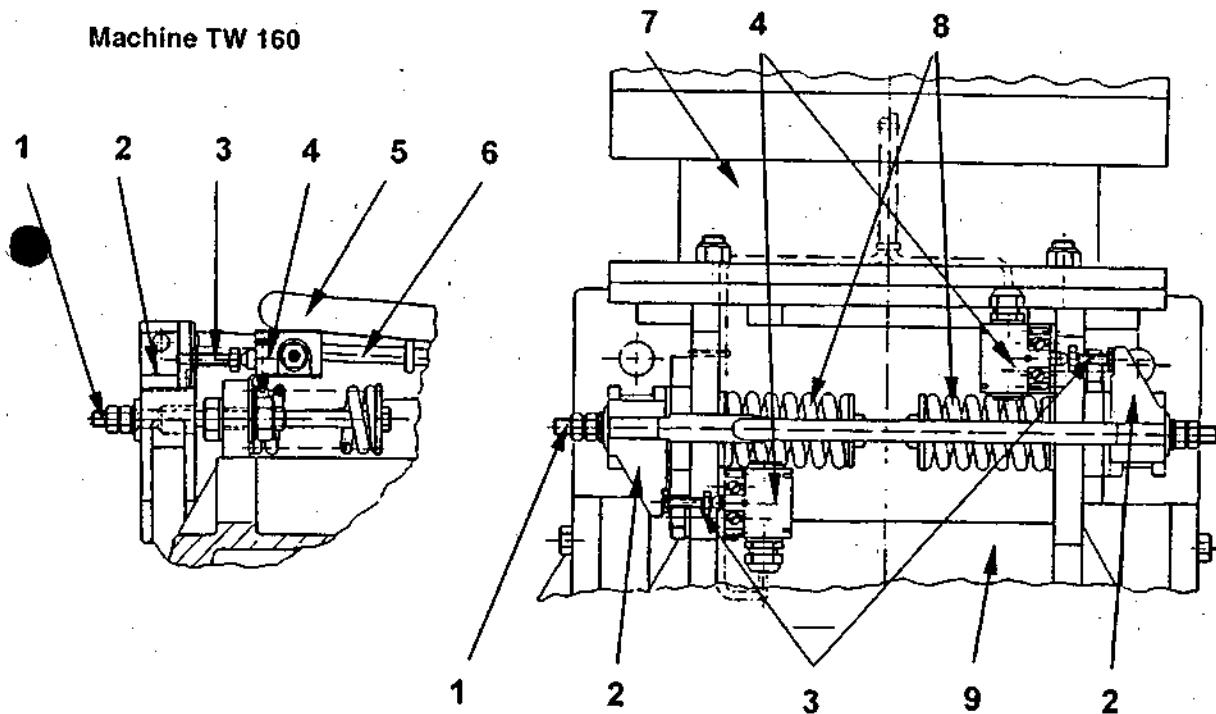
SA3 Mounting of sensors for brake checking

Machine W-series



1	Motor	6	Spring-tightening screw
2	Control switch (sensor)	7	Brake shoe
3	Plunger rod	8	Brake disk
4	Brake release lever	9	Machine
5	Compression spring	10	Adjusting screw

Machine TW 160



1	Spring-tightening screw	6	Plunger rod
2	Brake shoe	7	Motor
3	Adjusting screw	8	Compression spring
4	Control switch (sensor)	9	Machine
5	Brake release lever	10	

4.2**SA 3 special version brake checking circuit BRC**

Version for third-party and older controls (not TCI, TCM !)

The brake checking circuit is a retrofit electronic device designed for checking of brake shoes. It prevents motor motions if the brake is partly or fully closed. It helps to detect wear of brake lining at an early stage.

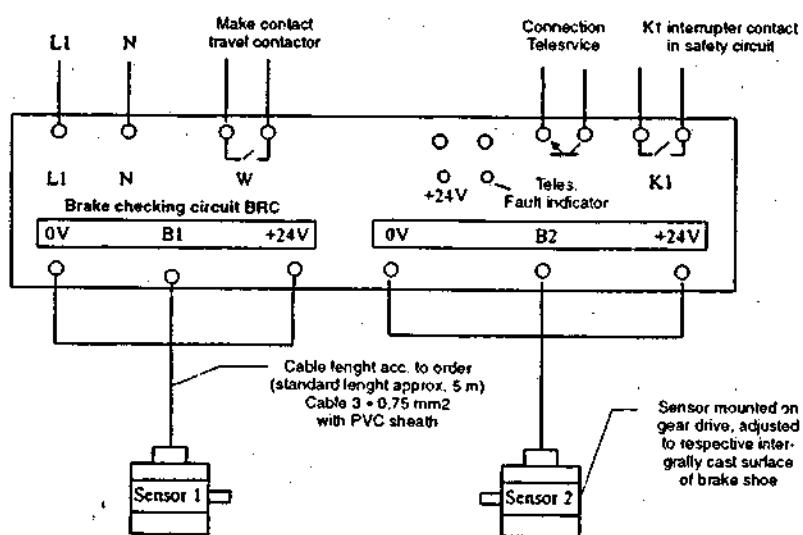
Switches (sensors) are used to check if the brake shoes are closed, open or worn-out. For better evaluation the run signal sent from the travel contactor is used.

Light-emitting diodes on the sensors and on the brake checking (BRC) device on the control cabinet are used as indicators.

If a Teleservice device is connected the error will be indicated on display.

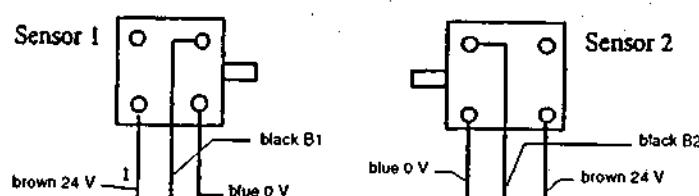
4.2.1

**Schematic diagram for brake checking circuit
valid for third-party and older controls (not TCI, TCM)**



Connections:

- L1 and N for mains 230 V
- W for make contact to W contactor
- B1 sensor 1 with voltage supply 24 V / 0 V
- B2 sensor 2 with voltage supply 24 V / 0 V
- K1 make contact for evaluation
(for example link to safety circuit)
- Teles. for connection to Thyssen Teleservice device
(remote monitoring of lift)

4.2.2**Connection plan sensors**

Maintenance instructions Progressive safety gear

Progressive safety gear

Make: THYSSEN AUFZUGSWERKE GmbH

Type: 6071/0 ; /1 ; /2 ; /3 left and right

Maintenance:

All parts must be easy to move
A vertical clearance of 0,5 mm must remain between jaw body and abutment
Pre-tension resetting spring (1) max. 10 mm to ensure mobility in horizontal direction
In neutral position the fork piece (2) of the grip wedge must rest on the jaw body

Check the safety gear equipment after every release after safety gear operation for mobility and correct functioning (visual examination). If necessary, flatten guide rails in the area of safety gear operation.

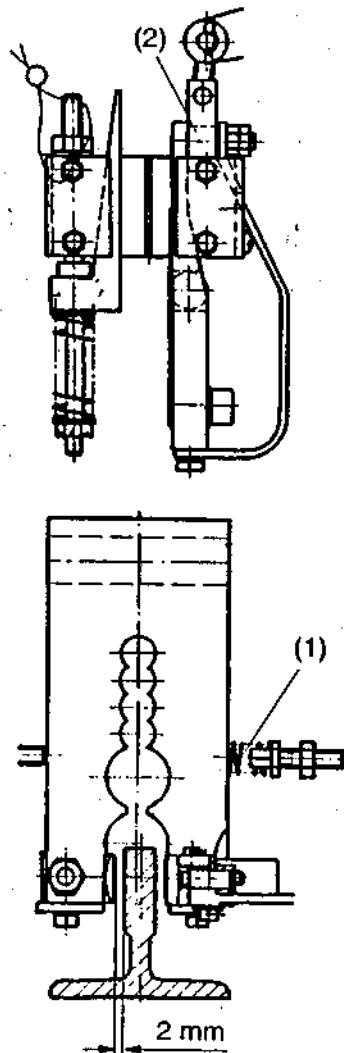
Attention:

The progressive safety gear is an adjusted, sealed and type-approved component.
Any changes of the progressive safety gear adjustment are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from THYSSEN AUFZUGSWERKE GmbH.

Always indicate the data on the name plate in the case of replacements orders. The safety jaws may only be changed in pairs.



Braking system

Make: THYSSEN AUFZUGSWERKE GmbH

Type: 6071/0 ; /1 ; /2 ; /3 left and right

Maintenance:

All parts must be easy to move
A vertical clearance of 0,5 mm must remain between jaw body and abutment

Pre-tension resetting spring (1) max. 10 mm to ensure mobility in horizontal direction

In neutral position the fork piece (2) of the grip wedge must rest on the jaw body

Adjust grip wedge by means of fastening screw in parallel to rail

Check the braking system equipment after every release after safety gear operation for mobility and correct functioning (visual examination). If necessary, flatten guide rails in the area of safety gear operation.

Attention:

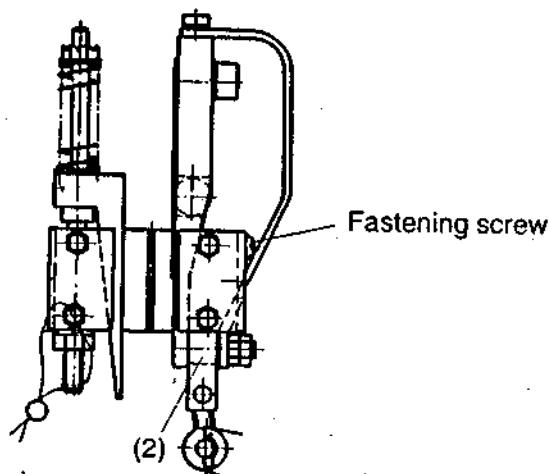
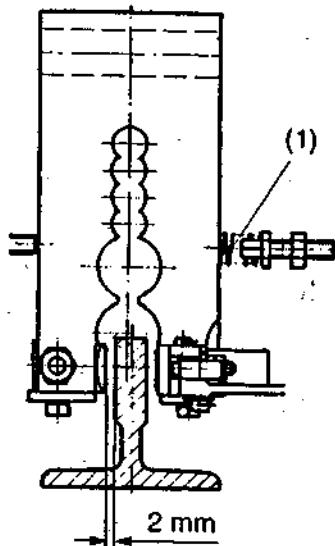
The braking system is an adjusted, sealed and type approved component

Any changes of the braking system adjustment are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Always indicate the data on the name plate in the case of replacements orders. The safety jaws may only be changed in pairs.



Instantaneous safety gear

Make: THYSSEN AUFZUGSWERKE GmbH

Type: 6079/1 UR 4
6179/8 OR0 / OR1

Maintenance:

All parts must be easy to move
The distance between guide rails and safety blocks must be equal on both sides
Check the safety gear equipment after every release after safety gear operation for mobility and correct functioning (visual examination).
If necessary, flatten guide rails in the area of safety gear operation.

Attention:

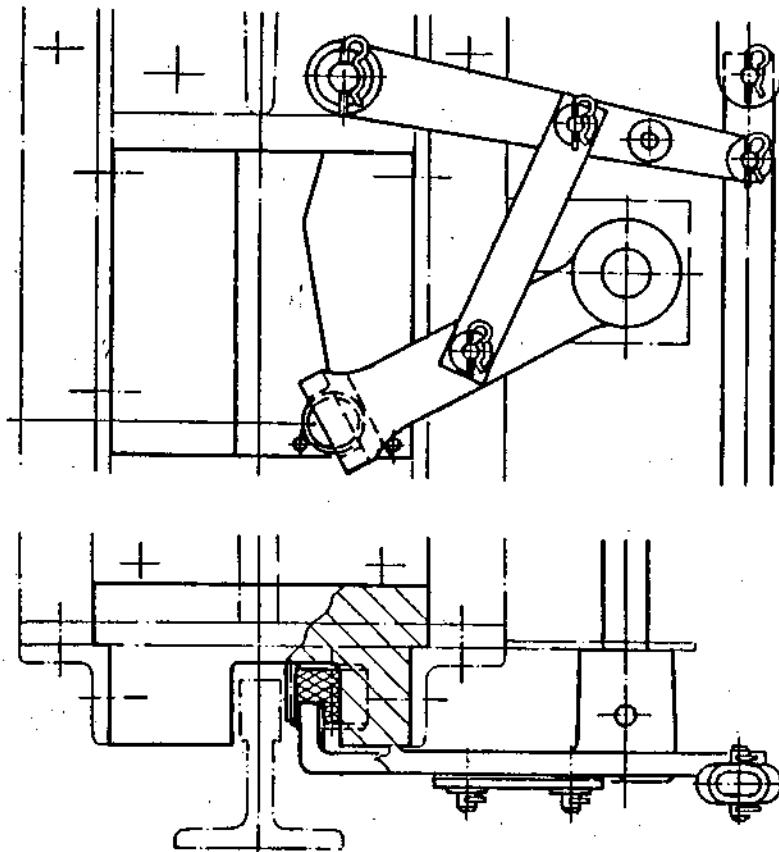
The instantaneous safety gear is a type-approved component.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Always indicate the data on the name plate in the case of replacements orders.

**Functional principle
of Instantaneous safety gear**





THYSSEN AUFZUGSWERKE GMBH

Maintenance instructions Sliding landing doors

Sliding landing doors

Make: THYSSEN ASCENSEURS S.A.S.

Type: M2T S6 / M2Z S6

Maintenance:

Lock switch closes at a depth of 8 mm
Distance hook to locking device 2 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Sliding landing doors

Make: THYSSEN AUFZUGSWERKE GmbH and
THYSSEN ASCENSEURS S.A.S.

Type: M2T S4 / M2Z S4

Maintenance:

Lock switch closes at a depth of > 7 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH.

Sliding landing doors

Make: THYSSEN AUFZUGSWERKE GmbH

Type: M2T / M2Z / M4TZ generation S3; S5; S7; S8

Maintenance:

Lock switch closes at a depth of > 7 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Sliding landing doors in Ex-version

Make: THYSSEN AUFZUGSWERKE GmbH

Type: M2T S7 / M2Z S7 / M4TZ S7 (in Ex -version)

Maintenance:

Lock switch closes at a depth of > 10 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Sliding landing doors

Make: THYSSEN AUFZUGSWERKE GmbH

Type: T3 / T6 Bauart S1

Maintenance:

Lock switch closes at a depth of > 7 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Sliding landing doors in Ex-version

Make: THYSSEN AUFZUGSWERKE GmbH

Type: T3 / T6 Bauart S1 (in Ex -Version)

Maintenance:

Lock switch closes at a depth of > 10 mm
Distance hook to locking device 3 mm with door closed
Check all door equipment for wear, safe fastening and defects
Check safe functioning of emergency unlocking device

Attention:

Any changes of the type-approved locking device are prohibited.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Maintenace instructions

Drive brake

Drive brake

Make: Mayr

Type: 892.010.0 size 500 ROBA-stop

The dual-circuit braking system is resistant to wear in normal operation.

Maintenance:

Check dual-circuit braking system:

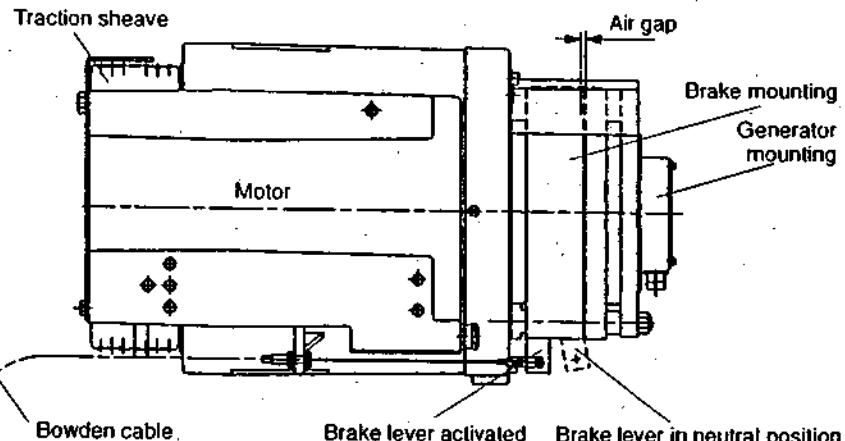
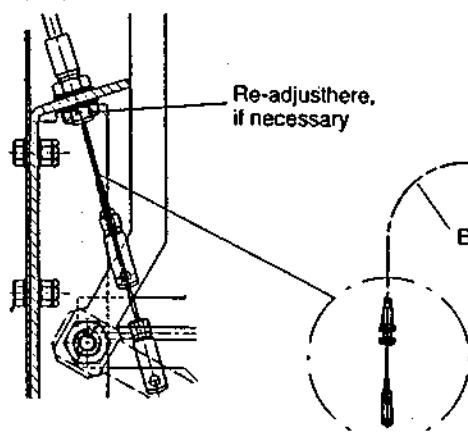
- Listen to the switching operation of the brake backplane from the control panel with door opened
- Measure braking deceleration for every brake circuit
 - Connect deceleration meter
 - Pull and thus release manual release lever
 - Release second brake release lever for some time until car moves, then close brake. Check measured value on device.
Repeat procedure with 2. manual release lever (2. brake circuit).
If the brake cannot be released sufficiently re-adjust the Bowden cable in the control panel.
With full load DOWN deceleration must be min. 0,7 m/s²
 - Use feeler gauge to check air gap between spool and brake backplane with closed brake acc. to table (at least every two years)

Motor size	Rated air gap brake applied, total	Max. air gap brake applied, total	Deceleration downwards	Deceleration upwards
DAF 210 M	0,5 mm $\pm 0,15$	1,3 mm	0,7 m/s ²	1,0 m/s ²
DAF 210 L	0,6 mm $\pm 0,15$	1,6 mm	0,7 m/s ²	1,0 m/s ²

If max. air gap is reached (see table), replace complete motor.
Repairs must only be carried out in the factory.

Fig.
Gearless-drive
with brake and generator mounting

Adjustment in control panel



Attention:

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

**Maintenance instructions
Scan board for switch conditions in
the safety circuit of lifts**

Scan board for switch conditions in the safety circuit of lifts

Make: THYSSEN AUFZUGSWERKE GmbH

Type: Sub-assembly MS2

Maintenance:

A number of tests are to be carried out in the control cabinet in the framework of maintenance works

Test procedure:

1. Disconnect the wire at terminal + TS – X1N3
(disconnect additional connection with open-through)
2. Move to mid-landing
3. Press car calls to other landing
4. Emergency unlocking after start
The travel contactors must separate immediately
5. Re-connect wire/wires to terminal + TS – X1N3

Comments:

Disconnect the travel contactors via the resistors of the input circuits at the MS sub-assemblies

Attention:

The type approved MS2 scan board must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Electric safety circuit

Make: THYSSEN AUFZUGSWERKE GmbH

Type: SR1

Maintenance:

Apply spurious signals to test safety circuit for correct functioning:

Test procedure:

1. ~~Continuous signal of generator or non-separation of relay~~

Apply 0 V signal to channel 1 or channel 2 via bridge to terminals 2 after 6 resp. 5 after 6

2. Failing generator signal resp. non-attraction of relay

Disconnect connection to channel 1 or channel 2 at terminal 2 resp. 5

Apply the test signals at a moment when they match with the currently applied input signals, i.e. insert bridge after 1. when the respective LED of safety circuit lights and disconnect supply line after 2. when LED goes out. At the end of the switching cycle at the latest the output of the safety circuit must be kept disconnected.

Comments:

If the safety circuit is used for bridging the door and locking device switch during levelling and re-levelling with door open and you apply a 0V signal to channel 1 (terminal 2) during stop at a landing shortly de-energize acknowledgement to CPU at terminal 3 to initiate start of the lift

Attention:

The type approved electric safety circuit SR1 must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Scan board for switch conditions in the safety circuit of lifts

Make: THYSSEN AUFZUGSWERKE GmbH

Type: Sub-assembly MQ1

Maintenance:

Test procedure:

1. Interrupt the connection of neutral conductor with X1.8 (MQ1)
2. The interruption of this connection must immediately stop the lift – for reasons of release of travel contactors.
As the electronic control also (but not reliably) activates or possibly activates switching-off of the drive release of contactors is not the only criterion to rely on.

For reasons of the interruption mentioned in 1. see to that no low-resistance connection between return conductors X1.8, X1.16 (MQ1), terminal X1.N3 (outside MQ1) and neutral conductor N or PE (earth) exists.

Meter voltage at connections X1.8, X1.16 (MQ1) and at terminal X1.N3 and – in the case of isolation from supply – meter ohmic resistance.

3. Then re-establish correct connection.

Attention:

The type approved MQ1 scan board must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH



THYSSEN AUFZUGSWERKE GMBH

**Maintenance instructions
Test of levelling and re-levelling speed in
connection with SR1 safety circuit**

Test of levelling and re-levelling speed in connection with SR1 safety circuit

Make: THYSSEN AUFZUGSWERKE GmbH

Maintenance:

Test of speed dependence can only be made in the electric recall mode.
Change electric recall speed with TCI tester.

Test procedure:

- Turn on electric recall switch
- Turn on test switch (bottom-most switch) on MZ1 board or + TS - A13
- Select test speed with test switch S3 (third switch from bottom) on MZ1 board or + TS - A13:
Test switch S3 = OFF: V < 0,3 m/s
Test switch S3 = ON: V < 0,5 m/s
- set electric recall speed < test speed
- move with electric recall operation
result:
LED channel 1 of SR1 resp. + TS - A27 lights
- set electric recall speed > test speed
- move with electric recall operation
result:
LED channel 1 of SR1 resp. + TS - A27 must not light
- Reset test switch S3 and S5 as well as electric recall

Attention:

The electric circuit must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Test of unlocking zone in connection with SR1 safety circuit

Make: THYSSEN AUFZUGSWERKE GmbH

Maintenance:

With zone-switch on control the LEDs of channel 1 and 2 must light up operational levelling at approximately the same time

With zone-switch off control:

- Disconnect and re-connect wire of channel 2 to SR1 at the landing
- Cautiously release brake. Car moves away from levelling zone. Stop as soon as LED of zone channel 1 at SR1 goes out.
- **Attention!** Supervise landing area of car
Check car level

Attention:

The electric circuit must not be changed.

If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Verification of deceleration

Make: THYSSEN AUFZUGSWERKE GmbH

Maintenance:

Verification of deceleration only possible in electrical mode
Change electrical recall speed with TCI tester or parameter-entry panel

Test procedure:

- Turn on electrical recall switch
- Turn on test switch 6S1 (bottom-most switch) on MZ1 board or + TS - A13
- Use TCI tester or parameter-entry panel to set electrical recall speed = rated speed
- Move to upper-most and/or bottom-most landing with electrical recall speed
- Speed control switches must release
- Emergency stop will be activated

With "Reduced Overtravel"

For proceeding see above

Notice:

The electric circuit must not be changed.

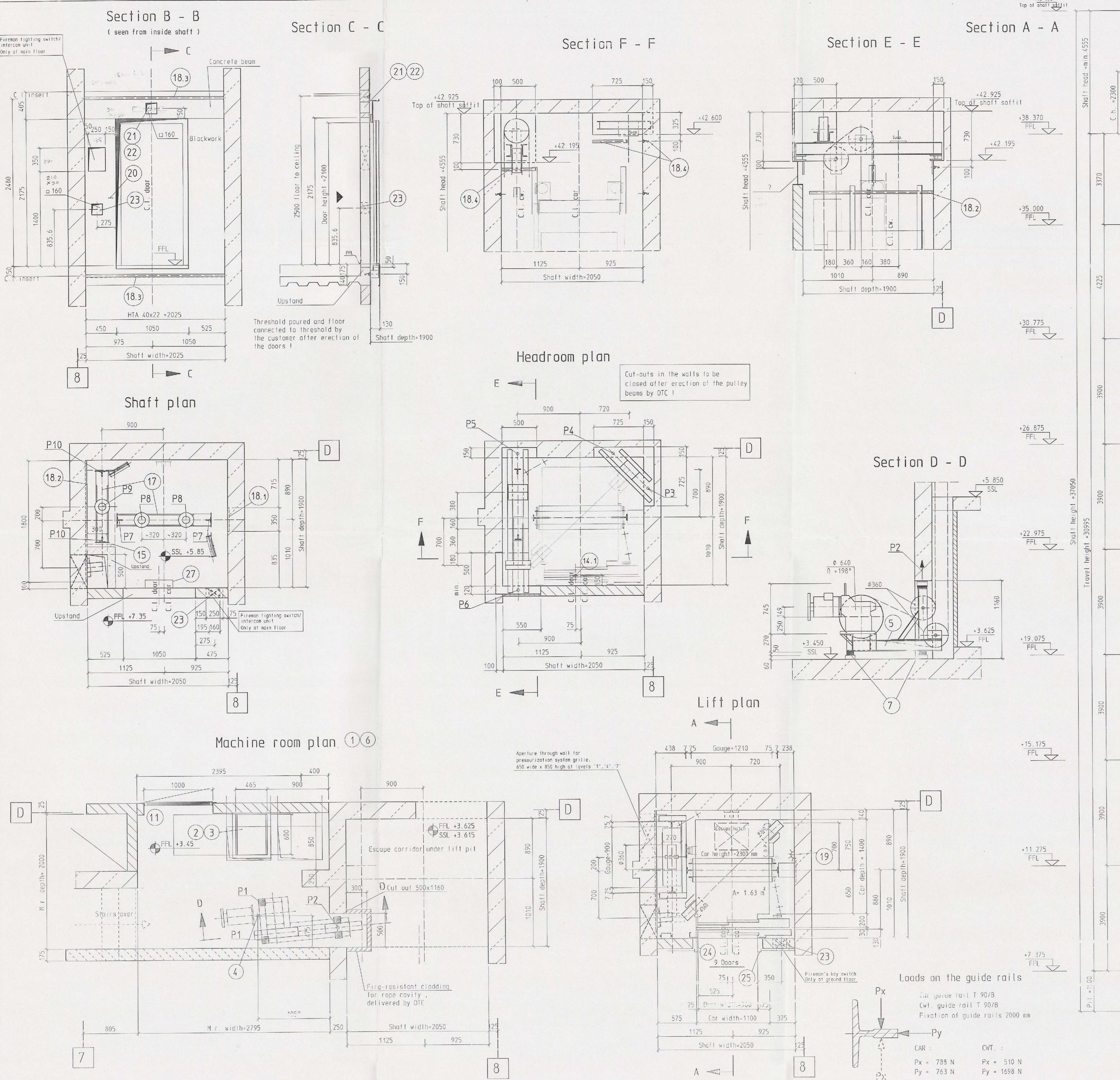
If (type approved) safety devices are replaced by parts of third parties the type approval of the installation becomes ineffective.

Only use original replacements from
THYSSEN AUFZUGSWERKE GmbH

Building Services Operating & Maintenance Instructions
5-7 Carlton Gardens London SW1

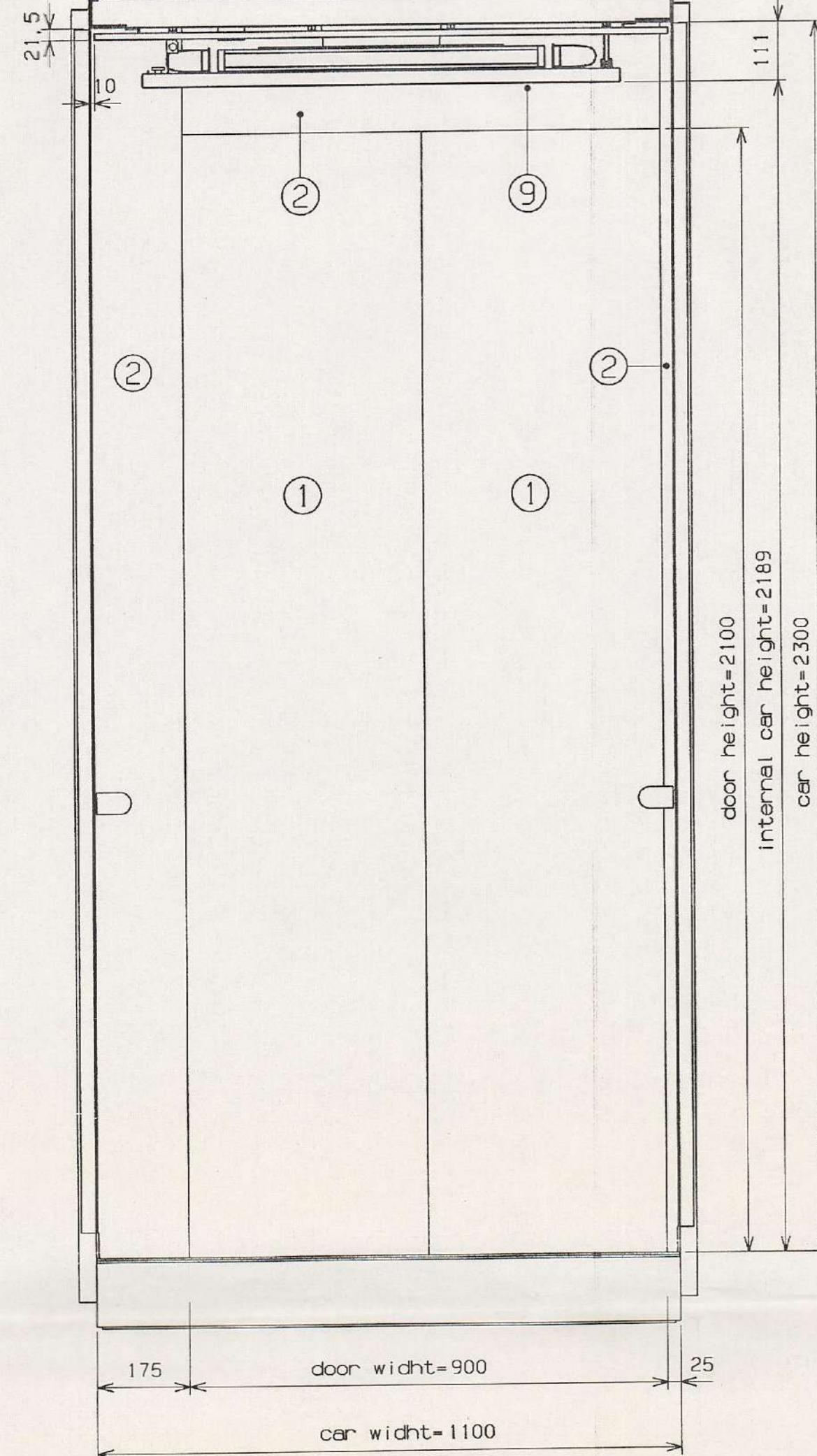
Register of record Drawings

Drawing No.	Title	Lift No.
69654/01-03/1	Lift & machine room plan	L1 - 3
69654/01-03/2	Door & shaft plan	L1 - 3
69654/01-03/3	Elevations	L1 - 3
69654/01-03/4	Headroom	L1 - 3
69654/01-03/20	Lift car interior (L1-L3)	L1 - 3
69654/04/1	Arrangement & builderswork	L4
69654/04/	Car drawing	L4
69654/05/1	Lift & machine room plan	L5
69654/05/2	Headroom & elevation	L5
69654/05/	Car drawing	L5
69654/06/1	Lift & machine room plan	L6
69654/06/2	Headroom & shaft elevation	L6
69654/06/20	Lift car interior (L6)	L6
69654/07-08/1	Arrangement & builderswork	L7 - 8
69654/07-08/2	Arrangement & builderswork	L7 - 8
69654/07-08/20	Lift car interior (L7-L8)	L7 - 8
69654/07-08/21	Lift car exterior (L7-L8)	L7 - 8
SK2874	Ground floor door frame	L7
SK2875	Ground floor door frame	L8
SK2876	Ground floor door frame drilling	L7 - 8
SK2881	Temporary frame bracing	L7 - 8
SK2901	Joint details - Ground floor frames	L7 - 8
SK2906	Details - Ground floor entrances	L7 - 8

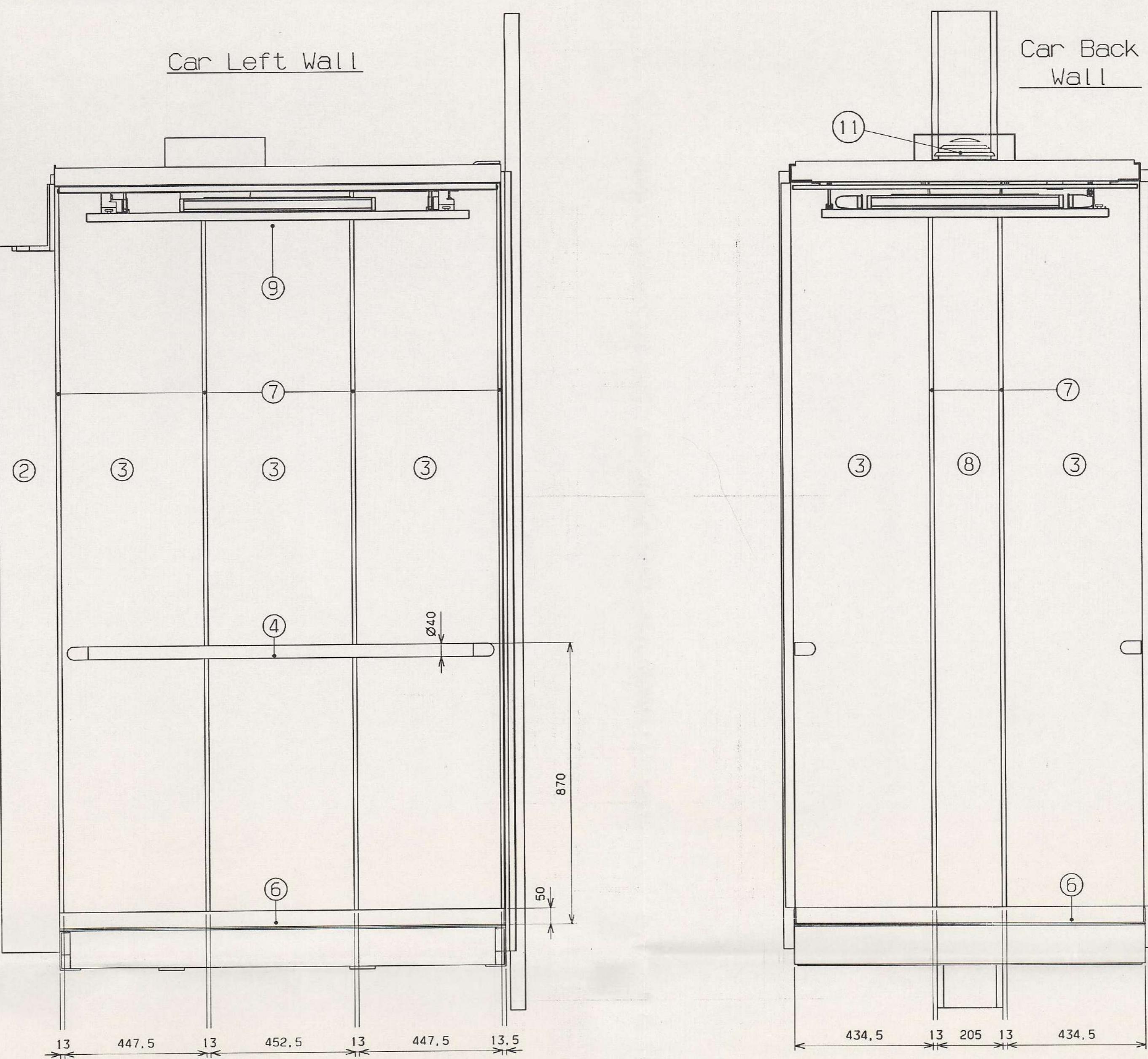


GUIDANCE NOTES / ITEMS (G.N.)		PLANUNGSHINWEISE (P.H.)	
O.T.C.	To be performed or delivered by others	B - Leistung bauseitig	
T	To be performed or delivered by Thyssen	T - Leistung von Thyssen	
T.L.E.	To be delivered by Thyssen Lifts & Escalators (local)	T.L.E. - Lieferung von Thyssen Lifts & Escalators (lokal)	
TRIEBWERKSRÄUM		TRIEBWERKSRÄUM	
1.	Heating, cooling and air conditioning of the machine room to obtain a temperature between +5° and +40° C.	1. Zulässige Raumtemperatur +5°C bis +40°C	
	Temperature of the floor slab to obtain a temperature between +5° and +40° C.	Verlustarbeit 6552 kJ (stetig) ins Freie abzuführende Wärmeenergie je Aufzug	
	During lift operation the heat output is approx. 6554 kJ/h per lift	Bei und Zeitführung erforderlich	
		O.T.C.	
		Jeder Aufzug erhält eine getrennte Einspeisung zum Fahrkorb- und Fahrkörchenschalter	O.T.C.
		Fremde Geräte und Leitungen in Schacht und Triebwerkraum sind unzulässig	
2.	Switches for car and hoistway lighting	2. Schalter für Fahrkorb- und Schachtbeflechtung T	
3.	Lift control	3. Steuerung	T
4.	Hoisting beamstays for P max. 10 kN individual load	4. Montagefördererlaste für P max. 10 kN Einzelbelastung	T.L.E.
5.	Frame	5. Triebwerksrahmen	T
6.	Lighting for machine room	6. Beleuchtung Triebwerkraum	T.B.
7.	Rubber pads 100 x 100 x 50 as anti-vibration isolation	7. Gummidämmteile 100 x 100 x 50 als Isolation	T
9.	Trunking of test 60 mm deep in the flooring for wiring of the lift equipment, covered with sheet steel supporting a persons weight	9. Kabelkanäle min. 60 mm tief im Estrich, neben den Steuerkästen abgedeckt mit biegsamen Blättern	T.L.E.
11.	Door to the machine room min. 1000 x 2000 mm clear opening	11. Triebwerkssprungtür min. 1000 x 2000 mm lichte Öffnung	O.T.C.
		SCHACHT	
12.	Increase of hoistway ceiling according to plan calculation	12. Höhe der Schachtdäche nach statischer Berechnung	B
13.	Ventilation of the shaft by a weatherproof opening below the ceiling or by an independent duct through the machine room	13. Schachtentlüftung durch eine witterfeste Öffnung unter der Schachtdäche oder durch einen unabhängigen Duct durch den Triebwerkraum	O.T.C.
14.	Hoisting eye for P max. 5 kN below shaft ceiling	14. Hoistungsohne für P max. 5 kN Tragkraft	T.L.E.
15.	Counterweight screen	15. Gegengewichtsverkleidung	T
17.	Buffer unit	17. Grubenabstand	T
		18. Ankerrollen (Hallenlängen) Typ HTA 40/22 18.1 length 350 mm HTA 40/22 OTC to cost in 18.2 length 1800 mm HTA 40/22 OTC to cost in 18.3 length 2025 mm HTA 40/22 OTC to cost in 18.4 length 500 mm HTA 40/22 OTC to cost in	
		Lieferung Einsetzen und Reinigen	O.T.C.
19.	Lighting for shaft	19. Schachtbeflechtung	T.L.E.
20.	Marker work of each floor to enable the filter to set the doorsills in relation to the finished floor	20. Metrische in jedem Stockwerk, damit die Türschwellen bündig sind mit OFF	B
21.	Cut-outs for position indicator with gong	21. Aussparung für Standortzeige mit Gong	B
22.	Cut-outs for direction indicator with gong	22. Aussparung für Weichenzeige mit Gong	B
23.	Cut-outs for push button box	23. Aussparung für Knopfboxen	T.L.E.
24.	Architraves	24. Mauerumfassungen	T.L.E.
25.	Embedding of the door frames and architraves in concrete	25. Einfügungen der Türrahmen und Mauerumfassungen	B
26.	...	26...	T.L.E.
27.	Ladder to pit	27. Schachtsteiger	
28.	Erection platforms (informations about location by erectors)	28. Montagegerüste nach Absprache mit TEL	
31.	Inside sheathing of the door walls (fascia plates)	31. Blechverkleidung der Schachtwänden an den Zugangssitzen	
		Schachtwände müssen senkrecht sein Turdrückwand müssen rechteckig und senkrecht übereinander sein. Max. Zul. Abweichung von der Senkrechten ± 25 mm	
		All dimensions are finished dimensions Rough dimensions are worked All dimensions in m Lightning protection has to be carried out by others according to local codes	
		Durchgangsloch Sackloch	
		LASTEN IM TRIEBWERKSRAUM (incl. 20% dynamic loads) P1 = each 10kN load distribution through rubber pads on MR floor	
		P2 = 36kN Distributed load in the machine room 5 kN/m²	
		LASTEN IM SCHACHT HEAD (incl. 20% dynamic loads) P3 = 7kN P4 = 7kN P5 = 36kN P6 = 56kN	
		LASTEN AUF DEN SCHACHTGRUNDSTÖDEN P7 = 20kN impact per guide rail when safety gear engages P8 = 38kN impact for each buffer P9 = 64kN > when compressed P10 = 21kN impact per guide rail when safety gear engages P7 - P9 never coincide P8 - P10 never coincide Please fill in: Power supply: 200 V 3ph 50 cycles Light power supply: 220 V 1ph 50 cycles with neutral wire	
		LASTEN AUF DEN SCHACHTGRUNDSTÖDEN P7 = 20kN Stoss je Führungsschiene beim Auslösen der Fangvorrichtung P8 = 38kN Stoss durch jeden gedrückten Puffer P9 = 98kN Stoss je Führungsschiene beim Auslösen der Fangvorrichtung Losten P7 - P9 treten nie gleichzeitig auf Losten P8 - P10 treten nie gleichzeitig auf	
		FOR CONSTRUCTION AS BUILT	
5	1. INT'L CONSTRUCTION, with counterweight, arranged C.O.P.	19.10.1998 Bozum	
4	2. Revision	21.07.1998 Bozum	
3			
2	Project Carlton Gardens, London Type SU51A00	Passenger/Fire Fighting Lift Capacity 630 kgs Speed 1 m/s	
1	Revision	THYSSEN AUFZÜGE	
		Scale 1:20 1:50	Date 18.05.1998 12.05.1998
		Drawn Draughted Draughted Draughted	Drawn gezeichnet gezeichnet gezeichnet
		Reviewed Überprüft Überprüft Überprüft	Reviewed geprüft geprüft geprüft
		Approved Genehmigt Genehmigt Genehmigt	Approved gebilligt gebilligt gebilligt
		Date 29.08.98 12.07.98	Date Zeit Zeit Zeit
		Name Name Name	Name Name Name
		Autogr. Nr. 98122 - 001/2	Autogr. Nr. 98122 - 001/2
		Zeichnungs-Nr. 69654/04/1	Zeichnungs-Nr. 69654/04/1

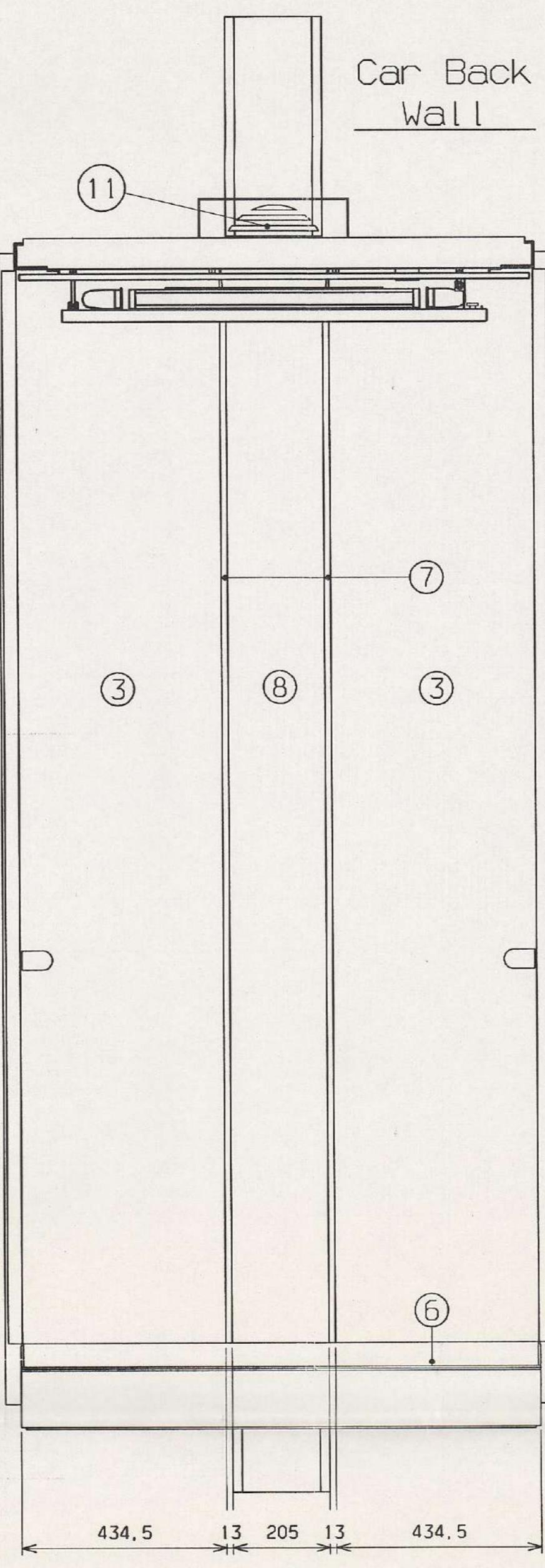
Car Front Wall



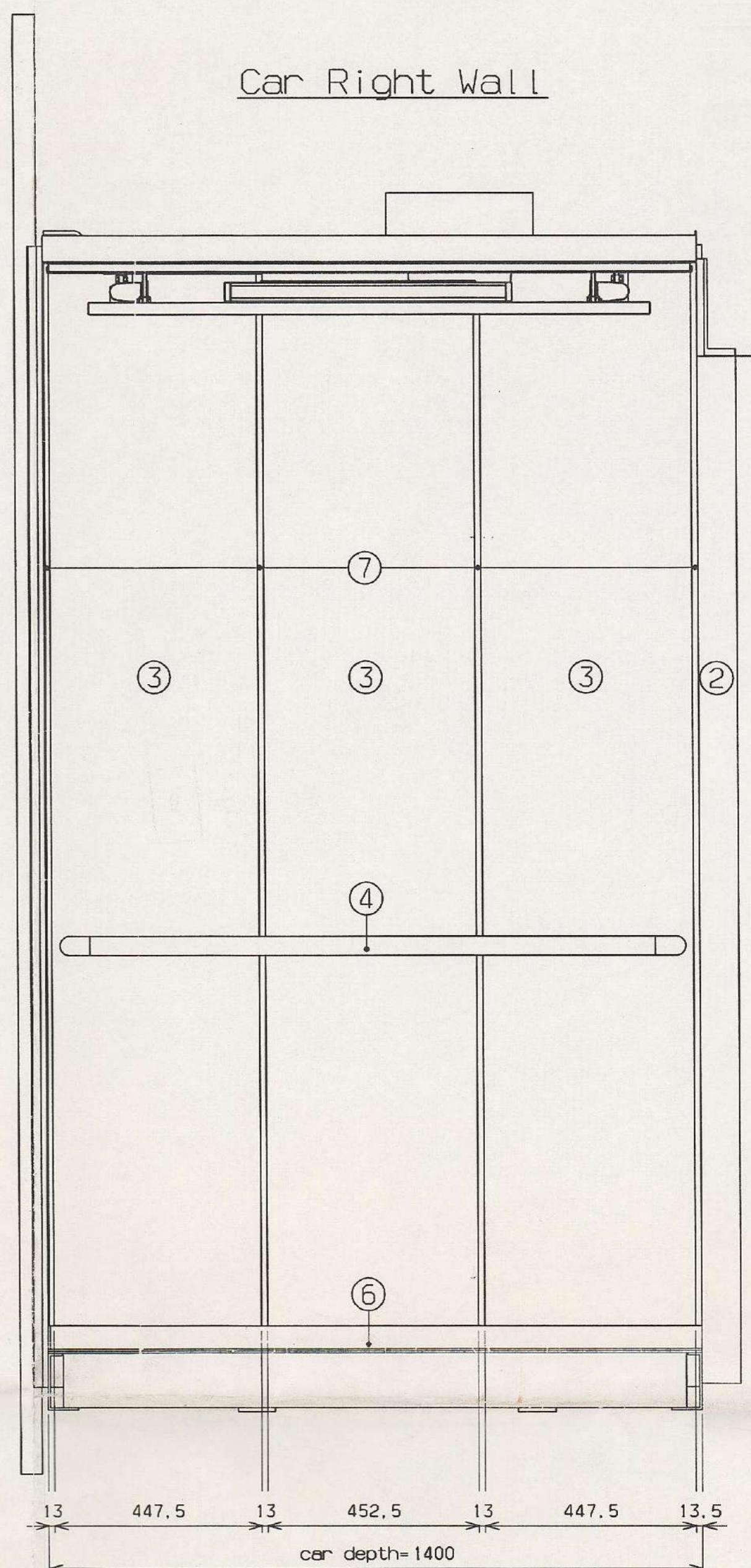
Car Left Wall



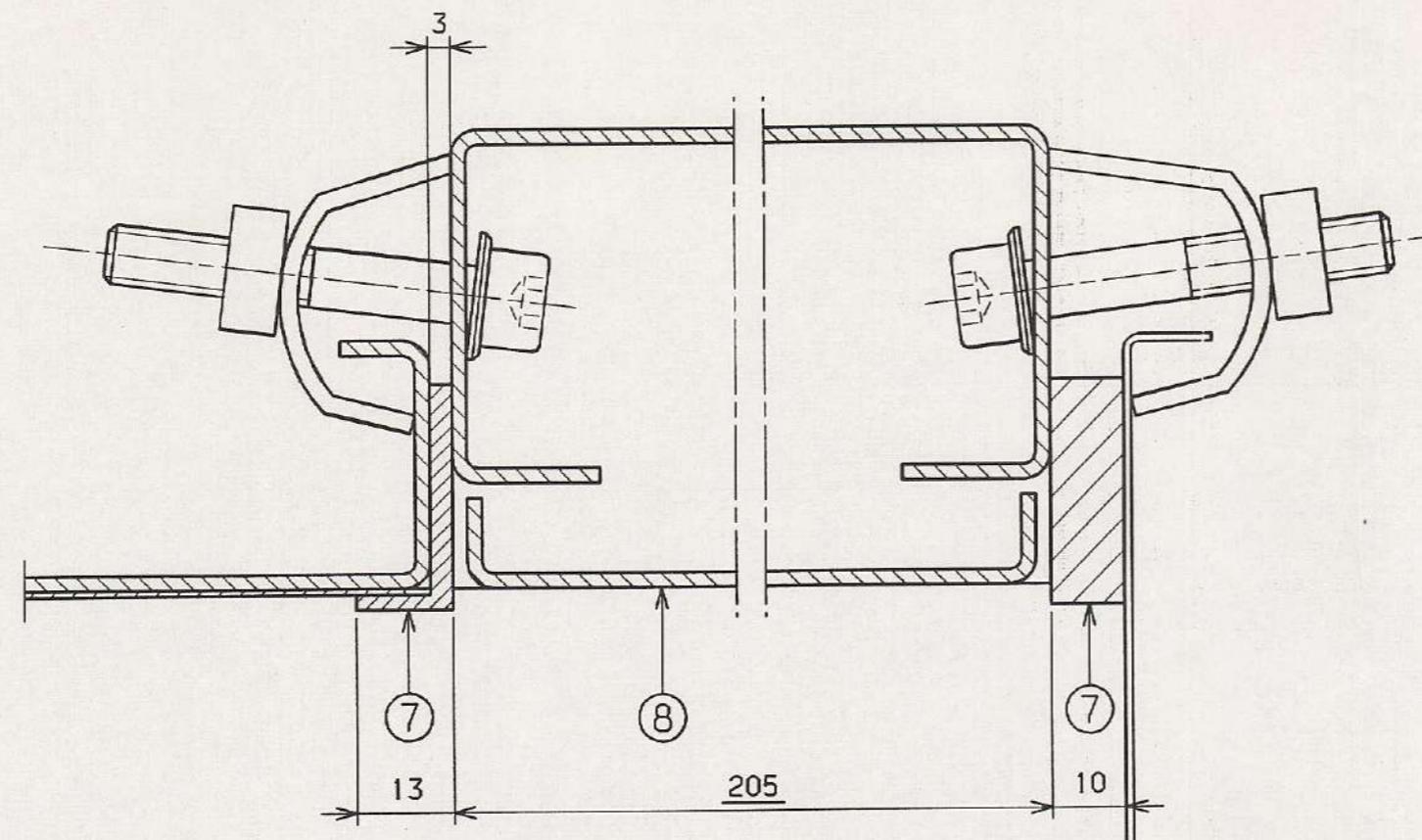
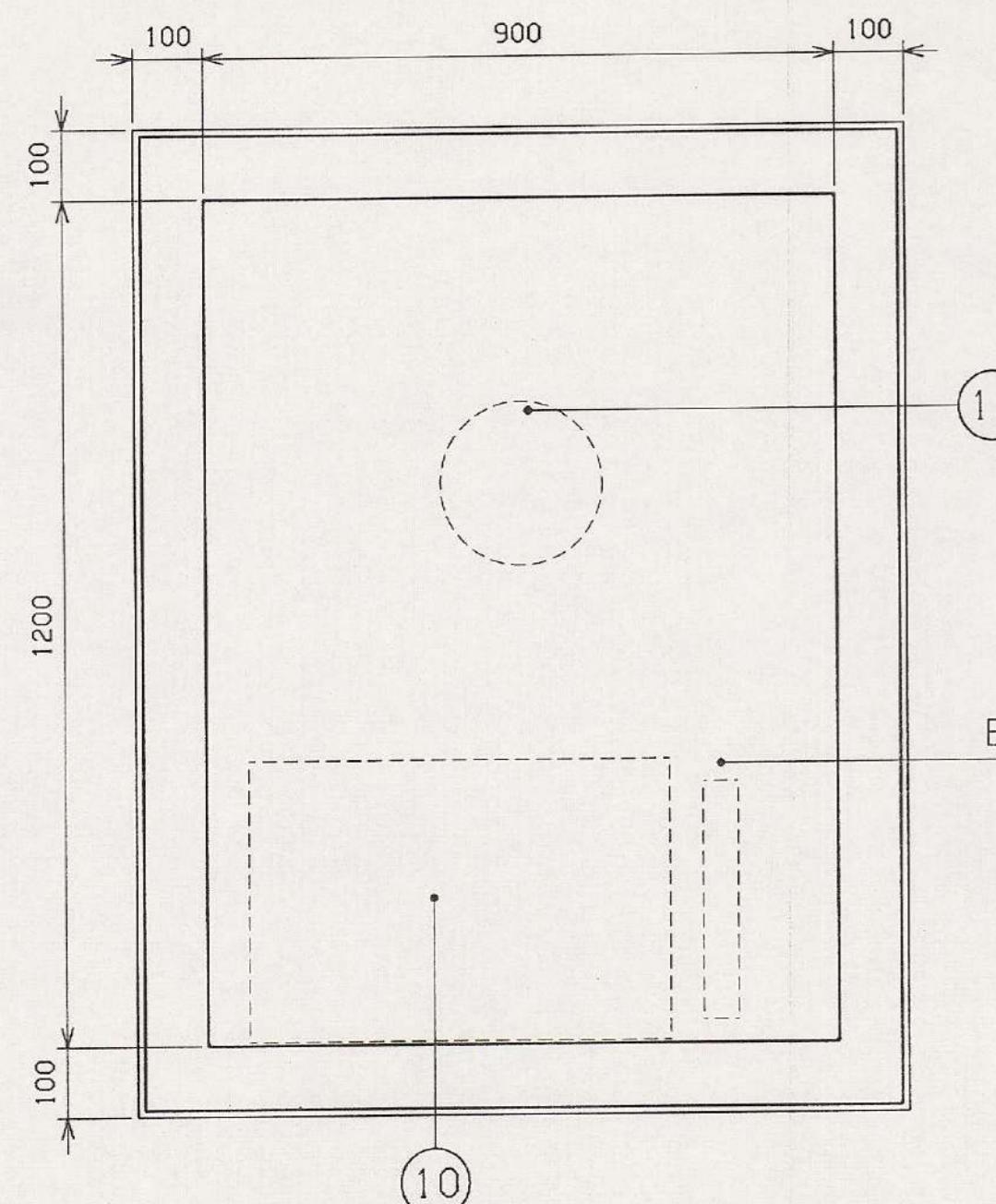
Car Back Wall



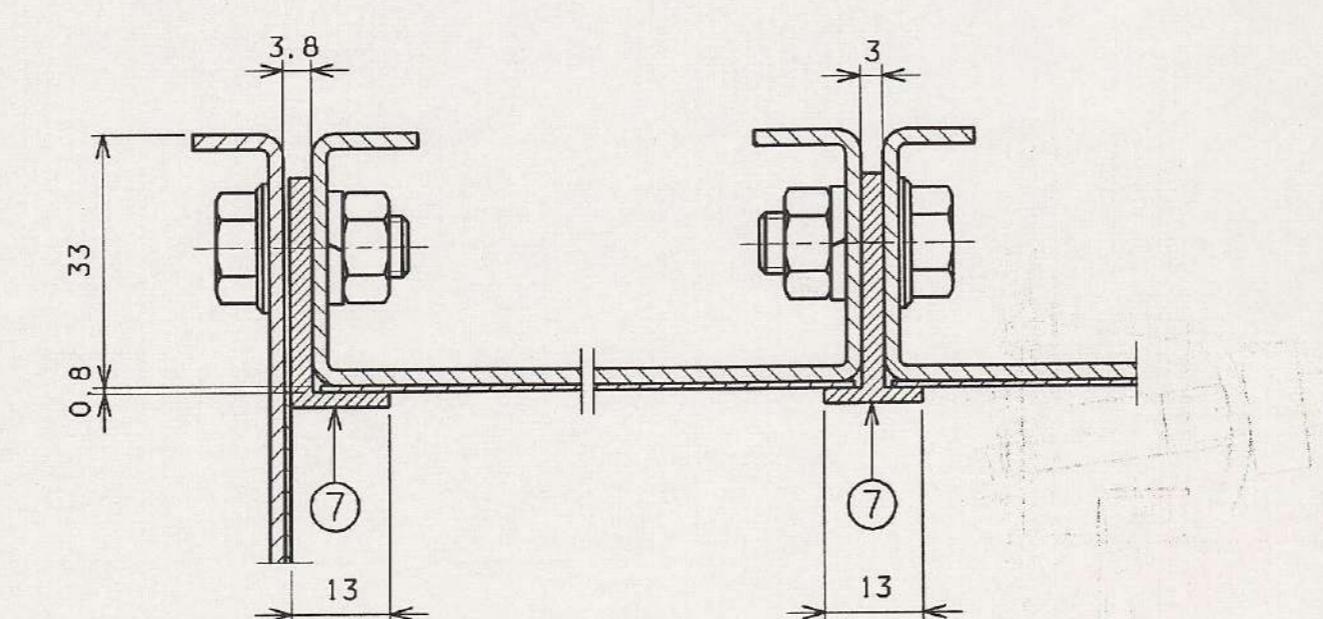
Car Right Wall



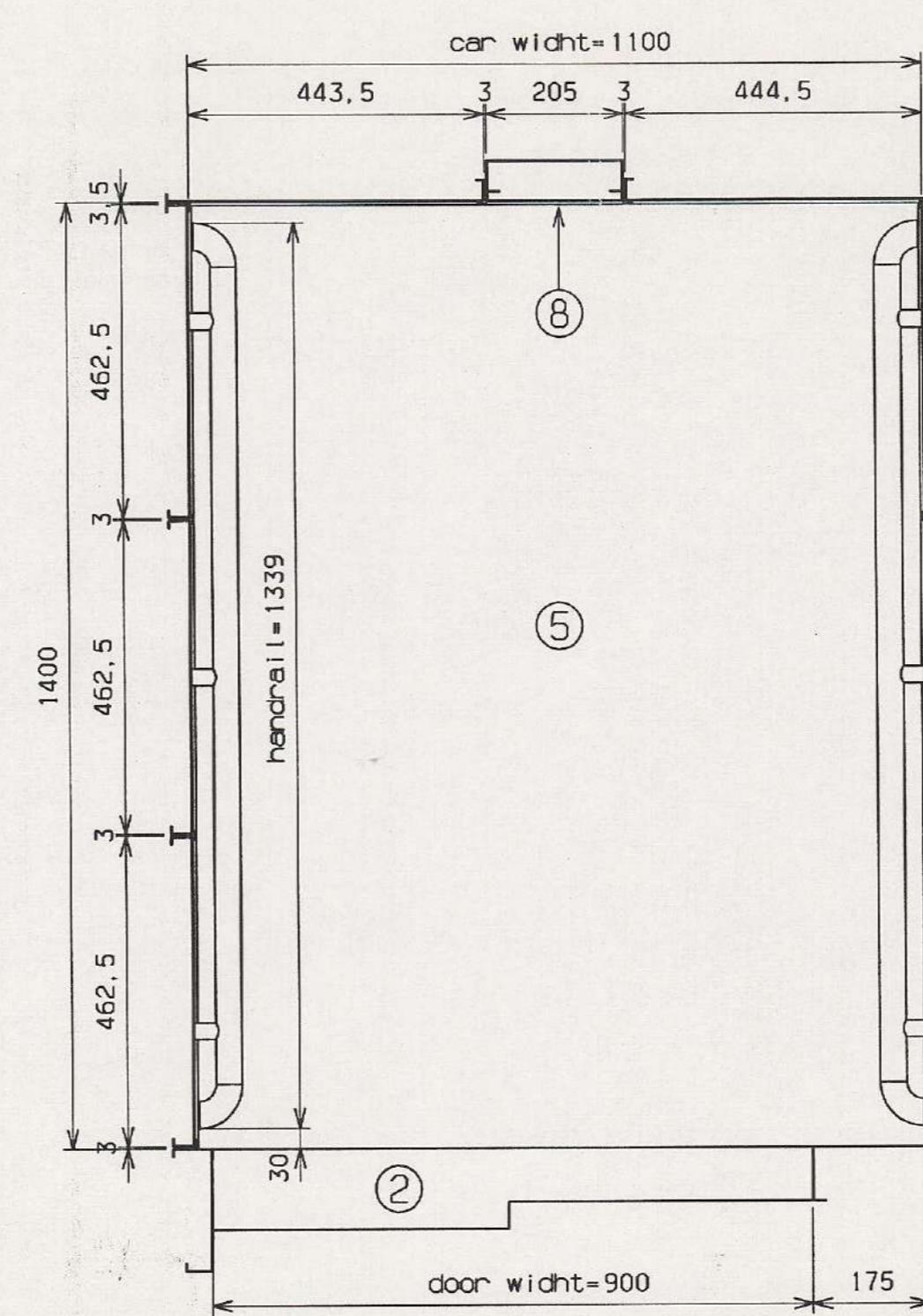
Car Ceiling



Emergency light 8V



Car Floor



AS BUILT

11	Fan Ventilator		
10	Acces hatch with contact Einstiegklappe mit Kontakt		
9	Suspended ceiling C2 painted RAL 9010,with Emergency-light ZW-Decke C2 lackiert RAL 9010, mit Notleuchte		
8	Car operating panel : stainless steel, grain 240 I- Lamelle : Edelstahl, Korn 240		
7	Aluminium rand anodized EV6, black Alu-Keder eloxiert EV6, schwarz		
6	Skirting : stainless steel, grain 240 Sockelleiste 50 mm : Edelstahl, Korn 240		
5	Flooring mat. NORAMENT 5mm , grey Bodenbelag NORAMENT 5mm, grau		
4	Hand rail Ø 40 mm : stainless steel, brushed Handlauf Ø 40 mm : Edelstahl gebürstet		
3	Car walls : stainless steel, Krupp des. LEINEN D25 Kabinenwände : Edelstahl,Krupp-Des. LEINEN D25		
2	Kabinenportal : Edelstahl,Krupp-Des. LEINEN D25 Car front wall : stainless steel, Krupp des. LEINEN D25		
1	Car door : stainless steel, Krupp des. LEINEN D25 Fahrkorbtür : Edelstahl,Krupp-Des. LEINEN D25		
Vorlauft / material		Datum/date	Neu/nova
		Bearb. Gepr. Name:	Schutzvermerk nach DIN 34 beachten / copyright reserved Zeichn. Nr. drawing no.
		29.10.98	Reszku
Kennwort project name		Car Carlton Gardens L4	
Fabr. Nr. maker's no.		29 98 98 122	
Änderung revision		Blatt page of ...	
		THYSSSEN	
		AUFGÜGE	
		P3000 Carlton Gardens L4 29988122_ZB Fahrkorb P3000 mit GZ	
		Ers. f.	
		Ers. d.	

THYSSEN AUFZÜGE GmbH

Page: 1

* REFERENCE CARLTON GARDENS, TEL *
*
* ORDER NO. 299898122 21.09.98 Bär *
*

Type of lift: SU51A00 Year of manufacture: 1998
Rated load: 630 kg Persons: 8
Rated speed: v= 1.00 m/s Machine room positioned: lower
Gear: W149B Suspension: 2:1
Floor selection: Standard with zone in all landings
Type of control: 6513/7 TCM - STANDARD

DOORS
Well entr.side I: M2TS3R Car entr.side I: M2TK3F2R
Door safety: Light screen + electronic passenger detector

LOCKING MAGNETS
Door entr.side I: RM 180

TYPE OF PROTECTION
Machine room: >=IP 20 Well: >=IP 20

POWER SUPPLY
Power line: 400 V main line spezification: 3/N/PE
Light line separate: 230 V Frequency: 50 Hz
design current: 12.5 A

DRIVE
operating motor current: 16.4 A operating motor power: 4.9 kW
Operating incoming current: 9.5 A impulse per canal: 1024
Type of drive: J60/API 18 Brake: MB2.1
geared 180/100V/In<=2, 5A

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Page: 2

 * REFERENCE CARLTON GARDENS, TEL *
 *
 * ORDER NO. 299898122 21.09.98 Bär *
 *

Number of landings: n=9

Landing		1		2		3		4		5		6		7		8		9		
Designation		LG		G		1		2		3		4		5		6		7		
Home landing				X																
Firemen's entr.				X		(X)														
Evacuation level																				
standby supply																				
Opening of door																				
entr.side I				X																
Pos.indicat.outs.				X																
entr. side I				X																

ADDITIONALS

Car control panel

Pushbutton:

Position indicator in car:

Position indicator outside:

Gong:

Continued travel indicator:

Door-close-button

Verbal announcement

Levelling with door opening

Re-levelling

Car priority

Remote release for governor

Firemen's operation:

Inspection end switch:

Unauthorized use:

Occupied device

Overload device

Standby supply:

Return command:

Switching Components

5*7-Pkt. (30mm)

by TLE (GRAY-CODE)

in all landings entr.side I

on entr.side I

incandescent lamp version

variant H1

firemen's call station in entrance (TLE)

key switch

upper and lower

canceling of car commandes exceeding
the number of passengers of cabine

canceling of car commands

by empty cabine

input (MP/X1:6)

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Page: 3

* REFERENCE CARLTON GARDENS, TEL *
*
* ORDER NO. 299898122 21.09.98 Bär *
*

Further additionals

Safety circuit: final limit switch upper/lower S101F/S101B
buffer switch counterw./car S133/S134
speed governor rope switch S132
stop switch in well S100
stop switch in car S100
slack rope switch S131
governor switch car S102
governor switch counterweight S103
safety gear switch S140
Emergency trap door switch contact-secured S141
car door lock 158

Emergency call relay with potential free contact

Collective fault message

Out of order message

Fan and car light: automatic (K35)

Travel counter

number of adjusting runs before "standing still":
unlimited number

After inspection travel: door is opened and afterwards closed

Lift-blocked-monitoring time: 4 min 16 s

Zone switch S27: in all landings

Additional emergency lighting

Intercom unit: car to motor room by TAD (Siedle)
telephonsocket outlet on car roof
- car to reception intercom
- fire-fighting intercom

Intercom unit by TLE:

Travelling cable - intercom

Power restoration delay: adjustable

Slack rope switch: sound an alarm in the motor room

Emergency trap door switch contact: visual indicator in the car

Inspection: car top control unit to BS 7255 (by TLE)

Handlowering indicator and buzzer

Temperature supervision in machine room

Lift pit moisture sensor message

Installation: shaft-and travelling cable with the LSF cable

EXTRA PROGRAM (SOFTWARE): C EZUS2

THYSSEN AUFZÜGE GmbH

Page: 4

* REFERENCE CARLTON GARDENS, TEL*
*
* ORDER NO. 299898122 21.09.98 Bär*
*

ENCLOSURES

approval RB-95A223
for MS, MS1, MS2 and MQ
approval RB-97A128
for MQ1
approval EB-95A168
for safety circuit SR1



CIRCUIT DIAGRAMS

31 pages

1	K	2	K	3		4	K	5
6	K	6-1		7		8		8-1 K
8-4	K	8-5		9	K	9-1		10 K
11	K	12	K	12-1		13	K	13-2 K
14	K	14-1	K	15	K	16	K	17 K
18	K	19	K	21	K	22	K	22-1 K
23	K							



TERMINAL DIAGRAMS

23 pages

1		2		3		4		5
5.1		5.2		6		7		8
9		10		11		12		13
14		15		15.1		16		17
17.1		18		19				

THYSSEN AUFZÜGE GmbH

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* REFERENCE CARLTON GARDENS, TEL *
*
* ORDER NO. 299898122 21.09.98 Bär *
*

SPECIFICATIONS:

SPECIFICATION REQUIREMENTS, WHICH ARE REALIZED IN THE PROCESSOR.

POS (EN 81 -1)	TRA	FUNCTION
1	260.32 (-)	Stopping of the landing control and the automatic re-call
2	260.421 (1-3)	The switching off of the car lighting does not become effective until the car has stopped in al landing and the entry of new calls is prevented. The return dispatch device is immediately effective.
3	262.62 (12.10)	Operation time control
4	266.12 (14.2.1.3a)	The inspection control must cancel the effect of the normal control including the movement of the independently power-operated doors.

Switchgears in safety circuit correspond to TRA 260.8, EN81-1 Pkt. 13.2

Min. holding current of contactors is > 6.7 mA

Routine test for control cabinets
according to DIN VDE 0660, part 500.



A00	= back plane board (MV)	K00	= power
A03	= back plane board in G03 (J60MA)	K01	= travel
A07	= brake control (MB)	K06	= travel (3AC-drive, controled)
A11	= power pack (MN)	K20	= emergency call
A12	= inquely (MQ MQ1)	K27	= zone
A12-H1	= signal potential X1:110	K35	= switching off control
A12-H2	= signal potential X1:113	K36	= out of order
A12-H3	= signal potential X1:133	K67	= firemen's operation/case of fire
A12-H4	= signal potential X1:137	K71	*= emergency stand-by power
A13	= central (MZ)	K73	= fault message
A13-H1	= signal travel direction up	K90	*= excess temperature in machine room
A13-H2	= signal travel direction down	K91	*= light power
A13-H3	= error message	K93	*= lift pit moisture sensor
A13-H4	= signal switches inspection/recall	K95	*= slack rope message
A13-S1	= car command terminal landing	K96	*= slack rope message
A13-S2	= car command first landing	K97	*= slack rope message
A13-S3	= switching off landing calls	K98	*= slack rope message
A13-S4	= door control off	M01	= drive
A13-S5	= service	M46	= ventilator car
A19	= distance calculator (MW)	M50	= door
A20	= emergency supply (MH)	P01	= travel counter
A21	*= intercom unit car	Q00	= power
A23	= portmodul (MP)	S00	= power
A27	= safety circuit levelling	S01	= recall operation
A30	= floor board (MS, MSA)	S20	= emergency call+emergency lighting
A40	= car board (MF)	S24	= switching off landing calls
A44	*= car top control station	S25	= remote release governor
A60	= verbal announcement (MSM)	S27	= zone
A68	= load weighing	S32	= landing call + acknowledgement
A71	= standby supply (ME)	S35	= switching off control
A90	*= relais board (GO)	S41	= car light
A97	*=zone signal box	S42	= car command + acknowledgement
B03	= pulse generator floor selection	S45	= inspection operation switches
B21	= call station machine room	S52	= door command
B22	= call station car roof	S54	= door inspection
B27	= sensor re-levelling	S90	*= temperature supervision in machine room
B43	= sensor floor selection	S97	*= zone signal box
B56	= light screen/light barrier (doors)	S100	= stop
B60	= verbal announcement	S101	= final limit switch
B68	= generator load weighing	S102	= speed governor
B90	*= electronic passenger detector	S103	= speed governor counterweight
E20	= emergency lighting	S131	= slack rope
E27	*= re-levelled middle signal	S132	= speed governor rope
E41	= car light	S133	= buffer counterweight
F00	= power contactor / car light	S134	= buffer car
F01	= mains 3AC	S139	= landing device
F02	= control voltage 1AC	S140	= safety gear
F31	= well light	S150	= car door
F67	= firemen's operation/case of fire	S158	= locking device car door
G03	= 3AC-drive, controled (freq.converter)	X0	= terminal block power, drive
G11	= information part	X1	= terminal block saftey circuit
G11-F11	= power pack G11 24V	X2	= terminal block > 50V
G11-F12	= power pack G11 8.6V	X8	= terminal block < 50V (lift 1-n)
G20	= accu emergency lighting	X9	= terminal block < 50V
G50	= door drive 1AC	X00	= socket outlet control cabinet
G67	= firemen's operation/case of fire	X01	= terminal box machine
H20	= alarm	X02	= distribution box governor
H27	= re-levelled middle	X11	= connections travelling cable
H33	= continued travel	X12	= connections travelling cable
H48	= overload	X13	= connections travelling cable/bus
H60	= position	X27	= distribution box zone
H90	*= excess temperature in machine room	X34	= distribution box well
H91	*= slack rope	X40	= bus connection car
H141	*= hatch open	X45	= distribution box S45
		X50	= terminal block door hanger
		X51	= terminal block door panel left
		Y07	= brake
		Y07-B1	= brake checking
		Y07-B2	= brake checking
		Y25	= remote release governor
		Y51	= locking device
		Z00	= filter power

CODE LETTER "kind" (qualifying symbol: -)

A	= components
B	= converters of non electrical values to electrical values or inverse
C	= capacitors
D	= binary elements, deceleration and registration devices
E	= illumination equipments
F	= protective equipments
G	= generators, power supplies
H	= signalling devices
K	= relays, contactors
L	= inductivities
M	= motors
N	= amplifiers, regulators
P	= counters, clocks, check points
Q	= power circuit switches, disconnectors
R	= resistors
S	= switches
T	= transformers
U	= converters of electrical values
V	= semi-conductors
W	= trunks (transmitters), antennas
X	= terminals, plugs, socket outlets
Y	= brakes, valves
Z	= filters, limiters

CODE LETTER "funktion"

A	= opening / door open
B	= lower / down
D	= entrance side II
F	= upper / up
P	= parallel device
Z	= closing / door closed

CODE LETTER "location" (qualifying symbol: +)

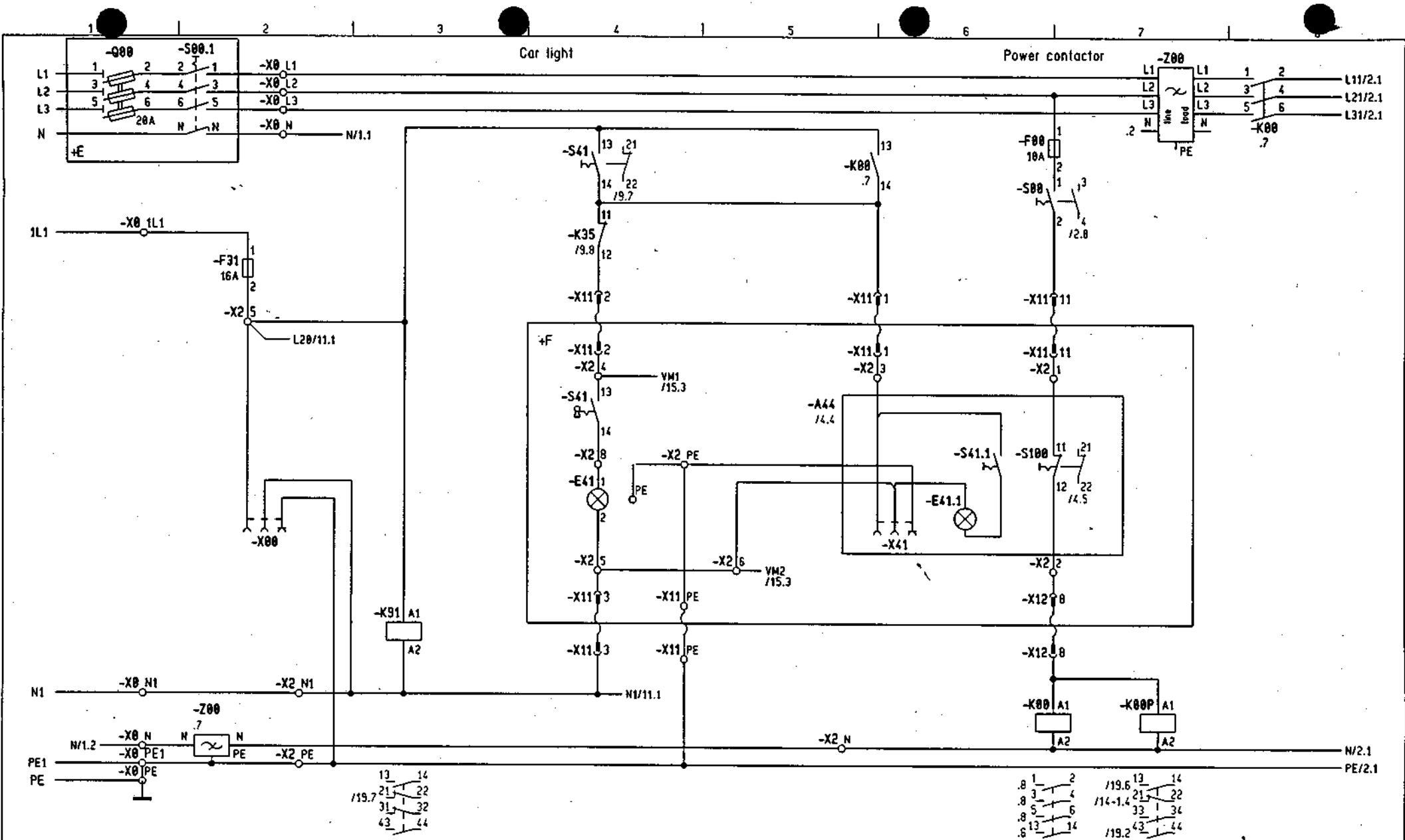
B	= control panel
E	= external
F	= car
R	= pulley room
S	= well
S1-Sn	= landings 1-n
T	= machine room
TS	= control cabinet

CODE LETTER "system" (qualifying symbol: =)

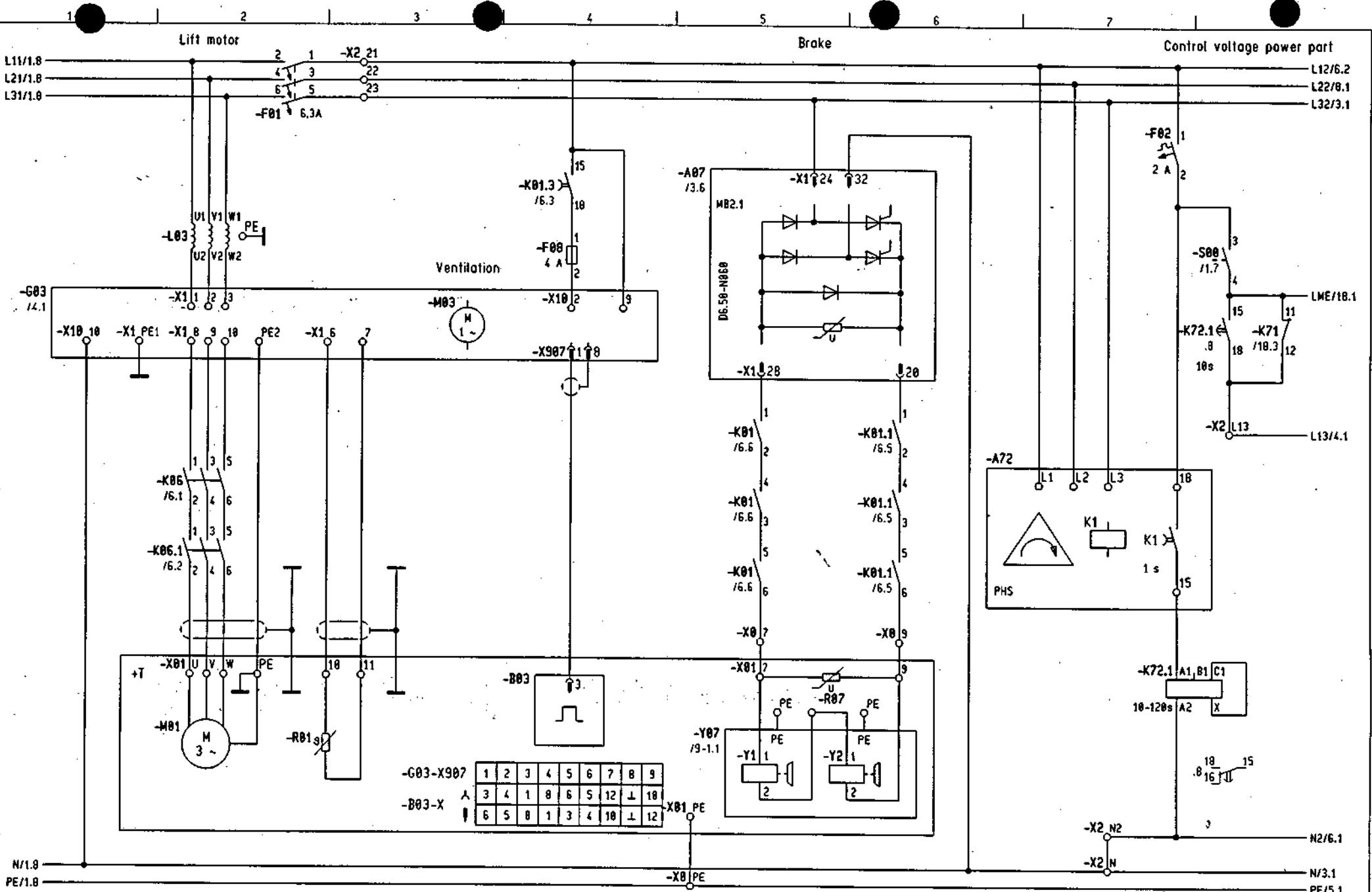
1..n	= number of lifts in group
------	----------------------------

ABBREVIATIONS ON FACE PLATE:

BM	= brake
BS	= brake fast switching
EK	= final limit switch (+TS-X1:110)
HK	= stop (+TS-X1:113)
KT	= locking device (+TS-X1:137)
PS	= testing switch
RM	= locking device
TK	= landing door (+TS-X1:133)
WO/WU	= travel direction contactor



a			DATE	24.09.98		THYSSEN AUFSÄGE	Traction drive lift BAC J60 Electric - Lighting	CARLTON GARDENS. TEL	=			
b			Resp.	Bör					+ TS			
c			CHECK									
	MODIFICATION	DATE	NAME	NORM		Orig.	Subst.	Subst.		299898122	K	Page 1
					1	2	3	4		31	Pg.	



1

2

3

4

5

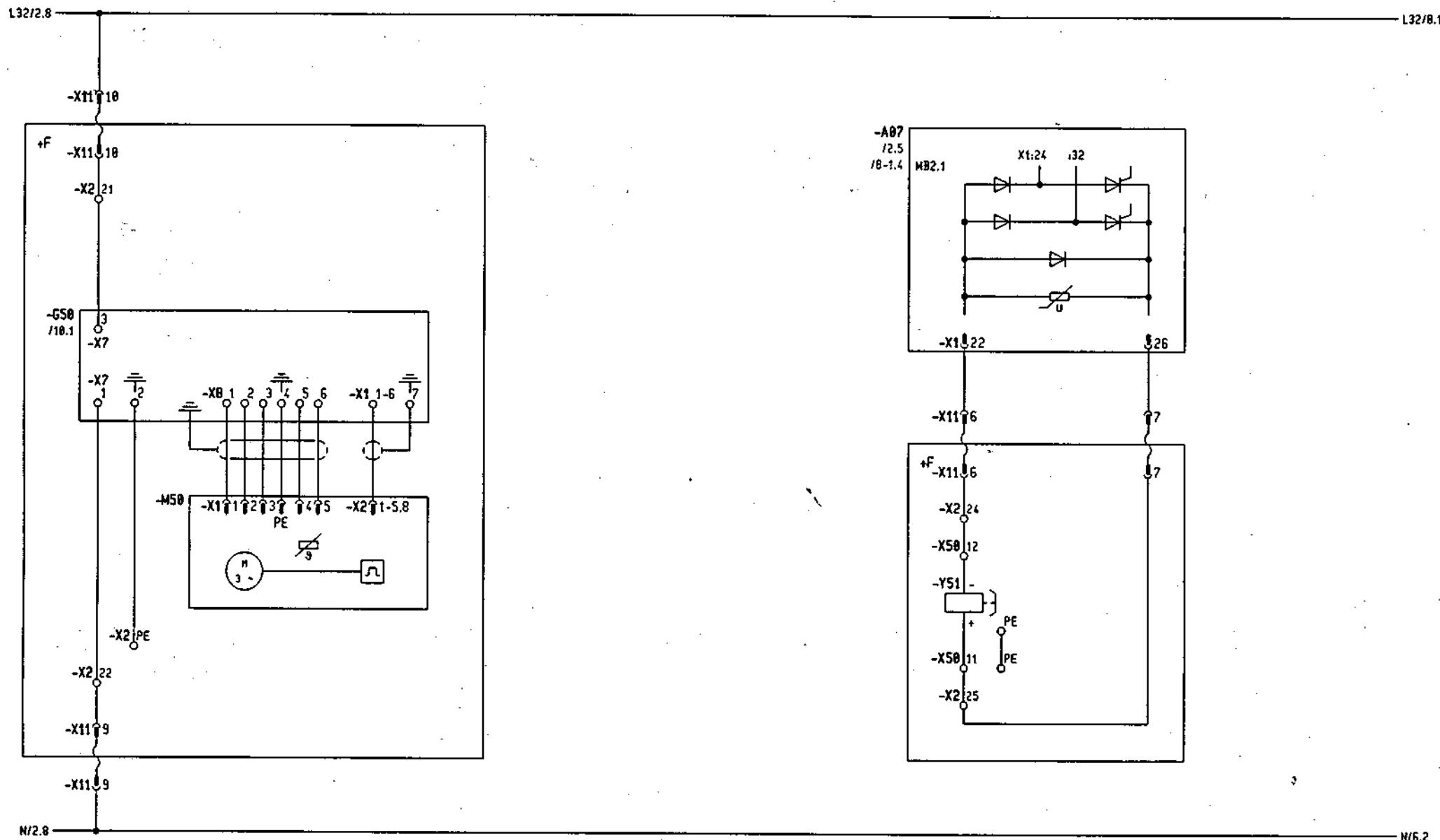
6

7

8

Door drive

Door locking



a			DATE	24.09.98
b			Resp.	Bär
c			CHECK	

Origin.

Subst.

Subst.

THYSSEN AUFSZÜGE

Traction drive lift 3AC J60
Door M2TK3F2

CARLTON GARDENS, TEL

N

299898122

31

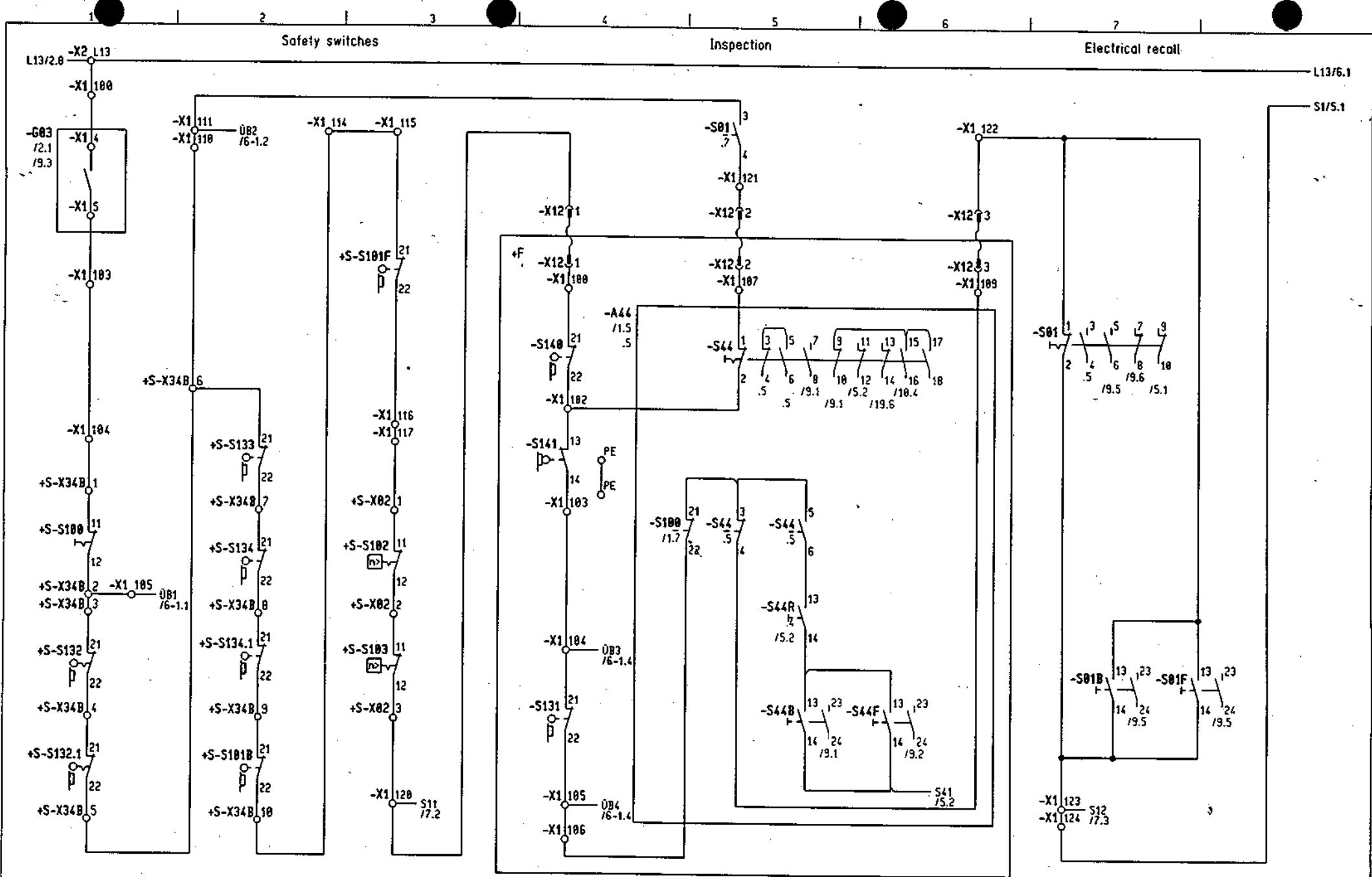
Pg.

5

6

7

8



a			DATE	24.09.98
b			Reso.	Bär
c			CHECK	
	MODIFICATION	DATE	NAME	NORM
	1			Origin
			2	

THYSSEN AUFZÜGE

Traction drive lift JAC J60 Safety circuit

CARLTON GARDENS. TEL

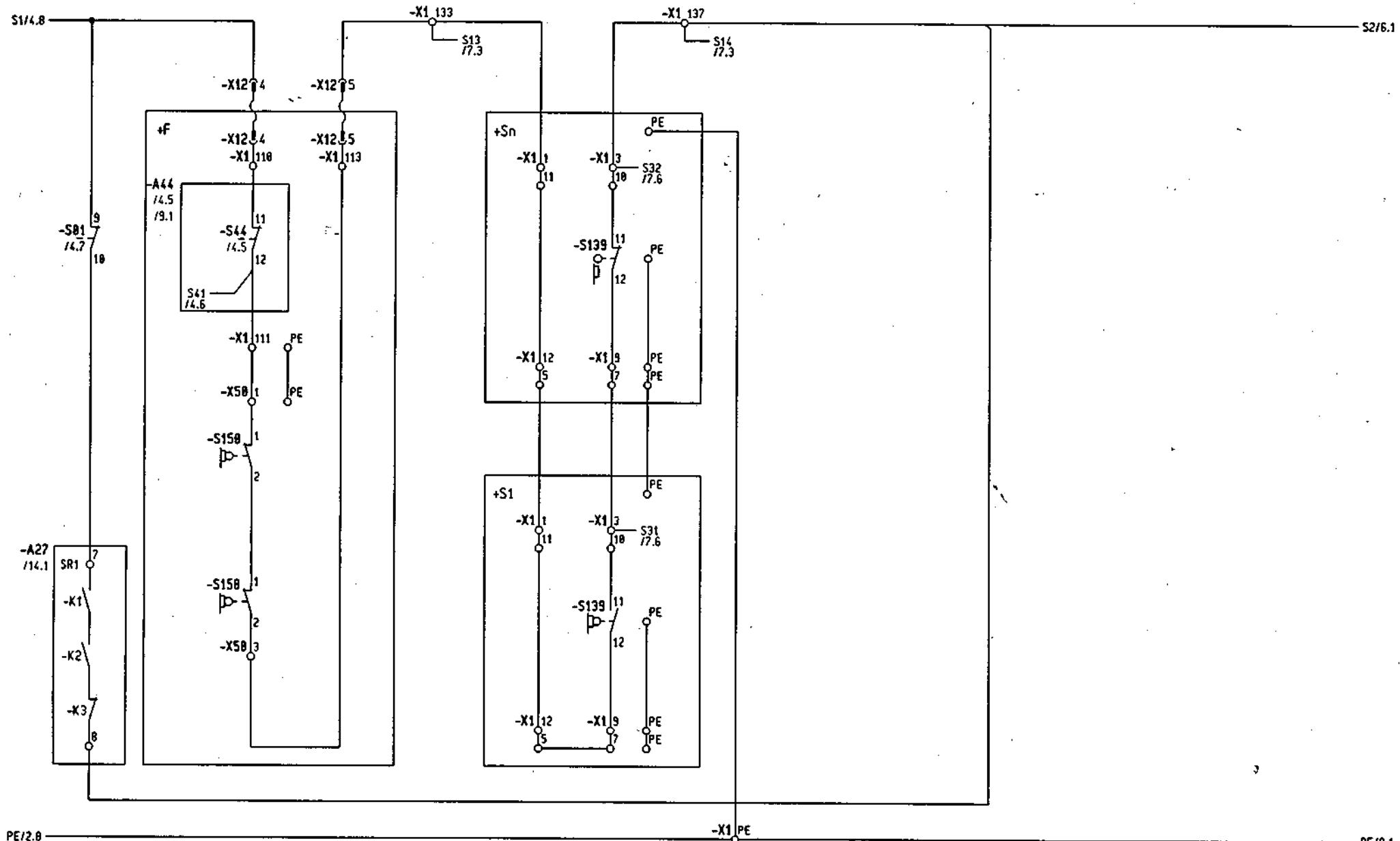
15

299898122

K

Car door switch

Locking switch



a			DATE	24.09.98
b			Resp.	Bör
c			CHECK	
	MODIFICATION	DATE	NAME	NORM

Origin. Subst. Subst.

THYSSEN AUFZÜGE

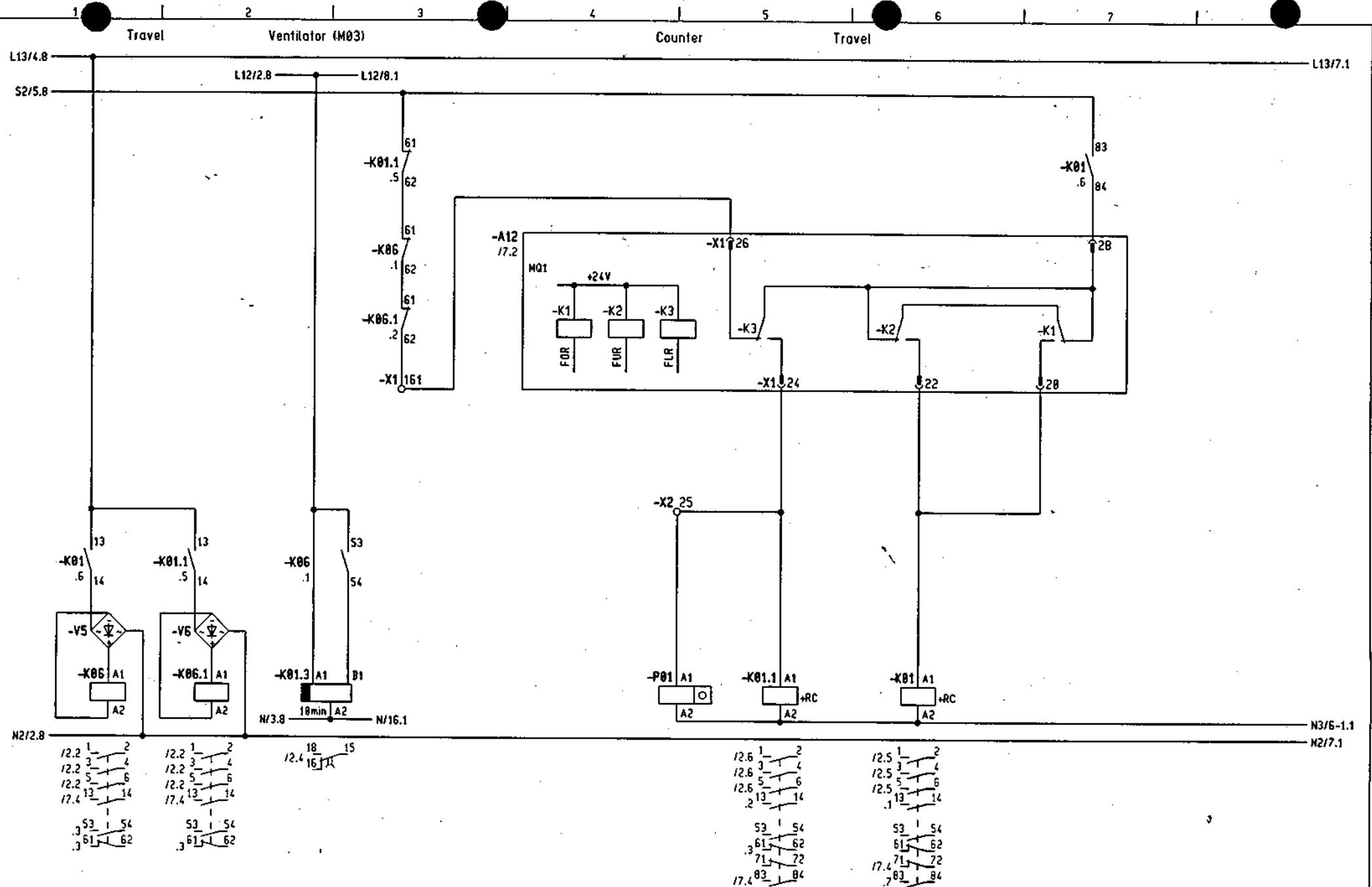
Traction drive lift 3AC J60
Safety circuit

CARLTON GARDENS, TEL

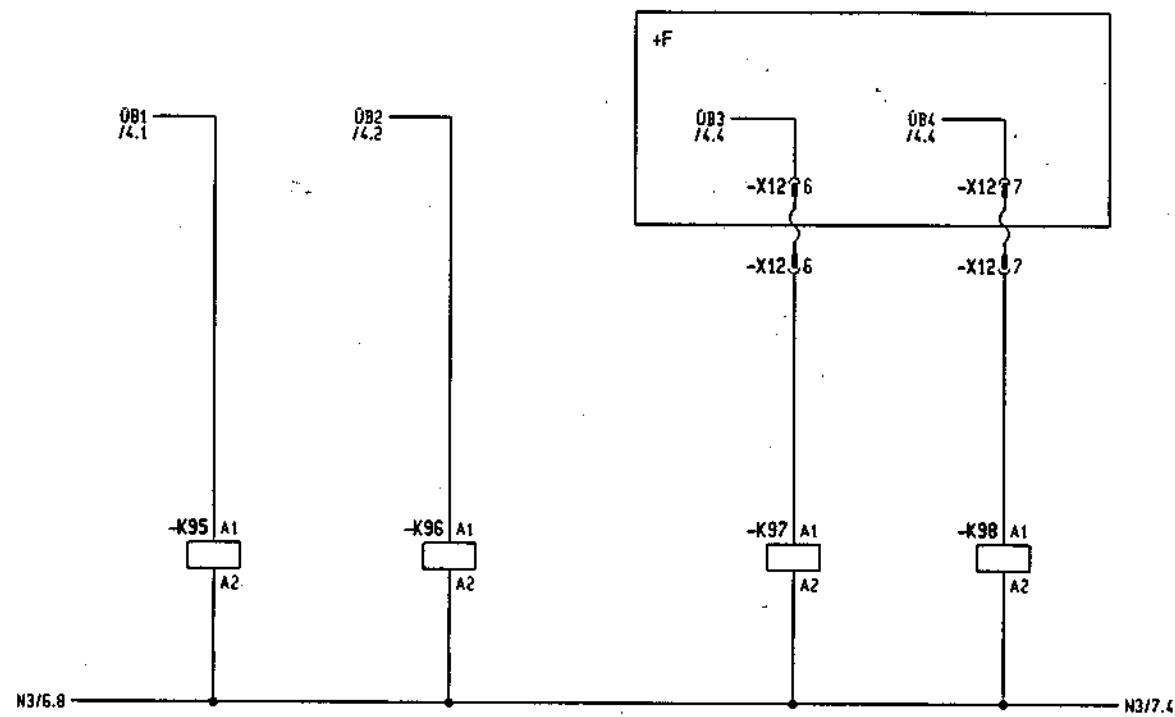
=

+ TS

299898122 N Page 5
31 Pg.



1 2 3 4 5 6 7



13 14
21 22
31 32
43 44

/14-1.6 13 44

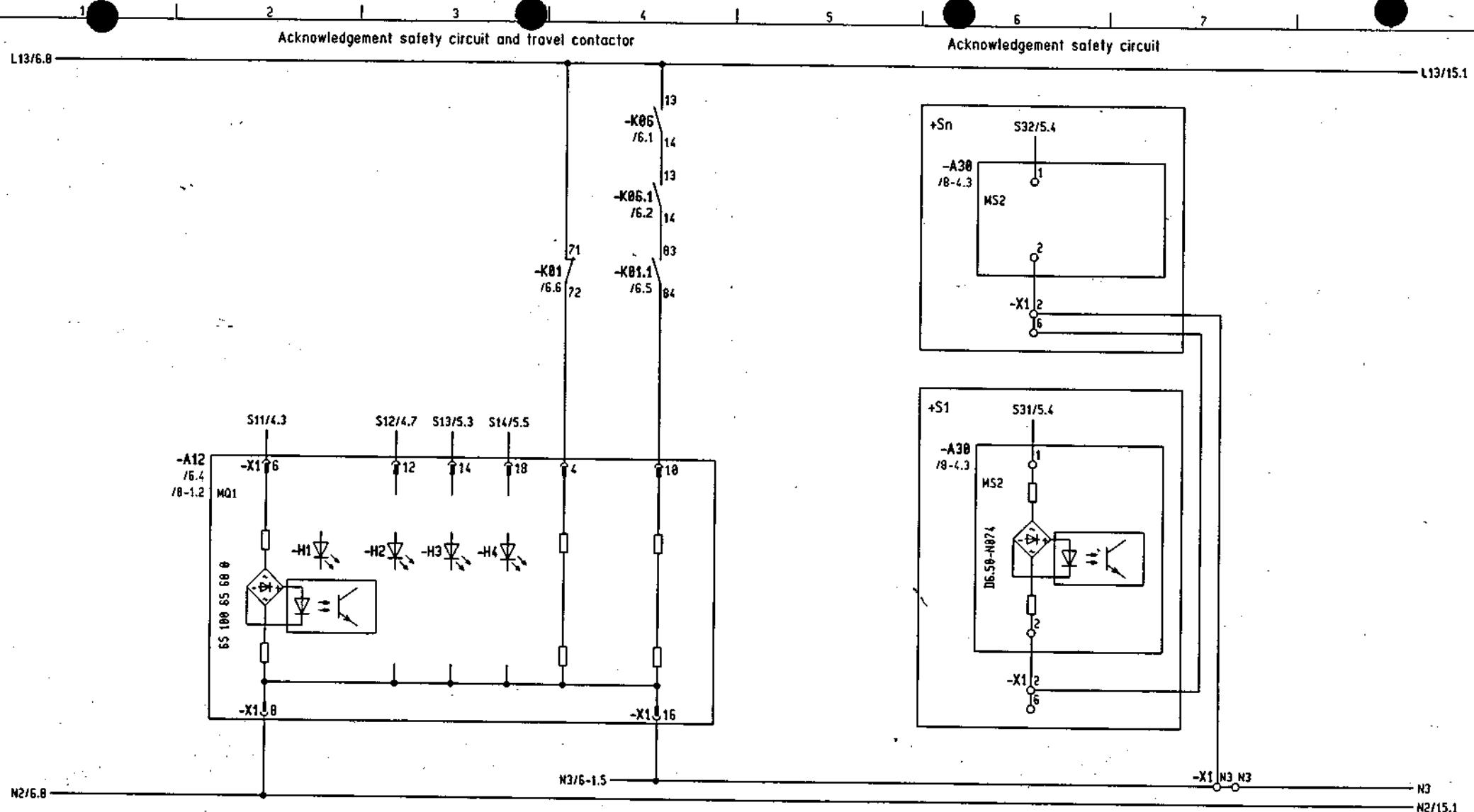
13 14
21 22
31 32
43 44

/14-1.6 21 32

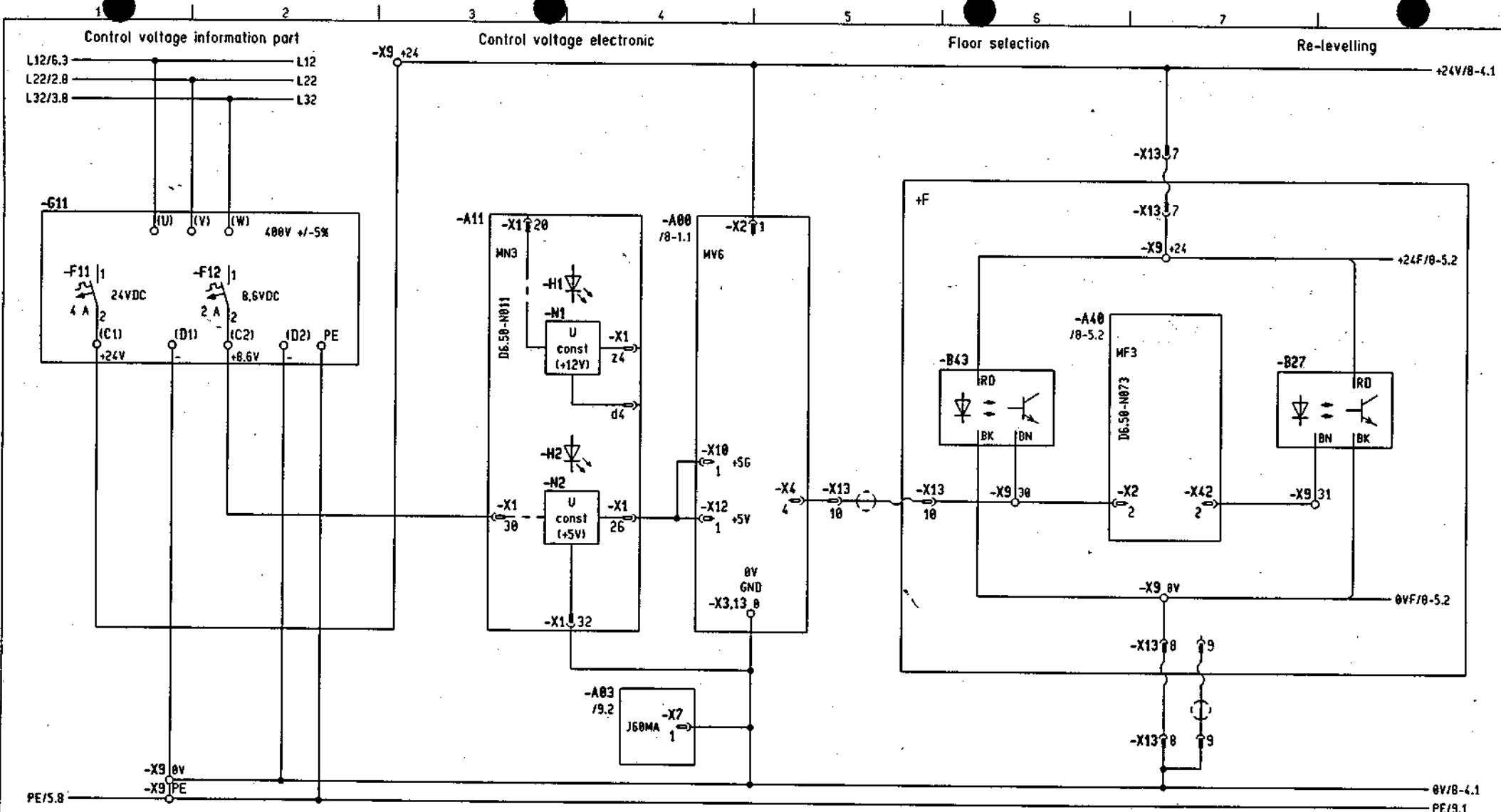
13 14
21 22
31 32
43 44

/14-1.6 21 32

a			DATE	30.09.98					
b			Resp.	Bor					
c			CHECK						
MODIFICATION	DATE	NAME	NORM.		Orgin.	Subst.	Subst.	Traction drive lift 3AC-J60	CARLTON GARDENS, TEL
1	2							Safety circuit	= + TS
								299898122	Page 6-1 31 Pg.



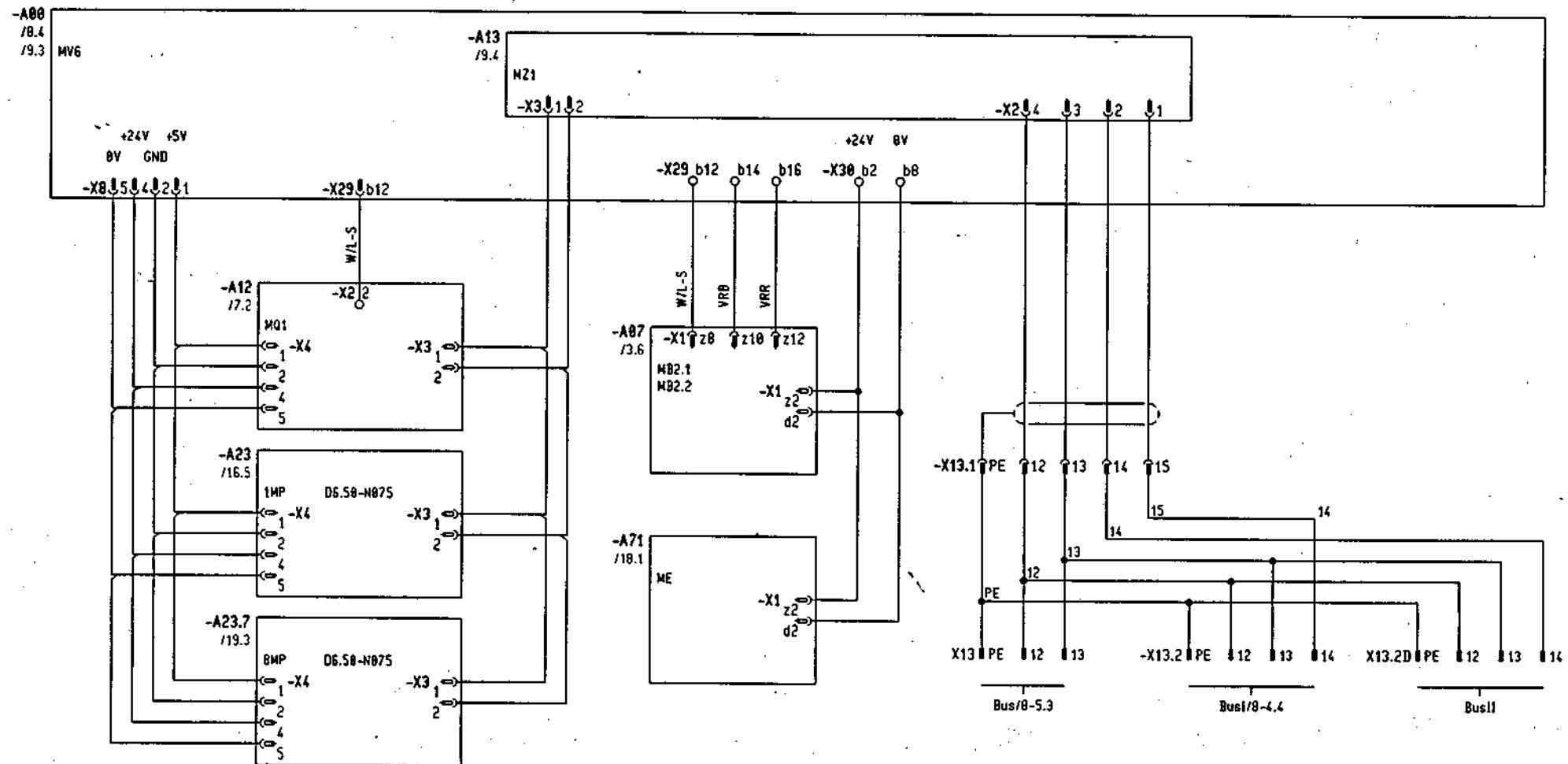
a			DATE	24.09.98
b			Respo.	Bor
c			CHECK	
MODIFICATION	DATE	NAME	NORM	
1				2



a			DATE	24.09.98				
b			Resp.	Bör				
c			CHECK					
MODIFICATION	DATE	NAME	NORM					
1	2	3	4	5	6	7	8	9
Orgin.	Subst.	Subst.			Traction drive lift 3AC J60	CARLTON GARDENS, TEL		
			THYSSEN AUFZÜGE		Informationpart		+ TS	
						299898122	N	Page 6
							31	Pg. 9

Connections information part

Busdistributor



a			DATE	24.09.98
b			Respo.	Bor
c			CHECK	
	MODIFICATION	DATE	NAME	NORM

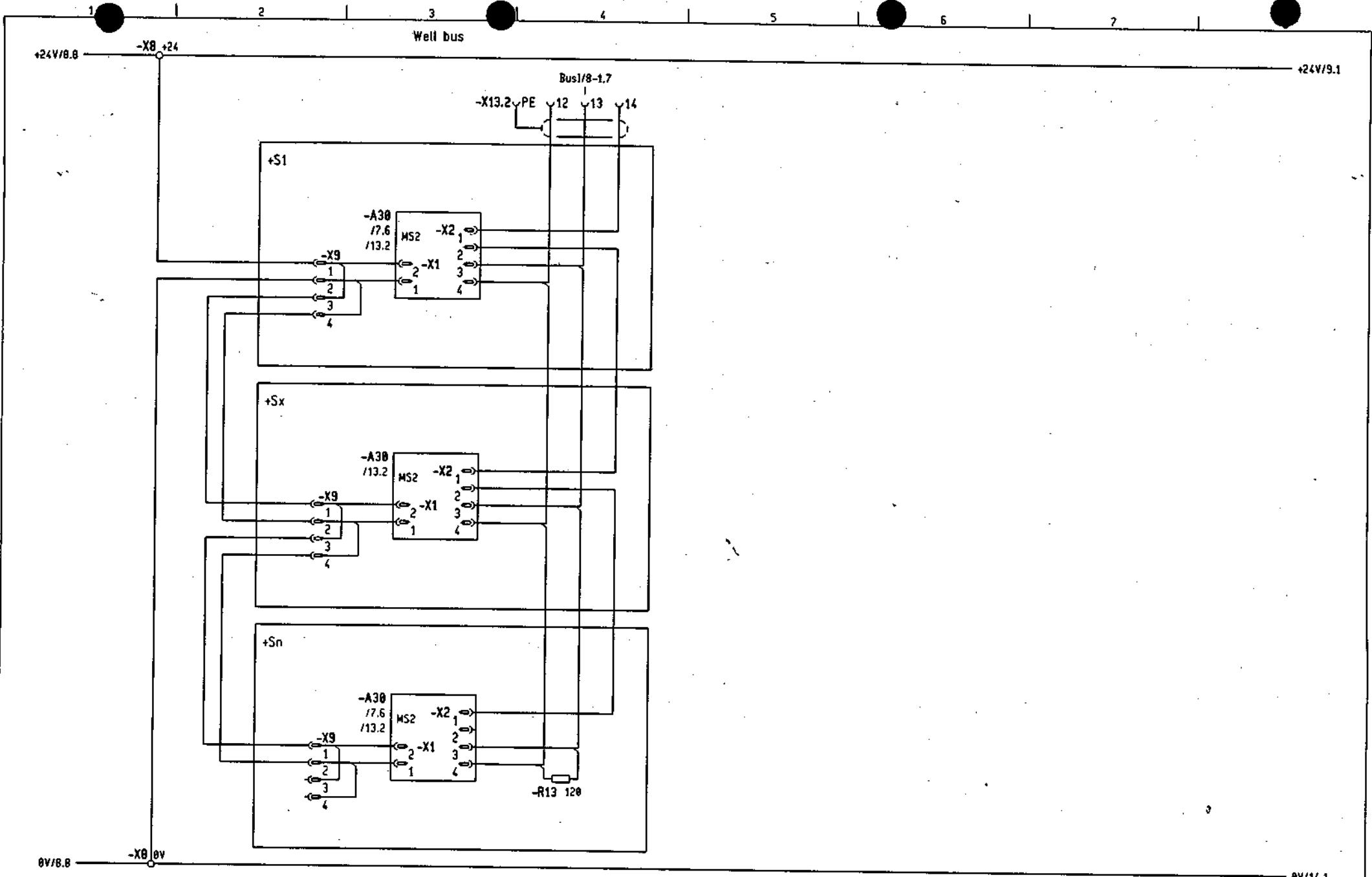


Traction drive lift 3AC J80 Informationpart

CARLTON GARDENS, TEL

TS

K Page 8-1
31 Pg.



a		DATE	02.10.98
b		Resp.	Ber
c		CHECK	

MODIFICATION DATE NAME NORM

1 2 Org. Subst.



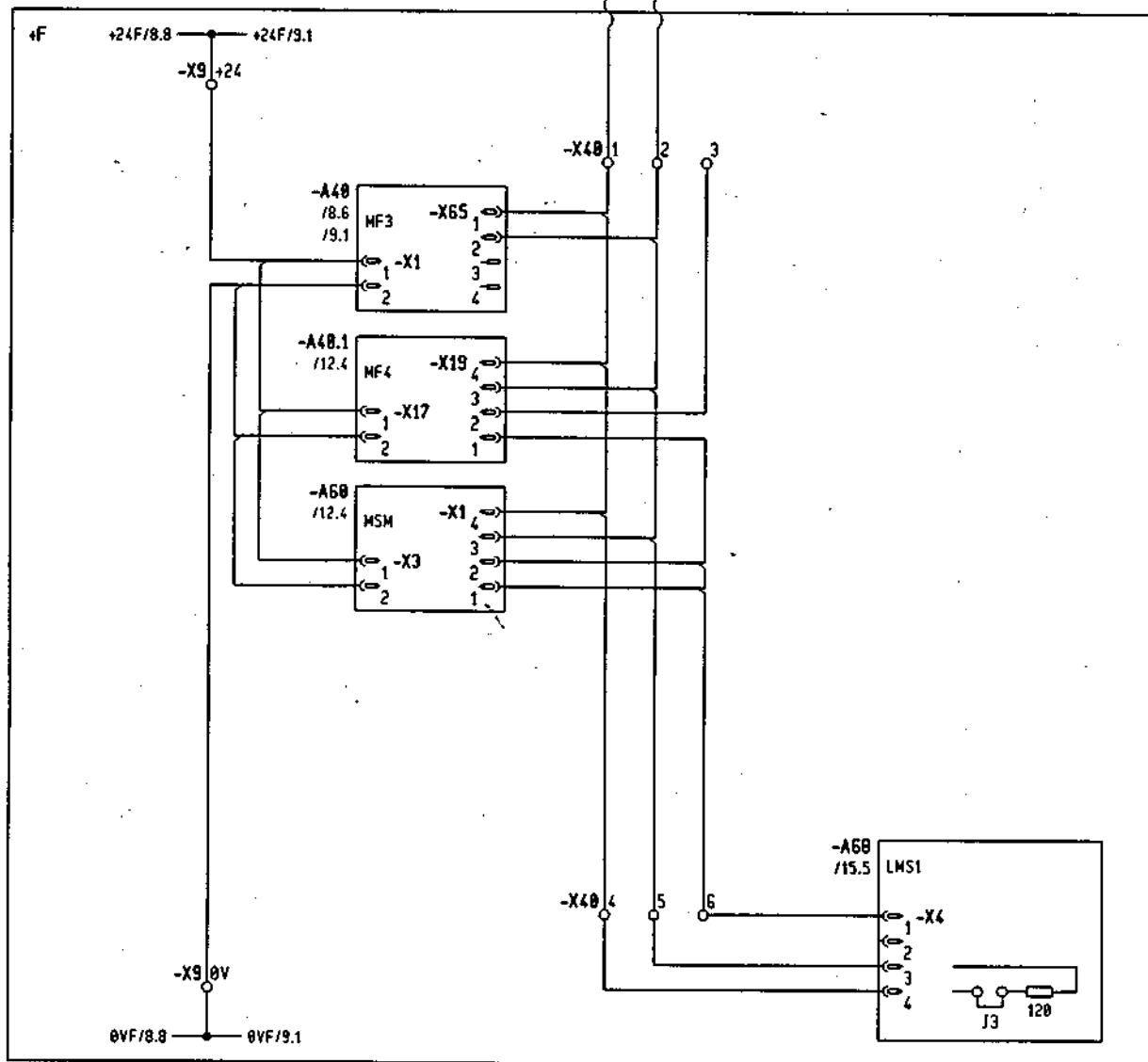
Traction drive lift 3AC J60
Informationpart

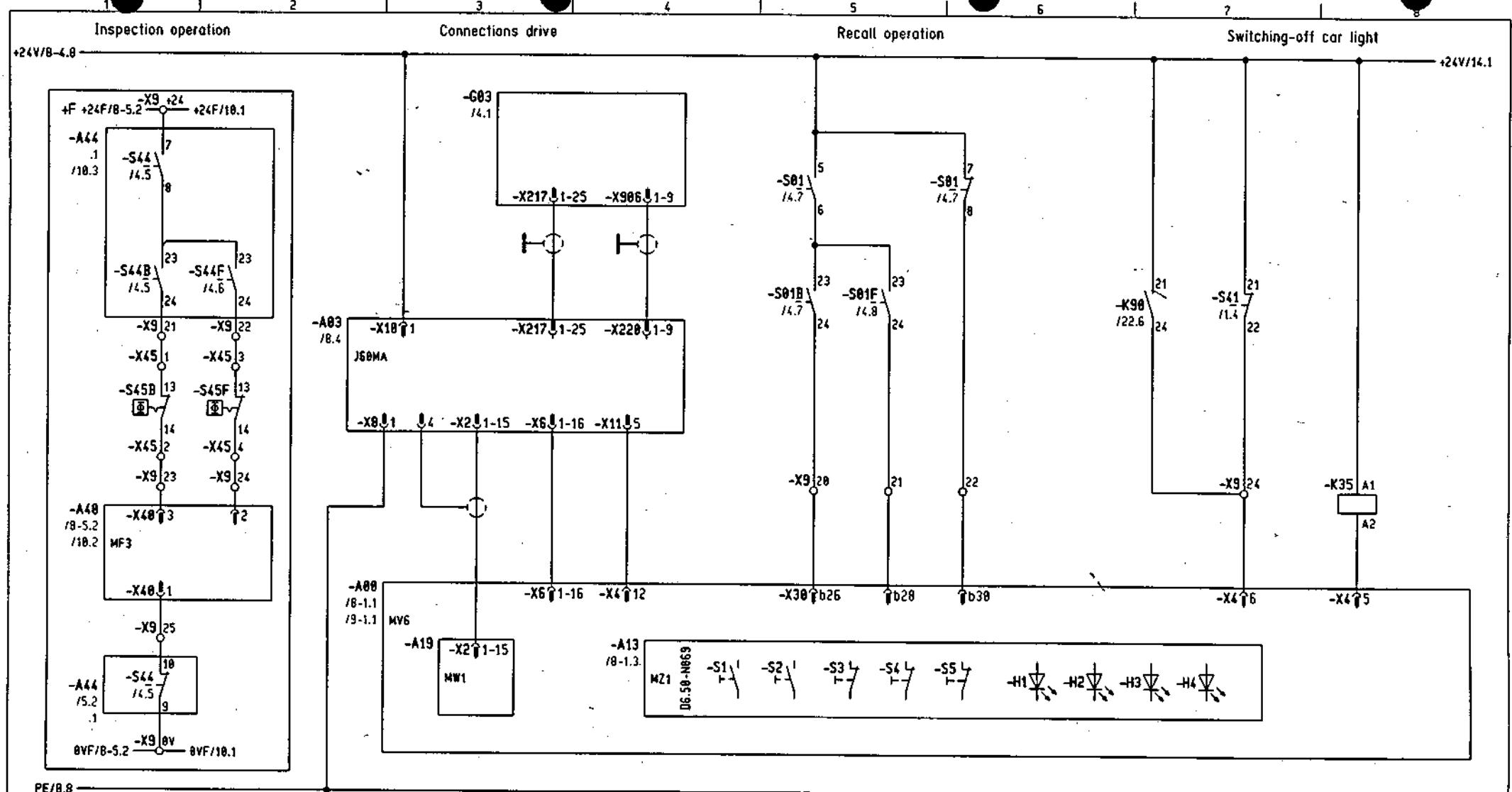
CARLTON GARDENS, TEL

=
+ TS

299898122 K

Page 8-4
31 Pg.





14
12
24
21
19
22
23

a			DATE	24.09.90				
b			Resp.	Bör				
c			CHECK					
MODIFICATION	DATE	NAME	NORM		Orgin.	Subst.	Subst.	
1	2	3	4		5	6	7	8

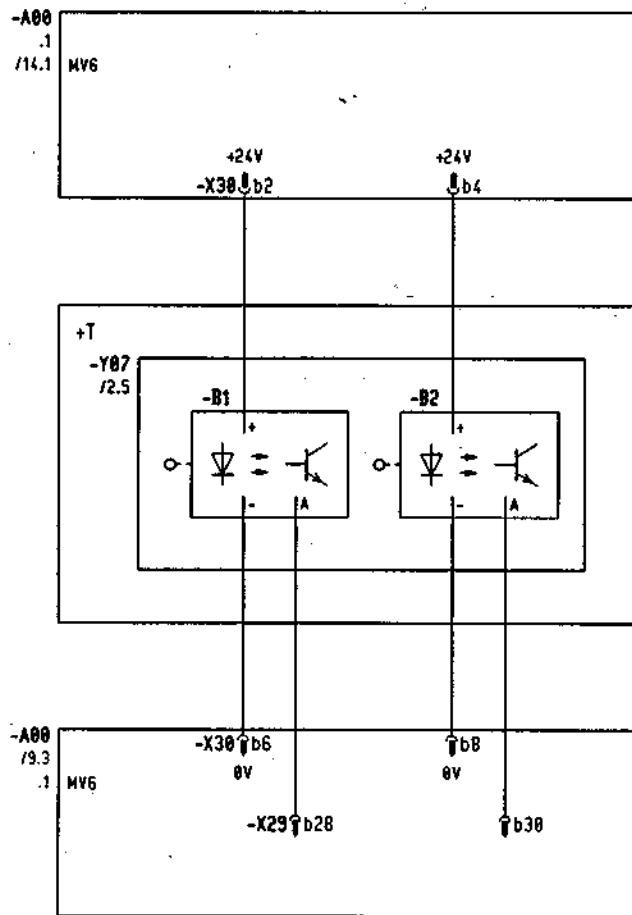
THYSSEN AUFZÜGE

Traction drive lift 3AC J60 Informationpart

CARLTON GARDENS, TEL + TS

299898122 K Page 9
31 Pg

Brake checking



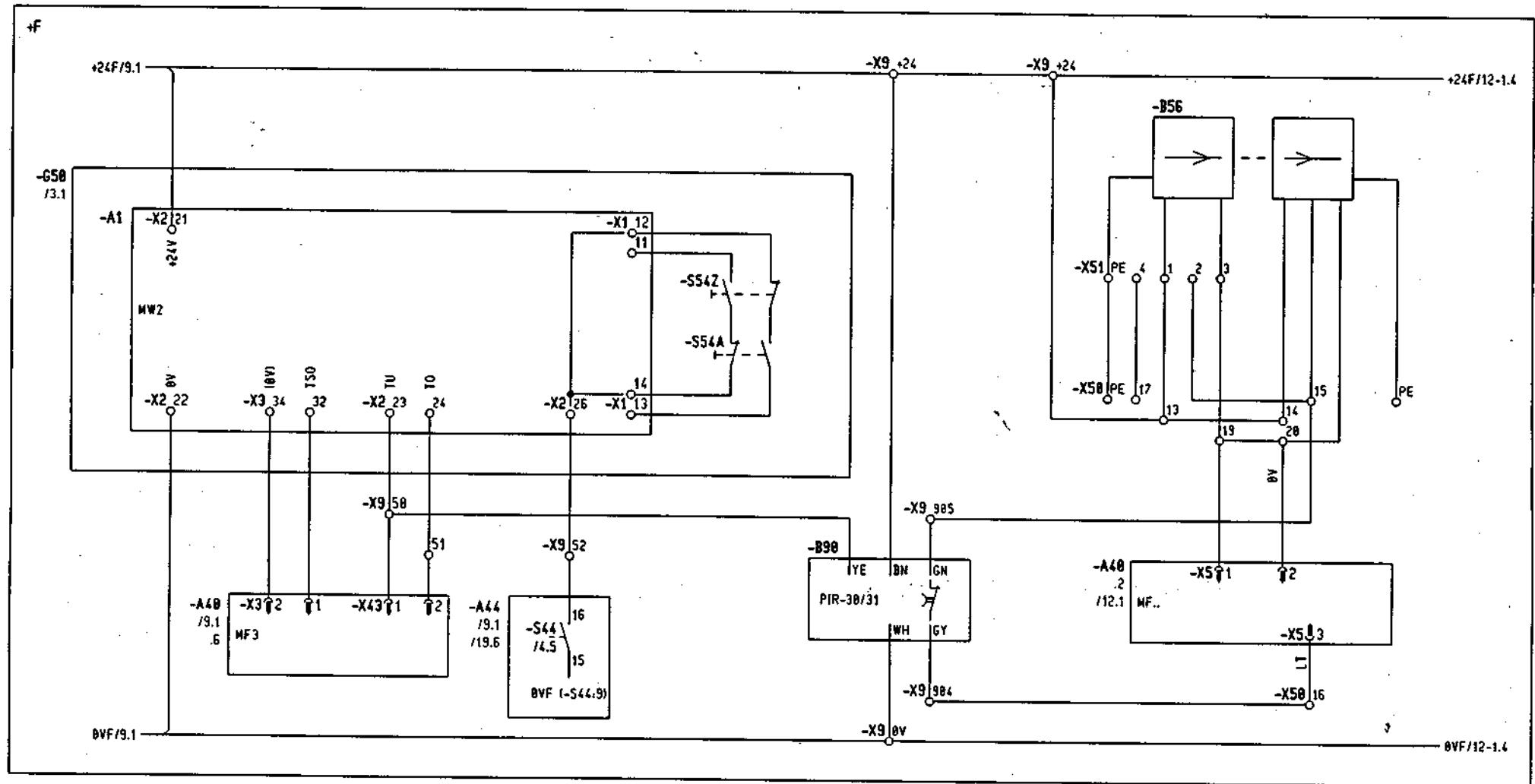
a			DATE	24.09.98		THYSSEN AUFZÜGE	Traction drive lift 3AC J60	CARLTON GARDENS, TEL	=
b			Resp.	Bär					+ TS
c			CHECK						
	MODIFICATION	DATE	NAME	NORM	Origin:	Subst.	Subst.	299898122	N
1	2							31	Page 9-1 Pg.

A horizontal number line with tick marks at every integer from 1 to 9. The numbers 1, 3, 5, 6, 7, 8, and 9 are written above the line. The tick marks are black circles. There are two additional black circles on the line: one between 3 and 4, and another between 6 and 7.

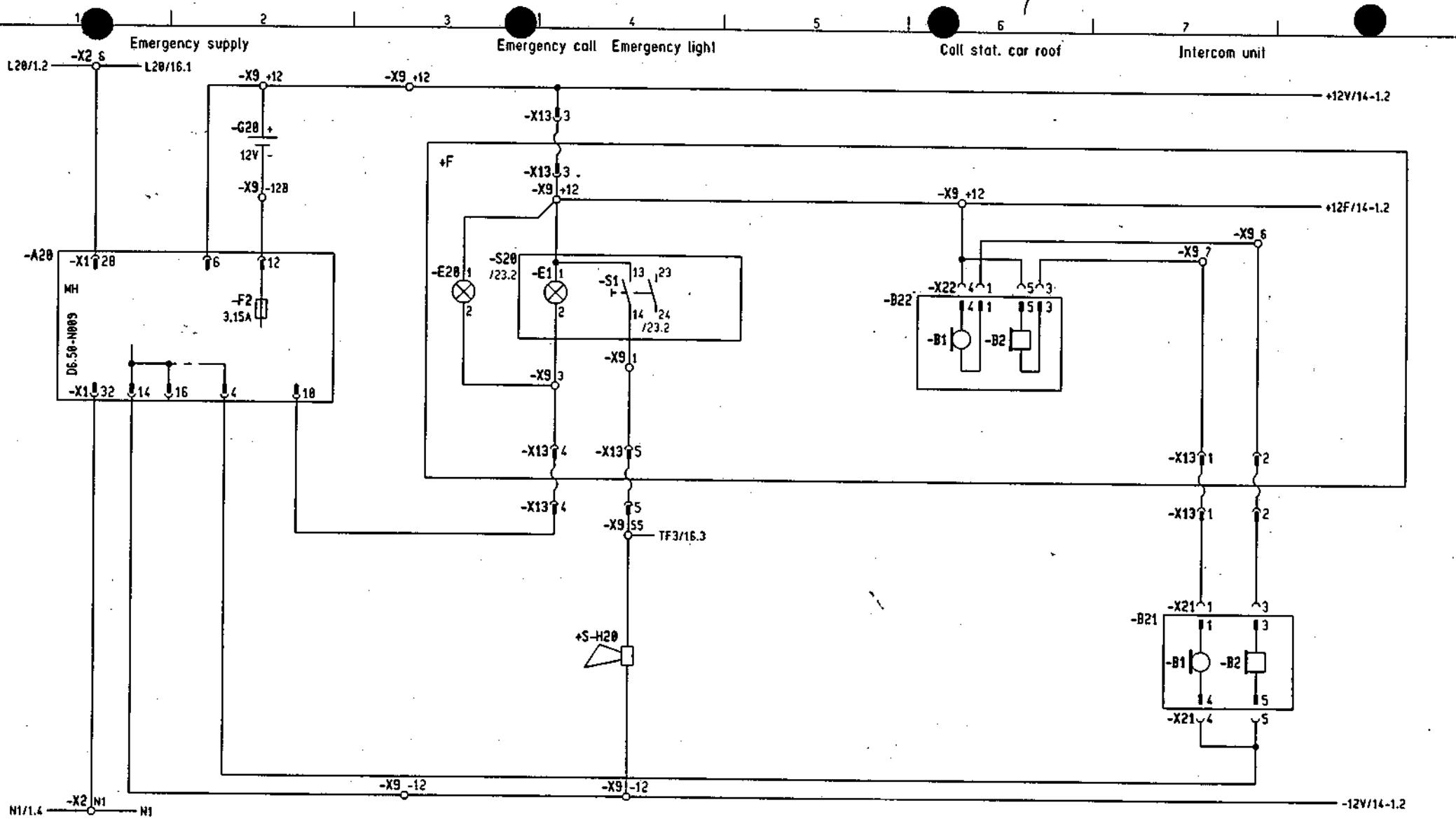
Door control

Door inspection

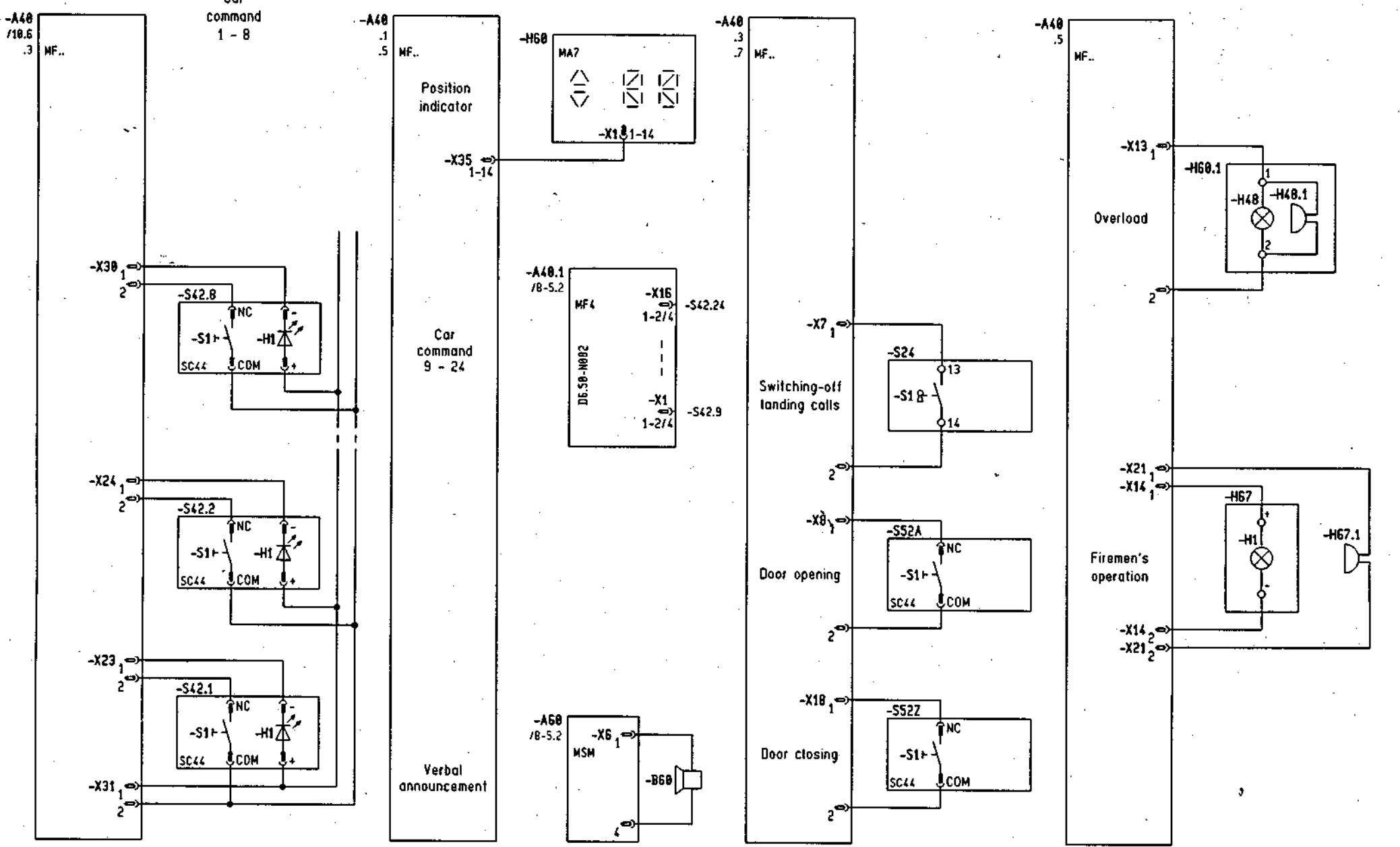
Door safety



a			DATE	24.09.98			THYSSEN AUFZÜGE	Traction drive lift 3AC J60 Door M2TK3F2	CARLTON GARDENS. TEL	b			= + TS
c			Resp.	Bör									
			CHECK										
MODIFICATION	DATE	NAME	NORM	Origin.	Subst.	Subst.				299898122	K	Page 18	
1	2			3	4	5	6	7	8			31	Pg.



a			DATE	24.09.98			Traction drive lift 3AC J60	CARLTON GARDENS, TEL	=
b			Resp.	Bör					
c			CHECK						
MODIFICATION	DATE	NAME	NORM		Orgin.	Subst.	Subst.		+ TS
1	2	3	4	5	6	7	8	9	Page 11 01 Pg.



a			DATE	24.09.98
b			Responsible	Bör
c			CHECK	

Original: Subst.

Subst.



Traction drive lift 3AC J60
Car

CARLTON GARDENS, TEL

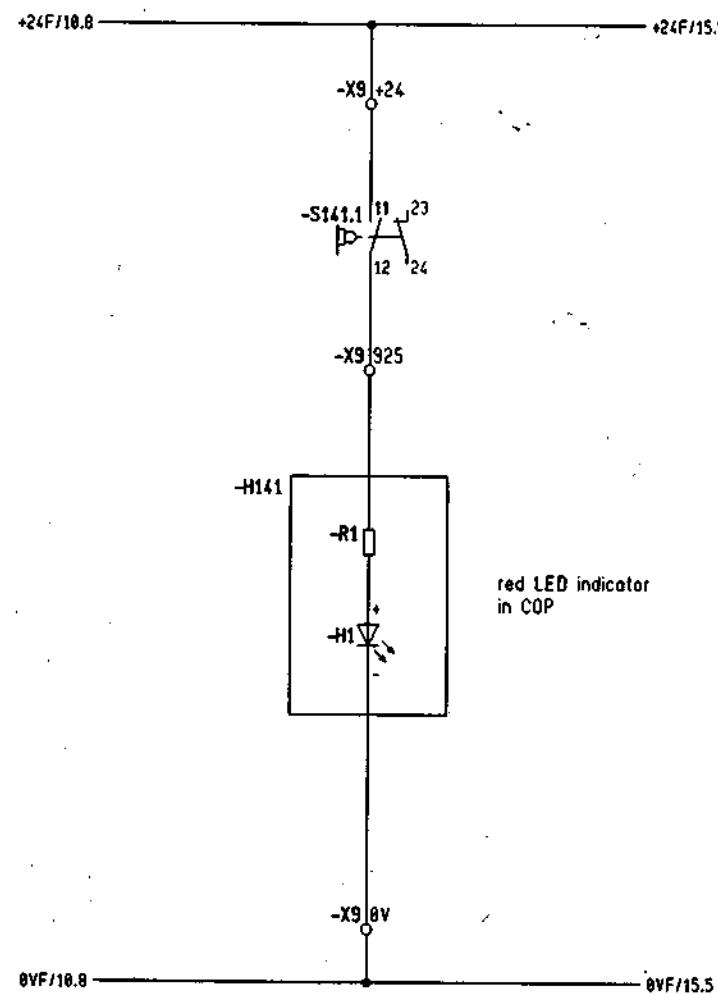
=
+ F

299898122

K

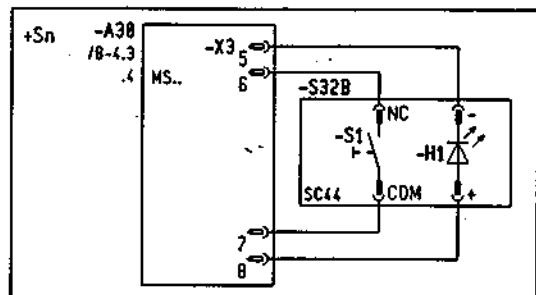
Page 12
31 Pg.

Deckelkontakt offen
hatch open



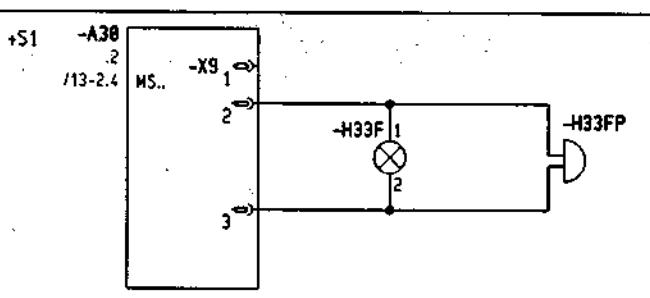
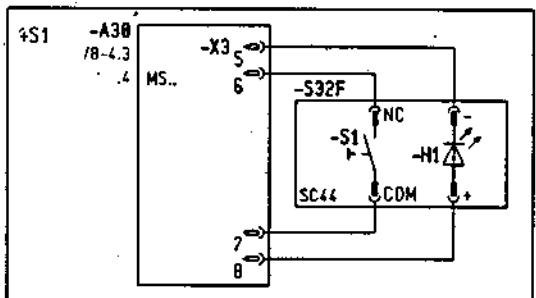
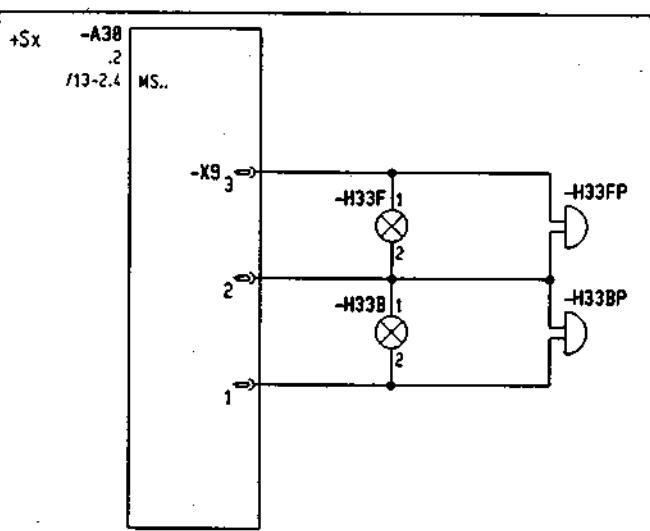
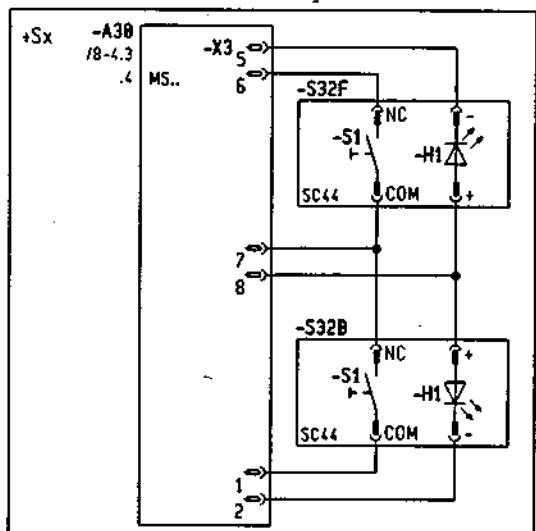
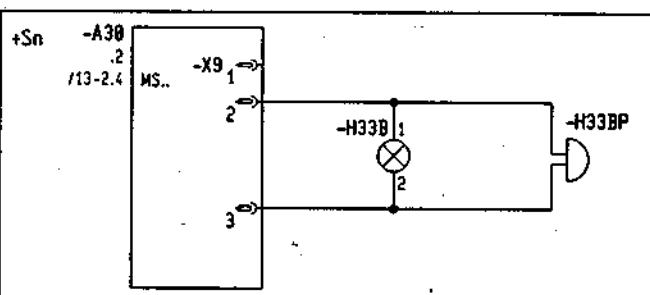
2

Landing call



4

Continued travel



a			DATE	24.09.98
b			Respo.	Bör
c			CHECK	

Origin. Subst.



Traction drive lift 3AC J60
Welt

CARLTON GARDENS, TEL

=

+ TS

299898122 K

Page 13
31 Pg.

1

2

3

4

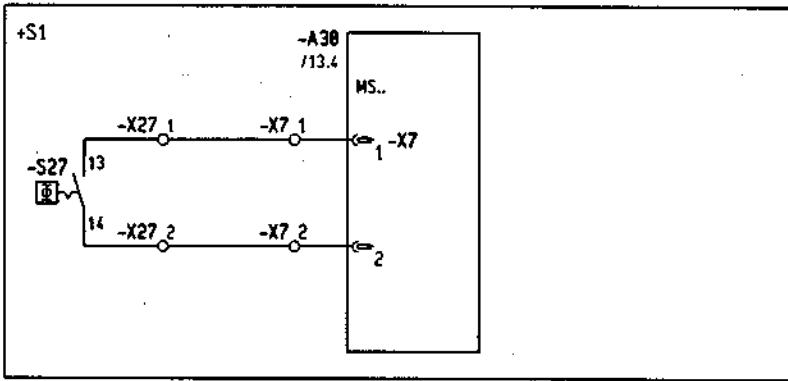
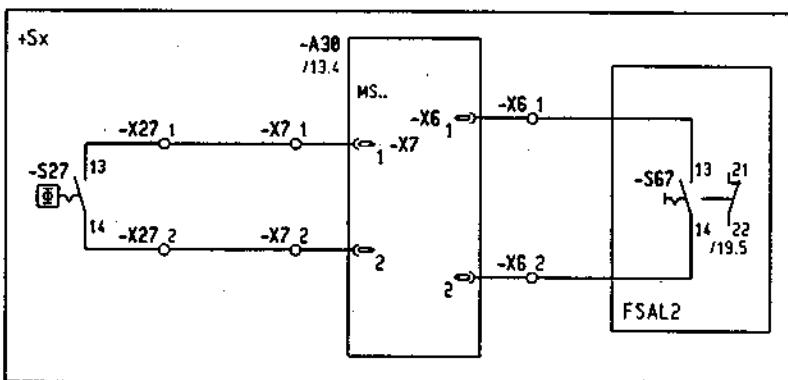
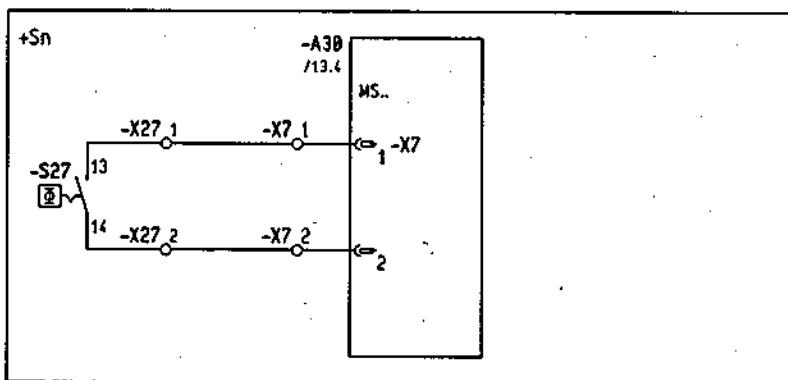
5

6

7

Zone

Firemen's entrance



a			DATE	24.09.98				
b			Resp.	Bör				
c			CHECK					
			Origin.		Subst.		Subst.	
MODIFICATION	DATE	NAME	NORM					
1	2							

THYSSEN AUFZÜGE

Traction drive lift 3AC J60
Well

CARLTON GARDENS, TEL

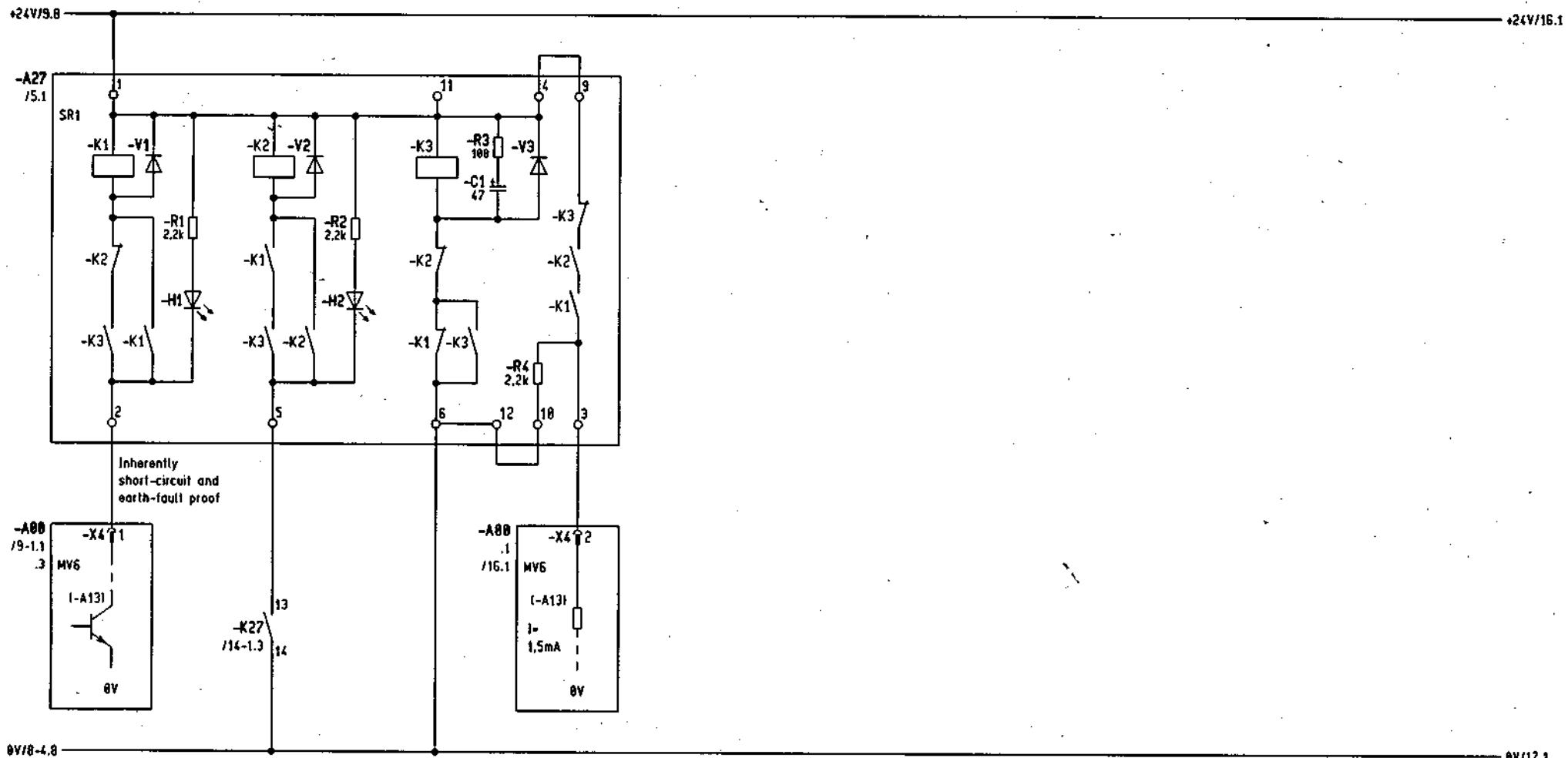
+ TS

299898122 K

Page 13-2
31 Pg.

v<0.3m/s or <0.5m/s and doorzone

Acknowledgement safety circuit



a			DATE	24.09.98
b			Resp.	Bör
c			CHECK	

Origin. Subst. Subst.



Traction drive lift 3AC J60
Safety circuit

CARLTON GARDENS, TEL

=
+ TS
Page 14
31 Pg.

299898122

K

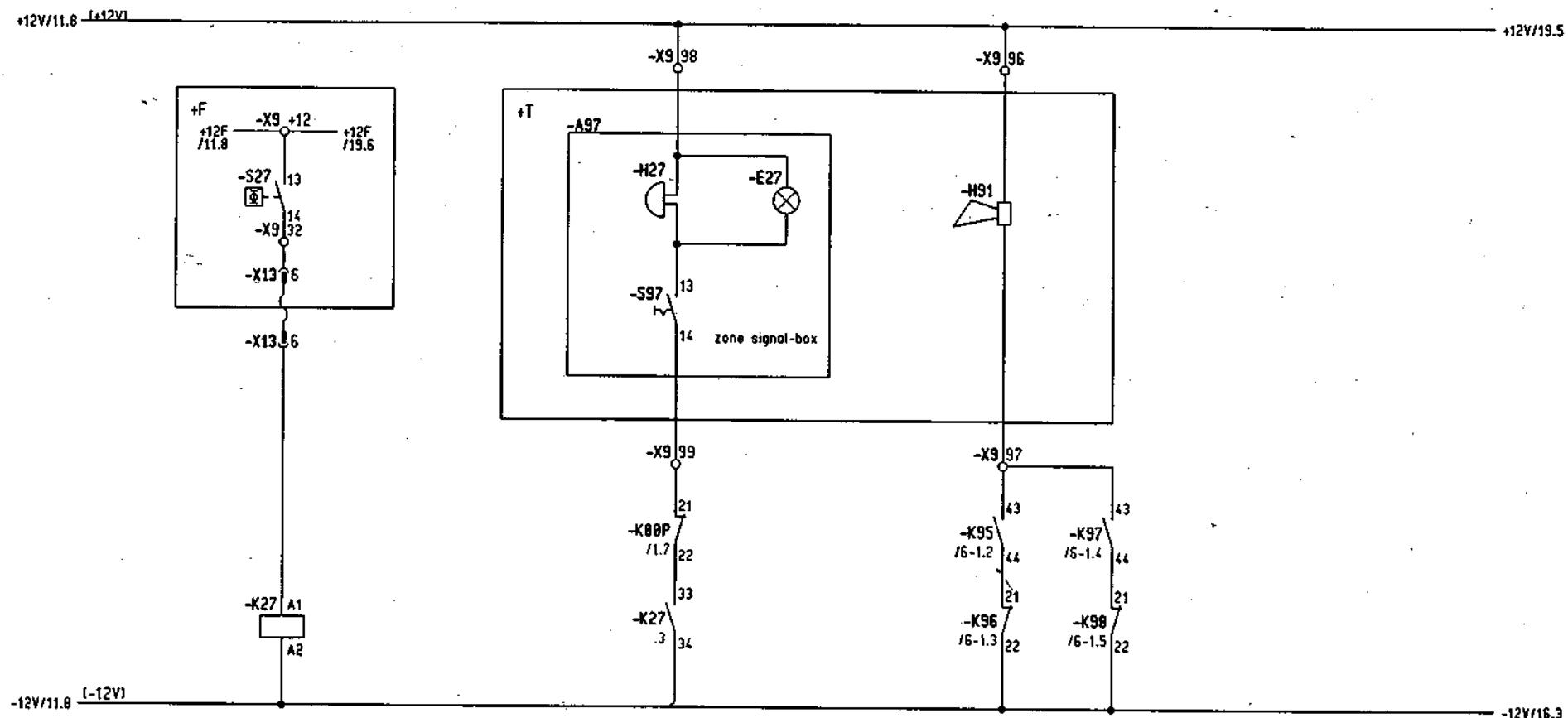
Page 14
31 Pg.

1 2 3 4 5 6 7

Zone

Re-levelled middle

Slack rope



/14.2
13
21
22
33
34
41
42

a			DATE	24.09.98				
b			Reso.	Ber				
c			CHECK					
MODIFICATION	DATE	NAME	NORM		Origin.	Subsi.	Subsi.	
1	2	3	4					

THYSSEN AUFZÜGE

Traction drive lift 3AC J60
Additionals

CARLTON GARDENS, TEL + TS

299898122 K Page 14-1
31 Pg.

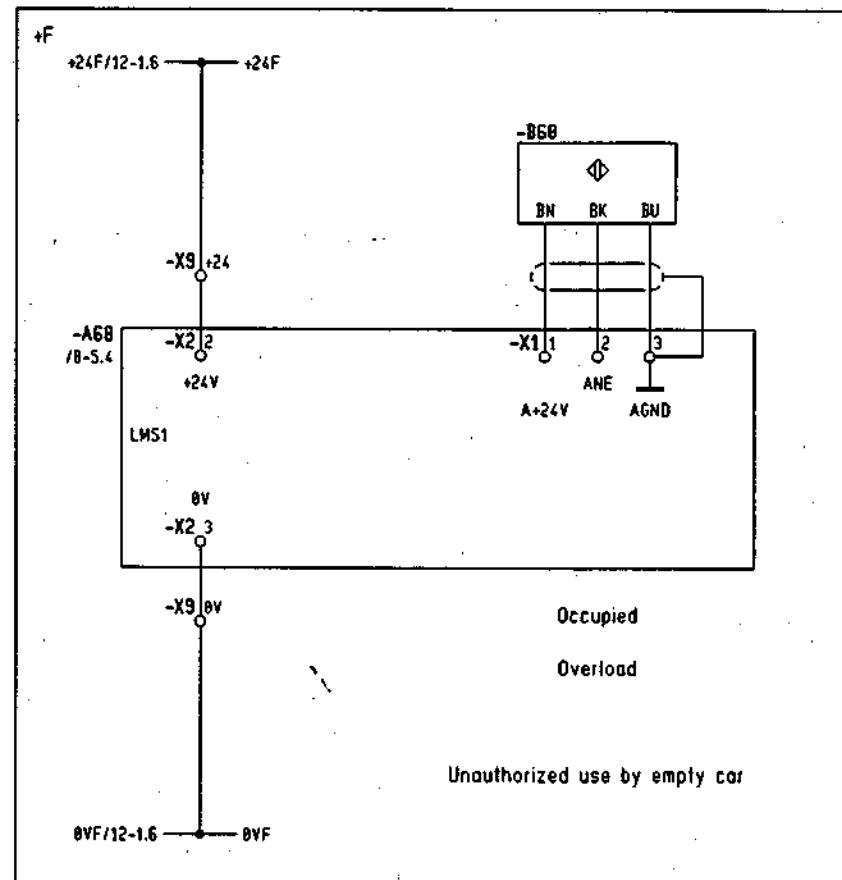
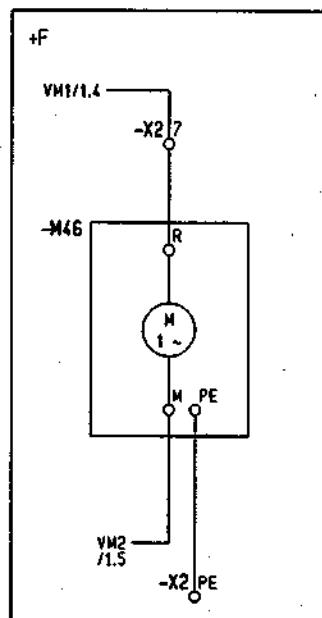
1 2 3 4 5 6 7 8

Car ventilator

Load weighing

L13/7.8

- 13/19 -



N2/7.9 -

PE/9.8

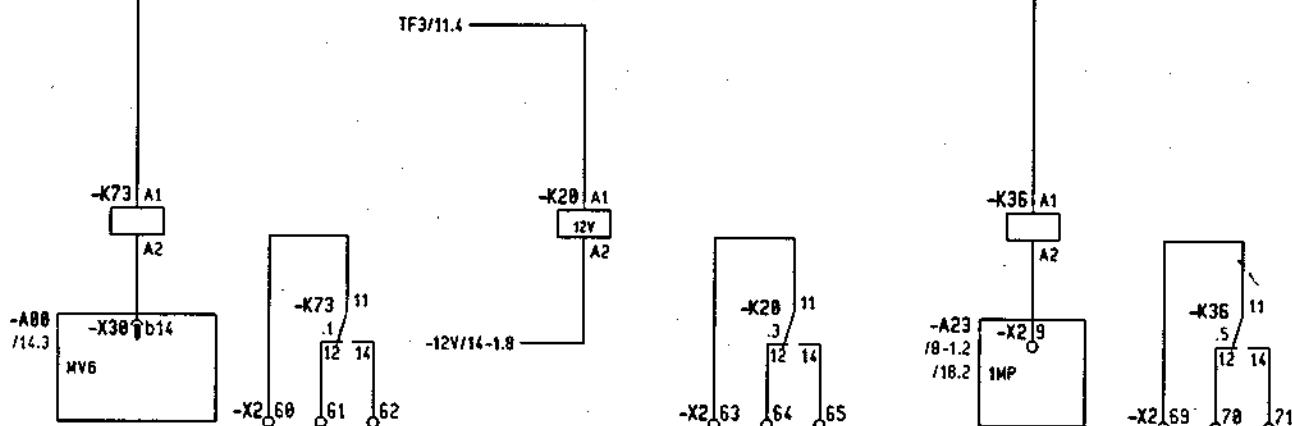
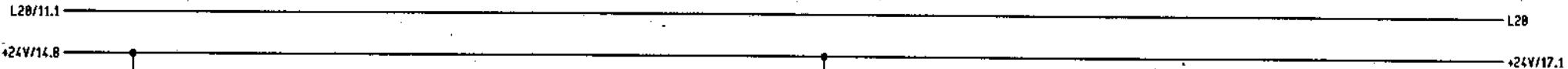
- 43/19.1

Page 10

a			DATE	24.09.98			THYSSEN AUFZÜGE	Traction drive lift 3AC J60 Additionals	CARLTON GARDENS, TEL	=	
b			Resp.	Bör						+ TS	
c			CHECK								
	MODIFICATION	DATE	NAME	NORM	Origin.	Subst.	Subst.		299898122	K	Page 15 31 Pg.
	1	2			3	4	5	6	7	8	

1 2 3 4 5 6 7
Collective fault message

Out of order



1 2 3 4 5 6 7 8

Remote release for
governor I-S102)

Remote release for
governor I-S103)

+24V/16.0

+24V/19.1

-S25

8

7

-S25.1

8

7

-X9 25

-X9 25.1

+S-Y25

1

}

2

-X9 8V

+S-Y25.1

1

}

2

-X9 8V

8V/14.8

8V/21.3

a			DATE	24.09.98
b			Resp.	Bör
c			CHECK	
MODIFICATION	DATE	NAME	NORM	

1

2

3



Traction drive lift 3AC J60
Additionals

CARLTON GARDENS, TEL

=
+ TS

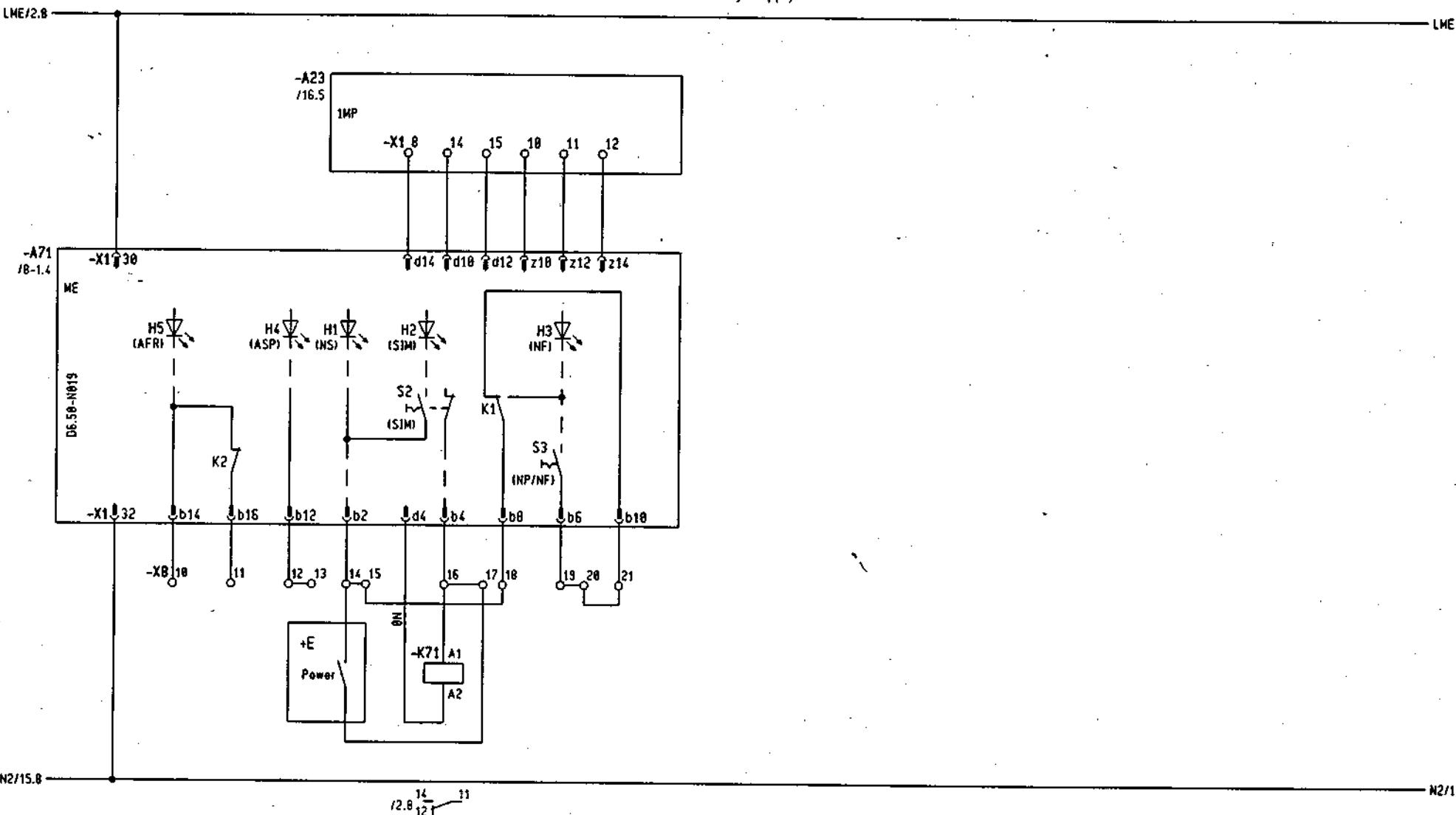
299898122

K

Page 17
31 Pg.

1 2 3 4 5 6 7 8

Standby supply



a		DATE	13.11.98
b		Resp.	Bor
c		CHECK	

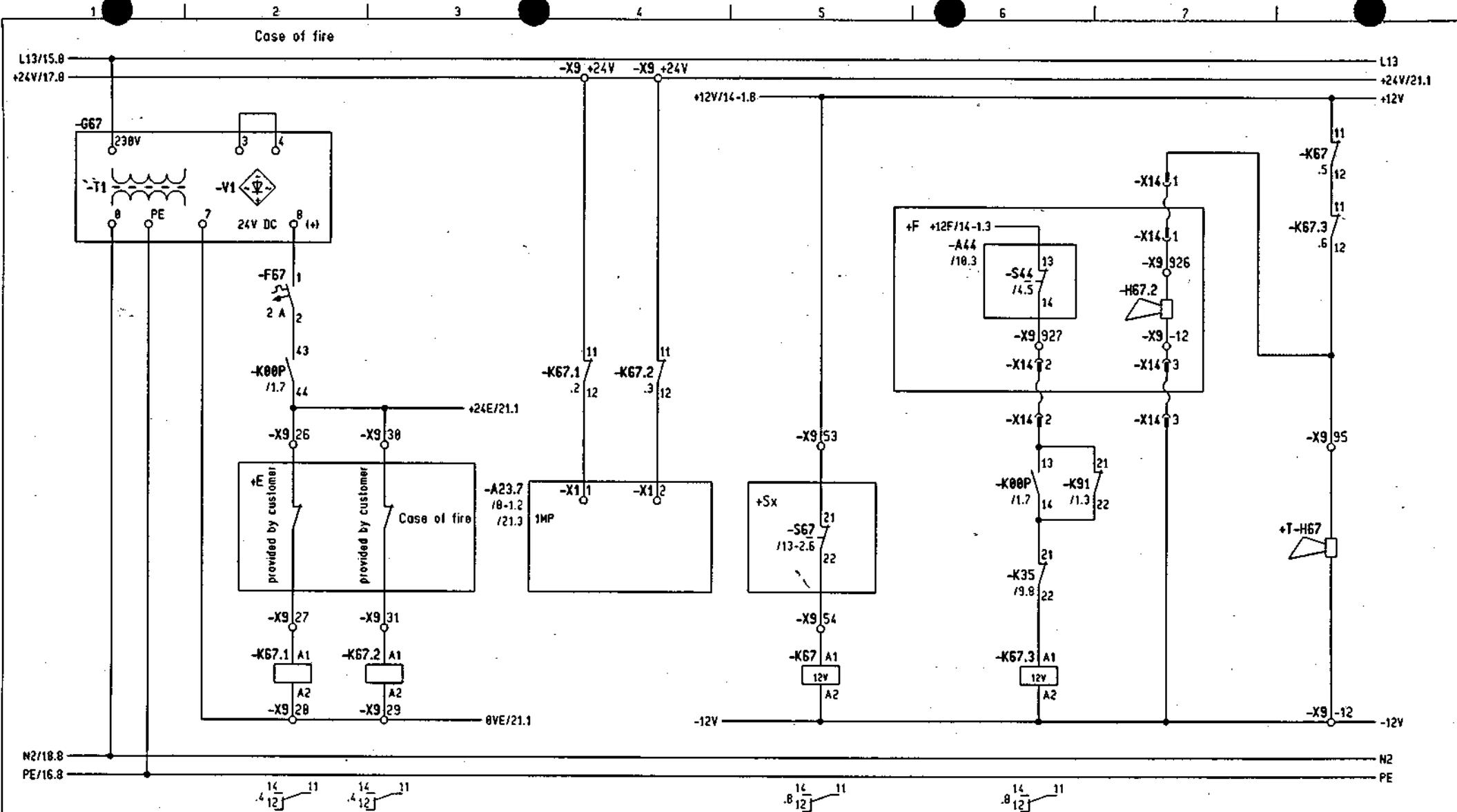
MODIFICATION DATE NAME NORM
1 2
Origin. Subst.
3 4

THYSSEN AUFZUGE
Subst.
5

Traction drive lift 3AC J60
Additionals
6

CARLTON GARDENS, TEL
7

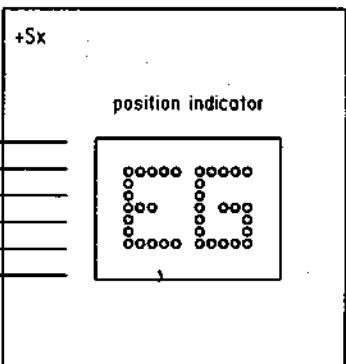
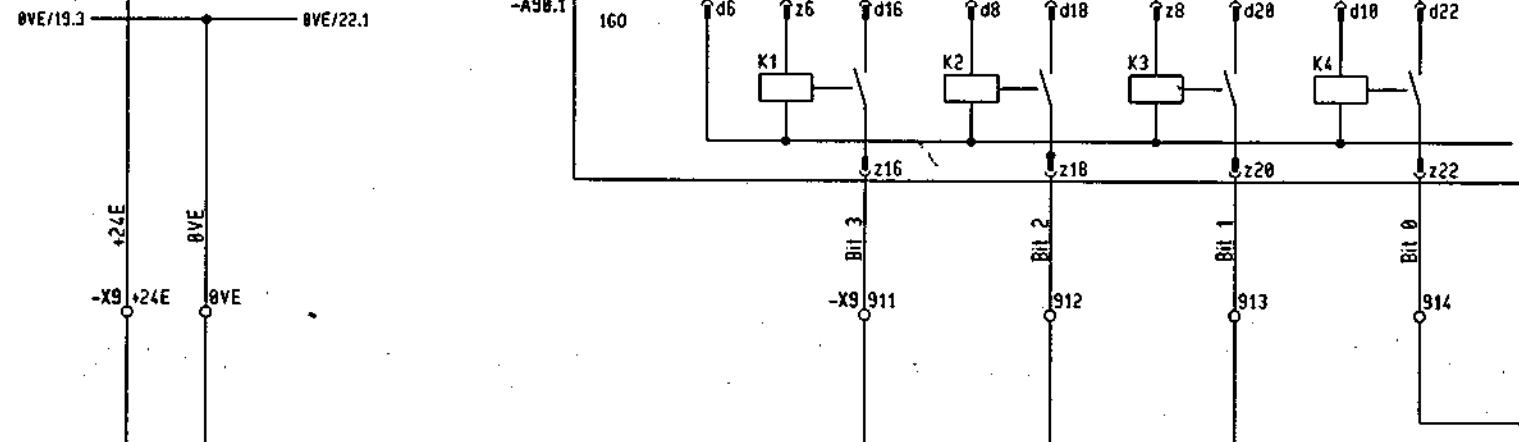
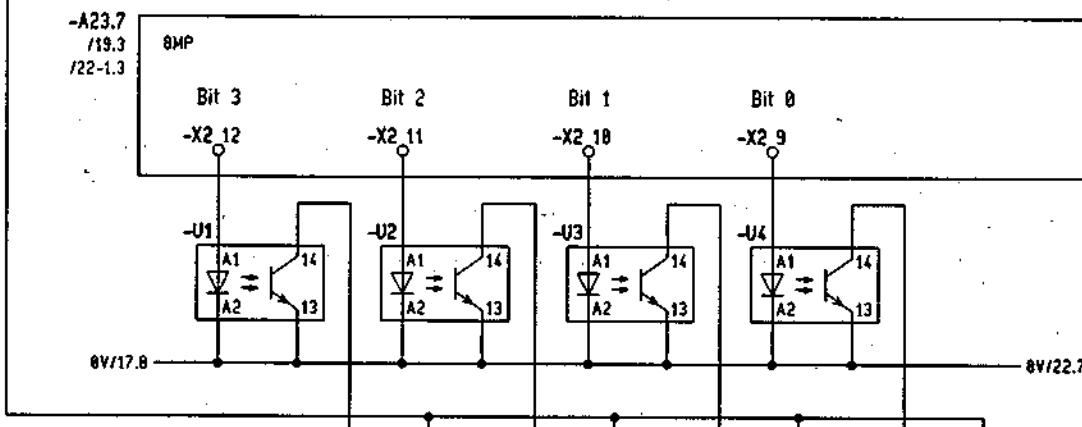
=
+ TS
299898122 K
8
Page 18
31 Pg.



a			DATE	24.09.98	THYSSEN AUFZÜGE		Traction drive lift 3AC J60 Case of fire	CARLTON GARDENS, TEL		+	TS	
b			Respo.	Bär								
c			CHECK									
	MODIFICATION	DATE	NAME	NORM	Origin.	Subst.	Subst.		299898122	K	Page 19	
	1	2	3	4	5	6	7	8			31	Pg.

Digital landing position indicator.

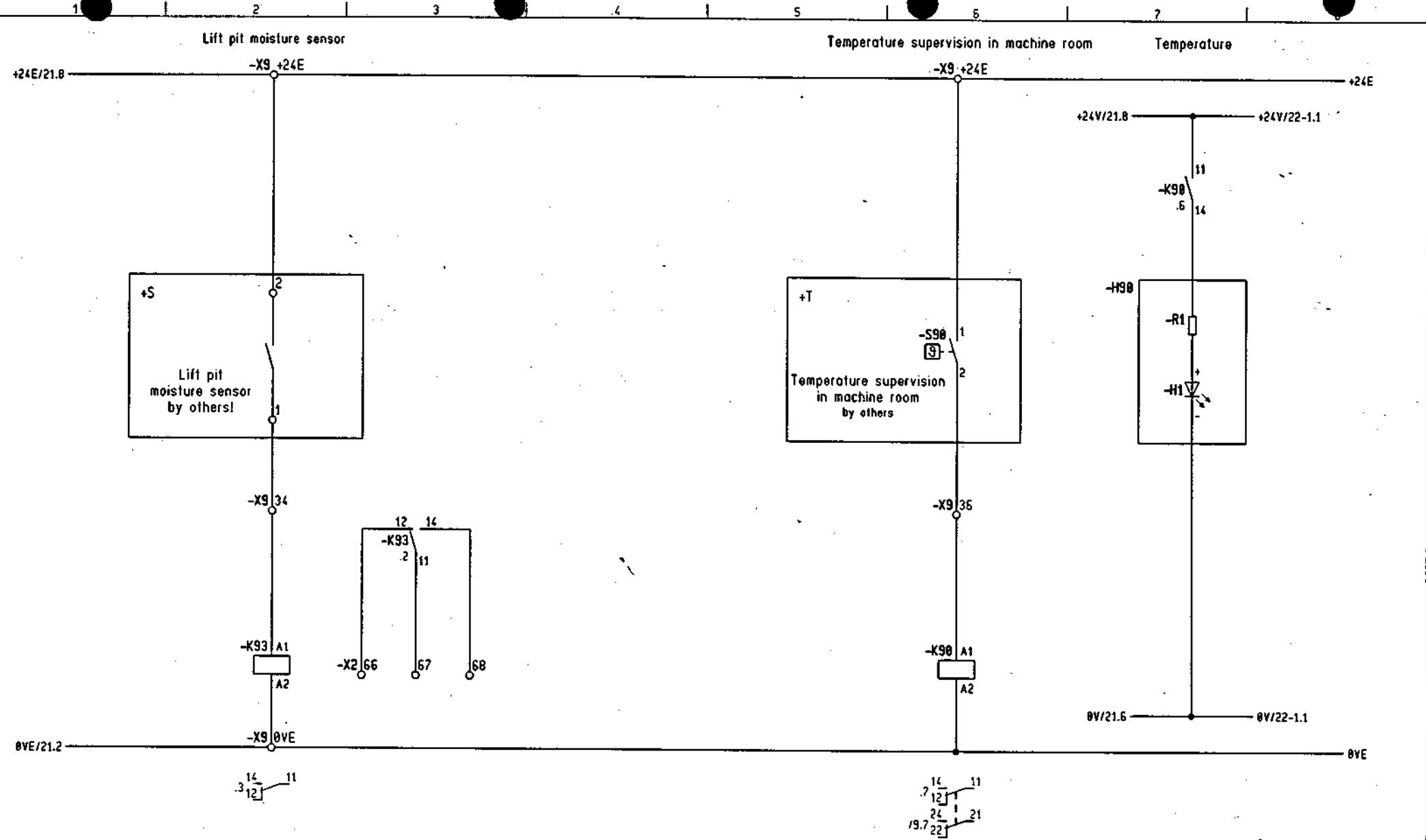
+24E/19.3 → 1 → 2 → 3 → 4 → 5 → 6 → 7 → +24E/22.1
 +24V/19.8 → 1 → 2 → 3 → 4 → 5 → 6 → 7 → +24V/22.7



Potential

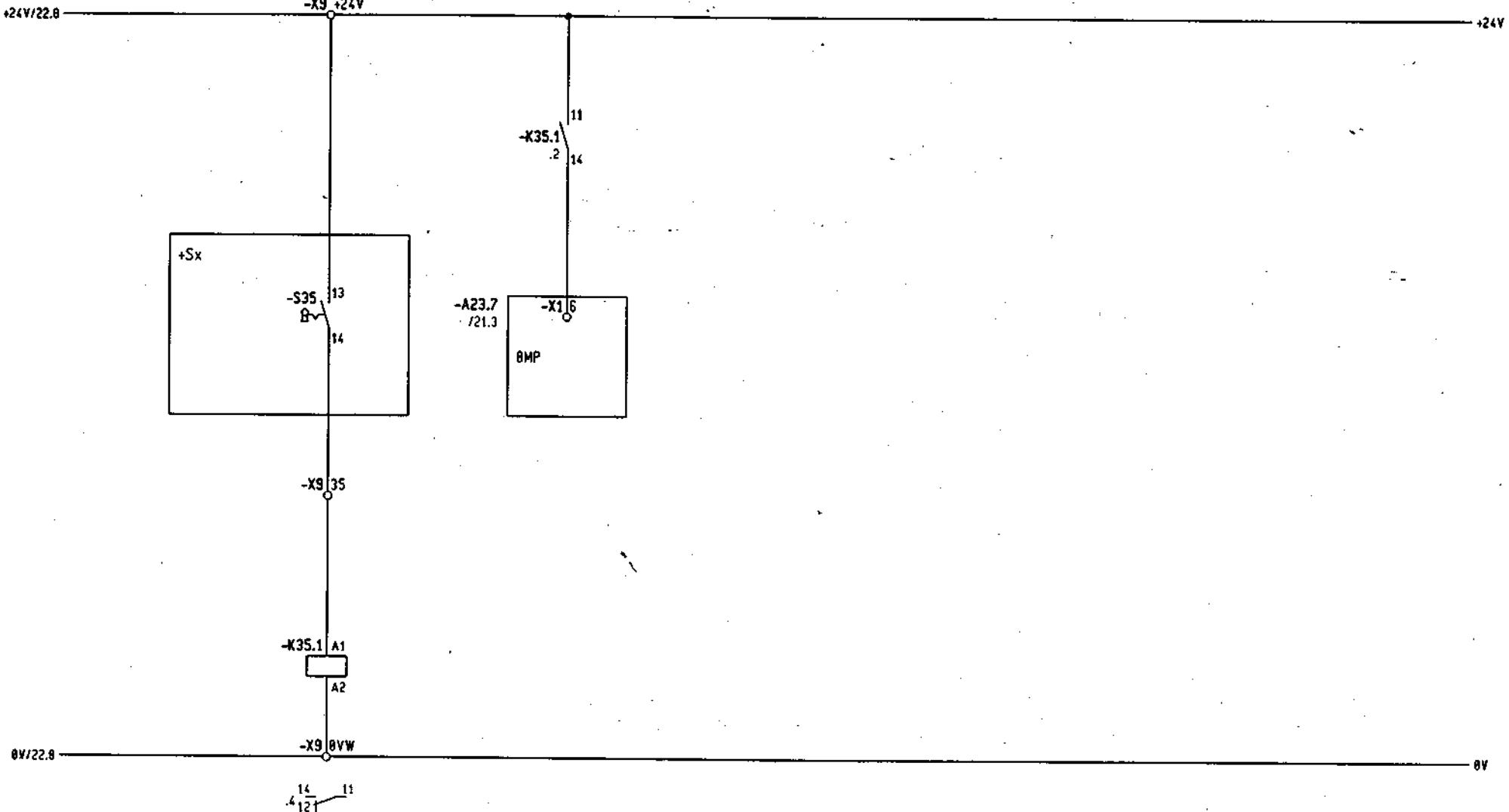
Digital landing position indicator, 4 Bit binär-code (Gray-Code)

a		DATE	15.18.98					
b		Resp.	Bör					
c		CHECK						
MODIFICATION	DATE	NAME	NORM	Orgin.	Subst.	Subst.	Traction drive lift 3AC J60 Additionals	CARLTON GARDENS, TEL
1	2	3	4	5	6	7	8	9
							299898122 K	Page 21 31 Pg.

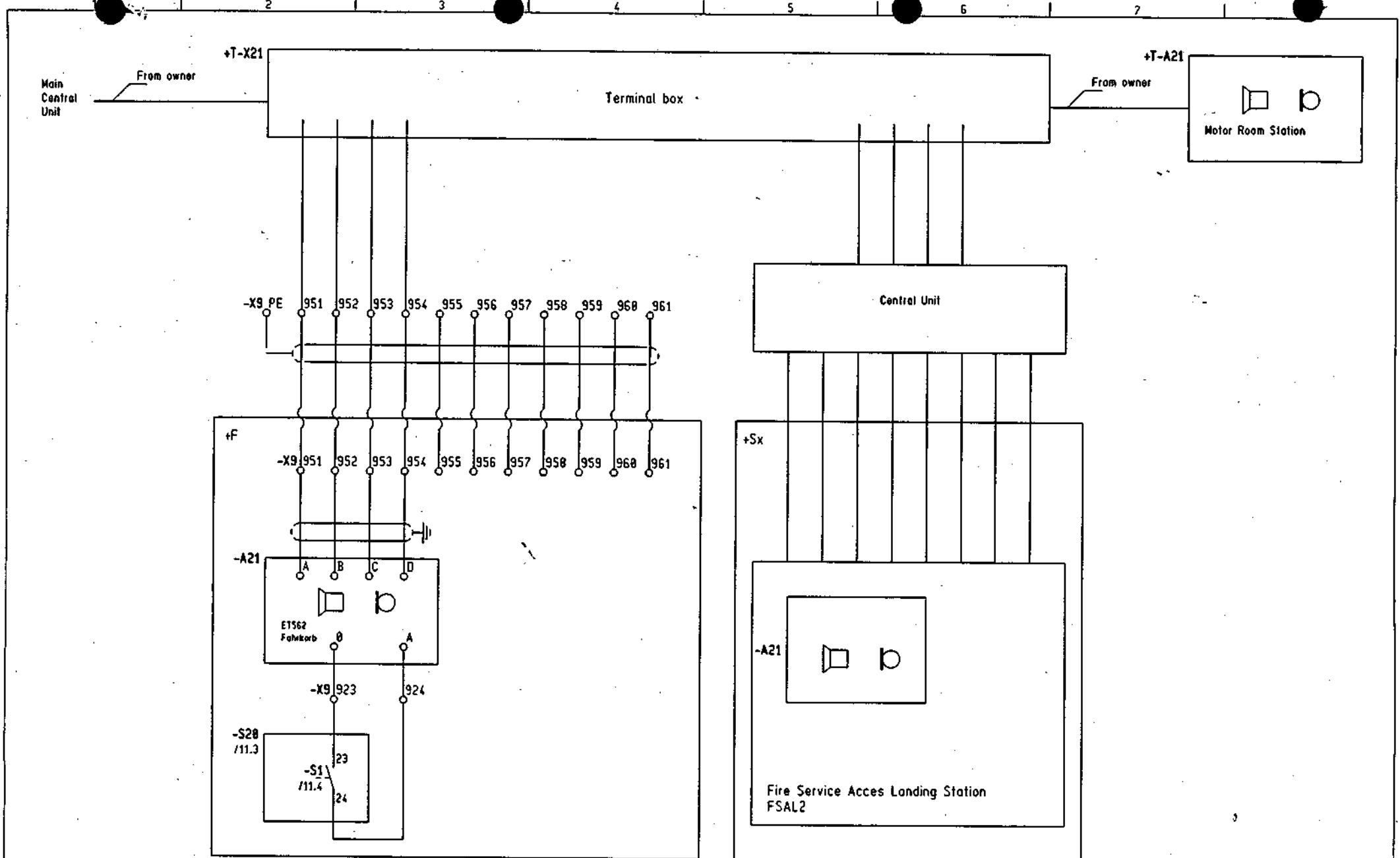


1 2 3 4 5 6 7

Out of service



a		DATE	30.09.98			Traction drive lift 3AC J60	CARLTON GARDENS. TEL	=
b		Resp.	Bor				+ TS	
c		CHECK						
	MODIFICATION	DATE	NAME	NORM	Orig.	Subst.	Subst.	Additionals
1	2	3	4	5	6	7	8	Page 22-1 31 Pg.



a		DATE	24.09.98	b		CHECK		c		
		Resp.	Büf							
MODIFICATION	DATE	NAME	NORM	Orgn.	Subst.	Subst.	Traction drive lift 3AC J60 Übergabe	CARLTON GARDENS, TEL	= + TS	Page 23 31 Pg.

Connections

Destination 1	Cross-refer-ence	No. connec-tion	bridge to	Destination 2
+Loc-DevID :Connec.				+Loc-DevID :Connec.
Connector:		+F-A40-X1		
	8-5.2	1 o		-A40.1-X17 1
	8-5.2	2 o		-A40.1-X17 2
Connector:		+F-A40-X2		
	8.7	2 o		-X9 30
Connector:		+F-A40-X3		
	10.2	1 o		-050-A1-X3 32
	10.2	2 o		-050-A1-X3 34
Connector:		+F-A40-X5		
	10.7	1 o		-X50 19
	10.7	2 o		-X50 28
	10.7	3 o		-X50 16
Connector:		+F-A40-X7		
	12.5	1 o		-S24-X1 13
	12.5	2 o		-S24-X1 14
Connector:		+F-A40-X8		
	12.5	1 o		-S52A-X NC
	12.5	2 o		-S52A-X COM
Connector:		+F-A40-X13		
	12.7	1 o		-H60.1-X 1
	12.7	2 o		-H60.1-X 2
Connector:		+F-A40-X14		
	12.7	1 o		-H67-X +
	12.7	2 o		-H67-X -
Connector:		+F-A40-X18		
	12.5	1 o		-S52Z-X NC
	12.5	2 o		-S52Z-X COM
Connector:		+F-A40-X21		
	12.7	1 o		-H67.1
	12.7	2 o		-H67.1

assigned wires of cable

a			DATE	13.11.98					A
b			Resp.	Bör					
c			CHECK						
	MODIFICATION	DATE	NAME	NORM	Drawn-	Subst.	Subst.	Subst.	



Terminals and connections

CARLTON GARDENS, TEL

- KLEMMPLAN
OB: +F-A40-X1

Page 1
3 Pg.

Connections

Destination 1	Cross-refer-ence	No. connec-tion	bridge to	Destination 2
+Loc-DevID :Connec.				+Loc-DevID :Connec.
Connector:		+F-A40-X23		
	12.1	1 o		-S42.1-X
	12.1	2 o		-S42.1-X NC
Connector:		+F-A40-X31		
	12.1	1 o		-S42.1-X +
	12.1	2 o		-S42.1-X COM
Connector:		+F-A40-X35		
	12.3	1-14 o		-H68-X1 1-1
Connector:		+F-A40-X40		
	9.1	1 o		-X9 25
	9.2	2 o		-X9 24
	9.1	3 o		-X9 23
Connector:		+F-A40-X42		
	8.7	2 o		-X9 31
Connector:		+F-A40-X43		
	10.3	1 o		-X9 50
	10.3	2 o		-X9 51
Connector:		+F-A40-X65		
	8-5.3	1 o		-A40.1-X19 4
	8-5.3	2 o		-A40.1-X19 3
	8-5.3	3 o		
	8-5.3	4 o		
Connector:		+F-A68-X6		
	12.4	1 o		-B68
	12.4	4 o		-B68
Terminal strip:		+F-A68-X1		
	15.7	1 o		-B68 BN
	15.7	2 o		-B68 BK
	15.7	3 o		-B68 BU
		o		
		o		

a			DATE	13.11.90			THYSSEN AUFZÜGE	Terminals and Connections	CARLTON GARDENS, TEL	-KLEMMPLAN	
b			Resp.	Bör						ob: +F-A48-X23	
c			CHECK								
MODIFICATION	DATE	NAME	NORM	Orig.	Subst.	Subst.			299898122	Page	2
										23	Pg.

W12.1 H05Y-X Terminal-plug 15x1m

Connections

Destination 1	Cross-reference	No. connection	bridge to	Destination 2
+Loc-DevID :Connec.				+Loc-DevID :Connec.

Terminal strip: +F-650-X1

3.3 1-6 O -M50-X2 1-5.
3.3 7 O

Terminal strip: +F-G50-X8

3.2	1 O	-M50-X1	1
3.2	2 O	-M50-X1	2
3.2	3 O	-M50-X1	3
3.2	4 O	-M50-X1	PE
3.2	5 O	-M50-X1	4
3.2	6 O	-M50-X1	5

Device: +F-S150

-S158 2 5.2 2 0 -S158 1

Terminal strip: +E-X1

Safety circuit
238 N

RD-Q

RD-h

RD-6

RD-0

100

assigned wires of cable

a			DATE	13.11.98
b			Reso.	84
c			CHECK	
	MODIFICATION	DATE	NAME	NORM



Terminals and connections

CARLTON GARDENS, TEL

- KLEMMPLAN

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Connections

a			DATE	13.11.98			
b			Resp.	Bör			
c			CHECK				
	MODIFICATION	DATE	NAME	NORM	Origin.	Subst.	Subst.



THYSSEN AUFZÖG

Terminals and connections

CARLTON GARDENS, TEL

→ KLEMMPLAN
OB: +F-X2

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Connections

assigned wires of cable

a			DATE	13.11.98			
b			Resp.	Bör			
c			CHECK				
	MODIFICATION	DATE	NAME	NORM	Origin.	Subst.	Subst.



THYSSEN AUFZUGE

Line	Cable	Type	Gauge	
Ref	Function			
W67.4	YR	3x0.8		
	Filament's operation			
W20.2	H03YY-F	2x0.75		
	Emergency light (v)			
W20.1	YY	15x1x0.8		
	Emergency call/light			
W22	YR	3x0.8		
	Call stat. car roof			
W27	Yoninst	2x0.75		
	Zone			
W14.1	HYV-J	12x1.5		
	Inspection			
Wg0	Yoninst	5x0.75		
	Vorraumüberwachung			
W50.5	YR	3x0.8		
	Door handle			
W14.1	H03YY-F	2x1		
	Emergency trap			
W68.1	YR	3x0.8		
	Load weighing			
W40	\$596859899	2x1x8		
	Car bus			
W4.3	Yoninst	3x0.75		
	Floor selection			
W27.1	Yoninst	3x0.75		
	Re-leveling			
W50.4	\$596859899	6x1.8		
	Door control			
W14.2	H03YY-K	15x1x1		
	Emergency stop			
W45.1	H03YY-F	2x0.75		
	Insp. limit switch			
W45.1	H03YY-F	2x0.75		
	Insp. limit switch			

Terminals and connections

CARLTON GARDENS, TEL

- KLEMMPLAN
ab: +F-X9

Page 9

			Höhenetikettabel	12x0.75
			Travelling cable 2	
	W14.1	H05V-K	15x1x1	
	Terminal-plug			
	W13.1	H05V-K	15x1x1	
	Terminal-plug			

Connections

Destination 1			Cross-refer-ence	No. connec-tion	bridge to	Destination 2		
+Loc-DevID :Connec.						+Loc-DevID :Connec.		
				9.1	23 o	-A40-X40	3	
					o	-X45	2	
				9.2	24 o	-A40-X40	2	
					o	-X45	4	
				9.1	25 o	-A44-S44	18	
					o	-A40-X40	1	
BU-j	-X13	10	8.6	30 o	o	-A40-X2	2	
					o	-B43	BN	
				8.8	31 o	-A40-X42	2	
					o	-B27	BN	
BU-f	-X13	6	14-1.3	32 o	-S27	14		
				10.3	58 o	-A40-X43	1	
					o	-B90	YE	
					o	-050-A1-X2	23	
				10.3	51 o	-A40-X43	2	
					o	-050-A1-X2	24	
				10.4	52 o	-A44-S44	16	
					o	-050-A1-X2	26	
				10.5	904 o	-X50	16	
					o	-B90	GY	
				10.5	905 o	-B90	GN	
					o	-X50	15	
				23.2	923 o	-S20-S1	23	
					o	-A21-X	8	
				23.3	924 o	-S20-S1	24	
					o	-A21-X	A	
				12-1.5	925 o	-H141-R1		
					o	-S141.1	12	
BU-a	-X14	1	19.7	926 o	-H67.2			
BU-b	-X14	2	19.6	927 o	-A44-S44	14		
1	+TS -X9	951	23.2	951 o	-A21-X	A		
2	+TS -X9	952	23.2	952 o	-A21-X	B		
3	+TS -X9	953	23.3	953 o	-A21-X	C		
4	+TS -X9	954	23.3	954 o	-A21-X	D		
5	+TS -X9	955	23.3	955 o				
6	+TS -X9	956	23.3	956 o				
7	+TS -X9	957	23.3	957 o				
8	+TS -X9	958	23.4	958 o				
9	+TS -X9	959	23.4	959 o				
10	+TS -X9	960	23.4	960 o				
11	3	9						

assigned wires of cable

a
b
c

DATE 13.11.98
Resp. BaR
CHECK

DATE 13.11.98
NAME NORM
Orgin. Subst.
Subst.

THYSSEN AUFZÜGE

Ø	Ter	Cable Type	Gauge	Function	Ø	Ter	Cable Type	Gauge	Function
W4.2	YR		3x0.8		W4.2	YR		3x0.8	
W45B.1	H03VV-F		2x0.75		W45B.1	H03VV-F		2x0.75	
W45F.1	H03VV-F		2x0.75	Insp. limit switch	W45F.1	H03VV-F		2x0.75	Insp. limit switch
W144.1	NYY-J		12x1.5	Inspection	W144.1	NYY-J		12x1.5	Inspection
W43.1	Floor selection		1x0.8		W43.1	Floor selection		1x0.8	
W27.2	YY		1x0.8		W27.2	YY		1x0.8	
W27.1	YYinst		3x0.75		W27.1	YYinst		3x0.75	
Zone	Re-leveling				Zone	Re-leveling			
W38.4	YY		3x0.8		W38.4	YY		3x0.8	
W38.4	YYinst		5x0.25		W38.4	YYinst		5x0.25	Vorgrundüberwachung
W41.2	H05V-K		15x1x1		W41.2	H05V-K		15x1x1	
W41.1	H05VV-F		2x1		W41.1	H05VV-F		2x1	
W21	Emergency trap				W21	Emergency trap			
J-HS1H	Sprechanlage		4x0.8		J-HS1H	Sprechanlage		4x0.8	

Terminals and connections

CARLTON GARDENS, TEL
obj: +F-X9

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a			DATE	13.11.98			
b			Resp.	Bär			
c			CHECK				
MODIFICATION	DATE	NAME	NORM		Origin,	Subst.	Subst.



THYSSEN AUFZUG

Terminals and connections

CARLTON GARDENS, TEL

• KLEMMPLAN
ob: •F-X9

Page 5.2

Connections									
Destination 1		Cross-reference	No. connection	bridge to	Destination 2				
+Loc-DevID :Connec.					+Loc-DevID :Connec.				
Connector: +F-X11									
+TS -X11	PE	1.4	PE o	-X2	PE				
+TS -X11	1	1.6	1 o	-X2	3				
+TS -X11	2	1.4	2 o	-X2	4				
+TS -X11	3	1.4	3 o	-X2	5				
+TS -X11	6	3.6	6 o	-X2	24				
+TS -X11	7	3.7	7 o	-X2	25				
+TS -X11	9	3.1	9 o	-X2	22				
+TS -X11	10	3.1	10 o	-X2	21				
+TS -X11	11	1.7	11 o	-X2	1				
Connector: +F-X12									
+TS -X12	1	4.4	1 o	-X1	180				
+TS -X12	2	4.5	2 o	-X1	187				
+TS -X12	3	4.6	3 o	-X1	109				
+TS -X12	4	5.2	4 o	-X1	110				
+TS -X12	5	5.3	5 o	-X1	113				
+TS -X12	6	6-1.4	6 o	-X1	184				
+TS -X12	7	6-1.5	7 o	-X1	185				
+TS -X12	8	1.7	8 o	-X2	2				
Connector: +F-X13									
+TS -X13	1	11.7	1 o	-X9	7				
+TS -X13	2	11.7	2 o	-X9	6				
+TS -X13	3	11.4	3 o	-X9	+12				
+TS -X13	4	11.4	4 o	-X9	3				
+TS -X13	5	11.4	5 o	-X9	1				
+TS -X13	6	14-1.3	6 o	-X9	32				
+TS -X13	7	8.7	7 o	-X9	+24				
+TS -X13	8	8.7	8 o	-X9	8V				
+TS -X13	9	8.7	9 o						
+TS -X13	10	8.6	10 o	-X9	30				
Connector: +F-X14									
+TS -X14	1	19.7	1 o	-X9	926				
+TS -X14	2	19.6	2 o	-X9	927				
+TS -X14	3	19.7	3 o	-X9	-12				
			o						
			o						

a			DATE	13.11.98	
b			Resp.	Bör	
c			CHECK		
	MODIFICATION	DATE	NAME	NORM	Circuit



assigned wires of cable

Terminals and connections

CARLTON GARDENS, TEL

• KLEMMPLAN

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Connections

Destination 1				Destination 2
+Loc-DevID :Connec.	cross-reference	No. connection	bridge to	+Loc-DevID :Connec.

Terminal strip: +F-X40

8-5.3	1 o	-A40-X65	1
	o	+TS -X13	12
8-5.3	2 o	-A40-X65	2
	o	+TS -X13	13
8-5.4	3 o	-A40-1-X19	2
8-5.3	4 o	-A60-X4	4
	o	-A60-X1	4
8-5.3	5 o	-A60-X4	3
	o	-A60-X1	3
8-5.4	6 o	-A60-X4	1
	o	-A60-X1	1

Terminal strip: +F-X45

9.1	1 o	-S45B	13
	o	-X9	21
9.1	2 o	-X9	23
	o	-S45B	14
9.2	3 o	-S45F	13
	o	-X9	22
9.2	4 o	-X9	24
	o	-S45F	14

assigned wires of cable

Function	Cable	Type	Gauge
Car bus	W 00.3	6596058890	3x124
Hönggerobel	W 11	Hönggerobel	3x18/0,7
Travelling cable 1	W 58.2	6596057892	3x0,6
Load weighing	W 55B	Verinst	2x0,75
Insp. limit switch	W 55B.1	H03VV-F	2x0,75
Insp. limit switch	W 55F	Verinst	2x0,75
Insp. limit switch	W 55F.1	H03VV-F	2x0,75

RD						
RD						
BU						
BU						
YE						
	4					
		3				
			2			

		BN	
		BN	
		BU	
	BU		BN
			BN
			BU
			BU

3 32 3 2 2 2 2

a			DATE	13.11.98
b			Resp.	Bör
c			CHECK	
	MODIFICATION	DATE	NAME	NORM



THYSSEN AUFZÜGE

Terminals and connections

CARLTON GARDENS, TEL

• KLEMMPLAN

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Connections

Destination 1	Cross-reference	No. connection	bridge to	Destination 2
+Loc-DevID :Connec.				+Loc-DevID :Connec.

Terminal strip: +F-X50

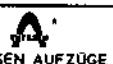
		10.6	PE	O		-X51	
		10.8	PE	O		-B56	
		3.6	PE	O		-Y51	PE
		5.2	PE	O		-X1	PE
		5.2	1	O		-S158	1
				O		-X1	111
		5.2	3	O		-X1	113
				O		-S158	2
		3.6	11	O		-X2	25
				O		-Y51	*
		3.6	12	O		-Y51	-
				O		-X2	24
		10.6	13	O		-X9	+24
				O		-X51	1
		10.7	14	O		-B56	
		10.7	15	O		-X51	2
				O		-X9	985
				O		-B56	
-X9	984	10.7	16	O		-A40-X5	3
		10.6	17	O		-X51	4
		10.7	19	O		-A40-X5	1
				O		-X51	3
		10.7	20	O		-A40-X5	2
				O		-B56	

Terminal strip: → F-X51

		10.6	PE	O	-X50	PE
				O	-B56	
		10.6	1	O	-X50	t3
				O	-B56	
		10.7	2	O	-X50	15
		10.7	3	O	-X50	19
				O	-B56	
		10.6	4	O	-X50	17
				O		
				O		
				O		
				O		

assigned wires of cable

a			DATE	13.11.98
b			Resp.	89r
c			CHECK	
	MODIFICATION	DATE	NAME	NORM



THYSSEN AUFZÜGE

Terminals and connections

CARLTON GARDENS, TEL.

• KLEMMPLAN
ab: +F-X50

3122

Connections

Destination 1	Cross-refer-ence	No. connec-tion	bridge to	Destination 2
---------------	------------------	-----------------	-----------	---------------

+Loc-DevID :Connec.				+Loc-DevID :Connec.
---------------------	--	--	--	---------------------

Distributor: +S-X02

	4.3	1 o	-S102	11
		o	+TS -X1	117
	4.3	2 o	-S103	11
		o	-S102	12
	4.3	3 o	+TS -X1	128
		o	-S103	12

Distributor: +S-X34B

	4.1	1 o	-S100	11
		o	+TS -X1	104
	4.1	2 o	+TS -X1	105
		o	-S100	12
	4.1	3 o	-S132	21
	4.1	4 o	-S132.1	21
		o	-S132	22
	4.1	5 o	-S132.1	22
	4.2	6 o	-S133	21
		o	+TS -X1	110
	4.2	7 o	-S134	21
		o	-S133	22
	4.2	8 o	-S134.1	21
		o	-S134	22
	4.2	9 o	-S1018	21
		o	-S134.1	22
	4.2	10 o	+TS -X1	114
		o	-S1018	22

Connector: +S1-A30-X3

	13.3	5 o	-S32F-X	-
	13.3	6 o	-S32F-X	NC
	13.3	7 o	-S32F-X	COM
	13.3	8 o	-S32F-X	+

Connector: +S1-A30-X9

	13.5	1 o		
	13.5	2 o	-H33F	1
	13.5	3 o	-H33F	2
		o		

assigned wires of cable

Ter	Cable	Type	Gauge	
W102	NHXMH-0	2x1,5		
W102.3	NHXMH-0	2x1,5		
W103	NHXMH-0	2x1,5		
W109	NHXMH-0	2x1,5	Stop	
W34B	NHXMH-J	5x1,5		
W132	NHXMH-0	2x1,5	Distributor well	
W32.1	NHXMH-0	2x1,5	Governor tape	
W33	NHXMH-0	2x1,5	Governor top	
W34	NHXMH-0	2x1,5	Buffer counterweight	
W134.1	NHXMH-0	2x1,5	Buffer car	
W101B	NHXMH-0	2x1,5	Final limit switch	
W32F.1	J-HSH	Øx0,8	Landing coll	
W33	J-HSH	4x0,8	Continued travel	

BK				
	BKbn			
	BKbu			
	BU			
	BK			
	BU			
	BK			
	BU			
	BN			
	BK			
	BU			
	BK			
	BU			

RD1a
RD1b
RD2a
RD2b

RD1b
RD1a

2 2 2 2 4 2 2 2 2 2 2 4 2

a		DATE	13.11.98
b		Resp.	Bär
c		CHECK	
MODIFICATION	DATE	NAME	NORM

Orgin. Subst. Subst.



TERMINALS AND CONNECTIONS

CARLTON GARDENS, TEL

-KLEMMPLAN
ob: +S-X02

299898122

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Connections

Destination 1

+Loc-DevID :Connec.

Cross-refer-

ence

No. connec-

bridge to

Destination 2

+Loc-DevID :Connec.

Connector:

+S1-X1

	5.4	PE	○	+Sn	-X1	PE
	5.4	PE	○		-S139-X	PE
	5.4	PE	○	1	○	11
	5.4	1	○	2	○	6
-A38-X	2	7.6	2	○	6	+Sn -X1
-A38-X	1	5.4	3	○	18	+Sn -X1
	5.4	5	○	12.7		
	7.6	6	○	2		
	5.4	7	○	5		
	5.4	9	○		-S139	12
	5.4	18	○	3	-S139	11
	5.4	11	○	1		
	5.4	12	○	5		

Terminal strip:

+S1-X9

8-4.2	1	○	3	+TS	-X8	+24
8-4.2	2	○	4	+TS	-X8	0V
8-4.2	3	○	1	+Sx	-X9	1
8-4.2	4	○	2	+Sx	-X9	2

Connector:

+Sn-A38-X9

13.5	1	○				
13.5	2	○		-H33B		1
13.5	3	○		-H33B		2

Connector:

+Sx-A38-X3

13.3	1	○		-S32B-X	COM
13.3	2	○		-S32B-X	-
13.3	5	○		-S32F-X	-
13.3	6	○		-S32F-X	NC
13.3	7	○		-S32F-X	COM
13.3	8	○		-S32F-X	+

Connector:

+Sx-A38-X6

13-2.5	1	○		-X6	1
13-2.5	2	○		-X6	2
		○			
		○			

assigned wires of cable

0	Cable	Type	Gauge	Function	Ter
	W137.x	SABIX A288	5x1	Landing door	
	W139.3	NHHW-J	tx2.5	Landing door	
	W139.2	NHHWH-0	tx1.5	Landing door	
	W139.1	NHHWH-0	tx1.5	Landing door	
	W30.1	NHHWH-0	tx1.5	Wall bus	
	W30x	NHHWH-0	tx1.5	Wall bus	
	W33h	J-HS10H	4x0.8	Continued travel	
	W32.x	J-HS10H	8x0.8	Landing call	
	W67x.2	H83W-F	2x0.75	Firemen's operation	

GNYE									
2									
3									
1									

4	1	1	1	2	2	2	6	2	

a			DATE	13.11.98
b			Resp.	Bär
c			CHECK	
d	MODIFICATION	DATE	NAME	NORM

THYSEN AUFZUGE

TERMINALS AND
CONNECTIONS

CARLTON GARDENS, TEL
obj: +S1-X1

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Connections

Destination 1	Cross-reference	No. connection	bridge to	Destination 2
+Loc-DevID :Connec.				+Loc-DevID :Connec.

Connector: +Sx-A30-X9

13.5	1 O	-H33B	2
13.5	2 O	-H33F	2
13.5	3 O	-H33F	1

Distributor: +Sx-X6

13-2.5	1 o	-A30-X6	1
	o	-S67	13
13-2.5	2 o	-A30-X6	2
	o	-S67	14

Terminal strip: → Sx-Xg

B-4.2	1 o 3	+S1 -X9	3
B-4.2	2 o 4	+S1 -X9	4
B-4.2	3 o 1	+Sn -X9	1
B-4.2	4 o 2	+Sn -X9	2

Distributor: +Sx-X27

13-2-4	1 o	-S27	13
	o	-X7	1
13-2-4	2 o	-S27	14
	o	-X7	2

Connector: +TS-A00-X4

-A27-X	2	14.1	1 O		
-A27-X	3	14.4	2 O		
-X13	18	8.5	4 O		
-K35	A2	9.8	5 O		
-X9	24	9.7	6 O		
-A83-X11	5	9.4	12 O		

Connector: +TS-A00-X29

8-1.2	b12 o	-A12-X2	I2
9-1.2	b28 o	+T -Y07-B1	IA
9-1.3	b30 o	+T -Y07-B2	IA
	o		

assigned wires of cable

a			DATE	13.11.98
b			Resp.	Bör
c			CHECK	
	MONIFICATION	DATE	NAME	NORM



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Terminals and connections

CARLTON GARDENS. TEL

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Connections

Destination 1 Cross-reference No. connection bridge to Destination 2

+Loc-DevID :Connec. +Loc-DevID :Connec.

Connector: +TS-A00-X30

-K73	A2	16.1	b14 o			
		9-1.2	b2 o	+T	-Y07-B1	+
		9-1.3	b4 o	+T	-Y07-B2	+
		9-1.2	b6 o	+T	-Y07-B1	-
		9-1.3	b8 o	+T	-Y07-B2	-

Device: +TS-A23-X1

-A71-X1	d14	18.3	8 o			
-A71-X1	z18	18.3	10 o			
-A71-X1	z12	18.4	11 o			
-A71-X1	z14	18.4	12 o			
-A71-X1	d18	18.3	14 o			
-A71-X1	d12	18.3	15 o			

Device: +TS-A23-X2

-K36	A2	16.5	9 o			

Device: +TS-A23.7-X1

-K35.1	k14	22-1.4	6 o			

Device: +TS-A23.7-X2

	21.5	9 o	-U4	A1		
	21.5	10 o	-U3	A1		
	21.4	11 o	-U2	A1		
	21.3	12 o	-U1	A1		

Connector: +TS-G03-X907

	2.4	1 o	+T	-B03-X	3	
	2.4	6 o				

Terminal strip: +TS-G03-X1

	2.2	PE2 o	+T	-X01	PE	
	2.3	6 o	+T	-X01	18	
	2.3	7 o	+T	-X01	11	
		o				
		o				
		o				
		o				

assigned wires of cable

0Ter	Cable	Type	Gauge	Function	BN	BU	GN	GNYE	BN	BU	3	3	1	4	2
W07.1	H03VV-F	3x0.75		Brake											
W07.2	H03VV-F	3x0.75		Brake											
W03	6596832899	Øx0.14		Actual value											
W01	ØH1-100SY	4x2.5		Lift motor											
W01.3	WTSUC1-0	2x1.5		Lift motor											

a		DATE	13.11.98			
b		Resp.	Bör			
c		CHECK				

Origin. Subst. Subst.



Terminals and
connections

CARLTON GARDENS, TEL

KLEMMPLAN
obj: +TS-A00-X30

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Connections

Destination 1	Cross-reference	No. connection	bridge to	Destination 2
+Loc-DevID :Connec.				+Loc-DevID :Connec.

Device: +TS-K06:1

2.2	2 o	+T	-X01	U
2.2	4 o	+T	-X01	V
2.2	6 o	+T	-X01	W

Terminal strip: +TS-X0 230 / 400 V

assigned wires of cable

a			DATE	13.11.98
b			Resp.	B&F
c			CHECK	
	MODIFICATION	DATE	NAME	NORM



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Terminals and connections

CARLTON GARDENS, TEL

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ob: +TS-KOB.1

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Connections

assigned wires of cable

G			DATE	13.11.98
B			Resp.	B4c
C			CHECK	
MODIFICATION	DATE	NAME	NORM	



Terminals and connections

CARLTON GARDENS, TEL

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ab: +JS-X1

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Connections

Destination 1		Cross-refer-ence	No. connec-tion	bridge to	Destination 2		
+Loc-DevID :Connec.					+Loc-DevID :Connec.		
Terminal strip:		+TS-X2		230 / 460 V			
-K72.1	16	2.8	L13 o				
-K81	13	4.1	L13 o				
-X1	108		o				
-K88	A2	1.5	N o				
-Z88	N		o				
-X11	9	2.7	N o	N2			
-A87-X1	32		o				
-X88		1.2	N1 o		-X8	N1	
-A28-X1	32	11.1	N1 o				
N1			o				
-X11	3		o				
-K72.1	A2	2.7	N2 o	N			
-X88		1.2	PE o				
-Z88	PE		o				
-F31	2	1.2	5 o				
-S41	13		o				
-X88			o				
L20		11.1	6 o				
-A28-X1	28		o				
-K81.3	15	2.3	21 o				
-F81	1		o				
-A72-X8	L2	2.3	22 o				
-F81	3		o				
-A87-X1	24	2.3	23 o				
-F81	5		o				
-A12-X1	24	6.5	25 o				
-P81	A1		o				
-K73	11	16.2	60 o				
-K73	12	16.2	61 o				
-K73	14	16.2	62 o				
-K28	11	16.4	63 o				
-K28	12	16.4	64 o				
-K28	14	16.4	65 o				
-K93	12	22.3	66 o				
-K93	11	22.3	67 o				
-K93	14	22.3	68 o				
-K36	11	16.5	69 o				
-K36	12	16.5	70 o				

assigned wires of cable

a			DATE	13.11.98
b			Resp.	Bör
c			CHECK	
MODIFICATION	DATE	NAME	NORM	



Terminals and connections

CARLTON GARDENS. TEL

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ob: +TS-X2

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Connections

assigned wires of cable

a			DATE	13.11.98
b			Resp.	Bär
c			CHECK	
MODIFICATION	DATE	NAME	NORM	



Terminals and connections

CARLTON GARDENS, TEL

- KLEMMPLAN
ob: +TS-X2

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Connections

a			DATE	13.11.98	
b			Resp.	Bör	
c			CHECK		
	MODIFICATION	DATE	NAME	NORM	Dra



Terminals and connections

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Ob: + TS-YB

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Connections

Destination 1		Cross-reference	No. connection	bridge to	Destination 2		
+Loc-DevID :Connec.					+Loc-DevID :Connec.		
Terminal strip:		+TS-X9		24 V			
-A20-X1	14	11.3	-12 o				
		11.4	-12 o		-K27	A2	
			o		+S -H28		
-12V		19.8	-12 o		+T -H67		
-X14	3		o				
-G20	-	11.2	-12B o				
-A20-X1	12		o				
-G20	+	11.2	+12 o				
-A20-X1	6		o				
-X13	3	11.3	+12 o				
-A00-X2	1	8.3	+24 o				
-G11-X	(C1)		o				
		21.1	+24E o	38	+Sx -H90	24V	
-A90.1-X1	d16	22.2	+24E o		+S -X	2	
+24E		22.6	+24E o		+T -S90	1	
-K67.1	11	19.4	+24V o				
-S25.1	8		o				
-A98.1-X1	d8	19.4	+24V o				
-K67.2	11		o				
-K90	11	22-1.2	+24V o		+Sx -S35	13	
			o		-K35.1	11	
-A27-X	6	17.2	0V o		+S -Y25	2	
-U1	A2	17.3	0V o		+S -Y25.1	2	
-G11-X	(D1)	8.1	0V o	PE			
-G11-X	(D2)		o				
		21.2	BVE o	29	+Sx -H90	0V	
-K93	A2	22.2	BVE o		-K90	A2	
-K35.1	A2	22-1.2	BVV o		0V		
-H90-H1	-		o				
		23.2	PE o				
-G11-X	PE	8.1	PE o	0V			
-X1	PE		o				
-S01B	24	9.5	20 o				
-A00-X30	b26		o				
-S01F	24	9.5	21 o				
-A00-X30	b28		o				
-S01	8	9.6	22 o				
-A00-X30	b30		o				

assigned wires of cable

a			DATE	13.11.98			
b			Resp.	Bör			
c			CHECK				
	MODIFICATION	DATE	NAME	NORM	Origin:	Subst.	Subst.



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Terminals and connections

CARLTON GARDENS, TEL

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Connections

Destination 1		Cross-reference	No. connection	bridge to	Destination 2	
+Loc-DevID	:Connec.				+Loc-DevID	:Connec.
-S41	22	9.7	24 o			
-A80-X4	6		o			
-K90	24		o			
-S25	7	17.2	25 o		+S -Y25	1
-S25.1	7	17.3	25.1 o		+S -Y25.1	1
-K00P	44	19.2	26 o			
-K67.1	A1	19.2	27 o			
-K67-X	7	19.2	28 o		-K67.1	A2
-K67.2	A2	19.3	29 o	0VE		
-K00P	44	19.3	30 o			
-K67.2	A1	19.3	31 o			
-K93	A1	22.2	34 o		+S -X	1
-K35.1	A1	22-1.2	35 o		+Sx -S35	14
-K90	A1	22.6	36 o		+T -S90	2
		19.5	53 o	96	+Sx -S67	21
-K67	A1	19.5	54 o		+Sx -S67	22
-X13	5	11.4	55 o		+S -H20	
-K20	A1		o			
-K67.3	12	19.8	95 o		+T -H67	
		14-1.6	96 o	98	+T -H91	
-K95	43	14-1.6	97 o		+T -H91	
			o		-K97	43
-X13	3	14-1.4	98 o		+T -H27	
-K00P	21	14-1.4	99 o		+T -S97	14
-A98.1-X1	z16	21.4	911 o		+Sx -H98	a
-A98.1-X1	z18	21.5	912 o		+Sx -H98	b
-A98.1-X1	z20	21.6	913 o		+Sx -H98	c
-A98.1-X1	z22	21.6	914 o		+Sx -H98	d
		23.2	951 o		+F -X9	951
		23.2	952 o		+F -X9	952
		23.3	953 o		+F -X9	953
		23.3	954 o		+F -X9	954
		23.3	955 o		+F -X9	955
		23.3	956 o		+F -X9	956
		23.3	957 o		+F -X9	957
		23.4	958 o		+F -X9	958
		23.4	959 o		+F -X9	959
		23.4	960 o		+F -X9	960
		23.4	961 o		+F -X9	961
			o			

assigned wires of cable

Ter	Cable	Type	Gauge	Function
4	W25	SABIX	A200	2x0,75 Remote tripping
4	W25.1	SABIX	A200	2x0,75 Remote tripping
4	W93	NHXMN-0		2x1,5
4	#9820			
2				
2				
BU				
BK				
WH				
RD				
WH				
RD				
WH				
BK				
RD2a				
RD2b				
GN1a				
GN1b				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				

a			DATE	13.11.98				
b			Resp.	Bör				
c			CHECK					
	NOTIFICATION	DATE	NAME	NORM		Origin.	Subst.	Sub



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ab: +TS+X9

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Connections

Destination 1	Cross-reference	No. connection	bridge to	Destination 2
+Loc-DevID :Connec.				+Loc-DevID :Connec.

Connector: +TS-X11

-X00		1.4	PE	O	+F	-X11	PE
-K00	14	1.6		1 O	+F	-X11	1
-K35	12	1.4		2 O	+F	-X11	2
-K91	A2	1.4		3 O	+F	-X11	3
-A07-X1	22	3.6		6 O	+F	-X11	6
-A07-X1	26	3.7		7 O	+F	-X11	7
-X2	N	3.1		9 O	+F	-X11	9
-A72-X0	L3	3.1		10 O	+F	-X11	10
-S00	2	1.7		11 O	+F	-X11	11

Connector: +TS-X12

-X1	128	4.4	1 0	+F	-X12	1
-X1	121	4.5	2 0	+F	-X12	2
-X1	122	4.6	3 0	+F	-X12	3
-S01	9	5.2	4 0	+F	-X12	4
-X1	133	5.3	5 0	+F	-X12	5
-K97	A1	6-1.6	6 0	+F	-X12	6
-K98	A1	6-1.5	7 0	+F	-X12	7
-K99	A1	1.7	8 0	+F	-X12	8

Connector: TS-X13

		B-5.3	PE O			
-X21	1	11.7	1 O	+F	-X13	1
-X21	3	11.7	2 O	+F	-X13	2
-X9	+12	11.4	3 O	+F	-X13	3
-A20-X1	18	11.4	4 O	+F	-X13	4
-X9	55	11.4	5 O	+F	-X13	5
-K27	A1	14-1.3	6 O	+F	-X13	6
-A00-X2	1	8.7	7 O	+F	-X13	7
-A00-X3,13	8	8.7	8 O	+F	-X13	8
		8.7	9 O	+F	-X13	9
-A00-X4	4	8.5	10 O	+F	-X13	10
		B-5.3	12 O	+F	-X40	1
		B-5.3	13 O	+F	-X40	2
			O			
			O			
			O			
			O			

assigned wires of cable

a			DATE	13.11.98			
b			Resp.	Bör			
c			CHECK				
	MODIFICATION	DATE	NAME	NORM	Drawn	Subst.	Suppl.



Terminals and connections

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Connections

Destination 1	Cross-reference	No. connection	bridge to	Destination 2
+Loc-DevID :Connec.				+Loc-DevID :Connec.

Connector: +TS-X13.2

B-4.4	PE O			
B-4.4	12 O	+S1	-A30-X2	4
B-4.4	13 O	+S1	-A30-X2	3
B-4.4	14 O	+S1	-A30-X2	1

Connector: +TS-X14

-K67.3	12	19.7	1 o	+F	-X14	1
-K08P	13	19.6	2 o	+F	-X14	2
-K67.3	A2	19.7	3 o	+F	-X14	3

assigned wires of cable

a			DATE	13.11.96			
b			Resp.	Bör			
c			CHECK				
	MODIFICATION	DATE	NAME	NORM	Drawn		Subst.



Terminals and connections

CARLTON GARDENS, TEL

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00: +TS-X13.2

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Order Data

Date 22.10.1998
 Factory No. 29 98 98 122
 Job name CARLTON GARDENS, TEL
 Prepared by Hofmann, V.
 Modular lift type SU51A00

G.7.1 Calculation method: General configuration, counter weight
G.7.1.1a Safety gear operation
G.7.1.1a.1 Bending stress

$$\begin{array}{lll} F_x = 0 & \text{N} \\ \sigma_{y1} = -0,53 & \text{N/mm}^2 \\ \sigma_{y2} = -2,97 & \text{N/mm}^2 \\ \sigma_{y3} = 2,97 & \text{N/mm}^2 \end{array}$$

$$\begin{array}{lll} F_y = 623,43 & \text{N} \\ \sigma_{x1} = -11,2 & \text{N/mm}^2 \\ \sigma_{x2} = 5,98 & \text{N/mm}^2 \\ \sigma_{x3} = 5,98 & \text{N/mm}^2 \end{array}$$

G.7.1.1a.2 Buckling

$$F_k = 19257,03 \text{ N}$$

$$\sigma_k = -30,7 \text{ N}$$

G.7.1.1a.3 Combined stress

$$\begin{array}{lll} \sigma_{m1} = -11,73 & \text{N/mm}^2 & \leq \sigma_{zul} \\ \sigma_{m2} = 3,01 & \text{N/mm}^2 & \leq \sigma_{zul} \\ \sigma_{m3} = 8,95 & \text{N/mm}^2 & \leq \sigma_{zul} \end{array}$$

$$\begin{array}{lll} \sigma_{zul} = 244 & \text{N/mm}^2 \\ \sigma_{max} = -22,89 & \text{N/mm}^2 & \leq \sigma_{zul} \\ \sigma_{cmax} = -41,26 & \text{N/mm}^2 & \leq \sigma_{zul} \end{array}$$

G.7.1.1a.4 Flange bending

$$\sigma_F = 1,73 \text{ N/mm}^2 \leq \sigma_{zul}$$

$$\sigma_{zul} = 244 \text{ N/mm}^2$$

G.7.1.1a.5 Deflections

$$\delta_x = 0,1 \text{ mm} \leq \delta_{zul}$$

$$\delta_{zul} = 5 \text{ mm}$$

$$\delta_y = 0,34 \text{ mm} \leq \delta_{zul}$$

G.7.1.1b Breaks for ascending car overspeed protection
G.7.1.1b.1 Bending stress

$$\begin{array}{lll} F_x = 0 & \text{N} \\ \sigma_{y1} = 0 & \text{N/mm}^2 \\ \sigma_{y2} = 0 & \text{N/mm}^2 \\ \sigma_{y3} = 0 & \text{N/mm}^2 \end{array}$$

$$\begin{array}{lll} F_y = 0 & \text{N} \\ \sigma_{x1} = 0 & \text{N/mm}^2 \\ \sigma_{x2} = 0 & \text{N/mm}^2 \\ \sigma_{x3} = 0 & \text{N/mm}^2 \end{array}$$

G.7.1.1b.2 Buckling

$$F_k = 0 \text{ N}$$

$$\sigma_k = 0 \text{ N}$$

G.7.1.1b.3 Combined stress

$$\begin{array}{lll} \sigma_{m1} = 0 & \text{N/mm}^2 & \leq \sigma_{zul} \\ \sigma_{m2} = 0 & \text{N/mm}^2 & \leq \sigma_{zul} \\ \sigma_{m3} = 0 & \text{N/mm}^2 & \leq \sigma_{zul} \end{array}$$

$$\sigma_{zul} = 244 \text{ N/mm}^2$$

$$\begin{array}{lll} \sigma_{max} = 0 & \text{N/mm}^2 & \leq \sigma_{zul} \\ \sigma_{cmax} = 0 & \text{N/mm}^2 & \leq \sigma_{zul} \end{array}$$

G.7.1.1b.4 Flange bending

$$\sigma_F = 0 \text{ N/mm}^2 \leq \sigma_{zul}$$

$$\sigma_{zul} = 244 \text{ N/mm}^2$$

G.7.1.1b.5 Deflections

$$\delta_x = 0 \text{ mm} \leq \delta_{zul}$$

$$\delta_{zulgg} = 5 \text{ mm}$$

$$\delta_y = 0 \text{ mm} \leq \delta_{zul}$$

Order Data

Date 22.10.1998
 Factory No. 29 98 98 122
 Job name CARLTON GARDENS, TEL
 Prepared by Hofmann, V.
 Modular lift type SU51A00

G.7.1 Calculation method: General configuration, counter weight
G.7.1.2a Normal use, running
G.7.1.2a.1 Bending stress

$$\begin{array}{lll} F_x = 0 & \text{N} \\ \sigma_{y1} = -0,32 & \text{N/mm}^2 \\ \sigma_{y2} = -1,78 & \text{N/mm}^2 \\ \sigma_{y3} = 1,78 & \text{N/mm}^2 \end{array}$$

$$\begin{array}{lll} F_y = 374,06 & \text{N} \\ \sigma_{x1} = -6,72 & \text{N/mm}^2 \\ \sigma_{x2} = 3,59 & \text{N/mm}^2 \\ \sigma_{x3} = 3,59 & \text{N/mm}^2 \end{array}$$

G.7.1.2a.2 Buckling In normal use, running, buckling does not arise.

G.7.1.2a.3 Combined stress

$$\begin{array}{lll} \sigma_{m1} = -7,04 & \text{N/mm}^2 \\ \sigma_{m2} = 1,8 & \text{N/mm}^2 \end{array} \leq \sigma_{zul}$$

$$\sigma_{zul} = 195 \text{ N/mm}^2$$

$$\begin{array}{lll} \sigma_{m3} = 5,37 & \text{N/mm}^2 \\ \sigma_{max} = -7,04 & \text{N/mm}^2 \end{array} \leq \sigma_{zul}$$

G.7.1.2a.4 Flange bending

$$\sigma_F = 1,04 \text{ N/mm}^2 \leq \sigma_{zul}$$

$$\sigma_{zul} = 195 \text{ N/mm}^2$$

G.7.1.2a.5 Deflections

$$\delta_x = 0,06 \text{ mm} \leq \delta_{zul}$$

$$\begin{array}{lll} \delta_{zul} = 5 \text{ mm} \\ \delta_y = 0,2 \text{ mm} \end{array} \leq \delta_{zul}$$

G.7.1.2b Jumping of counter weight at car safety device operation
G.7.1.2b.1 Bending stress

$$\begin{array}{lll} F_x = 0 & \text{N} \\ \sigma_{y1} = -0,53 & \text{N/mm}^2 \\ \sigma_{y2} = -2,97 & \text{N/mm}^2 \\ \sigma_{y3} = 2,97 & \text{N/mm}^2 \end{array}$$

$$\begin{array}{lll} F_y = 623,43 & \text{N} \\ \sigma_{x1} = -11,2 & \text{N/mm}^2 \\ \sigma_{x2} = 5,98 & \text{N/mm}^2 \\ \sigma_{x3} = 5,98 & \text{N/mm}^2 \end{array}$$

G.7.1.2b.2 Buckling In case of jumping of counter weight, buckling does not arise.

G.7.1.2b.3 Combined stress

$$\begin{array}{lll} \sigma_{m1} = -11,73 & \text{N/mm}^2 \\ \sigma_{m2} = 3,01 & \text{N/mm}^2 \end{array} \leq \sigma_{zul}$$

$$\sigma_{zul} = 244 \text{ N/mm}^2$$

$$\begin{array}{lll} \sigma_{m3} = 8,95 & \text{N/mm}^2 \\ \sigma_{max} = -11,73 & \text{N/mm}^2 \end{array} \leq \sigma_{zul}$$

G.7.1.2b.4 Flange bending

$$\sigma_F = 1,73 \text{ N/mm}^2 \leq \sigma_{zul}$$

$$\sigma_{zul} = 244 \text{ N/mm}^2$$

G.7.1.2b.5 Deflections

$$\delta_x = 0,1 \text{ mm} \leq \delta_{zul}$$

$$\begin{array}{lll} \delta_{zulgg} = 5 \text{ mm} \\ \delta_y = 0,34 \text{ mm} \end{array} \leq \delta_{zul}$$



THYSSEN AUFZÜGE

Calculation of rope pulley axle

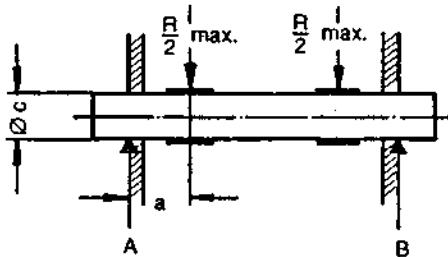
Standard
60 720 71 00 0
Sheet 1

- For angle of wrap $\geq 90^\circ$ proof of stability is required acc. to TRA

Rope pulley	Axle		Bearing Plain Roller Measurement	R_{perm} Plain bearing with $\sigma_{bperm} = 90 \text{ N/mm}^2$	R_{perm} Roller bearing with $\sigma_{bperm} = 120 \text{ N/mm}^2$	R_{actual} with F_{max} and G_{max}	
$\varnothing D$ [mm]	$\varnothing C$ [mm]	W_b [mm ³]	a [mm]	[N]	[N]	[N]	
360	50	12300	28		105000		a)
			45		65600		b)
400	50	12300	23		128000		
			32		159000		a)
450	60	21200	50		101800		b)
			45		268000		a)
540	80	50300	28		431000		b)
			45				a)
640	90	71600	47.5	271000			
			54		318000		
740	120	170000	57.5	532000			
			56.5		722000		

Axe material: C 45

- a) Rope pulley with normal load capacity
b) Rope pulley with increased load capacity



$$R_{perm} = \frac{2 * W_b * \sigma_{bperm}}{a} \quad R_{actual} \leq R_{perm}$$

Maximum axle load R_{max} occurs at the diverter pulleys indicated in Sheet 2
• For the respective suspension types this results in

Calculation formulas for R_{actual} :

The descriptions and values are supplied in the technical data.

1:1	1	$(F + Q + s_u + H_k + 0,5 s_p) * 2$	2:1	14	$F + Q + s_u + H_k + 0,5 s_p$
	2	$(F + Q + s_u + H_k + 0,5 s_p) * \sqrt{2}$		15	$(F + Q + s_u + H_k + 0,5 s_p) * 0,5 * \sqrt{2}$
	3	$(G + s_u + 0,5 s_p) * 2$		16	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	4	$(F + Q + s_u + H_k + 0,5 s_p) * \sqrt{2}$		17	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
2:1	5	$G + s_u + 0,5 s_p$	3:1	18	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	6	$F + Q + s_u + H_k + 0,5 s_p$		19	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	7	$(F + Q + s_u + H_k + 0,5 s_p) * 0,5 * \sqrt{2}$		20	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	8	$F + Q + s_u + H_k + 0,5 s_p$		21	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	9	$F + Q + s_u + H_k + 0,5 s_p$		22	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	10	$F + Q + s_u + H_k + 0,5 s_p$		23	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	11	$G + s_u + 0,5 s_p$		24	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	12	$F + Q + s_u + H_k + 0,5 s_p$		25	$(F + Q + s_u + H_k + 0,5 s_p) * \frac{2}{3}$
	13	$G + s_u + 0,5 s_p$	4:1	26	$(F + Q + s_u + H_k + 0,5 s_p) * 0,5$

Manuf. no.

signed:	Ankele	Date issued	5.3.90	24.7.95	16.09.96	02.12.96				
appr.:	Scholz	Name	EAS-N	Sche	Sche	Sche				

General dates

Load capacity	$Q \approx 630 \text{ kg}$
Mass of car	$F_k \approx 1625 \text{ kg}$
Mass of counterweight	$G_g \approx 1985 \text{ kg}$
Mass of pulley $\phi 360 / 7x8$	$S_f \approx 40 \text{ kg}$
Mass of rope	$S := 42 \text{ kg}$
Mass of trailing cable	$H_k \approx 23 \text{ kg}$
Acceleration coefficient	$k = 1.2$
Permissible bending stress (S235JR)	$\sigma_z \approx 140 \text{ N} \cdot \text{mm}^{-2}$ $E \approx 2.05 \cdot 10^5 \text{ N} \cdot \text{mm}^{-2}$

Pulley support for counterweight - plan-no.: 1 :

$$\text{U180 : } A := 28 \cdot \text{cm}^2 \quad W_x := 150 \cdot \text{cm}^3 \quad J_x := 1350 \cdot \text{cm}^4 \quad q := 216 \cdot \text{N} \cdot \text{m}^{-1}$$

$$L := 1970 \cdot \text{mm} \quad a := 330 \cdot \text{mm} \quad b := 510 \cdot \text{mm} \quad c := 870 \cdot \text{mm} \quad d := 1410 \cdot \text{mm} \quad h := 140 \cdot \text{mm} \quad \alpha := \tan\left(\frac{2 \cdot h}{c - b}\right)$$

Vertical force on car pulley : $F_1 := ((F_k + Q) + 2 \cdot S) \cdot k + S_f \quad F_1 = 27.927 \text{ kN}$

Rope tensile force - counterweight : $S_G := (0.5 \cdot G_g + S) \cdot k$

Vertical force on counterweight pulley : $F_2 := S_G \cdot (1 - \sin(\alpha)) + S_f \quad F_2 = 5.094 \text{ kN}$

$$F_3 := S_G \cdot (1 + \sin(\alpha)) + S_f \quad F_3 = 20.047 \text{ kN}$$

Vertical suspension force : $F_4 := S_G \quad F_4 = 12.178 \text{ kN}$

Horizontal force on counterweight pulley : $H := S_G \cdot \cos(\alpha) \quad H = 9.613 \text{ kN}$

Moment : $M := |H \cdot h| \quad M = 1.346 \text{ kN} \cdot \text{m}$

$$\Sigma M = 0 : \quad R_a := \frac{F_1 \cdot (L - a) + F_2 \cdot (L - b) + F_3 \cdot (L - c) + F_4 \cdot (L - d) + 0.5 \cdot q \cdot L^2 + 2 \cdot M}{L} \quad R_a = 43.259 \text{ kN}$$

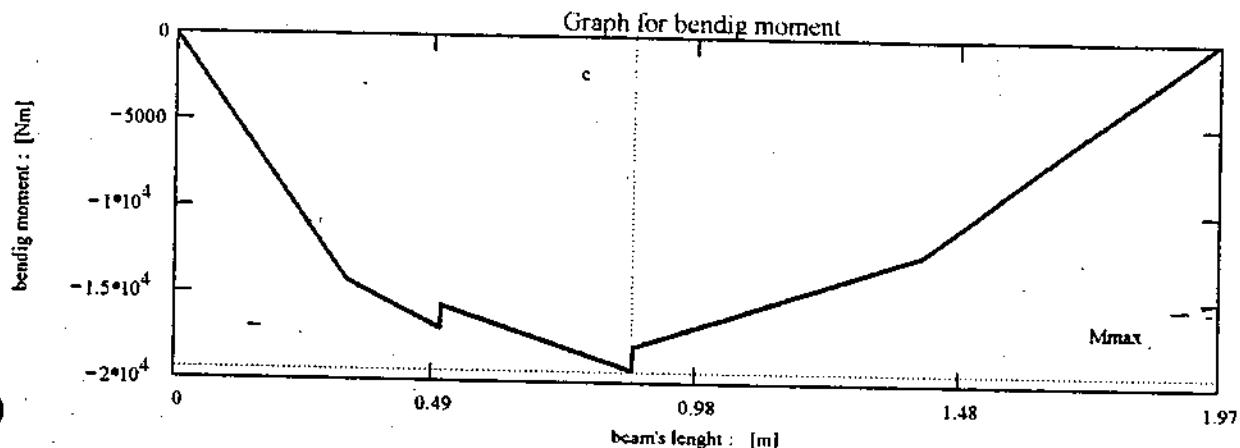
$$\Sigma P_y = 0 : \quad R_b := F_1 + F_2 + F_3 + F_4 + q \cdot L - R_a \quad R_b = 22.413 \text{ kN}$$

Bending moment :

$$M(x) := -R_a \cdot x + F_1 \cdot (x - a) \cdot (x > a) + [F_2 \cdot (x - b) + M] \cdot (x > b) + [F_3 \cdot (x - c) + M] \cdot (x > c) + F_4 \cdot (x - d) \cdot (x > d) + 0.5 \cdot q \cdot x^2$$

$$M(a) = -14.264 \text{ kN}\cdot\text{m} \quad M(b) = -17.007 \text{ kN}\cdot\text{m} \quad M(c) = -19.293 \text{ kN}\cdot\text{m} \quad M(d) = -12.517 \text{ kN}\cdot\text{m} \quad M_{\max} := M(c)$$

Bending stress : $\sigma_b := \frac{M_{\max}}{2 \cdot W_x}$ $\sigma_b = -64.3 \text{ N/mm}^2$ Safety factor : $\mu := \frac{\sigma_z}{|\sigma_b|}$ $\mu = 2.2$



Calculation of deflection :

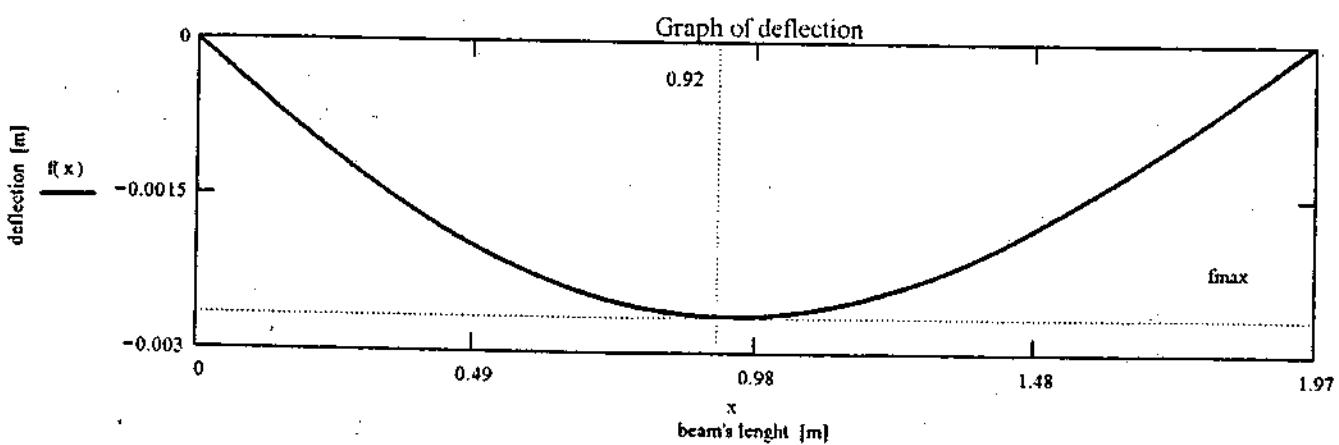
$$\alpha(x) := \frac{-F_1 \cdot (L-a) \cdot x}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot a - x^2 - a^2) \cdot (x \leq a) + \frac{-F_1 \cdot a \cdot (L-x)}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot x - x^2 - a^2) \cdot (x > a)$$

$$\beta(x) := \frac{-F_2 \cdot (L-b) \cdot x}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot b - x^2 - b^2) \cdot (x \leq b) + \frac{-F_2 \cdot b \cdot (L-x)}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot x - x^2 - b^2) \cdot (x > b)$$

$$\gamma(x) := \frac{-F_3 \cdot (L-c) \cdot x}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot c - x^2 - c^2) \cdot (x \leq c) + \frac{-F_3 \cdot c \cdot (L-x)}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot x - x^2 - c^2) \cdot (x > c)$$

$$\delta(x) := \frac{-F_4 \cdot (L-d) \cdot x}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot d - x^2 - d^2) \cdot (x \leq d) + \frac{-F_4 \cdot d \cdot (L-x)}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot x - x^2 - d^2) \cdot (x > d)$$

$$f(x) := \alpha(x) + \beta(x) + \gamma(x) + \delta(x) \quad x_m := 0.92 \text{ m} \quad f_{\max} := f(x_m) \quad f_{\max} = -2.7 \text{ mm}$$



Support for car suspension - plan No.: 2

$$\text{U300 : } A := 58.8 \cdot \text{cm}^2 \quad W_y := 67.8 \cdot \text{cm}^3 \quad J_y := 425 \cdot \text{cm}^4 \quad q := 453 \cdot \text{N} \cdot \text{m}^{-1} \quad L := 696 \cdot \text{mm} \quad a := 354 \cdot \text{mm}$$

$$\text{Vertical force : } F_1 := (0.5 \cdot (F_k + Q) + S) \cdot k \quad F_1 = 13.767 \text{ kN}$$

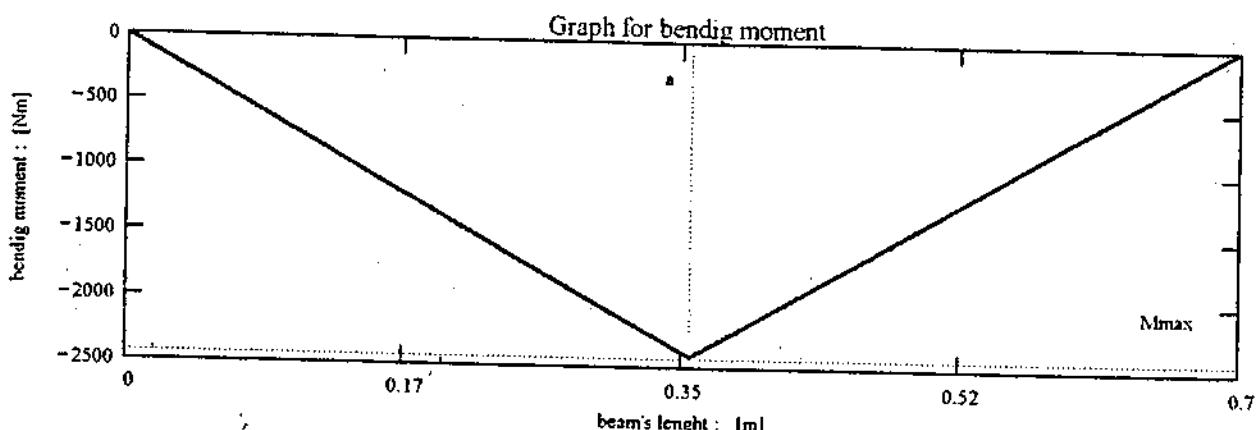
$$\Sigma M=0 : R_a := \frac{F_1 \cdot (L-a) + 0.5 \cdot q \cdot L^2}{L} \quad R_a = 6.923 \text{ kN}$$

$$\Sigma P_y=0 : R_b := F_1 + q \cdot L - R_a \quad R_b = 7.160 \text{ kN}$$

Bending moment :

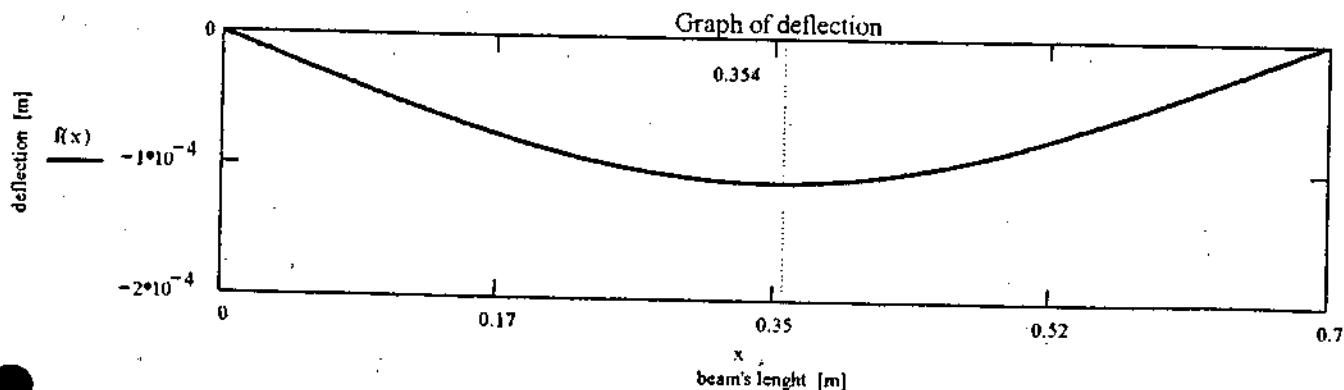
$$M(x) := -R_a \cdot x + F_1 \cdot (x-a) \cdot (x>a) + 0.5 \cdot q \cdot x^2 \quad M(a) = -2.422 \text{ kN} \cdot \text{m} \quad M_{\max} := M(a)$$

$$\text{Bending stress : } \sigma_b := \frac{M_{\max}}{2 \cdot W_y} \quad \sigma_b = -17.9 \text{ N} \cdot \text{mm}^{-2} \quad \text{Safety factor : } \mu := \frac{\sigma_z}{|\sigma_b|} \quad \mu = 7.8$$

Calculation of deflection :

$$a(x) := \frac{-F_1 \cdot (L-a) \cdot x}{6 \cdot E \cdot J_y \cdot L} \cdot (2 \cdot L \cdot a - x^2 - a^2) \cdot (x \leq a) + \frac{-F_1 \cdot a \cdot (L-x)}{6 \cdot E \cdot J_y \cdot L} \cdot (2 \cdot L \cdot x - x^2 - a^2) \cdot (x > a)$$

$$f(x) := a(x) \quad x_m := 0.354 \cdot \text{m} \quad f_{\max} := f(x_m) \quad f_{\max} = -1.5 \text{ mm}$$



Bottom pulley block - plan-no.: 3

Beam - U140 : $A := 20.4 \cdot \text{cm}^2$ $W_x := 86.4 \cdot \text{cm}^3$ $J_x := 605 \cdot \text{cm}^4$ $q := 157 \cdot \text{N} \cdot \text{m}^{-1}$

$L := 1648 \cdot \text{mm}$ $a := 519 \cdot \text{mm}$ $b := 907 \cdot \text{mm}$ $c := 742 \cdot \text{mm}$ $e := 1129 \cdot \text{mm}^2$

Beam 3a :

Vertical force on pulley : $F_1 := 0.25 \cdot (Q + F_k) \cdot k$

$$F_1 = 6.636 \text{ kN}$$

$$\Sigma M=0 : R_a := \frac{F_1 \cdot (L - a) + F_1 \cdot (L - b) + 0.5 \cdot q \cdot L^2 + Sf \cdot L}{L}$$

$$R_a = 8.052 \text{ kN}$$

$$\Sigma P_y = 0 : R_b := F_1 + F_1 + 2 \cdot Sf + q \cdot L - R_a$$

$$R_b = 6.264 \text{ kN}$$

Bending moment : $M(x) := -R_a \cdot x + F_1 \cdot (x - a) \cdot (x > a) + F_1 \cdot (x - b) \cdot (x > b) + 0.5 \cdot q \cdot x^2 + Sf \cdot x$

$$M(a) = -3.954 \text{ kN} \cdot \text{m} \quad M(b) = -4.308 \text{ kN} \cdot \text{m}$$

$$M_{\max} := M(b)$$

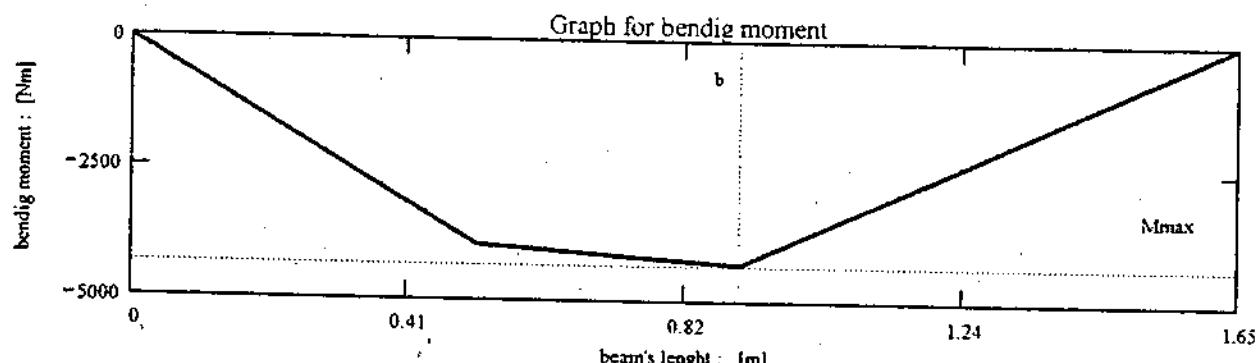
Bending stress :

$$\sigma_b := \frac{M_{\max}}{W_x} \quad \sigma_b = -49.9 \text{ N} \cdot \text{mm}^{-2}$$

Safety factor

:

$$\mu := \frac{\sigma_z}{|\sigma_b|} \quad \mu = 2.8$$

Calculation of deflection :

$$\alpha(x) := \frac{-F_1 \cdot (L - a) \cdot x}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot a - x^2 - a^2) \cdot (x \leq a) + \frac{-F_1 \cdot a \cdot (L - x)}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot x - x^2 - a^2) \cdot (x > a)$$

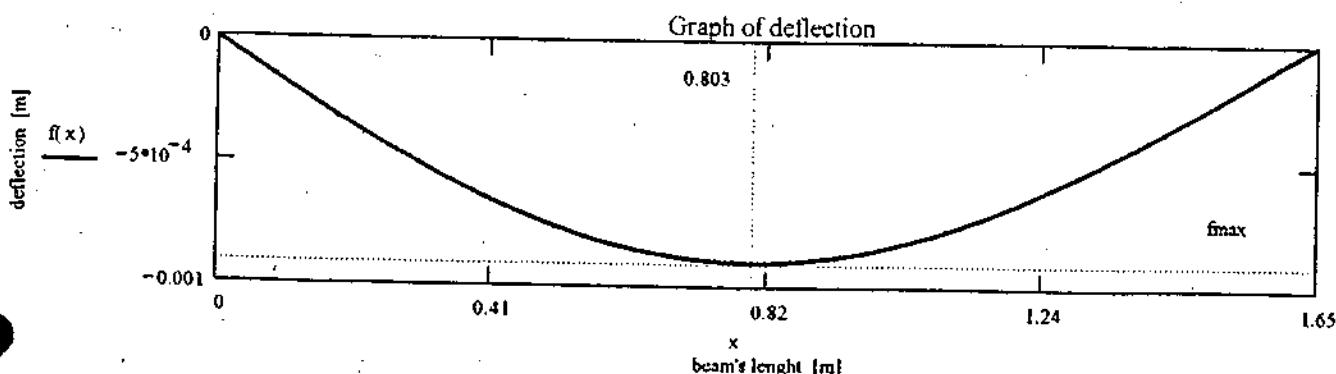
$$\beta(x) := \frac{-F_1 \cdot (L - b) \cdot x}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot b - x^2 - b^2) \cdot (x \leq b) + \frac{-F_1 \cdot b \cdot (L - x)}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot x - x^2 - b^2) \cdot (x > b)$$

$$f(x) := \alpha(x) + \beta(x)$$

$$x_m := 0.803 \text{ m}$$

$$f_{\max} := f(x_m)$$

$$f_{\max} = -0.9 \text{ mm}$$



Beam 3b :

Vertical force on pulley : $F_1 := 0.25 \cdot (Q + F_k) \cdot k$ $F_1 = 6.636 \text{ kN}$

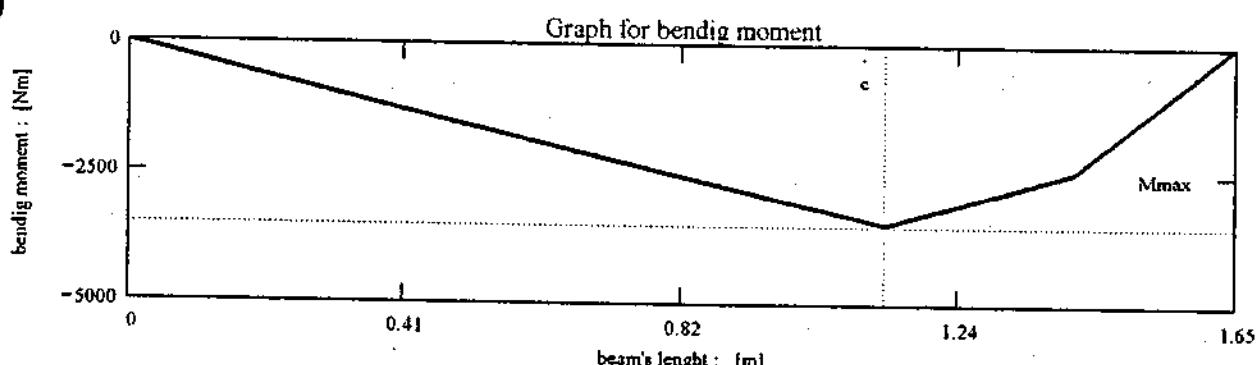
$$\Sigma M=0 : R_a := \frac{F_1 \cdot (L - c) + F_1 \cdot (L - d) + 0.5 \cdot q \cdot L^2 + S_f \cdot L}{L} \quad R_a = 3.570 \text{ kN}$$

$$\Sigma P_y=0 : R_b := F_1 + F_1 + 2 \cdot S_f + q \cdot L - R_a \quad R_b = 10.746 \text{ kN}$$

Bending moment : $M(x) := -R_a \cdot x + F_1 \cdot (x - c) \cdot (x > c) + F_1 \cdot (x - d) \cdot (x > d) + 0.5 \cdot q \cdot x^2 + S_f \cdot x$

$$M(c) = -3.488 \text{ kN} \cdot \text{m} \quad M(d) = -2.460 \text{ kN} \cdot \text{m} \quad M_{\max} := M(c)$$

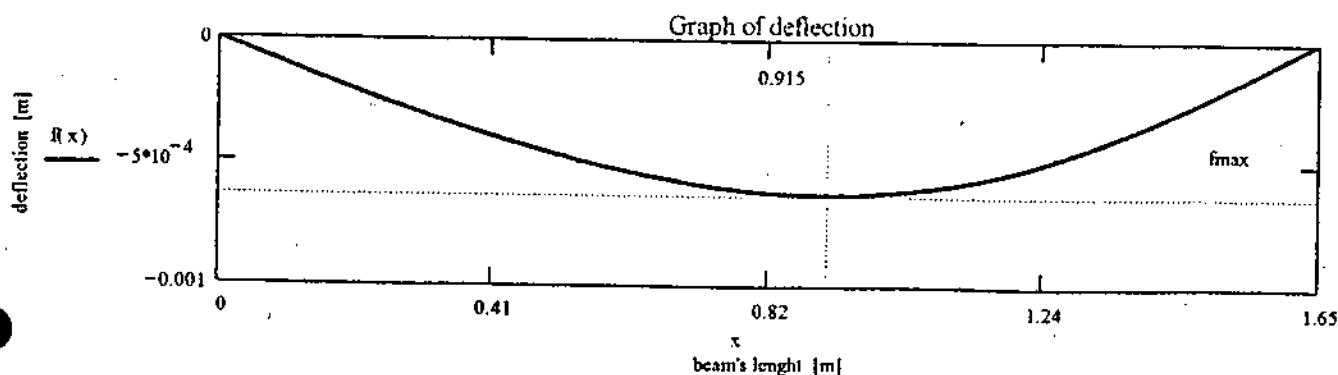
Bending stress : $\sigma_b := \frac{M_{\max}}{W_x} \quad \sigma_b = -40.4 \text{ N} \cdot \text{mm}^{-2}$ **Safety factor** $\mu := \frac{\sigma_z}{|\sigma_b|} - 1 \quad \mu = 3.5$

**Calculation of deflection :**

$$\alpha(x) := \frac{-F_1 \cdot (L - c) \cdot x}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot c - x^2 - c^2) \cdot (x \leq c) + \frac{-F_1 \cdot c \cdot (L - x)}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot x - x^2 - c^2) \cdot (x > c)$$

$$\beta(x) := \frac{-F_1 \cdot (L - d) \cdot x}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot d - x^2 - d^2) \cdot (x \leq d) + \frac{-F_1 \cdot d \cdot (L - x)}{6 \cdot E \cdot J_x \cdot L} \cdot (2 \cdot L \cdot x - x^2 - d^2) \cdot (x > d)$$

$$f(x) := \alpha(x) + \beta(x) \quad x_m := 0.915 \text{ m} \quad f_{\max} := f(x_m) \quad f_{\max} = -0.6 \text{ mm}$$



THYSSEN

THYSSEN AUFZÜGE

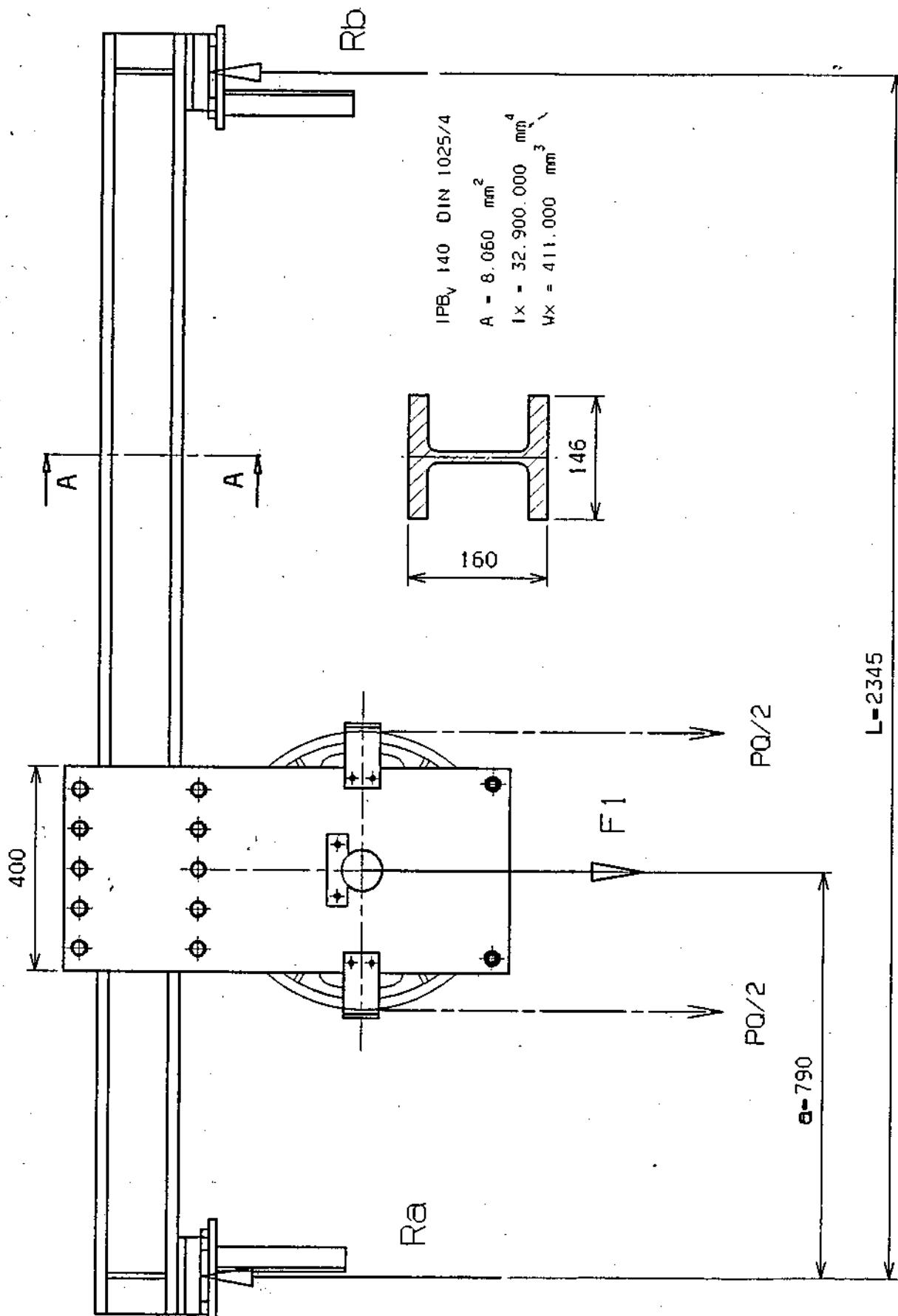
Pulley Support for Car calculation

Name

Raszka

Date

16.10.98



Project .:

Carlton Gardens Lift L5

Plan-No. :

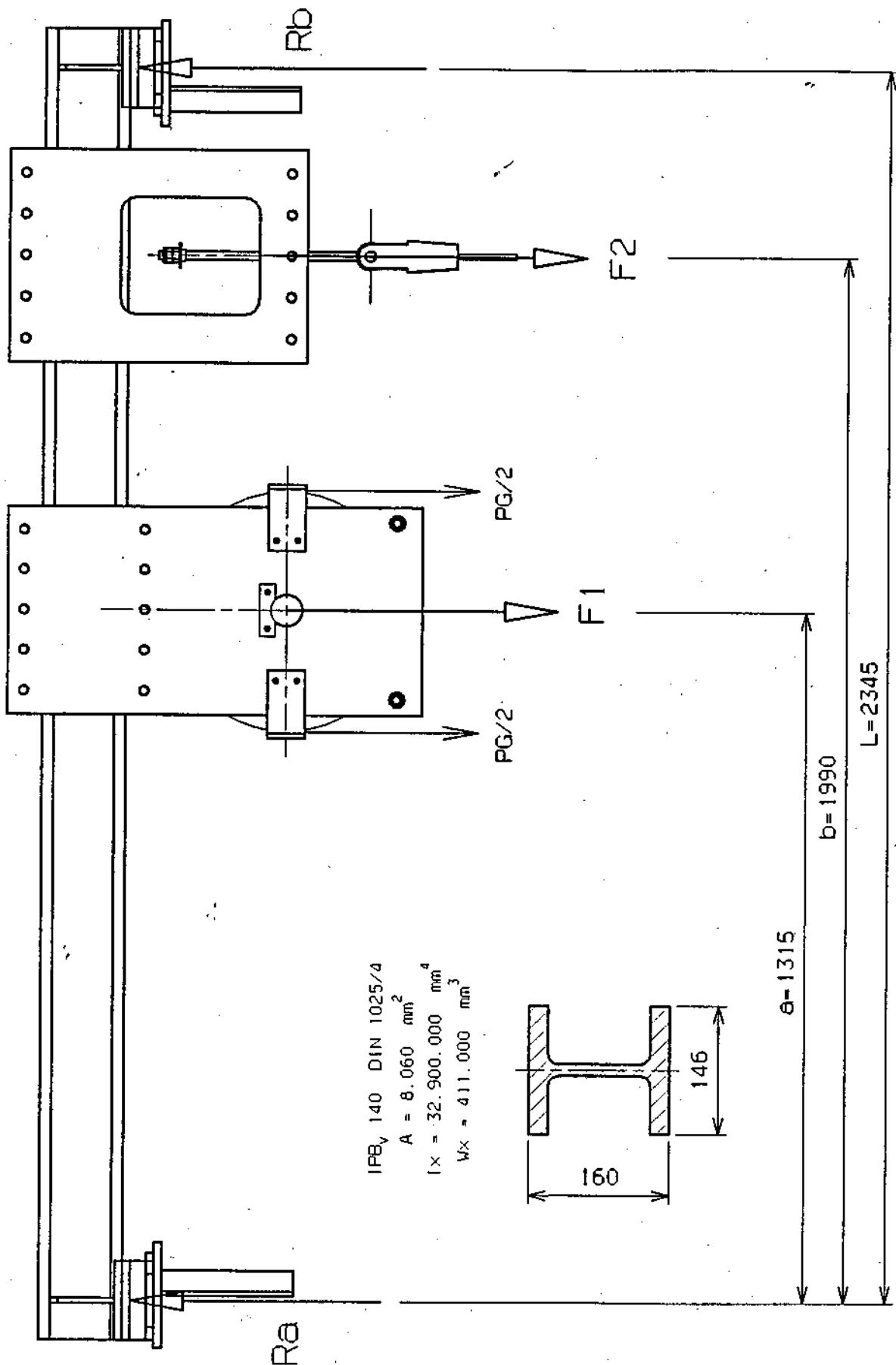
Factory order No.:

29 98 98 123

1

Pulley Support for Counterweight calculation

Name	Ruszka
Date	16.10.98



Project ..:

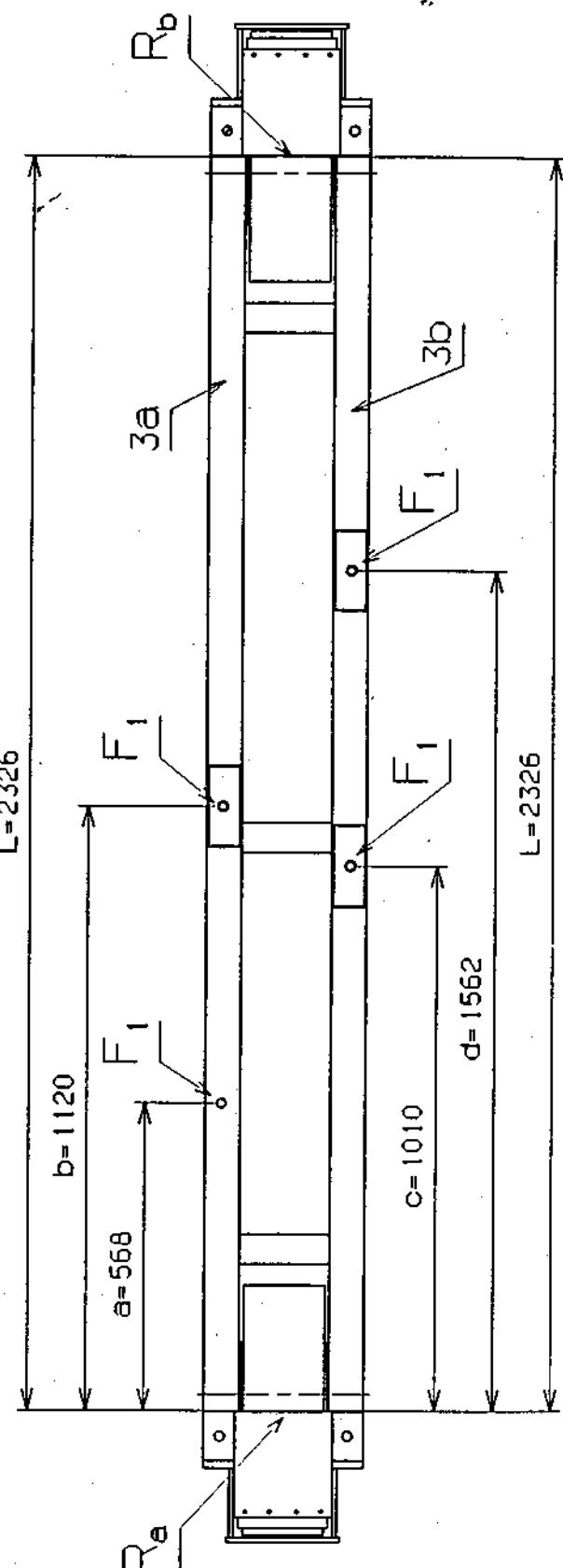
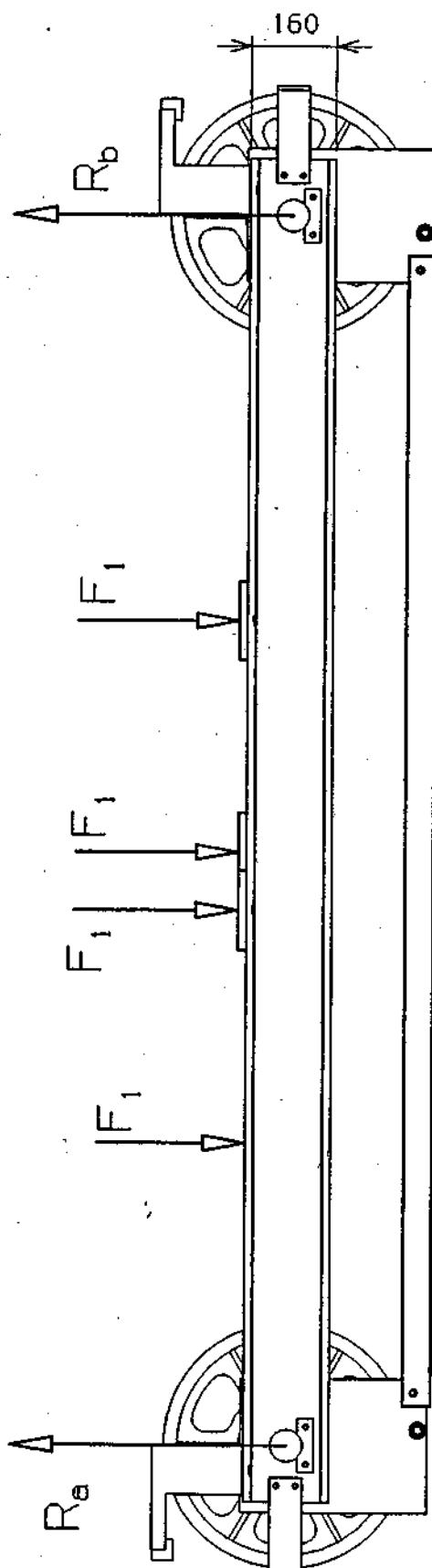
Carlton Gardens Lift L5

Plan-No. :

Factory order No.:

29 98 98 123

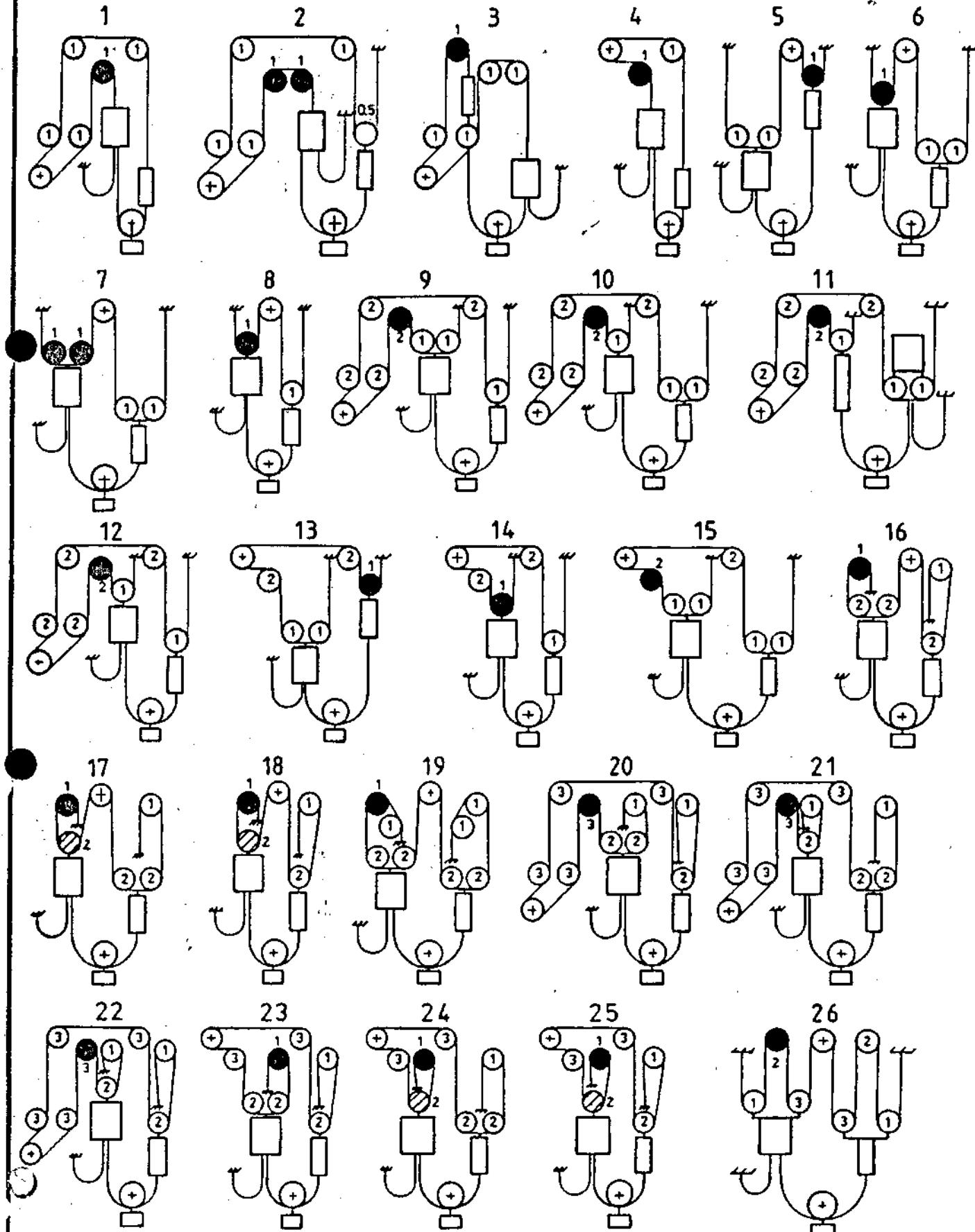
2



Calculation of rope pulley axle

 Standard
 60 720 71 00 0
 Sheet 2

- The axles or rope pulleys with the highest load are indicated by ●.
- Rope pulleys which due to their speed reach the load threshold earlier are indicated by ○.
- The numbers on the rope pulleys indicate the factor by which the rated lift speed is to be multiplied in order to obtain the actual rope pulley speed.



signed:	Hönnige	Date issued	5. 9. 91	24. 7. 95	02.12.96				
appr.:	Schiffner	Name	EAS-N	Sche	Sche				

EC type-examination certificate

Certificate no.: APV 001 / 002 / 003

Notified body: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München
(Identification number 0635)

**Applicant/
Certificate holder:** Thyssen Aufzugswerke GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a. d. F.

Date of submission: 1998-06-12

Manufacturer: Thyssen Aufzugswerke GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a. d. F.

Product, type: Energy dissipation hydraulic buffers,
type O1 A / O1 B / O1 C

Test Laboratory: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zentralabteilung Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München

**Date and
number of test report:** 1998-09-10
001 / 002 / 003

EC-directive: 95/16/EC

Statement: The safety component conforms to the directive's safety requirements for the respective scope of application stated on page 1 of the annex to this EC type-examination certificate.

Certificate date: 1998-09-10

Zertifizierungsstelle
für Aufzüge und Sicherheitsbauteile


Peter Tkalec



Annex to the EC type-examination certificate No. APV 001 / 002 / 003.

1. Scope of Application

1.1 Permissible total mass of car and rated load in using one buffer

Type	Type examination sign	Total mass (kg) min. max.
O1 A	APV 001	430 - 1370
O1 B	APV 002	620 - 2000
O1 C	APV 003	970 - 3020

If several buffers (of the same type) are used, the permissible masses are multiplied accordingly.

1.2 Permissible maximum impact speed

**1.2.1 Maximum impact speed
for a (maximum) buffer stroke of 175 mm (standard type)** 1,84 m/s

**1.2.2 Maximum impact speed
for a (minimum, shortened) buffer stroke of 80 mm (special type)** 1,24 m/s

For values lying between the maximum and the minimum buffer stroke of 80 - 175 mm, the permissible maximum impact speed can be calculated as follows:

$$v = \sqrt{2 \times g_n \times h}$$

v = maximum permissible impact speed (m/s)

h = buffer stroke (m)

g_n = standard acceleration of freefall (9,81 m/s²)

1.3 Properties of the fluid to be used

The buffer may only be filled with a viscosity of 32 mm²/s at 40°C.

2. Conditions

2.1 The lift may only be operated if the buffer is in ready position. The ready position must be checked by an electrical safety device.

2.2 The fluid level must be easy to check (e.g. by oil dipper stick).

2.3 In the case of a reduced buffer stroke (< 175 mm), the buffer label must – in addition to the data required by the standard – include the following information:

Note revealing that the buffer is not a standard-type buffer but a buffer with shorter buffer stroke (addition to type designation „SA1“).

- Given maximum buffer stroke
- Maximum impact speed for given buffer stroke

The masses and type examination signs listed under point 1.1 shall also apply to buffers with shorter than standard buffer strokes.

3. Remarks

3.1 In order to provide identification and information about the basic design and its functioning, drawing No. 60 540 76 00 0 dated 09. September 1998 is to be enclosed with the EC type-examination certificate and the annex thereto. The mounting and installation conditions are presented in separate documents.

3.2 The EC type-examination certificate may only be used in connection with the pertinent annex.

Attestation d'examen CE de type

No. d'attestation: APV 001 / 002 / 003

Organisme agréé: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München
(Numéro d'identification 0635)

Demandeur/
Détenteur de l'attestation: Thyssen Aufzugswerke GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a. d. F.

Présenté à l'examen: 1998-06-12

Fabricant: Thyssen Aufzugswerke GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a. d. F.

Produit, type: Amortisseurs hydraulique à dissipation d'énergie
type O1 A / O1 B / O1 C

Laboratoire d'essais: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zentralabteilung Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München

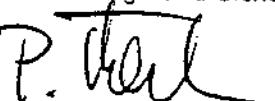
Date et
numéro du rapport d'essai: 1998-09-10
001 / 002 / 003

Directive de la Communauté
Européenne: 95/16/CE

Résultat: L'élément de sécurité satisfait aux exigences de sécurité de la directive pour le champ d'application indiqué dans l'annexe, page 1, à cette attestation d'examen CE de type.

Date de l'attestation: 1998-09-10

Zertifizierungsstelle
für Aufzüge und Sicherheitsbauteile



Peter Tkalec



Registriernummer: ZLS-ZE-126/97

Annexe à l'attestation d'examen CE de type numéro APV 001 / 002 / 003

1. Champ d'application

1.1 Masse globale autorisée de la cabine et de la charge nominale de l'utilisation d'un amortisseur

Type	Signe d'examen de type	Masse globale (kg) min. max.
O1 A	APV 001	430 - 1370
O1 B	APV 002	620 - 2000
O1 C	APV 003	970 - 3020

En cas de groupement multiple (d'un modèle) les masses autorisées sont multipliées en conséquence

1.2 Vitesse maximale de choc autorisées

- | | |
|---|----------|
| 1.2.1 Vitesse maximale de choc
avec une course d'amortisseur (maximale) de 175 mm (type standard) | 1,84 m/s |
| 1.2.2 Vitesse maximale de choc
avec une course d'amortisseur (minimale, raccourcie) de 80 mm (construction particulière) | 1,24 m/s |

Pour des valeurs intermédiaires des courses d'amortisseur de 80 - 175 mm, la vitesse maximale de choc autorisée peut être calculée comme suit:

$$v = \sqrt{2 \times g_n \times h}$$

v = vitesse maximale de choc autorisée (m/s)

h = course d'amortisseur (m)

g_n = accélération de la pesanteur normale (9,81 m/s²)

1.3 Caractéristiques du liquide à utiliser

Pour remplir l'amortisseur, il ne faut utiliser que de l'huile avec une viscosité de 32 mm²/s à 40°.

2. Conditions

2.1 L'ascenseur ne doit être utilisé que lorsque l'amortisseur se trouve en position d'attente. Le système de contrôle pour la position d'attente doit être un dispositif de protection électrique.

2.2 Le contrôle du niveau de liquide doit être facilement réalisable (par exemple par une jauge de niveau d'huile).

2.3 En cas de course d'amortisseur raccourcie (< 175 mm), la présence du marquage suivant sur la plaque qui se trouve sur l'amortisseur est obligatoire, en plus des indications exigées par la norme:

- Indication qui fait apparaître qu'il ne s'agit pas du type standard, mais d'un amortisseur avec une course d'amortisseur raccourcie (à ajouter à la spécification „SA1“)
- Course d'amortisseur maximale donnée
- Vitesse maximale de choc pour une course d'amortisseur donnée

Les masses et le signe d'examen de type indiqués au point 1.1 restent également valables pour les modèles avec une course d'amortisseur raccourcie.

3. Indications

3.1 Pour l'identification ainsi que l'information sur le principe de construction et de fonctionnement, il faut joindre à l'attestation d'examen CE de type et son annexe le dessin numéro 60 540 76 00 0 en date du 09 septembre 1998. Les conditions de montage et d'installation sont présentées dans des documents séparés.

3.2 L'attestation d'examen CE de type ne doit être utilisée qu'avec l'annexe correspondante.



THYSSEN AUFZUGSWERKE GMBH

EG - Konformitätserklärung nach Richtlinie 95/16/EG, Anhang II, A

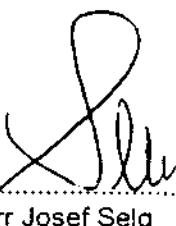
Hiermit erklären wir, daß das Sicherheitsbauteil

Art : Energieverzehrende Hydraulikpuffer
Typ : O1 A / O1 B / O1 C
Baujahr : siehe Typenschild am Bauteil
Hersteller von : Thyssen Aufzugswerke GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a.d.F.

in der gelieferten Ausführung dem geprüften Sicherheitsbauteil und der
Richtlinie 95/16/EG - Aufzugsrichtlinie - entspricht.

Angewendete harmonisierte Norm : EN 81-98
Bescheinigungs-Nr. : APV 001 / 002 / 003
Gemeidete Stelle : TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199
D-80686 München
(Kennnummer 0635)

Thyssen Aufzugswerke GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a.d.F.



.....
Herr Josef Selg
(Geschäftsführer Technik)



Calculation Traction sheave shaft Diverter axle

Selection of Car and Counterweight Buffer

Norm
60 300 05 00 0
60 720 71 00 0
60 210 11 00 0

Order Data

Date 20.04.1999
 Factory No. 29 98 98 122
 Job name CARLTON GARDENS, TEL
 Prepared by Wünsche
 Modular lift type SU51A00
 Suspension 2:1
 Drive W149B

Technical Data

Rated load	$Q = 630$	kg
Maximum car weight	$P_{max} = 1625$	kg
Balance factor of rated load	$q\% = 50$	%
Maximum counterweight	$M_{cwtmax} = 1952$	kg
Travelling cable force	$F_{Trav} = 228$	N
Travelling cable weight per meter	$S_{Trav} = 1.5$	kg/m
Force of suspension ropes	$F_{sr} = 410$	N
Force of compensating ropes/chains	$F_{cr} = 0$	N
Force of tension compensator	$F_{comp} = 0$	N
Diameter of traction sheave	$D_t = 640$	mm
Weight of traction sheave	$T' = 65$	kg
Angle of wrap	$\text{Alpha} = 195$	°
Travel height	$H = 30.995$	m
Operating speed	$v_n = 1$	m/s
Number of ropes	$n_s = 5$	
Rope construction	= Drako 250T	
Diameter of ropes	$d_r = 8$	mm
Bearing of pulleys	= Rolling bearing	

Traction sheave shaft

Diameter of traction sheave shaft	$D_{welle} = 85$	mm
Traction sheave shaft section modulus	$W_{welle} = 60292$	mm ³
Static sheave shaft load	$P_w = 21612$	N
Real bending moment	$M_b = 2810$	Nm
Real torsion moment	$M_d = 544$	Nm
Real bending stress	$\text{Sig}_b = 46.6$	N/mm ²
Real torsional shearing stress	$\text{Tau} = 4.5$	N/mm ²
Real reference stress	$\text{Sig}_v = 47.1$	N/mm ²
Admissible reference stress	$\text{Sig}_v-zul = 85$	N/mm ²
Material of traction sheave shaft	= C 60	

Diverter axle

The existing axial load is calculated with formula 9

Diameter diverter pulley	$D_{ro} = 360$	mm
Diameter od diverter pulley shaft	$D_{achse} = 50$	mm
Section modulus	$W_{achse} = 12300$	mm
Shaft bending force	$R_{vorh} = 22350$	N
Admissible shaft bending force	$R_{zul} = 105000$	N
Material of diverter pulley axis	= C 45	

Selection of Car and Counterweight Buffer

Kind of car buffer	= Oil buffer
Type of car buffer	= O1 A
Number of car buffers	= 2
Kind of counterweight buffer	= Oil buffer
Type of counterweight buffer	= O1 C
Number of counterweight buffers	= 1

Order Data

Date 20.04.1999
 Factory No. 29 98 98 122
 Job name CARLTON GARDENS, TEL
 Prepared by Wünsche
 Modular lift type SU51A00
 Suspension 2:1

Technical Data

Rated load Q = 630 kg
 Maximum car weight Pmax = 1625 kg
 Minimum car weight Pmin = 1480 kg
 Operating speed vn = 1 m/s
 Travel height H = 30.995 m
 Travelling cable weight per meter STrav = 1.5 kg/m
 Additional load for loading Qadd = 0 kg
 Maximum counterweight (Pmax + 0.5 * Q + MTrav/2) Mcwtmax = 1952 kg
 Minimum counterweight (Pmin + 0.5 * Q + MTrav/2) Mcwtmin = 1807 kg

Rope Data

Number of ropes ns = 5
 Rope construction Drako 250T
 Diameter of ropes dr = 8 mm
 Minimum breaking load per rope BKmin = 37200 N
 Number compensating ropes/chains nc = 0
 Tensioning weight Mcomp = 0 kg

Traction Sheave Data

Diameter of traction sheave Dt = 640 mm
 Angle of wrap α = 195 °
 Angle of the undercut of bearing groove β = 70 °
 Hardened grooves = Yes

Pulley Data**Rope pulleys in general**

Number of pulleys Np = 7
 Average diameter of rope pulleys Dp = 360 mm

Rope pulleys between traction sheave and car side

Number of diverter pulleys with simple bends NPDScar = 1
 Number of diverter pulleys with reversed bends NPDRcar = 1
 Additional pulley on car for 2:1 or 3:1 suspension NP21car = 1
 Reduced mass moment of inertia of reeving pulleys mPcar = 15.43 kgm²/m²
 Reduced mass moment of inertia of diverter pulleys mPDcar = 15.43 kgm²/m²
 Reduced mass moment of inertia of counter pulley mPDWcar = 0 kgm²/m²

Rope pulleys between traction sheave and counterweight side

Number of diverter pulleys with simple bends NPDScwt = 3
 Number of diverter pulleys with reversed bends NPDRcwt = 0
 Additional pulley on car for 2:1 or 3:1 suspension NP21cwt = 0
 Reduced mass moment of inertia of reeving pulleys mPcwt = 15.43 kgm²/m²
 Reduced mass moment of inertia of diverter pulleys mPDcwt = 15.43 kgm²/m²
 Reduced mass moment of inertia of counter pulley mPDWcwt = 0 kgm²/m²

Order Data

Date 20.04.1999
 Factory No. 29 98 98 122
 Job name CARLTON GARDENS, TEL
 Prepared by Wünsche
 Modular lift type SU51A00
 Suspension 2:1

Proof Rope Traction
Car loading condition

Required traction $T_1/T_2 = 1.3211$
 Actual traction $e^{f\alpha} = 1.7899$

Emergency braking condition

Required traction $T_1/T_2 = 1.4689$
 Actual traction $e^{f\alpha} = 1.6244$

Car stalled condition

Admissible traction $T_1/T_2 = 100$
 Actual traction $e^{f\alpha} = 3.2037$

Proof Rope Safety

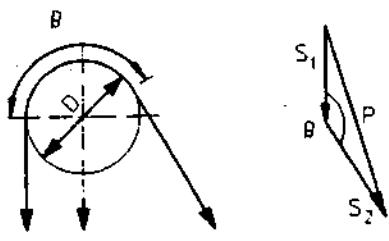
Equivalent number of pulleys $N_{equiv} = 102$
 Actual rope safety $S_{ist} = 16.21$

Minimum rope safety $SF_{min} = 12$
 Limit value rope lifetime $SF = 15.04$

Minimum Diameter of Pulley

Minimum diameter of pulley	$D_{min} = 320$	mm
Diameter of traction sheave	$D_t = 640$	mm
Diameter of smallest pulley	$D_{pmin} = 360$	mm

Calculation



$$S_1 = S_1' + T$$

Suspension	Rope force [N]	[N]	Torque [Nm]
1:1	$S_1 = F + Q + S_u + H_k + T$	$S_2 = G + s$	$M_d = X \times Q \times \frac{D}{2}$
2:1	$S_1 = \frac{F + Q + S_u + H_k}{2} + T$	$S_2 = \frac{G}{2} + s$	$M_d = X \times Q \times \frac{D}{4}$
3:1	$S_1 = \frac{F + Q + S_u + H_k}{3} + T$	$S_2 = \frac{G}{3} + s$	$M_d = X \times Q \times \frac{D}{6}$
4:1	$S_1 = \frac{F + Q + S_u + H_k}{4} + T$	$S_2 = \frac{G}{4} + s$	$M_d = X \times Q \times \frac{D}{8}$

Note: where the compensating ropes are tensioned, the force of tensioning weight s_p is to be taken into account.

Counterweight compensation (40...50%) Q $\longrightarrow X = 0,55$

Bending stress $\sigma_b = \frac{M_b}{W_b}$

Maximum shaft load $P = \sqrt{S_1^2 + S_2^2 - 2 \times S_1 \times S_2 \times \cos \beta}$

Torsional shearing stress $\tau = \frac{M_d}{2 \times W_b}$

Bending moment

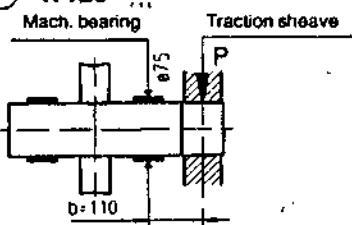
(1) (2) (3) (4) (5) (6) (9) (12) $M_d = P \times b$

Reference stress $\sigma_v = \sqrt{\sigma_b^2 + 2,5 \times \tau^2} \leq \sigma_{v,zw}$

(7) (8) (10) (11) $M_d = P \times b \times \frac{a + \frac{C}{2}}{L}$

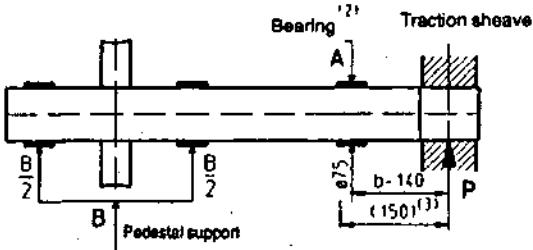
Machine

(1) W125

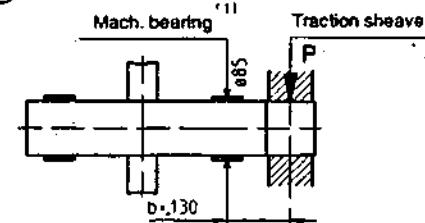


Material	C 60
σ_v permissible [N/mm ²]	① 85 ② 80

(2) W125 - SA9

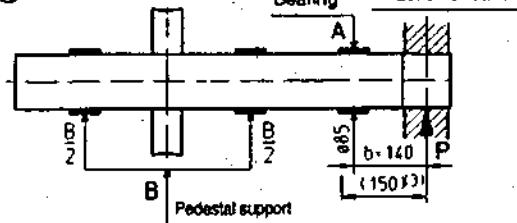


(3) W149B

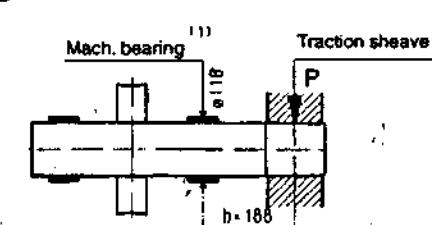


Material	C 60
σ_v permissible [N/mm ²]	③ 85 ④ 80

(4) W149B - SA9

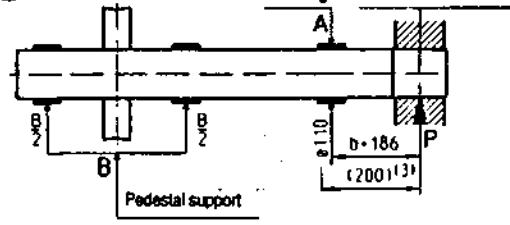


(5) W191



Material	C 60
σ_v permissible [N/mm ²]	③ 85 ④ 80

(6) W191 - SA9



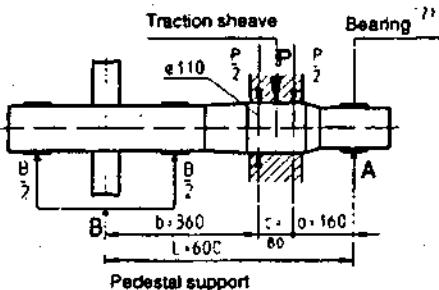
Note: for calculation purposes a program is available

- (1) Plain bearing
- (2) Rolling bearing
- (3) Pedestal bearing casing

signed: Scho.	Date issued	2. 11. 92	Jan. 95					
appr.: Scholz	Name	EAS-N	Sche					

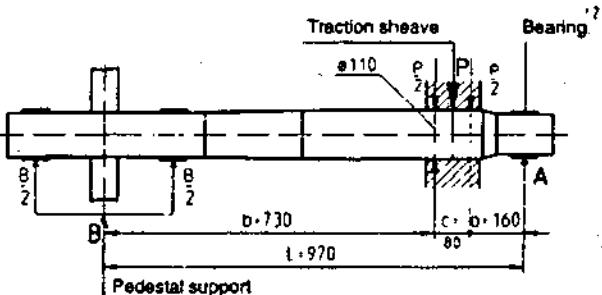
⑦ W263B
W263

Material	C 60
σ_v permissible [N/mm ²]	80



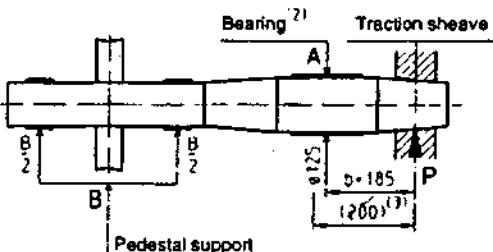
⑧ W263B – SA4
W263 – SA4

Material	C 60
σ_v permissible [N/mm ²]	80



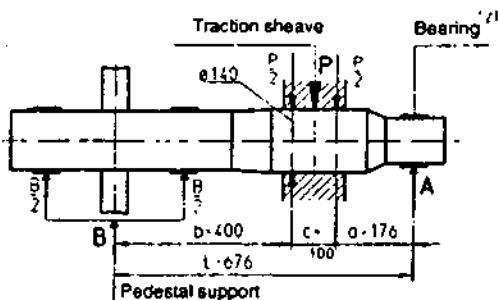
⑨ W263B – SA9

Material	C 60
σ_v permissible [N/mm ²]	75



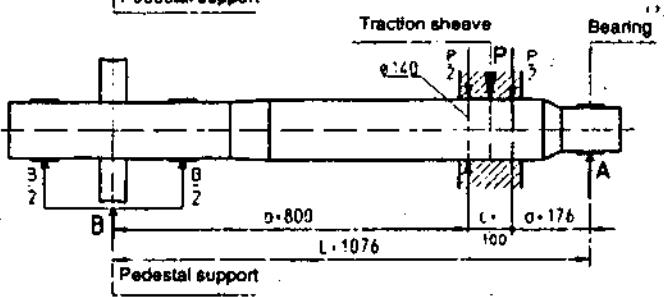
⑩ W332B
W332

Material	C 60
σ_v permissible [N/mm ²]	80



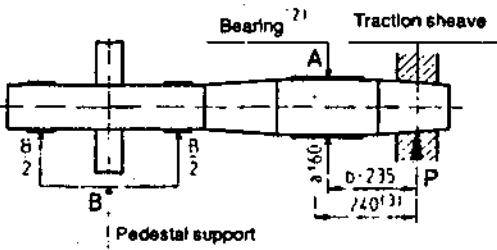
⑪ W332B – SA4
W332 – SA4

Material	C 60
σ_v permissible [N/mm ²]	80



⑫ W332B – SA9

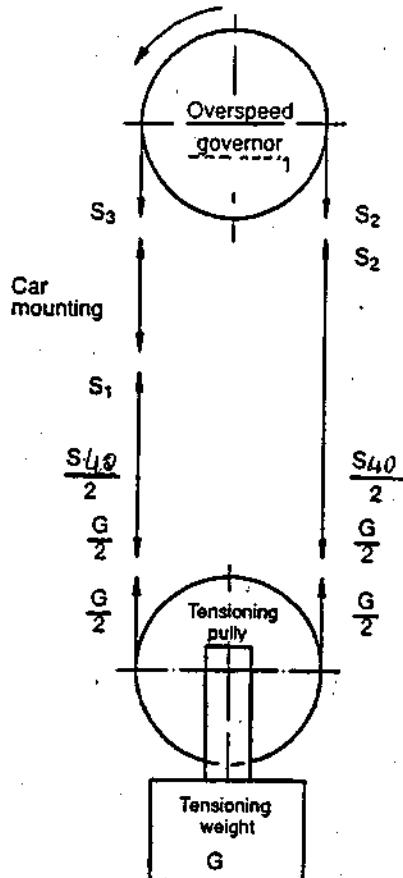
Material	C 60
σ_v permissible [N/mm ²]	75



Note: for calculation purposes a program is available

(2) Roller bearing
(3) Pedestal bearing casing

signed:	Scho.	Date issued	2. 11. 92	Jan. 95							
appr.:	Scholtz	Name	EAS-N	Sche							



System data:		[N]	883 (90 kg) ¹⁾
Tensioning weight G _{max}	Travelling height FH		
		40	
Rope data:			
Nominal diameter	[mm]	6.5	8.0
Type		6 * 19 Warrington with felt lining	8 * 19 Warrington with felt lining
Rope weight force	[N/m]	1.52	2.16
Calculated shearing force	[kN]	26.7	36.7
Minimum shearing force	[kN]	23.5	31.6
Calculation data:			
S ₁₀₀ rope weight for FH = 40 m	[N]	125	605
S ₁ a = g	[N]	461	1046
a = 0		398	744
S ₂ a = g	[N]	335	441
a = 0		398	744
S ₃ a = g	[N]	2104	1750
a = 0		2500	2951
v EN 81-1/2:98		9,4	12,4
			10,7

Calculation equations:

$$\text{Rope force } S_1 = \frac{G}{2} + \frac{S_{40}}{2} \left(1 + \frac{a}{g} \right) \quad [\text{N}]$$

$$\text{Rope force } S_2 = \frac{G}{2} + \frac{S_{40}}{2} \left(1 - \frac{a}{g} \right) \quad [\text{N}]$$

$$\text{Rope force } S_3 = S_2 \cdot e^{f(\mu)\beta} \quad [\text{N}]$$

$$f(\mu) = \frac{\mu_0}{\sin(\gamma/2)} \quad ; \quad \beta = \pi \triangleq 180^\circ \quad ; \quad \text{V-groove with } \gamma = 40^\circ \text{ (hardened)}$$

$$\mu_0 = 0.20 \text{ (rope and groove as new)}$$

$$\text{Safety } v \text{ EN 81} = \frac{\text{minimum shearing force}}{\text{greatest rope force}}$$

$$\text{Minimum safety (EN 81)} = 8$$

1) standardized tensioning weights:

68 kg – Steel
68 kg – Gussolith

Manuf. no.

PFEIFER DRAKO

DRAHTSEILEREI
GUSTAV KOCKS GMBH & CO

Drahtseilerei Gustav Kocks GmbH & Co. · Postfach 10 04 51 · D-45404 Mülheim an der Ruhr

Verwaltung: Mühlenberg 20
Werk: Tunnelstraße 38
D-45479 Mülheim an der Ruhr
Telefon: (02 08) 4 29 01-0
Telefax: (02 08) 4 29 01 43
Internet: <http://www.drako.de>

Werksbescheinigung 2.1 nach EN 10204

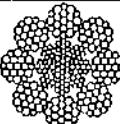
Test certificate 2.1 according to EN 10204

Certificat 2.1 selon EN 10204

DRAKO Spezial-Aufzugseile

DRAKO Special Elevator Ropes

DRAKO Câbles d'ascenseur spéciaux

Auftrags-Nr./Order/commande:														
Tragselle/Hoist ropes/Câbles de suspension:														
Seilnenn-Ø: Nominal rope diameter Diamètre nominal du câble		6,5 mm	8 mm	10 mm	11 mm	12 mm	13 mm	16 mm						
Verwendetes Seil: Used rope Câble utilisé														
	DRAKO 250 T mit Drahtseilseile integrated steel core avec âme centrale métallique	Rechnerische Bruchkraft F_b : Nominal breaking load charge de rupture nominale Mindestbruchkraft F_{min} : Minimum breaking load/ charge de rupture minimale Längengewicht: Weight/poids	47,4 kN 37,2 kN 0,27 kg/m	75,8 kN 59,5 kN 0,42 kg/m	90,0 kN 70,6 kN 0,51 kg/m	105,7 kN 83,0 kN 0,61 kg/m	124,0 kN 97,0 kN 0,71 kg/m	188,0 kN 148,0 kN 1,08 kg/m						
	6 x 19 Warrington + Fasereinlage Fibre core Âme textile	Rechnerische Bruchkraft F_b : Nominal breaking load charge de rupture nominale Mindestbruchkraft F_{min} : Minimum breaking load/ charge de rupture minimale Längengewicht: Weight/poids	30,1 kN 26,5 kN 0,154 kg/m											
Drahtnennfestigkeit: Nominal tensile strength/résistance nominale des fils		1770 N/mm²	1570 N/mm²											
Oberfläche der Drähte: Surface of wires/surface des fils		blank bright/clair												
Begrenzungsseil/Governor rope/Câble limiteur: Seilnenn-Ø: 6,5 mm, techn. Daten wie Tragselle mit 6,5 mm Ø Rope nominal dia: 6,5 mm, technical data see hoist ropes with 6,5 mm dia. Dia nominal du câble: 6,5 mm caractéristiques techniques voir câbles de 6,5 mm dia														

Die Drahtseile entsprechen den technischen Lieferbedingungen DIN 2078 und 3051.

The wire ropes are in accordance with the technical directions of DIN 2078 and 3051.

Les câbles en acier correspondent aux spécifications techniques DIN 2078 et DIN 3051.

Normangaben beziehen sich auf die jeweils letzte gültige Fassung.

Quoted standards relate to the respective latest valid version.

Spécifications mentionnées correspondent aux dernières éditions.

Mülheim an der Ruhr, den 15.03.1999

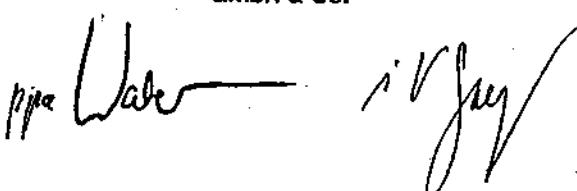
DRAHTSEILEREI GUSTAV KOCKS

GmbH & Co.

Fabrik-Nr.:

Maker's-No.:

N°d'usine:



EC type-examination certificate

Certificate no.: AFV 213/2

Notified body: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München
(Kennnummer 0635)

**Applicant/
Certificate holder:** Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a. d. F.

Date of submission: 1997-12-11

Manufacturer: Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a. d. F.

Product, type: Progressive safety gear, type 6071/1

Test Laboratory: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zentralabteilung Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München

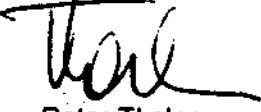
**Date and
number of test report:** 1998-03-31
213/2/F

EC-directive: 95/16/EC

Statement: The safety component conforms to the directive's safety requirements for the respective scope of application stated on page 1 of the annex to this EC type-examination certificate.

Certificate date: 1998-03-31

Zertifizierungsstelle
für Aufzüge und Sicherheitsbauteile


Peter Tkalec



Annex to the EC type-examination certificate No. AFV 213/2

1. Scope of Application

- 1.1 Permissible total mass of car and rated load or counterweight in using one pair of safety gears, depends on maximum tripping speed of the overspeed governor, manufacture and condition of the guide rail running surface

Max. tripping speed (m/s)	Manufactured by and condition	Total mass (kg) min. max.
3,22	drawn oiled*	1020 - 2860
3,22	machined oiled*	1588 - 5420
5,06	machined dry	1350 - 3740

*Mineral oils without additives (e. g. lubricating oils C according to DIN 51517 part 1)

- 1.2 Maximum tripping speed of overspeed governor and maximum rated speed

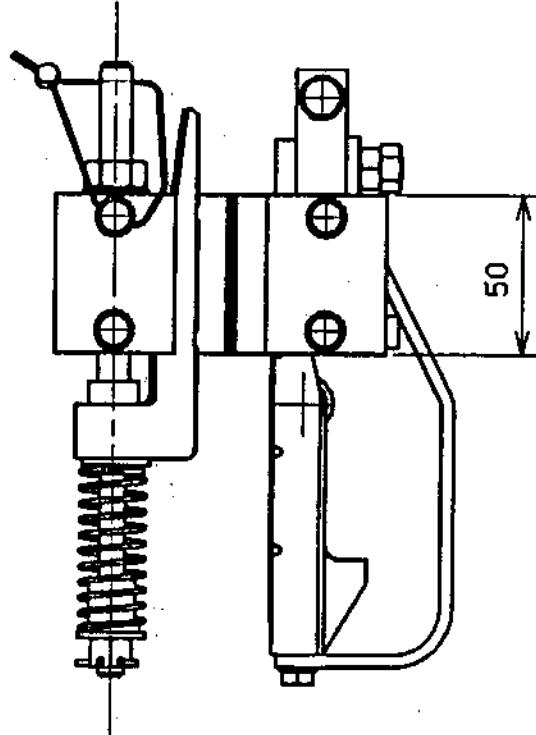
Maximum tripping speed (m/s)	3,22	5,06
Maximum rated speed (m/s)	2,80	4,40

- 1.3 Guide rails to be used

- 1.3.3 Minimum running surface width 28 mm
- 1.3.4 Blade width 9 - 16 mm

2. Remarks

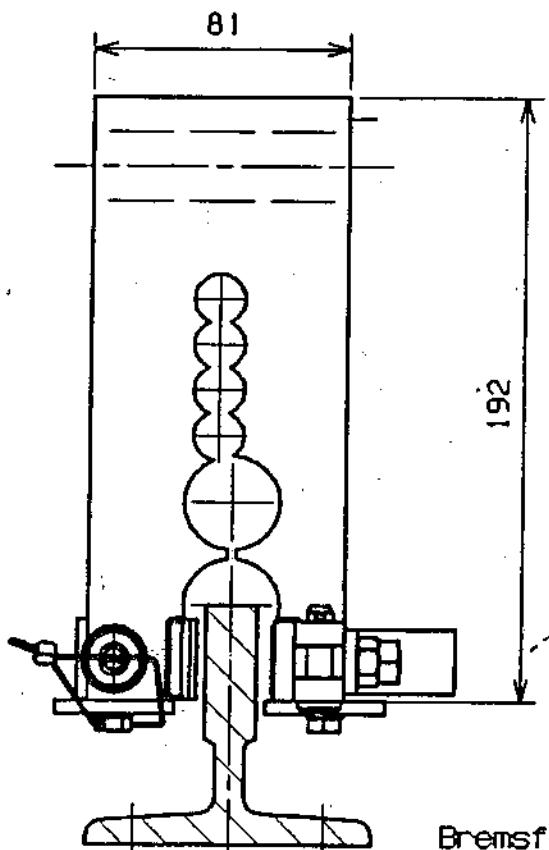
- 2.1 Pursuant to the standard DIN EN 81, annex F, paragraph 3, section 3.4. a) 2) the total mass determined for adjustment purposes may be 7,5 % higher or lower.
- 2.2 In order to provide identification and information about the basic design and its functioning, drawing No. 60 710 75 00 0 dated 13 January 1998 is to be enclosed with the EC type-examination certificate and the annex thereto. The environmental conditions and connection requirements of the safety gear are presented or described in separate documents (e. g. installation instructions).
- 2.3 The EC type-examination certificate may only be used in connection with the pertinent annex.



31. MRZ. 1998

- GEPRÜFT -

TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Region Bayern
Zentralabteilung Aufzüge und Sicherheitsbauteile
Der Sachverständige
Römer



Bremsfängvorrichtung L - Ausführung
Rechtsausführung spiegelbildlich
Progressive safety gear l.h. version
R.h. version reflected

Werkstoff / material	Datum/date	Name/nane	Schutzvermerk nach DIN 34 beachten / copyright reserved	Maßstab/scale
Bearb.	13.01.98	Friedl	Zeilch.Nr. drawing no.	1:2.5
Gepr.	13.01.98	Scholz		
None			60 710 75 00 0	
Kennwort project name	*		Benennung title	
Febr. Nr. maker's no.	*		Bremsfängvorrichtung Typ 6071/1 Progressive safety gear	
Änderung revision			Dateline filenote	Blatt page ... von of ...
			- *-*	
			Ers. r.	Ers. d.
THYSSEN				
THYSSEN AUFZÜGE				



THYSSEN AUFZÜGE GmbH

EG - Konformitätserklärung nach Richtlinie 95/16/EG, Anhang II, A

Hiermit erklären wir, daß das Sicherheitsbauteil

Art : Bremsfangvorrichtung
Typ : 6071/1
Baujahr : siehe Typenschild am Bauteil
Hergestellt von : Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a.d.F.

in der gelieferten Ausführung dem geprüften Sicherheitsbauteil und der
Richtlinie 95/16/EG - Aufzugsrichtlinie - entspricht.

Angewendete harmonisierte Norm : EN 81
Bescheinigungs-Nr. : AFV 213/2
Gemeldete Stelle : TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zentralabteilung Aufzüge und Sicherheitsbauteile
Westendstraße 199
D-80686 München
(Kennnummer 0635)

Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a.d.F.

Herr Josef Selg
(Konstruktionsleiter)

Herr Rolf Eisenbeis
(Produktionsleiter)

EC type-examination certificate

Certificate no.:	AGB 055/1	
Notified body:	TÜV Bau- und Betriebstechnik GmbH Unternehmensgruppe TÜV Süddeutschland Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile Westendstraße 199, D-80686 München (Kennnummer 0635)	
Applicant/ Certificate holder:	Thyssen Aufzüge GmbH Bernhäuser Str. 45 73765 Neuhausen a. d. F.	
Date of submission:	1998-01-13	
Manufacturer:	Thyssen Aufzüge GmbH Bernhäuser Str. 45 D-73765 Neuhausen a. d. F.	Thyssen Boetticher S.A. Cifuentes s/n E-28021 Madrid
Product, type:	Overspeed governor, type 6023	
Test Laboratory:	TÜV Bau- und Betriebstechnik GmbH Unternehmensgruppe TÜV Süddeutschland Zentralabteilung Aufzüge und Sicherheitsbauteile Westendstraße 199, D-80686 München	
Date and number of test report:	1998-03-31 055/1	
EC-directive:	95/16/EC	
Statement:	The safety component conforms to the directive's safety requirements for the respective scope of application stated on page 1 of the annex to this EC type-examination certificate.	
Certificate date:	1998-03-31	

Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile

Peter Tkatec



Annex to the type-examination certificate No. AGB 055/1

1. Scope of Application

- 1.1 Permissible tripping speed depending on the diameter of the traction groove and adjustment device (rocker with weight or spring)

Diameter of the traction groove (mm)	Permissible tripping speed (m/s)	
	rocker with weight	rocker with spring
300	0.60 - 0.70	0.70 - 3.13
250	0.50 - 0.58	0.58 - 2.60
212*	0.42 - 0.49	0.49 - 2.21

*also possible in the form of a second and/or additional traction groove on the governor wheel with a traction groove diameter of 300 mm.

- 1.2 Permissible rated speed $\leq 2,72 \text{ m/s}$

- 1.3 Driving rope

- 1.3.1 Type Round strand rope made of steel wire

- 1.3.2 Rope diameter depending on the diameter of the traction groove

Diameter of the traction groove (mm)	300	250	212
Rope diameter (mm)	6 - 8	6 - 8	6 - 7

- 1.4 Minimum tensioning force (force produced by the tensioning weight, acting on the axis of rope deviation pulley)

- 1.4.1 Tensioning force determined in the test (new rope and new groove) 275 N

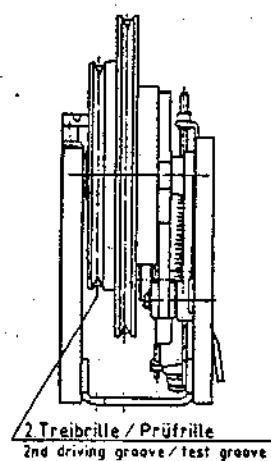
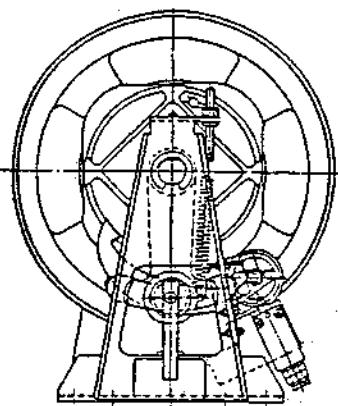
- 1.4.2 Tensioning force determined by calculation (coefficient of friction $\mu = 0.09$) 466 N

- 1.5 Tensile force in downwards direction at minimum tensioning force 300 N

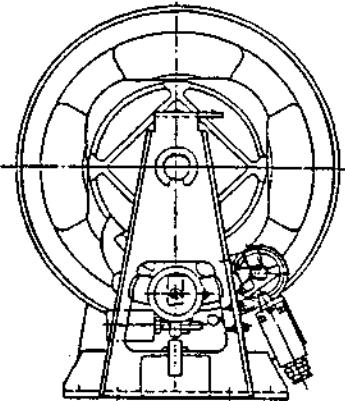
2. Remarks

- 2.1 The adjusted tripping speed and the safety switch must be sealed against unauthorized adjustment (safety switch, for example, by color sealing of the fastening screws and only if switching off is required prior to achieving the tripping speed).
- 2.2 In addition to the standard data the diameter of the respective traction groove must be given on the overspeed governor
- 2.3 With a governor wheel having a traction groove diameter of 250 mm, the additional traction groove with a diameter of 170 mm is only intended as a test groove
- 2.4 Retraction of the safety gear in both directions of rotation permissible
- 2.5 Rope deflection optional (but at least 180° angle of wrap)
- 2.6 Design with and without preliminary switch off intended
- 2.7 Design with remote release permissible
- 2.8 Design with locking device acting on both directions permissible
- 2.9 Installation suspended in pit permissible (requirements see expert opinion dated May 2, 1984, D2-FTB-ku-sch)
- 2.10 In order to provide identification and information about the basic design and its functioning and to show the environmental conditions and connection requirements pertaining to the tested and approved type and to define which parts have been tested, drawing No. 60 230 71 00 0 (page 1 and 2) dated 21 January 1998 is to be enclosed with the EC type-examination certificate and the annex thereto.
- 2.11 The EC type-examination certificate may only be used in connection with the pertinent annex.

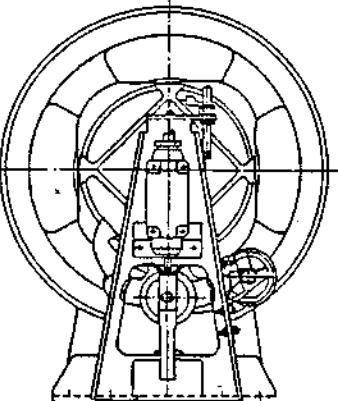
Ausführung federbelastet
Version spring loaded



Ausführung gewichtsbelastet
Version weight-loaded



Ausführung ohne Vorabschaltung
Version without pre-disconnection



31. MRZ 1998

-GEPRÜFT-

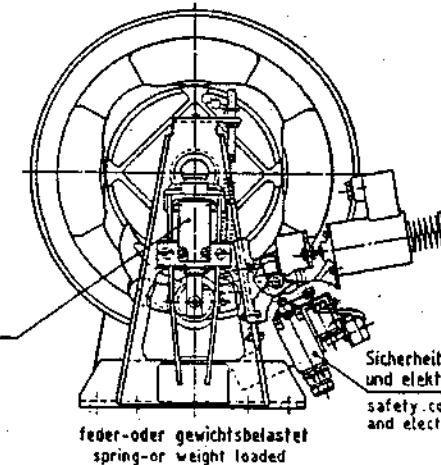
TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Region Bayern
Zentralabteilung Aufzüge und Sicherheitsbauteile
Der Sohn, 092399



feder- oder gewichtsbelastet
spring- or weight loaded

Werkstoff/Material	Datum/Date	Name/Name	Schutzvermerk n. DIN 34 beachten / copyright reserved	Maßstab/Scale
Bearb. 21.01.98	<i>Heinz Litsch</i>		Zeilung Nr. drawing no	
Gepr.	<i>Heinz Litsch</i>		60 230 71 00 0	
Norm.				/
Kennwort project name		Benennung Title		
Fabrik-Nr. maker's no.		Geschwindigkeitsbegrenzer Typ 6023 Overspeed governor type 6023		
Änderung revision		Datumsangabe Date stamp	Blatt 1 page of	
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THYSEN AUFZÜGE	Ers. 1	1 trs. c		

Ausführung mit Fernauslösung
Version with remote release

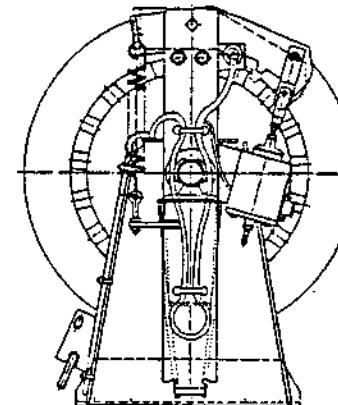


Sicherheitsschalter ohne
Vorabschaltung

Safety contact without
pre-disconnection

Sicherheitsschalter mit Vorabschaltung
und elektrischer Rückstellung
safety contact with pre-disconnection
and electrical reset

Ausführung beidseitig wirkende Sperreinrichtung
Version double-sided acting interlock



31. MRZ 1998

-GEPRÜFT-

TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Region Bayern
Zentralabteilung Aufzüge und Sicherheitsbauteile
Der Sohn, 092399

Hermann

Werkstoff/Material	Datum/Date	Name/Name	Schutzvermerk n. DIN 34 beachten / copyright reserved	Maßstab/Scale
Bearb. 21.01.98	<i>Heinz Litsch</i>		Zeilung Nr. drawing no	
Gepr. 27.1.98	<i>Heinz Litsch</i>		60 230 71,00 0	
Norm.				/
Kennwort project name		Benennung Title		
Fabrik-Nr. maker's no.		Geschwindigkeitsbegrenzer Typ 6023 Overspeed governor type 6023		
Änderung revision		Datumsangabe Date stamp	Blatt 2 page of	
THYSEN				
THYSEN AUFZÜGE	Ers. 1	1 trs. d		



THYSSEN AUFZÜGE GmbH

EG - Konformitätserklärung nach Richtlinie 95/16/EG, Anhang II, A

Hiermit erklären wir, daß das Sicherheitsbauteil

Art	: Geschwindigkeitsbegrenzer	
Typ	: 6023	
Baujahr	: siehe Typenschild am Bauteil	
Hergestellt von	: Thyssen Aufzüge GmbH Bernhäuser Str. 45 D-73765 Neuhausen a.d.F.	Thyssen Boetticher S.A. Cifuentes s/w E-28021 Madrid

in der gelieferten Ausführung dem geprüften Sicherheitsbauteil und der
Richtlinie 95/16/EG - Aufzugsrichtlinie - entspricht.

Angewendete harmonisierte Norm	: EN 81
Bescheinigungs-Nr.	: AGB 055/1
Gemeldete Stelle	: TÜV Bau- und Betriebstechnik GmbH Unternehmensgruppe TÜV Süddeutschland Zentralabteilung Aufzüge und Sicherheitsbauteile Westendstraße 199 D-80686 München (Kennnummer 0635)

Thyssen Aufzüge GmbH
Bernhäuser Str. 45
D-73765 Neuhausen a.d.F.

Herr Josef Selg
(Konstruktionsleiter)

Herr Rolf Eisenbeis
(Produktionsleiter) Thyssen Aufzüge GmbH

Herr Ramon Fayos Martinez
(Produktionsleiter) Thyssen Boetticher S.A.



THYSSEN AUFZUGSWERKE GMBH

Note:

The emergency unlocking key was delivered together with the car door.

Put the document

„Rescue of passengers and instructions for use“

and the emergency unlocking key into the bag provided on the control cabinet / control panel.