

Ultimate Light-weight & Compact Size, Meticulous Dedicated Design

KITO ELECTRIC CHAIN HOIST

EQ

Single Phase

Dual Speed Inverter Type
Equipped with
Electronic Overload Protection Device (OLL)
and Friction Clutch



**Cool Design and
Intelligent Function**

Highlighting the Global Industry with Technology Ultimate KITO Electric Chain Hoist EQ Now Released

Dual Speed Inverter Type
Equipped with
Electronic Overload Protection Device (OLL)
and Friction Clutch

KITO ELECTRIC CHAIN HOIST

EQ

500kg-1t



New KITO Electric Chain Hoist EQ maximizes the characteristics of its dual speed inverter. And we stick with the control design. Motor-frame integration has materialized an ultimate light-weight, compact size, while maintaining high functions. Equipped with OLL; the electronic overload protection device and friction clutch to ensure operational safety and environmental friendliness. Designed light-weight and compact, unique-shape push button switches are easy to grab and operate. KITO New Electric Chain Hoist is released now. You can experience the new design!



Integrated body protecting the high performance and high functions

- > Outstanding rigidity, high dust-proofness and water-proofness suitable for severe environments and working conditions
- > No-Load High-Speed Function
- > Simply-structured integrated body with less component parts
- > Dust-proof and jet-proof body (IP55)

Combination of idea and technology materializing light-weight size

Meticulous inverter dedicated design

- > Fully miniaturized mechanical parts taking into account inverter-based smooth start and stop
- > Transformer-free structure based on the inverter DC power
- > Thermal protector-free structure based on the electronic thermal system

Double safety mechanism preventing the accident at the occurrence of abnormal load

Equipped with a friction clutch and electronic overload limiter

- > The friction clutch prevents breakage of the hoist body and load chain at the occurrence of abnormal load such as an overload and lifting an anchored object.
- > The electronic overload limiter detects an overload with the inverter and stops operation immediately.

Shutting off the current to the motor at the time of excessive lifting/lowering to prevent an accident

- > The upper-lower limit switch prevents damage on the hoist body and load chain at the time of excessive lifting/lowering.
- > Simply-structured upper-lower limit switch considering reduction of dead space

Meticulous long-life design

- > Motor with an ingenious external cooling fan
- > Oil bath lubrication type gear box
- > Optimally shaped motor frame fins and fan cover
- > Intermittent rating 40/20% ED

Suitable for severe environments and working conditions

Simple design with Grade M6 (500kg) M5 (1t)

World-class KITO original chain

Superstrong nickel-plated load chain

- > Highly enhanced fatigue and wear resistance due to ingenious technology
- > Special alloy steel quenched chain with high strength, durability and accuracy

Visual indication of maintenance timing

- > Capable of showing the number of starts of the hoist and the hoist's total on-time in the Data Display, allowing maintenance and inspection according to the frequency of use.
- > Capable of controlling the inspection and replacement timings of component parts, etc. to suggest a maintenance plan for safety operation.

Shutting off the motor circuit in case of emergency

- > Capable of shutting off the motor circuit at hand by pressing the emergency stop button.
- > Originally designed easy-to-operate push button switch based on ergonomics
- > 24 V DC operating voltage for higher safety

Higher work efficiency of the inspector

Higher maintainability

- > Easy removal of a suspension eye by installing a connecting shaft at the upper part of the body
- > Centralized control by the inverter minimizes the number of electric parts and equipment and minimizes replacement parts.

Environmentally friendly

- > Free from 15 environmentally hazardous substances specified by KITO, including 6 European RoHS directive substances
- > Lower noise during operation and braking due to a 4-pole motor and pull-rotor brake

C o n t e n t s

4 Smooth & Ergonomic Operation

- Inverter
- Push button control

5 Reliable Safety

- Electronic overload limiter & friction clutch & upper-lower limit switch
- Electronic thermal protector
- Pull rotor type drum brake
- Emergency stop

Easier Maintenance

- Connecting shaft & suspension-eye
- CH (counter hour) meter

6 Enhanced Durability

- High end duty rating
- Unique motor frame fins & fan cover
- Load chain

Environmentally Friendly

- No hazardous substances
- Lower noise

7 EQ Outline

EQ Electric Chain Hoist Lineup

Trolleys

- Plain Trolley TSP

Lifting Speed (Single phase)

- EQ

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Chain Containers

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9 Hoist Classifications

- ISO/JIS
- FEM
- ASME HST

10 EQ (Single phase)

- With Suspension Eye (Specifications/ Dimensions)
- #### **Suspension Eye & Bottom Hook Dimensions**

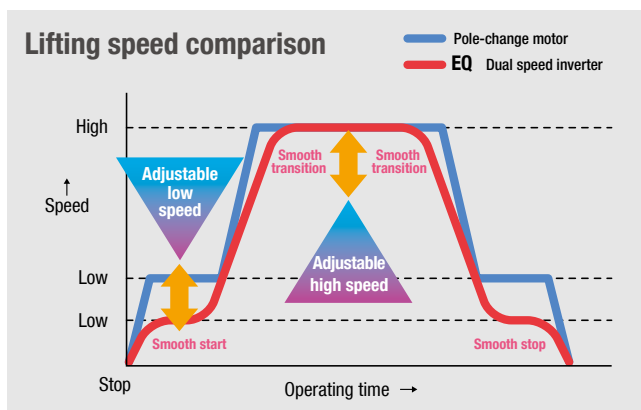
11 EQSP (Single phase)

- With Plain Trolley (Specifications/ Dimensions)

Technical Documents

- Electric Chain Hoist Rated Currents
- Power Supply Cable Allowable Lengths (EQ)

Smooth & Ergonomic Operation



Inverter

smooth transitional speed

The dual speed inverter delivers smoother movement than the pole change motor, reducing load swing. The high to low speed ratio can be set to a large value. This results in smooth starts, improved low speed stops, and improved positioning accuracy.

The standard speed ratio is 6:1 (500kg) 4:1 (1t).

A No-load High-Speed Function is equipped as standard feature, allowing its hoisting speed, faster during no-load operation. When the no-load condition is detected by the inverter, this function is activated automatically to switch to high speed operation, leading to improving the work efficiency with ease and safety. This function is easily activated (ON/OFF) with the push button control.

EQ inverter unit is well-customized for lifting applications including exclusive software with optimum control and is also provided with measures against impact and heat which were verified through long run tests.

Push button control

original design

The push button control is designed in an ergonomic shape that is operator friendly. Seeking ease of operation and universal design, KITO's original push button control is designed and manufactured based on trial and error repeated many times, in particular, upgrading prototypes and evaluation from an enduser point of view especially with respect to unit strength.

Contoured to comfortably fit into your hand. The button has a light operating sensation which responds to fine adjustments in pressure. The pressing stroke is short. The operator, therefore, will not become fatigued after long-periods of operation.



Reliable Safety

Electronic overload limiter & friction clutch & upper-lower limit switch **triple safety**

Maintaining safety is the most important task for lifting equipment, and is essential for stable operation. To ensure safety, KITO utilizes a triple safety mechanism consisting of an originally developed electronic overload limiter and friction clutch and upper-lower limit switch. When the inverter detects an overload, the electronic overload limiter turns off the power to the motor to stop lifting the load.

The friction clutch is an emergency overload protection device that idles the motor when subjected to an excessive load over the rated capacity. Friction clutch performance is not easily compromised with changes in the surrounding temperature. In the case of irregular loading, this operates in advance to prevent the hoist body or load chain from being damaged.



In the event that a load is lifted or lowered excessively, the limit switch stops the motor, preventing hoist or load chain damage. (Not regular use)



Electronic thermal protector

To prevent the motor from burning out due to excessive usage, a standard thermal protector is installed in the inverter.

Pull rotor type drum brake

With a rotor and pull rotor incorporated in the motor, this is a cone type drum brake which is released at the time of operation. When the power is shut off, the brake is activated, ensuring safety.

Emergency stop

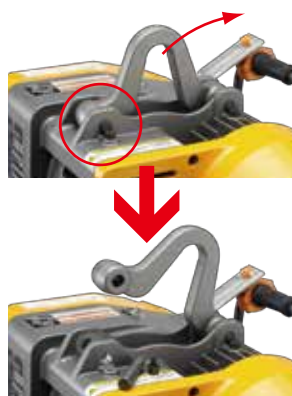
The emergency stop, provided as standard, allows the motor power to be disconnected in an emergency without cutting off the main power supply.



Easier Maintenance

Connecting shaft & suspension-eye

The connecting shaft mounted on the outside of the EQ. This allows a suspension-eye to be attached or removed with ease.



CH (counter hour) meter

As a standard feature, the hoist's total on-time and the number of moving starts are shown on the Data Display of the Inverter. This enables the user to carry out maintenance based upon the frequency of use. By maintaining a history of the CH meter data, the inspection periods and replacement periods for gear oil, brakes and load chains can be efficiently controlled, allowing the equipment to be used with confidence.

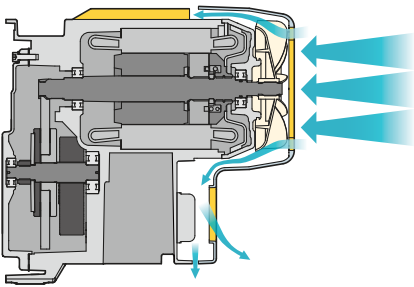


Enhanced Durability

High end duty rating

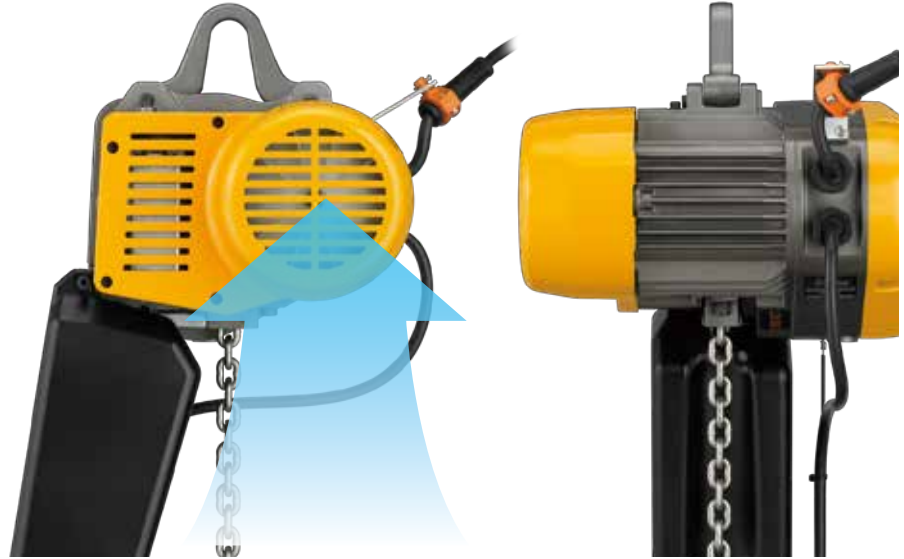
The EQ achieves 500kg M6 (ISO) /3m (FEM) 1t M5 (ISO) /2m (FEM) class (refer to section of "Hoist Classifications"), with a duty cycle of 40/20% ED. Supporting use in the most demanding environments and conditions, this long service life hoist is a heavy-duty product which is also applicable to high frequency or long lift operations.

The gearbox is lubricated in an oil bath. As a result of this, wear and tear has been improved and cooling has also been enhanced at the same time.



Unique motor frame fins & fan cover

A unique fan-cooled motor with motor frame fins and a fan cover have been configured into a purpose built design. This design produces a much quieter motor unit as well as enhanced fan cooling capabilities.



Load chain **super strength**

KITO's world class original super-strength nickel-plated load chain certified by German Institute, uses unique technology to greatly increase resistance to fatigue and wear. At KITO, testing is continuously being carried out regarding the load chain fatigue, wear, tensile strength, and environment. KITO takes pride in manufacturing load chains that have strength, durability and accuracy for utilization in the product.



Environmentally Friendly

No hazardous substances

As an environmental measure, several environmentally hazardous substances specified by KITO, including 6 European RoHS directive substances, are not used.

Lower noise

The utilization of the inverter, 4-pole motor as well as the drum brake, reduces the noise during operation and braking.

EQ Outline

Rated capacity:	500kg-1t (Dual speed)
Voltage:	240V 50Hz (Single phase)
Control voltage:	DC 24V
Duty rating:	40/20% ED
Classification:	1t: M5 (ISO/JIS), 2m (FEM), H4 (ASME) 500kg: M6 (ISO/JIS), 3m (FEM), H4 (ASME)
Motor insulation:	Class B
Enclosure:	Hoist body: IP55, Push button control: IP65
Suspension varieties:	Manual trolley
Operating temperature:	-20 - +40°C (-4 - +104°F)
Operating humidity:	85%RH or less
Noise level:	EQ,dual speed VFD model 80dB or less (A scale: measured at 1m away from the Electric chain hoist)

EQ Electric Chain Hoist Lineup

Type	Lifting speed	Capacity	
		500kg	1t
Suspension Eye EQ	Dual Speed Inverter	●	●
With Plain Trolley EQSP		●	●

KITO will not be held liable for any malfunction, lack of performance or accident if the product is being used in conjunction with any other equipment. If the product is to be used for unintended purposes, please confirm with your dealer in advance.

Trolleys

Plain Trolley TSP

- Designed for light load manual applications (500kg-1t)
- Designed to provide smooth and easy traversing.
- Lugs provide protection from striking damage against rail stoppers, and from falling off the rail.
- Wheel flanges also prevent derailment.



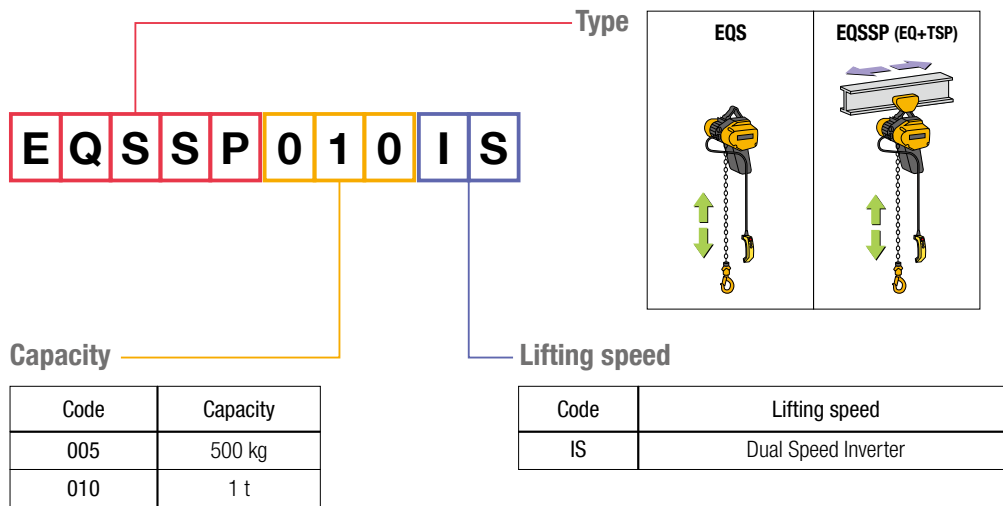
Lifting Speed (Single Phase)

EQ

(m/min)

Capacity	50Hz			
	High	Low	Adjustable Range	No-Load High-Speed
500kg	7.6	1.3	1.3-7.6	9.9
1t	5.1	1.2	1.2-5.1	9.2

Product Code



Chain Containers

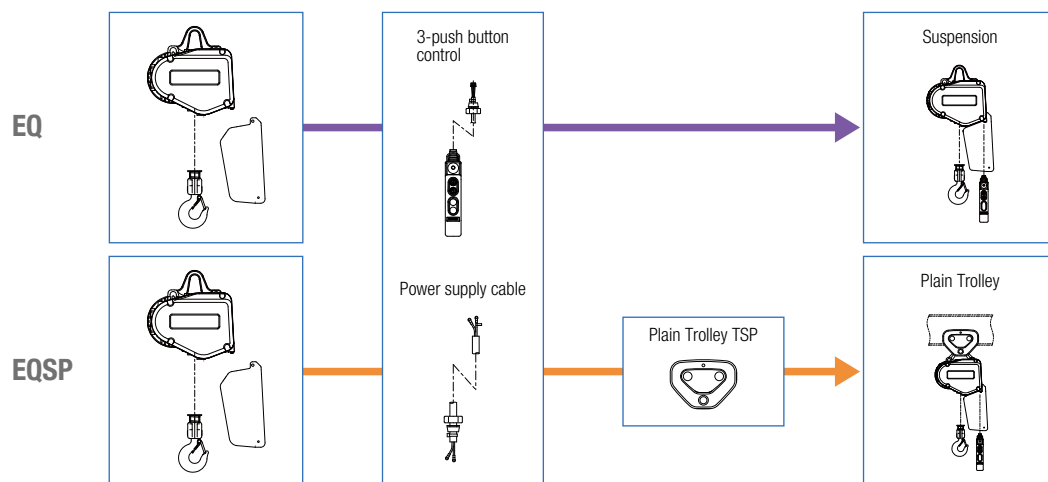
Type of containers



Product code	Body	≤6m	6.1≤15m
EQS005IS	C		
EQS010IS	D		*

* Please contact us.

Product Configurations



Hoist Classifications

ISO/JIS

State of loading		Total duration of use (h)							
		200	400	800	1600	3200	6300	12500	25000
Light	Mechanisms subjected very rarely to the maximum load and, normally, to light loads	–	–	M1	M2	M3	M4	M5	M6
Moderate	Mechanisms subjected fairly frequently to the maximum load but, normally, to rather moderate loads	–	M1	M2	M3	M4	M5	M6	–
Heavy	Mechanisms subjected frequently to the maximum load and, normally, to loads of heavy magnitude	M1	M2	M3	M4	M5	M6	–	–
Very heavy	Mechanisms subjected regularly to the maximum load	M2	M3	M4	M5	M6	–	–	–

This classification refers to ISO 4301-1 and applies to the mechanical components including gears and bearings except for consumable parts.

FEM Relation between ISO-and FEM-Denominations

1 D _m	1 C _m	1 B _m	1 A _m	2 m	3 m	4 m	5 m
M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8

Load spectrum	Cubic mean value	Class of operation time									
		V 0.06	V 0.02	V 0.25	V 0.5	V 1	V 2	V 3	V 4	V 5	
		T 0	T 1	T 2	T 3	T 4	T 5	T 6	T 7	T 8	
		Average operating time per day in hours									
		≤0.12	≤0.25	≤0.5	≤1	≤2	≤4	≤8	≤16	>16	
1 L1	K≤0.50	–	–	1 D _m	1 C _m	1 B _m	1 A _m	2 m	3 m	4 m	
2 L2	0.50<K≤0.63	–	1 D _m	1 C _m	1 B _m	1 A _m	2 m	3 m	4 m	5 m	
3 L3	0.63<K≤0.80	1 D _m	1 C _m	1 B _m	1 A _m	2 m	3 m	4 m	5 m	–	
4 L4	0.80<K≤1.00	1 C _m	1 B _m	1 A _m	2 m	3 m	4 m	5 m	–	–	

Class of operating time		Average operating time per day (in hours)	Calculated total operating time (in hours)
V0.06	T0	≤0.12	200
V0.12	T1	≤0.25	400
V0.25	T2	≤0.5	800
V0.5	T3	≤1	1,600
V1	T4	≤2	3,200
V2	T5	≤4	6,300
V3	T6	≤8	12,500
V4	T7	≤16	25,000
V5	T8	>16	50,000

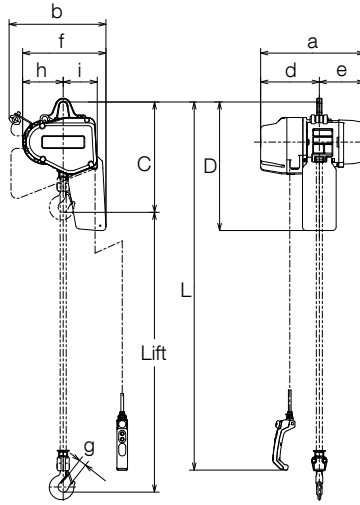
The grade symbols are identical to those of FEM 9.511. (Rules for Design of Serial Lifting Equipment: Classification of Mechanisms)

ASME HST

Hoist duty class	Typical areas of application	Operation time ratings at K=0.65			
		Uniformly distributed work periods		Infrequent work periods	
		Max. on time, min/ hr	Max. No. starts/ hr	Max. on time from cold start, min	Max. No. of starts
H2	Light machine shop fabricating, service, and maintenance; loads and utilization randomly distributed; rated loads infrequently handled	7.6 (12.5%)	75	15	100
H3	General machine shop fabricating, assembly, storage, and warehousing; loads and utilization randomly distributed	15 (25%)	150	30	200
H4	High volume handling in steel warehouses, machine shops, fabricating plants and mills, and foundries; manual or automatic cycling operations in heat treating and plating; loads at or near rated load frequently handled	30 (50%)	300	30	300

The grade symbols are identical to those of ASME HST-1M. (Performance standard for Electric Chain Hoist)

With Suspension Eye



- Standard length of power supply cable is five meters.
- Optional length of lift, push button cord and power supply cable besides standard is available on your request.
- Extending the load chain is prohibited with additional links.

Specifications

Capacity (t)	Product Code	Hoist Body	Standard Lift (m)	Push Button Cord L (m)	Lifting Motor		Lifting Speed (m/min)*			No load High speed	Load Chain		Classification ISO/FEM/ASME	Test Load (t)	Net Weight (kg)	Additional Weight per 1m Lift (kg)
					Output (kW)	Rating (%ED)	50Hz				Diameter (mm)	Chain Falls				
							High	Low	No load High speed							
500kg	EQS005IS	C	3	2.5	0.75	40/20	7.6	1.3	9.9	9.9	5.6	x 1	M6/3m/H4	625kg	33	0.71
1	EQS010IS	D			1.5		5.1	1.2	9.2	9.2	7.1	x 1	M5/2m/H4	1.25	43	1.14

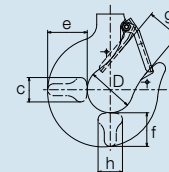
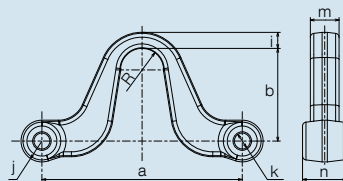
Note: The high speed is preset to the maximum speed in KITO factory. The speeds are adjustable between High and Low.

Dimensions (mm)

Capacity (t)	Product Code	Headroom C	D	a	b	d	e	f	g	h	i
500kg	EQS005IS	410	485	417	367	230	187	298	27	137	128
1	EQS010IS	465	535	433	403	245	188	332	31	154	142

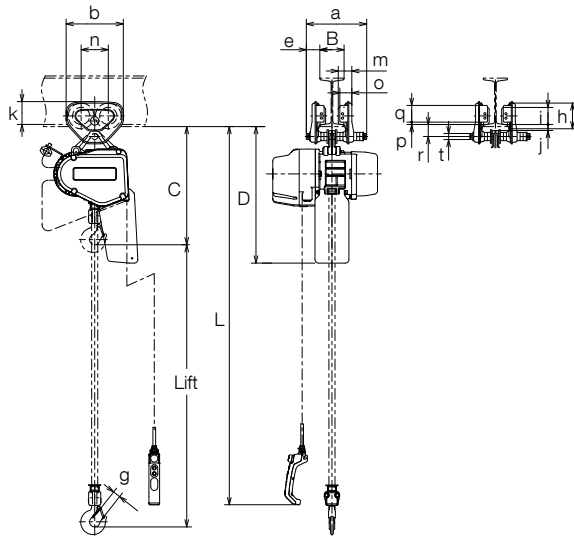
Suspension Eye & Bottom Hook Dimensions (mm)

Capacity (t)	Product Code	Suspension Eye								Bottom Hook					
		a	b	R	i	k	j	m	n	D	g	h	f	e	c
500kg	EQS005IS	139.6	67.5	16.5	8	12.2	16	16	33	35.5	27	17.5	23.5	28	17.5
1	EQS010IS	153.6	71		12.3										



EQSP Single Phase

With Plain Trolley



- Standard length of power supply cable is five meters.
- Optional length of lift, push button cord and power supply cable besides standard is available on your request.
- Extending the load chain is prohibited with additional links.

Specifications

Capacity (t)	Product Code	Hoist Body	Standard Lift (m)	Push Button Cord L (m)	EQ						EQSP			Test Load (t)	Net Weight (kg)	Additional Weight per 1m Lift (kg)		
					Lifting Motor		Lifting Speed (m/min)*			Load Chain	Classification ISO/FEM/ASME	Flange Width B (mm)					Min. Radius Curve (mm)	
					Output (kW)	Rating (%ED)	50Hz					Diameter (mm) x Chain Falls	Standard					Option
							High	Low	No load High speed	W20 (203mm)	W30 (305mm)							
500kg	EQSSP005IS	C	3	2.5	0.75	40/20	7.6	1.3	9.9	5.6 x 1	M6/3m/H4	50-102	103-203	204-305	1100	625kg	37	0.71
1	EQSSP010IS	D		1.5	5.1		1.2	9.2	7.1 x 1	M5/2m/H4	58-127	128-203	1300		1.25	50	1.14	

Note: The high speed is preset to the maximum speed in KITO factory. The lifting speeds are adjustable between High and Low.
In case of only straight I-beam, 0.5ton plain trolley can be used on 57mm and less width beam and 1ton plain trolley can be used on 73mm and less width beam.

Dimensions (mm)

Capacity (t)	Product Code	Headroom C	D	a	b	e	g	h	i	j	k	m	n	o	p	q	r	t
500kg	EQSSP005IS	430	505	264	182	46	27	82	60	19	76	47.5	84	42	10	54	38	22
1	EQSSP010IS	490	565	284	236	56	31	106	71	25	95	56	112	50		69	50	25

Technical Documents

Electric Chain Hoist Rated Currents

For lifting

Type	Motor output (kW)	Rated current (A)
		240 V
		50Hz
EQS005IS	0.75	14.5
EQS010IS	1.5	19.5

Power Supply Cable Allowable Lengths (EQ)

See the following table for the standard power supply cable allowable lengths and sizes. When using the cable of other size than those mentioned in the table, determine the cable length by the right formula.

$$\text{Allowable length (m)} = \frac{1000}{35.6} \times \frac{\text{Cross-sectional area of 1 core wire (mm}^2\text{)} \times \text{Rated voltage (V)} \times 0.02}{\text{Rated current (A)}}$$

Type	Cable size (mm ²)	Rated current (A)
		240 V
		50Hz
EQS005IS	2 (3.5)	33 (58)
EQS010IS	3.5 (5.5)	43 (67)

Note: Parenthesized values denote the size one rank above the standard one.

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