

KITO EXPLOSION-PROOF TYPE

ELECTRIC CHAIN HOIST

INSTRUCTION MANUAL

< This plant –use explosion-proof type chain hoist has passed the qualification test specified by the Ministry of Labor >



▲ CAUTION This instruction manual provides the user with specific information on the explosion-proof type electric chain hoist. Please read the instruction manual for the “Kito Excel Electric Chain Hoist” before use as well.

1 . Type of Explosion-proof Construction, Explosion Class, and Ignition Temperature.

◆ DANGER Do not install the electric chain hoist in any operating environment other than that specified below.

- This electric chain hoist is designed and manufactured in accordance with the requirements stipulated in the guidelines for explosion-proof plant-use electric equipment and facilities. Its application is limited to the following operating conditions.

Explosion-proof construction	Plant-use explosion-proof type
Explosion class and ignition temperature category for ambient gas or steam	d2 G4

Please note that this electric chain hoist does not satisfy the requirements for coal

mine explosion-proof equipment.

- The ranges applicable to the Kito Explosion-proof Electric Chain Hoist are indicated in the columns within  in the table below.

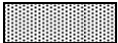
Table 1 - 1 Applicable Ranges of Explosion-proof Gases

Ignition temperature (i.e., point of firing)		G 1	G 2	G 3	G 4	G 5	
		Higher than 450	450 ~300	300 ~200	200 ~135	135 ~100	
Explosion class	1	A gap in excess of 0.6 mm when a flame is propagated at a depth of 25 mm in the gap	Acetone Ethane Ethyl acetate Benzene Ammonia Methane Acetic acid Toluene Carbon monoxide Methanol Propane	Ethanol Butane Butanol Acetic anhydride	Gasoline Hexane	Acetaldehyde Ethyl ether	
	2	A gap between 0.4 mm and 0.6 mm	Coal gas	Ethylene Ethylene oxide			
	3	A gap less than 0.4 mm	Water gas Hydrogen	Acetylene			Carbon disulfide

- The dimensions in the columns for “Explosion class” indicate the explosion-proof standard gaps at which ignition propagated.

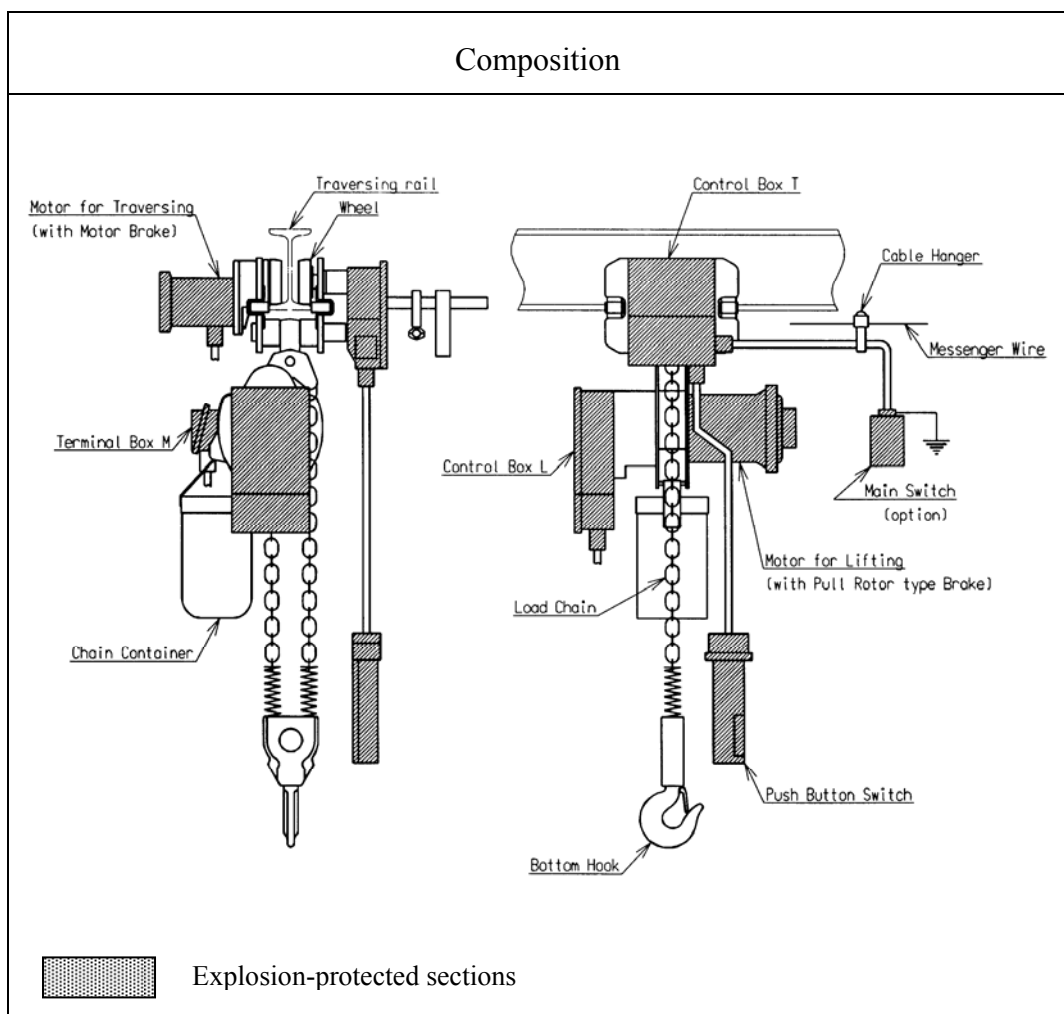
2 . Construction

2-1 Hoist body

- The section  in Fig.2-1 shows the explosion-protected construction.

Accordingly electric parts are of sufficient strength to withstand the internal pressure indicated in JIS C 0905. Other detailed specifications such as gap, depth of gap and locking construction are also made to meet the above standard.

Fig.2-1



The explosion-protected sections shown in the figure above must be disassembled by a professional service shop or an operator with expertise in related technology.

2-2 Cable entry

- The cable entry in each unit of the apparatus is of pressure-proof packing construction as shown in Fig.2-2. The cable entry section of the push button cord and the power supply cable lead into each terminal box installed in the control box and the control station.
- As shown in Fig.2-3, the cable entry section in the control box and the control station for the cables from the terminal box is of pressure-proof packing construction.

Fig.2-2

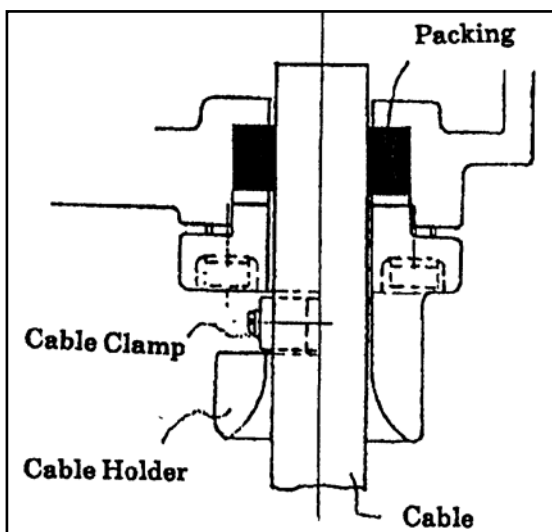
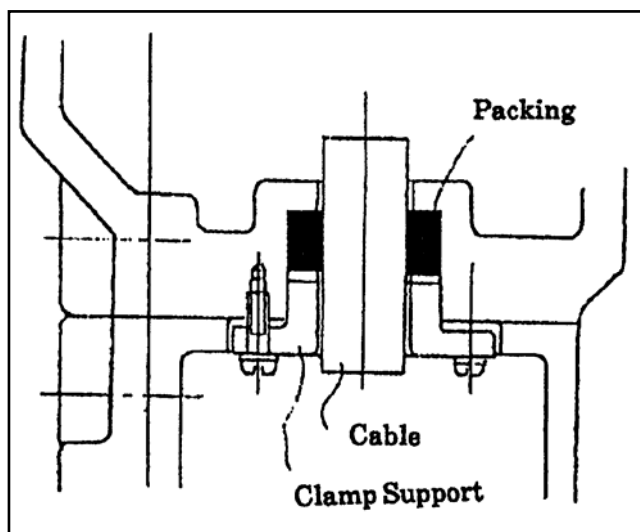


Fig.2-3

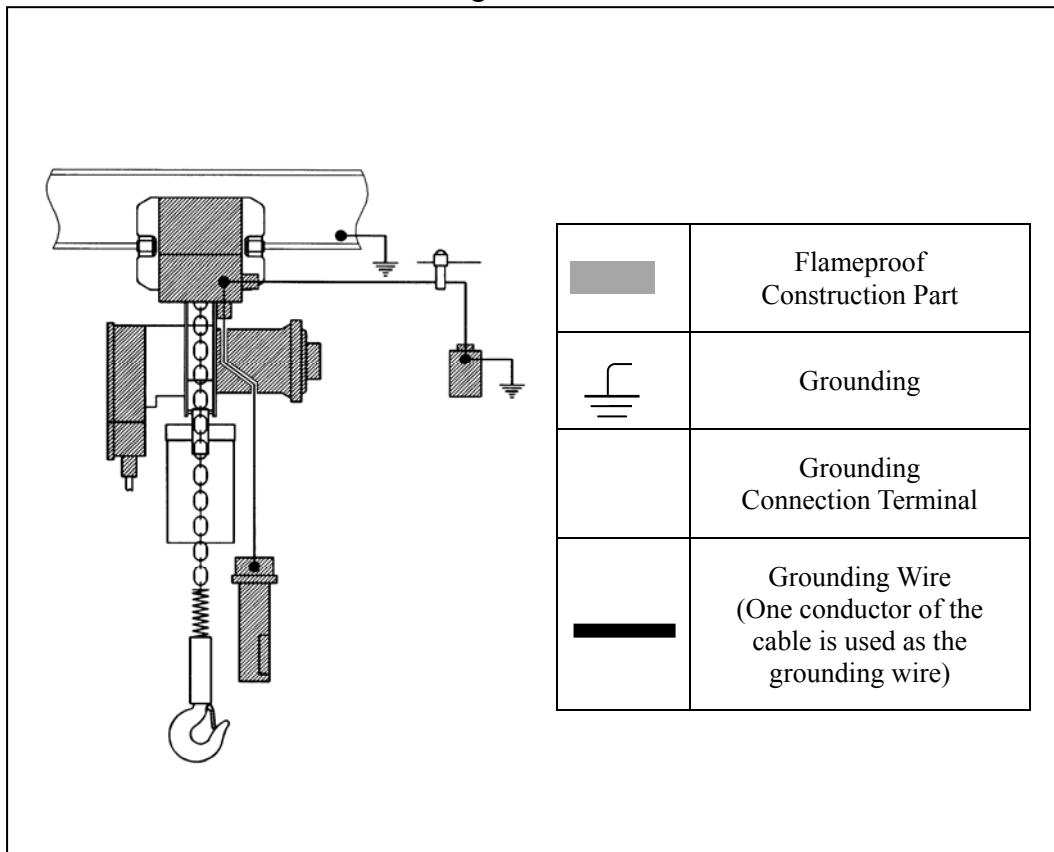


▲ CAUTION It is extremely important to secure explosion-proof performance as designed. If it is necessary to remove the cable in the process of installation or repair of the chain hoist, make sure that the cable is reset in place without being loose or disconnected.

2-3 Wiring

- The push button cord and power supply cable are rubber insulated flexible cables and one of the conductors is used for the grounding wire.
- The green conductor is the grounding wire.
- Grounding resistance should be less than 10Ω .
- Fig.2-4 , shows a rough sketch of the grounding method.

Fig.2-4



DANGER

- Make sure to ground the chain hoist.
- Install an earth leakage breaker in the wiring in addition to grounding.

2-4 Maximum temperature of electrical parts.

- The maximum temperature of the elements used in the explosion-proof structure “d2G4” is 70°C at an ambient temperature of 40°C .

CAUTION

Take reliable protective measures for the electrical parts (power supply switch, etc.) in consideration of fault current or other unfavorable conditions. Otherwise, a large current which is caused by a failure and flows through parts may raise the temperature of each housing to an extreme.

3 . Maintenance

CAUTION

- Use of the electric chain hoist in a highly explosive environment poses a danger of accidents. Danger may be increased due to faulty user handling or failure to carry out daily inspections. Use and maintain the chain hoist by following the correct safety procedures.

DANGER

- Maintenance, inspection, and repair must be done only by an expert technician designated by the manufacture.

3-1 Maintenance of flameproof surface (Gap and joint surface)

- The explosion-proof joint surface is smoothly finished in order to maintain the gap and depth required for preventing fire from escaping. However, as this section is opened during inspection, it is liable to be damaged and may become rusty and rough after long-term use.
- “The Gas Explosion-proof Guidelines” recommends lightly oiling this section for rust-and water-proofing. However, dust accumulates when oil remains for a long period of time and volatile matter is lost, resulting in solidification; reoiling with lighter cone-penetration oil should therefore be done periodically or at times of inspection.
- In the event that the flameproof joint surface becomes rusty, the rust should be removed with sandpaper and the surface roughness finished to smoother than 25S of JIS B 0601 (equivalent to Rmax. 25 in ISO / R468). In this case, the gap in the joint surface should be less than 0.2mm. In the event that the gap is more than 0.2mm, the parts must be replaced.

3-2 Prevention of rust on the frame

- The hoist body will become rusty when used outdoors or in a place where corrosive gas is present, and if left for a long time as is, the outer coating gradually becomes thinner and the mechanical strength decreases even though the design and manufacture were for the purpose of withstanding the internal pressure. Therefore, remove rust and recoat whenever necessary.

3-3 Do not over-fasten the bolt

- If the bolts and screws are too tight, their tensile strength decreases due to torsional stress, resulting in the loss of the bolt's function.
- Conversely, if they are loosened, the gas explosion-proof function is lost; care should also be taken to avoid this. For disassembly and assembly, use the hexagonal wrench.

3-4 Wiring

- When connecting external cable to the terminal box, the internal penetrated lead wires should be correctly connect to the correspondingly-numbered terminals using an “insulated clamp-type butt connecting sleeve,” and the grounding terminals must connected. Replace cables whose outer sheaths show severe damage.
- Fasten the bellmouthed packing sufficiently. Also use packing suitable for the outer diameter of the cable, so that the explosion-proof function will be maintained. The cable clamp must used.