

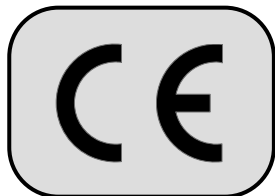
INSTRUCTION MANUAL

Electric chain hoist GCH 250/500 • GCH 1000 • GCH 1600/2000/2500

GIS CHAIN HOIST

 **SWISS QUALITY**

GCH
GCHK
GCHS
GCHH
GCHR



M A D E I N S W I T Z E R L A N D



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Spare parts / Ordering of spare parts

The correct order numbers for the original spare parts are to be taken from the spare parts list. Please ensure that you have the following data on your chain hoist to hand. Thereby a quick and correct supply of the parts required will be effected.

Electric chain hoist type :

Manufacture number :

Year of manufacture :

Load capacity :

Original spare parts for the electric chain hoist can be acquired from the following addresses:

1. Manufacturer

GIS AG
Hebe- und Fördertechnik
Luzernerstrasse 50
CH-6247 Schötz

Tel. +41 (0)41 984 11 33

Fax +41 (0)41 984 11 44

tel@gis-ag.ch

www.gis-ag.ch

2. Agent

.....

.....

.....

.....

.....

.....

0 General information

0.1 General safety information

0.1.1 Safety and hazard precautions

The following symbols and terms are used in this instruction manual for safety and hazard instructions:



DANGER !

The non-compliance either in part or full of work and operational directions marked with this symbol can result in serious personal injury or even death. Danger notices must be **strictly** complied with.



CAUTION !

The non-compliance either in part or full of work and operational directions marked with this symbol can result in major machinery, property or material damage.

Cautionary notices must be **strictly** adhered to.



NOTE

Effective and simple operation is the result of following the directions denoted under this symbol.

"Note" directions make work easier.

0.2 General safety specifications and procedures

The instruction manual for the electric chain hoist must be kept within the operating area of the hoist. The instructions mentioned in this manual must be kept strictly. Furthermore, supplementary to the instruction manual, the statutory regulations governing general accident prevention and environment protection are to be enforced.

Operating and service personnel must have read and understood the operating instructions, in particular the safety instructions, before commencing work. Protection gear for operating and service personnel must be made available and worn at all times. The operator or its designate is responsible for the safety and hazard awareness of the operating personnel and are responsible for the supervision thereof.

0.2.1 Warning colour / Marking / Danger signs

- Lubricate chain.....figure 0-1
- CE symbol.....figure 0-2
- Model platefigure 0-3
- Data plate.....figure 0-4

0.3 Special safety directions

Transport and assembly:

- Electric chain hoists, single parts and large components are to be carefully affixed to suitable and technically acceptable hoisting apparatus / load lifting members

Connection:

- The connection work is only to be effected by personnel specifically designated and trained for the job

Start-up / operation:

- Before initial start-up, as well as daily start-up carry out a visual check and carry out the predefined user-checks routine
 - Do not omit any serious safety procedure
 - Only put the electric chain hoist into operation when the available protection and safety apparatus is fully functional
 - Damage to the electric chain hoist and changes in its operational characteristics must be reported immediately to the person responsible
 - After use, or when in a non-operational mode, the chain hoist should be secured against unauthorised and unwarranted use
 - Transport of persons is not allowed
 - Moving loads above persons is not allowed
 - Persons are not allowed to remain below moving loads
 - Moving of overloads is not permitted
 - Do not pull the control cable
 - Always monitor and control the load
- See also adequate application (chapter 0.6)

Cleaning / service / repair / maintenance / refitting:

- For assembly work above body height, the necessary working platforms or ladders are to be made available
- Do not use machine parts for this purpose
- Check the electrical cable for damage or wear
- For safety and environmental protection, control and dispose of oils or other agents used
- Safety apparatus that has been disassembled for the service or repair of the hoist must be reassembled and checked after the service and repair work has been completed

- The predefined testing and service intervals found in the instruction manual must be adhered to
- Directions found in the instruction manual, with regard to the exchange of parts are to be followed
- Operating personnel are to be informed before the commencement of special or refitting work
- The repair working area should be secured
- During service or repair work, the electric chain hoist should be secured against unwarranted switching on
- Warning signs are to be placed
- The power cable is to be disconnected and secured against unwarranted connection
- Screw connections that have been loosened for repair or service work must be retightened
- Parts that are not reusable, such as O-rings, gaskets, self locking nuts, split-pins and washers are to be replaced

Shut down / storage:

- Before long periods of inactivity or storage, the chain hoist must be cleaned and preserved

0.4 Notes on hazard protection

Hazard areas must be clearly marked by warning signs and secured by isolation. It must be assured that the warnings regarding hazard areas are given due attention.

Hazards can stem from:

- incorrect application
- incomplete adherence to the safety directions
- incomplete or inexact execution of test and service work

0.4.1 Hazards caused by mechanical influences

Human injury:



DANGER !

Unconsciousness and injury through:

- crushing, shearing, cutting and twisting
- retraction, expulsion, ramming and rubbing
- slipping, stumbling and falling

Source:

- crush, shear and twist area
- breaching or bursting of parts

Protective possibilities:

- floor, equipment and machinery are to be kept clean
- eliminate leakages
- the safety distance must properly be observed

0.4.2 Hazards caused by electrical energy / power supply

Work on electrical apparatus or machinery may only be effected by qualified electricians or persons under the supervision and guidance of qualified electricians, in accordance with predefined electro-technical regulations.

Human injury:



DANGER !

Death through electrical shock, injury and burns through:

- contact
- faulty insulation
- faulty servicing or repair work
- short circuit

Source:

- contact with, touching of or standing too close to non-insulated power and voltage supply terminals
- exposed electricity supply terminals following breakdown of insulation
- inadequate execution of safety checks following repair work
- incorrect fusing

Protection possibilities:

- machinery and equipment designated for repair or service work should be isolated before commencement of such work

- first check isolated parts for voltage
- regularly check the electrical fittings
- immediately change loose or damaged cables
- blown fuses must be replaced with fuses of the correct value
- avoid contact or touching live terminals
- use only insulated tools

0.4.3 Sound level (SPL)

Tests on the chain hoist sound level are performed at a range of 1, 2, 4, 8 and 16 metres from the centre of the chain hoist motor to the measuring device.

Measurement of SPL according to DIN 45 635.

The SPL was measured:

- a) during operation of electric chain hoists on factory site
 - b) during open-air operation
- See table 0-1

0.5 Technical status

The present document was written in 2006. It corresponds to the directive 98/37/EC of the European Parliament and of the Council of 22nd June 1998.

0.5.1 Technical datas

0.5.1.1 Models GCH.....	table 0-2
0.5.1.2 Models GCHK.....	table 0-3
0.5.1.3 Models GCHS.....	table 0-4
0.5.1.4 Models GCHHK.....	table 0-5
0.5.1.5 Models GCHHTD.....	table 0-6
0.5.1.6 Models GCHR	table 0-7

0.5.2 Recurrent checks

Each device/ unit operator has to adequately note all checks, maintenance and inspections performed into the inspection booklet, and must have these confirmed by the competent person in charge.

Incorrect or missing entries lead to forfeiture of the manufacturer's warranty.



CAUTION !

Devices and cranes are to be periodically tested by an expert. Basically, visual and functional checks are to be performed, whereby the condition of the components with regards to damage, wear, corrosion or other alterations are to be determined. Apart from this, the completeness and efficiency of the safety contrivance will be assessed. In order to correctly value wearing parts, it may be necessary to dismantle the equipment under inspection.



CAUTION !

The carrying means must be inspected in their entire length, which implies even covered or hidden parts.



CAUTION !

All periodical inspections are to be arranged by the operator.

0.6 Operational parameters

The electric chain hoists of the series GCH are hoists of differing load capacities. They can be installed as stationary or mobile units. Electric chain hoists are manufactured in accordance with the latest technical developments along with the known technical safety regulations and specifications, and are tested for safety by the manufacturer.

Electric chain hoists are approved by various international institutes such as BG and others.

Electric chain hoists of the above mentioned series may only be used when in an acceptable technical condition, in accordance with their operating parameters, by safety and hazard conscious personnel.

The operational parameters of the electric chain hoist also encompass the compliance of the pre-defined operating, service and maintenance requirements laid down by the manufacturer.

The operational parameters do not include:

- exceeding the defined load capacity
- diagonal pulling of the load
- heaving, pulling or dragging of the load

See also chapter 0.3

Inching operations, ground mooring and driving against the limit switches should be avoided. The manufacturer accepts no responsibility for damage to equipment and third parties ensuing from such action.

0.6.1 Directions for the use of the instruction manual

This instruction manual includes the following chapters:

- | | | | |
|---|-------------------------|---|---|
| 0 | General | 4 | Measures for obtaining a safe period of operation |
| 1 | Description | | |
| 2 | Start-up instructions | | |
| 3 | Service and maintenance | | |

Supplementary to the instruction manual, the following documentation from the operator must be noted:

- Declaration of conformity
- Inspection booklet
- Spare parts list(s)
- Circuit diagrams

Page and figure numeration:

The pages are consecutively numbered. Empty pages are not numbered, however are calculated together with the consecutive pages.

Figures are numbered consecutively by chapter.

Example:

Figure 3-1 means: in chapter 3, figure 1

1 Description

General:

The GCH series consist of the following models:
GCH, GCHK, GCHS, GCHHK, GCHHTD, GCHR

1.1 Operating conditions

Classification according to application requirements:

The electric chain hoists and travelling gears are classified according to the following regulations into ISO Groups:

- EN 14492-2
- DIN 15400 (load hook)
- FEM calculation regulations for series lifting equipment (chain drive, motor, full load-life span)
- ISO 4301-1: D (M3) = 400 h
- Remarks about general revision (see chapter 4)

For the ISO Groups there is differing coefficient data that must be adhered to in operation.



CAUTION !

The travelling gear is always classified into the same ISO Group as the corresponding electric chain hoist.



NOTE

The ISO Group registration number of the electric chain hoist can be found on the model plate.

The manufacturer will only guarantee the safety and lasting operation when the electric chain hoist is used for applications that fall within its valid ISO Group coefficient data.

Before the first start-up, the user has to estimate according to the features in table 1-1, which one of the four types of load is right for the use of the electric chain hoist during its whole service life. Table 1-2 shows standard values for the operating conditions of the ISO Groups in dependence of the type of load and the time of operation.

Ascertainment of the correct type of application for an electric chain hoist:

The ascertainment of the correct type of application for the electric chain hoist can be gained from either the running time or from the expected type of load.



CAUTION !

Before the start-up operation of the electric chain hoist, it must be determined which of the load types shown in table 1-1 the electric chain hoist is to operate with. The classification of a load type, respectively a load collective (k), is for the complete operational life of the equipment and for operational safety reasons may not be altered.

Example 1: Ascertainment of the permissible running time of the electric chain hoist:
An electric chain hoist of the ISO Group M4 should, throughout its entire service life only be used for medium stress load tasks. This corresponds to the load type <3 heavy> (see table 1-1). Corresponding to the values in table 1-2, the electric chain hoist should not be used for longer than 0.5 - 1 hour per working day.

Example 2: Ascertainment of the permissible load type:

An electric chain hoist of the ISO Group M5 should, throughout its complete service life be used for approximately 6 hours per working day. Thereby, the electric chain hoist should be operated in accordance with the characteristics of the load type <1 light> (see table 1-1).

1.2 General functional description

1.2.1 Housing (figure 1-1 / 1)

The housing and the cover are made from robust cast aluminium, and cooling fins in the motor area provide efficient cooling. The chain store can be attached to the compact housing. Holes are provided for the chain screw connection of the mains connecting cable and the control cable. The eye or hook suspension system is attached to the flange.

1.2.2 Motor and brake (figure 1-1 / 2)

GIS electric chain hoists are driven by asynchronous motors. Models with two speeds are equipped with a pole-changing motor. The motors comply with legal regulations and the FEM calculation regulations for lifting equipment. The windings of the motor correspond with insulation class F.

The brake system consists of an AC-powered multiple disk brake. In the de-energized state the braking torque is provided by the compression spring.

1.2.3 Rotor shaft with integrated slip clutch (figure 1-1 / 3)

The slip clutch is installed in a functional location upstream of the brake system and is integrated in the rotor shaft. It protects the chain hoist from overloading and takes on the function of an emergency limit stop for the highest and lowest hook positions. The slip clutch still complies with the requirements of the EC machinery directive and is maintenance free.

1.2.4 Limit switch (figure 1-1 / 4)

A gearbox limit switch is installed to limit the highest and lowest chain positions. Downstream emergency stop contacts with automatic disconnection can be optionally retrofitted.

1.2.5 Electrical controller (figure 1-1 / 5)

The electric chain hoists are equipped with a 42 V contactor controller as standard. The emergency stop contactor that is usually installed disconnects all three main phases from the mains when it is pressed.

1.2.6 Chain drive (figure 1-1 / 6)

The high refractory round steel chain corresponds to grade DAT (8SS) in accordance with DIN EN 818-7. The chain wheel and the guide roller are tempered and correspond with the EN calculation regulations for series lifting equipment. The chain and the chain wheel are matched to each other. Therefore an original GIS chain must be used. The DIN 15400 load hook is equipped with a safety latch.

1.2.7 Gearbox (figure 1-1 / 7)

The two-stage or three-stage, closed spur gearing is designed for lifting gear requirements. The gear wheels are mounted on roller bearings and have continuous lubrication. The helical gearing reduces running noise to a minimum.

1.2.8 Control switch (figure 1-2)

The standard equipment of the electric chain hoist includes a control switch (raise/lower with emergency stop). The automatically disconnecting emergency stop contact of the control switch directly opens the power circuit to power the contactors.

A 4-button or 6-button control switch is attached to the travelling gear for additional movement directions.

2 Start-up



DANGER !

Mechanical adjustments may only be performed by authorized specialists.



CAUTION !

The operating staff must carefully read the operating instructions of the electric chain hoists before its initial operation and carry out all checks. Only when a safe operation has been established may the device be put into operation. Unauthorized persons may not operate the device or perform any work with the help of the same.

2.1 Transport and assembly

For the transport and assembly of the electric chain hoist, the safety directions for handling with loads are to be followed (see chapter 0.3).

The electric chain hoists must be assembled by qualified staff, always bearing in mind the accident prevention directions in chapter 0.2. Before assembly the electric chain hoist must be stored in an enclosed room or covered area.

Should the electric chain hoist be destined for operation outdoors, then it is recommended that a protection cover is erected to shield it from the influences of the weather. Wherever possible, the electric chain hoist should be transported in its original packaging. It is recommended that the assembly and connection of the electric chain hoist is effected on-site by our qualified customer service personnel.

2.2 Connection

2.2.1 Electrical connection



DANGER !

Electro technical adjustments may only be performed by authorized specialists.

The main connection cable, the mains connection fuse and the main switch must be installed by the customer beforehand for connecting the electric chain hoist to the mains power supply.

A 4-wire cable with a PE protective conductor is needed to provide the power supply for three-phase models. A 3-wire cable with a protective conductor is adequate for single-phase models. The length and the cross-section must be dimensioned to suit the power consumption of the electric chain hoist.

- Before connecting the electric chain hoist, check whether the operating voltage and frequency that are specified on the name plate correspond with the existing power supply
- Remove cover at electrical side
- Insert connecting cable with M25 x 1.5 cable screw connection into hole at side and connect to terminals L1, L2, L3 and PE in accordance with supplied circuit diagram
- Insert control cable with M20 x 1.5 threaded cable connection through hole in underside of housing and connect to terminals 1, 2, 3, 4 and 10. Attach strain relief to housing



DANGER !

The protective conductor is not to carry any power. With motor carriage operation, the power supply is enclosed in a terminal box of the drive motor. With the installation of a motor protector, the load plate voltage of the electric chain hoist must be noted.



CAUTION !

- Checking direction of rotation: If the direction of rotation does not correspond with the button symbols on the control switch, power supply wires L1 and L2 must be swapped round
- Inching operations on single-phase models can cause interferences



NOTE

Open the terminal that is used in accordance with figure 2-1.

2.2.2 Load chain



CAUTION !

- Only use original chains
- Welded seam of the chain links must face inward on the chain wheel (see figure 2-2)
- The gearbox limit switch must be mechanically disabled in order to pull in the chain, see chapter 2.2.3

Before start-up and during its operation the load chain must be oiled along its full length. The internal, contacting and rubbing surfaces of the chain links must have constant oil. Oiling can be effected by submersion or with an oil can, using a creeping gear oil.

The end of the chain is to be affixed with a flexible piece of wire and fed through the chain wheel (1) of the electric chain hoist. Through short switching impulses, the chain (2) will be housed correctly in accordance with figure 2-2.

The lifting height must be dimensioned such that the hook fittings are on the ground in the lowest hook position.

Single fall operation: The load hook (2) connection to the chain is made using a shim (1). The bolt (3) installation is important for power transmission (see figure 2-4).



ATTENTION !

Pay attention to correct arrangement of suspension! (see figure 2-3)

Double fall operation: Connect load side of chain end to chain retainer and fix in housing guide rail (3). Bottom sheave (1) with load hook (2) in accordance with figure 2-5.



ATTENTION !

Pay attention to correct arrangement of suspension! (see figure 2-3) There must be no longitudinal chain twisting. The chain end must be attached to the housing in accordance with figure 2-7.

2.2.3 Limit switch

The electric chain hoist is equipped with a gearbox limit switch as standard. This is also suitable for normal limit switch operation with a high degree of accuracy. The operation of the limit switches (highest and lowest hook position) must be checked during start-up.

Three different transmissions are available that are adapted to the lift:

GCH 250/500			
Transmission	Colour	Single fall lift [m]	Double fall lift [m]
i = 1:1	black	20	10
i = 1:3	yellow	60	30
i = 1:6	blue	120	60

GCH 1000			
Transmission	Colour	Single fall lift [m]	Double fall lift [m]
i = 1:1	black	30	15
i = 1:3	yellow	80	40
i = 1:6	blue	180	90

GCH 1600/2000/2500			
Transmission	Colour	Single fall lift [m]	Double fall lift [m]
i = 1:1	black	36	18
i = 1:3	yellow	110	55
i = 1:6	blue	220	110

Description of settings (see figure 2-6):

- Before pulling in the chain or changing the chain, the limit switch must be mechanically disabled by securing the rocker (1)
- Pull in the chain
- Move to highest hook position, rotate red ratchet wheel (front) (2) to switching cam of top limit switch (3); (rotate clockwise for higher hook position and anticlockwise for lower hook position)
- Activate rocker, move to lowest hook position, rotate green switching wheel (rear) (4) to switching cam of bottom limit switch (5); (rotate anticlockwise for higher hook position and clockwise for lower hook position)
- Activate rocker (must engage in switch wheel)
- Check operation of limit switch; the end stop and the hook fittings must not touch the housing

2.2.4 Chain bucket

- Move chain out at load side until limit switch is activated. Attach free end of chain at housing
- Attach chain bucket and allow chain to run in



DANGER !

All steel plate chain magazines must be equipped with an additional wire cable with a minimum diameter of 2 mm (see figure 2-3 and figure 2-7).

3 Service and maintenance

3.1 General regulations for service and maintenance work

Operating failures on the electric chain hoists impairing the safe operation of the device are to be cleared immediately.

The electric chain hoist may only be serviced by trained and authorized specialists.



NOTE

We recommend to have maintenance work performed by our customer service.



CAUTION !

If the operator performs maintenance work on an electric chain hoist on his own account, the type of maintenance performed must be entered together with the date of performance into the inspection booklet.

Alterations to, as well as changes of and supplements to the electric chain hoists which may impair the safety must be authorized by manufacturer in advance. Constructional alterations to the chain hoists not authorized by the manufacturer lead to an exclusion of the manufacturer's liability in case of damage.

Material warranty claims will only be recognized if solely genuine spare parts by the manufacturer have been employed.

We explicitly wish to point out those original parts and accessories not supplied on our behalf cannot be inspected or released by us.

General:

Service and maintenance are preventive measures designed to enhance the full functionality of the electric chain hoists. Non-compliance with the service and maintenance routines can result in reduction of the useful function of and/ or damage to the electric chain hoists.

Service and maintenance work is, in accordance with the instruction manual, to be effected at the predefined time intervals (table 3-1 and 3-2).

During service and maintenance work the general accident prevention directions, the special safety directions (chapter 0.3) as well as the notes on hazard protection (chapter 0.4) are to be followed.



DANGER !

Service and maintenance work is only to be effected on unloaded electric chain hoists. The main switch must be off. The lower sheave or the hook fittings must be lying on the floor or a maintenance platform.

The maintenance work encompasses visual checks and cleaning routines. The service work includes additional functional checks.

During the functional checks, all securing elements and cable clamps must be checked for secure seating.

Cables must be inspected for dirt, discoloration and arc spots.



CAUTION !

Used operating fuels (oil, lubricants ...) are to be safely collected and disposed of in an environmentally friendly manner.

Service and maintenance intervals are so defined:

t.....: daily

3 M.....: quarterly

12 M.....: annually

The predefined service and maintenance intervals are to be reduced when the loading of the electric chain hoist is on average large and when unfavourable conditions surface frequently during operation (dust, heat, humidity, steam etc.).

3.2 Service and maintenance

3.2.1 Maintenance summary

See table 3-1

3.2.2 Service summary

See table 3-2

3.2.3 Brake system

In the power free mode, the brake must be able to hold the nominal load without any problems. It has been operationally adjusted before delivery.



CAUTION !

Should the brake magnet (1) hum, buzz or vibrate, then the air gap (s) must be reset in accordance with table 3-3 (see figure 3-1).



CAUTION !

If the lifting speed is only reached slowly or the load drops a little further after it has been lowered, this is a sign of oily or sticky brake discs (1) or the closing of the disc cage (2) (see figure 3-2). Dismantle brake discs, clean and degrease. Disc cage to be replaced if damaged.



NOTE

By releasing the disc brake (careful pull on the brake arm (2) in accordance with figure 3-1) the load can be lowered in a manual mode.

Follow the correct installation procedure for the brake discs (see figure 3-2).

3.2.4 Load chain

The load chain is to be periodically checked for abrasion. The check is based upon three measurements.

- Accepted wear factors (table 3-4)
- Measurement points (figure 3-3)



CAUTION !

The chain is to be replaced when the measurements exceed those defined in the table. The chain wheel and chain guide are to be checked for wear at the same time, and, where necessary to be replaced. Only original chains are to be used. The chain links are not to be welded.

The installation of the new chain is effected in accordance with chapter 2.2.2.



NOTE

For ease of installation, the old chain and the new chain can be connected by a piece of flexible wire.

3.2.5 Limit stop assembly



CAUTION !

A damaged rubber chain buffer, underneath the housing, must be replaced.

Screw connections at the limit stop and shims resp. lower sheaves are to be checked and, where necessary, tightened to the right torque. For coefficient data see chapter 3.2.8.

3.2.6 Gearbox

The gearing has continual lubrication.

Lubricant..... : Strub N1424

Can be mixed and is compatible with all other brand name grease of a compatible type (DIN 51502: GP OM-20)

Lubrication fluid quantity : GCH 250/500 : 0.4 kg

GCH 1000 : 1.0 kg

GCH 1600/2000/2500 : 1.8 kg

3.2.7 Slip clutch

The slip clutch is pre-adjusted. The lining is wear resistant.



CAUTION !

An adjustment of the slip clutch may only be effected by qualified personnel and must be entered in the inspection booklet.

3.2.8 Suspension parts

All statically loaded parts are known as suspension parts. The bearing surfaces of the slewing suspension parts must be periodically greased.

Torque values for screws of the tenacity class 8.8 according to DIN ISO 898:

M 5	M 6	M 8	M 10	M 12
6 Nm	10 Nm	24 Nm	48 Nm	83 Nm

3.3 Ordering of spare parts

Notes on how to order spare parts can be found on page 3.

4 Measures for obtaining a safe period of operation

The statutory and health requirements of the EU regulations stipulate that specific dangers which may arise from fatigue or ageing must be prevented.

According to these, the operator of the serial hoist gear is obliged to determine the actual utilization. The actual utilization period is determined and documented during the annual inspection by customer service engineers. A general overhaul must be carried out when the theoretical utilization limit is reached, or after no more than 10 years. All checking and the general overhaul itself must be arranged by the operator of the hoist gear.

The following theoretical utilization period applies to electric chain hoists that are categorized according to ISO 4301-1 (converted into full-load hours):

M3	M4	M5	M6	M7
400 h	800 h	1600 h	3200 h	6300 h

4.1 How to determine the effective service life S

The actual utilization period depends on the daily operating time and the load collective. The running time is determined in accordance with information provided by the operator or recorded using a meter that counts the number of operating hours. The load collective is determined in accordance with table 1-1. These two items of information are used to calculate the annual utilization period from table 4-1.

If a production data acquisition system (BDE) is used, the actual utilization can be directly read out by our experts during the annual inspection.



CAUTION !

The periodically calculated or read-off values must be documented in the inspection booklet.

4.2 General overhaul

On reaching the theoretical service life (no later than 10 years for collection without BDE), a general overhaul is to be performed. Hereby the device is put into a condition allowing a safe operation within another period of utilization (service life). For this, components according to table 4-2 must be inspected and/ or exchanged. The inspection of as well as the approval for further utilization must be performed either by an expert company authorized by the manufacturer, or by the manufacturer personally.

The inspector determines: – the new possible theoretical utilization
– the max. period until the next general overhaul

Such data is to be documented in the inspection booklet.

5 Appendix

Table 0-2 Technical datas GCH

ISO (FEM) classification	M3 (1Bm) 150 s/h 25% duty	M4 (1Am) 180 s/h 30% duty	M5 (2m) 240 s/h 40% duty	M6 (3m) 300 s/h 50% duty	M7 (4m) 360 s/h 60% duty	Lifting speed	Motor power (M3)	3 x 400V 50Hz (M3)	1 x 230V 50Hz (M3)	No. of chain falls	Dead weight 3 m lift	Connection fuse
Types	Capacity [kg]					[m/min]	[kW]	[A]	[A]		[kg]	[A]
GCH 250/1N	250	200	160	125	100	8	0.36	1.3	-	1	19	10
GCH 250/1NF	250	200	160	125	100	8/2	0.36/0.09	2.7/3.0	-	1	22	10
GCH 250/1SF	160	125	100	80	60	12.5/3	0.36/0.09	2.7/3.0	-	1	22	10
GCH 250/1HF	100	80	60	50	40	20/5	0.36/0.09	2.7/3.0	-	1	22	10
GCH 250/1N 1Ph	160	-	-	-	-	8	0.23	-	8.9	1	19	10
GCH 250/2N	500	400	320	250	200	4	0.36	1.3	-	2	22.5	10
GCH 250/2NF	500	400	320	250	200	4/1	0.36/0.09	2.7/3.0	-	2	23	10
GCH 250/2SF	320	250	200	160	125	6.25/1.5	0.36/0.09	2.7/3.0	-	2	23	10
GCH 250/2N 1Ph	320	-	-	-	-	4	0.23	-	8.9	2	22.5	10
GCH 500/1N	500	400	320	250	200	8	0.72	2.1	-	1	20	10
GCH 500/1NF	500	400	320	250	200	8/2	0.72/0.18	2.9/3.0	-	1	22.5	10
GCH 500/1SF	320	250	200	160	125	12.5/3	0.72/0.18	2.9/3.0	-	1	22.5	10
GCH 500/1HF	200	160	125	100	80	20/5	0.72/0.18	2.9/3.0	-	1	22.5	10
GCH 500/1N 1Ph	250	-	-	-	-	8	0.36	-	8.9	1	20	10
GCH 500/2N	1'000	800	630	500	400	4	0.72	2.1	-	2	22.5	10
GCH 500/2NF	1'000	800	630	500	400	4/1	0.72/0.18	2.9/3.0	-	2	25	10
GCH 500/2SF	630	500	400	320	250	6.25/1.5	0.72/0.18	2.9/3.0	-	2	25	10
GCH 500/2N 1Ph	500	-	-	-	-	4	0.36	-	8.9	2	22.5	10
GCH 1000/1N	1'000	800	630	500	400	8	1.45	3.7	-	1	45	10
GCH 1000/1NF	1'000	800	630	500	400	8/2	1.45/0.36	4.0/2.8	-	1	46	10
GCH 1000/1SF	500	400	320	250	200	16/4	1.45/0.36	5.8/2.6	-	1	48	10
GCH 1000/2N	2'000	1'600	1'250	1'000	800	4	1.45	3.7	-	2	50	10
GCH 1000/2NF	2'000	1'600	1'250	1'000	800	4/1	1.45/0.36	4.0/2.8	-	2	51	10
GCH 1000/2SF	1'000	800	630	500	400	8/2	1.45/0.36	5.8/2.6	-	2	53	10
GCH 1600/1N	1'600	1'250	1'000	800	630	8	2.44	6.0	-	1	63	16
GCH 1600/1NF	1'600	1'250	1'000	800	630	8/2	2.44/0.61	6.6/4.2	-	1	65	16
GCH 1600/1SF	1'000	800	630	500	400	12.5/3	2.39/0.58	6.6/4.2	-	1	65	16
GCH 1600/2N	3'200	2'500	2'000	1'600	1'250	4	2.44	6.0	-	2	73	16
GCH 1600/2NF	3'200	2'500	2'000	1'600	1'250	4/1	2.44/0.61	6.6/4.2	-	2	75	16
GCH 1600/2SF	2'000	1'600	1'250	1'000	800	6.25/1.5	2.39/0.58	6.6/4.2	-	2	75	16
GCH 2000/1N	2'000	1'600	1'250	1'000	800	8	3.05	7.3	-	1	65	16
GCH 2000/1NF	2'000	1'600	1'250	1'000	800	8/2	3.05/0.77	8.0/4.5	-	1	67	16
GCH 2000/1SF	1'250	1'000	800	630	500	12.5/3	2.98/0.72	8.0/4.5	-	1	67	16
GCH 2000/2N	4'000	3'200	2'500	2'000	1'600	4	3.05	7.3	-	2	76	16
GCH 2000/2NF	4'000	3'200	2'500	2'000	1'600	4/1	3.05/0.77	8.0/4.5	-	2	78	16
GCH 2000/2SF	2'500	2'000	1'600	1'250	1'000	6.25/1.5	2.98/0.72	8.0/4.5	-	2	78	16
GCH 2500/1N	2'500	2'000	1'600	1'250	1'000	6.4	3.05	7.7	-	1	65	16
GCH 2500/1NF	2'500	2'000	1'600	1'250	1'000	6.4/1.6	3.05/0.77	8.2/4.4	-	1	67	16
GCH 2500/1SF	1'600	1'250	1'000	800	630	10/2.5	3.05/0.77	8.2/4.4	-	1	67	16
GCH 2500/2N	5'000	4'000	3'200	2'500	2'000	3.2	3.05	7.7	-	2	76	16
GCH 2500/2NF	5'000	4'000	3'200	2'500	2'000	3.2/0.8	3.05/0.77	8.2/4.4	-	2	78	16
GCH 2500/2SF	3'200	2'500	2'000	1'600	1'250	5/1.25	3.05/0.77	8.2/4.4	-	2	78	16

Table 0-3 Technical datas GCHK

ISO (FEM) classification	M3 (1Bm) 150 s/h 25% duty	M4 (1Am) 180 s/h 30% duty	M5 (2m) 240 s/h 40% duty	M6 (3m) 300 s/h 50% duty	M7 (4m) 360 s/h 60% duty	Lifting speed	Motor power (M3)	3 x 400V 50Hz (M3)	1 x 230V 50Hz (M3)	No. of chain falls	Dead weight 3 m lift	Connection fuse
Types	Capacity [kg]					[m/min]	[kW]	[A]	[A]		[kg]	[A]
GCHK 250/1NF	200	160	125	100	80	8/2	0.29/0.07	2.7/3.0	-	1	40	10
GCHK 250/1SF	125	100	80	60	50	12.5/3	0.28/0.07	2.7/3.0	-	1	40	10
GCHK 250/2NF	400	320	250	200	160	4/1	0.29/0.07	2.7/3.0	-	2	41	10
GCHK 250/2SF	250	200	160	125	100	6.25/1.5	0.28/0.07	2.7/3.0	-	2	41	10
GCHK 500/1NF	400	320	250	200	160	8/2	0.58/0.14	2.9/3.0	-	1	40.5	10
GCHK 500/1SF	250	200	160	125	100	12.5/3	0.57/0.14	2.9/3.0	-	1	40.5	10
GCHK 500/2NF	800	630	500	400	320	4/1	0.58/0.14	2.9/3.0	-	2	43	10
GCHK 500/2SF	500	400	320	250	200	6.25/1.5	0.57/0.14	2.9/3.0	-	2	43	10
GCHK 1000/1NF	800	630	500	400	320	8/2	1.16/0.29	3.3/2.8	-	1	88	10
GCHK 1000/1SF	400	320	250	200	160	16/4	1.16/0.29	5.4/2.4	-	1	90	10
GCHK 1000/2NF	1'600	1'250	1'000	800	630	4/1	1.16/0.29	3.3/2.8	-	2	94	10
GCHK 1000/2SF	800	630	500	400	320	8/2	1.16/0.29	5.4/2.4	-	2	96	10
GCHK 1600/1NF	1'250	1'000	800	630	500	8/2	1.91/0.48	5.5/4.1	-	1	127	16
GCHK 1600/1SF	800	630	500	400	320	12.5/3	1.91/0.46	5.5/4.1	-	1	127	16
GCHK 1600/2NF	2'500	2'000	1'600	1'250	1'000	4/1	1.91/0.48	5.5/4.1	-	2	139	16
GCHK 1600/2SF	1'600	1'250	1'000	800	630	6.25/1.5	1.91/0.46	5.5/4.1	-	2	139	16
GCHK 2000/1NF	1'600	1'250	1'000	800	630	8/2	2.44/0.61	6.6/4.2	-	1	129	16
GCHK 2000/1SF	1'000	800	630	500	400	12.5/3	2.38/0.57	6.6/4.2	-	1	129	16
GCHK 2000/2NF	3'200	2'500	2'000	1'600	1'250	4/1	2.44/0.61	6.6/4.2	-	2	142	16
GCHK 2000/2SF	2'000	1'600	1'250	1'000	800	6.25/1.5	2.38/0.57	6.6/4.2	-	2	142	16
GCHK 2500/1NF	2'000	1'600	1'250	1'000	800	6.4/1.6	2.44/0.61	6.2/4.1	-	1	129	16
GCHK 2500/1SF	1'250	1'000	800	630	500	10/2.5	2.38/0.60	6.2/4.1	-	1	129	16
GCHK 2500/2NF	4'000	3'200	2'500	2'000	1'600	3.2/0.8	2.44/0.61	6.2/4.1	-	2	142	16
GCHK 2500/2SF	2'500	2'000	1'600	1'250	1'000	5/1.25	2.38/0.60	6.2/4.1	-	2	142	16

Table 0-4 Technical datas GCHS

ISO (FEM) classification	M3 (1Bm) 150 s/h 25% duty	M4 (1Am) 180 s/h 30% duty	M5 (2m) 240 s/h 40% duty	M6 (3m) 300 s/h 50% duty	M7 (4m) 360 s/h 60% duty	Lifting speed	Motor power (M3)	3 x 400V 50Hz (M3)	1 x 230V 50Hz (M3)	No. of chain falls	Dead weight 3 m lift	Connection fuse
Types	Capacity [kg]					[m/min]	[kW]	[A]	[A]		[kg]	[A]
GCHS 500/1NF GCHS 500/1SF	2x200 2x125	2x160 2x100	2x125 2x80	2x100 2x60	2x80 2x50	8/2 12.5/3	0.58/0.14 0.57/0.14	2.9/3.0 2.9/3.0	- -	1 1	44.5 44.5	10 10
GCHS 500/2NF GCHS 500/2SF	2x400 2x250	2x320 2x200	2x250 2x160	2x200 2x125	2x160 2x100	4/1 6.25/1.5	0.58/0.14 0.57/0.14	2.9/3.0 2.9/3.0	- -	2 2	47 47	10 10
GCHS 1000/1NF GCHS 1000/1SF	2x400 2x200	2x320 2x160	2x250 2x125	2x200 2x100	2x160 2x80	8/2 16/4	1.16/0.29 1.16/0.29	3.3/2.8 5.4/2.4	- -	1 1	87 89	10 10
GCHS 1000/2NF GCHS 1000/2SF	2x800 2x400	2x630 2x320	2x500 2x250	2x400 2x200	2x320 2x160	4/1 8/2	1.16/0.29 1.16/0.29	3.3/2.8 5.4/2.4	- -	2 2	93 95	10 10
GCHS 2000/1NF GCHS 2000/1SF	2x800 2x500	2x630 2x400	2x500 2x320	2x400 2x250	2x320 2x200	8/2 12.5/3	2.44/0.61 2.38/0.57	6.6/4.2 6.6/4.2	- -	1 1	151 151	16 16
GCHS 2000/2NF GCHS 2000/2SF	2x1'600 2x1'000	2x1'250 2x800	2x1'000 2x630	2x800 2x500	2x630 2x400	4/1 6.25/1.5	2.44/0.61 2.38/0.57	6.6/4.2 6.6/4.2	- -	2 2	168 168	16 16

Table 0-5 Technical datas GCHHK

ISO (FEM) classification	M3 (1Bm) 150 s/h 25% duty	M4 (1Am) 180 s/h 30% duty	M5 (2m) 240 s/h 40% duty	M6 (3m) 300 s/h 50% duty	M7 (4m) 360 s/h 60% duty	Lifting speed	Motor power (M5)	3 x 400V 50Hz (M5)	1 x 230V 50Hz (M5)	No. of chain falls	Dead weight 3 m lift	Connection fuse
Types	Capacity [kg]					[m/min]	[kW]	[A]	[A]		[kg]	[A]
GCHHK 500/NF GCHHK 500/SF GCHHK 500/HF	- - -	- - -	250 200 125	250 160 100	200 125 80	8/2 12.5/3 20/5	0.36/0.09 0.45/0.11 0.45/0.11	2.7/3.0 2.7/3.0 2.7/3.0	- - -	1 1 1	27 27 27	10 10 10

Table 0-6 Technical datas GCHHTD

ISO (FEM) classification	M3 (1Bm) 150 s/h 25% duty	M4 (1Am) 180 s/h 30% duty	M5 (2m) 240 s/h 40% duty	M6 (3m) 300 s/h 50% duty	M7 (4m) 360 s/h 60% duty	Lifting speed	Motor power (M6/M4)	3 x 400V 50Hz (M6/M4)	1 x 230V 50Hz (M6/M4)	No. of chain falls	Dead weight 2 m lift	Connection fuse
Types	Capacity [kg]					[m/min]	[kW]	[A]	[A]		[kg]	[A]
GCHHTD 500/NF GCHHTD 500/SF	- -	- 250	- 200	250 160	200 125	8/2 12.5/3	0.36/0.09 0.57/0.14	2.7/3.0 2.7/3.0	- -	1 1	35 35	10 10

Table 0-7 Technical datas GCHR

ISO (FEM) classification	M3 (1Bm) 150 s/h 25% duty	M4 (1Am) 180 s/h 30% duty	M5 (2m) 240 s/h 40% duty	M6 (3m) 300 s/h 50% duty	M7 (4m) 360 s/h 60% duty	Lifting speed	Motor power (M4)	3 x 400V 50Hz (M4)	1 x 230V 50Hz (M4)	No. of chain falls	Dead weight 3 m lift	Connection fuse
Types	Capacity [kg]					[m/min]	[kW]	[A]	[A]		[kg]	[A]
GCHR 500/1N GCHR 500/1NF	- -	320 320	250 250	- -	- -	8 8/2	0.46 0.46/0.12	2.1 2.9/3.0	- -	1 1	20 22.5	10 10
GCHR 500/2N GCHR 500/2NF	- -	630 630	500 500	- -	- -	4 4/1	0.46 0.46/0.12	2.1 2.9/3.0	- -	2 2	22.5 25	10 10
GCHR 1000/1N GCHR 1000/1NF	- -	630 630	500 500	- -	- -	8 8/2	0.91 0.91/0.23	3.7 4.0/2.8	- -	1 1	45 46	10 10
GCHR 1000/2N GCHR 1000/2NF	- -	1'250 1'250	1'000 1'000	- -	- -	4 4/1	0.91 0.91/0.23	3.7 4.0/2.8	- -	2 2	50 51	10 10

Table 1-1 Load collectives

<p>Type of load 1 light $k < 0.50$</p> <p>$k = 0.50$</p> <p>Full load by way of an exception, however, predominantly low loads</p>	<p>Type of load 2 medium $0.50 < k < 0.63$</p> <p>$k = 0.63$</p> <p>Frequently fully loaded, however continuously lightly loaded</p>	<p>Type of load 3 heavy $0.63 < k < 0.80$</p> <p>$k = 0.80$</p> <p>Frequently fully loaded, continuous medium loading</p>	<p>Type of load 4 very heavy $0.80 < k < 1.00$</p> <p>$k = 1.00$</p> <p>Regularly fully loaded</p>
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k = Load collective (type of load)

Table 0-1 Sound level

Types	Measuring distance	1 m	2 m	4 m	8 m	16 m
	Measurement	dBA				
GCH 250/500	a) b)	75 75	72 69	69 63	66 57	63 51
GCH 1000	a) b)	72 72	69 66	66 60	63 54	60 48
GCH 1600/2000/2500	a) b)	75 75	72 69	69 63	66 57	63 51

Table 1-2 Operating conditions

ISO Group according to ISO 4301-1	M3	M4	M5	M6	M7
Load collective	Medium running time per working day [h]				
1 - light $k < 0.50$	up to 2	2 - 4	4 - 8	8 - 16	over 16
2 - medium $0.50 < k < 0.63$	up to 1	1 - 2	2 - 4	4 - 8	8 - 16
3 - heavy $0.63 < k < 0.80$	up to 0.5	0.5 - 1	1 - 2	2 - 4	4 - 8
4 - very heavy $0.80 < k < 1.00$	up to 0.25	up to 0.5	0.5 - 1	1 - 2	2 - 4

Table 3-3 Brake system

Brake type	Air gap (s) [mm]	Number of discs	
		internal	external
GCH 250/500	0.5	5	5
GCH 1000	0.5	7	7
GCH 1600/2000/2500	0.5	8	8

Table 4-1 Annual service life

Utilization per day [h]	≤ 0.25 (0.16)	≤ 0.50 (0.32)	≤ 1.0 (0.64)	≤ 2.0 (1.28)	≤ 4.0 (2.56)	≤ 8.0 (5.12)	≤ 16.0 (10.24)	> 16.0 (20.48)
Load collective	Annual service life [h]							
$k = 0.50$	6	12	24	48	96	192	384	768
$k = 0.63$	12	24	48	96	192	384	768	1536
$k = 0.80$	24	48	96	192	384	768	1536	3072
$k = 1.00$	48	96	192	384	768	1536	3072	6144

Table 3-1 Maintenance summary

Term	t	3 M	12 M	Activity	Notes
1. Load chain	X			visual check clean and oil as needed	see chapter 2.2.2
2. Hoist and carriage	X			excess noise check seal check	
3. Power supply cable	X			visual check	
4. Limit switch	X			function check	see chapter 2.2.3
5. Seal		X		visual check	
6. Cable discharging device control cable	X			visual check	

Table 3-2 Service summary

Term	t	3 M	12 M	Activity	Notes
1. Load chain		X	X	oiling measure abrasion	see chapter 2.2.2 / 3.2.4
2. Brake system	X		X	function check with load	see chapter 3.2.3
3. Electrical fittings			X	function check	
4. Securing screws on suspended parts and load hook with accessories			X	check for cracks check screw movement	see chapter 3.2.8
5. Gearing			X	visual check abrasion	see chapter 3.2.6
6. Limit switch			X	check switching elements	see chapter 3.2.5

Table 4-2 General overhaul

Components of GCH-models all types	Check of wear *	Exchange
Brake	x	
Motor shaft	x	
Gear teeth		x
Antifriction bearing		x
Washers		x
Chain	x **	
Chain wheel, chain guide	x	
Deflection wheels	x	
Suspension	x	
Load hook		x
Travelling gear, running wheel	x	
Contactors, limit switch	x	

* exchange when worn

** exchange no later than at general overhaul

Table 3-4 Wear factors load chain

		GCH 250	GCH 500	GCH 1000	GCH 1600	GCH 2000/2500
Chain type d x t	[mm]	4 x 12.3	5 x 15.3	7 x 22	9 x 27	10 x 28
Tolerances in accordance with: DIN 685, part 5 DIN EN 818-7	[mm]	138.0	171.6	246.8	302.9	314.2
1. Measurement over 11 chain links; a = 11t						
2. Measurement over 1 chain link 1t	[mm]	12.9	16.0	23.1	28.35	29.4
3. Measurement of the chain link diameter						
$dm = \frac{d1 + d2}{2} ; (dm \min. = 0.9 \times d)$	[mm]	3.6	4.5	6.3	8.1	9.0

Figure 0-1

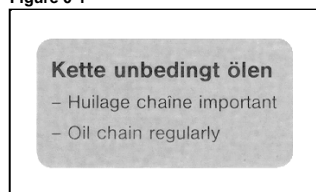


Figure 0-2

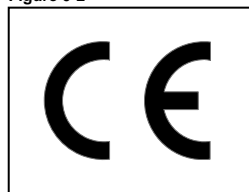


Figure 0-3

Fabr. Nr. / Ser. no.	254 00	
Bauart / Type		
V	Hz	Isol. Klasse Insul. Class
KW	FEM 1 Am	A FEM 1 Am
n/min	1 str. 1 fall	n/min 2 str. 2 falls
GIS AG Hebe- & Fördertechnik CH-6247 Schötz		

Figure 0-4

Modell / Model		
FEM 9.511	Gruppe Group	1-str. / 1 fall 2-str. / 2 falls
Last / Load	t	
ED / Duty %; S/h		
Kette / Chain	FEM 9.571	Baujahr Year
GIS AG Hebe- & Fördertechnik CH-6247 Schötz		

Figure 1-1

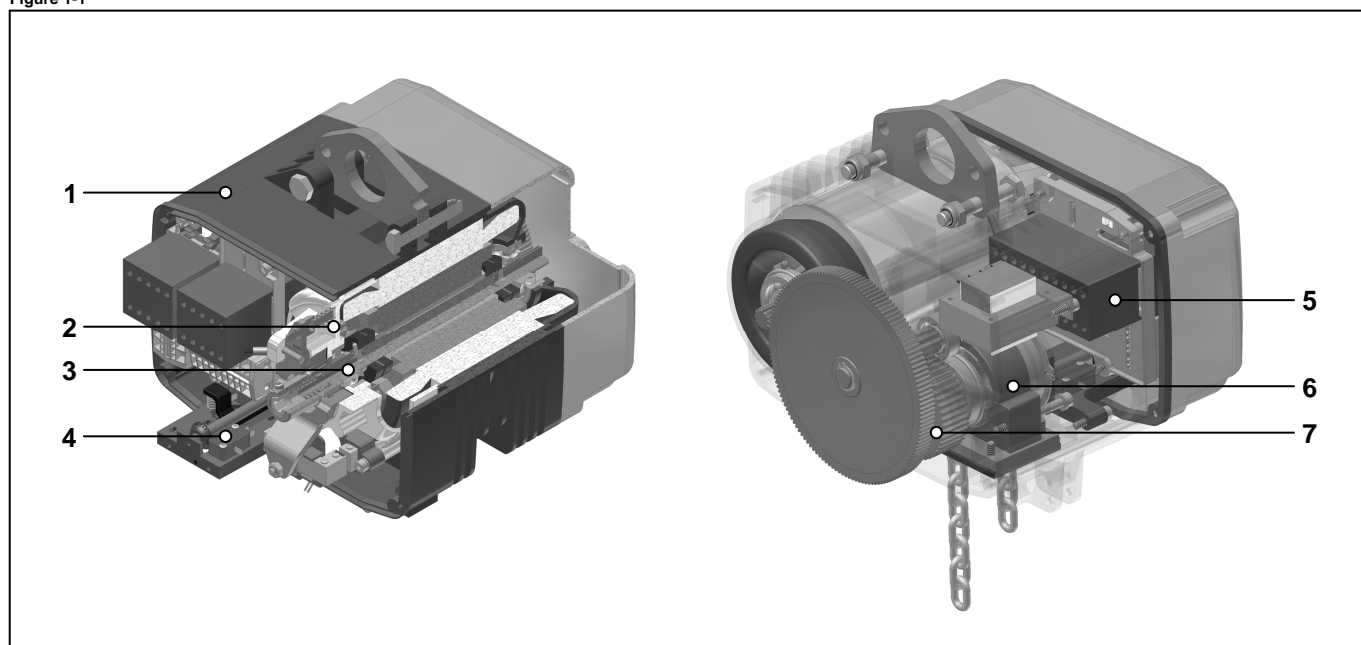


Figure 1-2

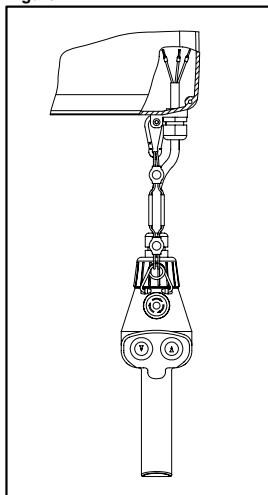


Figure 2-1

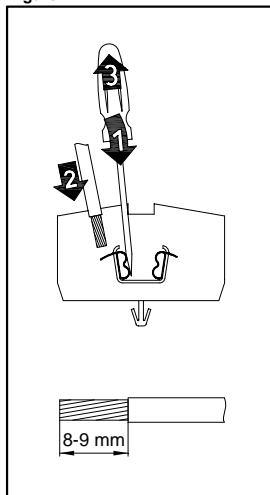


Figure 2-2

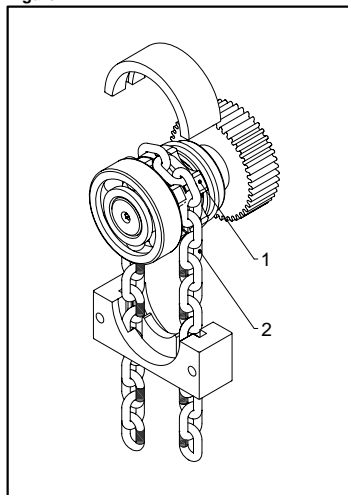


Figure 2-3

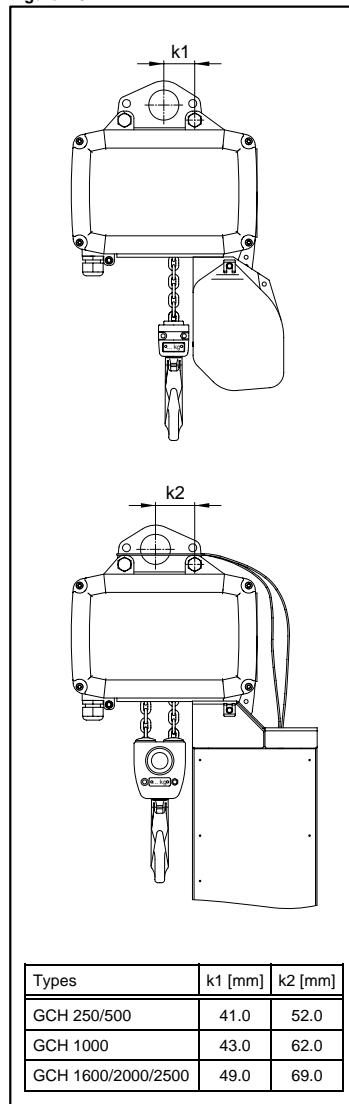


Figure 2-4

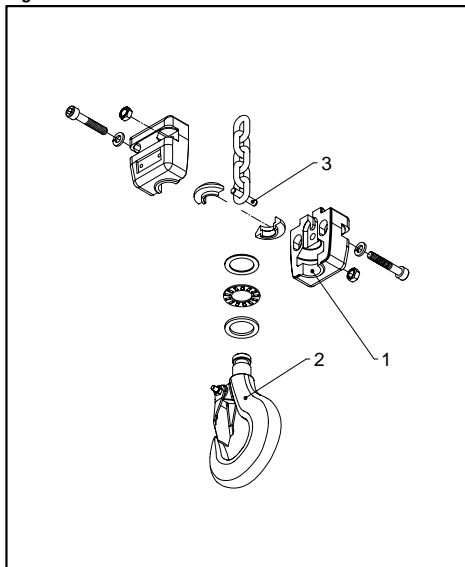


Figure 2-5

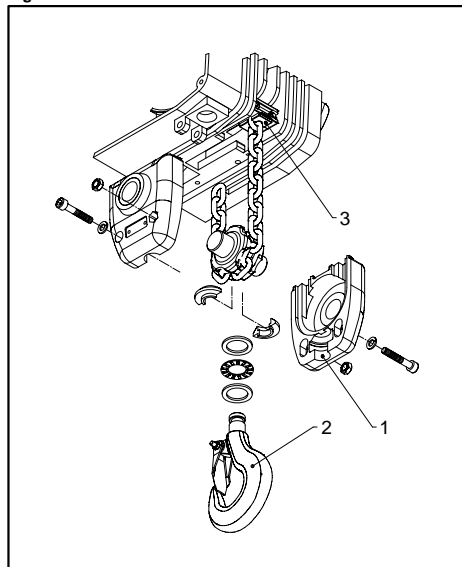


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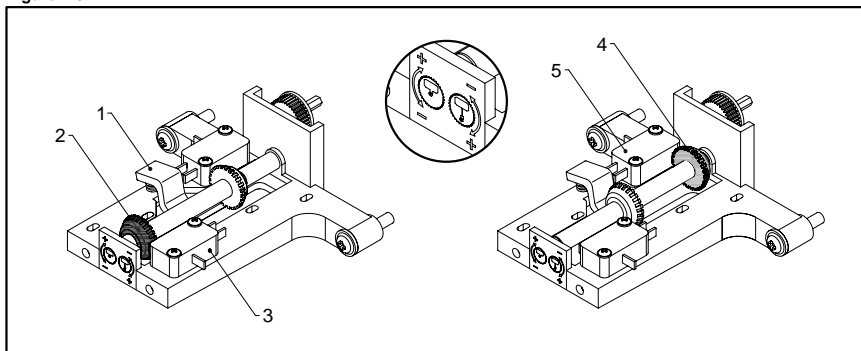


Figure 2-7

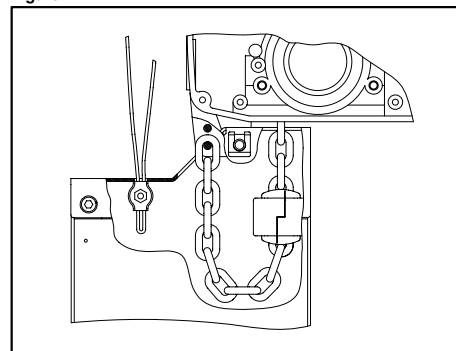


Figure 3-1

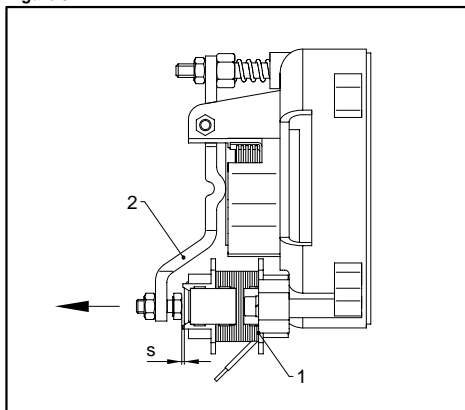


Figure 3-2

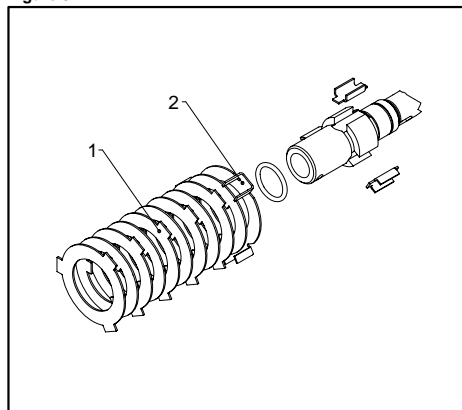
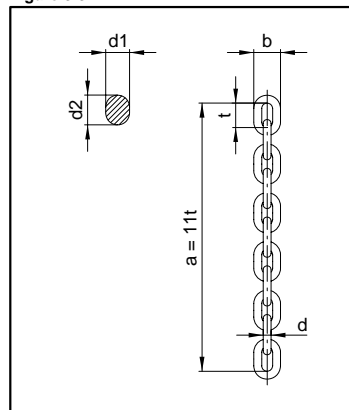


Figure 3-3



EC-DECLARATION OF CONFORMITY

as defined by EC directive 98/37/EC, Annex II A, 89/336/EEC, Annex I and 73/23/EEC, Annex III

We,

GIS AG, Hebe- und Fördertechnik, CH-6247 Schötz

declare herewith that the product



**GIS electric chain hoist, model
in the capacity range of**

**GCH
40 kg - 5000 kg**

in its type of serial production, effective construction year 2005

complies with the following provisions applying to it:

EC machinery directive	98/37/EC
EC directive for electromagnetic compatibility	89/336/EEC
modified by	92/31/EEC, 93/68/EEC
EC low voltage directive	73/23/EEC
modified by	93/68/EEC

Applied harmonized standards:

EN ISO 4301-1	Cranes and lifting appliances, Classification, Part 1: General
EN ISO 12100-1	Safety of machinery, Basic terminology
EN ISO 12100-2	Safety of machinery, Technical principles
DIN EN 818-7	Short link chain for lifting purposes, Safety, Fine tolerance hoist chain, Grade T
EN 954-1	Safety of machinery, Safety-related parts of control systems Part 1: General principles for design
EN 14492-2	Cranes, Power driven winches and hoists, Part 2: Power driven hoists
EN 50178	Electronic equipment for use in power installations
EN 60034-1	Rotating electrical machines, Part 1: Rating and performance
EN 60034-5	Degrees of protection provided by the integral design of rotating electrical machines
EN 60204-32	Safety of machinery, Electrical equipment of machines Part 32: Requirements for hoisting machines
EN 60529	Specification for degrees of protection provided by enclosures
EN 60947-1	Low-voltage switchgear and controlgear, Part 1: General rules
EN 61000-6-2	Electromagnetic compatibility (EMC), Part 6-2: Generic standards Immunity for industrial environments
EN 61000-6-3	Electromagnetic compatibility (EMC), Part 6-3: Generic standards Emission standard for residential, commercial and light-industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC), Part 6-4: Generic standards Emission standard for industrial environments

Applied standards and technical specifications:

FEM 9.751	Power driven series hoist mechanisms, safety
FEM 9.755	Measures for achieving safe working periods

Schötz, 14.04.2008

GIS AG


A. Grob
Managing Director


E. Leiva
Marketing Manager

For completion, assembling and starting according to instruction manual is signing as responsible:

Place: Date:

Responsible person:

Company:

EC-DECLARATION BY THE MANUFACTURER

as defined by EC directive 98/37/EC, Annex II B, 89/336/EEC, Annex I and 73/23/EEC, Annex III

We,

GIS AG, Hebe- und Fördertechnik, CH-6247 Schötz

declare herewith that the putting into service of the product



**GIS electric chain hoist, model
in the capacity range of**

**GCH
40 kg - 5000 kg**

in its type of serial production, effective construction year 2005

**intended to be incorporated into machinery, is prohibited until the machinery
into which it is to be incorporated has been declared that it**

complies with the following provisions applying to it:

EC machinery directive	98/37/EC
EC directive for electromagnetic compatibility	89/336/EEC
modified by	92/31/EEC, 93/68/EEC
EC low voltage directive	73/23/EEC
modified by	93/68/EEC

Applied harmonized standards:

EN ISO 4301-1	Cranes and lifting appliances, Classification, Part 1: General
EN ISO 12100-1	Safety of machinery, Basic terminology
EN ISO 12100-2	Safety of machinery, Technical principles
DIN EN 818-7	Short link chain for lifting purposes, Safety, Fine tolerance hoist chain, Grade T
EN 954-1	Safety of machinery, Safety-related parts of control systems
EN 14492-2	Cranes, Power driven winches and hoists, Part 2: Power driven hoists
EN 50178	Electronic equipment for use in power installations
EN 60034-1	Rotating electrical machines, Part 1: Rating and performance
EN 60034-5	Degrees of protection provided by the integral design of rotating electrical machines
EN 60204-32	Safety of machinery, Electrical equipment of machines
EN 60529	Part 32: Requirements for hoisting machines
EN 60947-1	Specification for degrees of protection provided by enclosures
EN 61000-6-2	Low-voltage switchgear and controlgear, Part 1: General rules
EN 61000-6-3	Electromagnetic compatibility (EMC), Part 6-2: Generic standards
EN 61000-6-4	Immunity for industrial environments
EN 61000-6-3	Electromagnetic compatibility (EMC), Part 6-3: Generic standards
EN 61000-6-4	Emission standard for residential, commercial and light-industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC), Part 6-4: Generic standards
EN 61000-6-4	Emission standard for industrial environments

Applied standards and technical specifications:

FEM 9.751	Power driven series hoist mechanisms, safety
FEM 9.755	Measures for achieving safe working periods

Schötz, 14.04.2008

GIS AG


A. Grob
Managing Director


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For completion, assembling and starting according to instruction manual is signing as responsible:

Place: Date:

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Company: