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**OWNER'S (OPERATOR'S) MANUAL AND  
SAFETY INSTRUCTIONS  
FOR KITO MOTORIZED CRANES  
N6 SERIES**

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*ALWAYS SAVE THIS BOOK FOR FUTURE REFERENCE.*

**KITO**

Thank you for purchasing the KITO N6 series Motorized Crane.

This crane uses a motorized end carriage that combines a light weight frame with a geared motor. It travels quietly and smoothly, and is designed to raise work efficiency in the customer's place.

Owing to thorough quality controls, this crane has been manufactured to satisfy requirements for durability.

**However, improper handling, usage or maintenance may result in unforeseen accident or injury. Therefore, read thoroughly this manual before using the equipment.**

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# 1. DEFINITIONS

**⚠ DANGER** : indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**⚠ WARNING** : indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**⚠ CAUTION** : indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

WLL : indicates maximum mass (working load limit) which a crane is designed to support in general service.  
Under WLL, all values are indicated in t (ton).

## 2. INTENDED PURPOSE

This crane has been designed for vertically lifting, lowering and horizontally carrying loads by means of the pendant push button switches, under normal atmospheric conditions of the work place.

## 3. BEFORE USE

### 3.1 Safety summary

Danger exists when heavy loads are transported, particularly when the equipment is not being used properly or is poorly maintained. Because accidents and serious injury could result, special safety precautions apply to the operation, maintenance and inspection of the KITO crane.

**⚠ WARNING** : **ALWAYS operate, inspect and maintain this Crane in accordance with applicable safety codes and regulations.**

Following these simple rules can help to avoid hoisting accidents;

**⚠ WARNING** : **IMPROPER crane use could result in death or serious injury. To avoid these hazards :**

#### 3.1.1 Before and during operation

- NEVER** lift or transport loads over or near people.
- NEVER** use a crane for lifting, supporting or transporting people.
- NEVER** leave a suspended load unattended.
- NEVER** lift more than the rated capacity.
- NEVER** reverse crane operation abruptly or inch the crane excessively in travel.
- NEVER** pull a load from an extreme angle.
- NEVER** allow the crane to impact the stopper or other cranes.

- ALWAYS** inspect the crane before use and at periodic intervals.
- ALWAYS** pay attention to load swing while operating the crane.
- ALWAYS** be aware of what is going on in the vicinity of the crane during use.
- ALWAYS** keep travel and traverse paths, and shelters, unobstructed.
- ALWAYS** operate the push buttons from a location from where both the hook and load can be seen.
- ALWAYS** check slings and loads are properly installed before use.
- ALWAYS** walk behind or alongside a suspended load, and keep eyes looking forward, while operating the crane.
- ALWAYS** read the "Safety Instructions" for your hoist and trolley respectively provided. — — — — —



**3.1.2 Maintenance and checks**

- ALWAYS** have maintenance, check and repairs performed by a qualified person.
- ALWAYS** place an "OUT OF SERVICE" sign on the crane when performing maintenance, checks or repairs.
- ALWAYS** turn OFF power to the hoist, trolley and crane before performing maintenance, checks or repairs.
- ALWAYS** wear a helmet and safety belt when performing maintenance, checks or repairs.

## **4. Cranes**

### **4.1 Features**

#### **[Geared motor]**

- (a) Employs an electromagnetic brake to mechanically adjust brake torque in stopping.
- (b) Travel is kept quiet because of the helical gear used in the reduction gear.
- (c) Comes in 3 models with different single speed specification (low, standard and high) and 1 model with dual speed specification (Reduction ratio of 4:1).

#### **[Low-head end carriage]**

- (a) Track wheels are easily taken off. This greatly shortens installation and maintenance work.
- (b) High tension bolts (H.T.B.) are used to couple the end carriage to the girder as standard for low-head type.
- (c) The center punch for girder installation holes is marked on the end carriage to make centering easier.
- (d) The end carriage is coated with a red primer when shipped from the factory.
- (e) Track wheels are made of carbon steel to improve durability.
- (f) The end carriage uses press formed frame designed by Kito.

#### **[Overhead end carriage]**

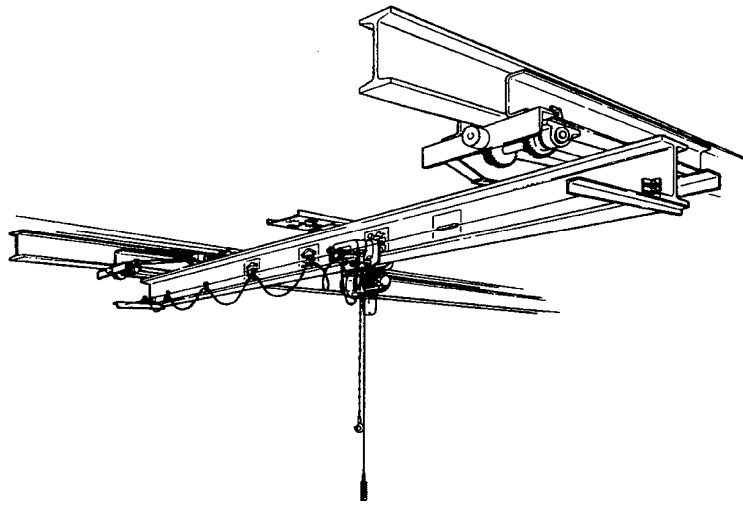
- (a) The end carriage has an open frame construction to facilitate track wheel maintenance.
- (b) The end carriage is built with side rollers to keep travel smooth and stable.
- (c) The center punch for girder installation holes, girders and travel rails are marked on the end carriage to make centering easier.
- (d) Span is easily adjusted on-site because the end carriage is coupled to the frame by bolts.
- (e) The end carriage is coated with a red primer when shipped from the factory.
- (f) Track wheels are made of carbon steel to improve durability.
- (g) The end carriage uses press formed parts designed by Kito.

#### **[Double girder end carriage]**

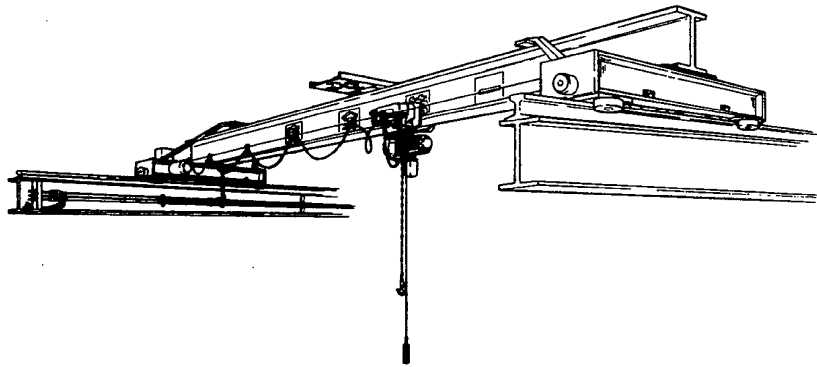
- (a) The end carriage has an open frame construction to facilitate track wheel maintenance.
- (b) The end carriage is built with side rollers to keep travel smooth and stable.
- (c) The center punch for girders and travel rails are marked on the end carriage to make centering easier.
- (d) The end carriage uses press formed frames (channel type) designed by Kito.  
Girders and catwalks are easily installed.
- (e) The end carriage is coated with a red primer when shipped from the factory.
- (f) Track wheels are made of carbon steel to improve durability.

**General view (For your reference)**

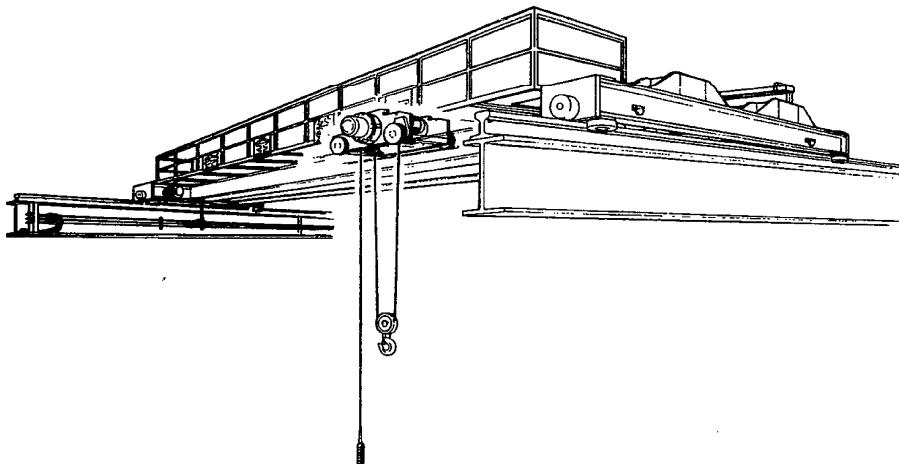
**[Low-head crane]**



**[Overhead crane]**

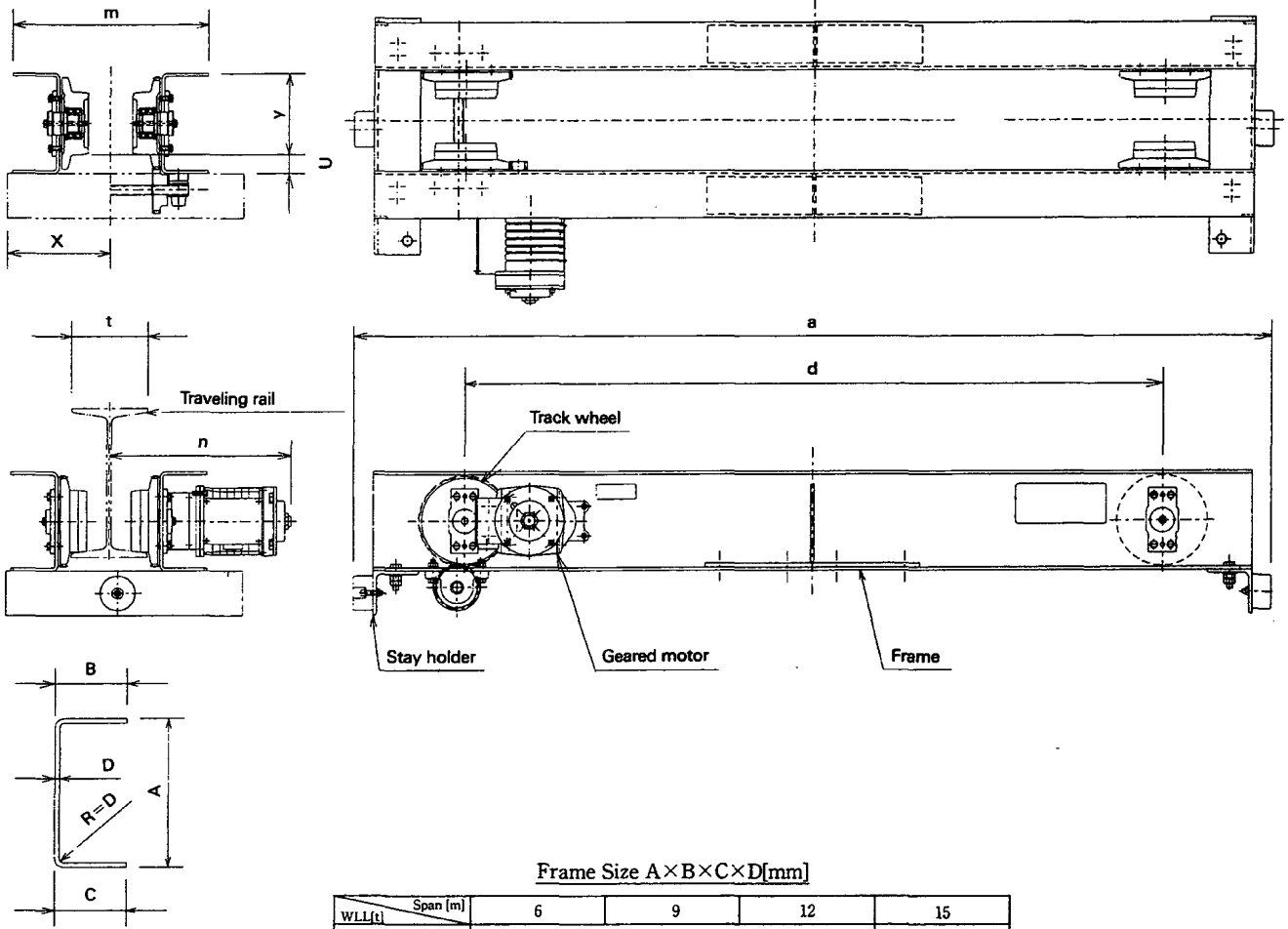


**[Duble girder crane]**



## 4.2 Specifications and outer appearance

### Low-head type motorized end carriage



Frame Size A×B×C×D[mm]

WLL(t)	Span [m]			
	6	9	12	15
1	155×60×60×6			
2	170×70×70×6	200×70×70×6		
3	200×70×70×6	200×95×95×6		200×90×90×9
5	200×80×80×9		240×105×105×9	

Section of frame

WLL	Max. span	Type	Code	Traveling motor output [kW×2] 50/60Hz [m/min]				Wheel diameter	Applicable traveling rail width	a	d	m	u	x	#2 y	#1 n	Max. wheel pressure	Net weight
				L	S	H	SD											
[t]	[m]			10/12	20/24	30/36	20.5/24.6	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	[kg]	
1	6	EL010-6	N6QL210V	0.25	0.25	0.25	0.25/0.063	95	75 to 150	1140	700	t+171	34	241-t/2	121	288+t/2	460	132
	9	EL010-9	N6QL310V	0.25	0.25	0.25	0.25/0.063	95	75 to 150	1500	1060	t+171	34	241-t/2	121	288+t/2	460	150
	12	EL010-12	N6QL410V	0.25	0.25	0.25	0.25/0.063	95	75 to 150	1840	1400	t+171	34	241-t/2	121	288+t/2	460	164
	15	EL030-15	N6QL530V	0.4	0.4	0.4	0.4/0.1	140	100 to 150	2200	1760	t+231	40	281-t/2	174	336+t/2	1600	340
2	6	EL020-6	N6QL220V	0.25	0.25	0.25	0.25/0.063	110	100 to 150	1140	700	t+191	36	281-t/2	138	288+t/2	950	152
	9	EL020-9	N6QL320V	0.25	0.25	0.25	0.25/0.063	110	100 to 150	1500	1060	t+191	36	281-t/2	138	288+t/2	950	172
	12	EL020-12	N6QL420V	0.25	0.25	0.25	0.25/0.063	110	100 to 150	1840	1400	t+191	36	281-t/2	165	288+t/2	950	202
	15	EL030-15	N6QL530V	0.4	0.25	0.4	0.4/0.1	140	125 to 150	2200	1760	t+231	40	281-t/2	174	336+t/2	1600	340
3	6	EL030-6	N6QL230V	0.25	0.25	0.25	0.25/0.063	110	100 to 150	1140	700	t+191	36	281-t/2	165	288+t/2	950	160
	12	EL030-12	N6QL430V	0.25	0.25	0.25	0.25/0.063	125	100 to 150	1840	1400	t+341	38	281-t/2	162	288+t/2	1070	234
	15	EL030-15	N6QL530V	0.4	0.4	0.4	0.4/0.1	140	125 to 150	2200	1760	t+231	40	281-t/2	174	336+t/2	1600	340
5	9	EL050-9	N6QL350V	0.4	0.4	0.4	0.4/0.1	140	125 to 150	1500	1060	t+211	40	281-t/2	174	336+t/2	1600	270
	15	EL050-15	N6QL550V	0.75	0.75	0.75	0.75/0.19	155	125 to 150	2200	1760	t+279	39	290-t/2	201	399+t/2	1800	432

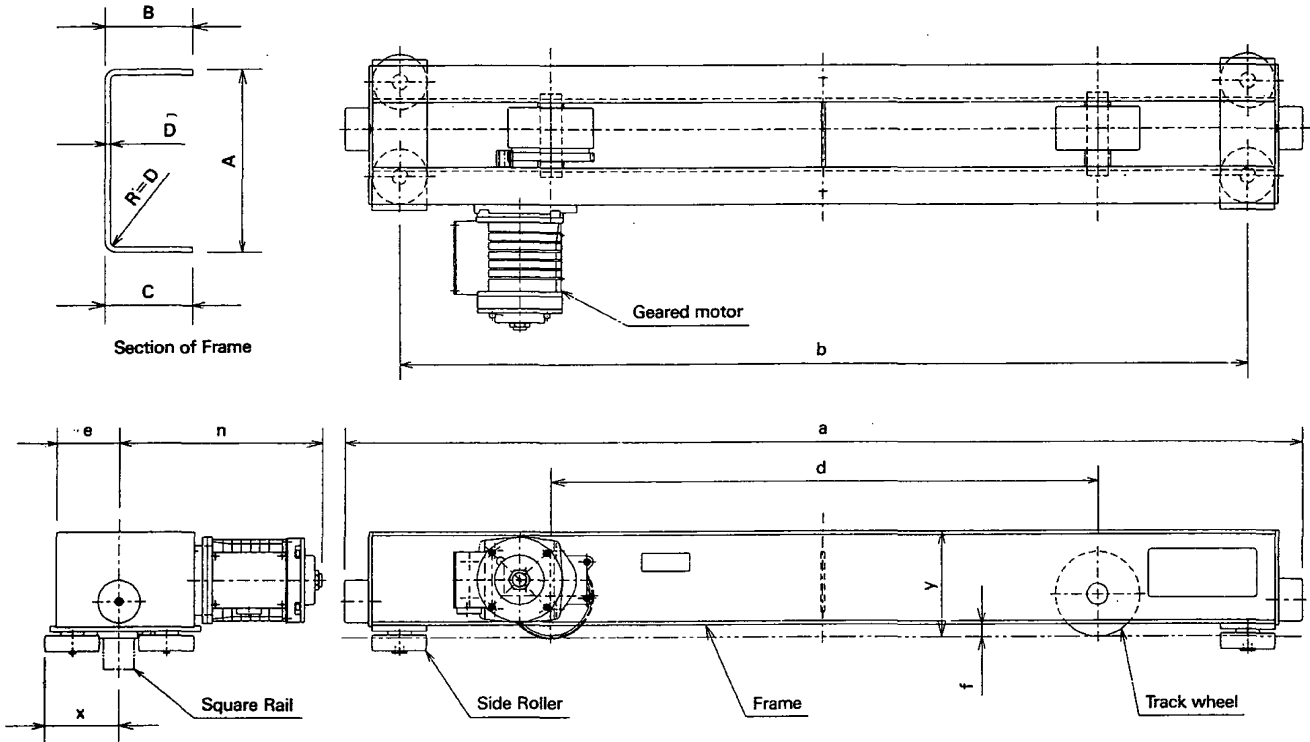
※1: show dimensions in case of standard speed (20/24 m/min.) geared motor.

※2: show height from the upper surface of the traveling rail to the top of the end carriage.

• WLL: Working Load Limit (t).

• Use I beam for the traveling rail.

## Overhead type motorized end carriage



Frame Size A × B × C × D [mm]

WLL [t]	Span [m]				
	9	12	15	18	21
1	155 × 60 × 60 × 6		170 × 70 × 70 × 6		
2	155 × 60 × 60 × 6		200 × 70 × 70 × 6		
3	150 × 60 × 60 × 6		200 × 95 × 95 × 6		
5	200 × 70 × 70 × 6	200 × 80 × 80 × 9			240 × 105 × 105 × 9
7.5	200 × 80 × 80 × 9		240 × 105 × 105 × 9		
10	200 × 80 × 80 × 9		240 × 105 × 105 × 9		

WLL	Max. span	Type	Code	Traveling motor output [kW×2] 50/60Hz [m/min]				Wheel diameter	Applicable traveling rail	a	b	d	e	f	x	y	n	Max. wheel pressure	Net weight
				L	S	H	SD												
				10/12	20/24	30/36	20.5/24.6												
1	12	EO010-12	N6QO410E	0.25	0.25	0.25	0.25/0.063	95	□32-□38-□40-□45	1580	1400	900	99	15.5	119	171	321	950	132
	18	EO010-18	N6QO610E	0.25	0.25	0.25	0.25/0.063	125	□32-□38-□40-□45	2280	2100	1200	114	20.5	119	191	325	1800	197
	21	EO030-21	N6QO730E	0.25	0.25	0.4	0.25/0.063	175	□45-□50	2691	2505	1400	134	20.5	123	221	326	3200	380
2	12	EO020-12	N6QO420E	0.25	0.25	0.25	0.25/0.063	125	□32-□38-□40-□45	1580	1400	900	104	20.5	119	176	325	1800	146
	18	EO030-18	N6QO620E	0.25	0.25	0.25	0.25/0.063	125	□32-□38-□40-□45	2280	2100	1200	114	20.5	119	221	325	1800	212
	21	EO030-21	N6QO730E	0.25	0.25	0.4	0.25/0.063	175	□45-□50	2691	2505	1400	134	20.5	123	221	326	3200	380
3	12	EO030-12	N6QO730E	0.25	0.25	0.4	0.25/0.063	140	□45-□50	1580	1400	900	104	20.5	123	176	325	2100	150
	18	EO030-18	N6QO630E	0.25	0.25	0.4	0.25/0.063	155	□45-□50	2280	2100	1200	139	20.5	123	221	325	2400	252
	21	EO030-21	N6QO730E	0.25	0.25	0.4	0.25/0.063	175	□45-□50	2691	2505	1400	134	20.5	123	221	326	3200	380
5	9	EO050-9	N6QO350E	0.25	0.25	0.4	0.25/0.063	175	□50	1490	1300	800	114	23.5	143	224	323	3200	197
	18	EO050-18	N6QO650E	0.4	0.4	0.75	0.4/0.1	210	□50	2296	2100	1200	128	23.5	143	224	376	4500	374
	21	EO050-21	N6QO750E	0.4	0.4	0.75	0.4/0.1	210	□50	2696	2500	1400	153	23.5	143	264	376	4500	496
7.5	12	EO000-12	N6QO411E	0.75	0.75	1.5	0.75/0.19	250	□55-□60	1645	1405	900	128	23.5	162	224	445	7500	384
	18	EO100-18	N6QO111E	0.75	0.75	1.5	0.75/0.19	300	□55-□60	2345	2105	1200	153	23.5	162	264	445	8100	586
	21	EO100-21	N6QO711E	0.75	0.75	1.5	0.75/0.19	300	□55-□60	2745	2505	1400	173	23.5	162	324	445	8100	724
10	12	EO100-12	N6QO411E	0.75	0.75	1.5	0.75/0.19	250	□55-□60	1645	1405	900	128	23.5	162	224	445	7500	384
	18	EO100-18	N6QO611E	0.75	0.75	1.5	0.75/0.19	300	□55-□60	2345	2105	1200	153	23.5	162	264	445	8100	586
	21	EO100-21	N6QO711E	0.75	0.75	1.5	0.75/0.19	300	□55-□60	2745	2505	1400	173	23.5	162	324	445	8100	724

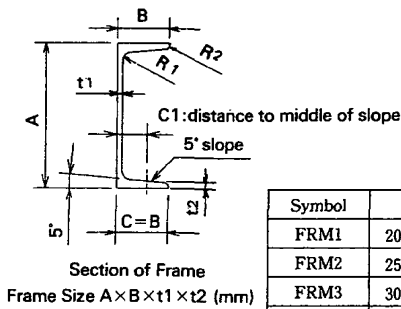
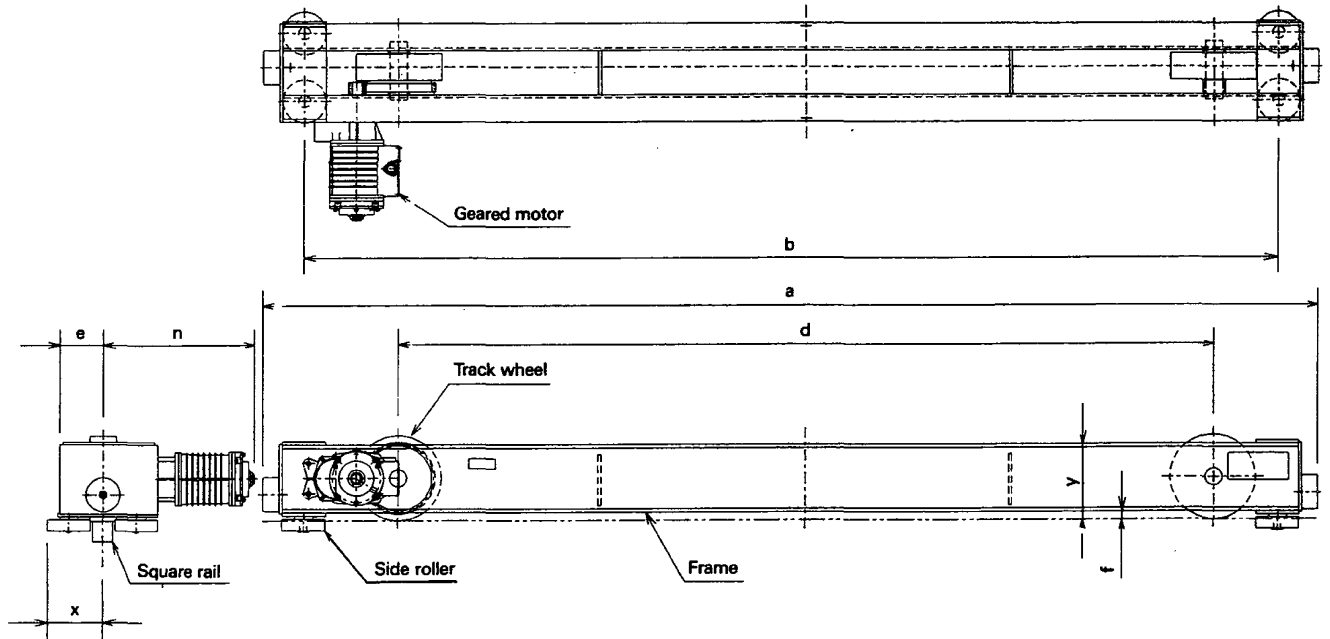
※1: show dimensions in case of standrad speed (20/24m/mon.) geared motor.

※2: show height from the upper surface of the traveling rail to the girder coupling.

• WLL: Working Load Limit (t).



## Overhead type motorized double girder end carriage



Frame Size [mm]

Symbol	Size	R1	R2	C1
FRM1	200×80×7.5×11	12	6	47
FRM2	250×90×9×13	14	7	53
FRM3	300×90×9×13	14	7	53
FRM4	300×90×10×15.5	19	9.5	55
FRM5	380×100×10.5×16	18	9	60
FRM6	380×100×13×20	24	12	62

Symbol of Frame Size

WLL (t)	Span [m]			
	15	18	21	27
3	FRM1	FRM1	FRM1	FRM1
5		FRM1	FRM2	FRM3
7.5		FRM2	FRM3	FRM4
10		FRM3	FRM5	
15	FRM4	FRM5		
20		FRM6		

WLL	Max. Span	Type	Code	Traveling motor output [kW×2] 50/60Hz [m/min]				Wheel diameter	Applicable traveling rail	a	b	d	e	f	x	y	*1n	Max. Wheel	Net weight
				L	S	H	SD												
				10/12	20/24	30/36	20.5/24.6												
3	15.0	WEO030-15	N6WO530E	0.25	0.25	0.4	0.25/0.063	175	□50	2615	2400	1995	124	23.5	143	224	325	3200	382
	21.0	WEO030-21	N6WO730E	0.4	0.4	0.75	0.4/0.1	210	□50	2845	2630	2195	128	23.5	143	224	375	4500	449
	27.0	WEO030-27	N6WO930E	0.4	0.4	0.75	0.4/0.1	210	□50	3395	3180	2140	128	23.5	143	224	375	4500	504
5	15.0	WEO030-21	N6WO730E	0.4	0.4	0.75	0.4/0.1	210	□50	2845	2630	2195	128	23.5	143	224	375	4500	449
	21.0	WEO050-21	N6WO750E	0.75	0.75	1.5	0.75/0.19	250	□55·□60	3095	2855	2390	128	23.5	162	224	444	7500	554
7.5	27.0	WEO050-27	N6WO950E	0.75	0.75	1.5	0.75/0.19	250	□55·□60	3425	3185	2590	138	23.5	162	274	445	7500	736
	21.0	WEO075-21	N6WO775E	0.75	0.75	1.5	0.75/0.19	250	□55·□60	3098	2885	2395	138	23.5	162	274	445	7500	686
	27.0	WEO075-27	N6WO975E	0.75	0.75	1.5	0.75/0.19	250	□55·□60	3478	3235	2740	138	23.5	162	324	445	7500	799
10	15.0	WEO075-21	N6WO775E	0.75	0.75	1.5	0.75/0.19	250	□55·□60	3098	2855	2395	138	23.5	162	274	445	7500	686
	21.0	WEO100-21	N6WO711E	0.75	0.75	1.5	0.75/0.19	300	□55·□60	3288	3045	2540	138	23.5	162	324	445	8400	828
15	27.0	WEO100-27	N6WO911E	1.5	1.5	1.5	1.5/0.38	350	□55·□60·□65	3698	3430	2840	140	27.5	189	328	529	10200	1136
	15.0	WEO100-27	N6WO911E	1.5	1.5	1.5	1.5/0.38	350	□55·□60·□65	3698	3430	2840	140	27.5	189	328	529	10200	1136
	27.0	WEO150-27	N6WO915E	1.5	1.5	1.5×2	1.5/0.38	400	□55·□60·□65	4028	3760	3150	150	27.5	189	408	530	13400	1448 [1588]
20	15.0	WEO150-27	N6WO915E	1.5	1.5	1.5×2	1.5/0.38	400	□55·□60·□65	4028	3760	3150	150	27.5	189	408	530	13400	1448 [1588]
	27.0	WEO200-27	N6WO921E	1.5	1.5	1.5×2	1.5/0.38	450	□55·□60·□65	4528	4260	3500	151	27.5	189	408	531	16400	1948 [2083]

※1 : Dimensions for standard speed geared motor  
 ※1 : show dimensions in case of standard speed (20/24m/min.) geared motor.  
 ※2 : show height from the upper surface of the traveling rail to the girder coupling.  
 • WLL : Working Load Limit (t).  
 • Figures in parentheses are for high (30/36 m/min.) speed type.

## 5. Assembly, wiring and test run

**⚠ WARNING** : ALWAYS make sure that the load supporting structures and load attaching device are strong enough to hold the weight of load and hoist.

Have all assembly works by the authorized people. Off-limits to unauthorized people in assembly works area.

### 5.1 Assembly

For detailed assembly instructions, refer to the motorized crane's assembly manual. The end carriage can be easily set on the travel rails with the following procedure.

#### [Low-head type end carriage]

(a) Detach all track wheels and axles from the end carriage as shown in Fig. 1.

The end carriage frame can be erected without detaching it from the girder. Reassemble the track wheels and axles when the end carriage is in position.

When installing track wheel onto frame fasten bolt ① with a torque tabulated below.

Bolt ① size	M8	M10
Fastening torque (kg-cm)	84 to 93	167 to 184

There is always the risk of the hoist and trolley moving when installing, therefore it is easy to fix them to the girder. Also, pay attention when assembling with the power supply cable, junction cable and other accessories.

(b) Installing as shown in Fig. 1

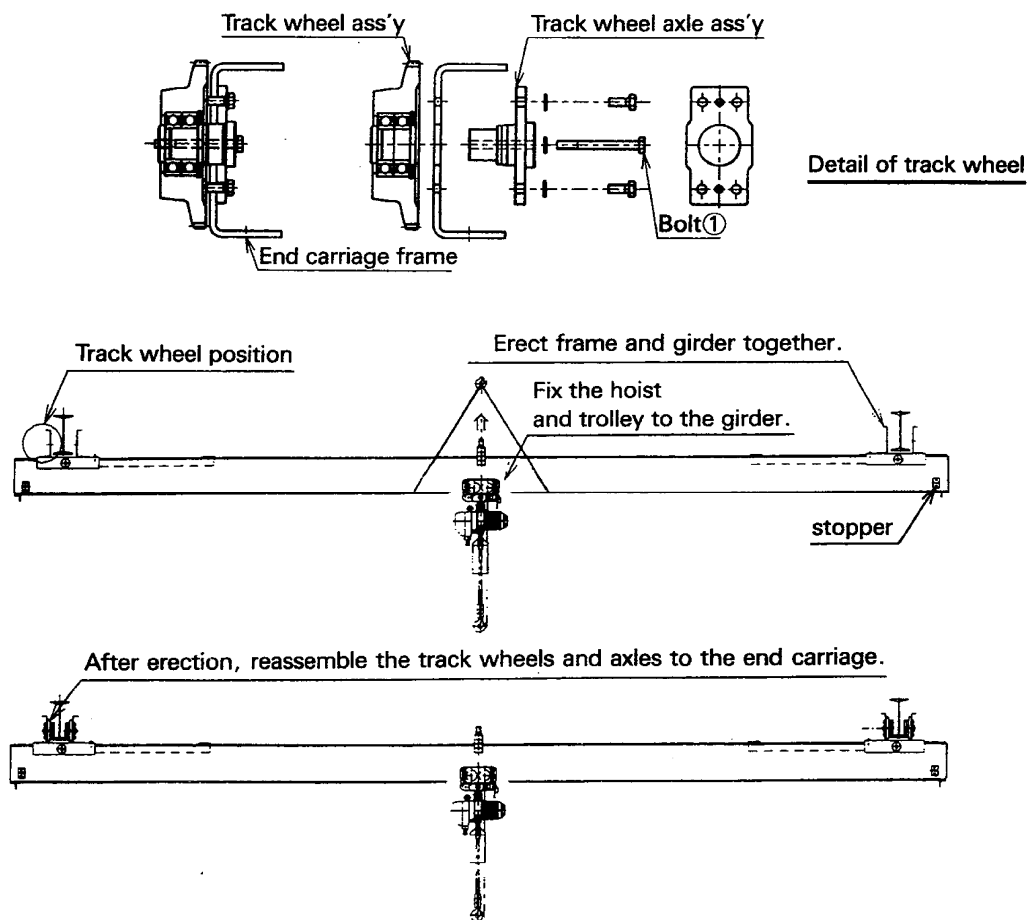


Fig. 1

(c) Precautions in installation (Refer to Fig. 2)

Pay attention to the following points when coupling the end carriage to the girder on-site.

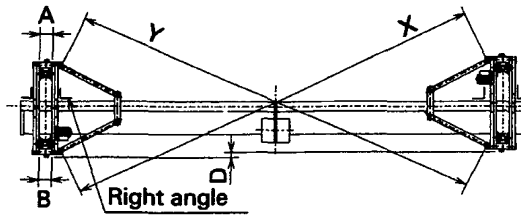


Fig. 2

- Keep the end carriage frames parallel (A and B should be the same).
- Minimize any discrepancy between the left and right end carriage frames position (D should be minimized).

**⚠ WARNING** : If improperly assembled and installed, the crane will repeatedly strike the stopper on the travel rail. This may cause bolts to loosen or other trouble.

- Keep the end carriage at a right angle to the girder.
- Minimize any discrepancy in angling between the left and right end carriage frames (X and Y dimensions).

**⚠ WARNING** : When installing the hoist and trolley on the girder, refer to the "Safety Instructions" for your hoist and trolley respectively provided.

[Overhead type crane]

- (a) Generally, the simple way to erect the completed crane is shown in Fig. 3. Lift the crane into position of following figure, then turn the crane so as to fit on the travel rails.

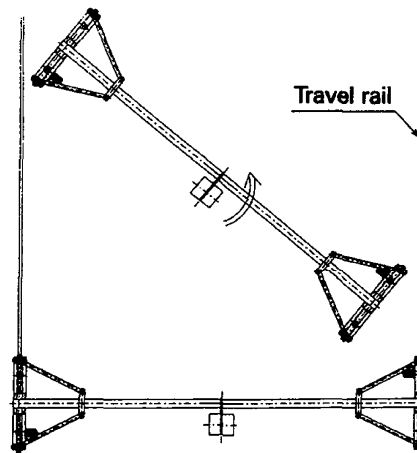
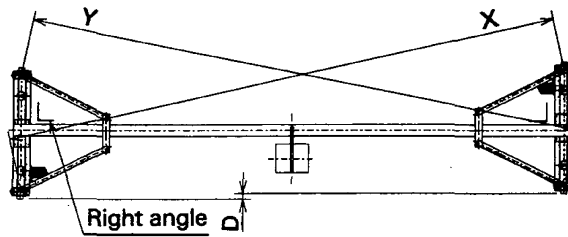


Fig. 3

(b) Precautions in installation (Refer to Fig. 4).

The end carriage comes set at a right angle to the girder and squared to size when delivered, nevertheless, pay attention to the following points when coupling the end carriage to the girder on-site.



**Fig. 4**

- Minimize any discrepancy between the left and right end carriage frames position (D should be minimized).

**⚠ WARNING** : If improperly assembled and installed, the crane will repeatedly strike the stopper on the travel rail. This may cause bolts to loosen or other trouble.

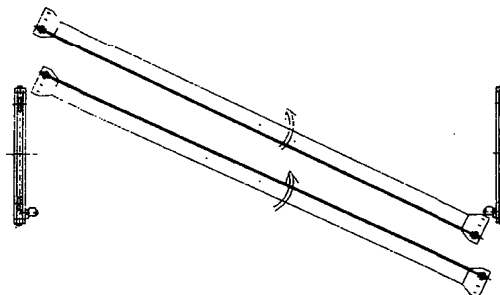
- Keep the end carriage at a right angle to the girder.
- Minimize any discrepancy in angling between the left and right end carriage frames (X and Y dimensions).

**⚠ WARNING** : When installing the hoist and trolley on the girder, refer to the "Safety Instructions" for your hoist and trolley respectively provided.

**[Double girder crane]**

Many double girder cranes come equipped with peripheral equipment and accessories, and there are equally as many different ways to erect them.

- If the crane can be erected with the left and right end carriage frames attached to the girder, then erect the crane according to the same procedure described for overhead cranes, check dimensions after erecting the equipment, and adjust where necessary.
- If the crane cannot be erected with the left and right end carriage frames attached to the girder, then first erect the end carriage frames on the travel rails as shown in Fig. 5. Next, turn the girders so as to fit between the travel rails and lift into position, and attach the girders to the end carriage frames on the travel rail. When assembling, set the end carriages to a right angle with the girder and square with one another, and adjust span as necessary (Refer to Fig. 5).



**Fig. 5**

(c) Precautions in installation (Refer to Fig. 6)

Pay attention to the following points when coupling the end carriage to the girder on-site.

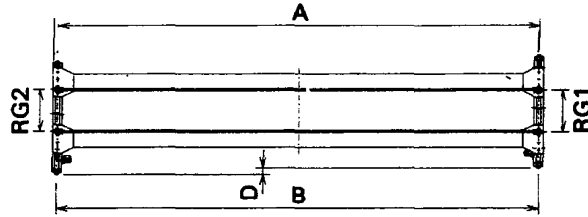


Fig. 6

- Minimize any discrepancy between the left and right end carriage frames position (D should be minimized). If improperly assembled and installed, the crane will repeatedly strike the stopper on the travel rail. This may cause bolts to loosen or other trouble.
- Minimize any discrepancy in rail gauge between the traverse rails (RG1 and RG2 dimensions).
- Keep the end carriage frames parallel (A and B should be the same).

## 5.2 Wiring

**⚠ DANGER** : ALWAYS turn off power source or breaker switch to prevent electric shock before beginning the wiring process.

**HAVE all wiring performed by an authorized electrician.**

Power can be supplied by the cable power supply, tro-reel, high tro-reel or trolley duct systems. For wiring from the power source to the crane's control box, refer to "9. Power supply" in this manual.

### 5.2.1 Control box internal wiring

Control box wiring differs depending on whether the emergency stop device (option) to the push button switch is attached or not, and whether an electric chain hoist or rope hoist is used. Check wiring diagrams before wiring.

For your reference, typical wiring schemes are shown in Figs. 7 through 12.

5.2.1 Electric traversing wire rope hoist with motorized trolley single speed (end carriage), without emergency stop device.

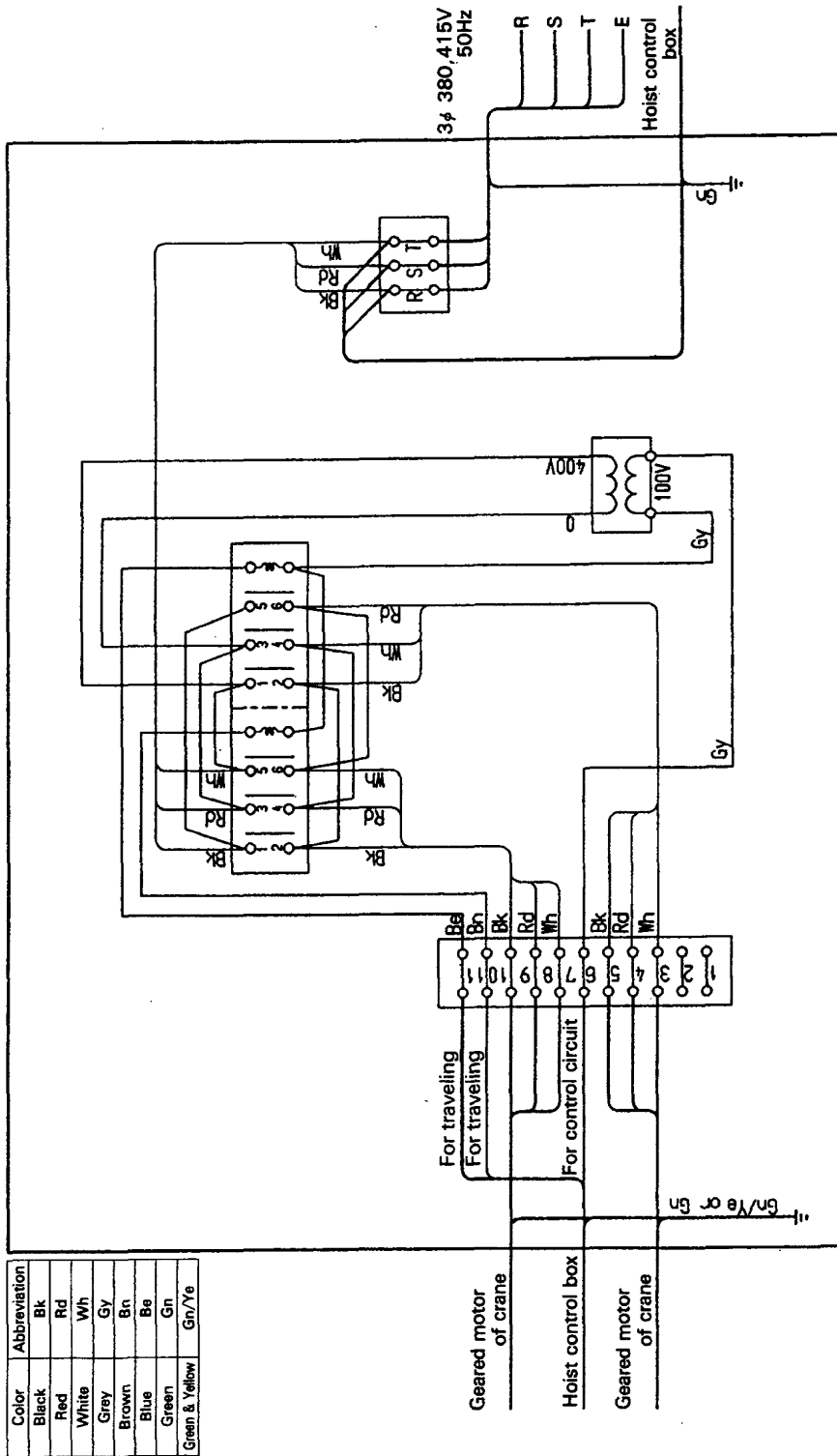


Fig. 7

5.2.1 Electric traversing wire rope hoist with motorized trolley single speed (end carriage), with emergency stop device.

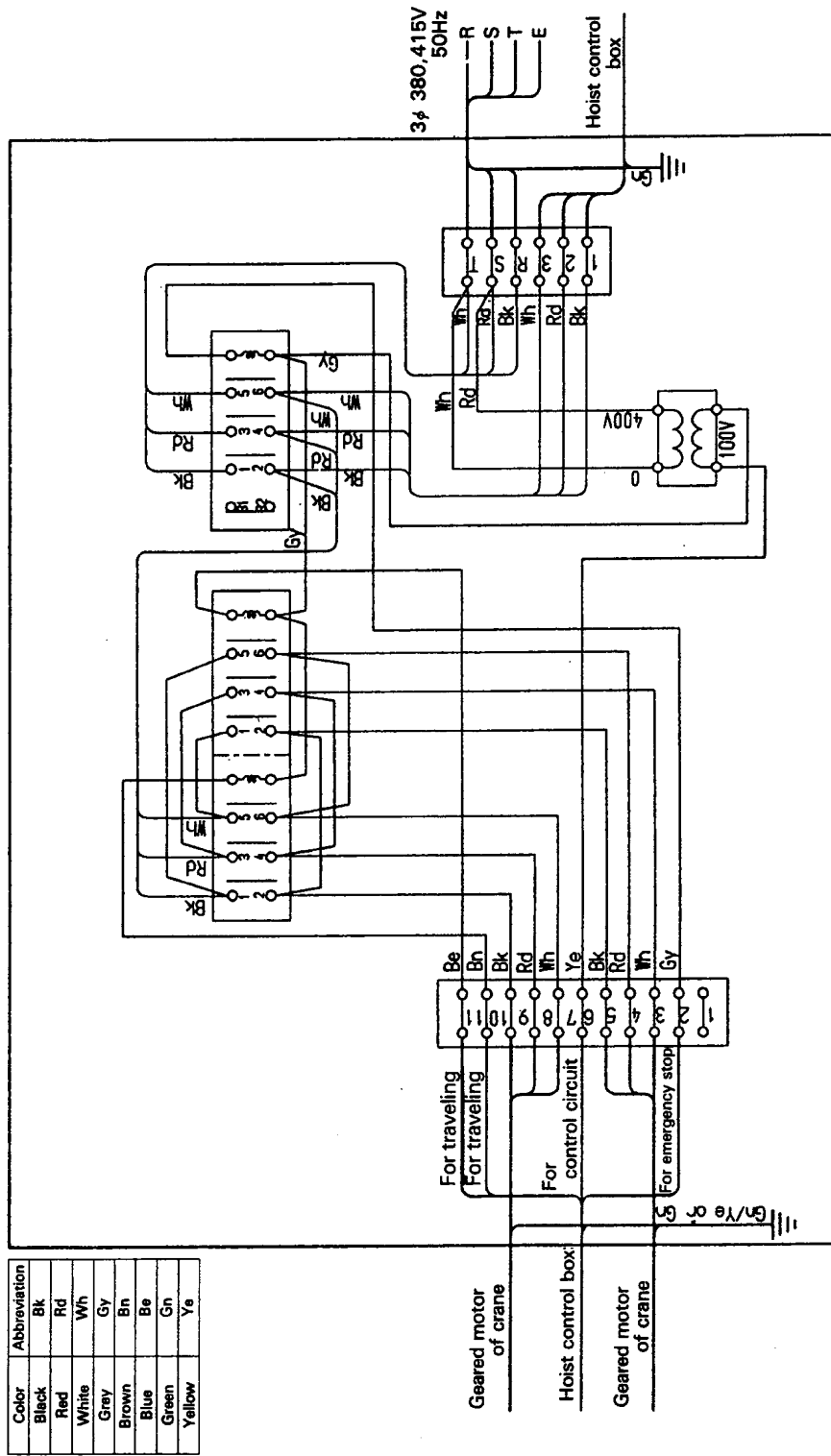
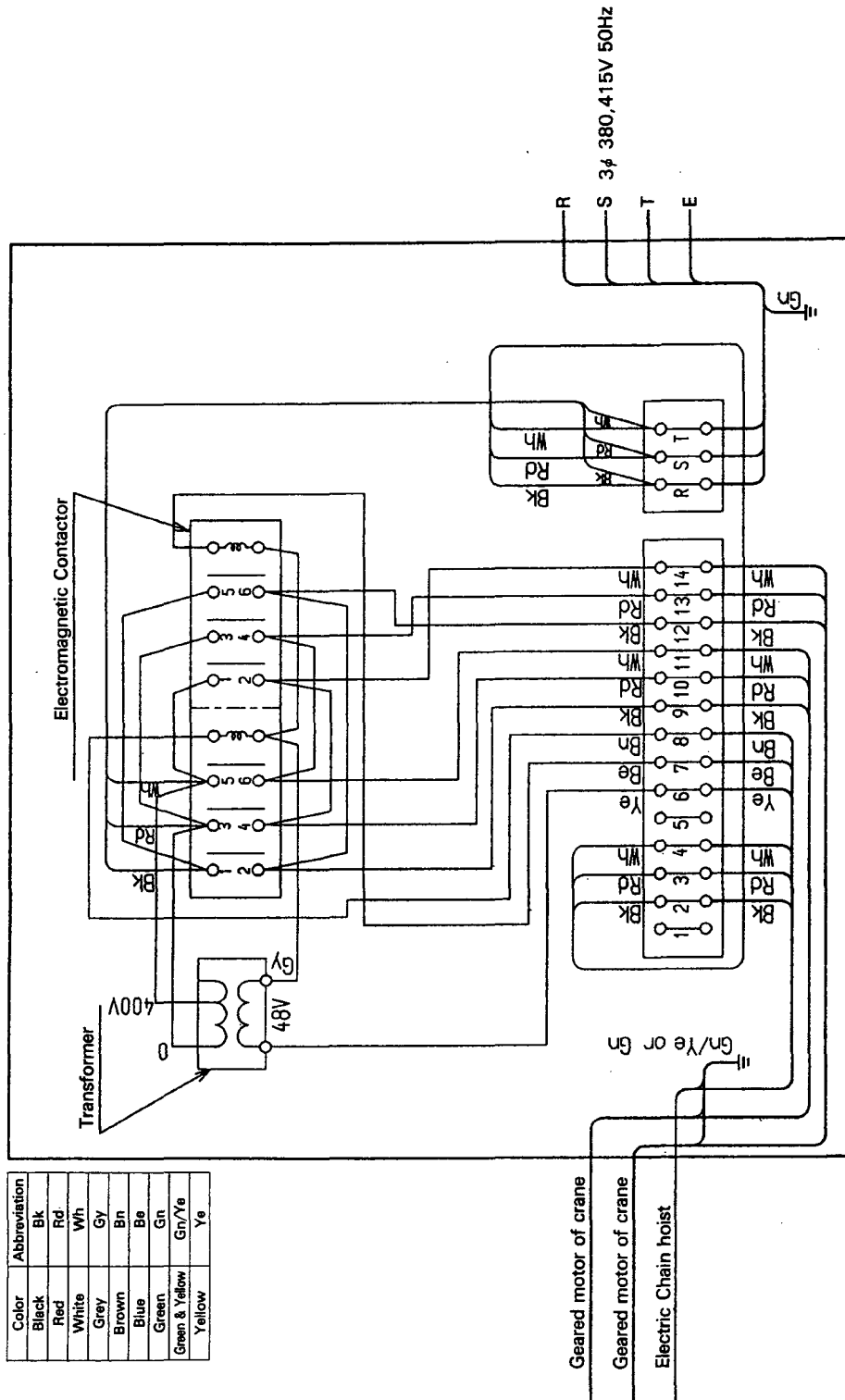


Fig. 8

**5.2.1 Electric chain hoist with motorized trolley, single speed (end carriage) without emergency stop device.**



Color	Abbreviation
Black	Bk
Red	Rd
White	Wh
Grey	Gy
Brown	Bn
Blue	Be
Green	Gn
Green & Yellow	Gn/Ye
Yellow	Ye

\*A disuse wire among three wires of the primary side of the transformer shall be isolated and rolled to be fixed securely.

**Fig. 9**



5.2.1 Electric chain hoist with motorized trolley, single speed (end carriage) with emergency stop device.

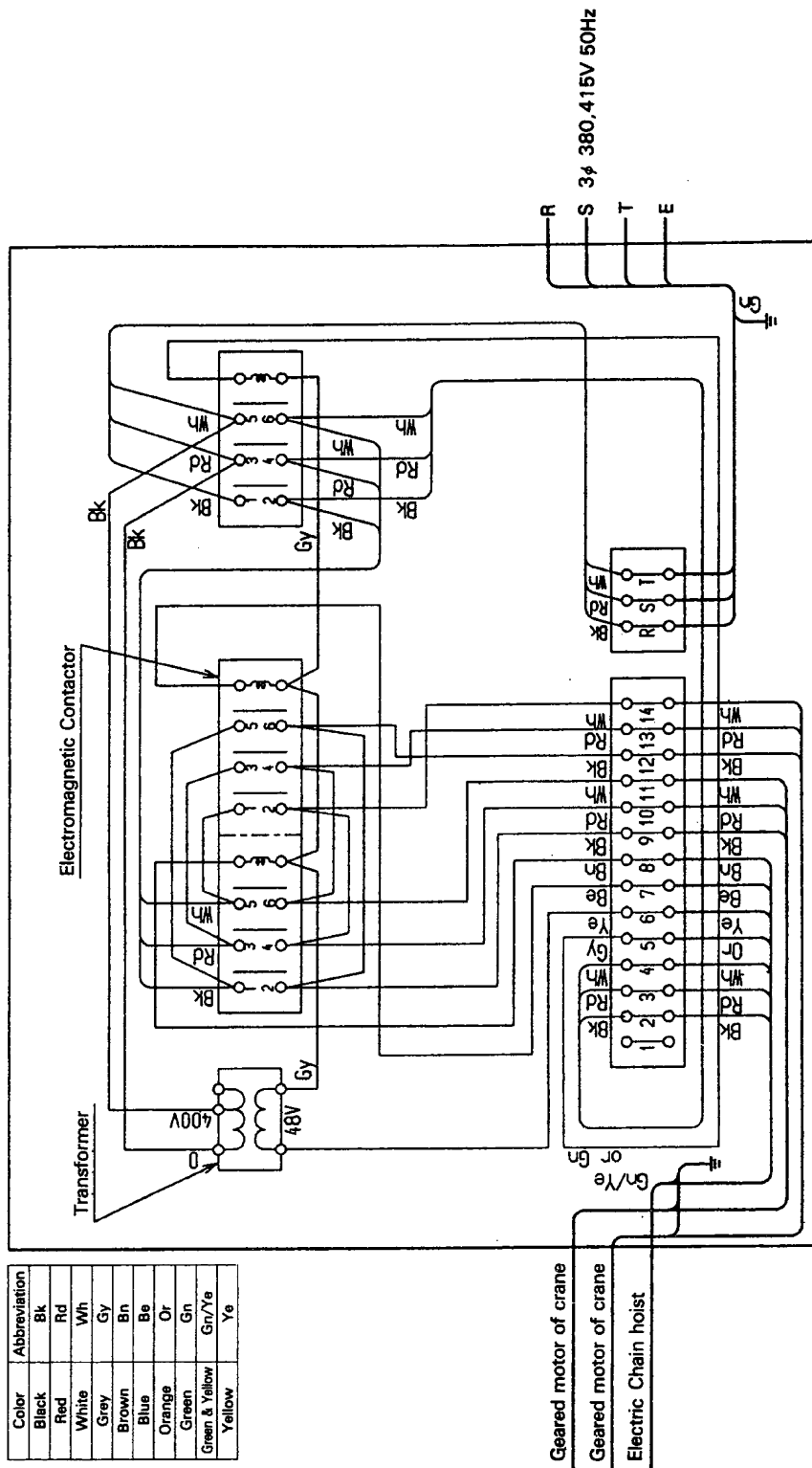
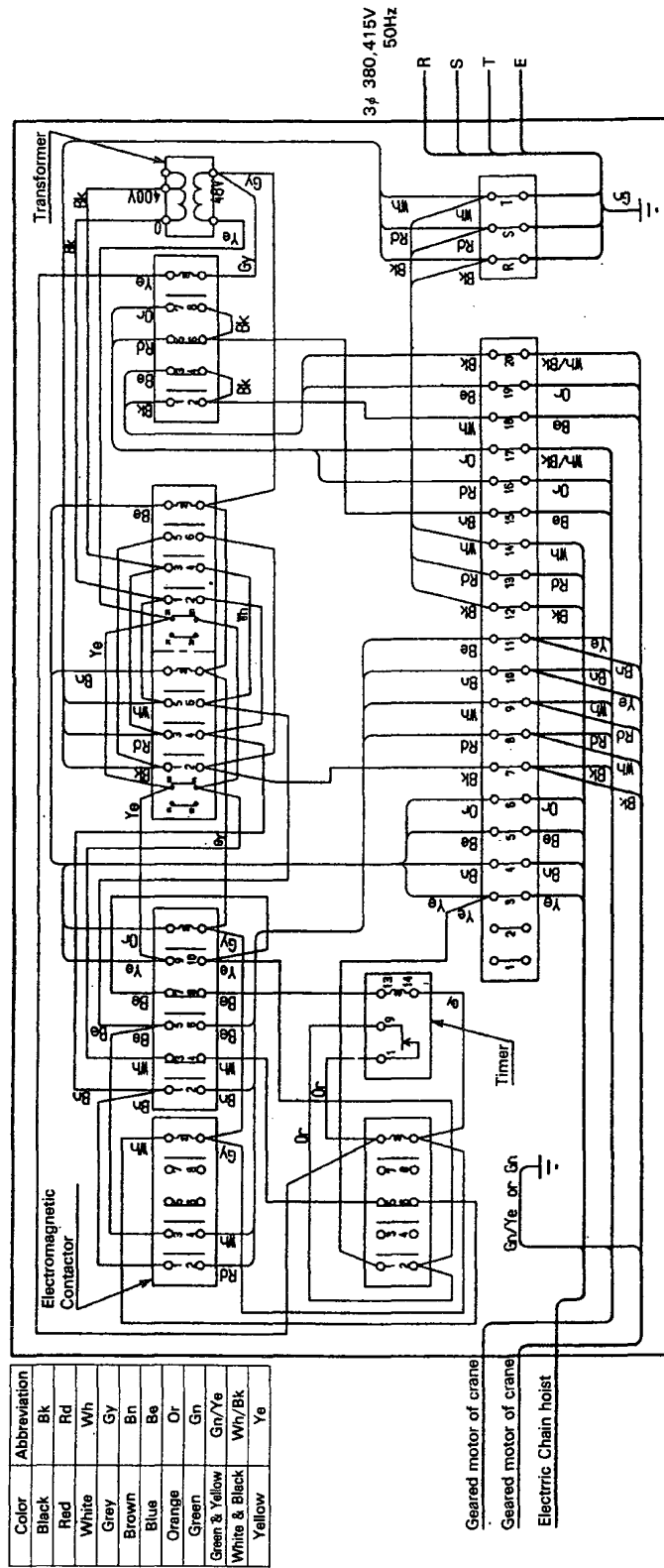


Fig. 10

**5.2.1 Electric chain hoist with motorized trolley, dual speed (end carriage) without emergency stop device.**



**Fig. 11**

5.2.1 Electric chain hoist with motorized trolley, dual speed (end carriage) with emergency stop device.

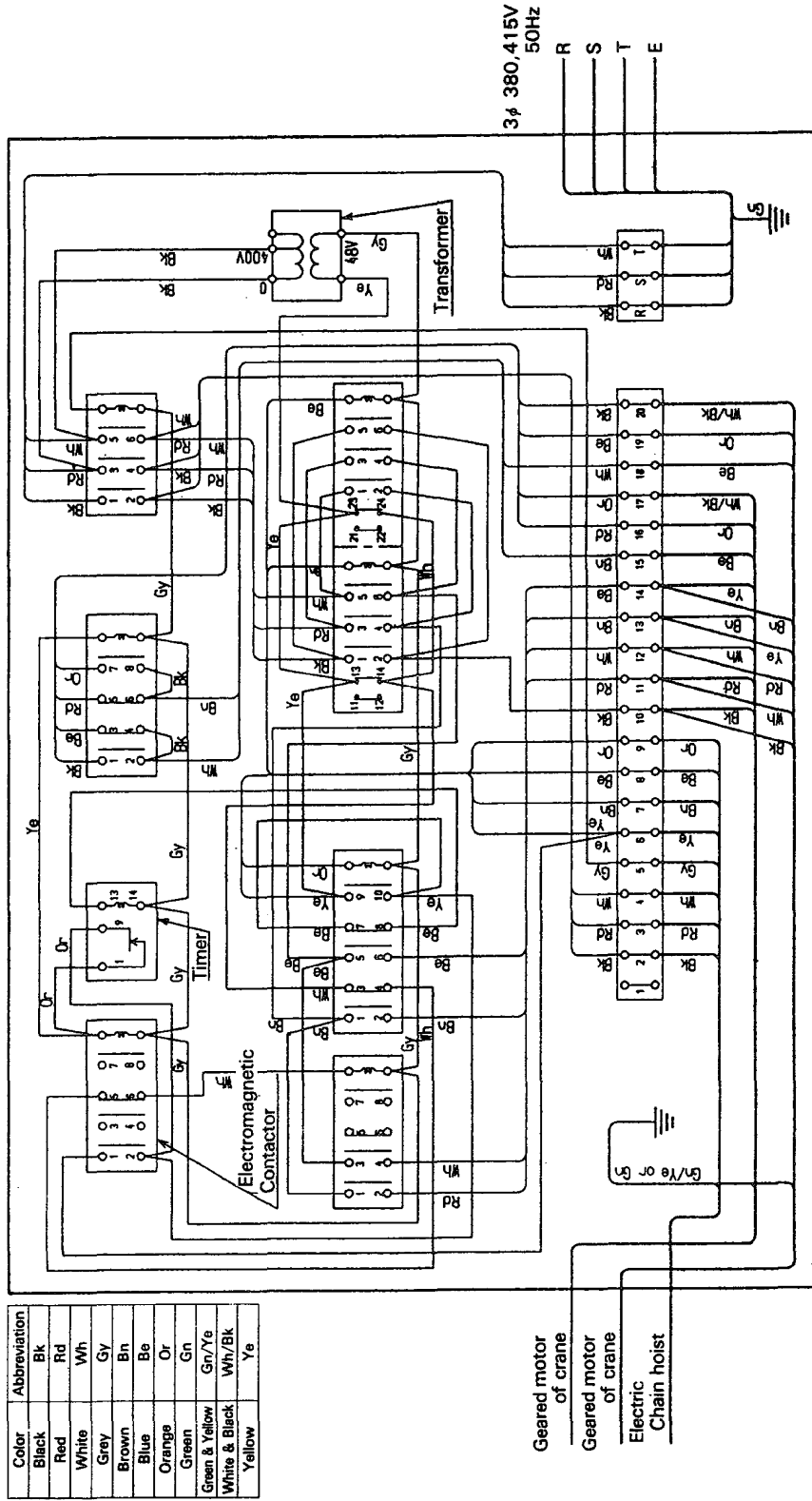


Fig. 12

### 5.2.2 Traverse side power supply

Though different according to span, cranes generally use a cable power supply system.

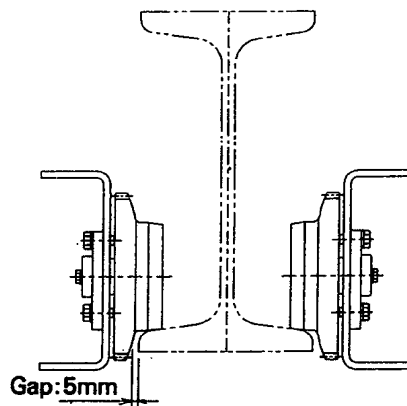
## 5.3 Test run

Re-check the following points after the crane has been installed.

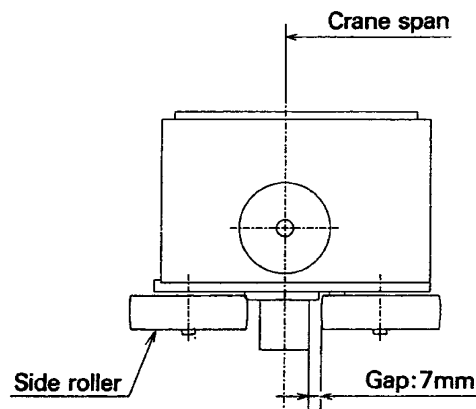
- (a) Make sure the stoppers are securely set on the girder, and that bolts are tight.
- (b) Make sure bolts coupling the end carriages to the girders are tight.
- (c) Make sure that bolts fastening the track wheel axles are tight.
- (d) Make sure the power collector moves smoothly.
- (e) Make sure the crane moves as indicated on the push button switches. Especially, make sure the left and right end carriages are not backwards.

After the above checks, check the following points to see if the crane travels properly.

- (f) Make sure no abnormal noises are made.
- (g) Make sure the crane does not travel on an incline or swerve.
- (h) Make sure the gap (approx. 5 mm) between the travel rail and track wheel flange is the same on both left and right sides.



- (i) Make sure the gap (approx. 7 mm) between the travel rail and side rollers is the same on both left and right sides.



- (j) After the above checks but before actually using the equipment, try lifting, lowering, traveling and traversing with a rated load suspended. Check the crane and parts move smoothly.

## 6. For better usage

There are things “to do” and “not to do”, in order to safely operate the equipment and maintain it in proper working order for many years.

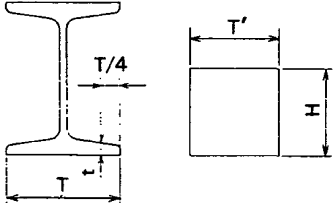
**⚠ WARNING** : Read carefully “Safety Instructions” for your hoist and trolley respectively provided.

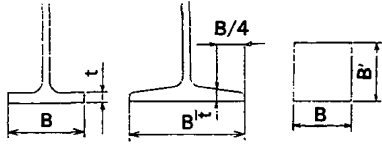
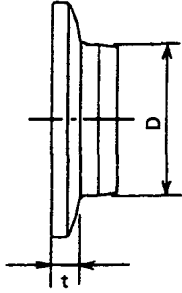
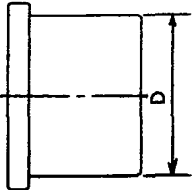
## 7. Maintenance and inspections

In order to safely operate the equipment and maintain it in proper working order for many years, perform daily, monthly and yearly checks on it. For your reference, sample monthly and yearly check lists are provided at the end of this manual.

### 7.1 Check items and criteria for judgement

Part	Check item	Inspection method	Discard limit/criteria	Remedy
Crane electric parts	<b>1. Power supply</b> [For cable power supply system]			
	<ul style="list-style-type: none"> <li>• Messenger wire tautness</li> <li>• Cable hanger installation and mobility</li> <li>• Cable length</li> </ul>	<ul style="list-style-type: none"> <li>• Check visually.</li> <li>• Check visually.</li> <li>• Check visually.</li> </ul>	<ul style="list-style-type: none"> <li>• The wire must be sufficiently taut.</li> <li>• The cable must be hung at intervals but never twisted.</li> <li>• The cable must be longer than crane's maximum travel distance.</li> </ul>	<ul style="list-style-type: none"> <li>• Tighten where necessary.</li> <li>• Replace hangers where necessary.</li> <li>• Replace cable with a longer one where necessary.</li> </ul>
	<b>2. Ground connection</b>	<ul style="list-style-type: none"> <li>• Check grounded parts.</li> </ul>	<ul style="list-style-type: none"> <li>• Parts must be grounded to meet 100Ω resistance against ground.</li> <li>• Insulating objects like paint must not be found on the travel surfaces.</li> </ul>	<ul style="list-style-type: none"> <li>• Ground parts in conformity with your local wiring regulations.</li> <li>• Remove any insulating objects.</li> </ul>
	<b>3. Insulation</b>	<ul style="list-style-type: none"> <li>• Measure charged and non-charged parts with an insulation resistance meter.</li> </ul>	<ul style="list-style-type: none"> <li>• Insulation resistance must be 0.5MΩ or more.</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate the cause and eliminate the trouble.</li> </ul>

Part	Check item	Inspection method	Discard limit/criteria	Remedy
Travel rail	<b>4. Travel rail</b> <ul style="list-style-type: none"> <li>Rail surface wear</li> </ul>	<ul style="list-style-type: none"> <li>Check visually and use calipers where necessary.</li> </ul>	<ul style="list-style-type: none"> <li>The travel rail surface must not be worn.</li> </ul>  <ul style="list-style-type: none"> <li>Wear limit for T : Up to 5% of new part</li> <li>Wear limit for T' : Up to 10% of new part</li> <li>Wear limit for t : Up to 10% of new part</li> <li>Wear limit for H : Up to 10% of new part</li> </ul>	<ul style="list-style-type: none"> <li>Replace worn parts.</li> </ul>
	<ul style="list-style-type: none"> <li>Looseness in fixing bolts</li> <li>Oil accumulation on rail surface</li> <li>Span</li> <li>Rail slope</li> <li>Rail deformation</li> </ul>	<ul style="list-style-type: none"> <li>Try turning with a wrench.</li> <li>Check visually.</li> <li>Measure with a tape measure or other means.</li> <li>Measure with a level.</li> <li>Check visually and use calipers where necessary.</li> </ul>	<ul style="list-style-type: none"> <li>Fixing bolts and hook bolts must be sufficiently tight.</li> <li>The rail surface must be free of oil.</li> <li>Crane span Low-head crane : <math>\pm 4\text{mm}</math> Overhead crane : <math>\pm 7\text{mm}</math> Double girder crane : <math>\pm 7\text{mm}</math></li> <li>Slope must be within <math>1/1000</math> of the distance between supporting beams.</li> <li>For I-beams, no deformation or sagging must be found.</li> </ul>	<ul style="list-style-type: none"> <li>Tighten where necessary.</li> <li>Clean where necessary.</li> <li>Adjust to the prescribed span.</li> <li>Adjust to the prescribed level.</li> <li>Replace deformed parts.</li> </ul>
Girder	<b>5. Girder</b> <ul style="list-style-type: none"> <li>Girder deformation</li> <li>Welded parts</li> </ul>	<ul style="list-style-type: none"> <li>Check visually and use calipers where necessary.</li> <li>Check visually and perform color check where necessary.</li> </ul>	<ul style="list-style-type: none"> <li>For I-beam, no deformation or sagging must be found.</li> <li>No cracks must be found.</li> <li>No corrosion must be found.</li> </ul>	<ul style="list-style-type: none"> <li>Reinforce or replace parts as necessary.</li> <li>Reinforce or repair parts as necessary.</li> </ul>

Part	Check item	Inspection method	Discard limit/criteria	Remedy																																																																								
Girder	<ul style="list-style-type: none"> <li>Girder wear</li> </ul>	<ul style="list-style-type: none"> <li>Check visually and use calipers where necessary.</li> </ul>	<ul style="list-style-type: none"> <li>The travel rail surface must not be worn.</li> </ul>  <ul style="list-style-type: none"> <li>Wear limit for B: Up to 5% of new part</li> <li>Wear limit for B': Up to 10% of new part</li> <li>Wear limit for t: Up to 10% of new part</li> </ul>	<ul style="list-style-type: none"> <li>Replace worn parts.</li> </ul>																																																																								
	<ul style="list-style-type: none"> <li>Looseness in fixing bolts</li> <li>Deflection</li> </ul>	<ul style="list-style-type: none"> <li>Try turning with a wrench.</li> <li>Measure with a level under rated load.</li> </ul>	<ul style="list-style-type: none"> <li>Fixing bolts for girder must be sufficiently tight.</li> <li>Deflection must be within 1/800 or less of the span.</li> </ul>	<ul style="list-style-type: none"> <li>Tighten where necessary.</li> <li>Reinforce girders or lower the rated load.</li> </ul>																																																																								
End carriage	<b>6. End carriage</b> <ul style="list-style-type: none"> <li>Track wheel wear</li> </ul>	<ul style="list-style-type: none"> <li>Measure with calipers.</li> </ul>  	<ul style="list-style-type: none"> <li>Wear in the travel surface and flange must not exceed in the below figures.</li> </ul> <p>[Track wheels for low-head crane] mm</p> <table border="1"> <tbody> <tr> <td rowspan="2"><math>\phi D</math></td> <td>Standard dimension</td> <td><math>\phi 95</math></td> <td><math>\phi 110</math></td> <td><math>\phi 125</math></td> </tr> <tr> <td>When worn</td> <td><math>\phi 90</math></td> <td><math>\phi 105</math></td> <td><math>\phi 119</math></td> </tr> <tr> <td rowspan="2">t</td> <td>Standard dimension</td> <td>18</td> <td>18</td> <td>18.5</td> </tr> <tr> <td>When worn</td> <td>13</td> <td>13</td> <td>13.5</td> </tr> <tr> <td rowspan="2"><math>\phi D</math></td> <td>Standard dimension</td> <td><math>\phi 140</math></td> <td><math>\phi 155</math></td> <td></td> </tr> <tr> <td>When worn</td> <td><math>\phi 133</math></td> <td><math>\phi 147</math></td> <td></td> </tr> <tr> <td rowspan="2">t</td> <td>Standard dimension</td> <td>19</td> <td>17.5</td> <td></td> </tr> <tr> <td>When worn</td> <td>12.5</td> <td>12.5</td> <td></td> </tr> </tbody> </table> <p>[Track wheels for overhead crane] mm</p> <table border="1"> <tbody> <tr> <td rowspan="2"><math>\phi D</math></td> <td>Standard dimension</td> <td><math>\phi 95</math></td> <td><math>\phi 125</math></td> <td><math>\phi 140</math></td> </tr> <tr> <td>When worn</td> <td><math>\phi 90</math></td> <td><math>\phi 119</math></td> <td><math>\phi 133</math></td> </tr> <tr> <td rowspan="2"><math>\phi D</math></td> <td>Standard dimension</td> <td><math>\phi 155</math></td> <td><math>\phi 175</math></td> <td><math>\phi 210</math></td> </tr> <tr> <td>When worn</td> <td><math>\phi 147</math></td> <td><math>\phi 166</math></td> <td><math>\phi 200</math></td> </tr> <tr> <td rowspan="2"><math>\phi D</math></td> <td>Standard dimension</td> <td><math>\phi 250</math></td> <td><math>\phi 300</math></td> <td><math>\phi 350</math></td> </tr> <tr> <td>When worn</td> <td><math>\phi 238</math></td> <td><math>\phi 285</math></td> <td><math>\phi 332</math></td> </tr> <tr> <td rowspan="2"><math>\phi D</math></td> <td>Standard dimension</td> <td><math>\phi 400</math></td> <td><math>\phi 450</math></td> <td></td> </tr> <tr> <td>When worn</td> <td><math>\phi 380</math></td> <td><math>\phi 427</math></td> <td></td> </tr> </tbody> </table>	$\phi D$	Standard dimension	$\phi 95$	$\phi 110$	$\phi 125$	When worn	$\phi 90$	$\phi 105$	$\phi 119$	t	Standard dimension	18	18	18.5	When worn	13	13	13.5	$\phi D$	Standard dimension	$\phi 140$	$\phi 155$		When worn	$\phi 133$	$\phi 147$		t	Standard dimension	19	17.5		When worn	12.5	12.5		$\phi D$	Standard dimension	$\phi 95$	$\phi 125$	$\phi 140$	When worn	$\phi 90$	$\phi 119$	$\phi 133$	$\phi D$	Standard dimension	$\phi 155$	$\phi 175$	$\phi 210$	When worn	$\phi 147$	$\phi 166$	$\phi 200$	$\phi D$	Standard dimension	$\phi 250$	$\phi 300$	$\phi 350$	When worn	$\phi 238$	$\phi 285$	$\phi 332$	$\phi D$	Standard dimension	$\phi 400$	$\phi 450$		When worn	$\phi 380$	$\phi 427$		<ul style="list-style-type: none"> <li>Replace parts where exceeding their wear limit.</li> </ul>
	$\phi D$	Standard dimension	$\phi 95$		$\phi 110$	$\phi 125$																																																																						
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Part	Check item	Inspection method	Discard limit/criteria	Remedy																																														
<b>End carriage</b>	<ul style="list-style-type: none"> <li>• Missing or mispositioned snap rings</li> <li>• Diameter of left and right track wheels</li> </ul>	<ul style="list-style-type: none"> <li>• Check visually.</li> <li>• Measure with calipers or depress gauge.</li> </ul>	<ul style="list-style-type: none"> <li>• No snap rings must be missing or out of position.</li> <li>• Difference in diameter must be within 1% or less.</li> </ul> <p>[Track wheels for low-head crane] mm</p> <table border="1"> <tr> <td>Diameter</td> <td>φ95</td> <td>φ110</td> <td></td> </tr> <tr> <td>Wear limit</td> <td>1.0</td> <td>1.1</td> <td></td> </tr> <tr> <td>Diameter</td> <td>φ125</td> <td>φ140</td> <td>φ155</td> </tr> <tr> <td>Wear limit</td> <td>1.2</td> <td>1.4</td> <td>1.5</td> </tr> </table> <p>[Track wheels for overhead crane] mm</p> <table border="1"> <tr> <td>Diameter</td> <td>φ95</td> <td>φ125</td> <td>φ140</td> <td>φ155</td> </tr> <tr> <td>Wear limit</td> <td>1.0</td> <td>1.2</td> <td>1.4</td> <td>1.5</td> </tr> <tr> <td>Diameter</td> <td>φ175</td> <td>φ210</td> <td>φ250</td> <td>φ300</td> </tr> <tr> <td>Wear limit</td> <td>1.7</td> <td>2.1</td> <td>2.5</td> <td>3.0</td> </tr> <tr> <td>Diameter</td> <td>φ350</td> <td>φ400</td> <td>φ450</td> <td></td> </tr> <tr> <td>Wear limit</td> <td>3.5</td> <td>4.0</td> <td>4.5</td> <td></td> </tr> </table>	Diameter	φ95	φ110		Wear limit	1.0	1.1		Diameter	φ125	φ140	φ155	Wear limit	1.2	1.4	1.5	Diameter	φ95	φ125	φ140	φ155	Wear limit	1.0	1.2	1.4	1.5	Diameter	φ175	φ210	φ250	φ300	Wear limit	1.7	2.1	2.5	3.0	Diameter	φ350	φ400	φ450		Wear limit	3.5	4.0	4.5		<ul style="list-style-type: none"> <li>• Put any out-of-place parts back in place.</li> <li>• Replace parts where exceeding their wear limit.</li> </ul>
	Diameter	φ95	φ110																																															
	Wear limit	1.0	1.1																																															
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Wear limit	3.5	4.0	4.5																																															
• Side roller wear	• Check visually or measure with calipers	• Roller wear must not exceed the below figures.	mm	• Replace parts where exceeding their wear limit.																																														
• Greasing	• Check visually.	• The track wheel teeth and the tooth of the pinion L must be sufficiently greased.		• Grease where necessary																																														
• Looseness in fixing bolts	• Try turning with a wrench.	• Fixing bolts must be sufficiently tight.		• Tighten where necessary.																																														
<b>Gear motor</b>	<b>7. Geared motor</b> <ul style="list-style-type: none"> <li>• Electro-magnetic brake action</li> <li>• Greasing</li> </ul>	<ul style="list-style-type: none"> <li>• Operate the crane forward and in reverse.</li> <li>• Overhaul and check visually.</li> </ul>	<ul style="list-style-type: none"> <li>• The crane must come to a smooth stop when the brakes are applied.</li> <li>• Parts must be sufficiently greased.</li> <li>• Greased parts must not be overly dirty or contaminated with foreign matter.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust the brakes where necessary.</li> <li>• Grease or degrease where necessary.</li> <li>• Replace parts where necessary.</li> </ul>																																														
	<b>Catwalk</b>	<b>8. Catwalk and inspection bridge</b> <ul style="list-style-type: none"> <li>• Catwalk</li> </ul>	• Check visually.	• The catwalk floor must not be slippery or prevent danger of tripping.	• Clean and/or inspect where necessary.																																													
• Rail		• Check visually.	• The rail must be sturdy, safe and undamaged.	• Repair parts where necessary.																																														



## 8. Track wheel disassembly and assembly

**⚠ DANGER** : NEVER perform disassembly and assembly works on the crane while it is supporting a load.

Off-limits to the area under the crane during the above works.

Low-head cranes come with detachable track wheel axes, in order to shorten installation and maintenance work.

### 8.1 Overhaul

Disassemble as described here following. Refer to Figs 13 and 14 for help.

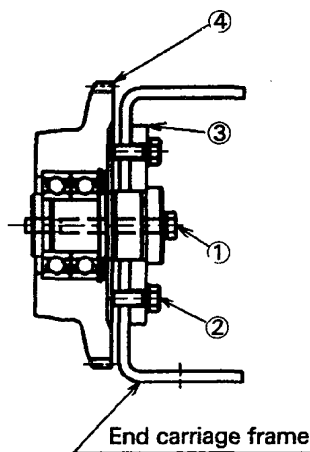


Fig. 13

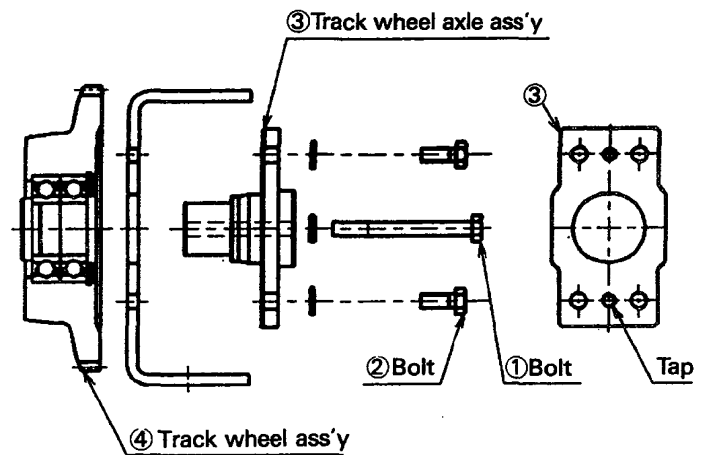


Fig. 14

Step 1 : Remove bolt ①, while holding the track wheel ④ by hand.

Step 2 : Remove bolt ②.

Step 3 : Remove the axle ass'y ③ from the end carriage frame, by screwing into the tap holes ( $\times 2$ ) on the axle ass'y with the bolt ②.

Step 4 : Remove the track wheel ④ from the axle ass'y ③.

## 8.2 Assembly

After installing the crane or maintenance, reassemble the track wheels as shown in Fig. 15.

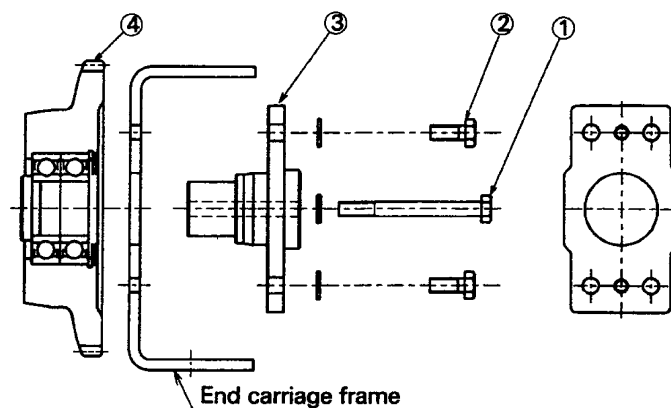


Fig. 15

Step 1: While holding the track wheel ④ by hand, pass the axle ③ through the end carriage frame and insert it inside the wheel bearing.

Step 2: While holding the track wheel ④ by hand, screw bolt ① in until both the axle ③ and wheel ④ are fixed.

When installing track wheel onto frame fasten bolt ① with a torque tabulated below.

Bolt ① size	M8	M10
Fastening Torque (kg-cm)	84 to 93	167 to 184

Step 3: Press on the axle ③ until properly in place on the end carriage frame.

Step 4: Screw bolt ② into the end carriage frame, until the axle ③ is fixed to the end carriage frame.

### [After assemble check]

After assemble parts, check the following points before setting the track wheels on the travel rails.

- (a) Make sure the wheels turn freely by hand.
- (b) Make sure bolts are sufficiently tight.

# 9. Power supply

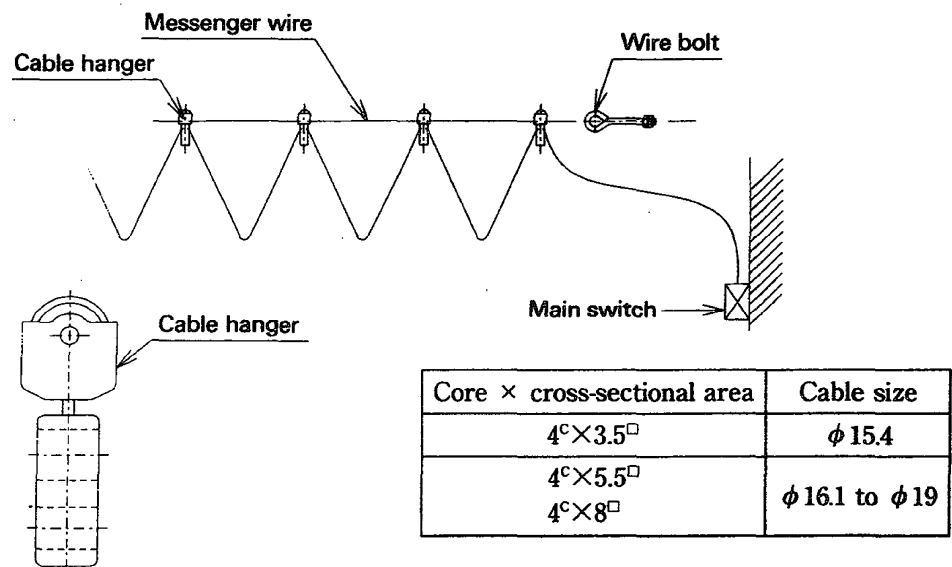
## 9.1 Power supply method

Power can be supplied from the source to the control box by a cable power supply, tro-reel, high tro-reel or trolley duct systems. But, for convenience sake, the simple cable power supply system is herein explained.

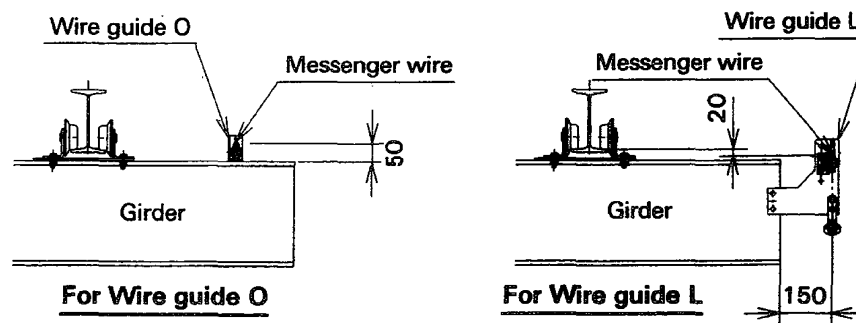
### (a) Cable power supply system

This is the widest used means of supplying power to the crane because it is easy to arrange the cable.

- Use a messenger wire with a diameter between  $\phi 3$  and  $\phi 6$ .
- Keep messenger wire length under 20m.
- Refer to the Kito Crane catalogue for allowed cable length.



String the messenger wire along the girder with either the wire guide O or wire guide L.



#### [For Wire guide O]

- The messenger wire can be strung along either the inside or outside of the span.

#### [For Wire guide L]

- The messenger wire can be strung along the outside of the span and anchored at the end of the girder.

## 10. Troubleshooting

Trouble	Cause	Remedy
<ul style="list-style-type: none"> <li>• The crane does not move smoothly.</li> </ul>	<ul style="list-style-type: none"> <li>• The end carriage is not set at a right angle to the girder or left and right end carriages are not parallel.</li> <li>• Track wheels are unevenly worn.</li> <li>• Due to wear in the track wheel flange, a gap has formed between the rail and wheel (rail swerves or runs on an incline).</li> <li>• Pressure is unbalanced between left and right brakes.</li> <li>• The wheel axle bolts are loose.</li> <li>• A gap has formed between the side rollers and travel rail (most likely due to wear in the side roller).</li> </ul>	<ul style="list-style-type: none"> <li>• Set the end carriages at a right angle to the girder, and parallel with one another.</li> <li>• Replace the wheels where necessary.</li> <li>• Replace the wheels where necessary.</li> <li>• Adjust the left and right brakes.</li> <li>• Tighten bolts where necessary.</li> <li>• Replace the side rollers where necessary.</li> </ul>
<ul style="list-style-type: none"> <li>• The motor gets extremely hot.</li> </ul>	<ul style="list-style-type: none"> <li>• The motor is running on a single phase current.</li> <li>• Voltage in the power supply has dropped.</li> <li>• The brake circuit is disconnected.</li> <li>• The rectifier is damaged.</li> </ul>	<ul style="list-style-type: none"> <li>• Rewire where necessary.</li> <li>• Measure voltage in the power supply.</li> <li>• Rewire where necessary.</li> <li>• Replace the recitifier.</li> </ul>
<ul style="list-style-type: none"> <li>• Buffers on the left and right end carriages do not contact the stoppers at the same time.</li> </ul>	<ul style="list-style-type: none"> <li>• The bolts coupling the end carriage to the girder are loose.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust parts so that contact is made at the same time, and tighten bolts where necessary.</li> </ul>
<ul style="list-style-type: none"> <li>• Electrical shock</li> </ul>	<ul style="list-style-type: none"> <li>• The travel rail is not properly grounded.</li> <li>• The travel surface on the girder is coated with paint.</li> <li>• Water or foreign matter has penetrated the electric parts.</li> </ul>	<ul style="list-style-type: none"> <li>• Ground parts where necessary.</li> <li>• Remove paint from girder surface.</li> <li>• Dry parts and remove any foreign matter where necessary.</li> </ul>

## 11. WARRANTY

KITO Corporation ("KITO") extends the following warranty to the original purchaser ("Purchaser") of new products manufactured by "KITO" (KITO's Products).

- (1) "KITO" warrants that KITO's Products, when shipped, shall be free from defects in workmanship and/or materials under normal use and service and "KITO" shall, at the election of "KITO", repair or replace free of charge any parts or items which are proven to have said defects, provided that all claims for defects under this warranty shall be made in writing immediately upon discovery and, in any event, within one (1) year from the date of purchase of KITO's Products by "Purchaser" and provided, further, that defective parts or items shall be kept for examination by "KITO" or its authorized agents or returned to KITO's factory or authorized service center upon request by "KITO".
- (2) "KITO" does not warrant components of products provided by other manufacturers. However to the extent possible, "KITO" will assign to "Purchaser" applicable warranties of such other manufacturers.
- (3) Except for the repair or replacement mentioned in (1) above which is "KITO"'s sole liability and purchaser's exclusive remedy under this warranty, "KITO" shall not be responsible for any other claims arising out of the purchase and use of KITO's Products, regardless of whether "Purchaser"'s claims are based on breach of contract, tort or other theories, including claims for any damages whether direct, indirect, incidental or consequential.
- (4) This warranty is conditional upon the installation, maintenance and use of KITO's Products pursuant to the product manuals prepared in accordance with content instructions by "KITO". This warranty shall not apply to KITO's Products which have been subject to negligence, misuse, abuse, misapplication or any improper use or combination or improper fittings, alignment or maintenance.
- (5) "KITO" shall not be responsible for any loss or damage caused by transportation, prolonged or improper storage or normal wear and tear of KITO's Products or for loss of operating time.
- (6) This warranty shall not apply to KITO's Products which have been fitted with or repaired with parts components or items not supplied or approved by "KITO" or which have been modified or altered.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

**12 Parts list** The following is a parts list for your endcarriage.

**Motorized Overhead End Carriage**

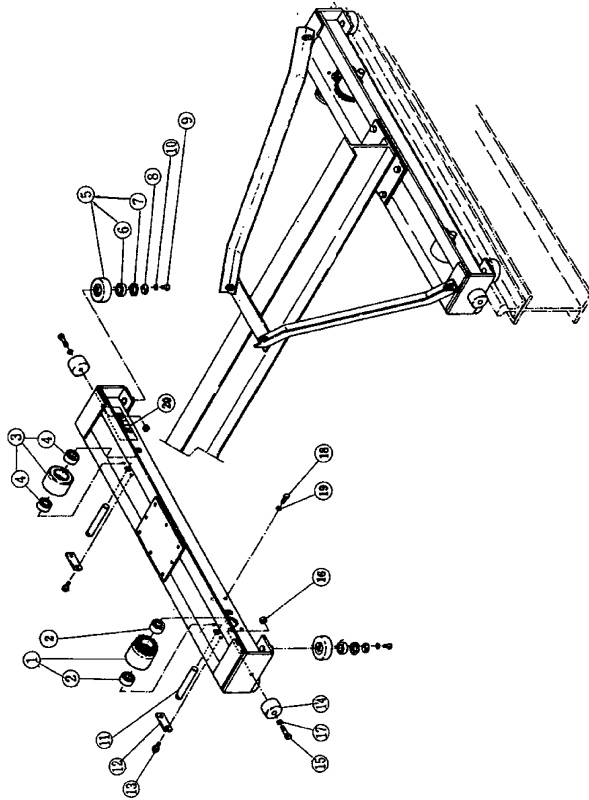


Fig. No.	Parts No.	Parts name	Type		E0010-12	E0010-18	E0020-12	E0020-18	Note
			Code	Number per unit					
1	N600-101	Wheel A ass'y	2						
2	N600-107	Ball bearing	4	(6305ZZ)					For track wheel
3	N600-102	Wheel B ass'y	2						
4	N600-107	Ball bearing	4	(6305ZZ)					For track wheel
5	N600-108	Roller ass'y	8						
6	N600-112	Ball bearing	8	(6205ZZ)					For roller
7	N600-110	Snap ring	8	(R-32)					For roller
8	N600-120	Roller washer	8						
9	N600-121	Socket bolt	16	(M6x15x1.5)					For roller washer
10	N600-122	Spring washer	16	(2-M6)					For roller washer
11	N600-105	Track wheel axle	4						
12	N600-105	Key plate	4						
13	N600-151	Socket bolt with spring washer	8	(M8x16x16)					For key plate
14	N60L-207	Buffer	4						
15	N60L-258	Socket bolt	4	(M8x35x22)					For buffer
16	N60L-259	Nut	4	(1-M8)					For buffer
17	N60L-260	Washer	4	(1-M8)					For buffer
18	N600-360	Bolt	8	(M8x28x28)					For geared motor installation
19	N600-361	Spring washer	8	(2-M8)					For geared motor installation
20	N600-208	Name plate S	2						

Fig. No.	Parts No.	Parts name	Type		E0010-12	E0010-18	E0020-12	E0020-18	Note
			Code	Number per unit					
1	N600-101	Wheel A ass'y	2						
2	N600-107	Ball bearing	4	(6307ZZ)					For track wheel
3	N600-102	Wheel B ass'y	2						
4	N600-107	Ball bearing	4	(6307ZZ)					For track wheel
5	N600-108	Roller ass'y	8						
6	N600-112	Ball bearing	8	(6205ZZ)					For roller
7	N600-110	Snap ring	8	(R-52)					For roller
8	N600-120	Roller washer	8						
9	N600-121	Socket bolt	16	(M6x15x1.5)					For roller washer
10	N600-122	Spring washer	16	(2-M6)					For roller washer
11	N600-105	Track wheel axle	4						
12	N600-105	Key plate	4						
13	N600-151	Socket bolt with spring washer	8	(M8x16x16)					For key plate
14	N60L-207	Buffer	4						
15	N60L-258	Socket bolt	4	(M8x35x22)					For buffer
16	N60L-259	Nut	4	(1-M8)					For buffer
17	N60L-260	Washer	4	(1-M8)					For buffer
18	N600-360	Bolt	8	(M8x28x28)					For geared motor installation
19	N600-361	Spring washer	8	(2-M8)					For geared motor installation
20	N600-208	Name plate S	2						

**Motorized Overhead End Carriage**

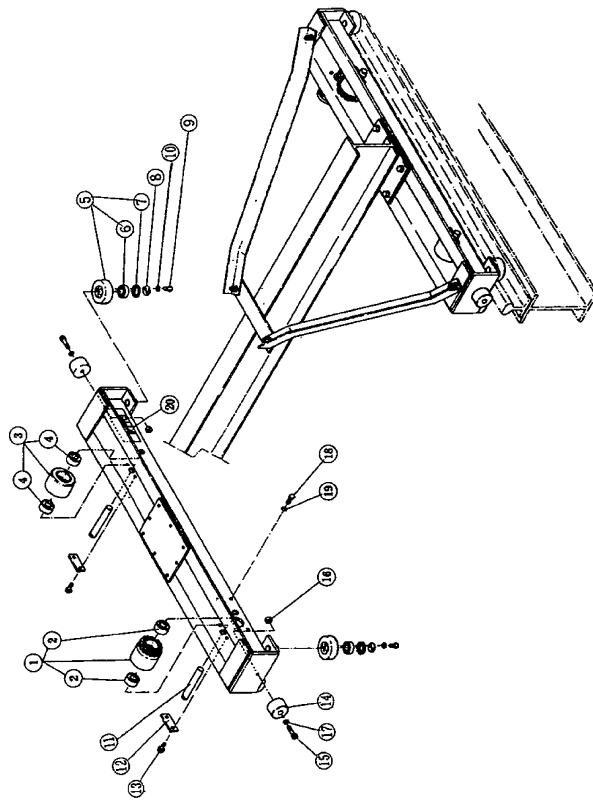


Fig. No.	Parts No.	Parts name	Type		EO 100-12	EO 100-18	EO 100-21	Note
			Code	Number Per Unit				
1	NGQQ-1101	Wheel A ass'y	2					
2	NGQQ-107	Ball bearing	4	(6310ZZ)		(6311ZZ)		For track wheel
3	NGQQ-1102	Wheel B ass'y	2					
4	NGQQ-107	Ball bearing	4	(6310ZZ)		(6311ZZ)		For track wheel
5	NGQQ-1108	Roller ass'y	8					
6	NGQQ-112	Ball bearing	8		(6208ZZ)			For roller
7	NGQQ-110	Snap ring	8		(R-80)			For roller
8	NGQQ-120	Roller washer	8					
9	NGQQ-121	Socket bolt	16		(M8x15x15)			For roller washer
10	NGQQ-122	Spring washer	16		(2-M8)			For roller washer
11	NGQQ-103	Track wheel axle	4					
12	NGQQ-105	Key plate	4					
13	NGQQ-151	Socket bolt with spring washer	8		(M8x16x.16)			For key plate
14	NGQQ-207	Buffer	4					
15	NGQQ-258	Socket bolt	4		(M8x35x22)			For buffer
16	NGQQ-259	Nut	4		(1-M8)			For buffer
17	NGQQ-260	Washer	4		(1-M8)			For buffer
18	NGQQ-360	Bolt	8		(M10x30x26)			For geared motor installation
19	NGQQ-361	Spring washer	8		(2-M10)			For geared motor installation
20	NGQQ-208	Name plate S	2					

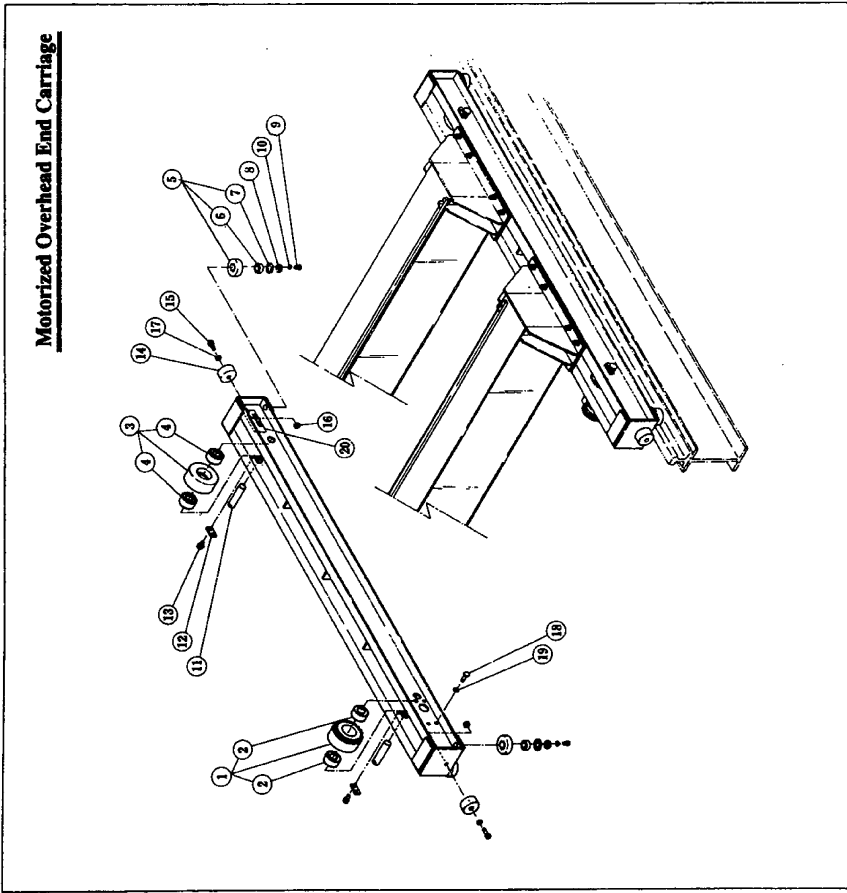


Fig. No.	Parts No.	Parts name	Type		WEO036-15	WEO090-27	WEO090-27	WEO075-27	Note
			Code	Number per unit					
①	N6WO-1101	Wheel A ass'y	4						
2	N6WO-107	Ball bearing	4	(6308ZZ)	(6309ZZ)		(6310ZZ)		
③	N6WO-1102	Wheel B ass'y	2						
4	N6WO-107	Ball bearing	4	(6308ZZ)	(6309ZZ)		(6310ZZ)		
⑤	N6QO-1108	Roller ass'y	8						
6	N6QO-112	Ball bearing	8	(6206ZZ)	(6208ZZ)		(6208ZZ)		For roller
7	N6QO-110	Snap ring	8	(R-62)	(R-80)				For roller
⑧	N6QO-120	Roller washer	8						
⑨	N6QO-121	Socket bolt	16	(M6x15x15)	(M8x15x15)				For roller washer
⑩	N6QO-122	Spring washer	16	(2-M6)	(2-M8)				For roller washer
⑪	N6WO-103	Track wheel axle	4						
⑫	N6QO-105	Key plate	4						
⑬	N6QO-151	Socket bolt with spring washer	8	(M8x16x16)	(M8x20x20)				For key plate
⑭	N6WO-207	Buffer	4						
⑮	N6WO-238	Socket bolt	4	(M12x50x36)	(M8x35x22)				For buffer 8 for WEO075-27
⑯	N6WO-259	Nut	⑧	(1-M8)	(1-M8)				For buffer 8 for WEO075-27
⑰	N6WO-260	Washer	4	(1-M12)	(1-M12)				For buffer 8 for WEO075-27
⑱	N6QO-360	Bolt	8	(M8x30x30)	(M10x30x26)				For geared motor installation
⑲	N6QO-361	Spring washer	8	(2-M8)	(2-M10)				For geared motor installation
⑳	N6WO-208	Name plate S	2						



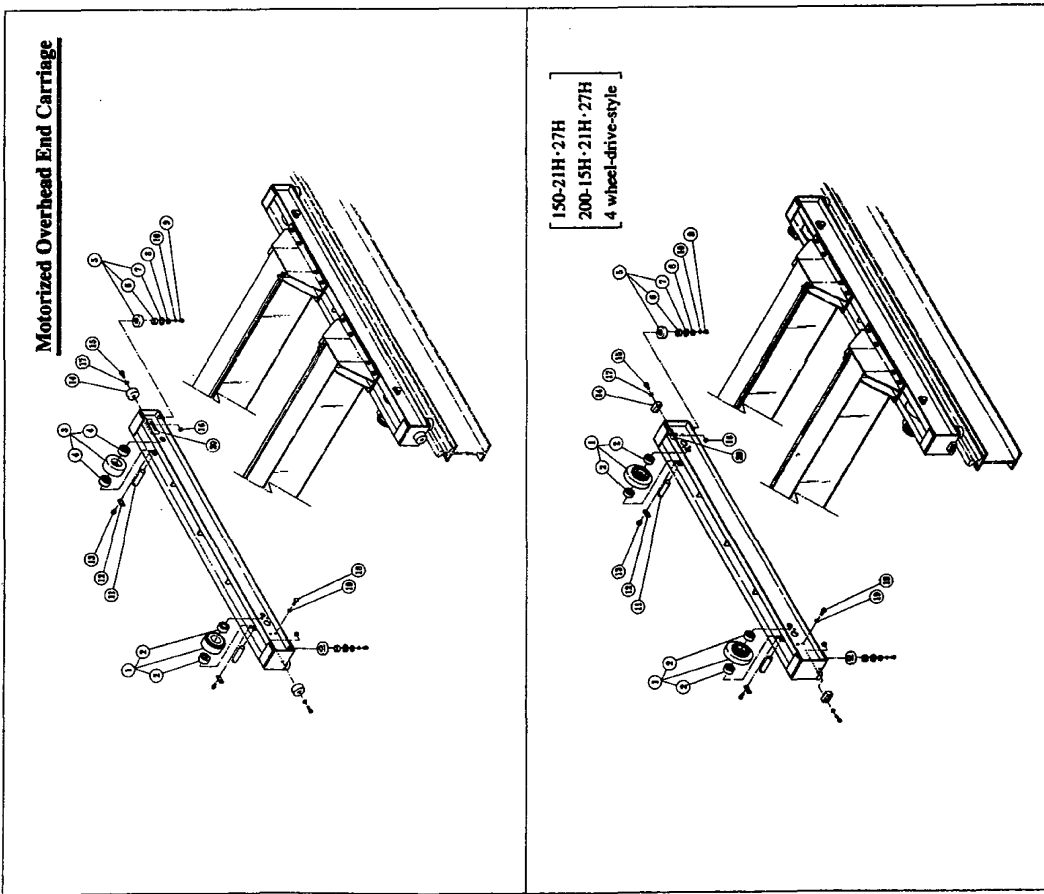
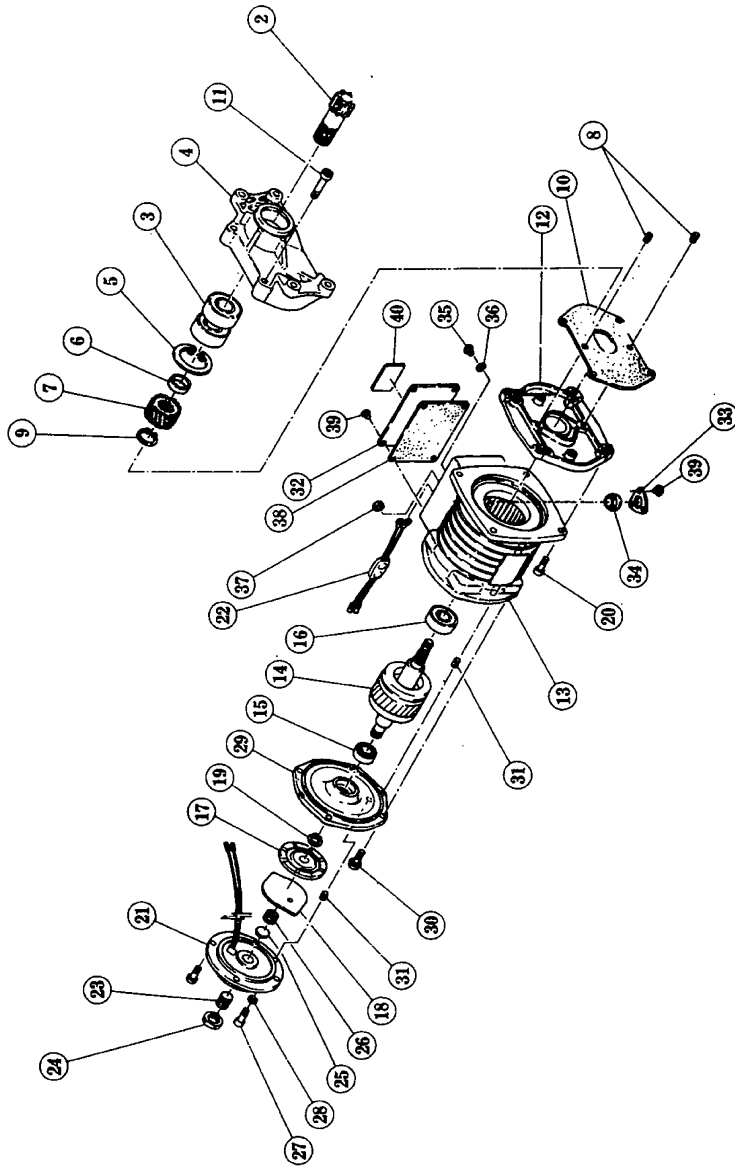


Fig. No.	Parts No.	Parts name	Type		Code	Note
			WEO100-21	WEO100-27		
			Number Per Unit			
			WEO100-21	WEO100-27	WEO100-21	WEO100-27
			WEO100-21	WEO100-27	WEO100-21	WEO100-27
1	NGWO-1101	Wheel A ass'y	2	(4)		4 for WEO150-27H/WEO200-27H
2	NGWO-107	Ball bearing	4	(8)	(6311ZZ)	8 for WEO150-27H/WEO200-27H
3	NGWO-1102	Wheel B ass'y	2			
4	NGWO-107	Ball bearing	4	(8)	(6311ZZ)	
5	NGWO-1108	Roller ass'y	8	(16)	(6308ZZ)	
6	NGWO-112	Ball bearing	8	(16)	(6308ZZ)	For roller
7	NGWO-110	Snap ring	8	(16)	(R-90)	For roller
8	NGWO-120	Roller washer	8	(16)		
9	NGWO-121	Socket bolt	16	(32)	(M8x15x1.5)	For roller washer
10	NGWO-122	Spring washer	16	(32)	(2-M8)	For roller washer
11	NGWO-103	Track wheel axle	4			
12	NGOO-105	Key plate	4			
13	NGOO-151	Socket bolt with spring washer	8	(16)	(M8x20x20)	For key plate
14	NGWO-207	Buffer	4			
15	NGWO-258	Socket bolt	8	(16)	(M12x50x36)	For buffer
16	NGWO-259	Nut	8	(16)	(1-M12)	For buffer
17	NGWO-260	Washer	8	(16)	(1-M12)	For buffer
18	NGOO-360	Bolt	8	(16)	(M12x35x20)	For geared motor installation
19	NGOO-361	Spring washer	8	(16)	(2-M10)	For geared motor installation
20	NGWO-208	Name plate S	2			16 for WEO150-27H/WEO200-27H

# Overhead Geared Motor

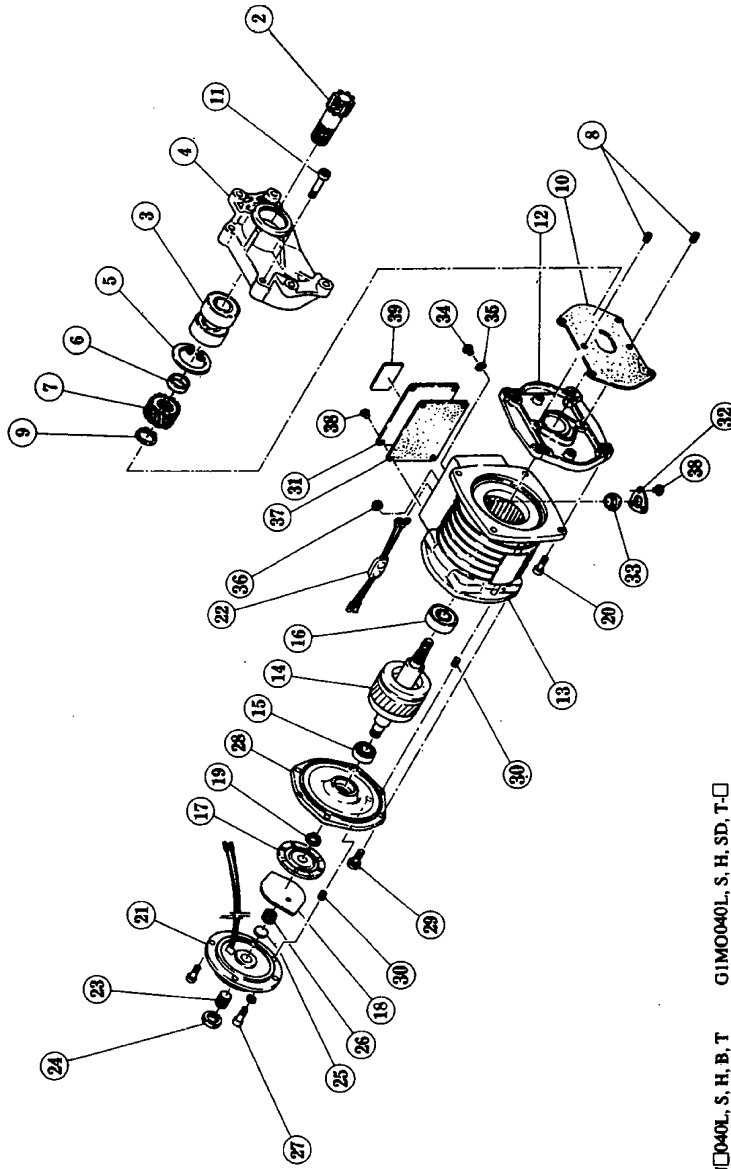


G11□025L, S, H, B, T	G1M0025L, S, H, SD, T-□
└─┬─┘	└─┬─┘
H : 220V	60Hz
S : 220/380V	50Hz
M : 220/440-230/460V	60Hz
X : 380-415V	50Hz
A : 500V	50Hz
K : 550-575V	60Hz

Fig. No.	Parts No.	Type	GIM025S □ GIM025L □ GIM025SD □				GIM025H □ GIM040T □	Note
			GIM025S	GIM025L	GIM025SD	GIM025H		
		Code	GIM025S	GIM025L	GIM025SD	GIM025H		
		Travel speed m/min (50/60Hz)	20/24	10/12	20/5/24/6	30/36	30/36	
		Number per unit	20/24	10/12	20/5/24/6	30/36	30/36	
		Parts name						
	G1JE-1303S	1 set of geared motor	2				20/24m/min	
	G1JE-1303L	1 set of geared motor	2				10/12m/min	
①	G1JE-1303B	1 set of geared motor	2				20/5/24/6m/min	
	G1JE-1303H	1 set of geared motor	2				30/36m/min	
	G1JE-1303T	1 set of geared motor	2				30/36m/min	
2	G1JE-301	Pinion	2					
3	G1JE-302	Ball bearing	4		(6204ZZ)		For pinion	
4	G1JE-303	Gear box A	2					
5	G1JE-304	Snap ring	2		(R-47)		For gear box A	
6	G1JE-305	Collar A	2					
7	G1JE-307S	Gear #2	2				For S	
	G1JE-307L	Gear #2	2				For L, SD	
	G1JE-307T	Gear #2	2				For H, T	
8	G1JE-308	Spring pin	4				For gear box A, B	
9	G1JE-309	Snap ring	2		(S-20)		For pinion	
10	G1JE-310	Gear box packing	2					
11	G1JE-313	Socket bolt	8		(M6x40;24)		For gear box A	
12	G1JE-401	Gear box B	2					
	G1JE-5510S	Stator assembly	2				For S, L, H	
13	G1JE-5501B	Stator assembly	2				For SD	
	G1JE-5501T	Stator assembly	2				For T	
	G1JE-5502S	Rotor assembly	2				For S, L	
14	G1JE-5502B	Rotor assembly	2				For SD	
	G1JE-5502H	Rotor assembly	2				For H	
	G1JE-5502T	Rotor assembly	2				For T	
15	G1JE-508	Ball bearing	2	(6002-2RU)	(6002-2RU)/(6002-2RU)	(6002-2RU)	For motor axle/brake side	
16	G1JE-509	Ball bearing	2	(6204-2RU)		(6005-2RU)	For motor axle/gear side	
17	G1JE-512	Brake disk	2					
18	G1JE-513	Armature	2					
19	G1JE-514	Snap ring	2		(S-15)		For motor axle	

Fig. No.	Parts No.	Type	GIM025S □ GIM025L □ GIM025SD □				GIM025H □ GIM040T □	Note
			GIM025S	GIM025L	GIM025SD	GIM025H		
		Code	GIM025S	GIM025L	GIM025SD	GIM025H		
		Travel speed m/min (50/60Hz)	20/24	10/12	20/5/24/6	30/36	30/36	
		Number per unit	20/24	10/12	20/5/24/6	30/36	30/36	
		Parts name						
20	G1JE-515	Socket bolt	8	(M6x22x22)			For motor frame	
	G1JE-515	Socket bolt with spring washer	8	(M6x22x22)			For motor frame	
21	G1JE-5610	Electromagnetic coil assembly	2					
22	G1JE-602	Rectifier	2					
23	G1JE-603	Adjusting bolt	2				For brake adjustment	
24	G1JE-604	Lock nut	2				For brake adjustment	
25	G1JE-605	Spring holder	2					
26	G1JE-606	Brake spring	2					
	G1JE-607	Socket bolt	8	(M6x10x24)			For electromagnetic coil	
27	G1JE-607	Socket bolt with spring washer	8	(M6x20x20)			For electromagnetic coil	
28	G1JE-608	Spring washer	8	(2-M6)			For electromagnetic coil	
29	G1JE-609	Brake bracket	2					
30	G1JE-611	Socket bolt with spring washer	8	(M6x20x20)			For brake bracket	
31	G1JE-616	Spring pin	4				For brake bracket, electromagnetic coil	
32	G1JE-701S	Terminal cover	2					
	G1JE-701B	Terminal cover	2					
33	G1JE-703	Cable holder	2					
34	G1JE-704S	Cable packing 14	2					
	G1JE-704B	Cable packing 18	2					
35	G1JE-705	Round head screw	6	(M4x10)			For terminal cover for SD	
36	G1JE-708	Spring washer	10	(2-M4)			For terminal cover for SD	
37	G1JE-709	Nut	10	(2-M4)			For terminal cover for SD	
38	G1JE-707S	Terminal cover packing	2					
	G1JE-707B	Terminal cover packing	2					
39	G1JE-710	Round head screw	16	(M4x10)			For terminal cover, cable holder, ground	
	G1JE-702S	Name plate TS	2					
	G1JE-702L	Name plate TS	2					
	G1JE-702B	Name plate TS	2					
	G1JE-702H	Name plate TS	2					
	G1JE-702T	Name plate TS	2					

# Overhead Geared Motor

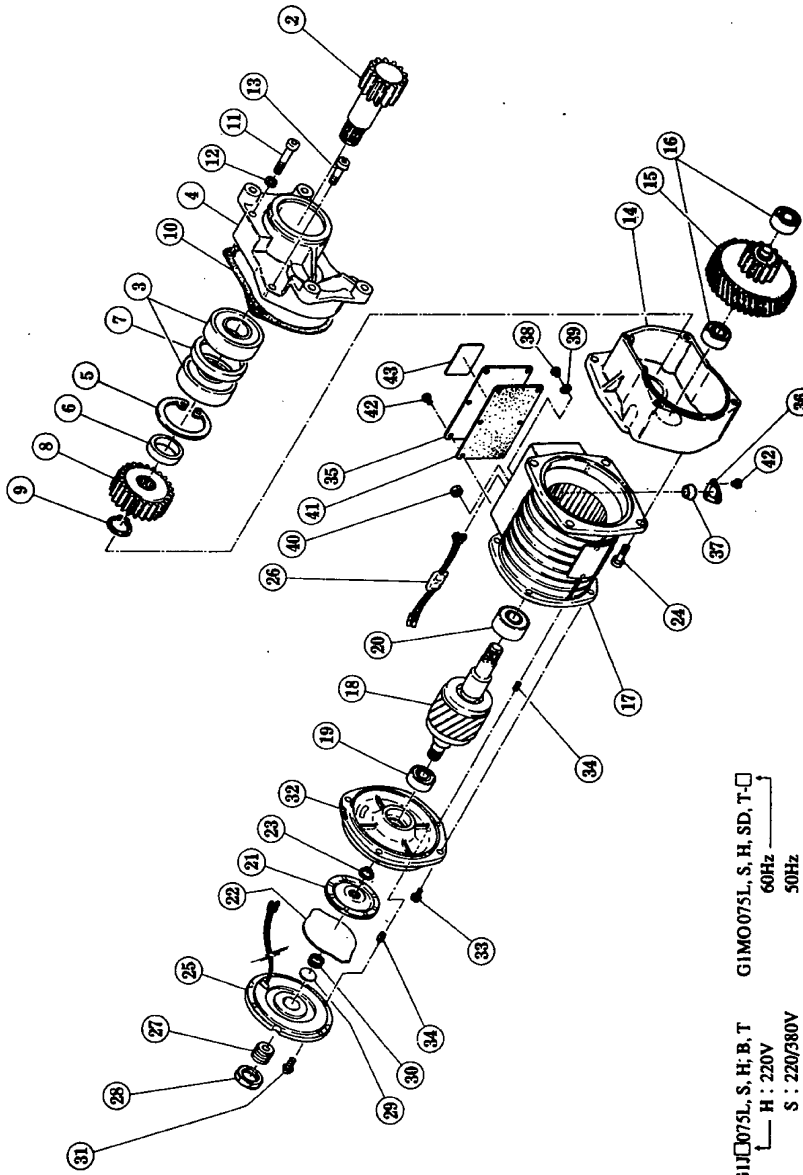


GI1□040L, S, H, B, T      GI1M040L, S, H, SD, T-□  
 H : 220V      60Hz  
 S : 220/380V      50Hz  
 M : 220/440-230/460V      60Hz  
 X : 380-415V      50Hz  
 A : 500V      50Hz  
 K : 550-575V      60Hz

Fig. No.	Parts No.	Parts name	Type				Note
			G1M04MS	G1M04ML	G1M04SD	G1M04RH	
			Code				
			Travel speed mm/min. (50/60Hz)				
			Number per unit				
	G1JE-1303S	1 set of geared motor	2			20/24m/min	
	G1JE-1303L	1 set of geared motor	2			10/12m/min	
①	G1JE-1303B	1 set of geared motor	2			20/5/24/6m/min	
	G1JE-1303H	1 set of geared motor	2			30/36m/min	
	G1JE-1303T	1 set of geared motor	2			30/36m/min	
2	G1JE-301	Pinion	2				
3	G1JE-302	Ball bearing	4		(6305ZZ)	For pinion	
4	G1JE-303	Gear box A	2				
5	G1JE-304	Snap ring	2		(R-62)	For gear box A	
6	G1JE-305	Collar A	2			For pinion	
	G1JE-307S	Gear #2	2			For S	
	G1JE-307L	Gear #2	2			For L, SD	
	G1JE-307H	Gear #2	2			For H, T	
8	G1JE-308	Spring pin	4			For gear box A, B	
9	G1JE-309	Snap ring	2		(S-25)	For pinion	
10	G1JE-310	Gear box packing	2				
11	G1JE-313	Socket bolt	8		(M6x30x24)	For gear box A	
12	G1JE-401	Gear box B	2				
	G1JE-5501S	Stator assembly	2			For S, L, H	
	G1JE-5501B	Stator assembly	2			For SD	
13	G1JE-5501T	Stator assembly	2			For T	
	G1JE-5502S	Rotor assembly	2			For S, L	
	G1JE-5502B	Rotor assembly	2			For SD	
14	G1JE-5502H	Rotor assembly	2			For H	
	G1JE-5502T	Rotor assembly	2			For T	
15	G1JE-508	Ball bearing	2		(6202-2RU)	For motor axle/brake side	
16	G1JE-509	Ball bearing	2		(6204-2RU)	For motor axle/gear side	
17	G1JE-512	Brake disk	2				

Fig. No.	Parts No.	Parts name	Type				Note
			G1M04MS	G1M04ML	G1M04SD	G1M04RH	
			Code				
			Travel speed mm/min. (50/60Hz)				
			Number per unit				
	18	G1JE-513	2				
	19	G1JE-514	2			For motor axle	
	20	G1JE-515	8		(S-15)	For motor frame	
	21	G1JE-5610	2		(M8x22x22)		
	22	G1JE-602	2				
	23	G1JE-603	2			For brake adjustment	
	24	G1JE-604	2			For brake adjustment	
	25	G1JE-605	2				
	26	G1JE-606	2				
	27	G1JE-607	8		(M6x20x20)	For electromagnetic coil	
	28	G1JE-609	2				
	29	G1JE-611	8		(M6x20x20)	For brake bracket	
	30	G1JE-616	4			For brake bracket, electromagnetic coil	
	31	G1JE-701	2				
	32	G1JE-703	2				
	33	G1JE-704S	2				
		G1JE-704B	2				
	34	G1JE-705	6		(M4x10)	For terminal, 10 parts for SD	
	35	G1JE-708	6		(2-M4)	For terminal, 10 parts for SD	
	36	G1JE-709	6		(2-M4)	For terminal, 10 parts for SD	
	37	G1JE-707	2				
	38	G1JE-710	16		(M4x10)	For terminal cover cable holder, ground	
		G1JE-702S	2				
		G1JE-702L	2				
	39	G1JE-702B	2				
		G1JE-702H	2				
		G1JE-702T	2				

# Overhead Geared Motor

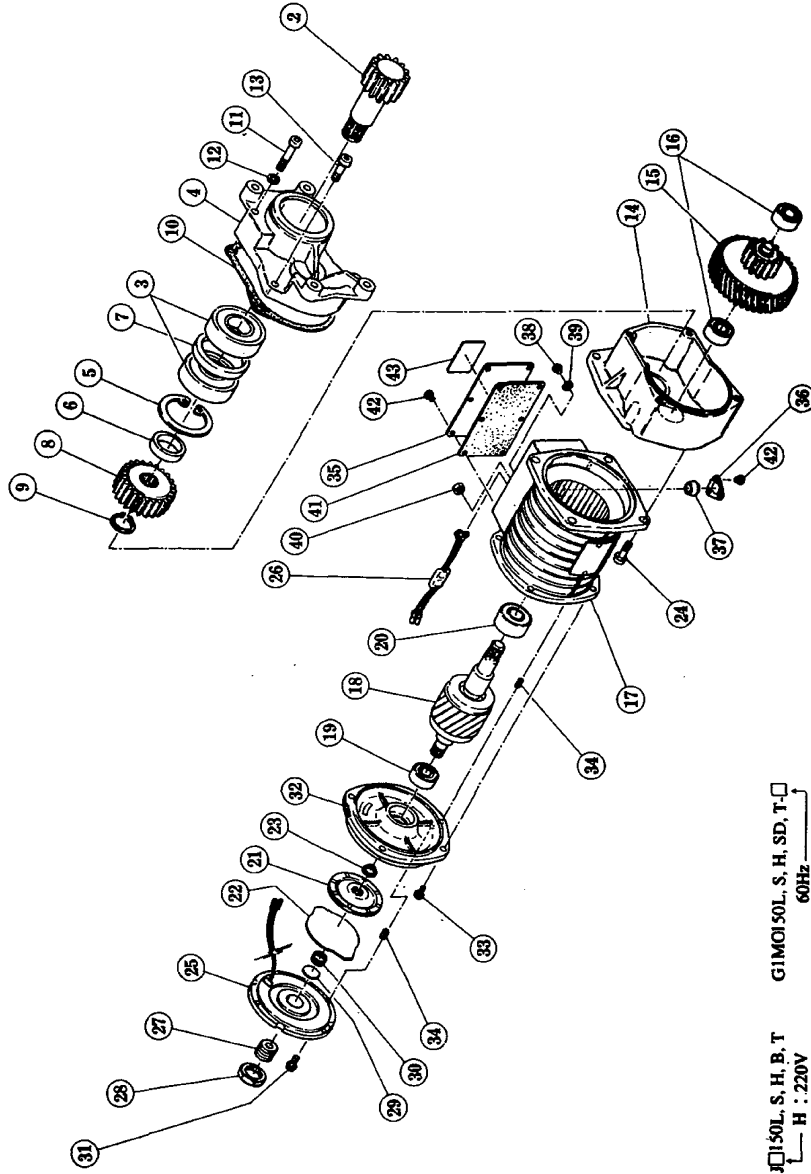


G11□075L, S, H, B, T      G11M075L, S, H, SD, T, □  
 H : 220V                      60Hz  
 S : 220/380V                50Hz  
 M : 220/440-230/460V      60Hz  
 X : 380-415V                50Hz  
 A : 500V                      50Hz  
 K : 550-575V                60Hz

Fig. No.	Parts No.	Parts name	Type		Code		Travel speed mm/min. (3000Hz) Number Per Unit	Note
			GIH0075S	GIH0075L	GIH0075B	GIH0075H		
	G1JE-1303S	1 set of geared motor	20/24	10/12	20/5/24/6	30/36	30/36	20/24mm/min
	G1JE-1303L	1 set of geared motor						10/12mm/min
①	G1JE-1303H	1 set of geared motor						20/5/24/6mm/min
	G1JE-1303T	1 set of geared motor						30/36mm/min
	G1JE-301	Pinion						30/36mm/min
2	G1JE-302	Ball bearing			(6306ZZ)			For pinion
3	G1JE-303	Gear box A						For gear box A
4	G1JE-304	Snap ring			(R-72)			
5	G1JE-305	Collar A						
6	G1JE-306	Collar B						
7	G1JE-411S	Gear #4						For S
	G1JE-411L	Gear #4						For L, SD
8	G1JE-411H	Gear #4						For H, T
9	G1JE-309	Snap ring			(S-25)			For pinion
10	G1JE-310	Gear box packing						
11	G1JE-313	Socket bolt			(M8x60x28)			For gear box A
12	G1JE-314	Spring washer			(2-M8)			For gear box A
13	G1JE-315	Socket bolt with spring washer			(M8x30x30)			For gear box A
14	G1JE-401S	Gear box B						
	G1JE-401T	Gear box B						
	G1JE-5307S	Gear #2 assembly						For S
15	G1JE-5307L	Gear #2 assembly						For L, SD
	G1JE-5307H	Gear #2 assembly						For H, T
16	G1JE-413	Ball bearing			(6203-2RU)			For gear #2 assembly
	G1JE-5501S	Stator assembly						For S, L, H
17	G1JE-5501B	Stator assembly						For SD
	G1JE-5501T	Stator assembly						For T
	G1JE-5502S	Rotor assembly						For S, L, H
18	G1JE-5502B	Rotor assembly						For SD
	G1JE-5502T	Rotor assembly						For T

Fig. No.	Parts No.	Parts name	Type		Code		Travel speed mm/min. (3000Hz) Number Per Unit	Note
			GIH0075S	GIH0075L	GIH0075B	GIH0075H		
	G1JE-508	Ball bearing	20/24	10/12	20/5/24/6	30/36	30/36	For motor axle / brake side
19	G1JE-509	Ball bearing			(6204-2RU)			For motor axle / gear side
20	G1JE-512	Brake disk						
21	G1JE-513	Armature			(S-20)			For motor axle / brake disk side
22	G1JE-514	Snap ring						For motor frame
23	G1JE-515	Socket bolt			(M8x22x22)			For motor frame
24	G1JE-515	Socket bolt with spring washer			(M10x28x28)			For motor frame
25	G1JE-5610	Electromagnetic coil assembly						
26	G1JE-602	Rectifier						
27	G1JE-603	Adjusting bolt						For brake adjustment
28	G1JE-604	Lock nut						For brake adjustment
29	G1JE-605	Spring holder						
30	G1JE-606	Brake spring						
31	G1JE-607	Socket bolt with spring washer			(M6x20x20)			For electromagnetic coil
32	G1JE-609	Brake bracket						
33	G1JE-611	Socket bolt with spring washer			(M6x20x20)			For brake bracket
34	G1JE-616	Spring pin						For brake bracket, electromagnetic coil
35	G1JE-701	Terminal cover						
36	G1JE-703	Cable holder						
37	G1JE-704S	Cable packing 14						
	G1JE-704B	Cable packing 18						
38	G1JE-705	Round head screw			(M4x10)			For terminal, 10 parts for SD
39	G1JE-708	Spring washer			(2-M4)			For terminal, 10 parts for SD
40	G1JE-709	Nut			(2-M4)			For terminal, 10 parts for SD
41	G1JE-707	Terminal cover packing						
42	G1JE-710	Round head screw			(M4x10)			For terminal cover, cable holder, ground, 20 for 150T
	G1JE-702S	Name plate TS						
	G1JE-702L	Name plate TS						
	G1JE-702B	Name plate TS						
43	G1JE-702H	Name plate TS						
	G1JE-702T	Name plate TS						

# Overhead Geared Motor



GIM□150L, S, H, B, T	GIMOI50L, S, H, SD, T, □
□ H : 220V	□ 60Hz
S : 220/380V	□ 50Hz
M : 220/440-230/460V	□ 60Hz
X : 380-415V	□ 50Hz
A : 500V	□ 50Hz
K : 550-575V	□ 60Hz



Fig. No.	Parts No.	Parts name	Type		Travel speed mm/min. (5000Hz) Number per unit	Note
			G1M0159S□	G1M0159H□		
			G1M0159L□	G1M0159D□	G1M0159H□	
			G1J□159	G1J□158	G1J□159H	
			20/24	20/5/24/6	30/36	
	G1JE-1303S	1 set of geared motor				20/24mm/min
	G1JE-1303L	1 set of geared motor				10/12mm/min
①	G1JE-1303B	1 set of geared motor				20/5/24/6mm/min
	G1JE-1303H	1 set of geared motor				30/36mm/min
2	G1JE-301	Pinion				
3	G1JE-302	Ball bearing		(6309ZZ)		For pinion
4	G1JE-303	Gear box A				
5	G1JE-304	Snap ring		(R-100)		For gear box A
6	G1JE-305	Collar A				
7	G1JE-306	Collar B				
	G1JE-401S	Gear #4				For S
8	G1JE-401L	Gear #4				For L, SD
	G1JE-401H	Gear #4				For H
9	G1JE-309	Snap ring		(S-30)		For pinion
10	G1JE-310	Gear box packing				
11	G1JE-313	Socket bolt		(M10x65x32)		For gear box A
12	G1JE-314	Spring washer		(2-M10)		For gear box A
13	G1JE-315	Socket bolt with spring washer		(M10x30x30)		For gear box A
14	G1JE-401	Gear box B				
	G1JE-5307S	Gear #2 assembly				For S
15	G1JE-5307L	Gear #2 assembly				For L, SD
	G1JE-5307H	Gear #2 assembly				For H
16	G1JE-413	Ball bearing		(6303-2RU)		For gear #2 assembly
17	G1JE-5501S	Stator assembly				For S, L, H
	G1JE-5501B	Stator assembly				For SD
	G1JE-5502S	Rotor assembly				For S, L, H
18	G1JE-5502B	Rotor assembly				For SD
19	G1JE-508	Ball bearing		(6204-2RU)		For motor axle/brake side

Fig. No.	Parts No.	Parts name	Type		Travel speed mm/min. (5000Hz) Number per unit	Note
			G1M0159S□	G1M0159H□		
			G1M0159L□	G1M0159D□	G1M0159H□	
			G1J□159	G1J□158	G1J□159H	
			20/24	20/5/24/6	30/36	
	G1JE-509	Ball bearing		(6305-2RU)		For motor axle/gear side
20	G1JE-512	Brake disk				
21	G1JE-513	Armature				
22	G1JE-514	Snap ring		(S-20)		For motor axle
23	G1JE-515	Socket bolt with spring washer		(M10x28x28)		For motor frame
24	G1JE-5610	Electromagnetic coil assembly				
25	G1JE-602	Rectifier				
26	G1JE-603	Adjusting bolt				For brake adjustment
27	G1JE-604	Lock nut				For brake adjustment
28	G1JE-605	Spring holder				
29	G1JE-606	Brake spring				
30	G1JE-607	Socket bolt with spring washer		(M6x20x20)		For electromagnetic coil
31	G1JE-609	Brake bracket				
32	G1JE-611	Socket bolt with spring washer		(M8x22x22)		For brake bracket
33	G1JE-616	Spring pin				For brake bracket, electromagnetic coil
34	G1JE-701	Terminal cover				
35	G1JE-703	Cable holder				
36	G1JE-704S	Cable packing 14				
37	G1JE-704B	Cable packing 18				
	G1JE-705	Round head screw		(M4x10)		For terminal, 10 parts for SD
38	G1JE-708	Spring washer		(2-M4)		For terminal, 10 parts for SD
39	G1JE-709	Nut		(2-M4)		For terminal, 10 parts for SD
40	G1JE-707	Terminal cover packing				
41	G1JE-710	Round head screw		(M4x10)		For terminal cover, cable holder, ground
42	G1JE-702S	Name plate TS				
	G1JE-702L	Name plate TS				
43	G1JE-702B	Name plate TS				
	G1JE-702H	Name plate TS				

**Motorized Low-head End Carriage**

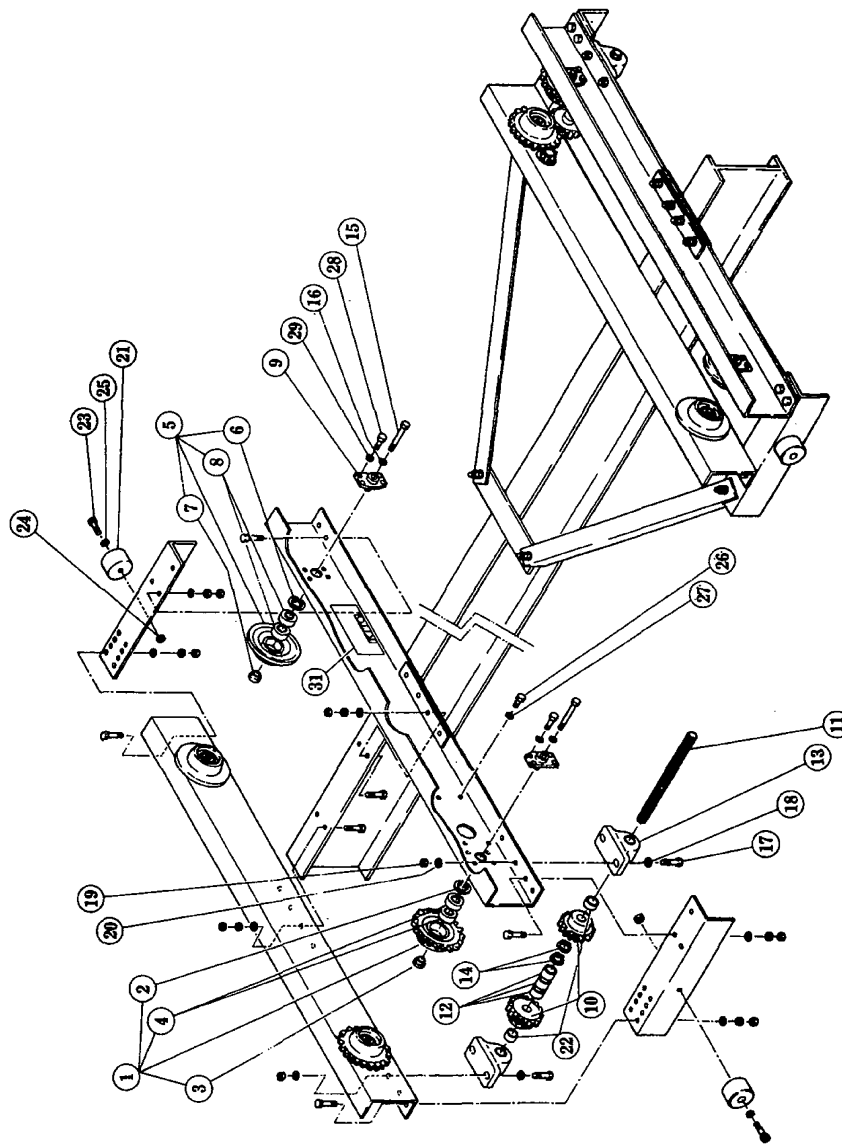
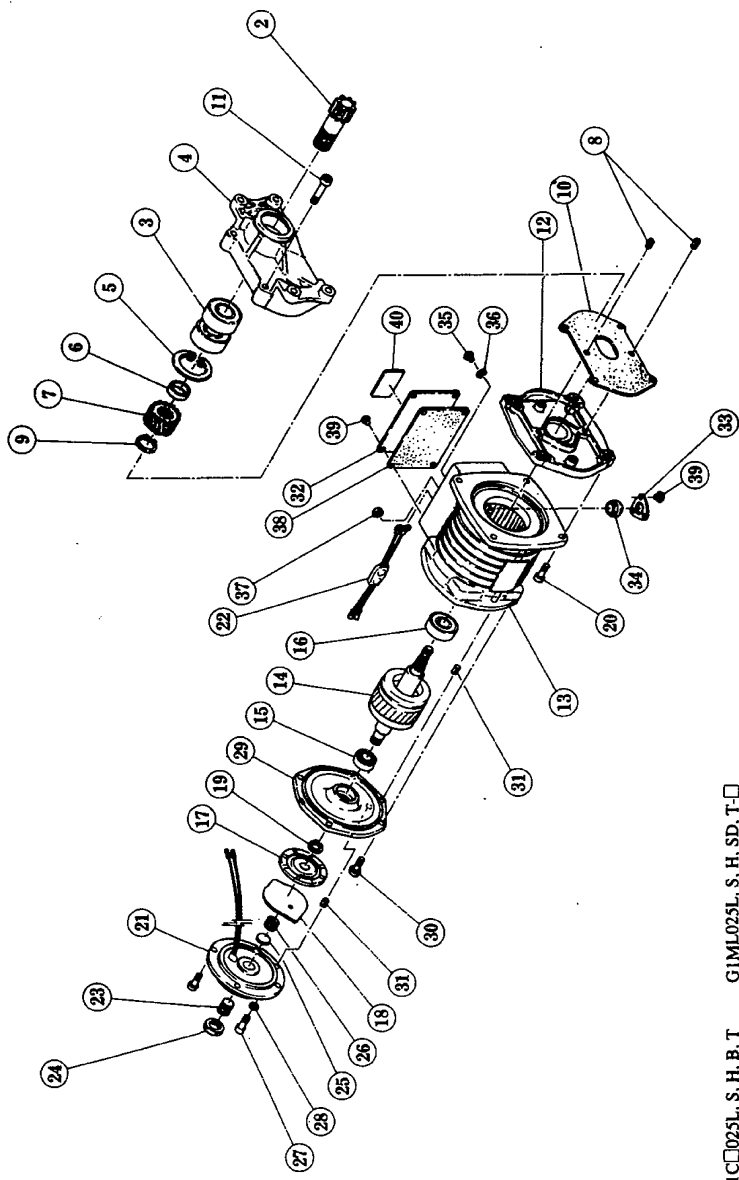


Fig. No.	Parts No.	Parts name	Type		Note
			Code	Number per unit	
1	N6QL-1101	Wheel A ass'y		4	
2	N6QL-105	Snap ring	(R-52)	4	For track wheel
3	N6QL-106	Bush		4	For track wheel
4	N6QL-107	Ball bearing	(6304ZZ)	4	For track wheel
5	N6QL-1102	Wheel B ass'y		4	
6	N6QL-105	Snap ring	(R-52)	4	For track wheel
7	N6QL-106	Bush		4	For track wheel
8	N6QL-107	Ball bearing	(6304ZZ)	4	For track wheel
9	N6QL-5103	Track wheel axle ass'y		8	
10	N6QL-113	Pinion L		4	
11	N6QL-114	Pinion axle L		2	
12	N6QL-115	Collar A	(UCP204)	6	
13	N6QL-116	Pillow block		4	
14	N6QL-117	Snap ring	(S-20)	4	
15	N6QL-121	Bolt	(M6x70x25)	8	For track wheel installation
16	N6QL-122	Spring washer	(2-M6)	8	For track wheel installation
17	N6QL-151	Bolt	(M10x40x26)	8	For pillow block
18	N6QL-152	Washer	(2-M10)	8	For pillow block
19	N6QL-153	Nut	(1-M10)	8	For pillow block
20	N6QL-154	Spring washer		8	For pillow block
21	N6QL-207	Buffer		4	
22	N6QL-209	Collar B		4	
23	N6QL-258	Socket bolt	(M8x35x22)	4	For buffer
24	N6QL-259	Nut	(1-M8)	4	For buffer
25	N6QL-260	Washer	(1-M8)	4	For buffer
26	N6QL-360	Bolt	(M8x28x28)	8	For geared motor installation
27	N6QL-361	Spring washer	(2-M8)	8	For geared motor installation
28	N6QL-363	Bolt	(M8x20x20)	32	For track wheel axle ass'y
29	N6QL-364	Spring washer	(2-M8)	32	For track wheel axle ass'y
30	N6QL-208	Name plate S		2	

Fig. No.	Parts No.	Parts name	Type		Note
			Code	Number per unit	
1	N6QL-1101	Wheel A ass'y		4	
2	N6QL-105	Snap ring	(R-80)	4	For track wheel
3	N6QL-106	Bush		4	For track wheel
4	N6QL-107	Ball bearing	(6307ZZ)	4	For track wheel
5	N6QL-1102	Wheel B ass'y		4	
6	N6QL-105	Snap ring	(R-80)	4	For track wheel
7	N6QL-106	Bush		4	For track wheel
8	N6QL-107	Ball bearing	(6307ZZ)	4	For track wheel
9	N6QL-5103	Track wheel axle ass'y		8	
10	N6QL-113	Pinion L		4	
11	N6QL-114	Pinion axle L		2	
12	N6QL-115	Collar A		6	
13	N6QL-116	Pillow block		4	
14	N6QL-117	Snap ring	(S-30)	4	
15	N6QL-121	Bolt	(M6x80x25) (M8x100x33)	8	For track wheel installation
16	N6QL-122	Spring washer	(2-M6)	8	For track wheel installation
17	N6QL-151	Bolt	(M14x55x55)	8	For pillow block
19	N6QL-153	Nut	(1-M14)	16	For pillow block
20	N6QL-154	Washer	(1-M14)	16	For pillow block
21	N6QL-207	Buffer		4	
22	N6QL-209	Collar B		4	
23	N6QL-258	Socket bolt	(M8x35x22)	4	For buffer
24	N6QL-259	Nut	(1-M8)	4	For buffer
25	N6QL-260	Washer	(1-M8)	4	For buffer
26	N6QL-360	Bolt	(M8x30x30)	8	For geared motor installation
27	N6QL-361	Spring washer	(2-M8)	8	For geared motor installation
28	N6QL-363	Bolt	(M8x20x20)	32	For track wheel axle ass'y
29	N6QL-364	Spring washer	(2-M8)	32	For track wheel axle ass'y
30	N6QL-208	Name plate S		2	

**Low-head geared motor**



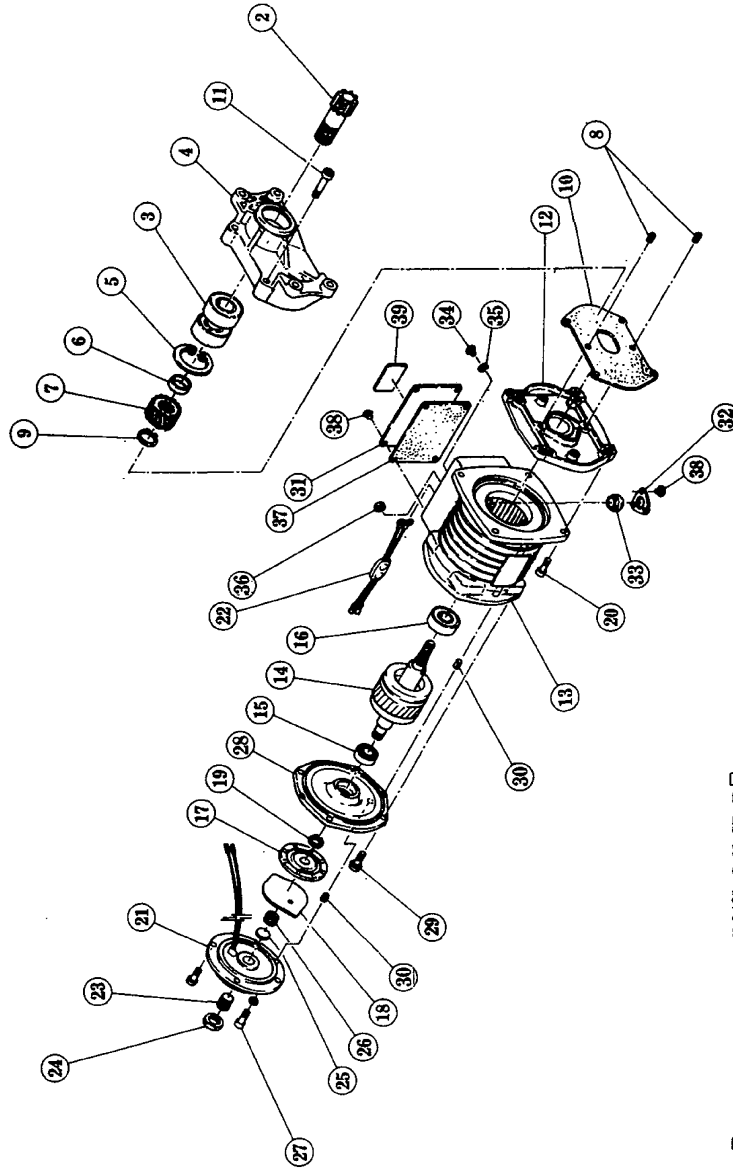
G1C□025L, S, H, B, T      G1ML025L, S, H, SD, T-□

H : 220V	60Hz
S : 220/380V	50Hz
M : 220/440-230/460V	60Hz
X : 380-415V	50Hz
A : 500V	50Hz
K : 550-575V	60Hz

Fig. No.	Parts No.	Parts name	Type				Note
			G1ML0235□	G1ML025L□	G1ML025SD□	G1ML025H□	
			Code				
			Travel speed r/min. (50/60Hz)				
			Number per unit				
	G1CE-1303S	1 set of geared motor	2				20/24r/min
	G1CE-1303L	1 set of geared motor	2				10/12r/min
①	G1CE-1303B	1 set of geared motor	2				20/5/24/6r/min
	G1CE-1303H	1 set of geared motor	2				30/36r/min
	G1CE-1303T	1 set of geared motor	2				30/36r/min
2	G1CE-301	Pinion	2				
3	G1JE-302	Ball bearing	4		(6204ZZ)		For pinion
4	G1JE-303	Gear box A	2				
5	G1JE-304	Snap ring	2		(R-47)		For gear box A
6	G1JE-305	Collar A	2				
	G1JE-307S	Gear #2	2				For S
7	G1JE-307L	Gear #2	2				For L, SD
	G1JE-307T	Gear #2	2				For H, T
8	G1JE-308	Spring pin	4				For gear box A, B
9	G1JE-309	Snap ring	2		(S-20)		For pinion
10	G1JE-310	Gear box packing	2				
11	G1JE-313	Socket bolt	8		(M6x40x24)		For gear box A
12	G1JE-401	Gear box B	2				
	G1JE-5501S	Stator assembly	2				For S, L, H
13	G1JE-5501B	Stator assembly	2				For SD
	G1JE-5501T	Stator assembly	2				For T
	G1JE-5502S	Rotor assembly	2				For S, L
	G1JE-5502B	Rotor assembly	2				For SD
14	G1JE-5502H	Rotor assembly	2				For H
	G1JE-5502T	Rotor assembly	2				For T
15	G1JE-508	Ball bearing	2	(6002-2RU)	(6202-2RU)	(6002-2RU)	For motor axle/brake side
16	G1JE-509	Ball bearing	2	(6204-2RU)		(6005-2RU)	For motor axle/gear side
17	G1JE-512	Brake disk	2				
18	G1JE-513	Armature	2				
19	G1JE-514	Snap ring	2		(S-15)		For motor axle

Fig. No.	Parts No.	Parts name	Type				Note
			G1ML0235□	G1ML025L□	G1ML025SD□	G1ML025H□	
			Code				
			Travel speed r/min. (50/60Hz)				
			Number per unit				
	G1JE-515	Socket bolt	8				For motor frame
20	G1JE-515	Socket bolt with spring washer	8		(M6x22x22)		For motor frame
21	G1JE-5610	Electromagnetic coil assembly	2				
22	G1JE-602	Rectifier	2				
23	G1JE-603	Adjusting bolt	2				For brake adjustment
24	G1JE-604	Lock nut	2				For brake adjustment
25	G1JE-605	Spring holder	2				
26	G1JE-606	Brake spring	2				
	G1JE-607	Socket bolt	8	(M6x40x24)		(M6x40x24)	For electromagnetic coil
27	G1JE-607	Socket bolt with spring washer	8	(M6x20x20)		(M6x20x20)	For electromagnetic coil
28	G1JE-608	Spring washer	8	(2-M6)		(2-M6)	For electromagnetic coil
29	G1JE-609	Brake bracket	2				
30	G1JE-611	Socket bolt with spring washer	8	(M6x20x20)		(M6x20x20)	For brake bracket
31	G1JE-616	Spring pin	4				For brake bracket, electromagnetic coil
32	G1JE-701S	Terminal cover	2				
	G1JE-701B	Terminal cover	2				
33	G1JE-703	Cable holder	2				
	G1JE-704S	Cable packing 14	2				
34	G1JE-704B	Cable packing 18	2				
35	G1JE-705	Round head screw	6	(M4x10)			For terminal, 10 pairs for SD
36	G1JE-708	Spring washer	6	(2-M4)			For terminal, 10 pairs for SD
37	G1JE-709	Nut	6	(2-M4)			For terminal, 10 pairs for SD
	G1JE-707S	Terminal cover packing	2				
38	G1JE-707B	Terminal cover packing	2				
39	G1JE-710	Round head screw	16	(M4x10)			For terminal cover, cable holder, ground
	G1CE-702S	Name plate TS	2				
	G1CE-702L	Name plate TS	2				
	G1CE-702B	Name plate TS	2				
40	G1CE-702H	Name plate TS	2				
	G1CE-702T	Name plate TS	2				

**Low-head geared motor**



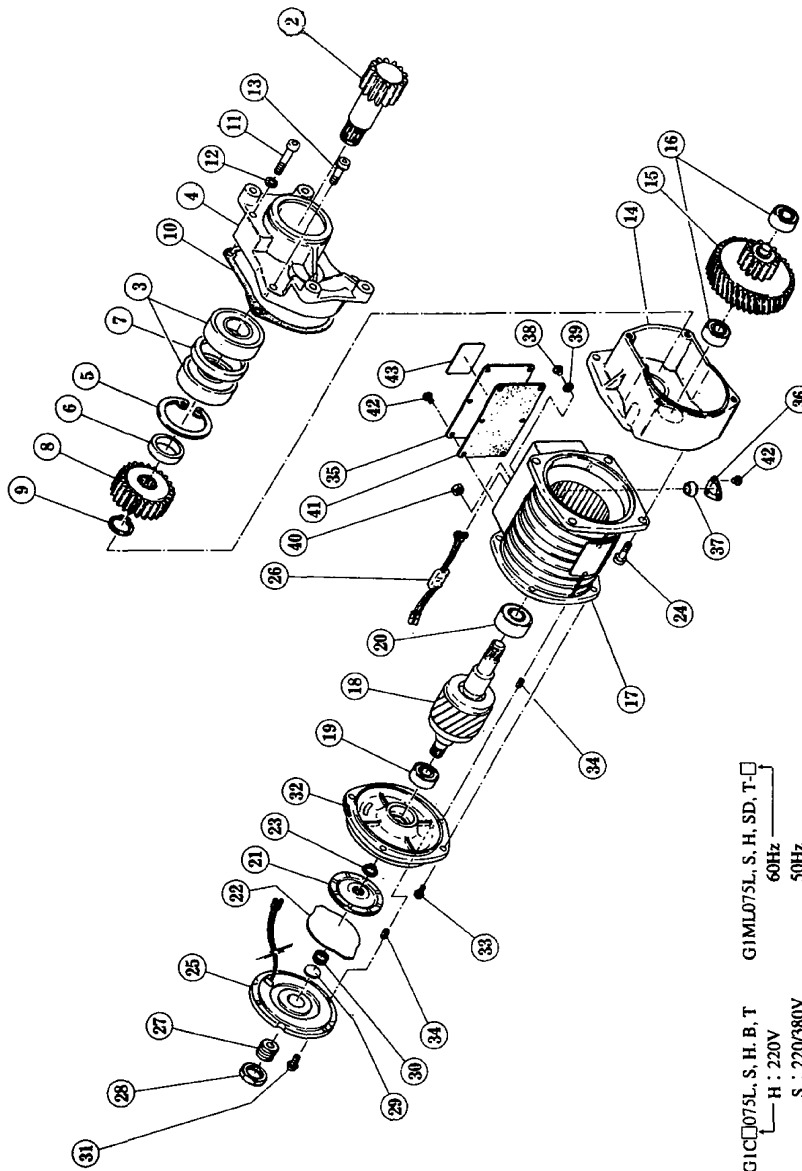
G1C□040L, S, H, B, T    G1ML040L, S, H, SD, T, □

— H : 220V	60Hz
S : 220/380V	50Hz
M : 220/440-230/460V	60Hz
X : 380-415V	50Hz
A : 500V	50Hz
K : 550-575V	60Hz

Fig. No.	Parts No.	Parts name	Type		Code		G1MLD40L	G1MLD40H	G1MLD75T	Note
			G1MLD40S	G1MLD40L	G1CD40S	G1CD40L				
	G1CE-1303S	1 set of geared motor	2							20/24m/min
	G1CE-1303L	1 set of geared motor	2							10/12m/min
①	G1CE-1303B	1 set of geared motor	2							20/5/24/6m/min
	G1CE-1303H	1 set of geared motor	2							30/36m/min
	G1CE-1303T	1 set of geared motor	2							30/36m/min
2	G1CE-301	Pinion	2							
3	G1JE-302	Ball bearing	4							For pinion
4	G1JE-303	Gear box A	2							(6105ZZ)
5	G1JE-304	Snap ring	2							For gear box A
6	G1JE-305	Collar A	2							(R-62)
	G1JE-307S	Gear #2	2							For pinion
7	G1JE-307L	Gear #2	2							For S
	G1JE-307H	Gear #2	2							For L, SD
	G1JE-308	Spring pin	4							For H, T
8	G1JE-309	Snap ring	2							For gear box A, B
9	G1JE-310	Gear box packing	2							For pinion
10	G1JE-313	Socket bolt	8							
11	G1JE-401	Gear box B	2							For gear box A
12	G1JE-5501S	Stator assembly	2							
13	G1JE-5501B	Stator assembly	2							For S, L, H
	G1JE-5501T	Stator assembly	2							For SD
	G1JE-5502S	Rotor assembly	2							For T
14	G1JE-5502B	Rotor assembly	2							For S, L
	G1JE-5502H	Rotor assembly	2							For SD
	G1JE-5502T	Rotor assembly	2							For H
15	G1JE-508	Ball bearing	2							For motor axle/brake side
16	G1JE-509	Ball bearing	2							For motor axle/gear side
17	G1JE-512	Brake disk	2							

Fig. No.	Parts No.	Parts name	Type		Code		G1MLD40L	G1MLD40H	G1MLD75T	Note
			G1MLD40S	G1CD40S	G1CD40L	G1CD40H				
18	G1JE-513	Armature	2							
19	G1JE-514	Snap ring	2							For motor axle
20	G1JE-515	Socket bolt	8							For motor frame
21	G1JE-5610	Electromagnetic coil assembly	2							
22	G1JE-602	Rectifier	2							
23	G1JE-603	Adjusting bolt	2							For brake adjustment
24	G1JE-604	Lock nut	2							For brake adjustment
25	G1JE-605	Spring holder	2							
26	G1JE-606	Brake spring	2							
27	G1JE-607	Socket bolt with spring washer	8							For electromagnetic coil
28	G1JE-609	Brake bracket	2							
29	G1JE-611	Socket bolt with spring washer	8							For brake bracket
30	G1JE-616	Spring pin	4							For brake bracket, electromagnetic coil
31	G1JE-701	Terminal cover	2							
32	G1JE-703	Cable holder	2							
33	G1JE-704S	Cable packing 14	2							
	G1JE-704B	Cable packing 18	2							
34	G1JE-705	Round head screw	6							For terminal, 10 parts for SD
35	G1JE-708	Spring washer	6							For terminal, 10 parts for SD
36	G1JE-709	Nut	6							For terminal, 10 parts for SD
37	G1JE-707	Terminal cover packing	2							
38	G1JE-710	Round head screw	16							For terminal cover, cable holder, ground
	G1CE-702S	Name plate TS	2							
	G1CE-702L	Name plate TS	2							
	G1CE-702B	Name plate TS	2							
	G1CE-702H	Name plate TS	2							
39	G1CE-702T	Name plate TS	2							

**Low-head geared motor**



G1C□075L, S, H, B, T	G1ML075L, S, H, SD, T-□
— H : 220V	60Hz
S : 220/380V	50Hz
M : 220/440-230/460V	60Hz
X : 380-415V	50Hz
A : 500V	50Hz
K : 550-575V	60Hz



Fig. No.	Parts No.	Parts name	Type		G1ML075S	G1ML075L	G1ML075SD	G1ML075H	Note
			Code	Travel speed m/min. (3000Hz)					
	G1CE-1303S	1 set of geared motor	2		20/24	10/12	20/5/24/6	30/36	20/24m/min
	G1CE-1303L	1 set of geared motor	2						10/12m/min
	G1CE-1303B	1 set of geared motor	2						20/5/24/6m/min
	G1CE-1303H	1 set of geared motor	2						30/36m/min
1	G1JE-301	Pinion	2						
2	G1JE-302	Ball bearing	4			(6306ZZ)			For pinion
3	G1JE-303	Gear box A	2						
4	G1JE-304	Snap ring	2			(R-72)			For gear box A
5	G1JE-305	Collar A	2						
6	G1JE-306	Collar B	2						
7	G1JE-411S	Gear #4	2						For S
8	G1JE-411L	Gear #4	2						For L, SD
	G1JE-411H	Gear #4	2						For H
9	G1JE-309	Snap ring	2			(S-25)			For pinion
10	G1JE-310	Gear box packing	2						
11	G1JE-313	Socket bolt	4			(M8x60x28)			For gear box A
12	G1JE-314	Spring washer	4			(2-M8)			For gear box A
13	G1JE-315	Socket bolt with spring washer	4			(M8x30x30)			For gear box A
14	G1JE-401	Gear box B	2						
	G1JE-5307S	Gear #2 ass'y	2						For S
15	G1JE-5307L	Gear #2 ass'y	2						For L, SD
	G1JE-5307H	Gear #2 ass'y	2						For H
16	G1JE-413	Ball bearing	4			(6303-2RU)			For gear #2 assembly
17	G1JE-5501S	Stator assembly	2						For S, L, H
	G1JE-5501B	Stator assembly	2						For SD
18	G1JE-5502S	Rotor assembly	2						For S, L, H
	G1JE-5502B	Rotor assembly	2						For SD
19	G1JE-508	Ball bearing	2			(6004-2RU)			For motor auto/brake side

Fig. No.	Parts No.	Parts name	Type		G1ML075S	G1ML075L	G1ML075SD	G1ML075H	Note
			Code	Travel speed m/min. (3000Hz)					
	G1JE-509	Ball bearing	2		20/24	10/12	20/5/24/6	30/36	For motor auto/gear side
20	G1JE-512	Brake disk	2						
21	G1JE-513	Armature	2						
22	G1JE-514	Snap ring	2			(S-20)			For motor auto/brake disk side
23	G1JE-515	Socket bolt	8			(M8x22x22)			
24	G1JE-5610	Electromagnetic coil assembly	2						
25	G1JE-602	Rectifier	2						
26	G1JE-603	Adjusting bolt	2						For brake adjustment
27	G1JE-604	Lock nut	2						For brake adjustment
28	G1JE-605	Spring holder	2						
29	G1JE-606	Brake spring	2						
30	G1JE-607	Socket bolt with spring washer	6			(M6x20x20)			For electromagnetic coil
31	G1JE-609	Brake bracket	2						
32	G1JE-611	Socket bolt with spring washer	8			(M6x20x20)			For brake bracket
33	G1JE-616	Spring pin	4						For electromagnetic coil
34	G1JE-701	Terminal cover	2						
35	G1JE-703	Cable holder	2						
36	G1JE-704S	Cable packing 14	2						
37	G1JE-704B	Cable packing 18	2						
	G1JE-705	Round head screw	6 (10)			(M4x10)			For terminal cover for SD
38	G1JE-708	Spring washer	10 (10)			(2-M4)			For terminal cover for SD
39	G1JE-709	Nut	10 (10)			(2-M4)			For terminal cover for SD
40	G1JE-707	Terminal cover packing	2						
41	G1JE-710	Round head screw	16			(M4x10)			For terminal cover, cable holder, ground
42	G1CE-702S	Name plate TS	2						
43	G1CE-702L	Name plate TS	2						
	G1CE-702B	Name plate TS	2						
	G1CE-702H	Name plate TS	2						

**Sample check lists (monthly and yearly inspection)**

Model No.	Manufacturing No.	Date installed	Inspection No.
Location	Type of crane	Rated load	Crane manufacturing No.
			Inspection valid until

		Check list		Date checked		
Hoist	Body	Outer appearance				
		Abnormal noise				
		Gear oil				
		Top pin				
		Plug-socket connection				
	Push button switches		Name plate			
			Performance test			
	Brake		Wiring			
			Performance			
	Limit switches		Limit lever/Lever pin coupling			
		Cross guide movement				
Load chain/Wire rope		Stopper				
		Performance test				
Accessories		Outer appearance				
		Abnormal noises				
		Wear				
		Suspender/Bottom yoke				
		Idle sheave				
		Chain spring				
		Hook shape/dimension				
		Hook movement				
		Hook latch				
		Chain container				
Push button switches		Idle sheave				
		Operation test				
Traverser		Wiring				
		Name plate				
		Traverse test				
		Motor reduction gear-to-frame installation				
Motorized/manual trolley		Wheel surface/Teeth wear				
		Snap ring for fixing wheels				
		Frame deformation				

○ : Good    △ : Replace or adjust next time.    ✕ : Requires replacement or adjustment immediately.

		Check list		Date checked	
Electric/Manual trolley	Traverser	Suspension shaft/Boots			
		Side rollers			
Crane	Girders	Hand wheel/Hand chain			
		Suspender			
		Control box			
		Contact/Transformer			
End carriage	Drive mechanism	Outer appearance			
		Wear in travel surface			
		Grounding*			
		Name plate			
Collector arm	Collector arm	Wear			
		Stoppers			
		Wear in wheel travel surface			
		Snap ring for fixing wheels			
Drive mechanism	Drive mechanism	Frame deformation			
		Side rollers			
		Buffers			
		Grease			
Collector arm	Collector arm	Motor brake			
		Soft run			
		Hand wheel/Hand chain			
		Messenger wire tautness			
Collector arm	Collector arm	Cable hangers			
		T-shaped hangers			
		Cable			
		Plug-socket connection			
Collector arm	Collector arm	Fuse capacity*			
		Grounding*			
		Incoming power supply voltage*			
		Insulation resistance			
Collector arm	Collector arm	Load test			
		Checked by			
Collector arm	Collector arm	Supervised by			

\*Check yearly.

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