

ACCOLIFT®

MOTORIZED TROLLEY SUSPENSION INSTRUCTION MANUAL

for

Installation / Operation / Maintenance / Parts



SERIAL NUMBER

⚠ WARNING

This equipment should not be installed, operated or maintained by any person who has not read all the contents of these instructions. Failure to read and comply with these instructions or any one of the limitations noted herein can result in serious bodily injury or death, and/or property damage.

There are no other warranties which extend beyond the description on the Order Acknowledgement and as it may apply to the specifications provided in this publication. The IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. Acco shall in no event be liable for any special, direct, indirect, incidental or consequential damages to anyone beyond the cost of replacement of the goods sold hereby.

Table of contents

Article no.	Description	
1.	General description of manual	8
	1.1. Trolley series and classification of electric wiring	
	1.2. Motor Trolley suspension	
2.	Safety precautions	10
	2.1. Warning and Caution	
3.	Installation	11
	2.1. Checking of product	
	3.1. Checking of product	
	3.2. Installation process	
	3.3. Checking of electricity	
	3.4. Installation of the Motorized Trolley Mounted Series	
	3.4.1. How to install Trolley on the runway I-beam	
	3.5. Applied Collar Numbers for Each Trolley Capacity on I-Beam	
	3.5.1. How to connect electric power source	
	3.6. Initial start-up	
4.	Precautions during operation	16
5.	Maintenance and servicing	17
	5.1. Electrical connection	
6.	Motorized Trolley Traversing(Dual Speed)	18
7.	Trial Operation	19
8.	Inverter Parameter Settings	19
	8.1. Inverter Setting and Control	
	8.1.1. Keypad Components	
	8.1.2 Display Description	
	8.1.3. LED Description	
	8.1.4. Key Descriptions	
	8.1.5. Viewing and Adjusting Basic(P) and Advanced (A) Parameters	
	8.1.6.Viewing the Display (d) Parameters	
	8.2.Trouble Shooting	
	8.3. Prevent Leakage Current&Noise Effect	
	8.3.1. Prevent Leakage Current Problem	
	8.3.2. Prevent Noise Effect Problem	
	8.4. Maintenance and Inspection	
9.	Electric Wiring Diagram and Connection Drawing	28
10.	Parts illustrations	32

SAFETY ALERT SYMBOL



The Safety Alert Symbol is used in this manual to indicate hazards and to alert the reader to information that should be known, understood, and followed in order to avoid DEATH or SERIOUS INJURY.

Read and understand this manual before using the hoist.

Important issues to remember during operation are provided at the hoist control stations, at various locations on the hoist and in this manual by DANGER, WARNING, or CAUTION instructions or placards, that alert personnel to potential hazards, proper operation, load limitations, and more.

⚠ 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.

⚠ CAUTION

These general instructions deal with the normal installation, operation, and maintenance situations encountered with the equipment described herein. The instructions should not be interpreted to anticipate every possible contingency or to anticipate the final system, crane, or configuration that uses this equipment.

This manual includes instructions and parts information for a variety of trolley types. Therefore, all instructions and parts information may not apply to any one type or size of specific trolley. Disregard those portions of the instructions that do not apply.

Record trolley serial number on the front cover of this manual for identification and future reference to avoid referring to the wrong manual for information or instructions on installation, operation, maintenance, or parts.

Use only the authorized replacement parts in the service and maintenance of this trolley.

⚠ WARNING

Equipment described herein is not designed for and should not be used for lifting, supporting, or transporting humans.

Equipment described herein should not be used in conjunction with other equipment unless necessary and/or required safety devices applicable to the system or application are installed by the system designer, system manufacturer, crane manufacturer, installer, or user.

Modifications to upgrade, rerate, or otherwise alter this equipment shall be authorized only by the original equipment manufacturer or qualified professional engineer.

Equipment described herein may be used in the design and manufacture of cranes or monorails. Additional equipment or devices may be required for the crane or monorail to comply with applicable crane design and safety standards. The crane designer, crane manufacturer, or user is responsible to furnish these additional items for compliance. Refer to ASME B30.17, Safety Standard for Cranes and Monorails (with Underhung Trolley or Bridge); and ASME B30.2 Safety Standard for Top-Running Double Girder Cranes. If a below-the-hook lifting device or sling is used with a hoist, refer to ASME B30.9, Safety Standard for Slings, or ASME B30.20, Safety Standard for Below-the-Hook Lifting Device.

Hoists and Cranes, used to handle molten material may require additional equipment or devices. Refer to ANSI Z241.2, Safety Requirements for Melting and Pouring of Metals in the Metalcasting Industry

Electrical equipment described herein is designed and built in compliance with ACCO Material Handling Solutions interpretation of ANSI/NFPA 70, National Electrical Code. The system designer, system manufacturer, crane designer, crane manufacturer, installer, or user is responsible to assure that the installation and associated wiring of these electrical components is in compliance with ANSI/NFPA 70, and all applicable Federal, State, and Local Codes.

Failure to read and comply with any one of the limitations noted herein can result in serious bodily injury or death, and/or property damage.

⚠ DANGER

HAZARDOUS VOLTAGES ARE PRESENT IN THE CONTROL BOX, OTHER ELECTRICAL COMPONENTS, AND CONNECTIONS BETWEEN THESE COMPONENTS

Before performing ANY mechanical or electrical maintenance on the equipment, de-energize (disconnect) the main switch supplying power to the equipment; and lock and tag the main switch in the de-energized position. Refer to ANSI Z244.1, Personnel Protection - Lockout/Tagout of Energy Sources.

⚠ DANGER

Do not operate the equipment without control enclosure cover or covers in place.

Only trained and competent personnel should inspect and repair this equipment

NOTICE

It is the responsibility of the owner/user to install, inspect, test, maintain, and operate a trolley in accordance with ASME B30.16, Safety standard for Overhead Hoists, OSHA Regulations, and ANSI/NFPA 70, National Electric Code. If the trolley is installed as part of a total lifting system, such as an overhead crane or monorail, it is also the responsibility of the owner/user to comply with the applicable ASME B30 volume that addresses that type of equipment.

It is the responsibility of the owner/user to have all personnel that will install, inspect, test, maintain, and operate a trolley read the contents of this manual and applicable portions of ASME B30.16, Safety Standard for Overhead Hoists, OSHA Regulations, and ANSI/NFPA 70, National Electrical Code. If the trolley is installed as part of a total lifting system, such as an overhead crane, the applicable ASME B30 volume that addresses that type of equipment must also be read by all personnel.

Any ANSI Standards referenced in this manual may be obtained from the American National Standards Institute, 1430 Broadway, New York, New York 10018.

This manual contains information for safe operation of an overhead trolley. Taking precedence over any specific rule, however, is the most important rule of all - "USE COMMON SENSE." Operation of an overhead trolley involves more than operating the controls. The operator must consider and anticipate the motions and actions that will occur as a result of operating the controls.

If the trolley owner/user requires additional information, or if any information in the manual is not clear, contact Acco Material Handling Solutions York, Pennsylvania or the distributor of the trolley. Do not install, inspect, test, maintain, or operate this trolley unless this information is fully understood.

When contacting Acco Material Handling Solutions or the distributor of the trolley, always make reference to the serial number of the trolley.

A regular schedule of inspection of the trolley in accordance with the requirements of ASME B30.16 should be established and records maintained.

⚠ WARNING

Before installing, removing, inspecting, or performing any maintenance on a trolley, the main switch shall be de-energized. Lock and tag the main switch in the de-energized position in accordance with ANSI Z244.1. Follow other maintenance procedures outlined in this manual and applicable ASME B30 volumes.

Additional WARNINGS are listed in various portions of this manual. Personnel shall read and follow these WARNINGS. Failure to read and comply with these WARNINGS as well as other instructions or any limitations noted in this manual and applicable ASME B30 volumes could result in serious bodily injury or death, and/or property damage.

1. General description of manual

The product is supplied together with the manual that is important to keep readily accessible

- During installation or set-up
- For training operators & the maintenance of the equipment
- For "Safety Precautions" & Operation instructions

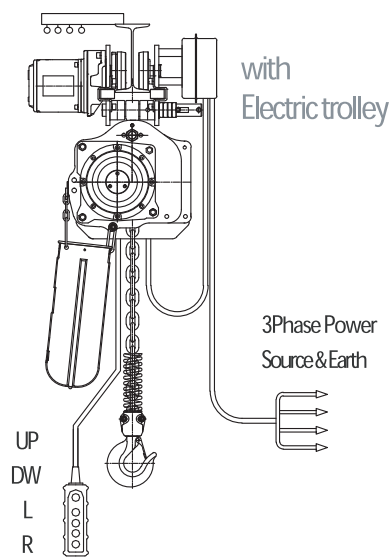
1.1. Trolley series and classification of electric wiring

ACCOLIFT[®] trolleys are designed to form an integral hoist/trolley combination, keeping the load equally distributed for easy traversing and long life. Motor-driven trolleys are ideal for heavier capacities and longer lift applications.

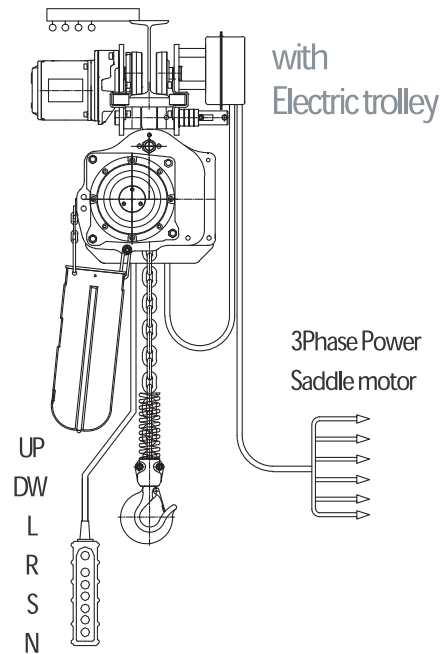


Motor Trolley

Motor trolley hoist



Motor trolley crane-mounted



1.2. Motor Trolley suspension

■ Specifications

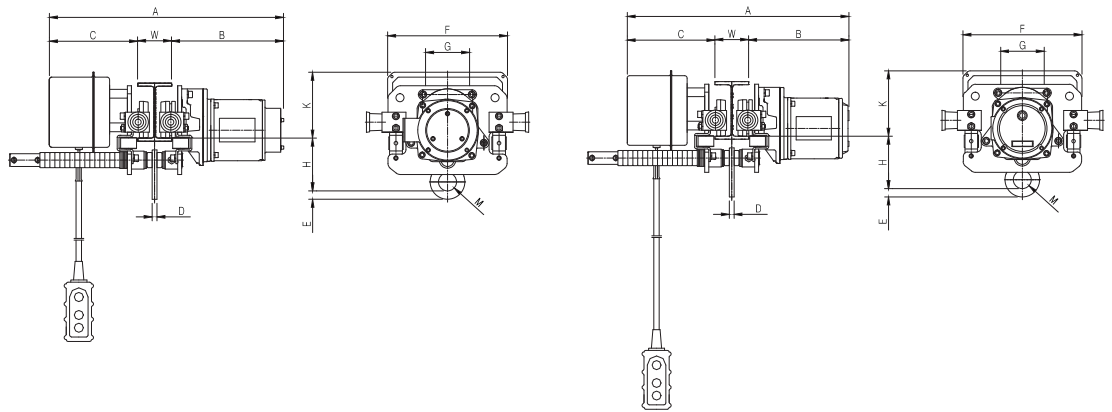
MODEL		MODEL	SINGLE SPEED		DUAL SPEED			
		MODEL NUMBER	2330510	2330520	2130510-VFD	2130520-VFD	2130530-VFD	2130550-VFD
Capacity(W.L.L)	ton		1	2	1	2	3	5
Power cord length	ft		29.5					
Pushbutton cord length	ft		5.9					
Traversing speed	fpm	SINGLE SPEED	36	36	NA	NA	NA	NA
		DUAL SPEED	NA	NA	75/25	75/25	65/22	65/22
Traversing motor	V		230/115	230/115	208-230/460	208-230/460	208-230/460	208-230/460
	HP		0.27		0.54		1	
Net weight	lbs		86	101	86	101	165	210
I-beam flange width	inch		3.25-12					
I-beam min. curve radius	inch		32		32		40	72

■ Dimension (inch)

CODE	MODEL	SINGLE SPEED		DUAL SPEED			
	MODEL NUMBER	2330510	2330520	2130510-VFD	2130520-VFD	2130530-VFD	2130550-VFD
calculated as below w. * B=1/2x width of traversing rail * 2B=2x1/2 x width of traversing rail * H=minimum headroom * hook is produced by the hot forging process and has ±2%variation from nominal dimension	A	20.3+W	20.6+W	18.6+W	18.9+W	19.8+W	20.4+W
	B	11.6	11.8	9.9	10.1	10.9	11.2
	C	8.7	8.8	8.7	8.8	8.9	9.2
	D	0.5	0.6	0.5	0.6	0.8	1
	E	0.8	0.9	0.8	0.9	1.3	1.4
	F	11.8	12.4	11.8	12.4	14.2	16.1
	G	4.4	4.9	4.4	4.9	5.5	6.1
	K	6.5	6.4	6.5	6.4	6.2	6.3
	M	1.8	1.8	1.8	1.8	2.6	3
	H	5.2	6	5.2	6	7.2	9
L	16	16.7	16	16.7	18	20	
W		3.25-12					

Single Speed Single Phase

Dual Speed Three Phase



2. Safety precautions

2.1. Warning and Caution

The Safety Alert Symbol is used in this manual to indicate hazards and to alert the reader to information that should be known, understood, and followed in order to avoid **SERIOUS BODILY INJURY** or **DEATH** and/or **PROPERTY DAMAGE**.

WARNING

WARNING symbol indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury. To avoid such a potentially hazardous situation, **THE OPERATOR SHALL**

- * NOT operate a damaged, malfunctioning or unusually performing trolley.
- * NOT operate the trolley until you have thoroughly read and understand the manual.
- * NOT operate a trolley which has been modified without the manufacturer's approval.
- * NOT lift more than rated load for the trolley.
- * NOT use the trolley to lift, support, or transport people, nor lift or transport loads over or near people.
- * NOT operate unless load is centered under trolley.
- * NOT leave load supported by the trolley unattended unless specific precautions have been taken.
- * NOT allow the suspension plate to be used as an electrical or welding ground.
- * NOT allow the suspension plate to be touched by a live welding electrode.
- * NOT remove or obscure the warnings on the trolley.
- * NOT operate a trolley on which the safety placards or decals are missing or illegible.
- * NOT operate a trolley unless it has been securely attached to a suitable beam.

- * Shut down a trolley that malfunctions or performs unusually and report such malfunction.
- * Warn personnel of an approaching load

CAUTION

Read and understand this manual before using the trolley. Taking precedence over any specific rule, however, is the most important rule of all: "USE COMMON SENSE"

It is the responsibility of the owner / user to

1. Install, inspect, test, maintain, and operate the trolley in accordance with the instruction manual furnished by the manufacturer of the trolley....
2. Train and designate trolley operators, and
3. Train and designate trolley inspectors / maintenance personnel

3. Installation

The service life of the trolley depends on the way it is installed. Always keep this manual near the trolley, available to the operator and the person in charge of maintenance.

Make sure that all safety rules are followed.

3.1. Checking of product

1. Check the product if there is any damage or deformation during the transportation.
2. Check the specification of the trolley you purchase as listed below.
 - a. Model no.
 - b. Rated capacity (ton)
 - c. Power supply
 - d. Push button pendant assembly (2button, 4button or 6button)
 - e. Specially ordered optional items
 - f. Beam width for trolley installation

Store the trolley in its normal operating position without load, away from aggressive atmospheres such as dust or humidity. Make sure that the trolley is always clean and protected from corrosion and is lubricated.

3.2. Installation process

Follow other maintenance procedures outlined in this manual.

1. Handle the trolley by its structure, or by the devices provided for this purpose, or in its original packing.
2. Review the nameplate and warning tags attached to the unit before the installation is started.
3. The trolley should be installed by the technician with the necessary competence.
4. Check that the voltage is in accordance with both the trolley and the voltage at the jobsite (230V, 380V, 440V).
5. Make sure that trolley beam is adequate for the trolley rated capacity.
6. Make sure that the safety rules are followed for harness, clearance of work areas, posting of instructions to be followed in the area.

3.3. Checking of electricity

⚠ WARNING

Before installing, removing, inspection, or performing any maintenance on the trolley, the main switch shall be de-energized and locked out and tagged out in accordance with ANSI Z244.1. Do not use this equipment in hazardous locations.

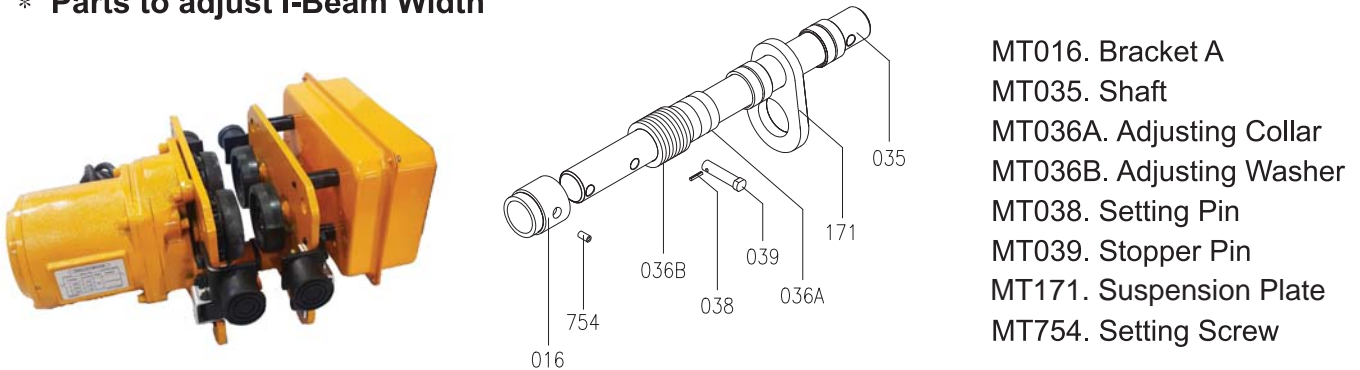
- * the electric trolleys shall be connected to an earth ground.
- * Lock-out and tag-out the main disconnect switch, in the de-energized position, before performing any service on the trolley.
- * The customer must supply the power supply cable, the fuses and the main disconnect switch.
- * Check that the supply voltage is the same as the nameplate voltage on the trolley.
- * Check that the voltage does not vary by more than $\pm 10\%$ from the nominal value.
- * Do not use conductors smaller than those listed in the manual, to supply power to the trolley.
- * Never bypass limit switches, remove limit switch stops, or otherwise defeat limit switch devices.

3.4. Installation of the Motorized Trolley Mounted Series

3.4.1. How to install Trolley on the runway I-beam

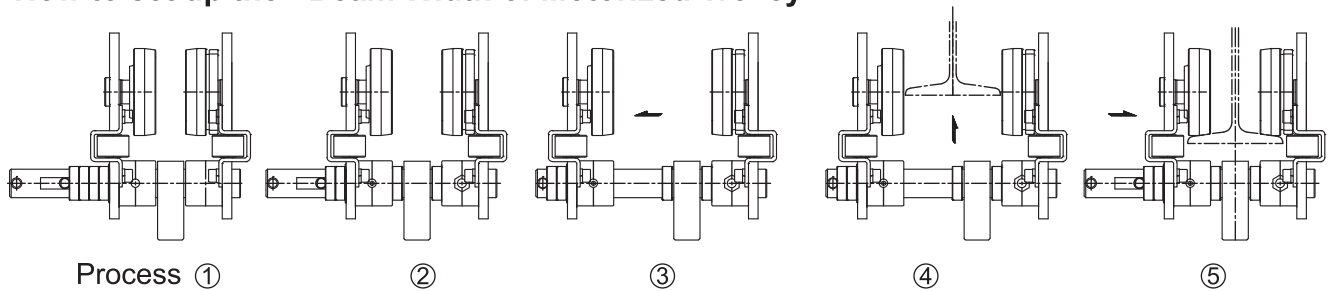
First, check the difference between beam flange width and guide roller spacing.

* Parts to adjust I-Beam Width



- MT016. Bracket A
- MT035. Shaft
- MT036A. Adjusting Collar
- MT036B. Adjusting Washer
- MT038. Setting Pin
- MT039. Stopper Pin
- MT171. Suspension Plate
- MT754. Setting Screw

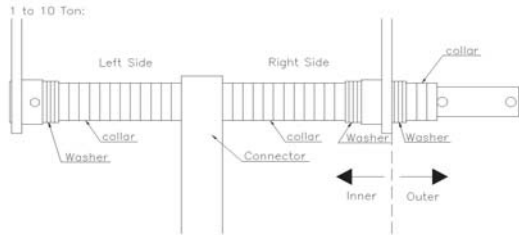
* How to set up the I-Beam Width of Motorized Trolley



Motorized trolley can be used on I-beams different in width only by inserting adjusting collars (0 pcs to 6 pcs.)

- ① Pull out both "MT039. Stopper Pin" and "MT036. Adjusting Collar"
- ② Widen TROLLEY up to the maximum width by pulling out "MT035. Shaft"
- ③ In accordance with the following I-Beam width instruction, please Insert the applied number of collars and washers at the right end and push the trolley to the direction of arrow mark.
- ④ Insert TROLLEY on I-Beam.
- ⑤ Locate "MT171. Suspension Plate" on the center and line up "MT036. Adjusting Collar" by setting the same number of collars and washers at both ends.

3.5. Applied Collar Numbers for Each Trolley Capacity on I-Beam.



Each collar width per pcs: 0.492 inch (12.5mm)
 Each washer width per pcs: 0.118 inch (3mm)

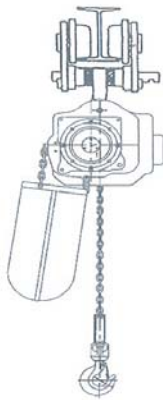
Beam Flange Width (in)			3 1/4	4	5	6	7	8	9	10	11	12
Cap. (Ton)	Spacer Type	(mm)	85	102	127	153	178	203	229	254	279	305
1	Washer	Inner	4	2	2	2	2	2	2	2	2	10
		Outer	6	8	8	8	8	8	8	8	8	0
	collar	Inner	2	4	6	10	12	14	14	16	18	18
		Outer	16	14	12	10	8	6	4	2	0	0
2	Washer	Inner	2	0	0	0	0	0	0	0	0	88
		Outer	6	8	8	8	8	8	8	8	8	0
	collar	Inner	2	4	6	10	12	14	14	16	18	18
		Outer	16	14	12	10	8	6	4	2	0	0
3	Washer	Inner	8	2	0	0	0	0	0	0	0	8
		Outer	6	14	16	16	16	16	16	16	16	16
	collar	Inner	0	2	4	6	8	10	12	14	14	16
		Outer	16	14	12	10	8	6	4	2	0	0
5	Washer	Inner	0	6	6	6	6	6	6	6	6	12
		Outer	12	6	6	6	6	6	6	6	6	0
	collar	Inner	2	2	4	6	8	10	12	14	16	16
		Outer	14	14	12	10	8	6	4	2	0	0

For Beam Flange Widths other than indicated, distribute collars and washers equally on Left Side and Right Side so that total clearance between Beam Flange Width and Trolley Side Guide Rollers is no less than 0.039 inch (1mm) and no more than 0.197 inch (5mm). A difference of one washer between Left Side and Right Side is permissible. No difference in quantity of collars between Left Side and Right Side is permissible.

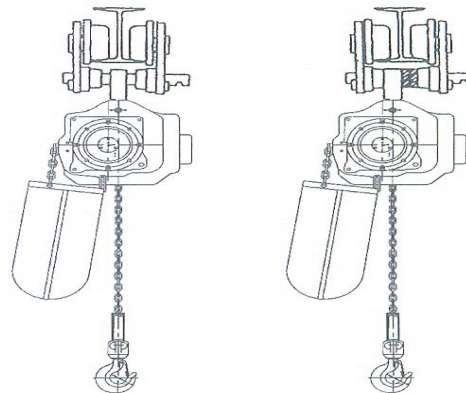
⚠ WARNING

RIGHT installation: Fit both sides of the connector with the same number of adjusting collars.
WRONG installation: It can result in serious accidents.

RIGHT Installation



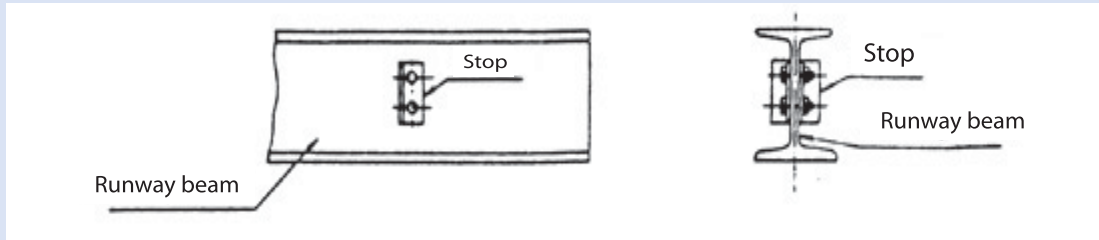
WRONG Installation



(A) Without collars, the setting of connector become loose and not secure.
 (B) With One-sided setting of collars, it shall result in the un-balanced trolley installation.

⚠ WARNING**(Customer scope for installation)**

1. Customer is strongly recommended to install END STOP as this is the customer's responsibility. To prevent possible falling of trolley from the runway beam, the customer shall install END STOP as follows.



2. For trolley limit switches used as a safety device, they shall be installed in parallel with I-beam at both ends to detect the runway limit of the end of trolley travel. Please refer to the figure for proper installation.

3.5.1. How to connect electric power source ("CIS": customer installation scope under customer responsibility)

- ① In parallel with I-beam, install the power cable to optimize the trolley movement.
- ② With each interval of 1.5 meter, the cable wheel shall be installed.
- ③ The minimum allowable curve radius of I-beam differs with each rated load of trolley.

Please refer to the specification of trolley in manual article no. 1.4. Motor Trolley Mounted Series, Single Speed

3.6. Initial start-up

Once these checks have been completed, proceed as follows (be ready to press the emergency stop button at all times)

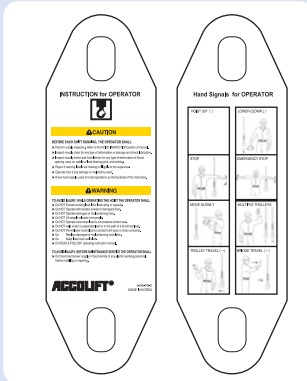
1. Start operating the trolley without a load.
2. Check, when not under load, that the movement of the trolley corresponds to the direction of the arrows on the pushbutton station.
3. Perform a load test with +10% of the nominal load and static tests with +25% of the nominal load on your installation equipped with our hoist.
4. The trolley which you have just purchased should only be used with a maximum load equal to the trolley's rated load. The length of its useful service life depends on the demands placed upon it, the average operating time, the number of start-stops and proper maintenance.

4. Precautions during operation

⚠ CAUTION

Indicates a potentially hazardous situation, which, if not avoided, MAY result in minor or moderate injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL

1. Perform a daily inspection according to the instruction manual.
2. Report missing or illegible warning labels to the supervisor.
3. Not Operate the trolley if any damage or malfunctions exist.
4. Know hand signals used for trolley operation as per instruction manual.
5. Always notify others when a load transport is about to begin.
6. Always make sure that the supporting structures are strong enough to support the weight of the load and trolley.
7. Maintain firm footing or be otherwise secured when operating the trolley.
8. Make sure the load is free to move and will clear all obstructions.
9. Avoid swinging the load.
10. Make sure trolley travel is in the same direction as shown on the controls.
11. Inspect the trolley regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
12. Use only manufacturer's recommended parts when repairing the unit.
13. NOT use limit switches as routine operating stops. They are emergency devices only.
14. NOT allow your attention to be diverted from operating the trolley.
15. NOT allow the trolley to be subjected to sharp contact with other trolleys structures, or objects through misuse.
16. NOT adjust or repair the trolley unless qualified to perform such adjustments or repairs.
17. The trolley should be maintained regularly, following the instructions in this manual.
18. Keep the moving components clean and oiled as indicated in this manual.
19. Make sure that the limit switch stops are in place, and that all limit switches are functioning properly...
20. Before operation, check that the load is correctly fastened and installed on the hook.
21. When moving the load, make sure that it is sufficiently raised and distant from the surrounding machines and other objects so as to avoid all obstacles during operation.
22. Make sure that the hoist is vertical to the load before moving it.
23. Avoid rocking the load or the hook when using the traveling trolley or crane, by limiting the starting and braking jerks.
24. Use the material under normal working conditions with ambient temperature, atmosphere.
25. Use only for indoor operation of trolley. For outdoor operation, provide adequate protection to ensure a rainproof environment.
26. NOT operate the trolley if any damage or malfunctions exist; and SHALL report any damage or malfunctions to the supervisor.
27. NOT operate the trolley if tagged-out.
28. NOT lift, lower, or transport personnel by means of the hoist, hoist trolley, hoist hook, or load.

NOTICE

Always read and follow the INSTRUCTION for OPERATOR, which contains the main CAUTION and WARNING instructions.

It shall be assembled onto the Push Button Switch Control regardless of working conditions.

For safer hoisting operation, please refer to the Hand Signals for OPERATOR on the backside.

Part number is 71574-1275.

Replace if lost or illegible.

5. Maintenance and servicing

5.1. Electrical connection

⚠ CAUTION

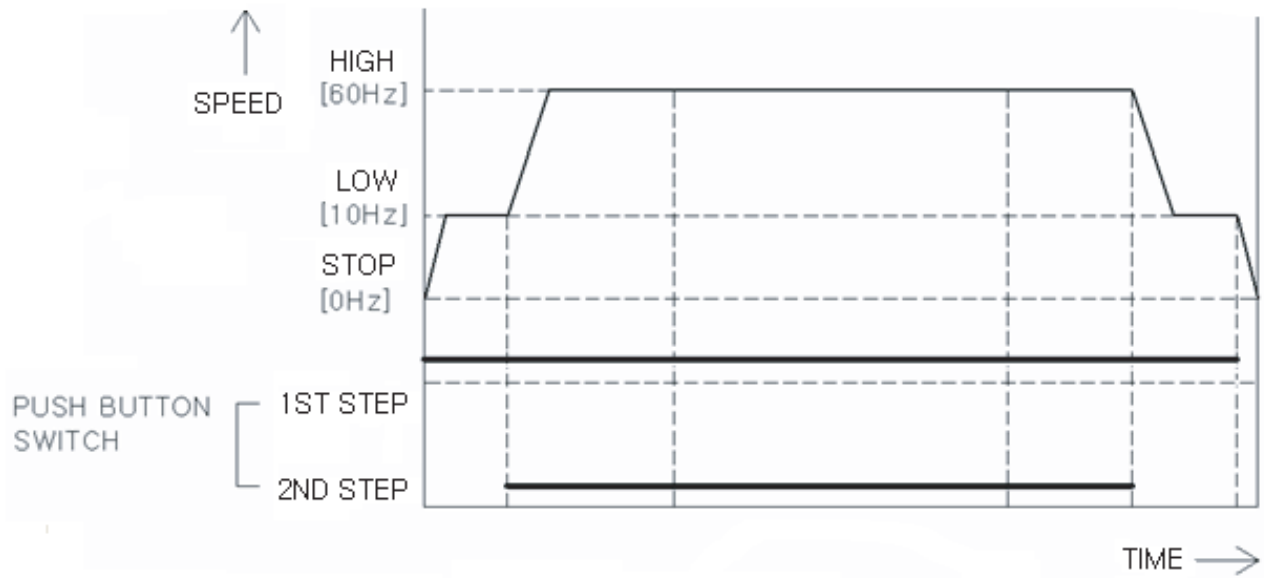
(customer responsible scope for installation)

Before removing the control box cover, check that the trolley power supply is disconnected and locked and tagged.

- * The customer must supply the power supply cable, the fuses and the main disconnect switch (refer to the wiring diagram.)
- * Check that the power supply voltage is correct for the trolley.
- * Check that the voltage does not vary by more than $\pm 10\%$ from the nominal value.
- * Make sure that the main hoist power disconnect switch is de-energized.
- * Do not use conductors smaller than those listed in the manual to supply power to the trolley.
- * Never bypass limit switches, remove limit switch stops, or otherwise defeat limit switches.

6. Motorized Trolley Traversing(Dual Speed)

- Fire step for low speed traversing and second step for high speed traversing.
- Acceleration time of 3.0 seconds and deceleration time of 3.0 seconds.



7. Trial Operation

⚠ DANGER

DISCONNECT POWER AND LOCKOUT DISCONNECTING MEANS BEFORE PERFORMING SERVICE TO ELECTRICAL PARTS OF THIS EQUIPMENT.

The inverter drive contains high voltage capacitors that take time to discharge after removal of power supply. Wait for 3 minutes for capacitors to discharge to safe voltage levels before proceeding with any check ups of electrical parts of this equipment after shutting down the power.

Failure to read and comply with any of the limitations noted herein will result in serious bodily injury or death, and/or property damage.

⚠ WARNING

- Check that all wiring has been completed before performing trial operation.
- Don't change wiring of push button switch.
- To change the acceleration or deceleration time, refer to inverter manual.
- Only authorized personnel should perform the operation. Operating personnel should read and understand all the contents of this manual.
- Failure to comply with any of the limitations noted herein can result in serious bodily injury or death and/or property damage.

8. INVERTER PARAMETER SETTINGS

ACCOLIFT 2-STEP SPEED INVERTER SETTINGS

CAPACITY	TROLLEY Hz SETTING	TROLLEY ACCEL SETTING	TROLLEY DECEL SETTING
	SET A70/A71 - TRAVERSING(east/west)	SET P39	SET P40
1TON	21Hz(FPM 25) - 62Hz(FPM 75)	3.0 SEC	3.0 SEC
2TON	21Hz(FPM 25) - 62Hz(FPM 75)	3.0 SEC	3.0 SEC
3TON	23Hz(FPM 22) - 68Hz(FPM 65)	3.0 SEC	3.0 SEC
5TON	23Hz(FPM 22) - 68Hz(FPM 65)	3.0 SEC	3.0 SEC

⚠ WARNING

- Do not change any parameter value not indicated in this manual
- Do not set a value that exceeds a parameter range given in inverter manual (PowerFlex 4 Adjustable Frequency AC Drive).
- Make sure to perform trial operation after changing a parameter value. If there is anything wrong, stop the operation immediately and check the values and correct them.

NOTICE

- To change the parameter value, refer to the inverter manual (PowerFlex 4 Adjustable Frequency AC Drive). Before making any changes in the inverter, clear understanding of the inverter manual is required.

8.1. Inverter Setting and Control

Factory-default parameter values allow the drive to be controlled from the integral keypad. No programming is required to start, stop, change direction, or control speed directly from the integral keypad.

8.1.1. Keypad Components

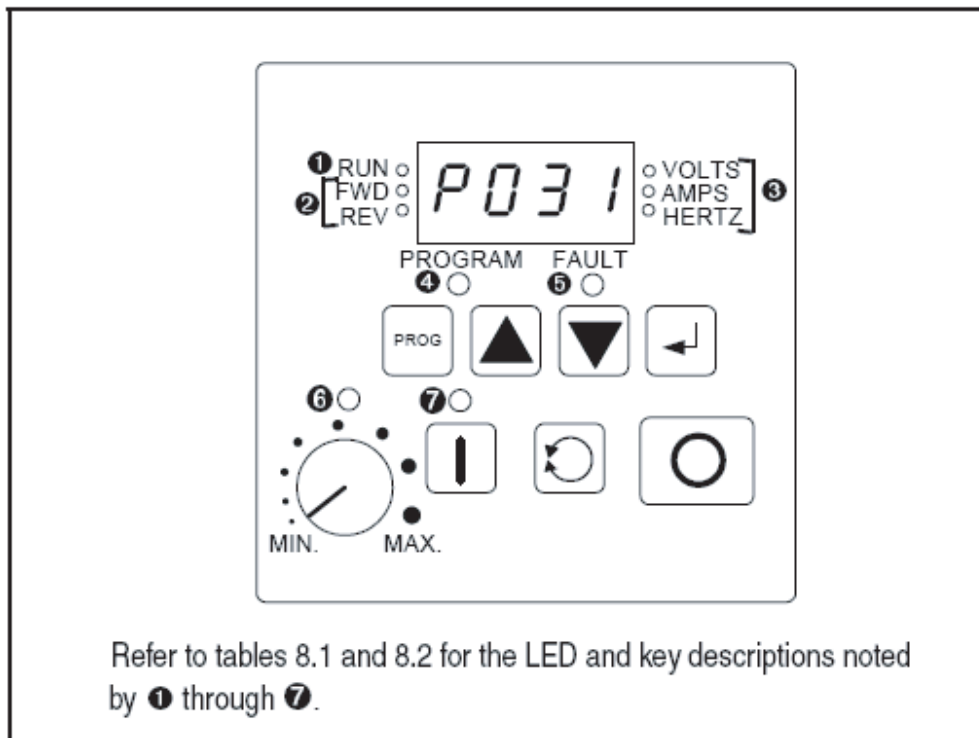


Figure 8.1 – Integral Keypad

8.1.2. Display Description

The alpha-numeric display indicates the following :

- Parameter number
- Parameter value
- Fault code

8.1.3 LED Description

Refer to figure 8.1 for the location of the LEDs described in table 8.1.








Table 8.1 – LED Descriptions

No.	LED	LED State	Description
①	RUN	Steady Red	Indicates the drive is running.
②	FWD REV	Flashing Red	Drive has been commanded to change direction. Indicates actual motor direction while decelerating to zero.
		Steady Red	Indicates the commanded motor direction.
③	VOLTS AMPS HERTZ	Steady Red	Indicates the units of the parameter value being displayed.
④	PROGRAM	Steady Red	Indicates the drive is in program mode and the parameter value can be changed.
⑤	FAULT	Flashing Red	Indicates drive is faulted.
⑥	Pot Status	Steady Green	Indicates potentiometer on integral keypad is active.
⑦	Start Key Status	Steady Green	Indicates Start key on integral keypad is active. The Reverse key is also active unless disabled by A095 (Reverse Disable).

8.1.4 Key Descriptions

Refer to figure 8.1 for the location of the keys described in table 8.2.

Table 8.2 – Key Descriptions



















Key	Name	Description
	Program	<ul style="list-style-type: none"> • Enter/exit program mode. • Scroll through parameter groups. • Back up one step in programming menu. • Cancel a change to a parameter value.
	Up Arrow Down Arrow	<ul style="list-style-type: none"> • Scroll through P and A parameters. • Increase/decrease the value of a flashing digit. • In Display Mode, increases/ decreases internal frequency parameter if that parameter is currently controlling the drive commanded speed.
	Enter	<ul style="list-style-type: none"> • Display value of P or A parameter. • Save a change to a parameter value. • Scroll through display (d) parameters.
	Potentiometer	Control drive speed. Default is active. Controlled by parameter P038.
	Start	Start the drive. Default is active. Controlled by parameter P036.
	Reverse	Reverse direction of the motor. Default is active. Controlled by parameters P036 and A095.
	Stop	<ul style="list-style-type: none"> • Stop the drive (if drive is running). • Clear fault (if drive is stopped). Controlled by parameter P037.

8.1.5 Viewing and Adjusting Basic(P) and Advanced (A) Parameters



Parameters are organized into three parameter groups:

- The Basic Parameter Group (Pnnn) contains the most commonly used parameters to simplify the start-up process.
- The Advanced Parameter Group (Annn) contains parameters used for more advanced applications.
- The Displayed Parameter Group (dnnn) contains parameters that indicate actual drive conditions.

Table 8.3 – Viewing and Adjusting Basic (P) and Advanced (A) Parameters

Procedure	Sample Display
Step 1. Press  until the desired parameter group is displayed. The PROGRAM LED will turn on to indicate the drive is in program mode.	
Step 2. Press   to scroll through the parameters in the selected parameter group.	
Step 3. Press  to view the value of the displayed parameter.	
Step 4. Press  or   . The adjustable value will flash on the display.	
Step 5. Use   to adjust the value.	
Step 6. Press  to accept the value. The value stops flashing.	
Step 7. Press  to return to the parameter number.	







To adjust additional parameters, repeat steps 2 through 7.


To exit a parameter without saving the value, press  instead of .

8.1.6 Viewing the Display (d) Parameters

Use the procedure in table 8.4 to view Display parameters.

Table 8.4 – Viewing the Display (d) Parameters

Procedure	Sample Display
Step 1. Press  to scroll through the parameter menus until the Display Group parameters are displayed. The PROGRAM LED will be off to indicate the drive is in display mode.	
Step 2. Press  to scroll through the Display Group parameters until the desired Display parameter is displayed.	
Step 3. The parameter value will be displayed 3 seconds after  is released.	

To view additional Display parameters, press  to return to the Display Group parameter list and scroll through the parameter list as described in step 2.

Note that the last user-selected Display parameter is saved when power is removed and is displayed by default when power is re-applied.

* For more detailed inverter operation, refer to the inverter manual -> (PowerFlex 4 Adjustable Frequency AC Drive).

8.2 Trouble Shooting

⚠ DANGER

DISCONNECT POWER AND LOCKOUT DISCONNECTING MEANS BEFORE PERFORMING SERVICE TO ELECTRICAL PARTS OF THIS EQUIPMENT.

Only a qualified electrician should perform service to electrical parts of this equipment.

- For trouble shooting of the inverter unit, refer to the inverter manual and respond accordingly.

Example of typical problem

- 1) Motor doesn't work.
- 2) Motor rotates backward.
- 3) Trolley travels at a speed excessively different from the rated speed.
- 4) Acceleration or deceleration is not smooth.
- 5) Excessive current runs to the motor

8.3 Prevent Leakage Current & Noise Effect

8.3.1 Prevent Leakage Current Problem

⚠ WARNING

- Leakage current generated through the inverter's input/output line or motor electrostatic capacitance may badly affect other equipment.
- Since the amount of leakage current depends on carrier frequency (number of switching pulses per second) or the length of the input / output line, take the following preventative measures.
 - * Solution => Provide an inductive filter or line reactor.

8.3.2 Prevent Noise Effect Problem

⚠ WARNING

- Noise generated through the power supply line of the inverter's main or control circuit may badly affect other electronics, in particular, measuring instruments and radios, such as those listed below;
 - => Position Detector, Pressure Sensor, Proximity Switch, AM radio, Telephone.

Solution

- Provide a separate power supply for the inverter and the connected equipment.
- Keep wiring of different types of circuits apart from each other.
- Use shielded wires for weak current and signal circuits and twisted pair wires for the power supply of weak current signals.
- Provide a noise filter at the incoming power supply circuit of the inverter.

8.4 Maintenance and Inspection

- Operator shall perform a daily inspection according to this manual including :
 - 1) Does trolley operate according to the push button control?
 - 2) Is there any noise or vibration while operating? Is there any brake slip?
 - 3) Are all warning labels in place and in readable condition?

- If any kind of problem is detected, stop the operation immediately and report it to the person in charge.

⚠ DANGER

HAZARDOUS VOLTAGES ARE PRESENT IN THE CONTROL BOX, OTHER ELECTRICAL COMPONENTS, AND CONNECTIONS BETWEEN THESE COMPONENTS.

Before performing ANY mechanical or electrical maintenance on the equipment, de-energize (disconnect) the main switch supplying power to the equipment : and lock and tag the main switch in the de-energized position. Refer to ANSI Z244.1, Personnel Protection - Lockout/ Tagout of Energy Sources. Before checking power supply or electric control parts for Trolley, wait 3 minutes before proceeding with any check-ups after shutting down the power.

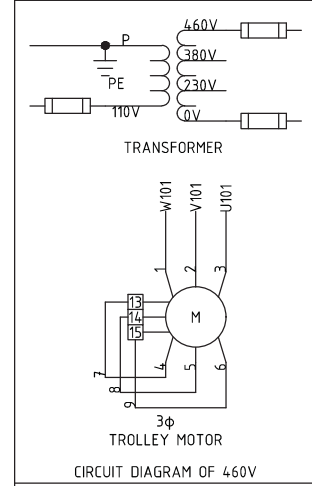
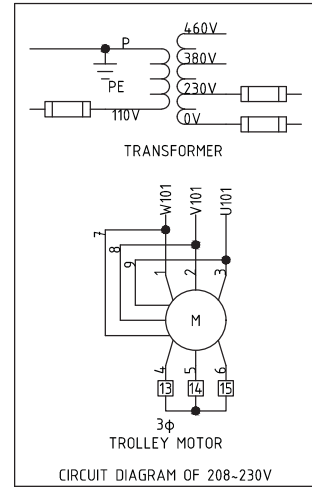
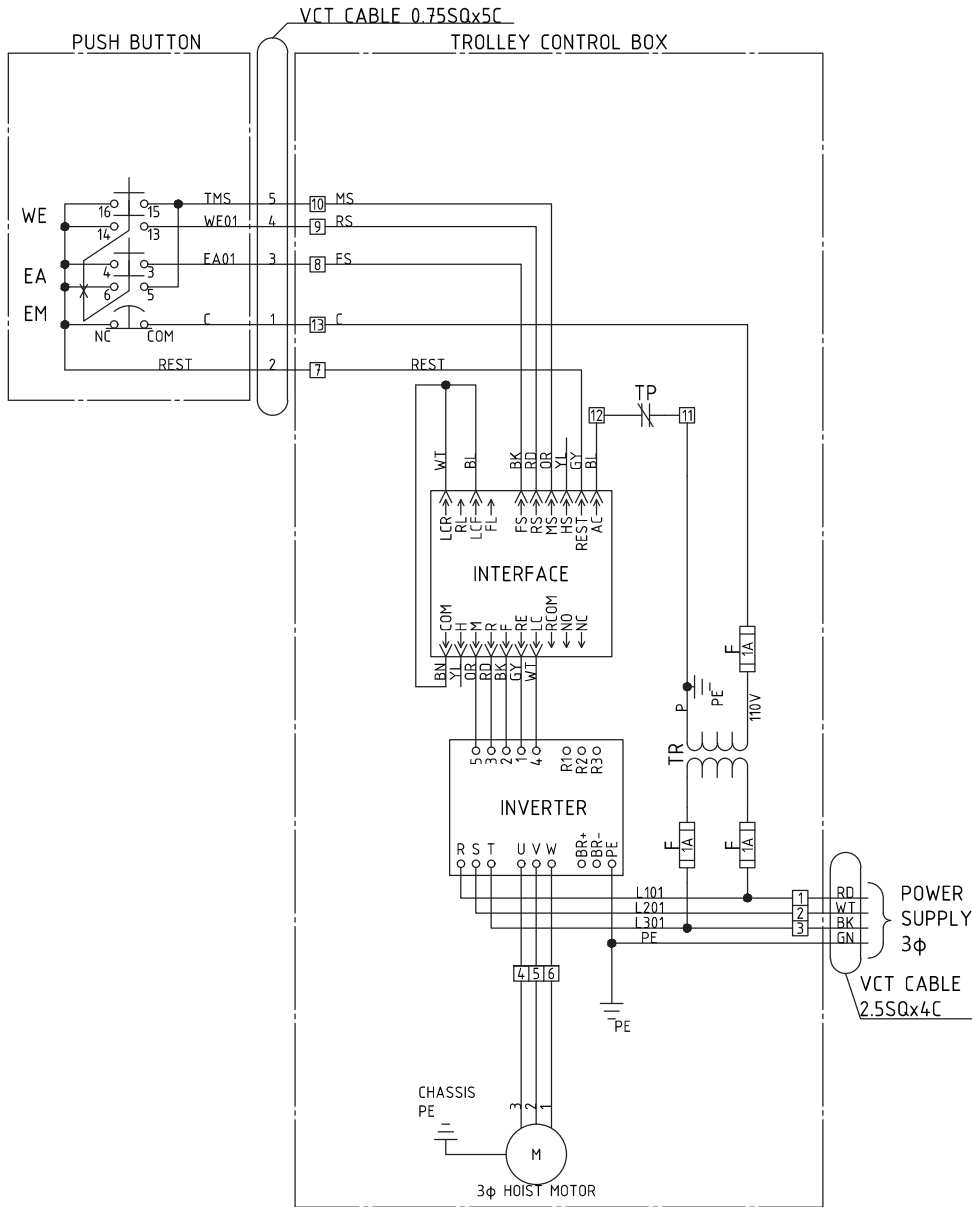
Do not operate the equipment without control enclosure cover or covers in place.

Only trained and competent personnel should inspect and repair this equipment

- Before turning on the power, make sure that the product has been properly wired without any shorted connections or loose screws.
- Disconnect the inverter unit before performing the insulation resistance or withstand voltage test.

9. Electric Wiring Diagram and Connection Drawing

**MOTORIZED TROLLEY
2130510-VFD ~ 2130550-VFD**

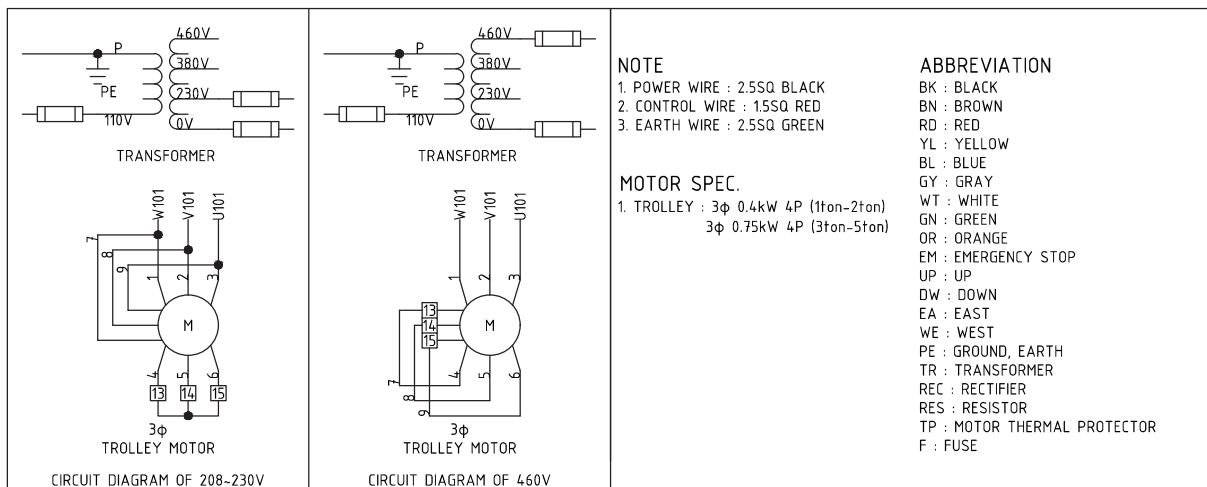
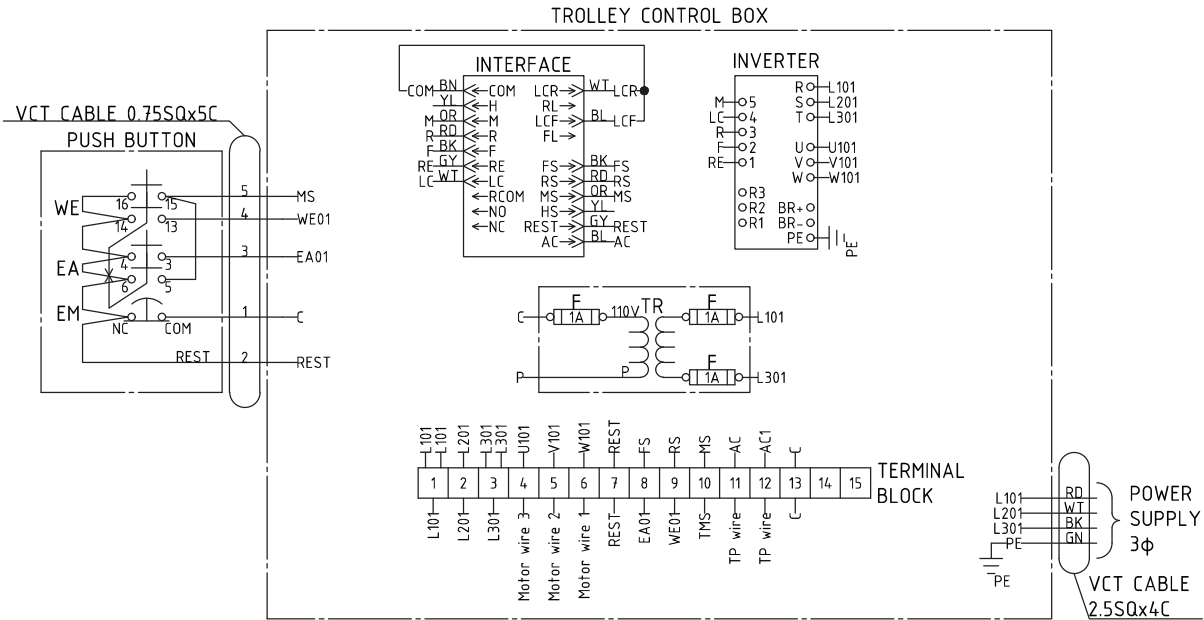


NOTE
 1. POWER WIRE : 2.5SQ BLACK
 2. CONTROL WIRE : 1.5SQ RED
 3. EARTH WIRE : 2.5SQ GREEN

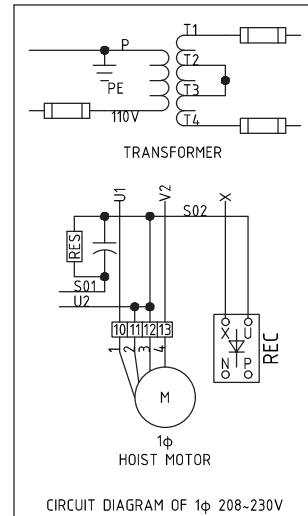
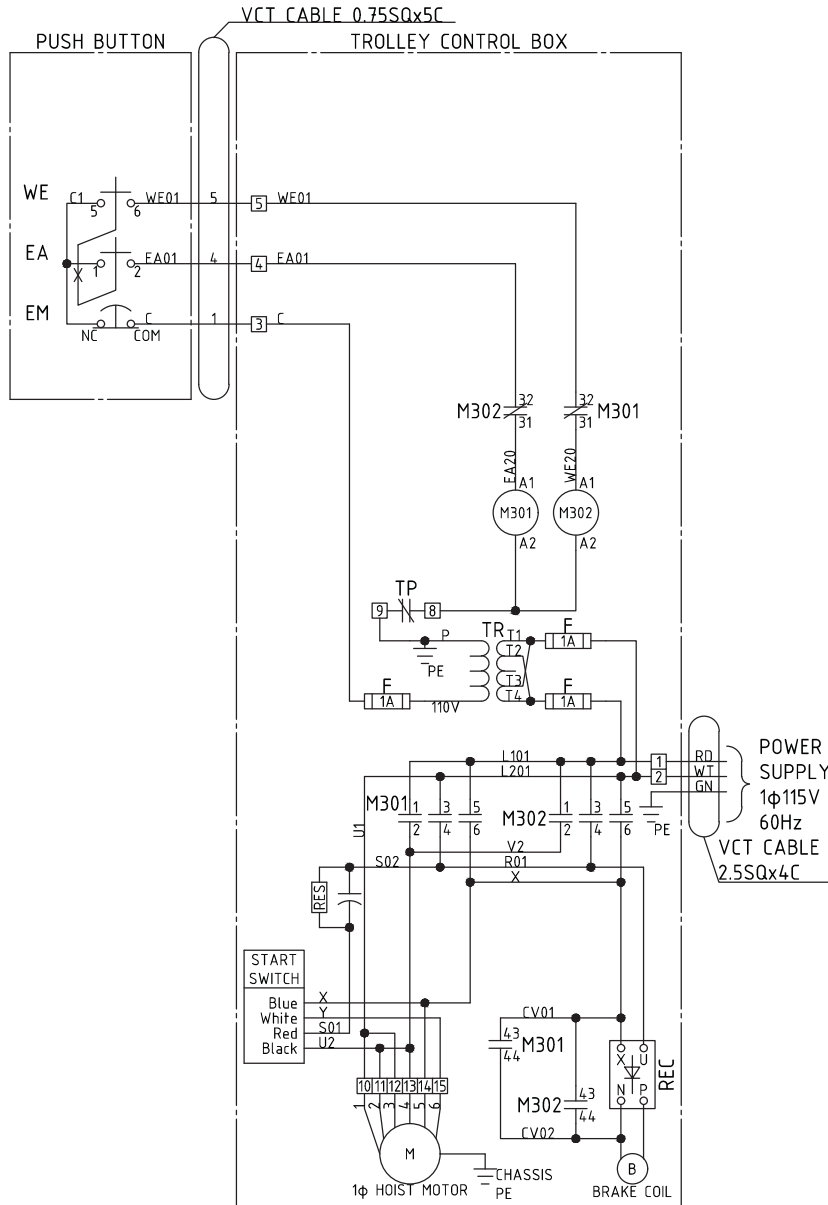
MOTOR SPEC.
 1. TROLLEY : 3φ 0.4kW 4P (1ton-2ton)
 3φ 0.75kW 4P (3ton-5ton)

ABBREVIATION
 BK : BLACK
 BN : BROWN
 RD : RED
 YL : YELLOW
 BL : BLUE
 GY : GRAY
 WT : WHITE
 GN : GREEN
 OR : ORANGE
 EM : EMERGENCY STOP
 UP : UP
 DW : DOWN
 EA : EAST
 WE : WEST
 PE : GROUND, EARTH
 TR : TRANSFORMER
 REC : RECTIFIER
 RES : RESISTOR
 TP : MOTOR THERMAL PROTECTOR
 F : FUSE

MOTORIZED TROLLEY 2130510-VFD ~ 2130550-VFD



MOTORIZED TROLLEY 2330510, 2330520



NOTE

1. POWER WIRE : 2.5SQ BLACK
2. CONTROL WIRE : 1.5SQ RED
3. EARTH WIRE : 2.5SQ GREEN

MOTOR SPEC.

1. TROLLEY : 1φ 0.2kW 8P

CAPACITOR SPEC.

1. TROLLEY : 220VAC 100μF

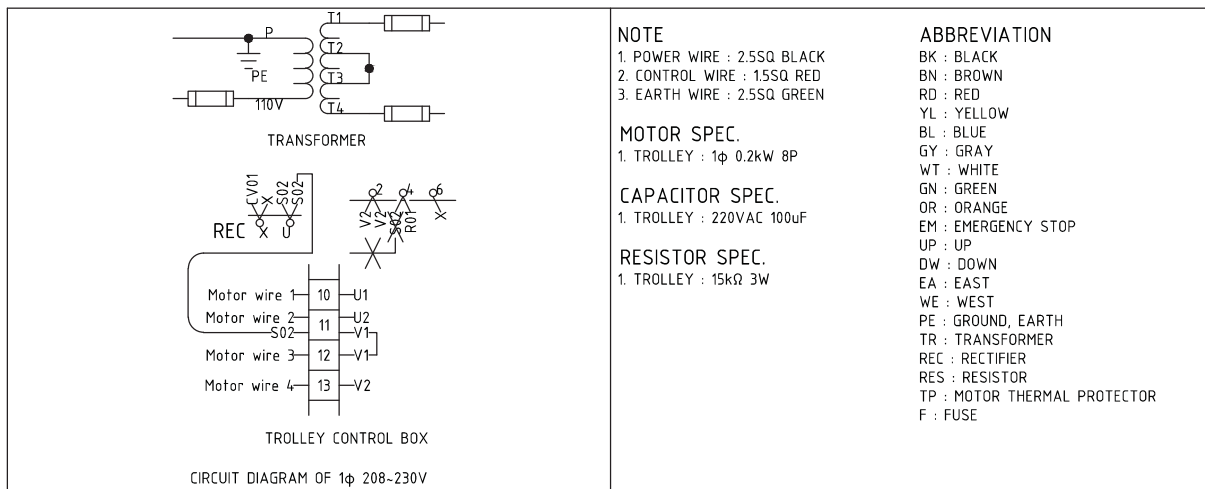
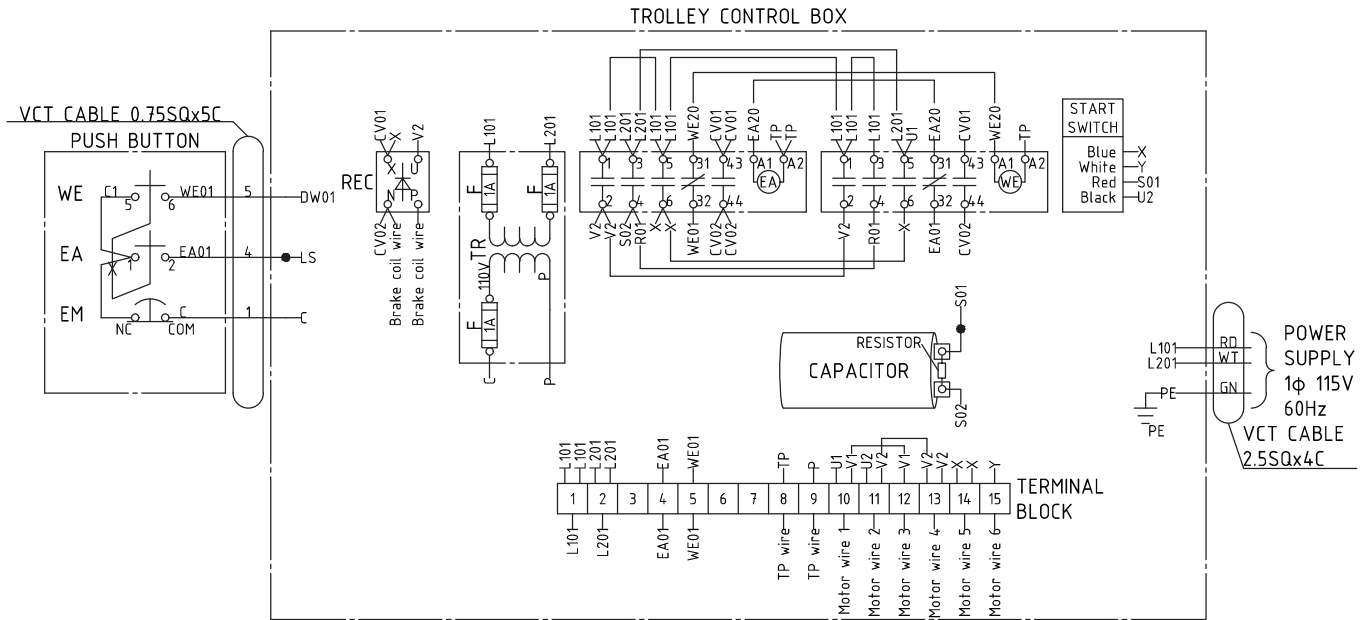
RESISTOR SPEC.

1. TROLLEY : 15kΩ 3W

ABBREVIATION

- BK : BLACK
- BN : BROWN
- RD : RED
- YL : YELLOW
- BL : BLUE
- GY : GRAY
- WT : WHITE
- GN : GREEN
- OR : ORANGE
- EM : EMERGENCY STOP
- UP : UP
- DW : DOWN
- EA : EAST
- WE : WEST
- PE : GROUND, EARTH
- TR : TRANSFORMER
- REC : RECTIFIER
- RES : RESISTOR
- TP : MOTOR THERMAL PROTECTOR
- F : FUSE

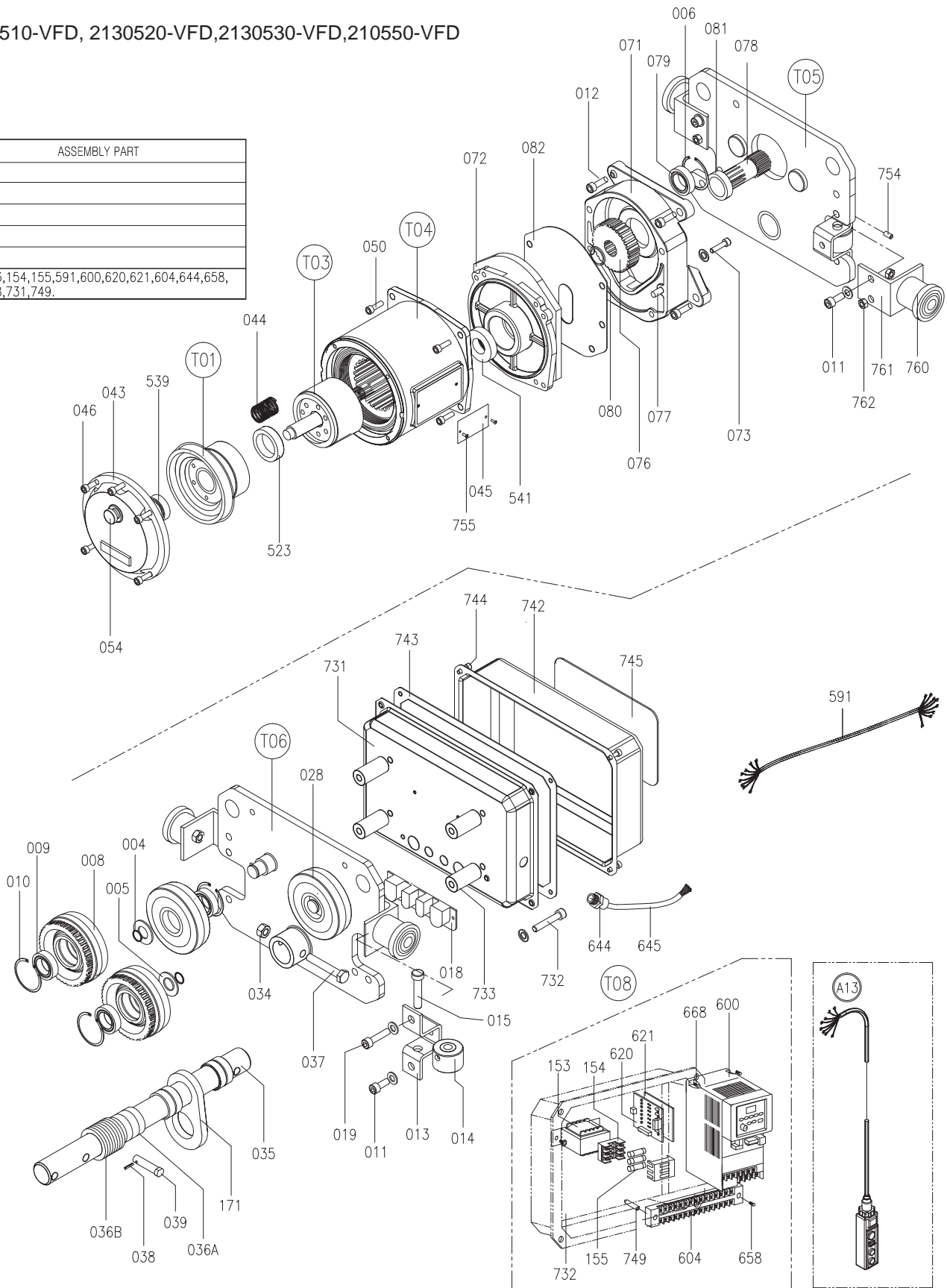
MOTORIZED TROLLEY (SINGLE PHASE) 2330510, 2330520



10.Parts illustrations

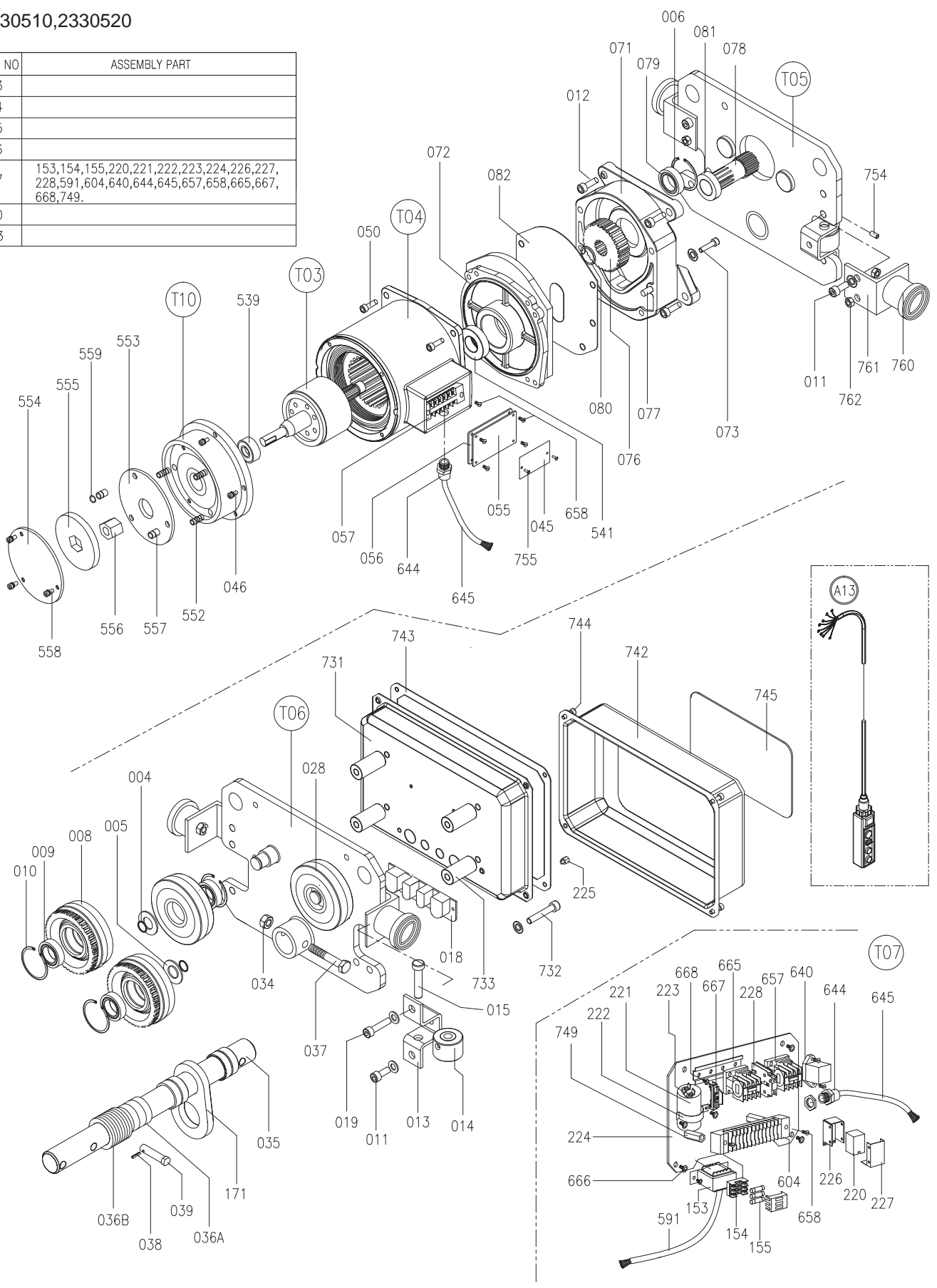
■ 2130510-VFD, 2130520-VFD,2130530-VFD,210550-VFD

ASS'Y NO	ASSEMBLY PART
T01	
T03	
T04	
T05	
T06	
T08	153,154,155,591,600,620,621,604,644,658,668,731,749.



■ 2330510,2330520

ASS'Y NO	ASSEMBLY PART
T03	
T04	
T05	
T06	
T07	153,154,155,220,221,222,223,224,226,227,228,591,604,640,644,645,657,658,665,667,668,749.
T10	
A13	



ACCOLIFT MODEL NO		1Ton	2Ton	1Ton	2Ton	3Ton	5Ton
		2330510	2330520	2130510-VFD	2130520-VFD	2130530-VFD	2130550-VFD
(MOTOR TROLLEY MOUNTED)							
DESCRIPTION							
MTT01	BRAKE DISC ASS'Y	NA		71574-1177			
MTT03	ROTOR ASS'Y	71574-4166		71574-1166		71574-3166	
MTT04	MOTOR ASS'Y	71574-4156		71574-1156		71574-3156	
MTT05	GEAR SIDE PLATE ASS'Y	71574-1133	71574-2133	71574-1133	71574-2133	71574-3133	71574-5133
MTT06	PLAIN SIDE ASS'Y	71574-1148	71574-2148	71574-1148	71574-2148	71574-3148	71574-5148
MTT07	ELECTRIC EQUIPMENT ASS'Y	71574-4517		NA			
MTT08	ELECTRIC EQUIPMENT ASS'Y	NA		71574-1518 (230V) 71574-1519 (460V)		71574-3518 (230V) 71574-3519 (460V)	
MTT10	BRAKE COIL ASS'Y	71574-4465		NA			
MTA13	PUSH BUTTON ASS'Y	71574-4464		71574-1464			
MT004	SNAP RING	71574-1134	71574-2134	71574-1134	71574-2134		71574-5134
MT005	PLAIN WASHER	71574-1135	71574-2135	71574-1135	71574-2135	71574-3135	71574-5135
MT006	SNAP RING	71574-1136					
MT008	GEAR ROLLER	71574-1137	71574-2137	71574-1137	71574-2137	71574-3137	71574-5137
MT009	BALL BEARING	71574-1138	71574-2138	71574-1138	71574-2138	71574-3138	71574-5138
MT010	SNAP RING	71574-1139	71574-2139	71574-1139	71574-2139	71574-3139	71574-5139
MT011	BOLT W/HEX, HOLE	71574-1140					
MT012	BOLT W/HEX, HOLE	71574-1141					
MT013	GUIDE ROLLER BODY	71574-1142					
MT014	GUIDE ROLLER	71574-1143		71574-1143		71574-3143	
MT015	GUIDE ROLLER PIN	71574-1144					
MT018	CORD HOLDER ASS'Y	71574-1147					
MT028	PLAIN ROLLER	71574-1150	71574-2150	71574-1150	71574-2150	71574-3150	71574-5150
MT034	U NUT	71574-1151	71574-2151	71574-1151	71574-2151		71574-5151
MT035	SHAFT	71574-1152	71574-2152	71574-1152	71574-2152	71574-3152	71574-5152
MT036A	ADJUSTING COLLAR	71574-1153	71574-2153	71574-1153	71574-2153	71574-3153	71574-5153
MT036A	ADJUSTING WASHER	71574-1227	71574-2227	71574-1227	71574-2227	71574-3227	71574-5227
MT037	STOPPER BOLT(WRENCH BOLT)	71574-1154	71574-2154	71574-1154	71574-2154	71574-3154	71574-5154
MT038	COTTER PIN	71574-1155		71574-1155		71574-3155	
MT039	STOPPER PIN	71574-1228	71574-2228	71574-1228	71574-2228	71574-3228	71574-5228
MT043	BRAKE COVER	NA		71574-1157			
MT044	BRAKE SPRING	NA		71574-1158			
MT045	NAME PLATE	71574-4159		71574-1159		71574-3159	
MT046	BOLT W/HEX, HOLE	71574-1160					
MT050	BOLT W/HEX, HOLE	71574-1162					
MT054	COVER PLUG	NA		71574-1163			
MT071	GEAR CASE	71574-1164					
MT071	FLANGE	71574-1165					
MT073	BOLT W/HEX, HOLE	71574-1320					
MT076	2'ND GEAR	71574-1167					
MT077	SPRING PIN	71574-1168					
MT078	3RD GEAR	71574-1169				71574-3169	71574-5169
MT079	BALL BEARING	71574-1170					
MT080	SNAP RING	71574-1171					
MT081	COLLAR FOR 3RD GEAR	71574-1172					
MT082	PACKING FLANGE	71574-1173					

ACCOLIFT MODEL NO		1Ton	2Ton	1Ton	2Ton	3Ton	5Ton
		2330510	2330520	2130510-VFD	2130520-VFD	2130530-VFD	2130550-VFD
(MOTOR TROLLEY MOUNTED)							
DESCRIPTION							
MT153	TRANSFORMER,48VOLT CONTROL	71964-4521		71574-1196			
	TRANSFORMER,110VOLT CONTROL	71964-3153		71574-1277			
MT154	FUSE HOLDER	71574-1110					
MT155	FUSE	71574-1111					
MT171	SUSPENSION PLATE	71574-1455	71574-2455	71574-1456	71574-2456	71574-3456	71574-5456
MT220	STARTING SWITCH	71574-4505		N/A			
MT221	CONDENSER	71574-4323		N/A			
MT222	SADDLE	71574-4324		N/A			
MT223	RECHARGE RESISTOR	71574-4325		N/A			
MT224	ELECTRIC EQUIPMENT BOARD	71574-4326		N/A			
MT225	HEX STAY BOLT	71574-4327		N/A			
MT226	STARTING SWITCH HOUSING	71964-3223		N/A			
MT227	STARTING SWITCH COVER	71964-3224		N/A			
MT228	INTERLOCK UNIT	71964-3228		N/A			
MT523	BUMPER RUBBER	NA		71574-1175			
MT539	BALL BEARING	71574-1178					
MT541	BALL BEARING	71574-1179					
MT550	BRAKE STATOR	71574-4331		N/A			
MT551	BRAKE COIL	71574-4332		N/A			
MT552	BRAKE SPRING	71574-4333		N/A			
MT553	MOVING PLATE	71574-4334		N/A			
MT554	BRAKE COVER	71574-4335		N/A			
MT555	BRAKE LINING	71574-4336		N/A			
MT556	HEX HUB	71574-4337		N/A			
MT557	STAY PIPE	71574-4338		N/A			
MT558	HEX WRENCH BOLT S/W	71574-4339		N/A			
MT559	O RING	71574-4340		N/A			
MT591	POWER CORD	71574-1341					
MT600	INVERER	NA		71574-1194(230V) 71574-1195(460V)		71574-3194(230V) 71574-3195(460V)	
MT604	TERMINAL BLOCK	71574-1343					
MT620	INTERFACE	NA		71574-2344			
MT621	INTERFACE BOARD	NA		71574-2345			
MT640	RECTIFIER	71574-4346		N/A			
MT644	CABLE HOLDER	71574-1347					
MT645	MOTOR CABLE	71574-4506		N/A			
MT657	MAGNETIC SWITCH	71574-1180		N/A			
MT658	MACHINE SCREW S/W	71574-1348					
MT665	CHANNEL	71574-1351		N/A			
MT666	FUSE HOLDER COVER	71574-1110		N/A			
MT667	CHANNEL STOPPER	71574-1353		N/A			
MT668	MACHINE SCREW S/W, P/W	71574-1507		71574-2507			
MT731	CONTROL BOX	71574-1182		71574-2182			

ACCOLIFT MODEL NO		1Ton	2Ton	1Ton	2Ton	3Ton	5Ton	
(MOTOR TROLLEY MOUNTED)		2330510	2330520	2130510-VFD	2130520-VFD	2130530-VFD	2130550-VFD	
DESCRIPTION								
MT732	BOLT W/HEX, HOLE	71574-1183						
MT733	SUPPORT BAR	71574-1184						
MT742	CONTROL BOX COVER	71574-1185-VFD						
MT743	CONTROL BOX COVER PACKING	71574-1186						
MT744	MACHINE SCREW	71574-1355						
MT745	NAME PLATE	71574-1462	71574-2462	71574-1463	71574-2463	71574-3463	71574-5463	
MT749	HEX STAY PIN	71574-1356						
MT754	SET SCREW	71574-1188						
MT755	RIVET	71574-1189						
MT756	LEAD PACKING	NA			71574-1190			
MT760	BUMPER STOPPER	71574-1313						
MT761	BUMPER BRACKET	71574-1314						
MT762	HEX NUT	71574-1357						

GENERAL CONDITIONS OF WARRANTY

WARRANTIES: The seller warrants to the original using Buyer thereof that the goods sold under this Agreement are free from defects in workmanship and materials for a period of one year from the date of shipment to the original using Buyer. No other express warranties are given and no affirmation of Seller or Seller's agents, by word or action, shall constitute a warranty. No warranty is made for components and accessories made by others when such items are warranted by their respective manufacturers.

Installation or operation of the equipment in any manner other than as recommended by Seller, shall void the warranty.

Any variations in details between the goods furnished herein and those covered in Buyer's specifications are due to standards of manufacture not to be construed as exceptions to the specifications.

DISCLAIMER OF IMPLIED WARRANTIES:

- (a) SELLER MAKES NO WARRANTY OF MERCHANTABILITY IN RESPECT TO THE GOODS SOLD UNDER THIS AGREEMENT.
- (b) This sale is made WITHOUT ANY WARRANTY BY SELLER THAT THE GOODS ARE SUITABLE FOR ANY PARTICULAR PURPOSE.
- (c) Buyer hereby waives all other warranties, guarantees, obligations, liabilities, rights, and remedies arising by law or otherwise including any obligation or liability of the Seller arising from tort, and Buyer shall indemnify Seller from any liability, loss, damage, or claim arising from Buyer's tortious use of the goods sold hereby.

REMEDIES:

- (a) Under no conditions shall any goods be returned to Seller without its prior written consent.
- (b) The Buyer's sole and exclusive remedy for breach of any warranty is limited to Seller furnishing, at its expense, duplicate or repaired parts F.O.B. Seller's plant with installation at Buyer's expense if discovery of a claimed defect occurs during the allowable warranty period, and if Seller's inspection determines a defect exists.
- (c) The quantity of material shown by invoice shall in all cases govern settlement for shortages, unless notice of shortage, appropriately documented, is given to the carrier and the Seller upon delivery by the Carrier.
- (d) Claims for errors, deficiencies or imperfections shall be deemed waived by the Buyer unless Seller is notified in writing of the basis of such claims within 10 days after discovery of claimed defect and such discovery occurs within the warranted period.
- (e) Neither Buyer nor User shall be entitled under this Agreement to recover from Seller any incidental or consequential damages of any nature including but not limited to the cost of any labor expended by others in connection with the goods sold hereby by reason of any alleged nonconformity or breach of warranty on the part of the Seller, nor costs of material or account thereof, nor any lost profits whether determinable or speculative.



Acco Material Handling Solutions

76 Acco Drive, York, Pennsylvania 17402
717-741-4863 800-967-7333 FAX 800-715-8897
Email : info@accomhs.com
www.accomhs.com