The ST chain hoist

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INTELLIGENT MOTION
Columbus McKinnon

STAHL CraneSystems

The ST chain hoist

The ST chain hoist programme ranks among the world's most distinctive and extensive ranges on offer. Users, crane manufacturers and systems manufacturers appreciate the robust classic which proves itself in operation day after day. It is powerful, reliable and undemanding as regards maintenance and power consumption. The supervised series production of the standard components brings you economic advantages. And in conjunction with the precise manufacture of off-standard components, the ST chain hoist is an acknowledged top level quality product.

The modular system permits numerous combinations of the sub-assemblies to achieve your individual solutions. The ST series from STAHL CraneSystems is available in 6 load capacity variants for the load capacity range from 125 kg to 6,300 kg. The chain hoists can be used as stationary models with suspension hook or eye, with rigid suspension or with a push trolley. Or when completed by an electric trolley, they are mounted on standard cranes, off-standard cranes or in systems manufacture. The technical highlight that makes the patented ST chain hoist one of the safest around is its direct suspension from the solid cast iron chain guide. The load is supported at the point where it engages.

The STF chain hoists variant is equipped with frequency inverters from Magnetek as standard. This ensures precise, stepless lifting and travel with reliable feedback.

Various off-standard designs are available for use in particular conditions. Two constructions optimise the effective hook height of all chain hoist models if required. The headroom of the short headroom trolley and extra short headroom trolley is reduced by 33 % and over 60 % respectively. For exceptional requirements, our experts in the engineering department will develop suitable customised solutions. Even in explosive atmospheres you do not have to manage without the ST chain hoist. On request, nearly the entire chain hoist programme is available in explosion-protected design for Zone 1, Zone 21 and Zone 22.

It is no coincidence that we are one of the market leaders in explosion-protected lifting technology and crane components.

Standard ST chain hoist with electric trolley.

ST chain hoist with the option RadioMOVEit (RMI).

The facts

- Extensive chain hoist range for lifting capacities from 125 kg to 6,300 kg
- Suspension directly from the chain guide of solid cast iron
- Easy inspection and maintenance of the chain drive thanks to over-mounted drive shaft
- Optionally with frequency inverters for lifting and travel from Magnetek
- Extremely short and compact construction ensures that space can be utilised to the maximum
- High ISO classification according to FEM/ISO standards
- Modern Kanban production, available fast
- Optionally available in explosion-protected design complying with ATEX and IECEx, NEC, CEC, INMETRO and TC RU

STF chain hoists from STAHL CraneSystems® with Magnetek®: First-class performance. Industry-leading controls.

STAHL CraneSystems' STF chain hoists will in future be equipped with frequency inverters from Magnetek as standard. They combine STAHL CraneSystems' signature performance and reliability with Magnetek's industry-leading design features and control capabilities.

The ST 10 – ST 60 chain hoist series can be equipped with Magnetek inverters, providing a unique, intelligent option for lifting tasks. Magnetek is known throughout the industry for user-friendly controls and extensive, integrated safety features. With inverters from Magnetek, the hoist always remains operational and provides the precision and accuracy needed for all lifting tasks.

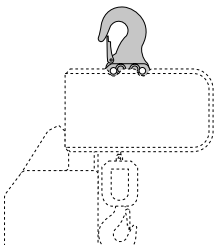
The chain hoist is also available with Magnetek radio remote controls, the latest electronics with light, ergonomic design and ease of use. No matter whether you prefer a control with buttons or a joystick version, our radio remote controls from Magnetek can be individually adapted to practically any application.

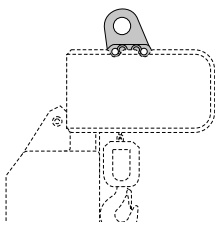
STAHL CraneSystems and Magnetek together offer intelligent technology for all lifting and positioning work. This ensures greater safety for the operator and less stress on structural, mechanical and control components.

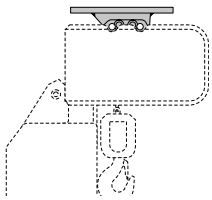
The models and trolley variants

Various models and trolley variants for the ST chain hoist open up a wide range of possible applications in crane and systems manufacture. Individually tailored to your specific requirements as stationary hoist or for use with a trolley. The trolleys are equipped as standard with one travel speed, as an option the motors can be supplied with two travel speeds. Other speeds as well as variable frequency drives are available as an option. Our chain hoists are known worldwide for their flexibility and versatility. Compact dimensions and extremely short approach dimensions help to make optimum use of the workshop.

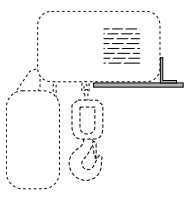
Suspension for stationary version
The standard stationary ST chain hoist has hook suspension. However you can also choose eye suspension or rigid suspension. The eye suspension is used when the stationary chain hoist is only rarely moved to a different location, while the low headroom permits long hook paths even in low-ceilinged rooms. If the ST chain hoist is to be permanently mounted, for example in systems manufacture, we recommend rigid suspension. Here, too, the extremely short headroom is of advantage. In addition, the rigid mounting prevents the chain hoist swinging on the trolley.

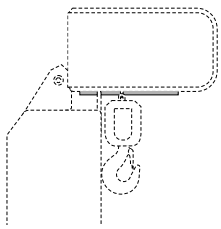

Hook

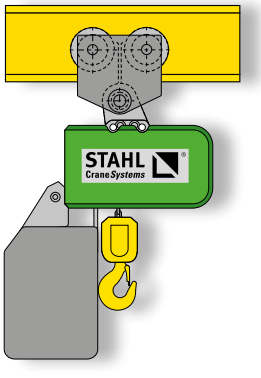

Eye

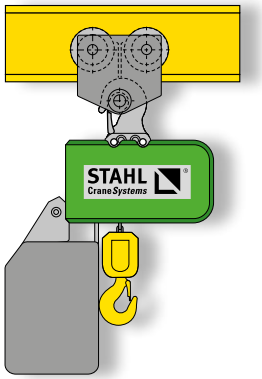

Rigid suspension

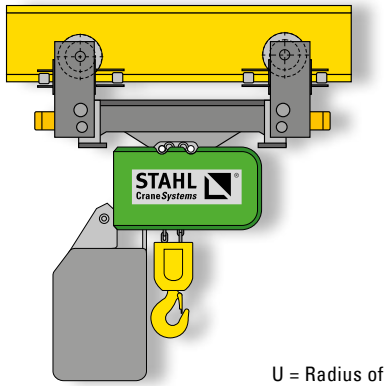
Foot mounting for stationary version
In order to utilise space optimally in low-ceilinged rooms, the ST chain hoist can be bolted from below onto a foot mounting.


ST05 mounting


ST10 – ST60 mounting



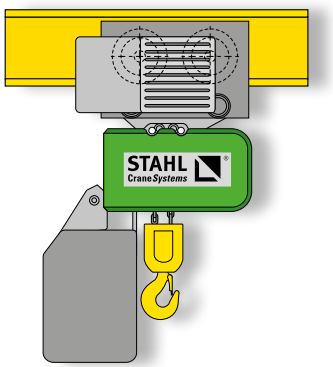


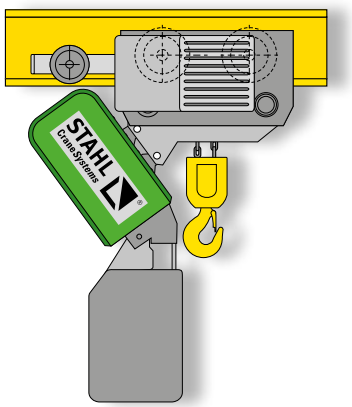


U = Radius of bend down to 800 mm possible

Push trolley
In standard version, the ST 05 and ST 10 1/1 chain hoists are suspended by eye or hook from the smooth-running push trolleys. A rigid connection with the chain hoist is possible on request. This rigid connection is standard in the ST 20 to ST 60 chain hoists. The push trolley does not affect the low headroom of the hoist.

Articulated trolley
The articulated trolley is available for frequent travel around bends and narrow radii. Depending on radius of bend, runway flange width or application, it is equipped with one or two travel motors. The lateral guide rollers cause minimum wear. The articulated trolley is designed for load capacities up to 6,300 kg.





›Standard headroom‹ electric trolley
Not one millimetre was given away in the design in order to enable large hook paths even at standard headroom.

›Short headroom‹ electric trolley
The smooth-running electric trolley can also be combined with the ST short headroom chain hoist, reducing the headroom by a further 33 %.

■ Standard □ Option

Type	Load capacity up to [kg]	Stationary	Push trolley	Electric trolley	Articulated trolley	Short head-room trolley	Extra short head-room trolley	Dual chain hoist	Big Bag
ST 05	125 – 630	■	■	■	■	■	■	■	–
ST 10	500 – 1,000	■	■	■	■	■	–	■	■
ST 20	1,000 – 2,000	■	■	■	■	■	–	–	–
ST 30	1,250 – 3,200	■	■	■	■	■	■	■	■
ST 32	1,250 – 3,200	■	■	■	■	■	–	–	–
ST 50	2,500 – 5,000	■	■*	■	■	■	■	■	■
ST 60	3,200 – 6,300	■	■*	■	■	■	□	■	–

* Only available with 1/1 reeving in the standard range.

Higher safe working loads on request.

The STK extra short headroom trolley

If you do not want to lose even a millimetre of lifting height, the STK extra short headroom trolley from STAHL CraneSystems is just the thing for you.

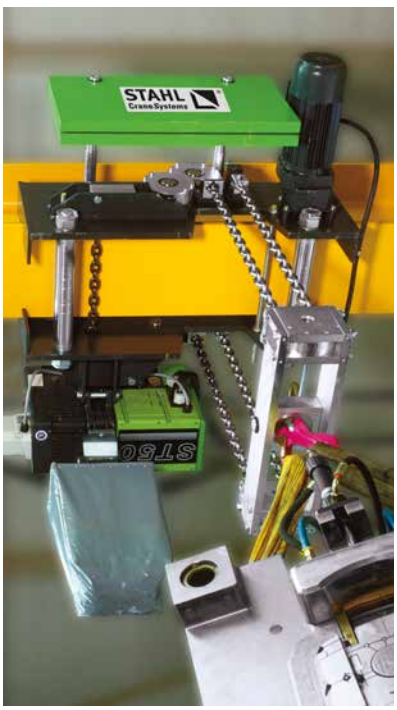
The construction of the short headroom trolley itself saves a tremendous amount of space. The body of the chain hoist is mounted at an angle, meaning that no return sheave is required. This reduces the headroom by 33 %. The extra short headroom trolley with its headroom reduced by 60 %, by contrast, achieves maximum hook paths, which is particularly beneficial in extremely low-ceilinged rooms. It fully deserves its name.

The extremely short distance from the underside of the beam to the bed of the hook is just 210 mm at a load capacity of 5,000 kg and even just 185 mm at a load capacity of 3,200 kg. The chain hoists used here, mounted vertically, are based on the standard ST chain hoist programme from STAHL CraneSystems.

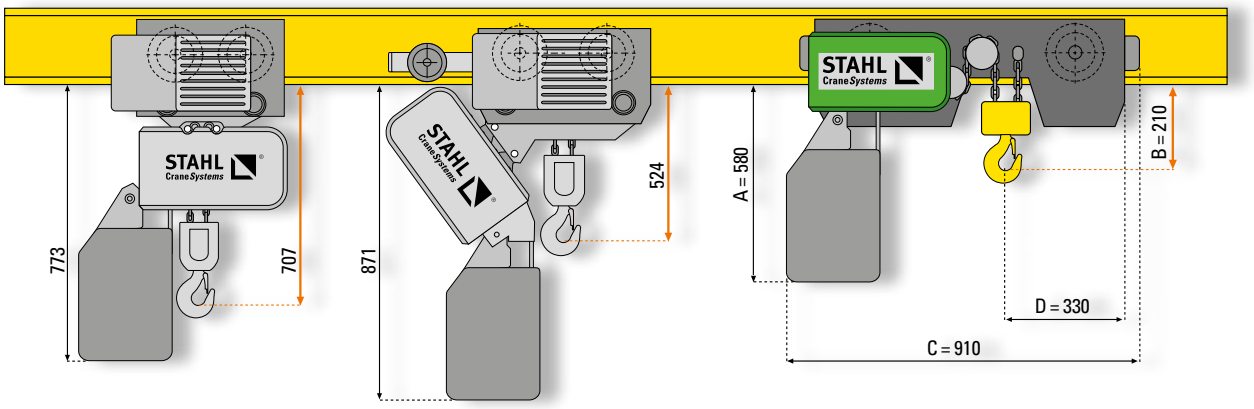
The innovative patented chain guide is unique. Two separate chains running in sync act on a single bottom hook block. The load is lifted and positioned without swinging or vibrating.

The facts

- Very compact dimensions for maximum use of halls
- Specially developed for low-ceilinged rooms
- Low deadweight
- Load is lifted steadily and without swinging
- Low maintenance
- Trolleys with no projecting edges for steady cross travel
- Optionally with frequency inverters for lifting and travel and radio remote controls from Magnetek
- Permanent electronic monitoring of the suspended loads
- Optionally available in explosion-protected design complying with ATEX and IECEx, NEC, CEC, INMETRO and TC RU



The patented design of the extra short headroom trolley reduces its headroom by 60 % and permits exceptional lifting heights. The even lifting of the load through perfect synchronisation of the chain falls is technically unique. The hook beam can be adjusted steplessly in dependence on the flange width.



Standard headroom | Short headroom | Extra short headroom

The dimensions apply to an ST chain hoist with a load capacity of 5,000 kg and standard lifting height of 3 m.

Type	STK 0502-8/2 2/2-1	STK 0502-8/2 4/2-1	STK 3016-8/2 2/2-1	STK 5025-8/2 2/2-1	STK 3016-8/2 4/2-1	STK 5025-8/2 4/2-1
Load capacity	500 kg	1,000 kg	1,600 kg	2,500 kg	3,200 kg	5,000 kg
Hoisting speed (50 Hz)	8 m/2 min	4 m/1 min	8 m/2 min	8 m/2 min	4 m/1 min	4 m/1 min
Hoisting speed (60 Hz)	10 m/2.5 min	5 m/1.2 min	10 m/2.5 min	10 m/2.5 min	5 m/1.2 min	5 m/1.2 min
No. of falls	2	4	2	2	4	4
Output (50 Hz)	0.8/0.2 kW	0.8/0.2 kW	2.3/0.57 kW	3.8/0.9 kW	2.3/0.57 kW	3.8/0.9 kW
Output (60 Hz)	0.96/0.24 kW	0.96/0.24 kW	2.8/0.68 kW	4.6/1.1 kW	2.8/0.68 kW	4.6/1.1 kW
Dimensions	Dimensions stated are approximate (subject to alterations)					
A	260 mm	490 mm	520 mm	580 mm	520 mm	580 mm
B	136 mm	151 mm	185 mm	210 mm	185 mm	210 mm
C	565 mm	750 mm	800 mm	910 mm	800 mm	910 mm
D	264 mm	290 mm	300 mm	330 mm	300 mm	330 mm

Other hoisting speeds, supplementary equipment such as gear limit switch and explosion-protected designs are possible. Please enquire.

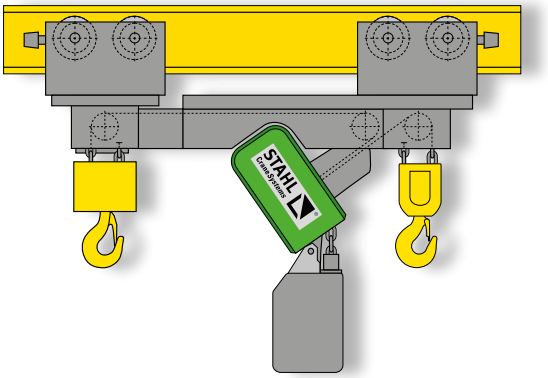
The STD dual chain hoist

The STD dual chain hoist is an off-standard development for long goods and loads which need to be picked up at two points. It has two load chains which are driven in synch by a single hoist motor. The distance between the hooks can be selected to suit the goods to be transported. The design means that the two running hooks running in synch lift and transport the load without dangerous tilting. Thanks to its low headroom, the STD dual chain hoist is also suitable for low-ceilinged rooms and achieves maximum hook paths.

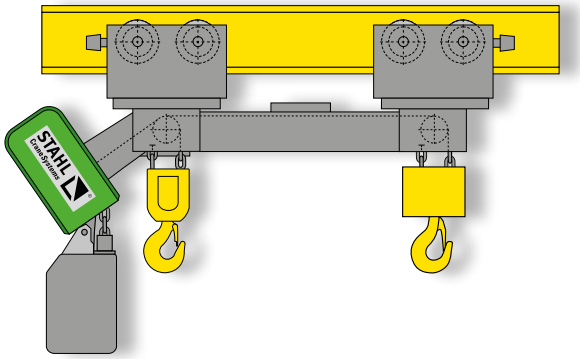
There are different versions of the STD dual chain hoist available. Depending on the requirements or the space available, there are versions where the load hooks are either to both the right and left or only on one side of the chain hoist. For stationary use, the STD chain hoist, adapted to the width of the load, is mounted rigidly on a substructure. In combination with an electric trolley, the STD chain hoist becomes mobile. The STD Vario dual chain hoist with its electrically adjustable distance between hooks allows goods of different lengths to be lifted without difficulty, transported, and positioned accurately. Even when the loads have different lengths or the load hooks are differently loaded, the two load hooks run steadily and completely in synch.

The facts

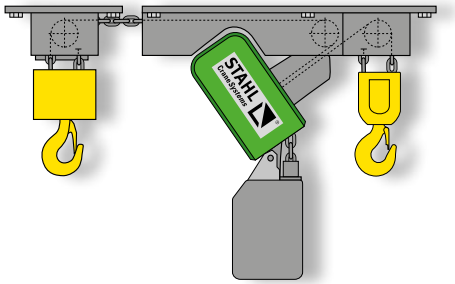
- Low space requirement permitting maximum height of lift
- Two hook lead-offs running in synch on one hoist
- Synchronous lifting even with uneven loading, no tilting of the load
- Individually adapted to width of load
- Low maintenance
- Optionally with frequency inverters for lifting and travel and radio remote controls from Magnetek
- Permanent electronic monitoring of the suspended loads
- Optionally available in explosion-protected design complying with ATEX and IECEx, NEC, CEC, INMETRO and TC RU



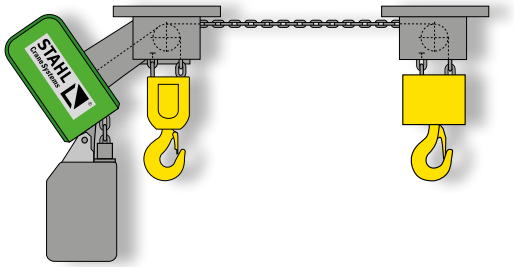
›Z‹ design
The load hooks are on the left and right of the chain hoist.



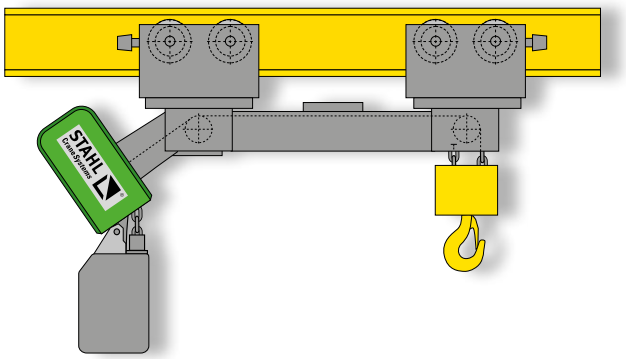
›E‹ design
The load hooks are on one side of the chain hoist.



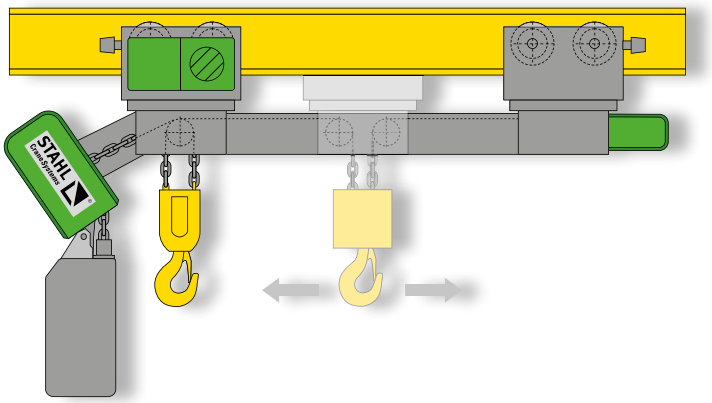
Stationary dual chain hoist ›Z‹
The STD chain hoist is adapted to the width of the load and rigidly mounted on a substructure. The load hooks are on the left and right of the chain hoist.



Stationary dual chain hoist ›E‹
The STD chain hoist is adapted to the width of the load and rigidly mounted on a substructure. The load hooks are on one side of the chain hoist.



STB big bag
The big bag version is designed for load capacities up to 3,200 kg. Its special feature is the free choice of the distance between chain hoist and load hook which makes lifting bulky loads or big bags up to top hook position possible without hindering edges such as trolley, chain hoist or chain box.



The STD Vario dual chain hoist
The distance between hooks is electrically adjustable and can be individually adapted to loads of different lengths. Both hooks run absolutely in synch. The load hooks cannot be shifted accidentally during lifting or travel.

The technology

It's reassuring to know what convincing technology is concealed in the robust ST chain hoist. The low-maintenance components of the modular chain hoist are optimally matched to each other. They guarantee constant performance, high efficiency and long service life. One of the main features guaranteeing safety in the workplace is the patented solid cast iron chain guide. The load-bearing components are integrated into this component so that the load is supported where it engages. The direct suspension means that the power flux is not diverted via the housing.

2 Motor

- High ISO classification according to FEM/ISO standards
- Powerful motors with high duty cycle and number of switching operations
- Standard fan cooling
- Single-speed and frequency-controlled versions available as options
- Optional temperature control by thermistor

4 Brake

- Low-maintenance, asbestos-free electromagnetic disc brake
- Oversized braking torque
- Long service life, brake pad status can be checked and measured
- Brake completely enclosed, protected from humidity, vapours and dusts from the exterior; ensuring long-term reliable operation

1 Chain drive

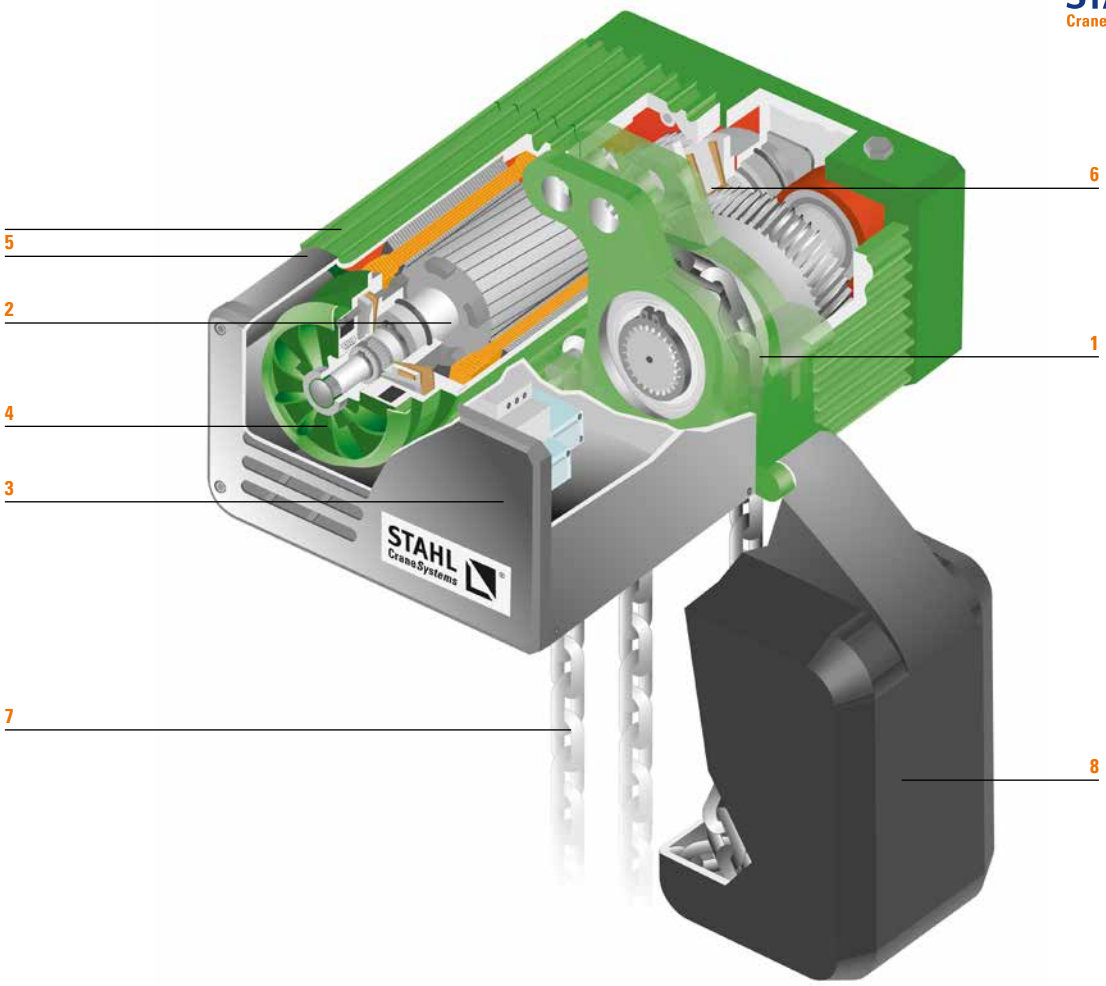
- Innovative patented chain drive
- Anchorage and load-bearing components are directly integrated into the high tensile grey cast iron
- Simple inspection and replacement of the chain sprocket thanks to over-mounted shaft bearing
- Enclosed chain guide
- Reliable functioning even in demanding applications
- Wear-resistant case-hardened chain sprocket in conjunction with optimised return sheaves; ensuring low wear on the chain

3 Standard control

- All customary connecting and control voltages are available
- Plug connection of control pendant and travel motor
- Clear arrangement of contactors
- As an option, available with direct control
- As an option, available without control pendant and/or contactor control

5 Paint

- Standard paint treatment as per RAL 6018 yellow-green and RAL 7021 greyish black
- High-quality primer and top coats for standard applications
- Off-standard paint treatment for outdoor use or corrosive ambient conditions
- Other colours per RAL chart optionally available



6 Overload slipping clutch and gear

- The slipping clutch of the ST 10 to ST 60 is located in the oil bath
- Easily adjustable from the exterior
- Precise response
- No electronic limiting necessary
- Various gear reductions available
- Oversized helically geared gearbox

7 Chain

- Surface-hardened, galvanised and large dimensioned load chain
- High case depth for long service life
- High ISO classification according to FEM/ISO standards
- Stainless steel or blackened manganese-phosphated load chains are available as option

8 Chain box

- Large selection of chain boxes in plastic, sheet steel, textile or stainless steel
- Available without chain box as an option

The options

There's always room for improvement. Although it is already first-class in standard design, you have the alternative of making your ST chain hoist even safer, even more cost-effective, even more convenient by selecting from numerous mechanical, electrical and electronic options. At the same time you will extend the service life of the chain hoist. You can increase the efficiency of the chain hoist and adapt it to your individual requirements. Here we show you just the most interesting supplementary equipment and options. If you need further detailed information, please contact us directly.

Operational hoist limit switch

- Two versions are possible: cut-off in top hook position or cut-off in top and bottom hook position (stationary, push trolley, electric trolley)
- Activated by the bottom hook block

Control pendant

- Robust control pendant with EMERGENCY STOP palm button and control cable
- All switching elements for hoist, cross and long travel are 2-step
- IP65 protection
- Additional buttons, such as horn activation, can be easily fitted

Gear-type limit switch

- Various functions possible: e.g. routine operational cut-off in highest or lowest hook position or switching from »fast« to »slow« before the stops
- IP55 protection, optionally IP66

SMC Multicontroller

- Continuous load monitoring by overload cut-off even if hoist is idling
- Overload protection with ALC automatic load control
- Load spectrum memory for load-related operating time summation
- Operating data registration, e.g. operating hours, load spectrum, motor switching operations and load cycles
- Data exchange with PC possible

Travel limit switch

- Travel limit switch on crab available as option
- Limiting for both directions of travel
- Switchover of »fast/slow« (predisconnect)
- Switch contacts designed for control current
- IP66 protection

Load display

- Four- or six-digit, 7-segment SLD load display, large format, luminous red
- Available with various interfaces including CAN
- Choice of 100 or 150 mm digit height
- Combinable with the optional overload sensor of the hoist and the SMC multi-controller available as an option; no additional devices or load handling attachments are required, the headroom of the hoist remains unchanged

Spring-steel chain guide

- Heavy high-tensile chain guide for rugged use
- Enclosed chain guide
- Extremely wear-resistant case-hardened chain sprocket

Bypass brake

- Second brake for increased safety
- Identically dimensioned
- Second brake acts in force transmission directly on the load, i.e. bypassed the slipping clutch
- As an alternative to the bypass brake, a second hoist motor brake is available

FMD1 slipping clutch test device

- Robust full metal design
- Modern electronic test apparatus with field-proven sensor technology, high degree of accuracy ± 2 %
- Test range up to 4,000 kg on one chain fall, suitable for chains up to 11,3 mm link thickness
- Optionally available for STD and STK
- Protector for evaluation device and internal test program
- Simple intuitive handling

Vibration damper

- Available for STD 10 to STD 60 double chain hoists
- Minimises the vibrations produced by operating the chain hoist and transmitted to the load chain via the chain sprocket (polygon effect)

The radio remote control options

Our extensive portfolio of Magnetek-brand radio remote controls can be customised to meet the needs of almost any application. Our rugged pushbutton and joystick controllers provide equipment operators with better positioning for job visibility, safety, data feedback, and extended machine life. From traditional units to our most sophisticated systems, our product portfolio provides total radio control when combined with a variety of receivers. Magnetek radios are compliant with EN ISO 13849-1 PL d and are optionally available in explosion-protected design in compliance with ATEX/IECEx. Radios for tandem cranes are designed to EN 15011.

Flex Wave™

The Flex Wave offers secure and dependable communications, innovative performance, and advanced features that enhance safety and efficiency for your lifting and positioning applications. Transmitters are ergonomic and lightweight to provide comfort to operators and are constructed of industrial-strength nylon and fiberglass composite materials for long-lasting operation.

- Channel scanning schemes for anti-interference
- Zero G to prevent unintended equipment motion
- IP66 rating for indoor or outdoor environments
- Options for added protection and flexibility, such as a rubber boot or vinyl cover

Flex VUE®

The Flex VUE includes a high-resolution, built-in colour display that keeps operators informed of system status and diagnostics at all times to maintain effective system functionality. With diagnostic information available at your fingertips, you can address issues more quickly, plan maintenance, and ultimately reduce downtime.

- Quick configuration to get you up and running fast
- Adjustable speed control for precise control of machine movement
- Nylon housing that withstands shock, water, heat, and harsh environments
- Compact and lightweight design to prevent operator fatigue

MLTX2™

The MLTX2 is one of the most lightweight bellybox transmitters available today, designed to enhance operator comfort. Choose from a variety of levers, joysticks, and toggle switches to customise to your exact needs.

- Access code system for peace-of-mind, as the signal only operates the intended equipment
- Synthesised frequency generation to enhance reliable operation
- IP66 rating to withstand harsh, industrial environments
- Available with ATEX and IECEx approvals for Zone 0, Zone 1, and Zone 2 applications:
  · ATEX Approval: II 1 G Ex ia IIC T3/T4 Ga
  · IECEx Approval: Ex ia IIC T3/T4 Ga
- Optional graphic display and two-way feedback to keep you informed of system status at all times

		Standard	Options
Ambient temperature		–20 °C to +40 °C	to +80 °C
Protection to EN 60529		IP55	IP66
Paint	Colour	Greyish black/yellow-green RAL 7021/6018	All other colours from RAL colour chart
	D.F.T.	60 µm to 80 µm	120 µm to 240 µm
	Finish/Powder coating	Polyurethane top coat	Epoxy-resin base (240 µm)
Control pendants		Control pendant with EMERGENCY STOP pushbutton	Radio remote control in pushbutton or joystick version
			RadioMOVEit RMI radio remote control
Control		Contactor control including main contactor	For crane manufacturers, contactor control without main contactor and transformer
			Direct control (ST 05 – ST 20)
Hoist motor control		Pole-changing in a ratio of 1:4	Frequency controlled at a ratio of 1:10
Travel motor control	50 Hz	20 m/min	2,5/10 m/min to 10/40 m/min
	60 Hz	25 m/min	3,2/12,5 m/min to 12,5/50 m/min
	50/60 Hz	2,5...25 m/min frequency controlled	4...40 m/min frequency controlled
Motor supply voltage	50 Hz	380–415 V	All voltages possible
		For ST 05 also 380–400 V or 415 V	
Chain	Grade 8 to DIN 5684	Galvanised	Stainless steel or blackened manganese-phosphated load chains
	Safety factor	≥ 5,0	–
Chain guide		Grey cast iron EN GJS	Sandwich guide chain made of hardened spring steel plates
Chain box		Plastic	Sheet steel, textile or stainless steel
Load lifting elements		Load hook in bottom hook block	Thread bar
			VAGH safety load hook
			Galvanised or stainless steel load hook
Limit switches		–	Operational hoist limit switch
			Gear-type limit switch
	Travel limit switch	–	Pre and end limiting in both directions
Overload cut-off		Slipping clutch	Load sensor
	Signal transmitter	–	Horn, flashing light
	Visualisation	–	SLD large-format load display, display in radio transmitter, readable on PC
	Data exchange	–	With PC or via a cloud
Cumulative load controller		–	SMC or safety PLC
Temperature control of travel motors		–	Thermistor
Mechanical safety devices		–	Wheel arresters
		Guide rollers for wide flange widths dependent on trolley type	Guide rollers for narrow flange widths
		Support rollers for trolleys	–
Hoist brake		Monodisc spring-loaded brake with asbestos-free brake lining	Manual release of hoist brake
			Bypass brake, double brake
Data recording		–	Operating hours counter or SMC
Panel box		Plastic	ST 10 – ST 60 sheet or stainless steel

The frequency inverters

The STF chain hoist

The STF chain hoist combines the proven technology of the ST chain hoist with the advantages of the Magnetek IMPULSE® frequency inverters. Equipped with the IMPULSE®·G+ Mini as standard, the STF chain hoist not only allows precise movements, but also provides valuable diagnostic and performance information such as the current status of the chain hoist via data exchange with IoT networks. The IMPULSE·G+ Mini frequency inverter can be connected to fieldbus systems such as Modbus, Profibus or Ethernet, making it an important step towards Industry 4.0.

The STF chain hoist is equipped with overspeed protection, standstill monitoring (SRC rotation control) and an advanced 1024 PPR tachometer. This ensures greater safety for the operator and less stress on structural, mechanical and control components. The fast programmability of the frequency inverter, coupled with the easy commissioning of the chain hoist, also offers a safe, highly reliable and simple plug-and-play application.

The facts

- Standard with Magnetek IMPULSE·G+ Mini
- Optional frequency-controlled drive
- Simple connection to IoT networks
- Increased safety through overspeed protection and standstill monitoring (SRC rotation control)
- 1024 PPR tachometer for reliable feedback in harsh environments
- Simple plug-and-play application
- IP66 protection available as an option, braking resistance also optionally available in IP67

The IMPULSE®·G+ Mini

IMPULSE® frequency inverters from Magnetek continuously monitor many environment and function-related parameters of hoists. They thus ensure compliance with safe functional limits, which increases safety, reliability and uptime. The IMPULSE®·G+ Mini enables advanced speed settings, better load control, high duty cycle and increased crane life. It is available for stationary hoist or towing units, monorail, double rail or underslung trolleys.

The display of the IMPULSE·G+ Mini frequency inverter offers improved parameter selection through user-friendly softkeys – making navigation and reading of diagnostic information even easier. The compact dimensions of the IMPULSE·G+ Mini allow the use of smaller control enclosures, resulting in lower overall costs. Both the hardware and software are specifically designed and extensively tested for overhead handling of materials.

The facts

- Programming of various drive parameters
- Back-ups of parameters (save and copy)
- Monitoring of drive functions
- Reading of alphanumeric fault diagnosis instructions
- Remote monitoring

IMPULSE·G+ Mini for lifting

	Short-circuit protection Detects when there is a short circuit on a motor, and thus prevents further faults	**Phase failure detection** Detects a phase failure at the input and keeps the load in a safe state
	Generative braking The speed of the motors is reduced generatively. Brakes are only used as holding brakes and for emergency braking. This reduces wear on the brake lining	**Rotary encoder feedback** The SRC monitoring device continuously monitors the motor speed, as well as the motor standstill, to ensure safe load control
	Safe shutdown* A redundant hardware safety circuit ensures that motor and brake supply are switched off if an EMERGENCY STOP switch or a safety control opens the digital signal input of the inverter	**Safe operating windows™** Reduces the possibility of programming unsafe parameters

* Optional

IMPULSE·G+ Mini for travel

	Sway control* Significantly reduces unwanted swaying when moving loads	**Autotuning** The frequency inverter offers static autotuning for demanding applications
	Motor protection against thermal overload Reduces the possibility of motor damage	**Safety** EN 61800-5-2, EN 61508, SIL2, hardware-supported block circuit
	Safe shutdown* A redundant hardware safety circuit ensures that motor and brake supply are switched off if an EMERGENCY STOP switch or a safety control opens the digital signal input of the inverter	**Micro-Speed™*** Enables the user to scale the motor speed. This can be useful when positioning loads
	Safe operating windows™ Reduces the possibility of programming unsafe parameters	

* Optional

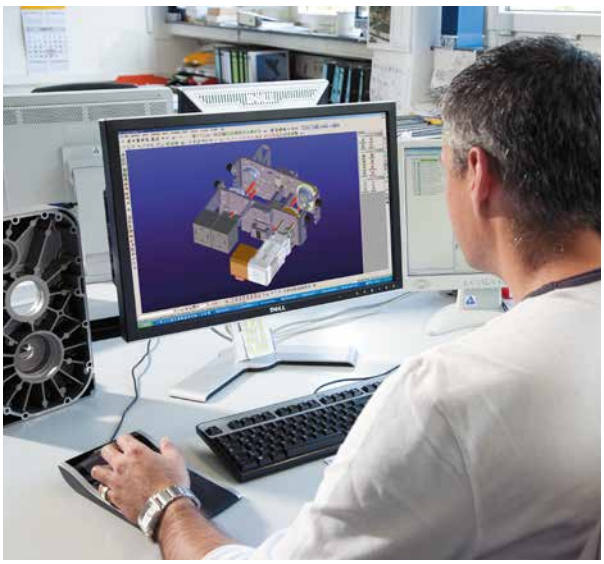
The engineering

Engineering means innovation and individuality. It is the task of our experts to redefine the lifting and moving of loads for complex requirements time and again. They constantly develop modern, individual custom and off-standard solutions from one of the largest ranges of standard components available. Virtually no other manufacturer of hoisting and crane technology can offer this variety of precisely engineered special solutions with such quality and such efficiency.

The modular ST chain hoist programme forms the basis for a wide variety of solutions. Compact construction, extremely low headroom, twin chain hoists or multi-reeved chain hoists, STB big bag version, coupled chain hoists for four-point load pick-up. Various trolleys are available for all chain hoists. Customised system solutions individually adapted to your precise requirements are our forte. The experience and knowledge gained from more than 140 years in crane technology gives us the flexibility to develop and produce the optimum solution for your project in short time. On request, all off-standard chain hoists and customised solutions are available in explosion-protected design for Zone 1, Zone 21 and Zone 22.

The facts

- Optimally matched to your project
- Every hoist is the result of over 140 years of experience and expertise
- Short development time
- Cost-effective thanks to modular system
- Technically mature thanks to the use of field-proven standard components
- High quality and reliability ensured by in-house production
- All customised solutions are available as an option in explosion-protected design complying with ATEX and IECEx, NEC, CEC, INMETRO and TC RU



Example 1 **ST chain hoist with 30,000 kg load capacity**

This off-standard design comprising four ST 60 chain hoists from STAHL CraneSystems is designed for an impressive load capacity of 30,000 kg and is used on a maintenance crane in a metallurgy plant in New Caledonia. Loads in this range are normally lifted with wire rope hoists.

Due to the extreme requirements such as restricted space, short approach dimensions, narrow track gauge and true vertical lift, a solution with wire rope hoists is not possible. The construction of chain hoists ensures true vertical lift, and they have extremely compact dimensions. This prompted the engineers from STAHL CraneSystems to develop an off-standard solution with the robust ST 60 chain hoists. The chain hoists are cardanically coupled in pairs, ensuring that the hoists run in synch. They were reeved with twice 130 m robust chain with a deadweight of 700 kg. The multi-reeved chains withstand maximum stresses. The chain hoists are disconnected in top and bottom hook position by a gear limit switch. To provide increased safety, the loads are continuously registered by load sensors which disconnect the hoist at overload.

The hoist is mounted on a purpose-built double rail crab with specially developed wheelblocks. With a track gauge of 2,000 mm and a wheelbase of 1,660 mm, its dimensions are extremely compact.

The facts

- Combination of four ST 60 chain hoists
- 12/4-1 reeving
- Load capacity 30,000 kg
- True vertical lift
- Extremely short approach dimensions
- Track gauge 2,000 mm
- Use of modular components of the chain hoist types ST 50 and ST 60

➔ Capacity of 7,500 kg (3/1 reeving) and 10,000 kg (4/1 reeving) possible, higher reeving, S.W.Ls and capacities on request

➔ Different trolley variants possible: Overhead, underslung short headroom, articulated or stationary

Example 2 **STD dual chain hoist in series production system**

STAHL CraneSystems' engineers designed a cost-effective and reliable overhead monorail system with semi-automatic control for an assembly line. Eight STD dual chain hoists are used on a 93 m closed circular runway to pick up 250 kg components and lift them in synch at two points. The two-point load pick-up ensures that the load is transported safely without swinging.

A buffer store of five trolleys carrying components is ready at the assembly point. Attaching the loads at the loading station is activated manually by radio remote control. Lifting and transport to the buffer store are then automatic. As soon as a new product arrives at the assembly line, the fitter calls for the components by radio remote control. The trolley moves into an unloading station and automatically follows the assembly line at the same speed. The longitudinal position above the line can be corrected by accelerating or braking the drive. Correcting the trolley position at right-angles to the assembly line is possible on a movable skid with a path of 500 mm. Dangerous diagonal pull of the loads is thus prevented.

To increase process reliability, an infrared signal with limited range is sent to the trolleys in addition to the radio signal. Furthermore, a trolley can exit the runway to a maintenance spur via a switch point and be serviced there. The other dual chain hoists are not affected and continue to operate without disturbance.

The facts

- Eight STD chain hoists with monorail trolleys
- Closed circular runway, 93 m long
- Power supply via integrated eight-pole conductor line
- Radio control with redundant infrared signal
- Travel speed synchronised with assembly line
- Chain hoist can be moved at right-angles to the runway on an off-standard skid

Example 3 **Four ST chain hoists with a total lifting capacity of 25,000 kg**

The boat crane of a Dutch shipyard is equipped with four ST 60 chain hoists from STAHL CraneSystems and designed for a total lifting capacity up to 25,000 kg. Far above the portal crane, there is a further ST chain hoist to upright and stabilise the ship masts.

The crane is used to raise and lower yachts and sailing boats of various sizes from/into the water. The crane and crane controller were modernised to state of the art with the help of extensive technical changes.

The ST 60 chain hoists are suspended freely from hinges so that ships of various widths can be lifted. With suspended load, the hoists are able to tilt into an optimum position. Two of the chain hoists are mounted at a fixed point, and the other two on movable trolleys so that the distances between the hooks can be varied according to boat length. Load sensors, SMC condition monitoring units and an SCC total load controller measure the load at every chain hoist and protect the crane against overload. An easy-to-read load display shows the total load attached. The crane is controlled via radio transmitter. It is also possible to operate the crane with the control elements on the crane's control box. The four chain hoists can be operated together, individually and in pairs.

The facts

- Portal crane with four ST 60 chain hoists with a load capacity of 6,300 kg each, two of which are movable
- Hook spacing can be adjusted to ships of various lengths
- Flexible suspension from hinges for ships of different widths
- Load display
- Load sensors and total load controller
- SMC multicontroller
- Radio remote control

The industry-specific applications

Industries in which sensitive products are handled in unusual environments place special hygienic and mechanical demands on the work equipment used there and thus also on crane systems and chain hoists. The challenges are as varied as the areas of application: Chain hoists used in cleaning technology must be protected against strong jets of water, corrosion, large temperature fluctuations or aggressive vapours, among other things. In the food industry, special lubricants are indispensable and abrasion particles may not get into the food. When used in clean rooms, the room air must not be contaminated – cranes and hoists may therefore neither cause contamination nor provide a breeding ground for micro-organisms, germs or bacteria. They must also be very low-wear and quiet in operation and be as easy as possible to clean everywhere.

Based on the modular system of the ST chain hoist, our engineers and technicians can develop versatile general solutions for specific tasks. The standard components of the ST chain hoist can, for example, be adapted to many requirements in the food sector by means of special paints and biodegradable lubricants with food approval or by design in protection class IP66. The ST chain hoist can be used in clean rooms or in medical technology by using trolleys and load chains made of stainless steel, acid and alkali-resistant components or drip pans under the hoist and trolleys. The extra short headroom trolley and the STD dual chain hoist are suitable for complex, space-saving solutions, for example in cold rooms or big bag dosing systems. All components of the ST chain hoist are also available in explosion-protected versions – so even hazardous materials such as flour, grain or sugar can be transported safely.

The options

- IP66 protection for hoists and controls
- Anti-condensation heaters against corrosion
- Stainless steel components
- Acid and alkali-resistant components
- Special paints and lubricants
- Use in harsh environments, e.g. in foundries, concrete plants and tunnel construction
- Drip pans and trays
- Electronic swing damping for low-wear operation
- STK extra short headroom trolley for confined spaces
- STD dual chain hoist in big bag version possible
- Synchronous chain guides for smooth, vibration-free and synchronous lifting and lowering of the load
- Explosion-protected versions

➔ Our flexible technology and the know-how of our engineers offers the right solution for every project!

Mechanically coupled chain hoists

If several load suspension points are required for lifting a load, mechanically coupled chain hoists are used – for example in car body construction or when using frame constructions to lift the load. Here, three, four or more chain lead-offs with synchronous and redundant chain drives are used. Single-fall load monitoring is available as an option.

Versatile chain drive

In addition to the standard round link chain, the chain of the ST chain hoist can also be supplied as a roller chain according to the bicycle principle or as a toothed belt drive. If the chain hoist is not to be used as a hoist but as a drive, a version with a traverse drive is available for this purpose. The innovative chain drives of the ST chain hoist also allow different chain angles. To prevent overloading of the hoist, an adjustable slipping clutch built into the gearbox ensures safety.

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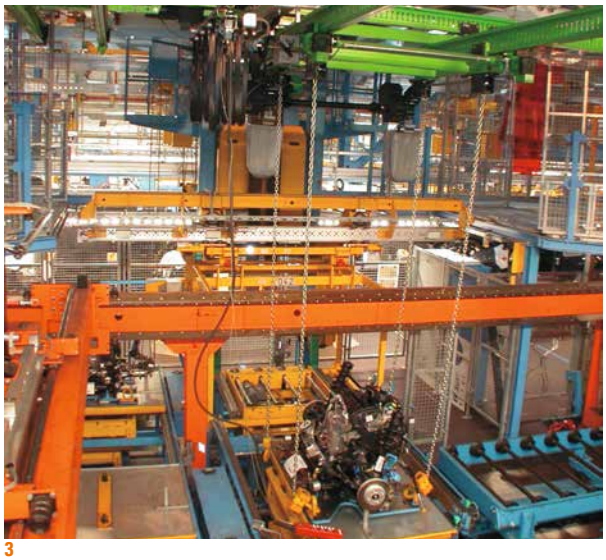
1 A special crane system with chain hoist is installed in a clean room facility. A drip pan under the hoist protects the production area below from possible abrasion particles.

2 A special crane with height-reduced endcarriages and an individually adapted STD 50 dual chain hoist works in one of the largest burnishing plants in Germany.

3 Synchronous lifting for four-point load attachment by coupling the chain hoists.



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The explosion-protected ST Ex chain hoist

STAHL CraneSystems is known internationally as an explosion protection specialist and is considered one of the world's market leaders in explosion protection technology. The safety of people and machines in areas subject to gas and dust explosion hazards is our top priority. Here we make no compromises. As developer of numerous innovations in this field, we have had palpable influence on crane technology. Experience and know-how from many decades, our own fundamental research and development, approvals from the Federal Physico-Technical Institute (PTB) and other test institutes in many countries underline our expertise. Hoisting technology from STAHL CraneSystems ranks among the safest technology on the market in the chemical, petrochemical and pharmaceutical industries, the food processing industry, power supply, shipbuilding, offshore and natural gas liquefaction industries (LNG).

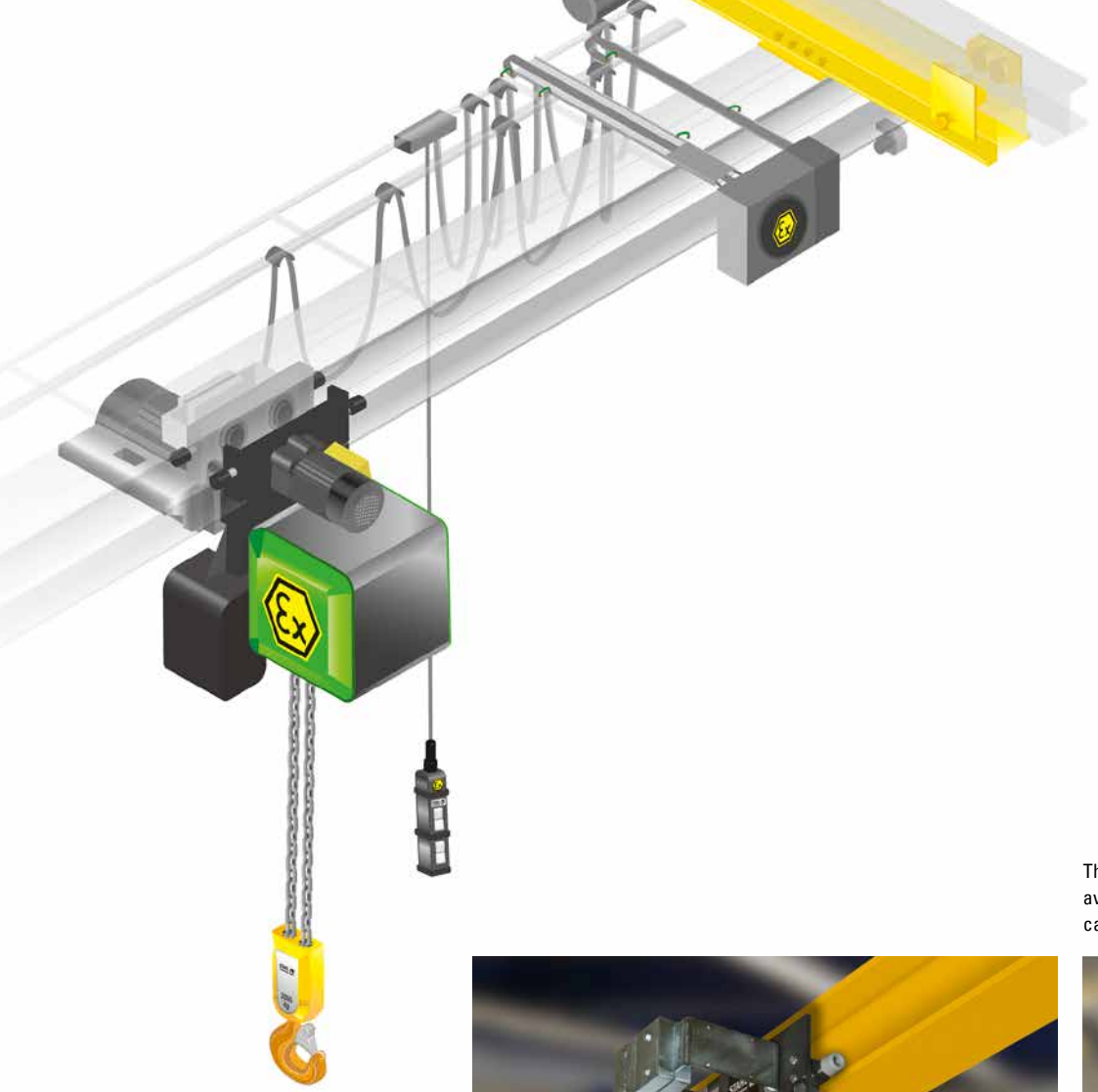
Without exception, the ST Ex chain hoist programme is based on the modular ST chain hoist programme. All components of the explosion-protected chain hoists come from our in-house production, from motor and brake to controls and control pendant. For this ensures the complete, high-quality explosion protection on which users, crane manufacturers and system manufacturers all over the world have relied for decades. The strict ATEX directives and IECEx regulations on mechanical and electrical explosion protection are of course met.

The facts

- International specialist for explosion protection technology
- One of the most extensive chain hoist ranges for Zone 1, Zone 21 and Zone 22 worldwide
- Based on the ST chain hoist
- Design to ATEX and IECEx, NEC, CEC, INMETRO and TC RU in certified quality
- All equipment available in explosion-protected design

→ For more information, visit www.stahlcranes.com or ask for our brochure »Expertise in explosion protection«, which we will gladly send to you by post.

Use	Category	Protection against	Explosion protection class
Zone 1	Ex II 2 G	Gas	Ex db eb IIB T4 Gb or Ex db eb IIC T4 Gb
Zone 21	Ex II 2 D	Dust	Ex tb IIIC T120 °C Db
Zone 22	Ex II 3 D	Dust	Ex tc IIIC T120 °C Dc
Class I, Div 2	–	Gas	Class I, Zone 1, AEx db eb IIC T4 Gb Class I, Division 2, Groups A, B, C, D, T4



The ST Ex chain hoist for Zone 22 is available in six frame sizes up to a load capacity of 6,300 kg.

The ST Ex chain hoist for Zone 1 and Zone 21 is available in two frame sizes up to a load capacity of 5,000 kg.

The ST chain hoist in action

Experts in all countries immediately recognise hoists and crane components from STAHL CraneSystems.
For the ST chain hoist is in action all around the world in the most diverse variants and solutions. Innovative, thought through down to the most minor detail and manufactured with greatest care, the ST chain hoist continues to conquer new areas of application. It thus proves its well above average flexibility and cost-effectiveness. STAHL CraneSystems is represented on all continents by subsidiaries, sales and crane manufacturing partners.

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1 An ST 20 explosion-protected chain hoist with a load capacity of 1,600 kg is used for outdoor maintenance work in a chemical plant. The narrow construction of the explosion-protected chain hoist enables the whole width of the crane bridge to be used. The travel drives of the underhung crane endcarriages are also in explosion-protected design.

2 Chain hoists of various models are used with single girder suspension cranes in a sawmill in the Netherlands.

3 Only 210 mm high: The extra short headroom trolley makes optimum use of the hook path in the low hall of a plastic casting factory in combination with the ST 50 chain hoist for a load capacity of up to 5,000 kg. The headroom reduced by over 60 % simultaneously increases the height of lift.

4 Two STD dual chain hoists with the aid of four synchronously operating load hooks enable long goods weighing 10 tonnes to be transported without swinging.

5 A special crane with height-reduced suspended crane endcarriages and an individually adapted custom hoist works in a chemical plant in Germany. The custom hoist is an STD 50 dual chain hoist with two synchronised rope lead-offs. An ST 20 chain hoist serves as an auxiliary hoist.

6 48 off-standard chain hoists operate in extremely high humidity in a coating plant for the motor industry in China.

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1 A special crane with height-reduced endcarriages and an individually adapted STD 50 dual chain hoist works in a burnishing line.

2 A light crane system with ST 05 chain hoists provides assistance in the repair, maintenance and servicing of racing cars.

3 The single-fall design of the ST 50 chain hoist permits fast hoisting speeds for load capacities up to 2,500 kg. It is mounted with a push trolley on a wall slewing crane.

4 Big bag beams are lifted up to top hook position without any hindering edges with the big bag design for load capacities up to 3,200 kg.

5 Two ST 50 chain hoists acting in tandem lift complete car bodies and transport them along the assembly line.

6 A number of ST chain hoists are used in the maintenance and replacement of train rails in England. All the hoists are equipped with customised load lifting equipment. They are centrally controlled to ensure that they work in synch. They are disconnected by a gear limit switch, reliably limiting the lifting process.

7 A chain hoist in short headroom trolley version is mounted on a single girder overhead travelling crane. It is used for transporting fork-lift truck batteries to the charging station.

The industry-leading service and training

STAHL CraneSystems is committed to quality, right down to the smallest detail. Developed with care by our engineers and experts, our products are manufactured with care to the highest levels of performance and reliability. This high level of quality not only applies to the products we design, but also to the service we provide to our customers around the world.

Our global sales team works exclusively with capable, professional crane manufacturing partners to provide you with industry-leading service and training. When you purchase a full crane system or STAHL CraneSystems components, you can expect optimum support from our partners. Whether you need a consultation, installation of a new system, system testing, maintenance, modernisation, spare parts, or training, we are here, together with our crane building partners, to provide you with streamlined, expert support anywhere around the globe.

Spare parts – available around the clock

Our own subsidiaries and numerous partners around the world ensure a reliable supply of spare parts and expert assistance in your area. Even decades after a series has been discontinued, spare parts are available all over the world around the clock.

Training courses

We are dedicated to safety. With training courses, webinars, and online safety tools and information, we keep our regional crane manufacturing partners and end users educated on how to best use and service our products. This information covers all of our main product lines, providing practical and theoretical knowledge relevant to individual products and full crane systems.

For training materials or information on our full training offering, visit www.stahlcranes.com/en/support

Factory service centre – on duty around the world

To help support our customers, our factory service center is available to provide assistance and expertise to field technicians as well as crane and systems manufacturers – anytime, anywhere. With modern diagnostic tools and condition monitoring systems, we are here to support your service and maintenance needs. We will help ensure your system and operators stay safe. You can rely on us.

To reach our factory service center, contact customer.service@stahlcranes.com

MarketingPortal plus – our online support

At mpplus.stahlcranes.com you can view or download the information you need quickly and conveniently, including brochures, product information, technical documents, illustrations, and much more.

You can find this and other brochures at www.stahlcranes.com/download. We will gladly also send them to you by post.

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