Lifting and crane technology

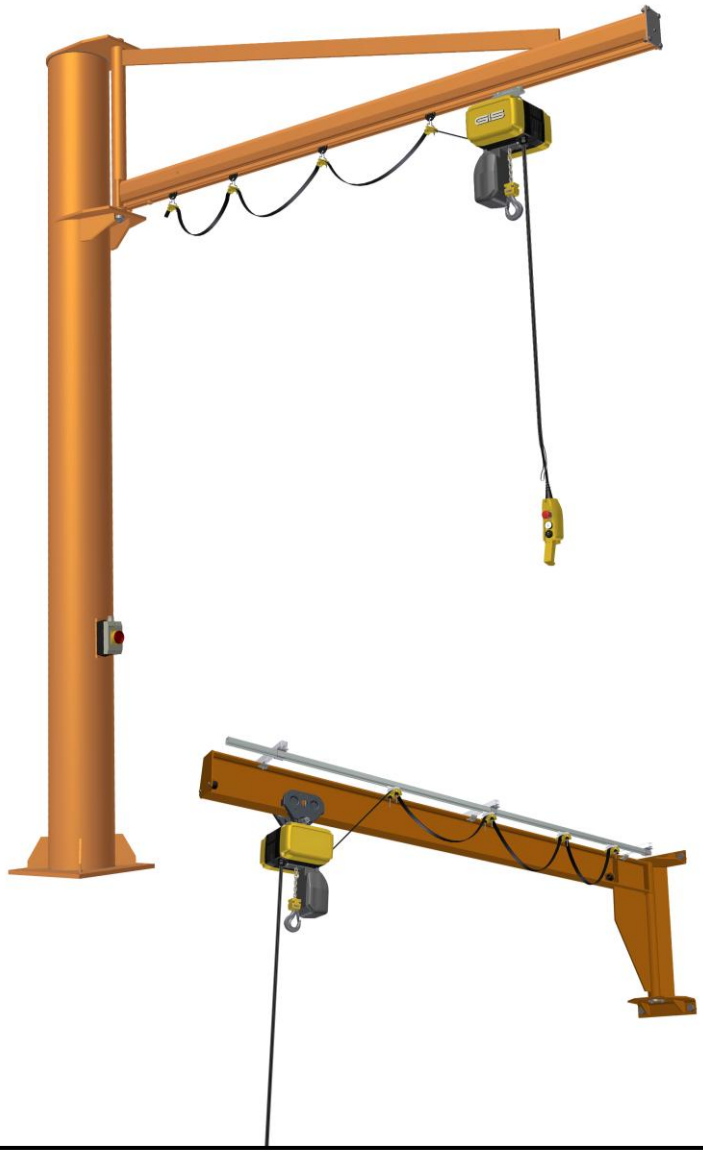
OPERATING AND ASSEMBLY INSTRUCTIONS

Slewing pillar crane • Slewing wall crane

GIS CRANES

SWISS QUALITY

MADE IN SWITZERLAND



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The correct order numbers for original spare parts can be obtained from the relevant spare parts list. Please ensure that you have the following data on your slewing crane to hand. This will enable the correct spare parts to be supplied without delay.

Slewing crane type : .....

Year of manufacture : .....

Load capacity : .....

Original spare parts for the slewing crane 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

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1 General information

1.1 General hazard warnings

The product is intended for operation from high-voltage industrial power mains, unless its movements are powered solely by human effort. During operation, there are dangerous exposed components that conduct live voltage inside the product, as well as moving or rotating parts. Severe damage to the health of persons or to property can be caused due to:

- prohibited removal of covers
- improper use
- incorrect operation
- inadequate maintenance and servicing.

Failure to comply with the safety warnings stated in these Instructions may result in injuries or even death.
There may be danger to life and limb from the product if it is operated or used by staff who are untrained or inadequately trained, or if it is operated or used other than in the specified manner.
The operator must take care to ensure that the operating and maintenance staff receive instruction in good time before they work with the product.
Because of the danger of injury (e.g. due to being caught up or pulled into the machine), staff must not wear loose clothing, have uncovered long hair, or wear jewellery (including rings).
Persons under the influence of drugs, alcohol or medicines which affect their ability to react must not undertake any work with or on the product.
Contact with concentrated acids or alkalis may cause the disintegration of plastic housings, or dangerous corrosion of metal parts; any parts that are attacked in this way must be replaced promptly.
The product must not be operated in areas with an explosion risk unless it is explicitly prepared for this purpose in each individual case.

During operation:

All measures stipulated in the Instructions before, during and after commissioning, as well as warnings regarding general safety (especially operational safety and accident prevention) must be followed strictly; failure to do so leads to the risk of accidents which may prove fatal.
The use of impermissible or unsuitable tools or auxiliary equipment may lead to injuries.
Crushing and shearing points may be present due to the movement or rotation of parts, both on the product and between the product and nearby objects; an adequate safety distance must always be kept from moving or rotating parts in order to prevent items of clothing, parts or the body or hair from being pulled in or caught up.
The following must be avoided: the effects of extreme heat (e.g. during welding), sparking when cleaning agents or even open flames are used in the vicinity of combustible parts or parts which can be deformed by heat (e.g. wood, plastics, oils, greases, electrical equipment or wiring); otherwise, there is a risk of fire entailing the release of harmful gases or damage to insulation, etc.

1.2 Proper use

The plant described here is suitable for transporting and lifting loads within the permissible loading capacity and within the drive group and stress group on which the product is based; the load-carrying capacity, drive group and stress group are stated in the datasheet/test logbook for the product in question.

Proper use also includes strict compliance with the installation, operating and maintenance instructions.
Improper use is deemed to include (but is not limited to) the following:

- Exceeding the permissible load-carrying capacity
- Pulling loads at angles
- Wrenching loads loose, dragging or pulling them (along the ground)
- Catching falling loads
- Carrying persons with the load or the lifting accessories
- Inching operation
- Changing the direction of operation of the machine while it is running ("counter-switching")
- Planned approach of emergency limit switches

On this subject, see also chapter 2.2 Safety warnings for the user.

1.3 Warranty

GIS AG shall not accept any liability whatsoever for damage to the crane and/or the lifting gear which is due to improper use or to incorrect work or work undertaken by untrained persons, or any liability in respect of third parties.

IMPORTANT !
Changes to components carried out at the responsibility of the party making such changes, installation in a manner other than that described in the Instructions and/or installation diagram or the use of parts other than original GIS parts shall result in the loss of entitlement to the warranty in respect of the entire plant.

In order to ensure safe operation of the product, it is essential to use only **GIS original parts** whenever parts are required.

Safe operation in the long term is guaranteed only if the crane/lifting gear is operated in accordance with its classification; please consult the test logbook or the data sheet for the product to find the lifting class, stress group and drive group of your crane/lifting gear.

GIS products must only be maintained and serviced by trained **specialist staff**.

We recommend that maintenance and servicing work should be carried out by the GIS Customer Service.

1.4 Other information

The year of construction is shown on the master datasheet for the product in the test logbook.

To ensure that the product performs its functions reliably and satisfactorily, it is essential for it to be operated, maintained and serviced only by persons who are designated to do so by the operator and who are familiar with the installation, operating and maintenance instructions as well as the applicable safety regulations, such as the accident prevention regulations.
The installation, operating and maintenance instructions must be available to the persons assigned to these tasks at all times.

GIS products are largely low-maintenance.

The number of maintenance tasks that are required must be carried out carefully in accordance with the installation, operating and maintenance instructions and the maintenance schedule.

GIS Customer Service will undertake maintenance on request.

2 Safety

2.1 General warnings

The installation, operating and maintenance instructions must always be kept at the operational location of the GIS product and must be accessible to the operating staff at all times.
The operating, maintenance and servicing staff must have read and understood the operating instructions before they commence work.
The operator of the GIS product must monitor handling of the product by the staff to ensure compliance with safety requirements.

2.1.1 Regulations

GIS products are constructed and tested in compliance with European regulations and directives, and they must also be operated in accordance therewith.

2.2 Safety warnings for the user

IMPORTANT !
In order to ensure safe working, it is urgently necessary for the operating and maintenance staff to receive instruction on these installation, operating and maintenance instructions.

All securing/immobilising devices must be released before starting to operate the product.

In case of danger, the crane switch must be turned off.

At the end of operation, lifting accessories such as grippers or magnets must be set down, the empty hook must be raised and the crane must be moved into its rest position. As appropriate, any locking/immobilising devices that are available must be engaged or inserted, and the crane switch must be turned off.

When operating and carrying out maintenance on the crane, the safety regulations (e.g. accident prevention regulations and other official provisions) must be heeded.

The term "crane" as used in the following text also denotes a trolley running on rails.

If different national regulations on crane operation are applicable to the operator or the manner of operation, the information below shall still be valid unless it explicitly contradicts the national regulations.

1. Cranes must be tested by an expert commissioned by the company before they are operated for the first time, and before operation resumes after any major changes.

2. Cranes must be tested by an expert commissioned by the entrepreneur in accordance with the conditions of their deployment and the operational circumstances as required, but at least once per year (see point 5.4.3, "Recurring tests").

3. The results of the aforementioned tests must be documented.

4. Persons employed to operate a crane (crane operators) or to maintain it (crane maintenance technicians) must meet the following requirements:
   1. they must have reached the age of 18;
   2. they must be physically and mentally suited to such work;
   3. they must have received instruction on operating or maintaining the crane and must have furnished proof to the company of their ability to do so;
   4. they must be persons who can be expected to carry out the tasks assigned to them in a reliable manner.

   They must be designated by the entrepreneur to operate or maintain the crane.

5. On commencing work, the crane operator must test the functions of the brakes and emergency stop equipment, and must monitor the condition of the crane in order to identify any evident defects.
   Safety equipment does not exonerate the crane operator from his duty to exercise care. Such equipment is installed in order to ensure the necessary safety should the crane operator become unable to perform his function.

6. In case of defects which endanger operational safety, the crane operator must stop operation of the crane.

7. The crane operator must notify all defects on the crane to the responsible supervisor, and also to the person replacing him in case of a changeover of crane operators.

8. The crane operator must ensure that all control devices are in the zero or idling positions before releasing the supply of power to the drive units.

9. If the crane operator cannot observe the load during all the movements of the crane, or cannot observe the lifting accessories if the crane is operated without a load, he may only operate the crane when signalled to do so by a banksman.

10. If necessary, the crane operator must give warning signals.

11. The load must not be moved above persons.

12. As long as a load is suspended from the hook, the crane operator must keep the control device in the manual range.

13. Operational approaches to end positions limited by emergency limit devices are permitted only if operational limit switches are installed upstream of such devices.

14. Cranes must not be loaded beyond the maximum permitted load for them.

15. The entrepreneur must ensure that during storage work with rail-mounted or fixed-position cranes, a safety distance of at least 0.5m between the outer moving parts of the crane and the stored materials is maintained.

16. (1) If the working areas of several cranes overlap, the entrepreneur or his authorised representative must specify the working procedure in advance, and must ensure that the crane operators can understand and communicate with one another perfectly.

    (2) If one load is lifted jointly by several cranes, the entrepreneur or his authorised representative must specify the working procedure in advance, and it must be carried out in the presence of a supervisor designated by the entrepreneur.

17. Maintenance work must be carried out only when the crane is switched off. Maintenance work that cannot be carried out from the ground must be undertaken solely from working gantries or platforms.

    Maintenance and repair work must only be carried out while the crane is not loaded, and while the mains switch and/or circuit breaker is switched off and is protected against being switched back on in an unauthorised manner.

    A fixed-position or transportable working platform must be available for maintenance and repair work on cranes without maintenance procedures.

18. (1) In connection with all repair and maintenance work on cranes and in the operational area of the crane, the entrepreneur or his authorised representative must order and monitor the following safety measures:

    1. The crane must be switched off and must be protected against being switched back on in error or without authorisation.
    2. If there is a risk of falling objects, the hazard area under the crane must be secured by closing it off or by warning posts/guards.
    3. The crane must be secured by rail stops or warning posts.
    4. The operator of the neighbouring crane and as necessary, operators of adjacent rail tracks, must be informed of the nature and location of the work. This also applies to operators who take over when there is a shift change.

    (2) If the aforementioned safety measures do not serve the intended purpose, or if they cannot be implemented or are inadequate due to operational reasons, the entrepreneur or his authorised representative must order and monitor different or additional safety measures.

19. It is prohibited to carry persons with the load or the lifting accessories.

20. The hoist chain must not be used directly as a sling around the load; hoisting gear must not be kinked or pulled over sharp edges.

21. It is forbidden to pull loads at angles or to drag them.

    The crane must not be used to wrench loads loose, pull, drag or move them at angles, because these actions lead to the risk of overloading.

    Wrenching jammed loads so as to loosen them is not permitted.

22. After repair and maintenance work or after work has been undertaken in the crane's operating area, cranes must be operated only if the entrepreneur or his authorised representative gives clearance for operation to resume. Prior to giving such clearance, the entrepreneur or his authorised representative must ascertain that:
    1. the work has been definitively completed;
    2. the entire crane is restored to safe operating condition.

23. When operating additional crane devices and/or equipment, any special warnings and information which may be relevant must be heeded. If additional crane devices and equipment are retrofitted, the operator is responsible for verifying that such equipment is permissible and is suitable for the crane installation.

On commissioning and after work on the main power supply lines, the control devices must be inspected to ensure that they function correctly and perfectly, because these devices will not function as intended if phases are interchanged, leading to a risk of accidents.

3 Description

3.1 Crane

The crane comprises the boom with the bolt, the mounting base and the pillar.

The pillar consists of the top plate, the pillar tube and the pillar base with the anchorage.

The trolley (crab), including the lifting gear, travels in the GIS*KB* profile or on the lower chord of the boom profile. The trolley travel movements may be carried out with an electric trolley as an additional option.

3.2 Electrical equipment

Work on the electrical equipment must be carried out only by a specialist electrician and only when the equipment is disconnected from the power supply (dead).
Details of the electrical equipment are shown in the circuit diagram.

3.2.1 Mains feed (main power supply)

Cross-sections for the mains feed from the sub-distributor via the mains connection switch to the infeed must be determined by the operator. The mains feed must be dimensioned such that the voltage on the infeed does not fall below the lower value of the voltage range.

3.2.2 Mains connection switch

It must be possible to release the hoist by means of a mains connection switch or a plug-in connector, and to protect it against being switched back on.
The mains connection switch is located on the pillar, and its function is to isolate the main power supply for the purposes of repair and maintenance work.

3.2.3 Trolley power supply

The power supply for the lifting gear is provided via a trailing cable, conductor line or a cable carrier system.

3.2.4 Type of control

3.2.4.1 Contactor control

The motor power is connected via contactors in the lifting gear or in the contactor box, as a result of which the control voltage of 42 V is present in the pendant control.
The standard contactor control is designed for an operational voltage range of 400 V, 50 Hz. Other operational voltages are possible. The standard control voltage is 42 V.

3.2.4.2 Direct control

The motor power is switched directly in the pendant control.

3.2.5 Pendant control

The motion drives are controlled by two-stage keys with spring return. It is advisable to carry out positioning tasks with the first stage. Frequent inching damages the motors and switchgear. Simultaneous operation of the control keys in opposite directions is prevented by mechanical locking of the switching elements.

The red mushroom button is used to implement the requested functions: emergency stop from the hall and from the operating location.
Important! An emergency stop is not the same as an emergency shutdown – i.e. in the former case, the energy supply to the motion drives is merely interrupted and the brakes are applied. However, the plant is not disconnected from the power supply in this case.
An emergency stop is triggered by pressing the mushroom button, and the plant is switched back on by turning it to the left. An emergency stop should be implemented if the following operational conditions occur:

– if the motion drives of the crane installation no longer respond to the normal control commands, as a result of which hazards could occur.

3.3 Technical data

3.3.1 Lubricants

See the separate installation, operating and maintenance instructions for the lifting gear and trolley that are used.

4 Installation

4.1 General guidelines

1. The installation must be carried out with the necessary care, according to these instructions.
2. All screwed joints must be secured with the relevant locking components.
3. All electrical components must be included in the protective earthing.
4. The mains cable must be fuse-protected according to the applicable standards.
5. Transport and installation damage to the paintwork is inevitable and does not justify complaints. Such damage must be repaired immediately in order to prevent further corrosion. If cranes are delivered with a coating of primer, any damage to the primer must be rectified immediately after installation and the topcoat must be applied. Any damage can be repaired by using the paint supplied together with the product.

4.2 Anchoring and fixing the crane

4.2.1 General

Slewing crane anchorages must be planned and dimensioned by engineers in accordance with the rules, regulations and recognised technological norms as valid at the time of planning and execution.

The foundations specified in the corresponding dimension sheets for the slewing pillar crane are minimum foundations which meet the following conditions:

When executing the foundations, the relevant standards and regulations must be followed.

4.2.2 Pre-assembly of the boom, independently of the pillar

4.2.2.1 Load-carrying capacity plates

The loading capacity plates with information on the maximum permitted load for the crane must be affixed with adhesive on both sides of the boom, onto clean and grease-free contact areas so that they are permanently and easily identifiable.

4.2.2.2 Lifting gear

The lifting gear is pre-assembled according to the installation, operating and maintenance instructions for the relevant lifting gear.

1. Use of a GIS chain hoist

Pre-assembly of a GIS chain hoist for a GIS manual trolley or a GIS electric trolley is described in the relevant installation, operating and maintenance instructions for the lifting gear.

4.2.2.3 Note on electrical components

To make the installation easier, the electrical components can be positioned on the boom before the boom is placed on the pillar.

4.3 Electrical installation

All electrical connections must be made only while the power is disconnected.

The wiring is executed as shown in the appended circuit diagram.

It is mandatory for the protective (earthing) conductor to be routed all the way from the mains connection as far as every single item of electrical operating equipment. The slewing crane must only be connected to a 3-phase mains supply with a protective conductor.

5 Commissioning

IMPORTANT !
Before starting the electrical work for commissioning purposes, the crane installation must be disconnected from the power supply.
To do this, the mains switch or circuit breaker must be turned off and protected from being switched back on in an unauthorised manner.

Details of the electrical supply for the crane installation are shown in the appended circuit diagrams.

5.1 Connecting to the mains

The mains connection must be made by the operator.

5.2 Direction of rotation of drives

When switching the drives on for the first time, the direction of travel of the drives must be compared with the specifications regarding the direction of travel for the control device. The movements depend on the phase sequence of the mains line. **As the first control command after releasing the red mushroom button, the control key for Slow UP must be pressed. Never press the DOWN button as the first command! If the hook moves upwards or if no movement is triggered because the upper travel limit switch had already been approached, the phase sequence is correct. To counter-check, press the Slow DOWN key.** If the triggered movement is not in the direction indicated on the control device, two supply line wires must be changed over.

Disregarding this information can lead to damage!

5.3 Acceptance and tests (within the operator's area of responsibility)

IMPORTANT !
If acceptance and tests are not carried out by the crane manufacturer's specialist staff but instead, third parties are assigned to carry out this task by the operator, the operator shall bear the responsibility for selecting suitable staff and for initiating/carrying out the test.

Requirements for persons selected as testers:

- comprehensive knowledge of mechanical and electrical engineering for cranes
- adequate experience of operation, installation, maintenance and servicing of cranes
- comprehensive knowledge of the rules of technology relating to acceptance, and of guidelines and relevant safety regulations, e.g. accident prevention regulations

Requirements of relevant national regulations must be heeded in each case.

5.3.1 Acceptance test before operating for the first time

The acceptance test prior to first operation must be carried out by the tester in ready-to-operate condition, under normal operational conditions.

It must be ensured that nobody is put at greater risk by the test than is inevitable under the circumstances.
The staff required for the test, e.g. the crane operator and the anchorman/slinger, must be qualified for this work and must be made available by the operator.

Perfect understanding and communication among the persons participating in the test must be ensured. If direct communication between the slinging points and the control points is impossible, suitable equipment must be provided by the operator.

In particular, the acceptance test must include the following:

- Inspection of the test logbook, based on the table of contents
- Verification that the fully assembled plant conforms to the technical specifications
- Verification of compliance with any safety regulations, e.g. accident prevention regulations, which must be followed
- Test of the effectiveness of safety equipment and measures, and of all brakes
- Check on any safety distances that are required
- Dynamic sample loading with 1.1 times the rated load of the crane.
  This test is carried out at rated speed, and for all the most unfavourable load positions.
  The most unfavourable load positions are as follows:
  For slewing cranes ->: trolley position at longest outreach/working radius
  If the crane's control circuit allows several movements at the same time (e.g. lifting and crane travel), the test must be carried out with a combination of these movements.
  The use of a spring balance or similar device between the crane and the ground anchorage as a substitute for a test load is not allowed.
- If a static sample loading test is also carried out (no movement other than the lifting movement), this must also be performed with the least favourable load positions; 1.25 times the rated load for all cranes.
  In this case, the load must be lifted slowly until it hovers just above the ground. No permanent deformations or evident faults must appear on the crane. Prevents the slip clutch setting a lifting of the test load, apply the additional load on the suspended load.
- The results of the tests must be documented in the test logbook.
- The tester must decide on commissioning.
- If faults are discovered during the test, the operator must ensure that they are rectified; the tester must decide whether another test must be performed after the faults have been rectified.

IMPORTANT !
The acceptance test as per this section does not constitute exemption from any tests that may be required according to national regulations, which must be carried out in addition where appropriate.
If national testing regulations for the dynamic and/or static tests specify higher test loads than those indicated in this section, this point must be clarified with the crane manufacturer before carrying out the test.

5.3.2 Acceptance test after major changes

After major changes, an acceptance test must be carried out by a tester before resuming operation of the crane.

Examples of major changes include:

- Change of the type of current (power)
- Replacement of trolleys
- Conversion or modification of drives
- Increase in the load-carrying capacity of a crane installation
- Extension of a crane track
- Relocation of cranes onto different crane tracks, for fixed-location crane installations
- Welding on load-bearing components
- Design changes to the supporting structure
- Conversion of parts of the supporting structure, e.g. boom, pillar
- Changes to operating conditions regarding runtime and collective load for the crane installation

5.3.3 Recurring tests

The plant must be inspected by a tester as required according to the operational conditions (utilisation of the maximum load-carrying capacity, frequency of operation and ambient conditions), but it must be inspected **at least once per year**.

A plant operated for a large number of hours which also works mostly at full load must be inspected more often than (for example) a crane that is used only occasionally for installation purposes, for which one single test per year is sufficient.

Dusty or aggressive atmospheres can also reduce the intervals between tests. Intervals between tests other than the maximum period of one year must therefore be defined by the operator, taking account of the operational conditions, and in consultation with the manufacturer in case of doubt.

The result of these tests must be documented in the crane's test logbook.

The recurring test must basically comprise:

- check on the identity of the installation against the data in the test logbook
- inspection of the condition of components (including weld seams) and equipment, in order to identify damage, wear, corrosion and other changes
- check on the completeness and effectiveness of the safety equipment and brakes
- inspection of the crane track including its supports and joints
- for lifting gear: determination of the percentage of the theoretical lifetime already used
- re-inspection if defects that impair safety have been identified and rectified.

6 Operation

6.1 Operation inside closed halls

GIS slewing cranes are intended for operation inside halls that are closed on all sides. The normal ambient temperature range in which GIS slewing cranes may be operated extends from -5 to +40 degrees Celsius. The operator must notify the manufacturer of any divergent operational conditions, so that the latter can carry out a suitable test and propose any special measures which must then be carried out by the operator and/or by the manufacturer, as contractually defined, in order to guarantee safe operation of the crane.

6.2 Operation outside closed halls

GIS slewing cranes are not designed for operation outside of halls that are closed on all sides. When they leave the factory, they are not protected against unintentional crane and trolley movements caused by wind. For this reason, GIS slewing cranes can only be used outdoors (outside of closed halls) in exceptional cases, with a lower payload and a smaller outreach/working radius, provided that they are not equipped with an electrical slewing system or an electrical trolley (crab). The following warnings must be followed strictly by the crane owner (purchaser) and the crane operator(s) designated by him:

1. Use only trained employees!

Due to the specific hazards involved in operating cranes in the open air, i.e. outside of halls that are closed on sides, only trained employees may operate the crane. The employees must receive instruction from the operator in the correct and proper handling of the crane and must be made thoroughly familiar with this information. Training must be repeated at suitable intervals.

2. Hazards during and beyond operation outside of closed halls / safety

If a collision between the boom or the trolley (including their loading accessories) and other objects in the surrounding area cannot definitely be excluded, measures must be taken to prevent the boom from rotating freely in order to prevent such a collision, e.g. the load hook must be inserted into a lug on the ground. If appropriate, the operator must undertake the necessary construction work for safety precautions of this sort.

3. Weathering / protection against weather conditions

Because the crane is subject to constant weathering when it is operated outside of a closed hall, there is an increased risk of corrosion as compared with operation in closed halls, which is taken as the basis for its production in the factory. As well as impairing the appearance of the crane, corrosion shortens the lifetime by reducing and indenting the load-bearing cross-sections. The corrosion protection must therefore be inspected regularly (about every 6 months) in accordance with the weather and climate conditions prevailing at the operational location, and must be repaired or renewed as necessary. To protect against weathering, the operator is strongly advised to provide a fixed protective roof for the trolley, under which it can be parked outside of operating periods (e.g. a protective roof on the boom).

4. Recurring tests

If slewing cranes are used in the open air (outside of closed halls), the recurring tests must be carried out at appropriate and possibly shorter intervals according to the meteorological and environmental influences prevailing at the operational location, and at least every 12 months. It is essential that the status of corrosion is regularly included in such inspections.

6.3 Abnormal operating conditions

The following are considered as examples of operating conditions that diverge from normal operation:

1. In case of divergence from the aforementioned ambient temperatures, oil/grease of a quality suitable to the circumstances is required in the transmissions of the drive motors.
2. GIS cranes are **not** suitable for environments with aggressive and explosive media.
3. Use of the crane when the air humidity is high.
4. Transport of molten masses.
5. Magnetic operation.
6. Guided hoist load.

7 Maintenance

GIS slewing cranes require only a minimal outlay on maintenance. The maintenance intervals must be adapted to the conditions of use and the operating circumstances, but maintenance must be carried out at least once per year.
The maintenance intervals must be adjusted if the crane is operated for multiple shifts.

Worn or damaged parts must be replaced during maintenance. To ensure safe operation of the crane, it is essential that only GIS original parts are used. Any warranty claims can be acknowledged only if GIS original parts are used.

The maintenance outlay is generally limited to the following points:

1. About 6 weeks after commissioning, all screwed joints e.g. on the clamp-fitted buffers, the roller box or the electrical slewing unit, the trolley/crab and the power supply components, must be inspected to ensure that they are in proper condition and must be corrected as necessary. Once these steps have been carried out for the first time, they must also be repeated during every further maintenance operation.
   At regular intervals according to the operating conditions, the pillar base anchorage must be inspected to ensure that it sits firmly, and it must be corrected as necessary.

2. Under more arduous operational conditions and / or in case of especially unfavourable ambient influences (gases, acid or alkali baths, cold storage rooms or the like), separate upkeep and maintenance instructions must be requested from the manufacturer.

3. Maintenance of lifting gear and manual or electric trolleys must be carried out as per the relevant installation, operating and maintenance instructions for such equipment.

   GIS specialists will be glad to carry out maintenance work for you. Our experts are experienced in maintenance, and they have the right tools on board.

7.1 Faults - causes - how to rectify them

Rectification of all the faults described below must be carried out only by suitable specialist staff.

IMPORTANT !
All work on electrical equipment must be carried out only when the crane is dead (disconnected from the power supply).

Fault	Possible cause	Remedy	Comments
Crane does not operate	No mains voltage available	Check the emergency OFF switch and contactor K1, inspect the current collector(s)	
Drive motors do not run in any direction of rotation, and do not "hum" even if the pendant control is activated	No mains voltage present Mains connection is not correct	Check the voltage Connect all 3 phases correctly	
	Faulty fuses Quick-fit plugs, mains connection and/or pendant control not property inserted or fuse-protected	Replace fuses Insert quick-fit plugs firmly and secure with safety catches	Consult the circuit diagram
	Contact fault in the pendant control, broken cabling wires in the feed line or the pendant control, or possibly on the power drive	Check wiring for breaks, replace the control line as necessary	
Drive motors do not run in any direction of rotation, but do "hum" if the pendant control is activated IMPORTANT!!! Motor winding may burn in this case	Faulty mains connection or failure of a mains fuse Faulty contactor	Check the mains connection Replace the contactor	
Drive motors start only with difficulty	Brake does not release, motor is running against applied brake	See: brake faults	
Electrical drive movements only possible in one direction	Faulty switching element in the pendant control Faulty contactor, broken wires	Check switching element for faults or replace it, replace contactor, check control cable	
Brake does not release	No voltage present on the brake coil, no AC voltage present at rectifier input	Check and repair connections Check motor	Important: pull out the mains plug before starting work!
	Rectifier is not correctly connected, or is faulty	Check DC voltage on the brake coil; connect the rectifier correctly, or replace it	Consult the circuit diagram
	Brake coil has no electrical throughput and is faulty	Replace brake coil	Follow the relevant installation, operating and maintenance instructions

Fault	Possible cause	Remedy	Comments
Overrun traverse when lifting and/or lowering and/or during electrically powered trolley travel is too long	Maximum air gap attained (limit of wear has been reached)	Replace brake lining	Follow the relevant installation, operating and maintenance instructions
Crane swivels in a preferred direction	The swivel axis is not vertical	Re-align the slewing crane	See the installation drawing

7.2 Repairs

IMPORTANT !
Repairs must be carried out only by suitable specialist staff. GIS shall not accept any liability for damage due to repairs on the crane which are not carried out correctly, or which are carried out by unauthorised persons.

8 Disposal, decommissioning

GIS products are to be disposed of in an environmentally compatible manner after they cease to be used.
GIS is a manufacturer of cranes, lifting gear and components for crane systems. These are high-quality products with long lifetimes which are largely maintenance-free.

Details of the disposal and recycling options for the components are shown in the overview table below.

Product	Materials	Disposal
Pillar Boom Trolleys Motors Transmission Drive unit components	Metals	Separation of materials Materials are passed on for recycling/re-use by melting them down
Brake linings	Multiple components	At special waste management facilities, in compliance with official local regulations
Lubricants	Oils and greases	Processing or disposal as per the Waste Management Act, e.g. incineration
Cables, housings, plugs, pendant control	Rubber, PVC, silicone, Polychlorophren	Materials are separated and passed on for recycling/re-use
Electronics sub-assemblies	Plastics, metals, electrolytes	At special waste management facilities, in compliance with official local regulations

Products with paintwork must be passed on for recycling/re-use as appropriate to the paintwork materials, or must be disposed of at special waste management facilities in compliance with official local regulations.

EC DECLARATION OF CONFORMITY

Declaration for machinery according to EU directive 2006/42/EC, Annexe II A

We,

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

hereby declare that the following machinery

Slewing pillar crane, series	**SD, SD-H, SDR, SD-HR**
Slewing wall crane, series	**WD, WD-H, WD-HR**
Articulated slewing crane, series	**GSD, GWD**
payload range	**up to 1000 kg**

which was developed to transport loads, conforms to the basic requirements of the EC Directive cited below, insofar as applicable for the scope supplied:

EC Machinery Directive	2006/42/EC

Standards and technical specifications applied:

FEM 1.001	Vols. 1 - 8, as applicable
FEM 9.901	Calculation bases
FEM 9.341	Local girder stresses
DIN 15018	Parts 1 - 3, as applicable

Authorized to compile relevant technical documentation:
Mr. Pius Engel, GIS AG, Luzernerstrasse 50, CH-6247 Schötz.

Schötz, 20.11.2012 **GIS AG**

I. Muri
Director

E. Widmer
Sales Manager

EC DECLARATION OF INCORPORATION

Declaration for the incorporation of partly completed machinery according to EU directive 2006/42/EC, Annexe II B

We,

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

hereby declare that the following partially completed machinery

Slewing pillar crane, series	**SD, SD-H, SDR, SD-HR**
Slewing wall crane, series	**WD, WD-H, WD-HR**
Articulated slewing crane, series	**GSD, GWD**
payload range	**up to 1000 kg**

which was developed to transport loads, is intended for incorporation into a machine and conforms to the basic requirements of the EC Directive cited below, insofar as applicable for the scope supplied:

EC Machinery Directive 2006/42/EC

We furthermore declare that the technical documentation was drawn up in accordance with Annexe VII, Part B of Directive 2006/42/EC. We undertake to send the special documentation on the crane to individual national authorities in case of justified requests to do so. The documentation will be transmitted electronically.

Standards and technical specifications applied:

FEM 1.001	Vols. 1 - 8, as applicable
FEM 9.901	Calculation bases
FEM 9.341	Local girder stresses
DIN 15018	Parts 1 - 3, as applicable

This declaration relates solely to the crane. Commissioning is prohibited until it has been determined that the plant into which the crane is incorporated complies with the provisions of the aforementioned EC Directive.

Authorized to compile relevant technical documentation:
Mr. Pius Engel, GIS AG, Luzernerstrasse 50, CH-6247 Schötz.

Schötz, 20.11.2012 **GIS AG**

I. Muri
Director

E. Widmer
Sales Manager