

MOTORIZED CRANES N6 SERIES

OWNER'S (OPERATOR'S) MANUAL AND SAFETY INSTRUCTIONS

To Customer

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.

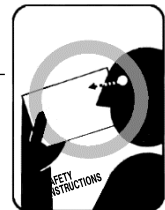
Following these simple rules can help to avoid hoisting accidents:

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

3.1.1 Before and perationduring

- 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)

[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]

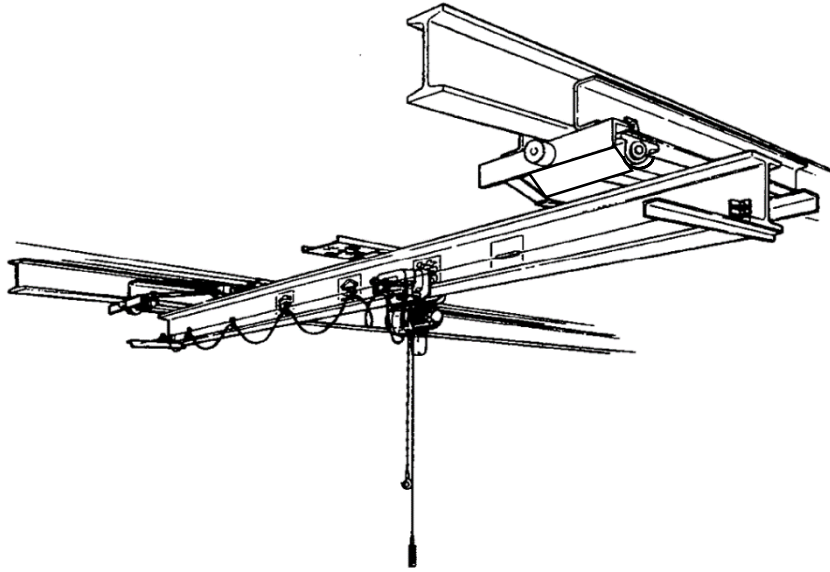
- (a) The end carriage has an open frame construction to facilitate track wheel maintenance.
- (b) The end carriage is built with side rollers to keep travel smooth and stable.
- (c) The center punch for girder installation holes, girders and travel rails are marked on the end carriage to make centering 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.

[Overhead double girder end carriage]

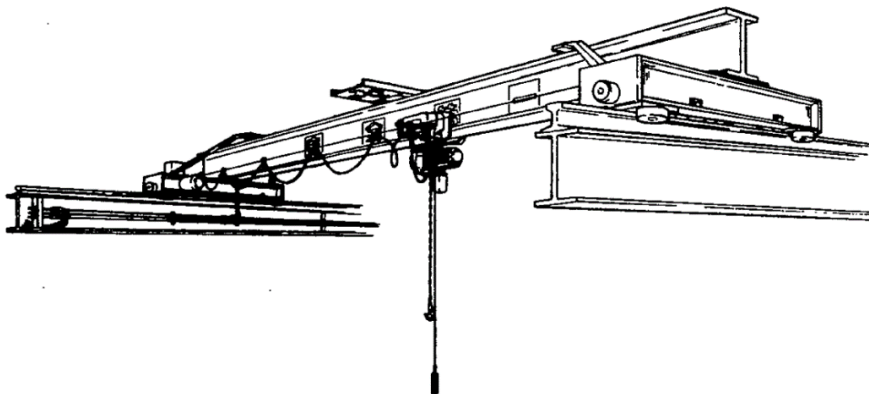
- (a) The end carriage has an open frame construction to facilitate track wheel maintenance.
- (b) The end carriage is built with side rollers to keep travel smooth and stable.
- (c) The center punch for girders and travel rails are marked on the end carriage to make centering easier.
- (d) The end carriage 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)

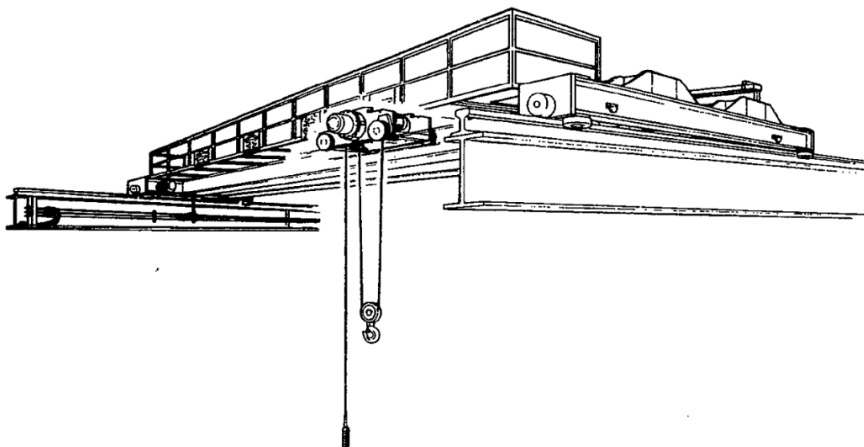
[Low-head crane]



[Overhead crane]

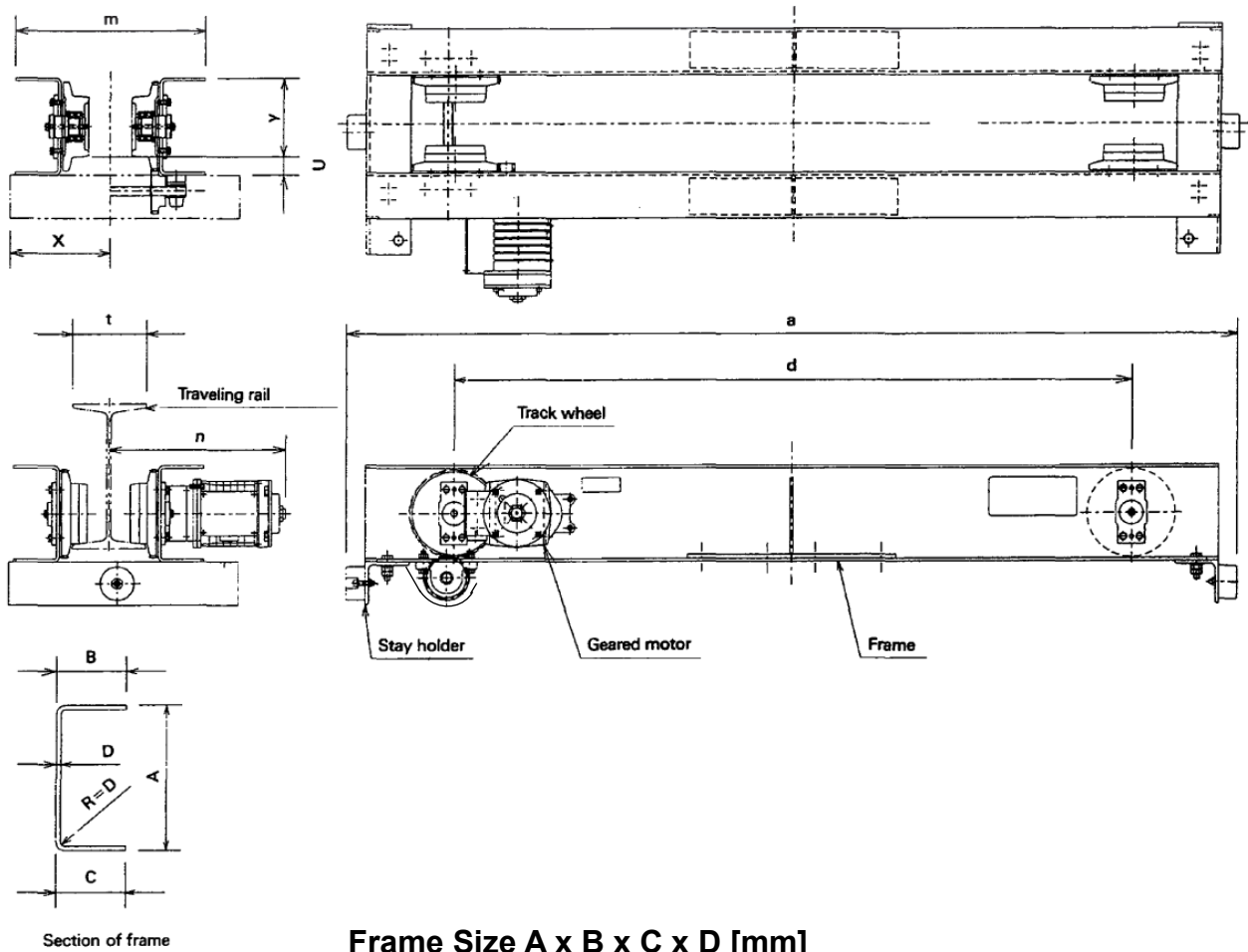


[Overhead double girder crane]



4.2 Specifications and outer appearance

Low-head type motorized end carriage



Frame Size A x B x C x D [mm]

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

WLL	Max. span	Type	Code	Traveling Motor Output [kWx2] 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											
				10/12	20/24	30/36											
1	6	EL010-6	N6QL210V	0.25	0.25	0.25	95	75 to 150	1140	700	t+171	34	241-t/2	121	288+t/2	460	135
	9	EL010-9	N6QL310V	0.25	0.25	0.25	95	75 to 150	1500	1060	t+171	34	241-t/2	121	288+t/2	460	153
	12	EL010-12	N6QL410V	0.25	0.25	0.25	95	75 to 150	1840	1400	t+171	34	241-t/2	121	288+t/2	460	167
	15	EL010-15	N6QL530V	0.4	0.4	0.4	140	125 · 150	2200	1760	t+231	40	281-t/2	174	336+t/2	1600	344
2	6	EL020-6	N6QL220V	0.25	0.25	0.25	110	100 to 150	1140	700	t+191	36	281-t/2	138	288+t/2	950	156
	9	EL020-9	N6QL320V	0.25	0.25	0.25	110	100 to 150	1500	1060	t+191	36	281-t/2	138	288+t/2	950	176
	12	EL020-12	N6QL420V	0.25	0.25	0.25	110	100 to 150	1840	1400	t+191	36	281-t/2	165	288+t/2	950	206
	15	EL020-15	N6QL530V	0.4	0.25	0.4	140	125 · 150	2200	1760	t+231	40	281-t/2	174	336+t/2	1600	344
3	6	EL030-6	N6QL230V	0.25	0.25	0.25	110	100 to 150	1140	700	t+191	36	281-t/2	165	288+t/2	950	164
	12	EL030-9-12	N6QL430V	0.25	0.25	0.25	125	100 to 150	1840	1400	t+341	38	281-t/2	162	288+t/2	1070	238
	15	EL030-15	N6QL530V	0.4	0.4	0.4	140	125 · 150	2200	1760	t+231	40	281-t/2	174	336+t/2	1600	344
5	9	EL050-6-9	N6QL350V	0.4	0.4	0.4	140	125 · 150	1500	1060	t+211	40	281-t/2	174	336+t/2	1600	274
	15	EL050-12-15	N6QL550V	0.75	0.75	0.75	155	125 · 150	2200	1760	t+279	39	290-t/2	201	399+t/2	1800	436

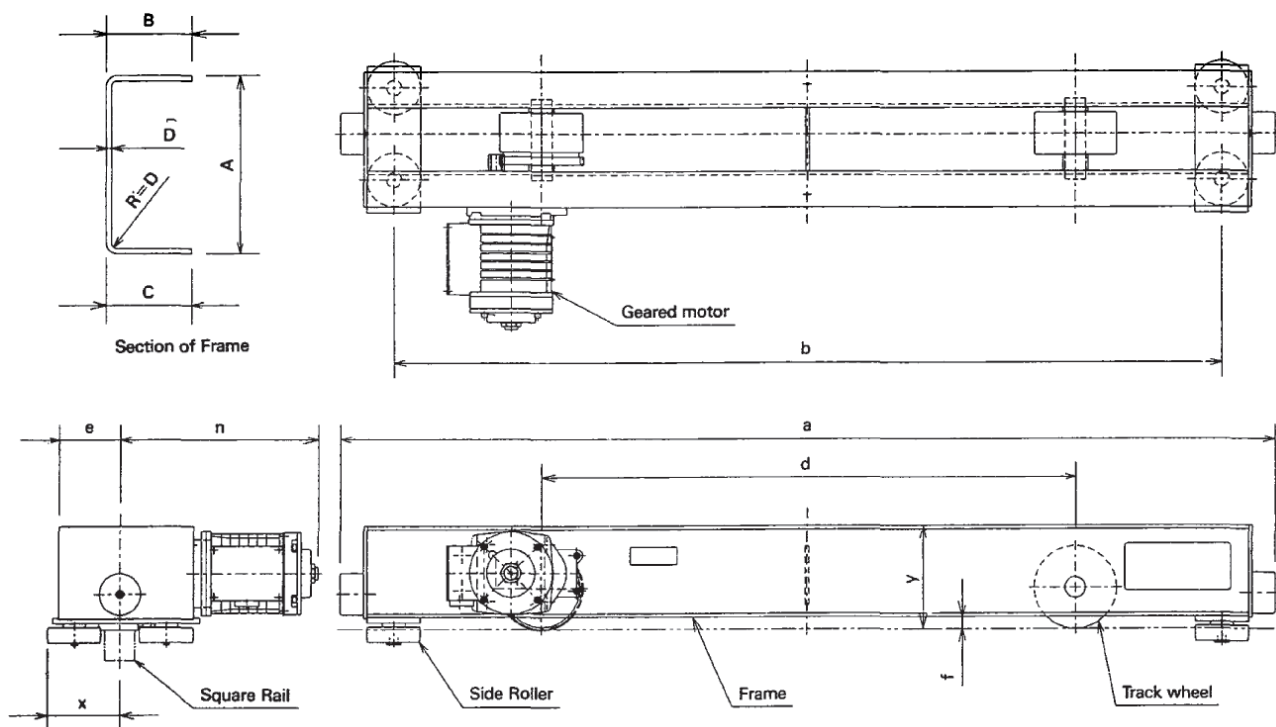
*1: show dimensions in case of standard speed (20/24[m/min].) geared motor.

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

• WLL: Working Load Limit [t].

• Use 1 beam for the traveling rail.

Overhead type motorized end carriage



Frame Size A x B x C x D [mm]

Span [m]	9	12	15	18	21
WLL [t]					
1	155 x 60 x 60 x 6		170 x 70 x 70 x 6		
2	155 x 60 x 60 x 6		200 x 70 x 70 x 6		
3	150 x 60 x 60 x 6		200 x 95 x 95 x 6		
5	200 x 70 x 70 x 6	200 x 80 x 80 x 9			240 x 105 x 105 x 9
7.5	200 x 80 x 80 x 9		240 x 105 x 105 x 9		200 x 125 x 125 x 9
10					

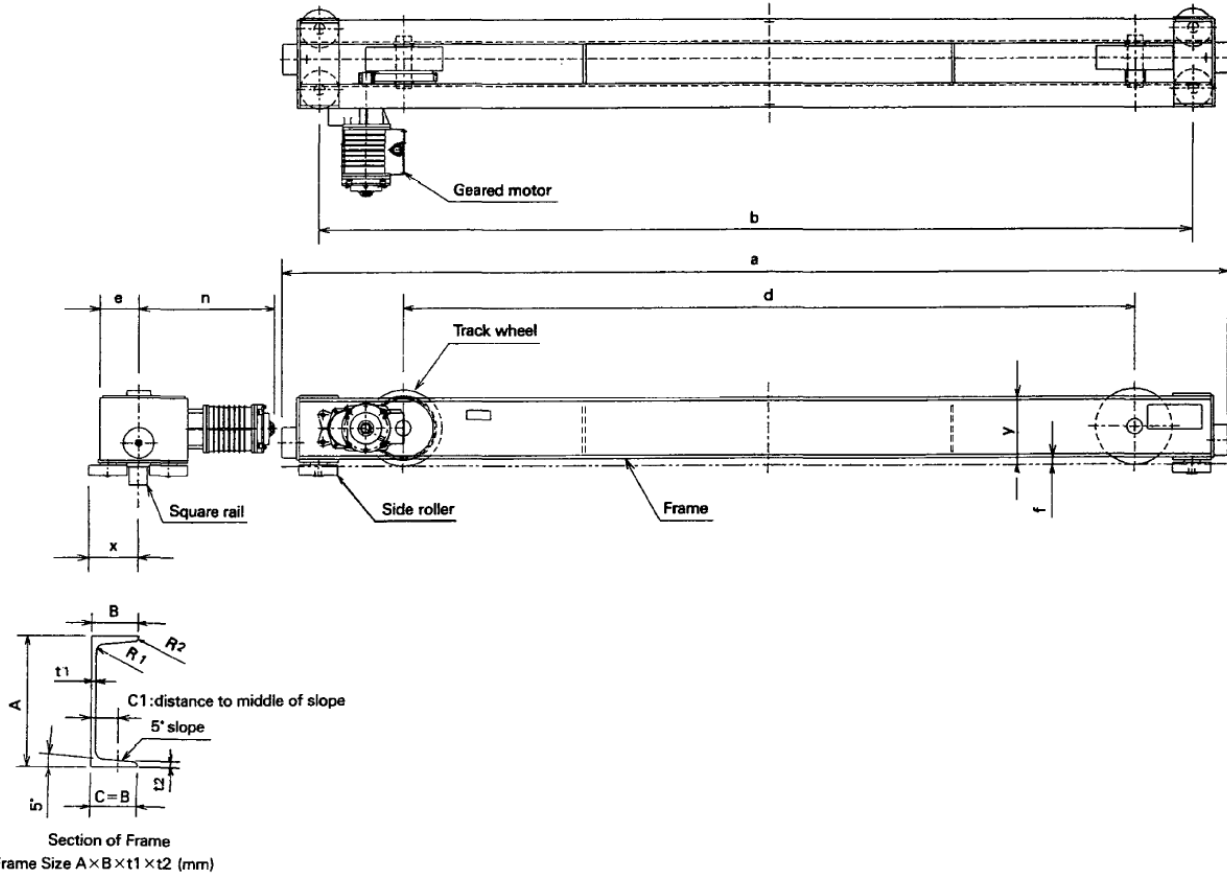
WLL	Max. span	Type	Code	Traveling Motor Output [kWx2] 50/60Hz [m/min]			Wheel Diameter [mm]	Applicable Traveling Rail Width [mm]	a [mm]	b [mm]	d [mm]	e [mm]	f [mm]	x [mm]	*2 y [mm]	*1 n [mm]	Max. Wheel Pressure [kg]	Net Weight [kg]
				L	S	H												
				10/12	20/24	30/36												
1	12	EO010-9-12	N6QO410V	0.25	0.25	0.25	95	□32-□38-□40-□45	1580	1400	900	99	15.5	119	171	321	950	132
	18	EO010-18	N6QO610V	0.25	0.25	0.25	125	□32-□38-□40-□45	2280	2100	1200	114	20.5	119	191	325	1800	197
	21	EO010-21	N6QO730V	0.25	0.25	0.4	175	□45-□50	2691	2505	1400	134	20.5	123	221	326	3200	380
2	12	EO020-9-12	N6QO420V	0.25	0.25	0.25	125	□32-□38-□40-□45	1580	1400	900	104	20.5	119	176	325	1800	146
	18	EO020-18	N6QO620V	0.25	0.25	0.25	125	□32-□38-□40-□45	2280	2100	1200	114	20.5	119	221	325	1800	212
	21	EO020-21	N6QO730V	0.25	0.25	0.4	175	□45-□50	2691	2505	1400	134	20.5	123	221	326	3200	380
3	12	EO030-9-12	N6QO430V	0.25	0.25	0.4	140	□45-□50	1580	1400	900	104	20.5	123	176	325	2100	150
	18	EO030-18	N6QO630V	0.25	0.25	0.4	155	□45-□50	2280	2100	1200	139	20.5	123	221	325	2400	252
	21	EO030-21	N6QO730V	0.25	0.25	0.4	175	□45-□50	2691	2505	1400	134	20.5	123	221	326	3200	380
5	9	EO050-9	N6QO350V	0.25	0.25	0.4	175	□50	1490	1300	800	114	23.5	143	224	323	3200	197
	18	EO050-12-18	N6QO650V	0.4	0.4	0.75	210	□50	2296	2100	1200	128	23.5	143	224	376	4500	374
	21	EO050-21	N6QO750V	0.4	0.4	0.75	210	□50	2696	2500	1400	153	23.5	143	264	376	4500	496
7.5	12	EO075-12	N6QO411V	0.75	0.75	1.5	250	□55-□60	1645	1405	900	128	23.5	162	224	445	7500	384
	18	EO075-18	N6QO611V	0.75	0.75	1.5	300	□55-□60	2345	2105	1200	153	23.5	162	264	445	8100	586
	21	EO075-21	N6QO711V	0.75	0.75	1.5	300	□55-□60	2745	2505	1400	173	23.5	162	324	445	8100	724
10	12	EO100-12	N6QO411V	0.75	0.75	1.5	250	□55-□60	1645	1405	900	128	23.5	162	224	445	7500	384
	18	EO100-18	N6QO611V	0.75	0.75	1.5	300	□55-□60	2345	2105	1200	153	23.5	162	264	445	8100	586
	21	EO100-21	N6QO711V	0.75	0.75	1.5	300	□55-□60	2745	2505	1400	173	23.5	162	324	445	8100	724

*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 girder coupling.

• WLL: Working Load Limit [t].

Overhead type motorized double girder end carriage



Frame Size [mm]

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

Symbol of Frame Size

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

WLL	Max. span	Type	Code	Traveling Motor Output [kWx2] 50/60Hz [m/min]			Wheel Diameter	Applicable Traveling Rail Width	a	b	d	e	f	x	*2 y	*1 n	Max. Wheel Pressure	Net Weight
				L	S	H												
				10/12	20/24	30/36												
3	15	WEO030-15	N6WO530V	0.25	0.25	0.4	175	□50	2615	2400	1995	124	23.5	143	224	325	3200	382
	21	WEO030-21	N6WO730V	0.4	0.4	0.75	210	□50	2845	2630	2195	128	23.5	143	224	375	4500	449
	27	WEO030-27	N6WO930V	0.4	0.4	0.75	210	□50	3395	3180	2140	128	23.5	143	224	375	4500	504
5	15	WEO050-15	N6WO730V	0.4	0.4	0.75	210	□50	2845	2630	2195	128	23.5	143	224	375	4500	449
	21	WEO050-21	N6WO750V	0.75	0.75	1.5	250	□55·□60	3095	2855	2390	128	23.5	162	224	444	7500	554
	27	WEO050-27	N6WO950V	0.75	0.75	1.5	250	□55·□60	3425	3185	2590	138	23.5	162	274	445	7500	736
7.5	21	WEO075-15-21	N6WO775V	0.75	0.75	1.5	250	□55·□60	3098	2885	2395	138	23.5	162	274	445	7500	686
	27	WEO075-27	N6WO975V	0.75	0.75	1.5	250	□55·□60	3478	3235	2740	138	23.5	162	324	445	7500	799
10	15	WEO100-15	N6WO775V	0.75	0.75	1.5	250	□55·□60	3098	2855	2395	138	23.5	162	274	445	7500	686
	21	WEO100-21	N6WO711V	0.75	0.75	1.5	300	□55·□60	3288	3045	2540	138	23.5	162	324	445	8400	828
	27	WEO100-27	N6WO911V	1.5	1.5	1.5	350	□55·□60·□65	3698	3430	2840	140	27.5	189	328	529	10200	1136
15	15	WEO150-15	N6WO911V	1.5	1.5	1.5	350	□55·□60·□65	3698	3430	2840	140	27.5	189	328	529	10200	1136
	27	WEO150-21-27	N6WO915V	1.5	1.5	1.5x2	400	□55·□60·□65	4028	3760	3150	150	27.5	189	408	530	13400	1448[1588]
20	15	WEO200-15	N6WO915V	1.5	1.5	1.5x2	400	□55·□60·□65	4028	3760	3150	150	27.5	189	408	530	13400	1448[1588]
	27	WEO200-21-27	N6WO921V	1.5	1.5	1.5x2	450	□55·□60·□65	4528	4260	3500	151	27.5	189	408	531	16400	1945[2083]

*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 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

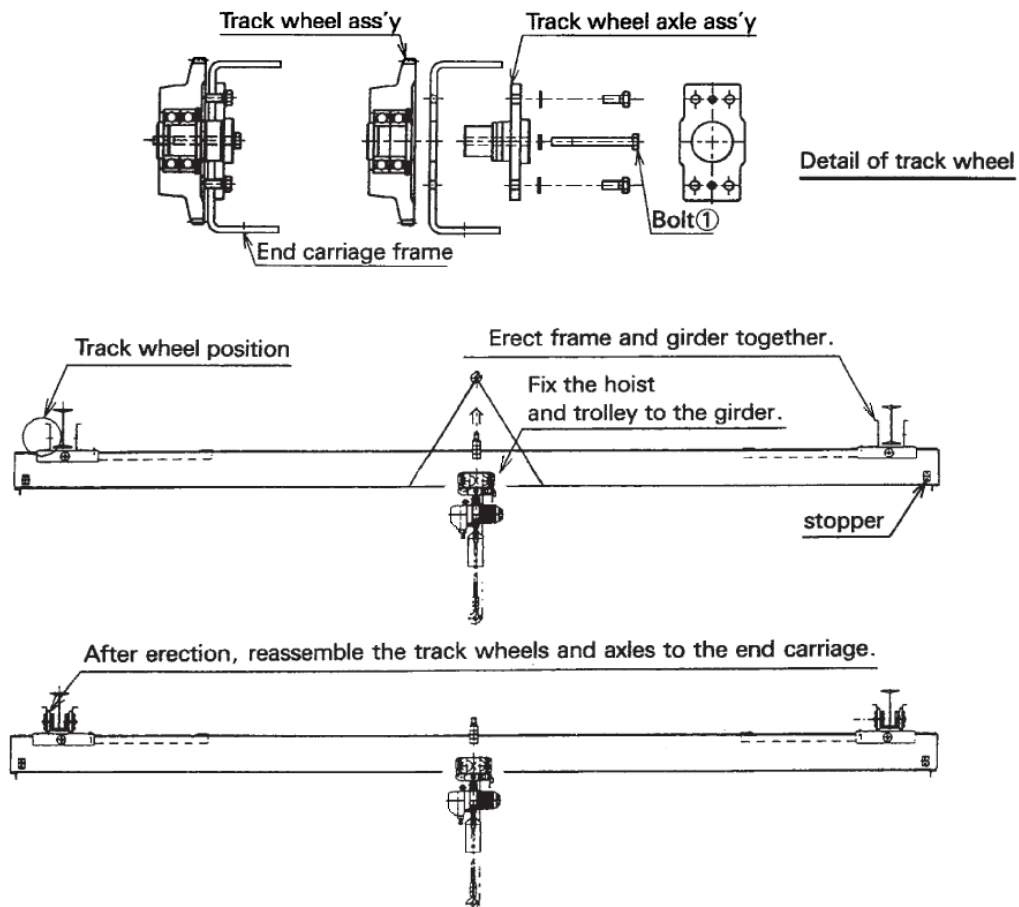


Fig. 1

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

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

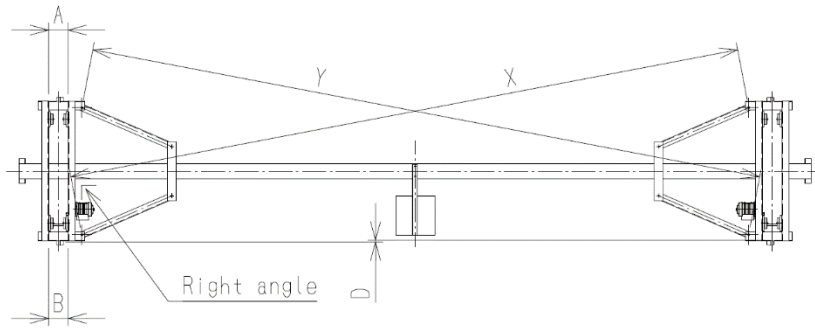


Fig. 2

- 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.

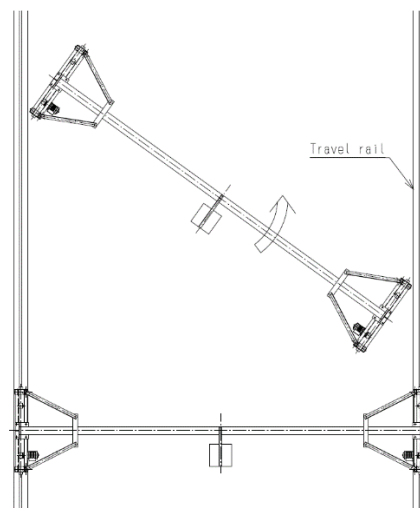


Fig. 3

(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.

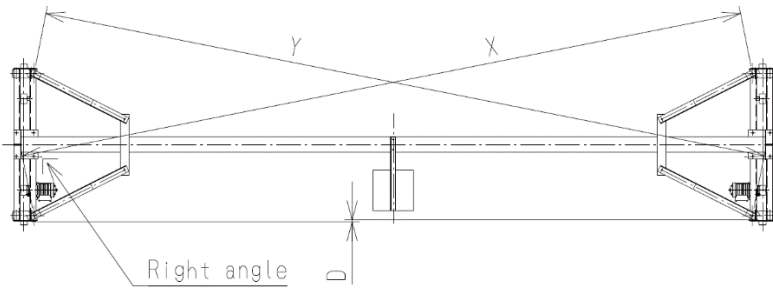


Fig. 4

- 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).

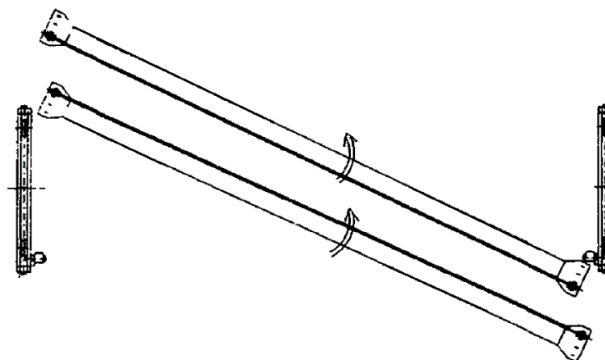


Fig. 5

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

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

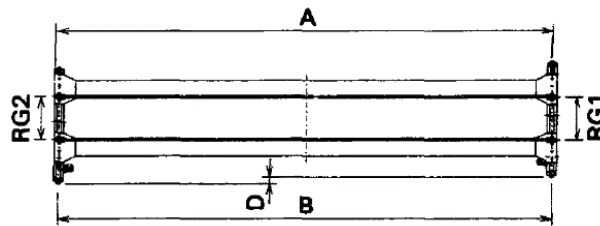


Fig. 6

- 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



: 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 10.

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

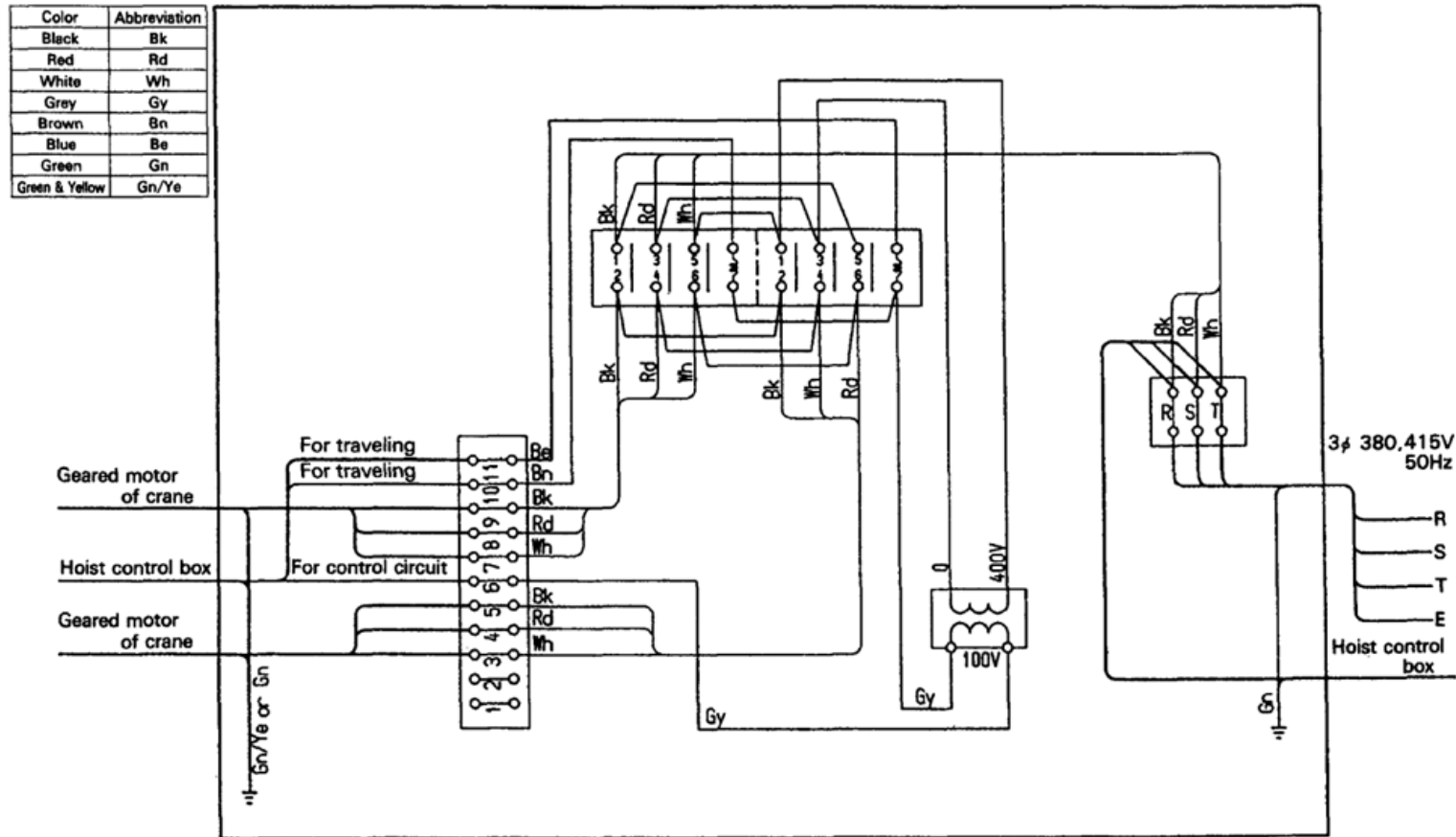


Fig. 7

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

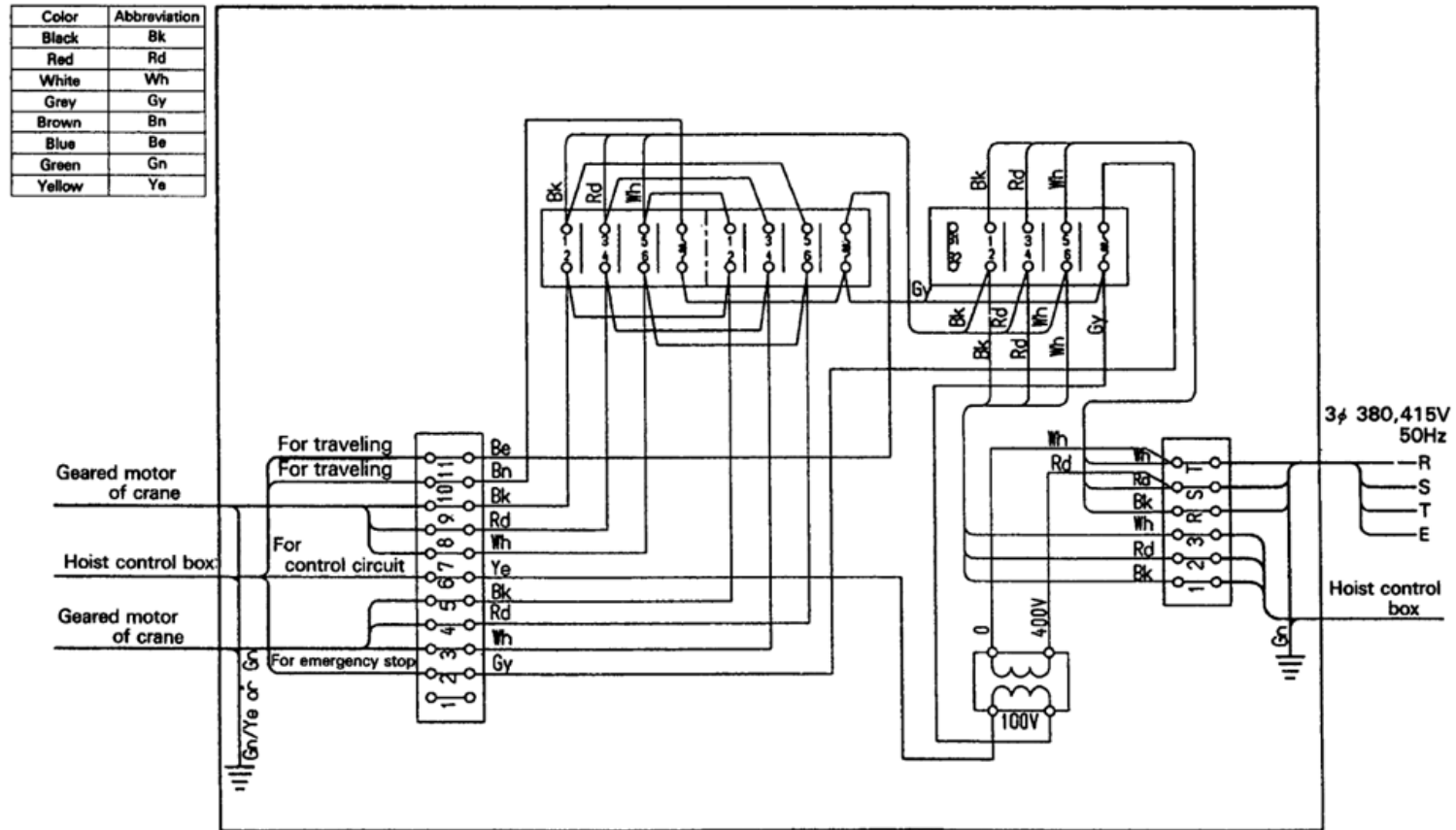


Fig. 8

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

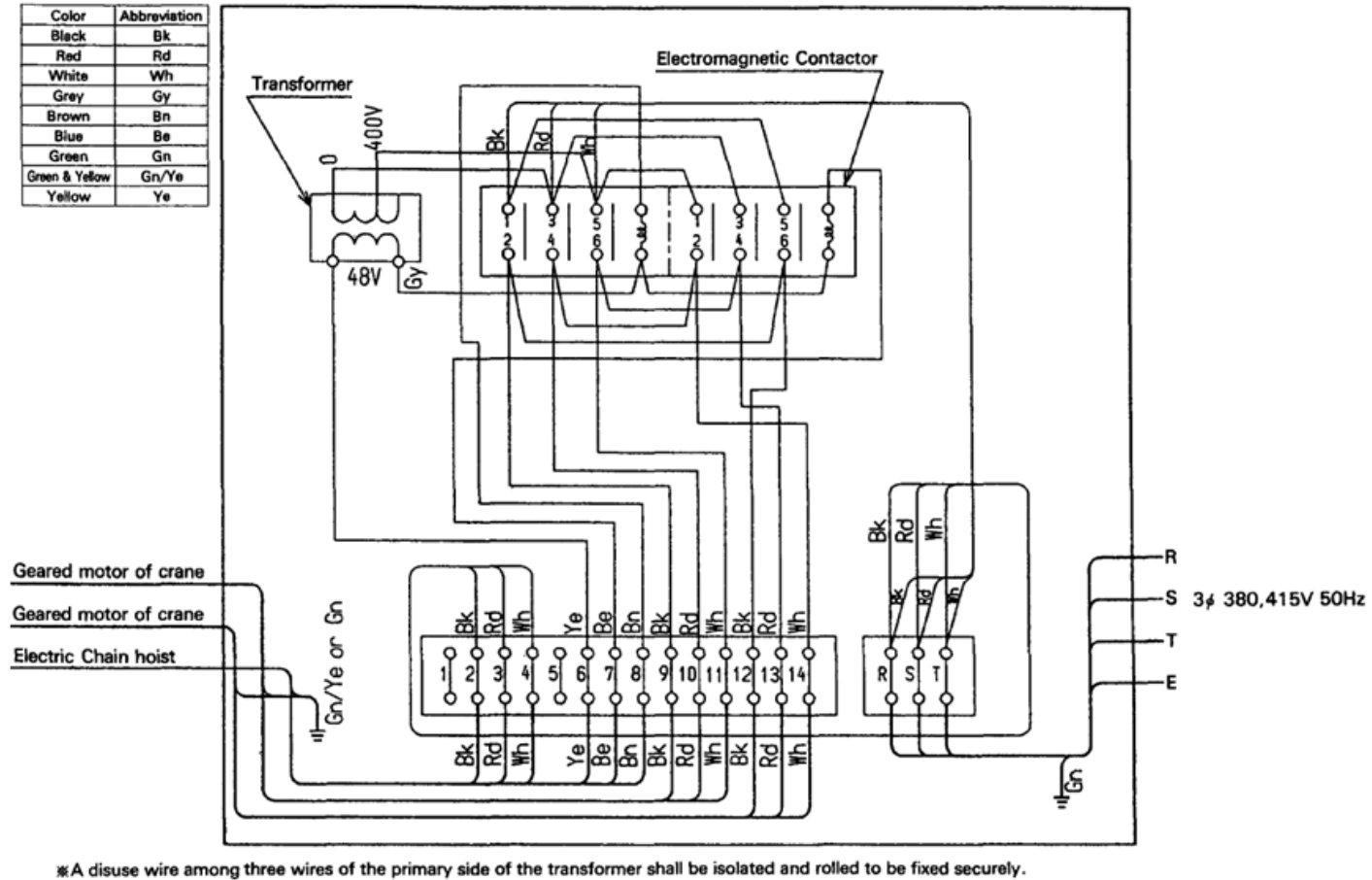


Fig. 9

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

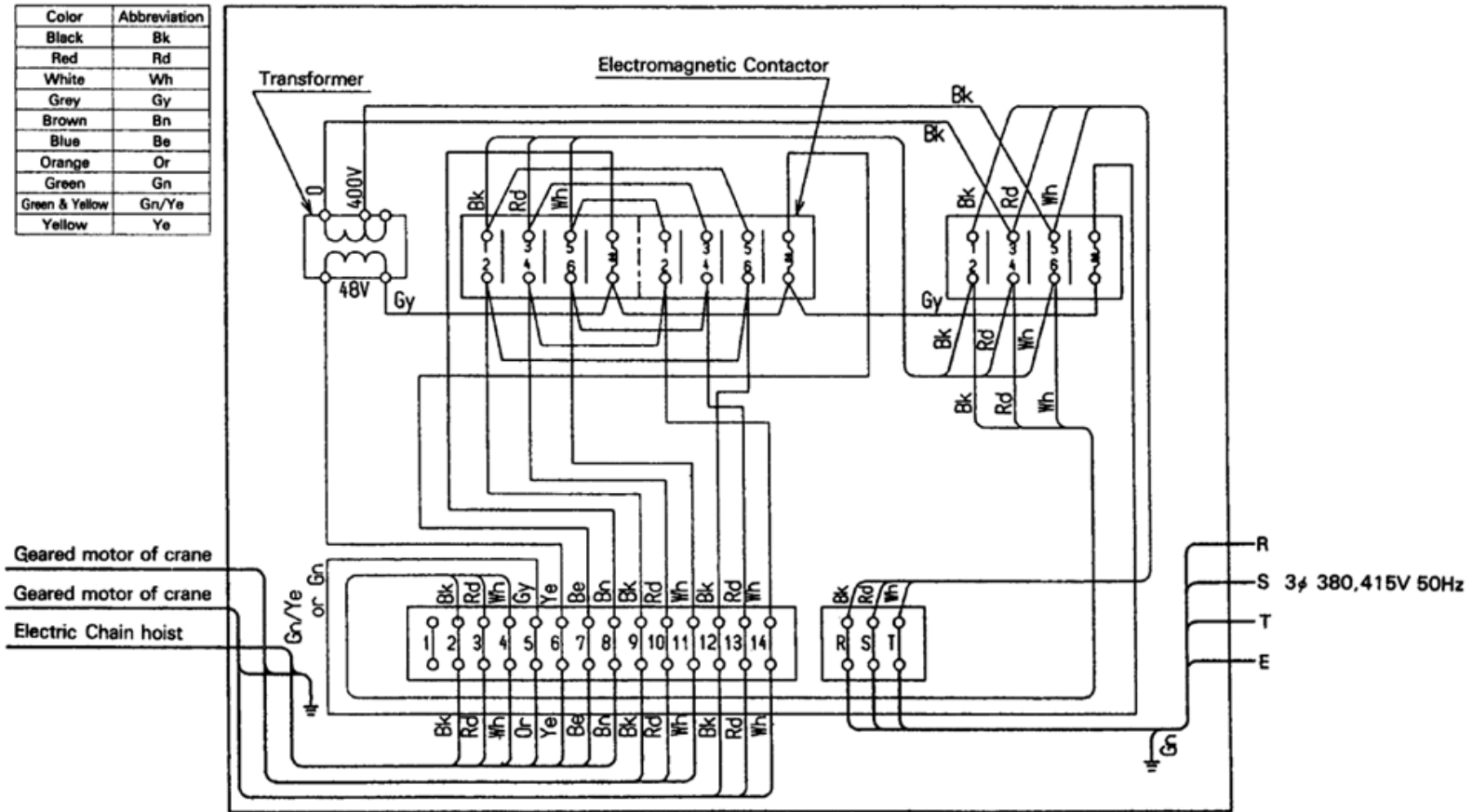


Fig. 10

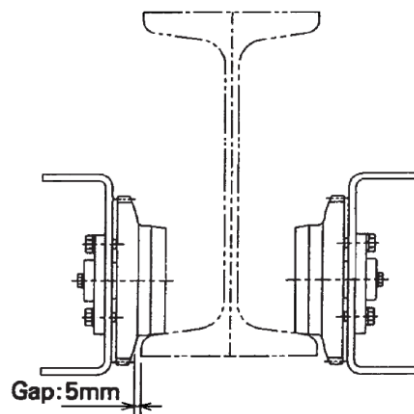
5.2.2 Traverse side power supply

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

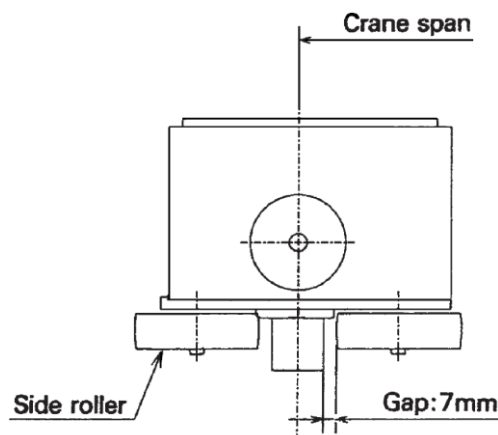
5.3 Test Run

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.

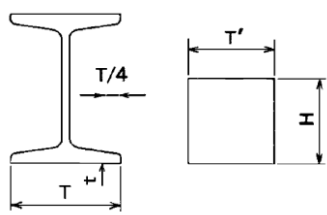
⚠ WARNING : Read carefully “Safety Instructions” for your hoist and trolley respectively provided.

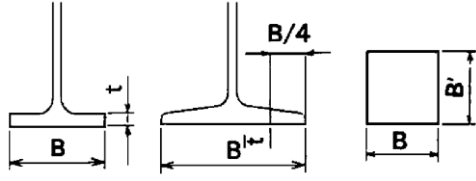
7. Maintenance and Inspections

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.

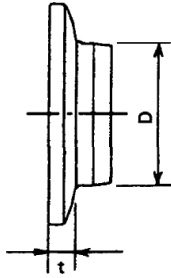
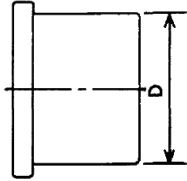
7.1 Check items and criteria for judgement

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

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

Check Item	Inspection Method	Discard Limit/Criteria	Remedy
<ul style="list-style-type: none"> Girder wear 	<ul style="list-style-type: none"> Check visually and use calipers where necessary. 	<ul style="list-style-type: none"> The travel rail surface must not be worn.  <ul style="list-style-type: none"> Wear limit for B: Up to 5% of new part Wear limit for B': Up to 10% of new part Wear limit for t: Up to 10% of new part 	<ul style="list-style-type: none"> Replace worn parts.
<ul style="list-style-type: none"> Looseness in fixing bolts Deflection 	<ul style="list-style-type: none"> Try turning with a wrench. Measure with a level under rated load. 	<ul style="list-style-type: none"> Fixing bolts for girder must be sufficiently tight. Deflection must be within 1/800 or less of the span. 	<ul style="list-style-type: none"> Tighten where necessary. Reinforce girders or lower the rated load.

End Carriage

6. End carriage <ul style="list-style-type: none"> Track wheel wear 	<ul style="list-style-type: none"> Measure with calipers.  	<ul style="list-style-type: none"> Wear in the travel surface and flange must not exceed in the below figures. <p>[Track wheels for low-head crane] mm</p> <table border="1"> <tbody> <tr> <td rowspan="2">phi D</td> <td>Standard dimension</td> <td>phi 95</td> <td>phi 110</td> <td>phi 125</td> </tr> <tr> <td>When worn</td> <td>phi 90</td> <td>phi 105</td> <td>phi 119</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">phi D</td> <td>Standard dimension</td> <td>phi 140</td> <td>phi 155</td> <td></td> </tr> <tr> <td>When worn</td> <td>phi 133</td> <td>phi 147</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">phi D</td> <td>Standard dimension</td> <td>phi 95</td> <td>phi 125</td> <td>phi 140</td> </tr> <tr> <td>When worn</td> <td>phi 90</td> <td>phi 119</td> <td>phi 133</td> </tr> <tr> <td rowspan="2">phi D</td> <td>Standard dimension</td> <td>phi 155</td> <td>phi 175</td> <td>phi 210</td> </tr> <tr> <td>When worn</td> <td>phi 147</td> <td>phi 166</td> <td>phi 200</td> </tr> <tr> <td rowspan="2">phi D</td> <td>Standard dimension</td> <td>phi 250</td> <td>phi 300</td> <td>phi 350</td> </tr> <tr> <td>When worn</td> <td>phi 238</td> <td>phi 285</td> <td>phi 332</td> </tr> <tr> <td rowspan="2">phi D</td> <td>Standard dimension</td> <td>phi 400</td> <td>phi 450</td> <td></td> </tr> <tr> <td>When worn</td> <td>phi 380</td> <td>phi 427</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"> Replace parts where exceeding their wear limit.
phi D	Standard dimension	phi 95		phi 110	phi 125																																																																						
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	When worn	phi 380	phi 427																																																																								

Check Item	Inspection Method	Discard Limit/Criteria	Remedy																																																						
End carriage																																																									
<ul style="list-style-type: none"> • Missing or mispositioned snap rings • Diameter of left and right track wheels 	<ul style="list-style-type: none"> • Check visually. • Measure with calipers or depress gauge. 	<ul style="list-style-type: none"> • No snap rings must be missing or out of position. • Difference in diameter between left and right must be within 1% or less. <table border="1"> <tr> <td colspan="4">[Track wheels for low-head crane] mm</td> </tr> <tr> <td>Diameter</td> <td>φ 95</td> <td>φ 110</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>φ 125</td> <td>φ 140</td> <td>φ 155</td> </tr> <tr> <td>Wear limit</td> <td>1.2</td> <td>1.4</td> <td>1.5</td> </tr> <tr> <td colspan="4">[Track wheels for overhead crane] mm</td> </tr> <tr> <td>Diameter</td> <td>φ 95</td> <td>φ 125</td> <td>φ 140</td> <td>φ 155</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>φ 175</td> <td>φ 210</td> <td>φ 250</td> <td>φ 300</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>φ 350</td> <td>φ 400</td> <td>φ 450</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>	[Track wheels for low-head crane] mm				Diameter	φ 95	φ 110		Wear limit	1.0	1.1		Diameter	φ 125	φ 140	φ 155	Wear limit	1.2	1.4	1.5	[Track wheels for overhead crane] mm				Diameter	φ 95	φ 125	φ 140	φ 155	Wear limit	1.0	1.2	1.4	1.5	Diameter	φ 175	φ 210	φ 250	φ 300	Wear limit	1.7	2.1	2.5	3.0	Diameter	φ 350	φ 400	φ 450		Wear limit	3.5	4.0	4.5		<ul style="list-style-type: none"> • Put any out-of-place parts back in place. • Replace parts where exceeding their wear limit.
[Track wheels for low-head crane] mm																																																									
Diameter	φ 95	φ 110																																																							
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Wear limit	3.5	4.0	4.5																																																						
<ul style="list-style-type: none"> • Side roller wear 	<ul style="list-style-type: none"> • Check visually or measure with calipers. 	<ul style="list-style-type: none"> • Roller wear must not exceed the below figures. <table border="1"> <tr> <td></td> <td colspan="3" style="text-align: right;">mm</td> </tr> <tr> <td>Standard dimension</td> <td>φ 90</td> <td>φ 110</td> <td>φ 125</td> </tr> <tr> <td>When worn</td> <td>φ 82</td> <td>φ 102</td> <td>φ 117</td> </tr> </table>		mm			Standard dimension	φ 90	φ 110	φ 125	When worn	φ 82	φ 102	φ 117	<ul style="list-style-type: none"> • Replace parts where exceeding their wear limit. 																																										
	mm																																																								
Standard dimension	φ 90	φ 110	φ 125																																																						
When worn	φ 82	φ 102	φ 117																																																						
<ul style="list-style-type: none"> • Greasing 	<ul style="list-style-type: none"> • Check visually. 	<ul style="list-style-type: none"> • The track wheel teeth and the tooth of the pinion L must be sufficiently greased. 	<ul style="list-style-type: none"> • Grease where necessary. 																																																						
<ul style="list-style-type: none"> • Looseness in fixing bolts 	<ul style="list-style-type: none"> • Try turning with a wrench. 	<ul style="list-style-type: none"> • Fixing bolts must be sufficiently tight. 	<ul style="list-style-type: none"> • Tighten where necessary. 																																																						
Geared Motor																																																									
7. Geared motor <ul style="list-style-type: none"> • Electromagnetic brake action • Greasing 	<ul style="list-style-type: none"> • Operate the crane forward and in reverse. • Overhaul and check visually. 	<ul style="list-style-type: none"> • The crane must come to a smooth stop when the brakes are applied. • Parts must be sufficiently greased. • Greased parts must not be overly dirty or contaminated with foreign matter. 	<ul style="list-style-type: none"> • Adjust the brakes where necessary. • Grease or degrease where necessary. • Replace parts where necessary. 																																																						
Catwalk																																																									
8. Catwalk and inspection bridge <ul style="list-style-type: none"> • Catwalk • Rail 	<ul style="list-style-type: none"> • Check visually. • Check visually. 	<ul style="list-style-type: none"> • The catwalk floor must not be slippery or prevent danger of tripping. • The rail must be sturdy, safe and undamaged. 	<ul style="list-style-type: none"> • Clean and / or inspect where necessary. • 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 axles, in order to shorten installation and maintenance work.

8.1 Disassembly

Disassemble as described here following. Refer to Figs 11 and 12 for help.

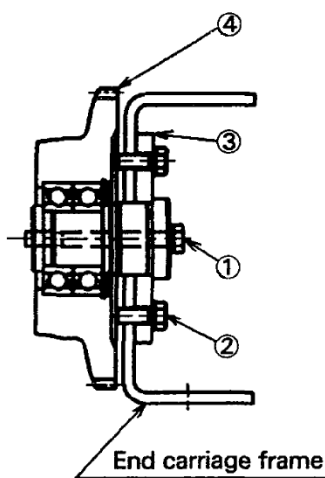


Fig. 11

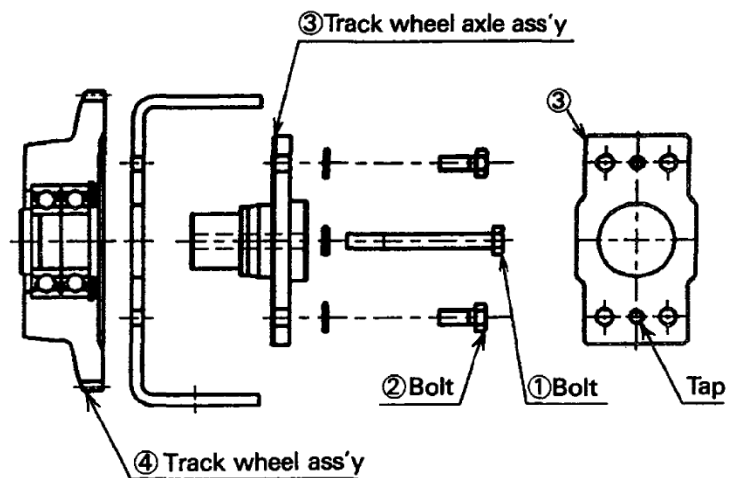


Fig. 12

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 (x2) 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. 13.

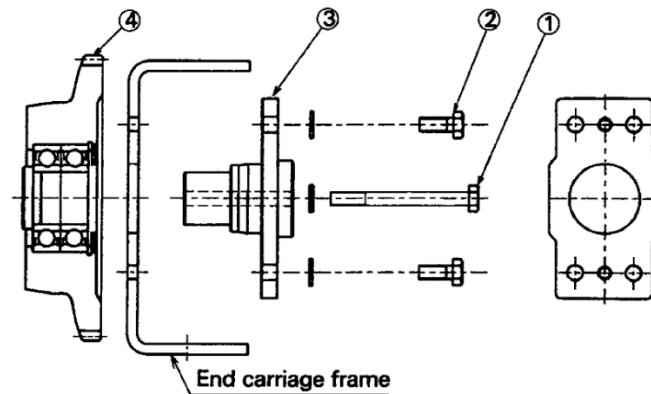


Fig. 13

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.

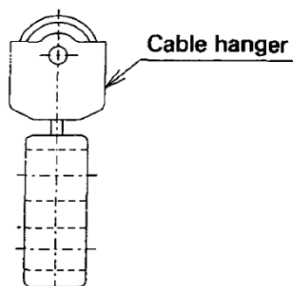
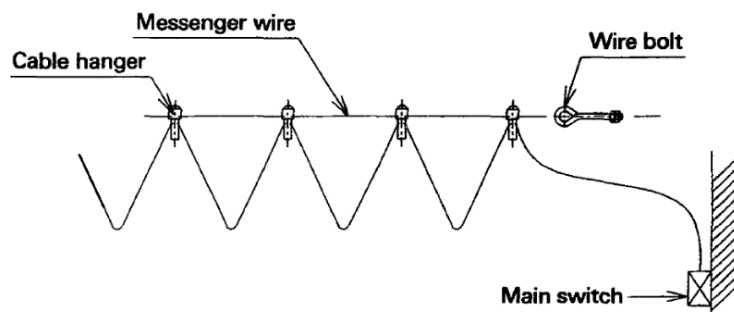
9. Power Supply Method

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

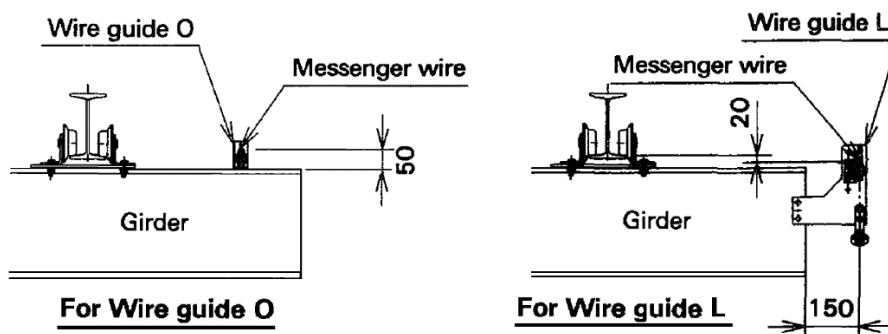
This is the widest used means of supplying power to the crane because it is easy to arrange the cable.

- 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.



Core x Cross-Sectional Area	Cable Size
$4^C \times 3.5^{\square}$	$\phi 15.4$
$4^C \times 5.5^{\square}$ $4^C \times 8^{\square}$	$\phi 16.1$ to $\phi 19$

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

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 end carriage.

■ Overhead Type Motorized End Carriage

EO010-9 · 12, EO010-18, EO010-21, EO020-9 · 12, EO020-18, EO020-21
EO030-9 · 12, EO030-18, EO030-21, EO050-9, EO050-12 · 18, EO050-21

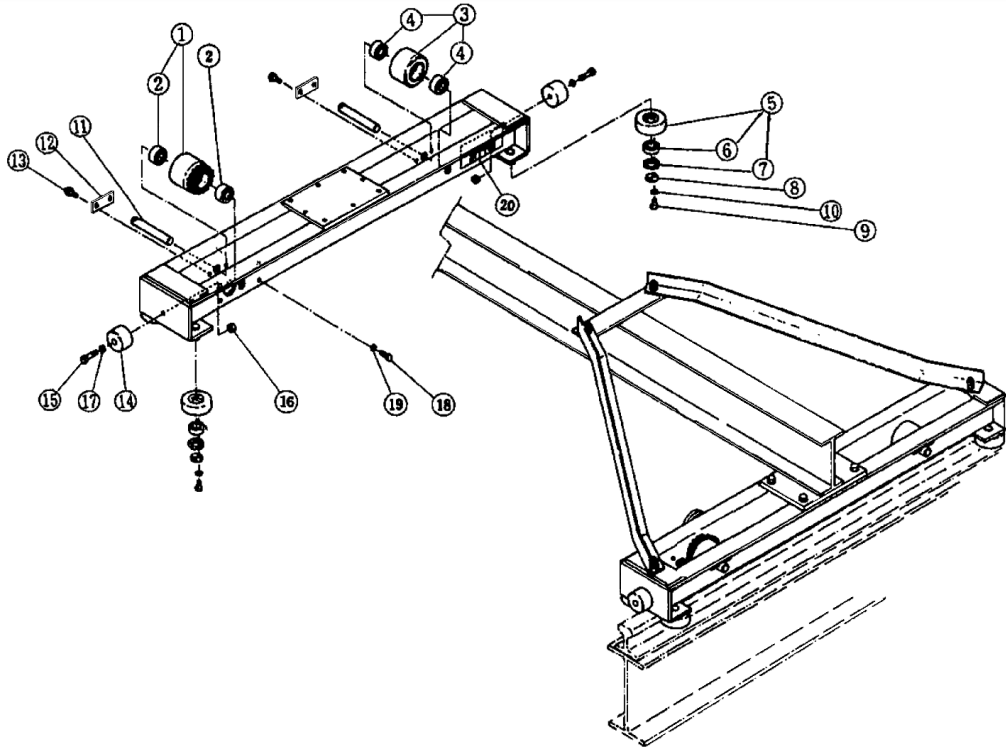


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type				Note
				EO010-9 · 12	EO010-18	EO020-9 · 12	EO020-18	
				Code				
				N6QO410V	N6QO610V	N6QO420V	N6QO620V	
1	1101	Wheel A ass'y	2	N6QO310E1101	N6QO510E1101			
2	107	Ball bearing	4	J1GR0B0-06305	J1GR020-06306			For track wheel
3	1102	Wheel B ass'y	2	N6QO310E1102	N6QO510E1102			
4	107	Ball bearing	4	J1GR0B0-06305	J1GR020-06306			For track wheel
5	1108	Roller ass'y	8	N6QO310E1108				
6	112	Ball bearing	8	J1GR020-06205				For roller
7	110	Snap ring	8	J1SR000-00052				For roller
8	120	Roller washer	8	N6QO310E9120				
9,10	121	Socket bolt with Spring washer	16	J1BG1-0601515				For roller axle
11	103	Track wheel axle	4	N6QO310E9103	N6QO510E9103			
12	105	Key plate	4	N2QO310-9105				
13	151	Socket bolt with spring washer	8	J1BG1-0801818				For key plate
14	207	Buffer	4	N6QL210E9207				
15	258	Socket bolt	4	J1BE1-0803522				For buffer
16	259	Nut	4	J1NA001-10080				For buffer
17	260	Washer	4	J1WK011-10080				For buffer
18,19	360	Bolt with Spring washer	8	J1BH1-0802828	J1BH1-0803030			For geared motor installation
20	208	Name plate S	2	N6QO410E9208	N6QO610E9208	N6QO420E9208	N6QO620E9208	

Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type			Note
				EO030-9 · 12	EO030-18	EO010-21 EO020-21 EO030-21	
				Code			
				N6QO430V	N6QO630V	N6QO730V	
1	1101	Wheel A ass'y	2	N6QO710E1101	N6QO720E1101	N6QO730E1101	
2	107	Ball bearing	4	J1GR0B0-06307		J1GR020-06308	For track wheel
3	1102	Wheel B ass'y	2	N6QO710E1102	N6QO720E1102	N6QO730E1102	
4	107	Ball bearing	4	J1GR0B0-06307		J1GR020-06308	For track wheel
5	1108	Roller ass'y	8	N6QO310E1108			
6	112	Ball bearing	8	J1GR020-06205			For roller
7	110	Snap ring	8	J1SR000-00052			For roller
8	120	Roller washer	8	N6QO310E9120			
9,10	121	Socket bolt with Spring washer	16	J1BG1-0601515			For roller axle
11	103	Track wheel axle	4	N6QO710E9103		N6QO730E9103	
12	105	Key plate	4	N2QO310-9105			
13	151	Socket bolt with spring washer	8	J1BG1-0801818		J1BG1-0802020	For key plate
14	207	Buffer	4	N6QL210E9207			
15	258	Socket bolt	4	J1BE1-0803522			For buffer
16	259	Nut	4	J1NA001-10080			For buffer
17	260	Washer	4	J1WK011-10080			For buffer
18,19	360	Bolt with Spring washer	8	J1BH1-0803030		J1BH1-0803232	For geared motor installation
20	208	Name plate S	2	N6QO430E9208	N6QO630E9208	N6QO730E9208	

Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type			Note
				EO050-9	EO050-12 · 18	EO050-21	
				Code			
				N6QO350V	N6QO650V	N6QO750V	
1	1101	Wheel A ass'y	2	N6QO730E1101	N6QO450E1101		
2	107	Ball bearing	4	J1GR020-06308	J1GR020-06309		For track wheel
3	1102	Wheel B ass'y	2	N6QO730E1102	N6QO450E1102		
4	107	Ball bearing	4	J1GR020-06308	J1GR020-06309		For track wheel
5	1108	Roller ass'y	8	N6QO350E1108			
6	112	Ball bearing	8	J1GR020-06206			For roller
7	110	Snap ring	8	J1SR000-00062			For roller
8	120	Roller washer	8	N6QO350E9120			
9,10	121	Socket bolt with Spring washer	16	J1BG1-0601515			For roller axle
11	103	Track wheel axle	4	N6QO730E9103	N6QO450E9103		
12	105	Key plate	4	N2QO310-9105			
13	151	Socket bolt with spring washer	8	J1BG1-0801818	J1BG1-0802020		For key plate
14	207	Buffer	4	N6QL210E9207			
15	258	Socket bolt	4	J1BE1-0803522			For buffer
16	259	Nut	4	J1NA001-10080			For buffer
17	260	Washer	4	J1WK011-10080			For buffer
18,19	360	Bolt with Spring washer	8	J1BH1-0803030	J1BH1-0803232		For geared motor installation
20	208	Name plate S	2	N6QO350E9208	N6QO650E9208	N6QO750E9208	

■ Overhead Type Motorized End Carriage

EO075-12, EO075-18, EO075-21, EO100-12, EO100-18, EO100-21

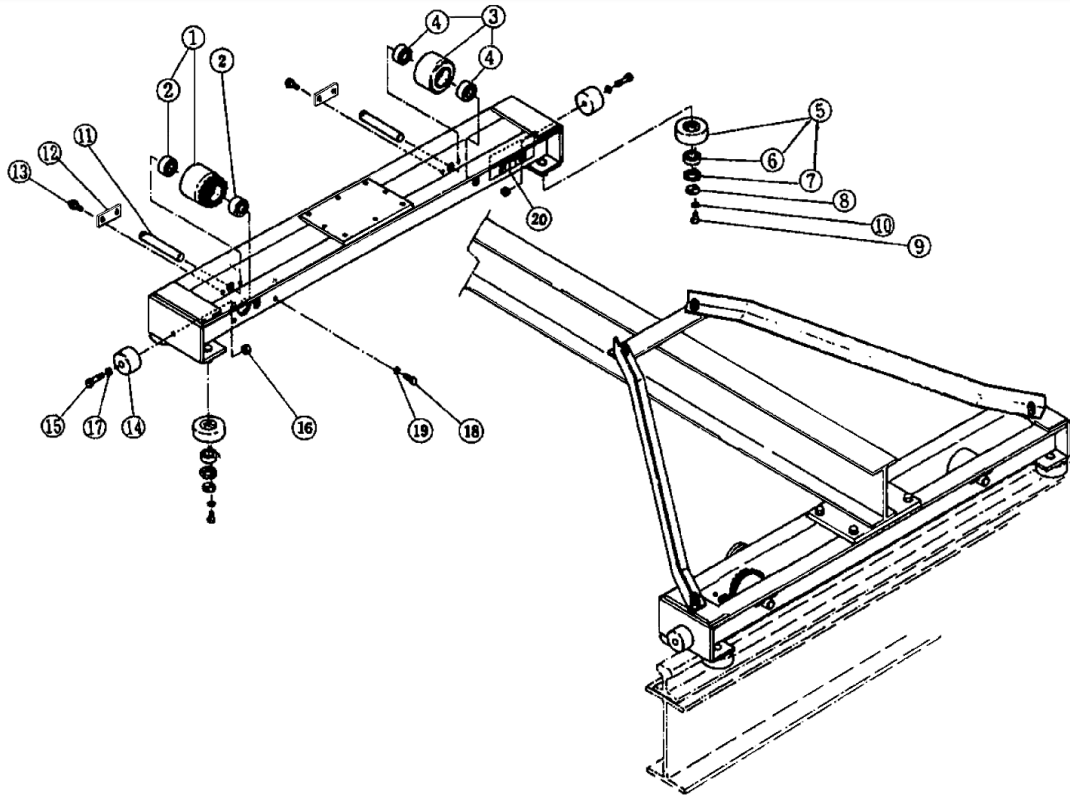


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type			Note
				EO075-12	EO075-18	EO075-21	
				EO100-12	EO100-18	EO100-21	
				Code			
N6QO411V		N6QO611V		N6QO711V			
1	1101	Wheel A ass'y	2	N6QO575E1101	N6QO511E1101		
2	107	Ball bearing	4	J1GR020-06310	J1GR020-06311		For track wheel
3	1102	Wheel B ass'y	2	N6QO575E1102	N6QO511E1102		
4	107	Ball bearing	4	J1GR020-06310	J1GR020-06311		For track wheel
5	1108	Roller ass'y	8	N6QO375E1108			
6	112	Ball bearing	8	J1GR020-06208			For roller
7	110	Snap ring	8	J1SR000-00080			For roller
8	120	Roller washer	8	N6QO375E9120			
9,10	121	Socket bolt with Spring washer	16	J1BG1-0801818			For roller axle
11	103	Track wheel axle	4	N6QO575E9103	N6QO511E9103		
12	105	Key plate	4	N6WO915E9105	N4QO411E9105		
13	151	Socket bolt with spring washer	8	J1BG1-0802222			For key plate
14	207	Buffer	4	N6QO375E9207			
15	258	Socket bolt	4	J1BE1-0803535			For buffer
16	259	Nut	4	J1NA001-10080			For buffer
17	260	Washer	4	J1WK011-10080			For buffer
18,19	360	Bolt with Spring washer	8	J1BH1-1003232			For geared motor installation
20	208	Name plate S	2	N6QO411E9208	N6QO611E9208	N6QO711E9208	

Overhead Type Motorized Double Girder End Carriage

WEO030-15, WEO030-21, WEO030-27, WEO050-15

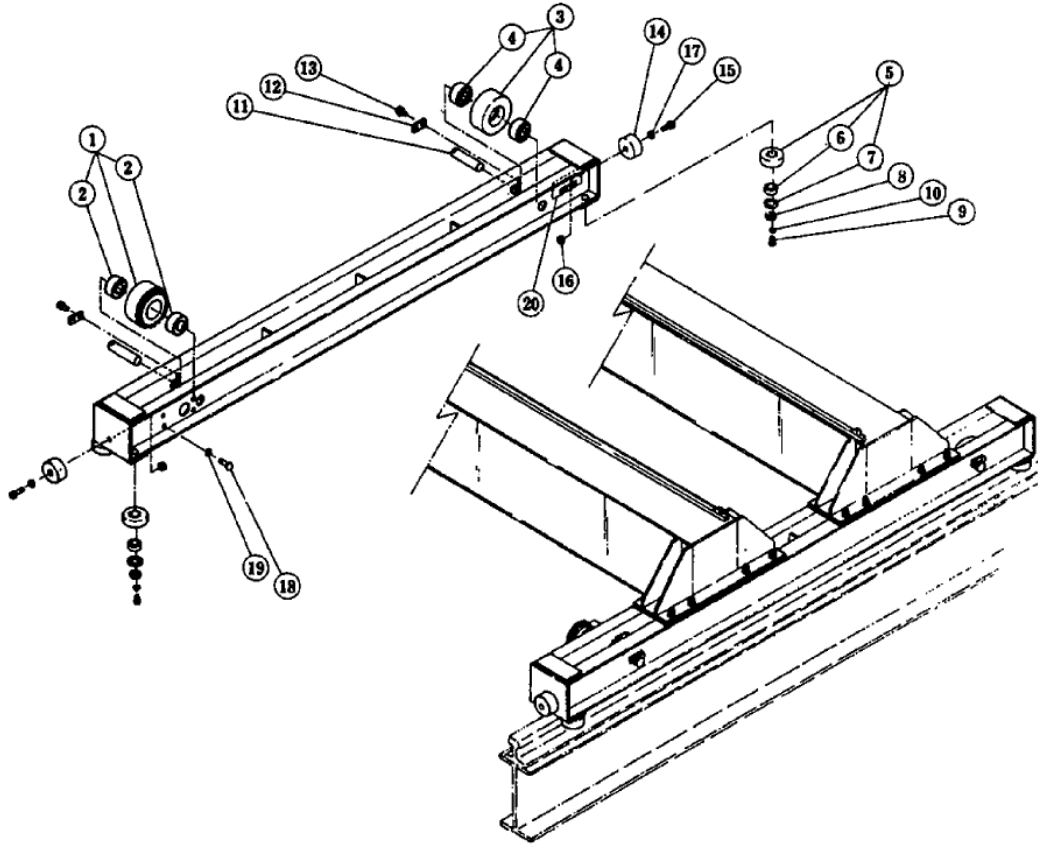


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type			Note
				WEO030-15	WEO030-21 WEO050-15	WEO030-27	
				Code			
				N6WO530V	N6WO730V	N6WO930V	
1	1101	Wheel A ass'y	2	N6QO730E1101	N6QO450E1101		
2	107	Ball bearing	4	J1GR020-06308	J1GR020-06309		For track wheel
3	1102	Wheel B ass'y	2	N6QO730E1102	N6QO450E1102		
4	107	Ball bearing	4	J1GR020-06308	J1GR020-06309		For track wheel
5	1108	Roller ass'y	8	N6QO350E1108			
6	112	Ball bearing	8	J1GR020-06206			For roller
7	110	Snap ring	8	J1SR000-00062			For roller
8	120	Roller washer	8	N6QO350E9120			
9,10	121	Socket bolt with Spring washer	16	J1BG1-0601515			For roller axle
11	103	Track wheel axle	4	N6QO730E9103	N6QO450E9103		
12	105	Key plate	4	N2QO310-9105			
13	151	Socket bolt with spring washer	8	J1BG1-0802020			For key plate
14	207	Buffer	4	N6QO375E9207			
15	258	Socket bolt	4	J1BE1-0803535			For buffer
16	259	Nut	4	J1NA001-10080			For buffer
17	260	Washer	4	J1WK011-10080			For buffer
18,19	360	Bolt with Spring washer	8	J1BH1-0803232			For geared motor installation
20	208	Name plate S	2	N6WO530E9208	N6WO730E9208	N6WO930E9208	

Overhead Type Motorized Double Girder End Carriage

WEO050-21, WEO050-27, WEO-075-15 · 21, WEO100-15

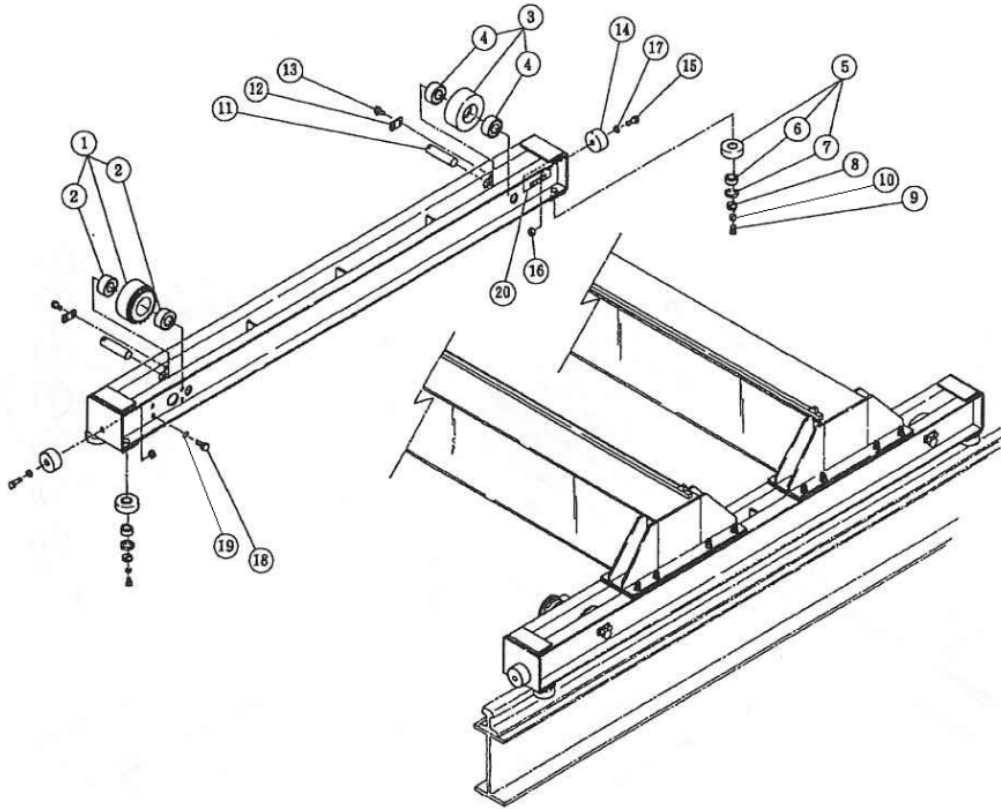


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type			Note
				WEO050-21	WEO050-27	WEO075-15 · 21 WEO100-15	
				Code			
				N6WO750V	N6WO950V	N6WO775V	
1	1101	Wheel A ass'y	2		N6QO575E1101		
2	107	Ball bearing	4		J1GR020-06310		For track wheel
3	1102	Wheel B ass'y	2		N6QO575E1102		
4	107	Ball bearing	4		J1GR020-06310		For track wheel
5	1108	Roller ass'y	8		N6QO375E1108		
6	112	Ball bearing	8		J1GR020-06208		For roller
7	110	Snap ring	8		J1SR000-00080		For roller
8	120	Roller washer	8		N6QO375E9120		
9,10	121	Socket bolt with Spring washer	16		J1BG1-0801818		For roller axle
11	103	Track wheel axle	4		N6QO575E9103		
12	105	Key plate	4		N4QO411E9105		
13	151	Socket bolt with spring washer	8		J1BG1-0802222		For key plate
14	207	Buffer	4	N6QO375E9207		N6WO511E9207	
15	258	Socket bolt	4 (8)	J1BE1-0803535		J1BE1-1205536	For buffer 8 for WEO100-15
16	259	Nut	4 (8)	J1NA001-10080		J1NA001-10120	For buffer 8 for WEO100-15
17	260	Washer	4 (8)	J1WK011-10080		J1WB011-10120	For buffer 8 for WEO100-15
18,19	360	Bolt with Spring washer	8	J1BH1-1003030	J1BH1-1003232		For geared motor installation
20	208	Name plate S	2	N6WO750E9208	N6WO950E9208	N6WO775E9208	

Overhead Type Motorized Double Girder End Carriage

WEO075-27, WEO100-21, WEO-100-27, WEO150-15

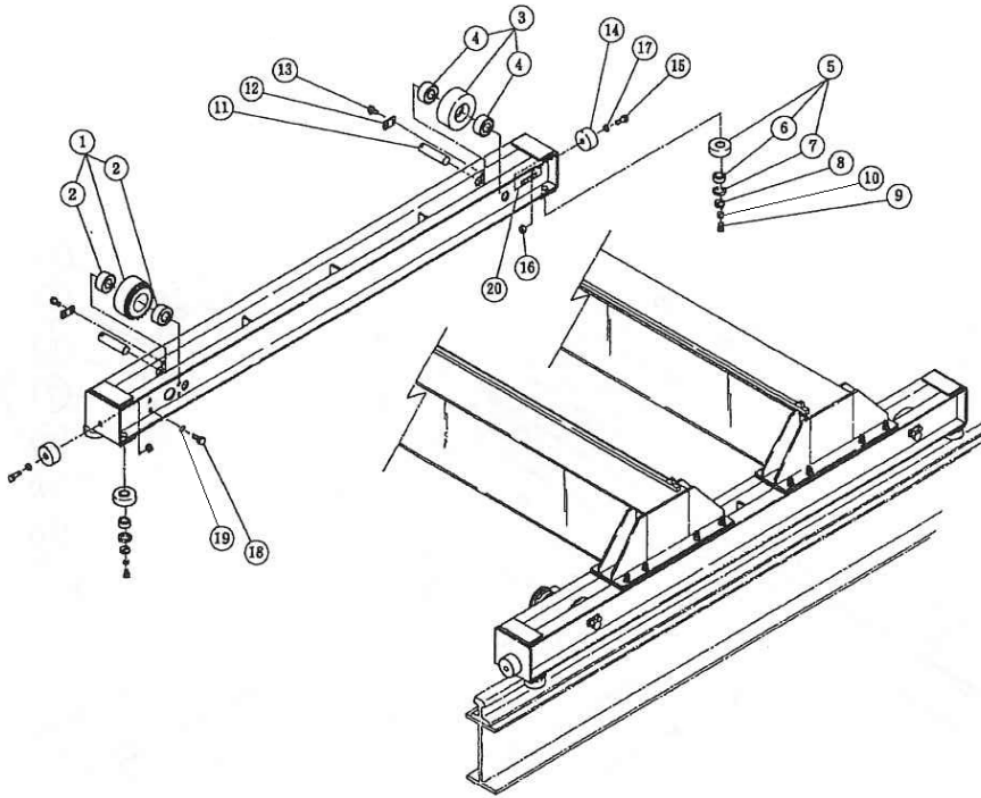


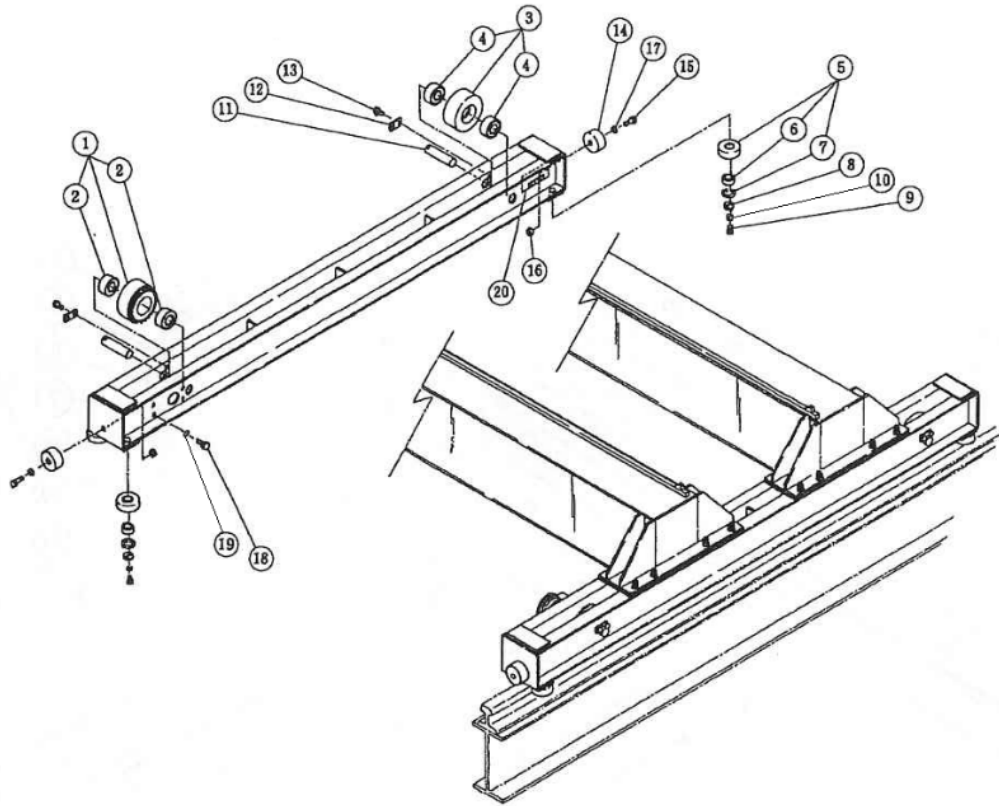
Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type			Note
				WEO075-27	WEO100-21	WEO100-27 WEO150-15	
				Code			
1	1101	Wheel A ass'y	2	N6WO975E1101	N6WO711E1101	N6WO911E1101	
2	107	Ball bearing	4	J1GR020-06311	J1GR020-06312	J1GR020-06313	For track wheel
3	1102	Wheel B ass'y	2	N6WO975E1102	N6WO711E1102	N6WO911E1102	
4	107	Ball bearing	4	J1GR020-06311	J1GR020-06312	J1GR020-06313	For track wheel
5	1108	Roller ass'y	8	N6QO375E1108		N6WO911E1108	
6	112	Ball bearing	8	J1GR020-06208		J1GR020-06308	For roller
7	110	Snap ring	8	J1SR000-00080		J1SR000-00090	For roller
8	120	Roller washer	8	N6QO375E9120			
9,10	121	Socket bolt with Spring washer	16	J1BG1-0801818			For roller axle
11	103	Track wheel axle	4	N6QO511E9103	N6WO711E9103	N6WO911E9103	
12	105	Key plate	4	N4QO411E9105	N6WO915E9105	N4QO411E9105	
13	151	Socket bolt with spring washer	8	J1BG1-0802222		J1BG1-0802525	For key plate
14	207	Buffer	4	N6WO511E9207			
15	258	Socket bolt	8	J1BE1-1205536			For buffer
16	259	Nut	8	J1NA001-10120			For buffer
17	260	Washer	8	J1WB011-10120			For buffer
18,19	360	Bolt with Spring washer	8	J1BH1-1003232		J1BH1-1204545	For geared motor installation
20	208	Name plate S	2	N6WO975E9208	N6WO711E9208	N6WO911E9208	

■ Overhead Type Motorized Double Girder End Carriage

WEO150-21 · 27, WEO200-15, WEO200-21 · 27

[4 Wheel Drive Style]

WEO150-21H · 27H, WEO200-15H, WEO200-21H · 27H



4 Wheel Drive Style

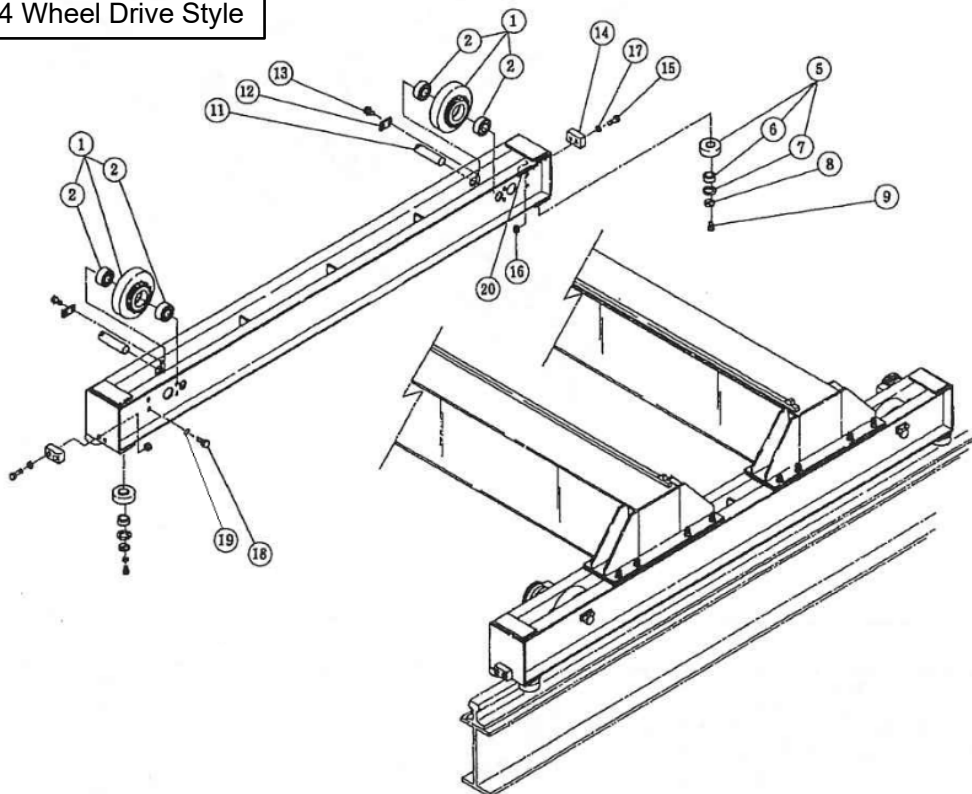


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type				Note
				WEO150-21 · 27 WEO200-15	WEO150-21H · 27H WEO200-15H	WEO200-21 · 27	WEO200-21H · 27H	
				Code				
N6WO915V		N6WB915V		N6WO921V		N6WB921V		
1	1101	Wheel A ass'y	2 (4)	N6WO915E1101		N6WO921E1101		4 for WEO150-27H WEO200-27H
2	107	Ball bearing	4 (8)	J1GR020-06315		J1GR020-06317		8 for WEO150-27H WEO200-27H
3	1102	Wheel B ass'y	2	N6WO915E 1102	-	N6WO921E 1102	-	
4	107	Ball bearing	4	J1GR020-06315	-	J1GR020-06317	-	
5	1108	Roller ass'y	8	N6WO911E1108				
6	112	Ball bearing	8	J1GR020-06308				For roller
7	110	Snap ring	8	J1SR000-00090				For roller
8	120	Roller washer	8	N6QO375E9120				
9,10	121	Socket bolt with Spring washer	16	J1BG1-0801818				For roller axle
11	103	Track wheel axle	4	N6WO915E 9103	N6WO921E 9103			
12	105	Key plate	4	N6WO915E9105		N6WO921E9105		
13	151	Socket bolt with spring washer	8	J1BG1-0802525		J1BG1-1003030		For key plate
14	207	Buffer	4	N6WO521E9207				
15	258	Socket bolt	8	J1BE1-1205536				For buffer
16	259	Nut	8	J1NA001-10120				For buffer
17	260	Washer	8	J1WB011-10120				For buffer
18, 19	360	Bolt with Spring washer	8 (16)	J1BH1-1204545				For geared motor installation 16 for WEO150-27H/ WEO200-27H
20	208	Name plate S	2	N6WO915E 9208	N6WB915E 9208	N6WO921E 9208	N6WB921E 9208	

■ Overhead Geared Motor

Type : G1MO025S – □, G1MO025L – □, G1MO025H – □, G1MO040T – □

□ : Power Sources

E : 200V 50Hz, 200-220V 60Hz

Z : 380-415V 50Hz, 440-460V 60Hz

B : 220V 50Hz, 208-230V 60Hz

380V 50Hz, 380-460V 60Hz

① Geared motor assembly

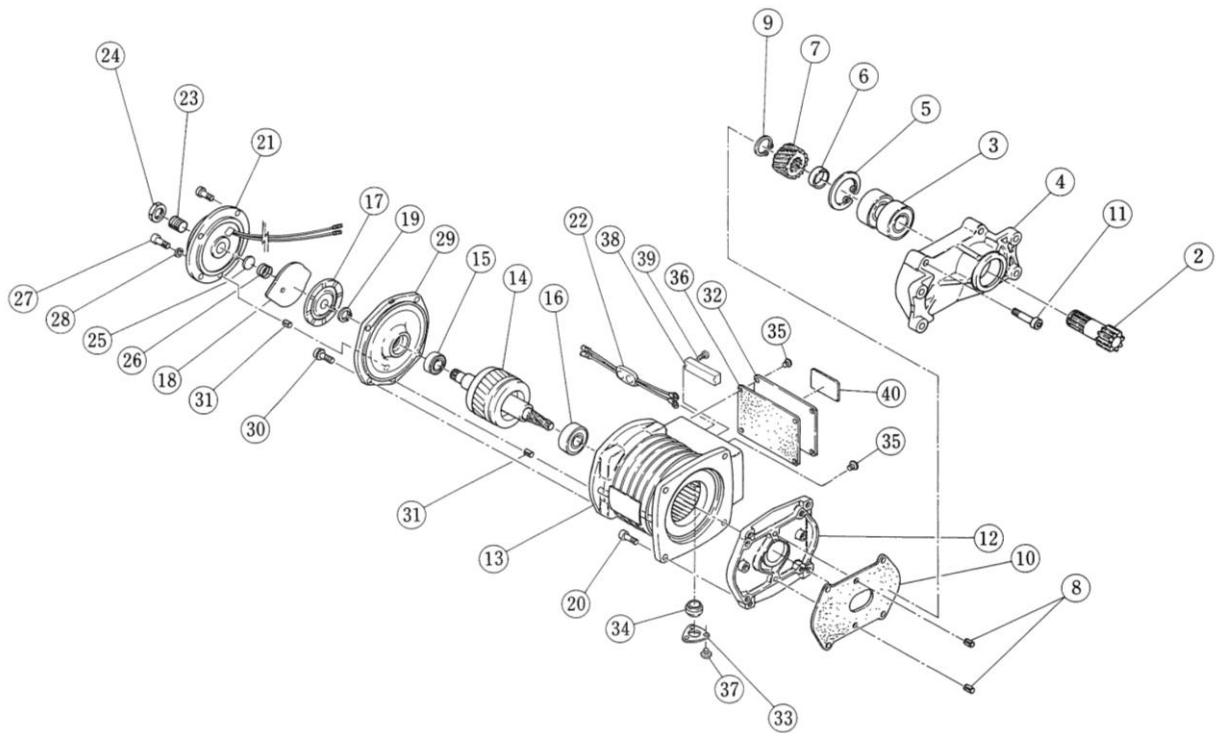


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type				Note
				G1M0025S-□	G1M0025L-□	G1M0025H-□	G1M0040T-□	
				Code				
				G1J □ 025S	G1J □ 025L	G1J □ 025H	G1J □ 040T	
				Travel Speed m/min.(50/60Hz)				
20/24	10/12	30/36	30/36					
1	1303	1 set of Geared motor	2	G1JE025S1303	G1JE025L1303	G1JE025H1303	G1JE040T1303	
				G1JZ025S1303	G1JZ025L1303	-	G1JZ040T1303	
				G1JB025S1303	G1JB025L1303	-	G1JB040T1303	
2	301	Pinion	2	G1JE025S9301				
3	302	Ball bearing	4	J1GR020-06204				For pinion
4	303	Gear box A	2	G1JE025S9303				
5	304	Snap ring	2	J1SR000-00047				For gear box A
6	305	Collar A	2	G1JE025S9305				
7	307	Gear #2	2	G1JE025S9952	G1JE025L9307	G1JE040T9307		
8	308	Spring pin	4	G1JE025S9308				For gear box A, B
9	309	Snap ring	2	J1SS000-00020				For pinion
10	310	Gear box packing	2	G1JE025S9310				
11	313	Socket bolt	8	J1BE1-0604024				For gear box A
		Spring washer	-	-				
		Socket bolt with spring washer	-	-				
12	401	Gear box B	2	G1JE025S9401				
13	5501	Stator assembly	2	G1JE025S5501		G1JE025S5501	G1JE040T5501	Code : G1JE
				G1JZ025S5501		-	G1JZ040T5501	Code : G1JZ
				G1JB025S5501		-	G1JB040T5501	Code : G1JB
14	5502	Rotor assembly	2	G1JE025S5911	G1JE025S5502	G1JE025H5502	G1JE040T5502	
15	508	Ball bearing	2	J1GR050-06002			J1GR0C0-06202	For motor axle/brake side
16	509	Ball bearing	2	J1GR0C0-06005	J1GR050-06204	J1GR0C0-06005		For motor axle/gear side
17	512	Brake disk	2	G1JE025S9512				
18	513	Armature	2	G1JE025S9513				
19	514	Snap ring	2	J1SS000-00015				For motor axle
20	515 516	Socket bolt	8	J1BE1-0602222			-	For motor frame
		Spring washer	-	-			-	
		Socket bolt with spring washer	8	-			J1BG1-0602222	
21	5610	Electromagnetic coil assembly	2	G1JE025S5610				
22	602	Rectifier	2	G1JE025S9602				
23	603	Adjusting bolt	2	G1JE025S9603				For brake adjustment
24	604	Lock nut	2	G1JE025S9604				For brake adjustment
25	605	Spring holder	2	G1JE025S9605				
26	606	Brake spring	2	G1JE040S9606				
27 28	607 608	Socket bolt	8	J1BE1-0604024			-	For electromagnetic coil
		Spring washer	8	J1WS011-20060			-	
		Socket bolt with spring washer	8	-			J1BG1-0602020	
29	609	Brake bracker	2	G1JE025S9609			G1JE040S9609	
30	611 612	Socket bolt	-	-			-	For brake bracket
		Spring washer	-	-			-	
		Socket both with spring washer	8	-			J1BG1-0602020	
31	616	Spring pin	4	J1PS11-06001				For brake bracket, electromagnetic coil
32	701	Terminal cover	2	G1JE025S9701				
33	703	Cable holder	2	G1JE025S9703				
34	704	Cable packing 14	2	G1JE025S9704				
35	705	Round head screw	10	J1AP2-4001010				
36	707	Terminal cover packing	2	G1JE025S9707				
37	710	Round head screw	6	J1AP2-4001010				
38	805	Terminal 6P	2	ECP1206AA				
39	806	Round head screw	4	J1AP2-4001212				
40	702	Name plate TS	2	G1JE025S9702				

■ Overhead Geared Motor

Type : G1MO040S – □, G1MO040L – □, G1MO040H – □, G1MO075T – □

□ : Power Sources

E : 200V 50Hz, 200-220V 60Hz

Z : 380-415V 50Hz, 440-460V 60Hz

B : 220V 50Hz, 208-230V 60Hz

380V 50Hz, 380-460V 60Hz

① Geared motor assembly

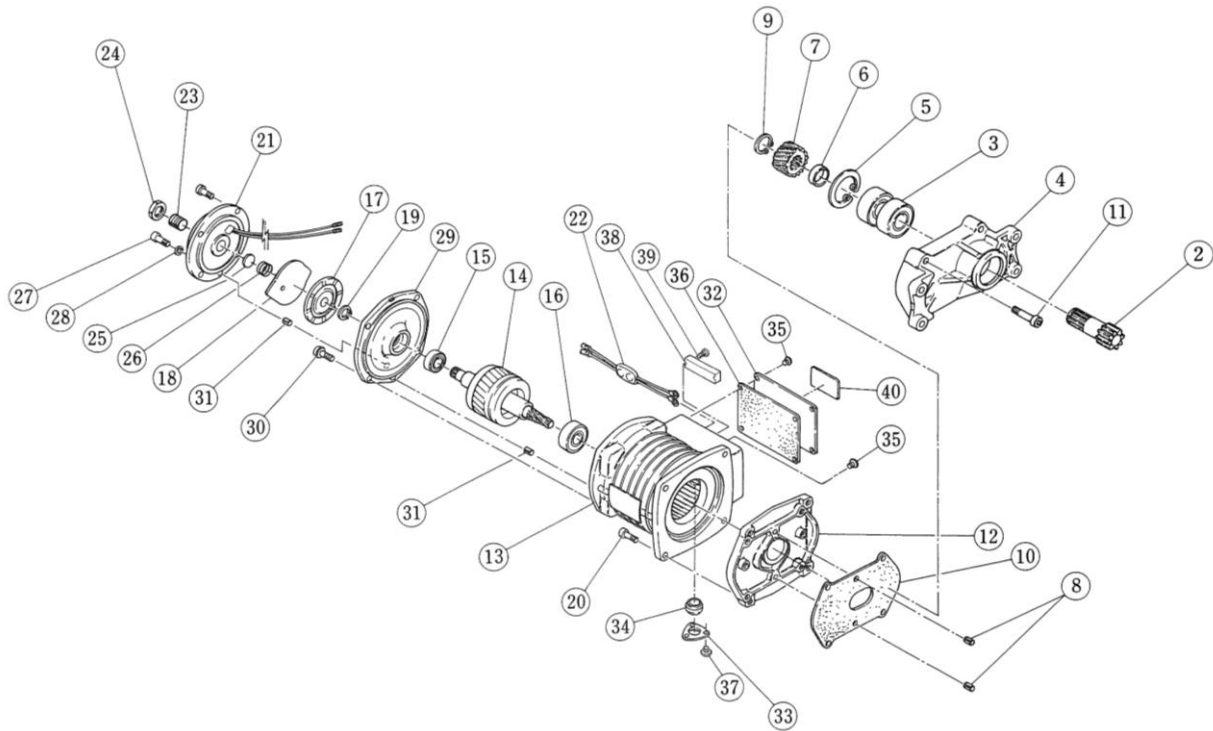


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type				Note	
				G1M0040S□	G1M0040L□	G1M0040H□	G1M0075T□		
				Code					
				G1J □ 040S	G1J □ 040L	G1J □ 040H	G1J □ 075T		
				Travel Speed m/min.(50/60Hz)					
20/24	10/12	30/36	30/36						
1	1303	1 set of Geared motor	2	G1JE040S1303	G1JE040L1303	G1JE040H1303	G1JE075T1303		
				G1JZ040S1303	G1JZ040L1303	—	G1JZ075T1303		
				G1JB040S1303	G1JB040L1303	—	G1JB075T1303		
2	301	Pinion	2	G1JE040S9301					
3	302	Ball bearing	4	J1GR0B0-06305				For pinion	
4	303	Gear box A	2	G1JB040S9303					
5	304	Snap ring	2	J1SR000-00062				For gear box A	
6	305	Collar A	2	G1JE040S9305				For pinion	
7	307	Gear #2	2	G1JE040S9952	G1JE040L9307	G1JE040H9307			
8	308	Spring pin	4	G1JE025S9308				For gear box A, B	
9	309	Snap ring	2	J1SS000-00025				For pinion	
10	310	Gear box packing	2	G1JE040S9310					
11	313	Socket bolt	8	J1BE1-0605024				For gear box A	
		Spring washer	—	—					
		Socket both with spring washer	—	—					
12	401	Gear box B	2	G1JE040S9401					
13	5501	Stator assembly	2	G1JE040S5501			G1JE075S5501	Code : G1JE	
				G1JZ040S5501			—	G1JZ075S5501	Code : G1JZ
				G1JB040S5501			—	G1JB075S5501	Code : G1JB
14	5502	Rotor assembly	2	G1JE040S5911	G1JE040S5502	G1JE040H5502	G1JE075T5502		
15	508	Ball bearing	2	J1GR0C0-06202			J1GR050-06004	For motor axle/ brake side	
16	509	Ball bearing	2	J1GR050-06204		J1GR0C0-06005		For motor axle/ gear side	
17	512	Brake disk	2	G1JE025S9512			G1JE075S9512		
18	513	Armature	2	G1JE025S9513			G1JE075S9513		
19	514	Snap ring	2	J1SS000-00015			J1SS000-00020	For motor axle	
20	515 516	Socket bolt	8	J1BE1-0802222				For motor frame	
		Spring washer	—	—					
		Socket both with spring washer	—	—					
21	5610	Electromagnetic coil assembly	2	G1JE025S5610			G1JE075S5610		
22	602	Rectifier	2	G1JE025S9602					
23	603	Adjusting bolt	2	G1JE025S9603			G1JE075S9603	For brake adjustment	
24	604	Lock nut	2	G1JE025S9604			G1JE075S9604	For brake adjustment	
25	605	Spring holder	2	G1JE025S9605			G1JE075S9605		
26	606	Brake spring	2	G1JE040S9606			G1JE075S9606		
27	607 608	Socket bolt	—	—				For electromagnetic coil	
		Spring washer	—	—					
		Socket both with spring washer	8	J1BG1-0602020			—		
28	608	Socket both with spring washer	6	—			J1BG1-0602020		
29	609	Brake bracket	2	G1JE040S9609			G1JE075S9609		
30	611 612	Socket bolt	—	—				For brake bracket	
		Spring washer	—	—					
		Socket bolt with spring washer	8	J1BG1-0602020					
31	616	Spring pin	4	J1PS11-060012				For brake bracket, electromagnetic coil	
32	701	Terminal cover	2	G1JE040S97013					
33	703	Cable holder	2	G1JE025S9703					
34	704	Cable packing 14	2	G1JE025S9704					
35	705	Round head screw	10	J1AP2-4001010					
36	707	Terminal cover packing	2	G1JE040S9707					
37	710	Round head screw	6	J1AP2-4001010					
38	805	Terminal 6P	2	ECP1206AA					
39	806	Round head screw	4	J1AP2-4001212					
40	702	Name plate TS	2	G1JE025S9702					

Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type				Note
				G1M0075S-□	G1M0075L-□	G1M0075H-□	G1M0150T-□	
				Code				
				G1J □ 075S	G1J □ 075L	G1J □ 075H	G1J □ 150T	
				Travel Speed m/min.(50/60Hz)				
20/24	10/12	30/36	30/36					
1	1303	1 set of Geared motor	2	G1JE075S1303	G1JE075L1303	G1JE075H1303	G1JE150T1303	
				G1JZ075S1303	G1JZ075L1303	G1JZ075H1303	G1JZ150T1303	
				G1JB075S1303	G1JB075L1303	-	G1JB150T1303	
2	301	Pinion	2	G1JE075S9301				
3	302	Ball bearing	4	J1GR020-06306				For pinion
4	303	Gear box A	2	G1JE075S9303				
5	304	Snap ring	2	J1SR000-00072				For gear box A
6	305	Collar A	2	G1JE075S9305				
7	306	Collar B	2	G1JE075S9306				
8	411	Gear #4	2	G1JE075S9954	G1JE075L9411	G1JE075H9954	G1JE150T9954	
9	309	Snap ring	2	J1SS000-00025				For pinion
10	310	Gear box packing	2	G1JE075S9310				
11	313	Socket bolt	4	J1BE1-0806028				For gear box A
		Spring washer	-	J1WS011-20080				
		Socket bolt with spring washer	-	-				
12	314	Socket bolt	-	-				For gear box A
		Spring washer	-	-				
		Socket bolt with spring washer	4	J1BG1-0803030				
14	401	Gear box B	2	G1JE075S9401			G1JE150T9401	
15	5307	Gear #2 assembly	2	G1JE075S5921	G1JE075L5307	G1JE075H5921	G1JE150T5921	
16	413	Ball bearing	4	J1GR050-06203				For gear #2 assembly
17	5501	Stator assembly	2	G1JE075S5501			G1JE150S5501	Code : G1JE
				G1JZ075S5501			G1JZ150S5501	Code : G1JZ
				G1JB075S5501			-	G1JB150S5501
18	5502	Rotor assembly	2	G1JE075S5911	G1JE075S5502	G1JE075S5911	G1JE150T5911	
19	508	Ball bearing	2	J1GR050-06004			J1GR050-06204	For motor axle/brake side
20	509	Ball bearing	2	J1GR0C0-06005	J1GR050-06204	J1GR0C0-06005	J1GR050-06206	For motor axle/gear side
21	512	Brake disk	2	G1JE075S9512				
22	513	Armature	2	G1JE075S9513				
23	514	Snap ring	2	J1SS000-00020				For motor axle/brake disk side
24	515 516	Socket bolt	8	J1BE1-0802222			-	For motor frame
		Spring washer	-	-			-	
		Socket bolt with spring washer	8	-			J1BG1-1002525	
25	5610	Electromagnetic coil assembly	2	G1JE075S5610			G1JE150S5610	
26	602	Rectifier	2	G1JE025S9602				
27	603	Adjusting bolt	2	G1JE075S9603				For brake adjustment
28	604	Lock nut	2	G1JE075S9604				For brake adjustment
29	605	Spring holder	2	G1JE075S9605				
30	606	Brake spring	2	G1JE075S9606			G1JE150S9606	
31	607 608	Socket bolt	-	-				For electromagnetic coil
		Spring washer	-	-				
		Socket bolt with spring washer	6	J1BG1-0602020				
32	609	Brake bracket	2	G1JE075S9609			G1JE150S9609	
33	611 612	Socket bolt	-	-			-	For brake bracket
		Spring washer	-	-			-	
		Socket bolt with spring washer	8	J1BG1-0602020			J1BG1-0802222	
34	616	Spring pin	4	J1PS11-060012				For brake bracket, electromagnetic coil
35	701	Terminal cover	2	G1JE040S9701			G1JE150S9701	
36	703	Cable holder	2	G1JE025S9703				
37	704	Cable packing 14	2	G1JE025S9704				
38	705	Round head screw	10	J1AP2-4001010			-	
			14	-			J1AP2-4001010	
39	707	Terminal cover packing	2	G1JE040S9707			G1JE150S9707	
40	710	Round head screw	6	J1AP2-4001010				
41	805	Terminal 6P	2	ECP1206AA				
42	806	Round head screw	4	J1AP2-4001212				
43	702	Name plate TS	2	G1JE025S9702				

■ Overhead Geared Motor

Type : G1MO150S – □, G1MO150L – □, G1MO150H – □

□ : Power Sources

E : 200V 50Hz, 200-220V 60Hz

Z : 380-415V 50Hz, 440-460V 60Hz

B : 220V 50Hz, 208-230V 60Hz

380V 50Hz, 380-460V 60Hz

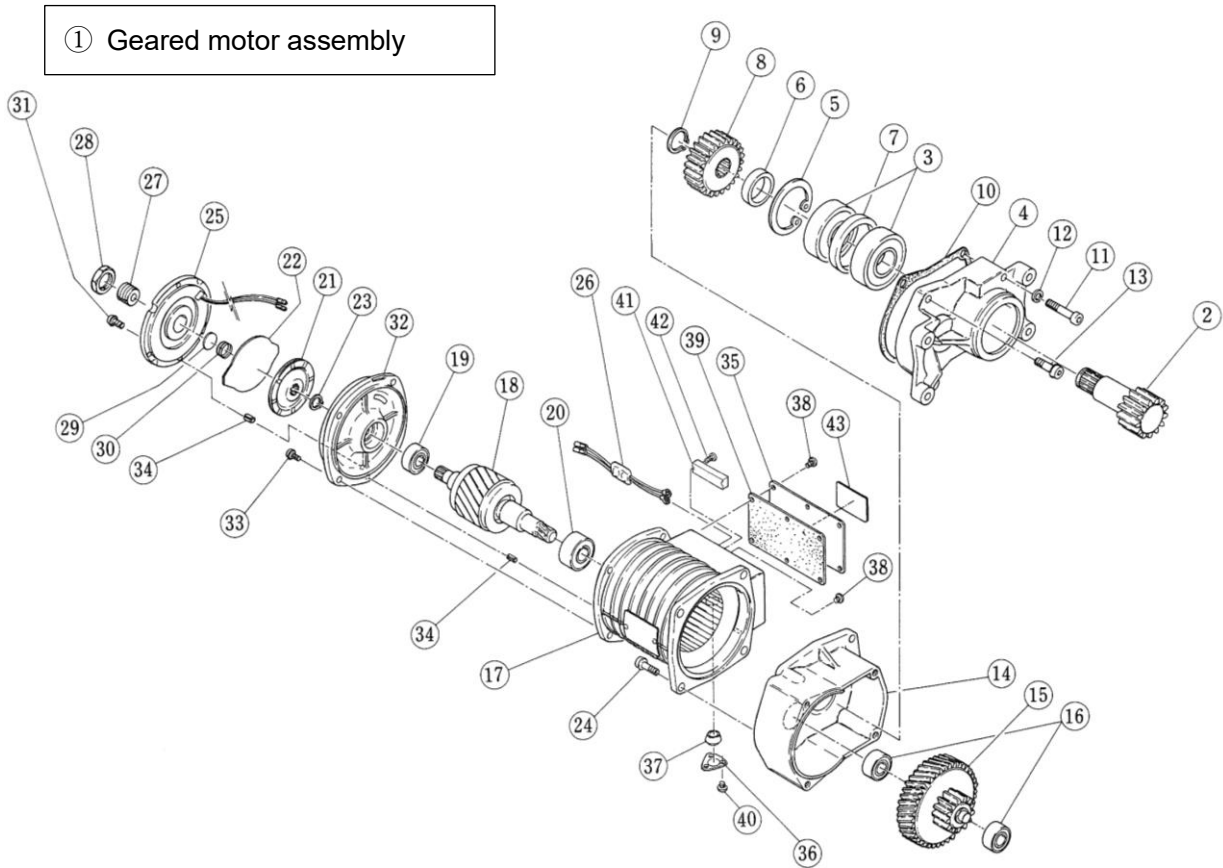


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type			Note
				G1M0150S-□	G1M0150L-□	G1M0150H-□	
				Code			
				G1J□ 150S	G1J□ 150L	G1J□ 150H	
				Travel Speed m/min.(50/60Hz)			
20/24	10/12	30/36					
1	1303	1 set of Geared motor	2	G1JE150S1303 G1JZ150S1303 G1JB150S1303	G1JE150L1303 — —	G1JE150H1303 G1JZ150H1303 —	
2	301	Pinion	2	G1JE150S9301			
3	302	Ball bearing	4	J1GR020-06309			For pinion
4	303	Gear box A	2	G1JE150S9303			
5	304	Snap ring	2	J1SR000-00100			For gear box A
6	305	Collar A	2	G1JE150S9305			
7	306	Collar B	2	G1JE150S9306			
8	411	Gear #4	2	G1JE150S9954	G1JE150L9411	G1JE150H9954	
9	309	Snap ring	2	J1SS000-00035			For pinion
10	310	Gear box packing	2	G1JE150S9310			
11	313	Socket bolt	4	J1BE1-1006532			For gear box A
		Spring washer	4	J1WS011-20100			
12	314	Socket bolt with spring washer	—	—			For gear box A
		Socket bolt	—	—			
13	315	Spring washer	—	—			For gear box A
		Socket bolt with spring washer	4	J1BG1-1003030			
14	401	Gear box B	2	G1JE150S9401			
15	5307	Gear #2 assembly	2	G1JE150S5921	G1JE150L5307	G1JE150H5921	
16	413	Ball bearing	4	J1GR050-06303			For gear #2 assembly
17	5501	Stator assembly	2	G1JE150S5501			Code : G1JE
				G1JZ150S5501	—	G1JZ150S5501	
				G1JB150S5501	—	—	
18	5502	Rotor assembly	2	G1JE150S5911	G1JE150S5502	G1JE150S5911	
19	508	Ball bearing	2	J1GR050-06204			For motor axle/brake side
20	509	Ball bearing	2	J1GR0C0-06007	J1GR050-06305	J1GR0C0-06007	For motor axle/gear side
21	512	Brake disk	2	G1JE075S9512			
22	513	Armature	2	G1JE075S9513			
23	514	Snap ring	2	J1SS000-00020			For motor axle
24	515	Socket bolt	—	—			For motor frame
		Spring washer	—	—			
		Socket bolt with spring washer	8	J1BG1-1002525			
25	5610	Electromagnetic coil assembly	2	G1JE150S5610			
26	602	Rectifier	2	G1JE025S9602			
27	603	Adjusting bolt	2	G1JE075S9603			For brake adjustment
28	604	Lock nut	2	G1JE075S9604			For brake adjustment
29	605	Spring holder	2	G1JE075S9605			
30	606	Brake spring	2	G1JE150S9606			
31	607	Socket bolt	—	J1BG1-0602020			For electromagnetic coil
		Spring washer	—	—			
		Socket bolt with spring washer	6	J1BG1-0602020			
32	609	Brake bracket	2	G1JE150S9609			
33	611	Socket bolt	—	—			For brake bracket
		Spring washer	—	—			
		Socket bolt with spring washer	8	J1BG1-0802222			
34	616	Spring pin	4	J1PS11-060012			For brake bracket, electromagnetic coil
35	701	Terminal cover	2	G1JE150S9701			
36	703	Cable holder	2	G1JE025S9703			
37	704	Cable packing 14	2	G1JE025S9704			
38	705	Round head screw	14	J1AP2-4001010			
39	707	Terminal cover packing	2	G1JE150S9707			
40	710	Round head screw	6	J1AP2-4001010			
41	805	Terminal 6P	2	ECP1206AA			
42	806	Round head screw	4	J1AP2-4001212			
43	702	Name plate TS	2	G1JE025S9702			

■ Low-head Type Motorized End Carriage

Type : EL010-6, EL010-9, EL010-12

EL020-6, EL020-9, EL020-12

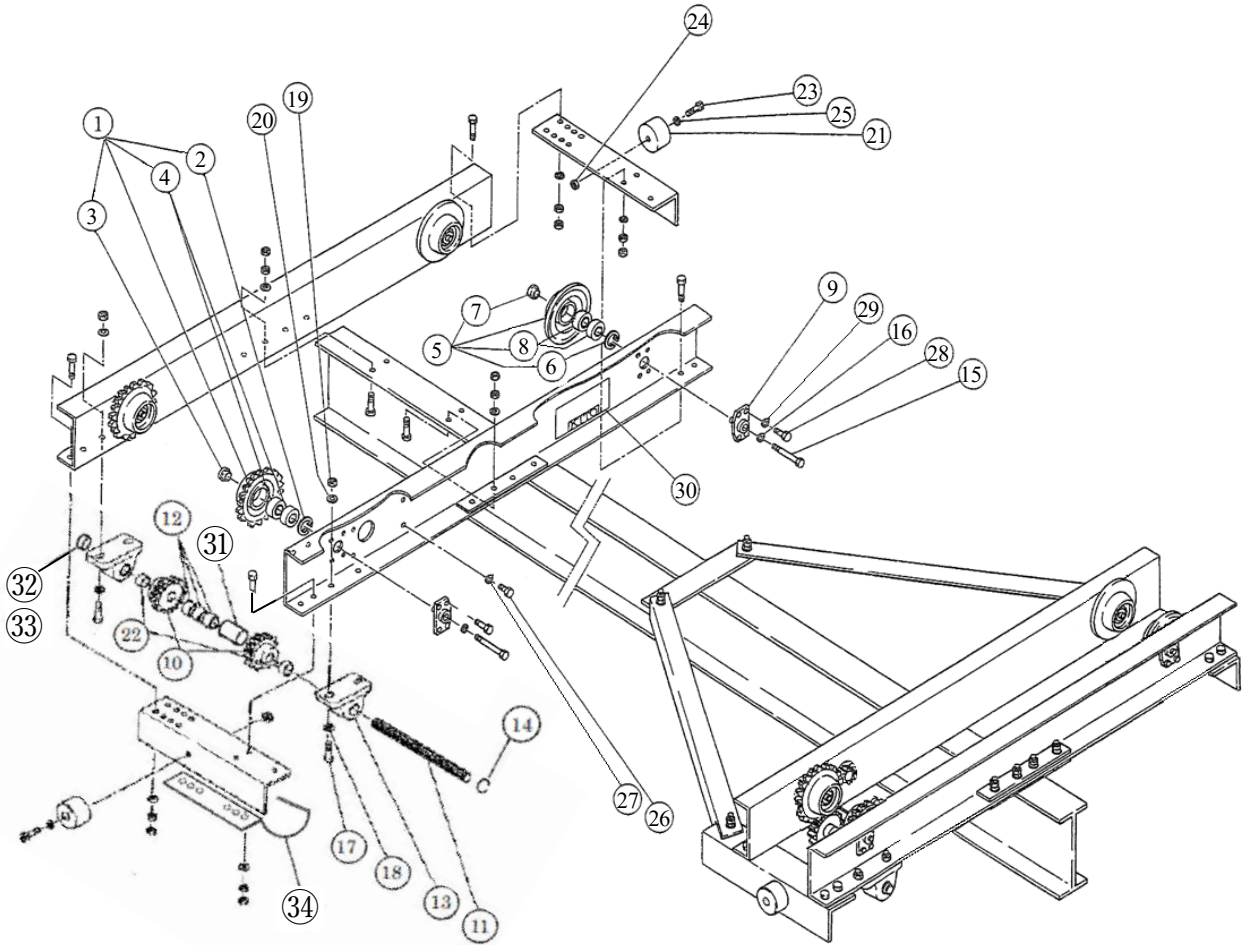


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type						Note
				EL010 -6	EI010 -9	EL010 -12	EL020 -6	EL020 -9	EL020 -12	
				Code						
				N6QL 210V	N6QL 310V	N6QL 410V	N6QL 220V	N6QL 320V	N6QL 420V	
1	1101	Wheel A ass'y	4	N6QL210E1101			N6QL510E1101			
2	105	Snap ring	4	J1SR000-00052			J1SR000-00062			For track wheel
3	106	Bush	4	N6QL210E9106			N6QL510E9106			For track wheel
4	107	Ball bearing	4	J1GR020C06205			J1GR020C06206			For track wheel
5	1102	Wheel B ass'y	4	N6QL210E1102			N6QL510E1102			
6	105	Snap ring	4	J1SR000-00052			J1SR000-00062			For track wheel
7	106	Bush	4	N6QL210E9106			N6QL510E9106			For track wheel
8	107	Ball bearing	4	J1GR020C06205			J1GR020C06206			For track wheel
9	5103	Track wheel axle ass'y	8	N6QL210E5103			N6QL510E5103			
10	113	Pinion L	4	N6QL210E9113						
11	655	Pinion axle L	2	N6QL210E9655						
12	115	Collar A	6	N6QL210E9115						
13	116	Pillow block	4	J1UC01-204000						
14	117	Snap ring	2	J1SS000-00020						
15	121	Bolt	8	J1BA1-0807522			J1BA1-0808022			For track wheel installation
16	122	Spring washer	8	J1WS011-20080						For track wheel installation
17	151	Bolt	8	J1BA1-1004040						For pillow block
18	152	Washer	8	J1WB011-10100						For pillow block
19	153	Nut	8	J1NA001-10100						For pillow block
20	154	Spring washer	8	J1WS011-20100						For pillow block
21	207	Buffer	4	N6QL210E9207						
22	209	Collar B	4	N6QL210E9209						
23	258	Socket bolt	4	J1BE1-0803535						For buffer
24	259	Nut	4	J1NA001-10080						For buffer
25	260	Washer	4	J1WK011-10080						For buffer
26	360	Bolt with Spring washer	8	J1BH1-0802828						For geared motor installation
28	363	Bolt with Spring washer	32	J1BH1-0802020						
30	208	Name plate S	2	N6QL210E9208	N6QL310E9208	N6QL410E9208	N6QL220E9208	N6QL320E9208	N6QL420E9208	
31	652	Collar C	2	N6QL210E9652						
32	653	Collar D	2	N6QL210E9653						
33	654	Set screw	4	J1TB011-06008						For collar D
34	651	Gear cover	2	N6QL210E9651			N6QL220E9651			

■ Low-head Type Motorized End Carriage

Type : EL010-15, EL020-15

EL030-6, EL030-9 · 12, EL030-15

EL050-6 · 9, EL050-12 · 15

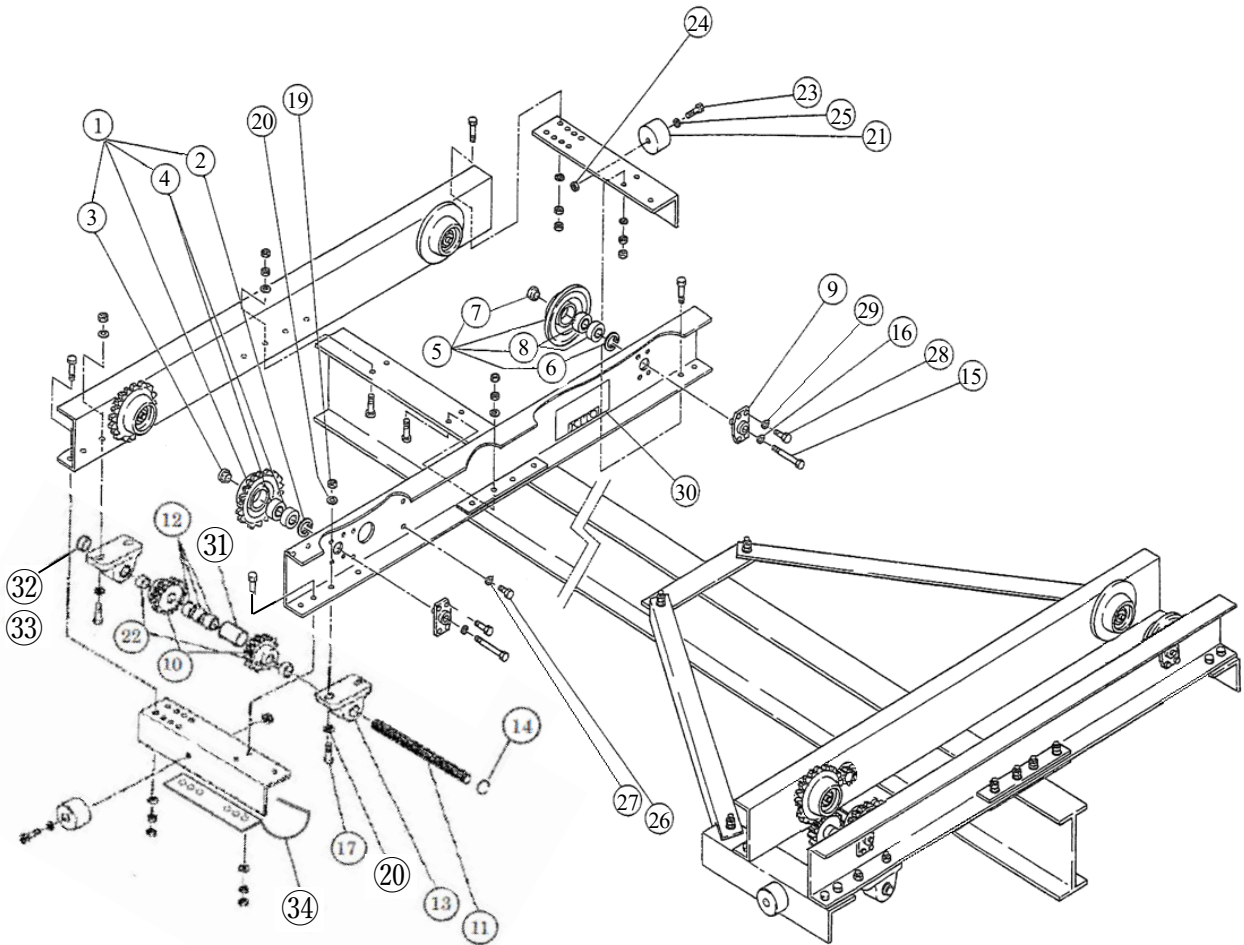


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type					Note
				EL030 -6	EL030 -9·12	EL010,20,30 -15	EL050 -6·9	EL050 -12·15	
				Code					
N6QL 230V	N6QL 430V	N6QL 530V	N6QL 350V	N6QL 550V					
1	1101	Wheel A ass'y	4	N6QL510 E1101	N6QL520 E1101	N6QL530E1101		N6QL450 E1101	
2	105	Snap ring	4	J1SR000-00062		J1SR000-00068		J1SR000 -00075	For track wheel
3	106	Bush	4	N6QL510 E9106	N6QL520 E9106	N6QL530E9106		N6QL450 E9106	For track wheel
4	107	Ball bearing	4	J1GR020 C06206	J1GR020 C06007	J1GR020C06008		J1GR020 C06009	For track wheel
5	1102	Wheel B ass'y	4	N6QL510 E1102	N6QL520 E1102	N6QL530E1102		N6QL450 E1102	
6	105	Snap ring	4	J1SR000-00062		J1SR000-00068		J1SR000 -00075	For track wheel
7	106	Bush	4	N6QL510 E9106	N6QL520 E9106	N6QL530E9106		N6QL450 E9106	
8	107	Ball bearing	4	J1GR020 C06206	J1GR020 C06007	J1GR020C06008		J1GR020 C06009	For track wheel
9	5103	Track wheel axle ass'y	8	N6QL510 E5103	N6QL520 E5103	N6QL530E5103		N6QL450 E5103	
10	113	Pinion L	4	N6QL230E9113		N6QL530E9113		N6QL550 E9113	
11	655	Pinion axle L	2	N6QL230E9655				N6QL550 E9655	
12	115	Collar A	4 (2)	N6QL230E9115				2 for EL050-15	
13	116	Pillow block	4	J1UC01-206000					
14	117	Snap ring	2	J1SS000-00030					
15	121	Bolt	8	J1BA1-0808022		J1BA1-0809522		J1BA1 -1010026	For track wheel installation
16	122	Spring washer	8	J1WS011-20080				J1WS011 -20100	For track wheel installation
17	151	Bolt	8	J1BA1-1405555		J1BA1-1406060		For pillow block	
19	153	Nut	16	J1NA001-10140				For pillow block	
20	154	Washer	16	J1WB011-10140				For pillow block	
21	207	Buffer	4	N6QL210E9207					
22	209	Collar B	4	N6QL230E9209					
23	258	Socket bolt	4	J1BE1-0803535				For buffer	
24	259	Nut	4	J1NA001-10080				For buffer	
25	260	Washer	4	J1WK011-10080				For buffer	
26 27	360	Boltwith Spring washer	8	J1BH1-0802828		J1BH1-0803232		J1BH1 -1003232	For geared motor installation
28 29	363	Bolt with Spring washer	32	J1BH1-0802020		J1BH1-1203030		For track wheel axle ass'y	
30	208	Name plate S	2	N6QL230 E9208	N6QL430 E9208	N6QL530E9208		N6QL350 E9208	N6QL550 E9208
31	652	Collar C	2	N6QL230E9652				N6QL550 E9652	
32	653	Collar D	2	N6QL230E9653					
33	654	Set screw	4	J1TB011-06008				For collar D	
34	651	Gear cover	2	N6QL230E9651				N6QL550 E9651	

■ Low-head Geared Motor

Type : G1ML025S – □, G1ML025L – □, G1ML025H – □, G1ML040T – □

□ : Power Sources

E : 200V 50Hz, 200-220V 60Hz

Z : 380-415V 50Hz, 440-460V 60Hz

B : 220V 50Hz, 208-230V 60Hz

380V 50Hz, 380-460V 60Hz

① Geared motor assembly

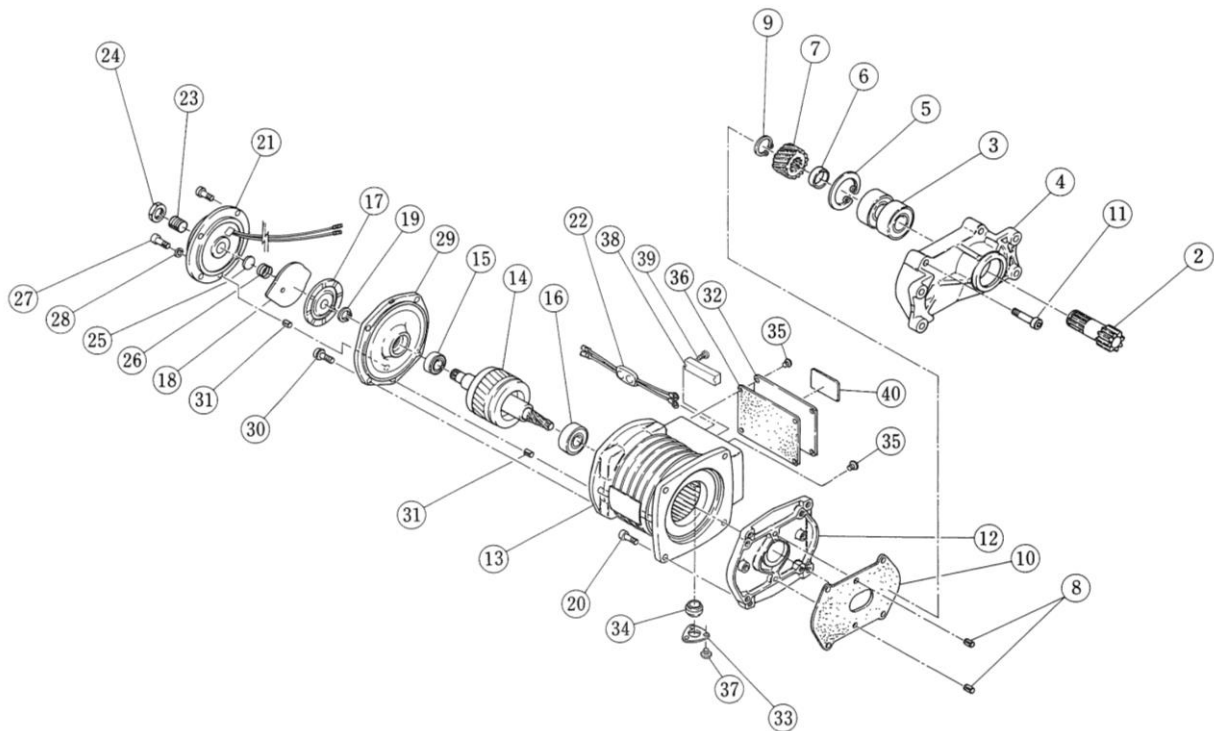


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type				Note
				G1ML025S-□	G1ML025L-□	G1ML025H-□	G1ML040T-□	
				Code				
				G1C □ 025S	G1JC □ 025L	G1C □ 025H	G1C □ 040T	
				Travel Speed m/min.(50/60Hz)				
20/24	10/12	30/36	30/36					
1	1303	1 set of Geared motor	2	G1CE025S1303	G1CE025L1303	G1CE025H1303	G1CE040T1303	
				G1CZ025S1303	G1CZ025L1303	G1CZ025H1303	G1CZ040T1303	
				G1CB025S1303	G1CB025L1303	-	G1CB040T1303	
2	301	Pinion	2	G1CE025S9301				
3	302	Ball bearing	4	J1GR020-06204				For pinion
4	303	Gear box A	2	G1JE025S9303				
5	304	Snap ring	2	J1SR000-00047				For gear box A
6	305	Collar A	2	G1JE025S9305				
7	307	Gear #2	2	G1JE025S9952	G1JE025L9307	G1JE040T9307		
8	308	Spring pin	4	G1JE025S9308				For gear box A, B
9	309	Snap ring	2	J1SS000-00020				For pinion
10	310	Gear box packing	2	G1JE025S9310				
11	313	Socket bolt	8	J1BE1-0604024				For gear box A
		Spring washer	-	-				
		Socket bolt with spring washer	-	-				
12	401	Gear box B	2	G1JE025S9401				
13	5501	Stator assembly	2	G1JE025S5501		G1JE025S5501	G1JE040T5501	Code : G1JE
				G1JZ025S5501		-	G1JZ040T5501	Code : G1JZ
				G1JB025S5501		-	G1JB040T5501	Code : G1JB
14	5502	Rotor assembly	2	G1JE025S5911	G1JE025S5502	G1JE025H5502	G1JE040T5502	
15	508	Ball bearing	2	J1GR050-06002			J1GR0C0-06202	For motor axle/brake side
16	509	Ball bearing	2	J1GR0C0-06005	J1GR050-06204	J1GR0C0-06005		For motor axle/gear side
17	512	Brake disk	2	G1JE025S9512				
18	513	Armature	2	G1JE025S9513				
19	514	Snap ring	2	J1SS000-00015				For motor axle
20	515 516	Socket bolt	8	J1BE1-0602222			-	For motor frame
		Spring washer	-	-			-	
		Socket bolt with spring washer	8	-			J1BG1-0602222	
21	5610	Electromagnetic coil assembly	2	G1JE025S5610				
22	602	Rectifier	2	G1JE025S9602				
23	603	Adjusting bolt	2	G1JE025S9603				For brake adjustment
24	604	Lock nut	2	G1JE025S9604				For brake adjustment
25	605	Spring holder	2	G1JE025S9605				
26	606	Brake spring	2	G1JE040S9606				
27 28	607 608	Socket bolt	8	J1BE1-0604024			-	For electromagnetic coil
		Spring washer	8	J1WS011-20060			-	
		Socket bolt with spring washer	8	-			J1BG1-0602020	
29	609	Brake bracker	2	G1JE025S9609			G1JE040S9609	
30	611 612	Socket bolt	-	-			-	For brake bracket
		Spring washer	-	-			-	
		Socket both with spring washer	8	-			J1BG1-0602020	
31	616	Spring pin	4	J1PS11-06001				For brake bracket, electromagnetic coil
32	701	Terminal cover	2	G1JE025S9701				
33	703	Cable holder	2	G1JE025S9703				
34	704	Cable packing 14	2	G1JE025S9704				
35	705	Round head screw	10	J1AP2-4001010				
36	707	Terminal cover packing	2	G1JE025S9707				
37	710	Round head screw	6	J1AP2-4001010				
38	805	Terminal 6P	2	ECP1206AA				
39	806	Round head screw	4	J1AP2-4001212				
40	702	Name plate TS	2	G1JE025S9702				

■ Low-head Geared Motor

Type : G1ML040S – □, G1ML040L – □, G1ML040H – □, G1ML075T – □

□ : Power Sources

E : 200V 50Hz, 200-220V 60Hz

Z : 380-415V 50Hz, 440-460V 60Hz

B : 220V 50Hz, 208-230V 60Hz

380V 50Hz, 380-460V 60Hz

① Geared motor assembly

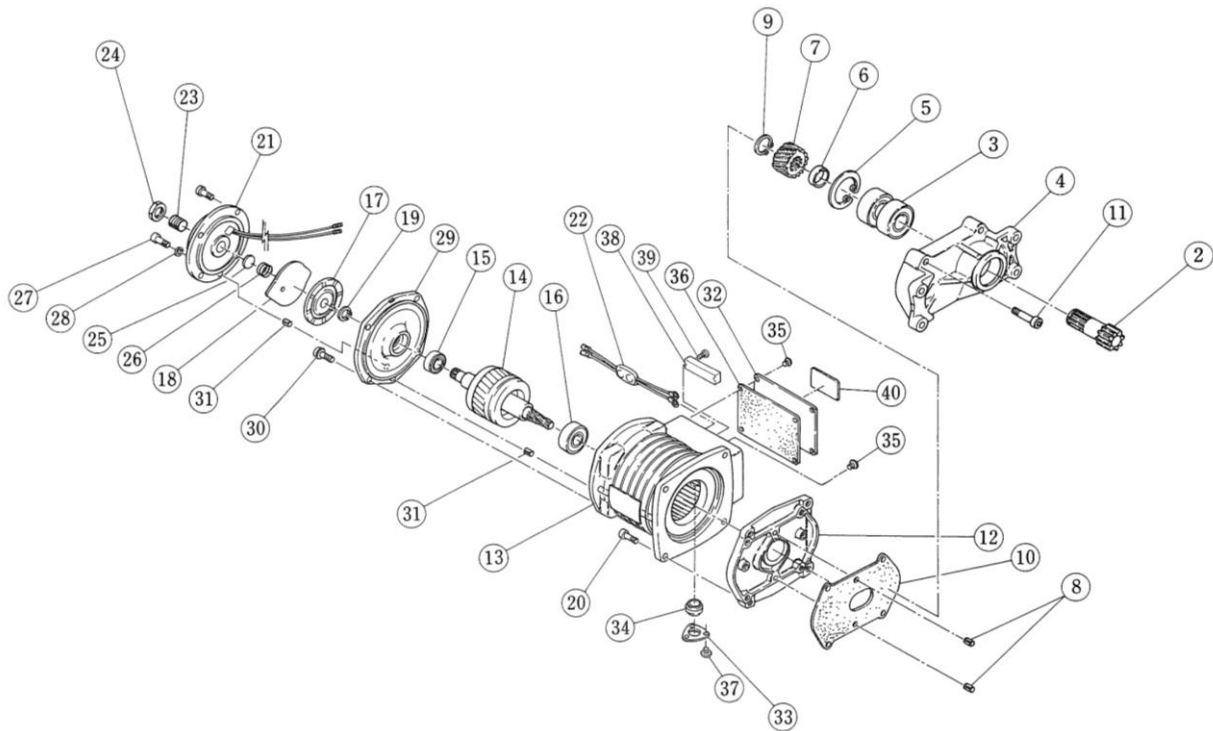


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type				Note	
				G1ML040S-□	G1ML040L-□	G1ML040H-□	G1ML075T-□		
				Code					
				G1C □ 040S	G1C □ 040L	G1C □ 040H	G1C □ 075T		
				Travel Speed m/min.(50/60Hz)					
20/24	10/12	30/36	30/36						
1	1303	1 set of Geared motor	2	G1CE040S1303	G1CE040L1303	G1CE040H1303	G1CE075T1303		
				G1CZ040S1303	G1CZ040L1303	-	G1CZ075T1303		
				G1CB040S1303	G1CB040L1303	-	G1CB075T1303		
2	301	Pinion	2	G1CE040S9301					
3	302	Ball bearing	4	J1GR0B0-06305				For pinion	
4	303	Gear box A	2	G1JB040S9303					
5	304	Snap ring	2	J1SR000-00062				For gear box A	
6	305	Collar A	2	G1JE040S9305				For pinion	
7	307	Gear #2	2	G1JE040S9952	G1JE040L9307	G1JE040H9307			
8	308	Spring pin	4	G1JE025S9308				For gear box A, B	
9	309	Snap ring	2	J1SS000-00025				For pinion	
10	310	Gear box packing	2	G1JE040S9310					
11	313	Socket bolt	8	J1BE1-0605024				For gear box A	
		Spring washer	-	-					
		Socket both with spring washer	-	-					
12	401	Gear box B	2	G1JE040S9401					
13	5501	Stator assembly	2	G1JE040S5501			G1JE075S5501	Code : G1JE	
				G1JZ040S5501			-	G1JZ075S5501	Code : G1JZ
				G1JB040S5501			-	G1JB075S5501	Code : G1JB
14	5502	Rotor assembly	2	G1JE040S5911	G1JE040S5502	G1JE040H5502	G1JE075T5502		
15	508	Ball bearing	2	J1GR0C0-06202			J1GR050-06004	For motor axle/ brake side	
16	509	Ball bearing	2	J1GR050-06204		J1GR0C0-06005		For motor axle/ gear side	
17	512	Brake disk	2	G1JE025S9512			G1JE075S9512		
18	513	Armature	2	G1JE025S9513			G1JE075S9513		
19	514	Snap ring	2	J1SS000-00015			J1SS000-00020	For motor axle	
20	515 516	Socket bolt	8	J1BE1-0802222				For motor frame	
		Spring washer	-	-					
		Socket both with spring washer	-	-					
21	5610	Electromagnetic coil assembly	2	G1JE025S5610			G1JE075S5610		
22	602	Rectifier	2	G1JE025S9602					
23	603	Adjusting bolt	2	G1JE025S9603			G1JE075S9603	For brake adjustment	
24	604	Lock nut	2	G1JE025S9604			G1JE075S9604	For brake adjustment	
25	605	Spring holder	2	G1JE025S9605			G1JE075S9605		
26	606	Brake spring	2	G1JE040S9606			G1JE075S9606		
27	607 608	Socket bolt	-	-				For electromagnetic coil	
		Spring washer	-	-					
		Socket both with spring washer	8	J1BG1-0602020			-		
28	608	Socket both with spring washer	6	-			J1BG1-0602020		
29	609	Brake bracket	2	G1JE040S9609			G1JE075S9609		
30	611 612	Socket bolt	-	-				For brake bracket	
		Spring washer	-	-					
		Socket bolt with spring washer	8	J1BG1-0602020					
31	616	Spring pin	4	J1PS11-060012				For brake bracket, electromagnetic coil	
32	701	Terminal cover	2	G1JE040S97013					
33	703	Cable holder	2	G1JE025S9703					
34	704	Cable packing 14	2	G1JE025S9704					
35	705	Round head screw	10	J1AP2-4001010					
36	707	Terminal cover packing	2	G1JE040S9707					
37	710	Round head screw	6	J1AP2-4001010					
38	805	Terminal 6P	2	ECP1206AA					
39	806	Round head screw	4	J1AP2-4001212					
40	702	Name plate TS	2	G1JE025S9702					

■ Low-head Geared Motor

Type : G1ML075S – □, G1ML075L – □, G1ML075H – □

□ : Power Sources

E : 200V 50Hz, 200-220V 60Hz

Z : 380-415V 50Hz, 440-460V 60Hz

B : 220V 50Hz, 208-230V 60Hz

380V 50Hz, 380-460V 60Hz

① Geared motor assembly

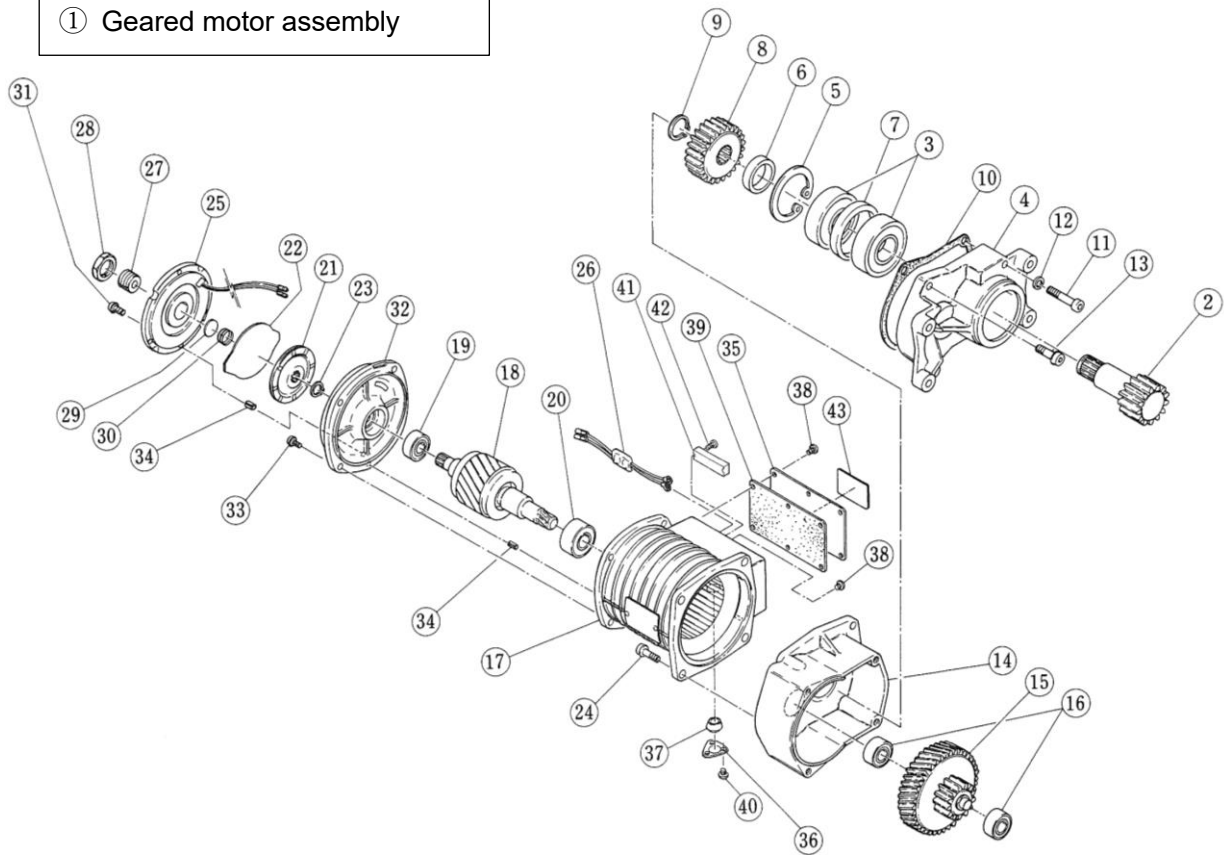


Fig. No.	Parts No.	Parts Name	Q'ty per Unit	Type			Note	
				G1ML075S□	G1ML075L□	G1ML075H□		
				Code				
				G1C □ 075S	G1C □ 075L	G1C □ 075H		
				Travel Speed m/min.(50/60Hz)				
20/24	10/12	30/36						
1	1303	1 set of Geared motor	2	G1CE075S1303	G1CE075L1303	G1CE075H1303		
				G1CZ075S1303	-	-		
				G1CB075S1303	-	-		
2	301	Pinion	2	G1CE075S9301				
3	302	Ball bearing	4	J1GR020-06306			For pinion	
4	303	Gear box A	2	G1JE075S9303				
5	304	Snap ring	2	J1SR000-00072			For gear box A	
6	305	Collar A	2	G1JE075S9305				
7	306	Collar B	2	G1JE075S9306				
8	411	Gear #4	2	G1JE075S9954	G1JE075L9411	G1JE075H9954		
9	309	Snap ring	2	J1SS000-00025			For pinion	
10	310	Gear box packing	2	G1JE075S9310				
11	313	Socket bolt	4	J1BE1-0806028			For gear box A	
		Spring washer	-	J1WS011-20080				
12	314	Socket bolt with spring washer	-	-			For gear box A	
		Socket bolt	-	-				
13	315	Spring washer	-	-			For gear box A	
		316	Socket bolt with spring washer	4	J1BG1-0803030			
14	401	Gear box B	2	G1JE075S9401				
15	5307	Gear #2 assembly	2	G1JE075S5921	G1JE075L5307	G1JE075H5921		
16	413	Ball bearing	4	J1GR050-06203			For gear #2 assembly	
17	5501	Stator assembly	2	G1JE075S5501			Code : G1JE	
				G1JZ075S5501			Code : G1JZ	
				G1JB075S5501			Code : G1JB	
18	5502	Rotor assembly	2	G1JE075S5911	G1JE075S5502	G1JE075S5911		
19	508	Ball bearing	2	J1GR050-06004			For motor axle/brake side	
20	509	Ball bearing	2	J1GR0C0-06005	J1GR050-06204	J1GR0C0-06005	For motor axle/gear side	
21	512	Brake disk	2	G1JE075S9512				
22	513	Armature	2	G1JE075S9513				
23	514	Snap ring	2	J1SS000-00020			For motor axle/brake disk side	
24	515	Socket bolt	8	J1BE1-0802222			For motor frame	
		516	Spring washer	-	-			
		Socket bolt with spring washer	8	-				
25	5610	Electromagnetic coil assembly	2	G1JE075S5610				
26	602	Rectifier	2	G1JE025S9602				
27	603	Adjusting bolt	2	G1JE075S9603			For brake adjustment	
28	604	Lock nut	2	G1JE075S9604			For brake adjustment	
29	605	Spring holder	2	G1JE075S9605				
30	606	Brake spring	2	G1JE075S9606				
31	607	Socket bolt	-	-			For electromagnetic coil	
		608	Spring washer	-	-			
32	609	Socket bolt with spring washer	6	J1BG1-0602020			For brake bracket	
		Brake bracket	2	G1JE075S9609				
33	611	Socket bolt	-	-			For brake bracket	
		612	Spring washer	-	-			
		Socket bolt with spring washer	8	J1BG1-0602020				
34	616	Spring pin	4	J1PS11-060012			For brake bracket, electromagnetic coil	
35	701	Terminal cover	2	G1JE040S9701				
36	703	Cable holder	2	G1JE025S9703				
37	704	Cable packing 14	2	G1JE025S9704				
38	705	Round head screw	10	J1AP2-4001010				
			14	-				
39	707	Terminal cover packing	2	G1JE040S9707				
40	710	Round head screw	6	J1AP2-4001010				
41	805	Terminal 6P	2	ECP1206AA				
42	806	Round head screw	4	J1AP2-4001212				
43	702	Name plate TS	2	G1JE025S9702				

13. 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	

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

Check List		Date Checked					
Hoist							
Body	Outer appearance						
	Abnormal noise						
	Gear oil						
	Top pin						
	Plug-socket connection						
	Name plate						
Push button switches	Performance test						
	Wiring						
Brake	Performance						
Limit switches	Limit lever/Lever pin coupling						
	Cross guide movement						
	Stopper						
	Performance test						
Load chain/Wire rope	Outer appearance						
	Abnormal noises						
	Wear						
Accessories	Suspender/Bottom yoke						
	Idle sheave						
	Chain spring						
	Hook shape/dimension						
	Hook movement						
	Hook latch						
	Chain container						
	Idle sheave						
Motorized/Manual Trolley							
Push button switches	Operation test						
	Wiring						
Traverser	Name plate						
	Traverse test						
	Motor reduction gear-to-frame installation						
	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/Bolts						
	Side rollers						
	Hand wheel/Hand chain						
	Suspender						
Crane							
Electric parts	Control box						
	Contact/ Transformer						
Travel rails	Outer appearance						
	Wear in travel surface						
	Grounding*						
Girders	Name plate						
	Wear						
	Stoppers						
End carriage	Wear in wheel travel surface						
	Snap ring for fixing wheels*						
	Frame deformation						
	Side rollers						
	Buffers						
Drive mechanism	Grease						
	Motor brake						
	Soft run						
	Hand wheel/Hand chain						
Collector Arm							
Messenger wire tautness							
Cable hangers							
T-shaped hangers							
Cable							
Plug-socket connection							
Fuse capacity*							
Grounding*							
Incoming power supply voltage*							
Insulation resistance							
Load test							
Checked by							
Supervised by							

*: Check yearly.

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