



TCG2000 Inductive Charger FOR RAV4

INSTALLATION MANUAL



TOYOTA MOTOR CORPORATION



Before beginning the installation process, please read this installation manual completely, including the important safety instructions.

Important Safety Instructions

SAVE THESE INSTRUCTIONS - This manual contains important safety instructions for the Magne Charge™ Inductive Charger Model TCG 2000 that shall be followed during installation, operation, and maintenance of the unit. Installation shall be in accordance with all local building codes, electrical codes, and ordinances by qualified personnel.

Carefully read these instructions before installing this charger.

The symbols used in this manual and displayed on the charger are listed below together with an explanation of each symbol.

 DANGER	This indicates the presence of high voltage and the danger of electrical shock. This symbol is a warning that improper handling may result in serious injury or death. Follow instructions to avoid serious accidents.
 WARNING	This symbol is a warning that improper handling may result in serious injury. Follow instructions to avoid serious accidents.
NOTICE	This indicates additional important explanation regarding installation. This symbol warns that improper handling may result in damage to the charger.

DANGER

- Disconnect the power to the charger branch circuit at the service panel and verify that high voltage is not present on utility wiring prior to installation.

• GROUNDING INSTRUCTIONS

This charger must be connected to a permanently grounded wiring system.

An equipment-grounding conductor should be pulled with circuit conductors and connected to the equipment-grounding lead on the battery charger. Use a UL style 1015, AWG10 grounding line.

Connections to the battery charger should comply with all local codes and ordinances.

NOTICE

To installers	Please leave this installation manual for the user once installation is completed. Installation must be carried out by an authorized electrician in accordance with local codes, ordinances, and this installation manual.
To users	Please store this installation manual in a safe place. This manual may be needed for reference by our service section.

Installation Precautions

Carry out the following installation work after carefully reading these precautions.

1. Carry out installation in accordance with local building and electric codes and ordinances.
2. For the installation surface select a location with a flat surface that is able to sufficiently support the weight of the charger and installation components.
3. Install the charger at a height that is more than 46 cm (18 inches) above the floor. In addition there should be sufficient space below the charger so that the airflow is not obstructed.

4. For compatible access by handicap persons the charger should be installed such that the height of the center of the coupler paddle does not exceed 1.22m (4 ft) from the floor.
5. The charger should be installed such that there is at least 66cm (26 inches) of unobstructed space above the unit to allow access for service and inspection.
6. The charger should be installed in a location that allows the coupler paddle to reach the vehicle's charge port.
7. This charger requires a dedicated branch circuit. The branch circuit must be a single phase 208 - 240Vac rated circuit equipped with over-current protection of 40amperes.

NOTICE

Do not install a Ground Fault Circuit Interrupter (GFCI) in the branch circuit. The charger is equipped with a built-in ground fault protector that may cause a GFCI to malfunction.

8. Do not step or pull on the AC input cable or paddle cable. Do not subject the charger unit to any undue shock.
9. Do not turn the breaker on until installation is completed.
10. This product is designed for use in a temperature range from -30°C to +50°C. Do not install this equipment in a location where the temperature is likely to exceed this range.
11. Use a dedicated mounting pedestal for installing this charger.
12. Use tools that match the right dimensions for installing components and observe the prescribed tightening torques.
13. Refer to the following specifications for preparing a location for installation.

Input Power Specifications	Voltage	208-240Vac (Single-phase line)
	Circuit capacity	40amperes
Dimensions	Frequency	60Hz
	Height	625mm (25 inches)
	Width	405mm (16 inches)
	Depth	210mm (8 inches)
	Paddle cable length	3.0m (9 feet 10 inches)
	Weight	Approx. 30kg (Approx. 66 pounds)

<Inspection>

- The two black 10 AWG wires are for input power.
- The green 10 AWG wire is for chassis / equipment ground.
- The white 10 AWG wire is for the neutral connection.

<Floor mount installation>

1. Select a location that is not subject to flooding.
 2. Prepare the Mounting Base specified below.
- Mounting Stud Size 10mm (3/8 inches)

NOTICE

Mounting surface must be flat. Studheight must be 30 to 38mm (1.2 to 1 1/2 inches) above the mounting surface.

3. Refer to page 9 of this manual for the stud bolt installation locations.
4. Prepare the nut and washer that is appropriate for the Mounting Stud Size.

<Wall mount installation>

1. The installation location should comply with the pattern sheet of the accompanying document.
2. The wood screws included in this kit are designed for use assuming an outer wall of 12mm (0.5 inches), wood on the inside of the outer wall of 8mm (0.3 inches), and construction material of 38.1mm (1.5 inches). If the wall cross-section construction is different for each type of construction method, prepare wood screws that meet the following conditions.




Wood screw conditions : #12 zinc plated wood screw with a screw thread length of 20mm (0.8 inches) or more for biting into the construction material.

3. If the wood screws break through the construction material, interfere with the inside wall of the dwelling, or cause some other trouble such as water leakage or a reduction in the insulating effect, then investigate what length screw will eliminate the problem and prepare accordingly.



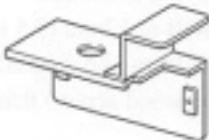

PARTS LIST








<Floor mount type>

Charger unit

NO.	PART NAME	PART NUMBER	QTY.	REF.
1	Charger 	G9090 - 42030	1	
2	TCG2000 Inductive Charger Owner's Manual 	N/A	1	
3	TCG2000 Inductive Charger Installation Manual 	N/A	1	

Floor mount kit : KIT NUMBER (G9093 - 42050)




NO.	PART NAME	PART NUMBER	QTY.	REF.
1	Charger unit pedestal 	N/A	1	
2	Pedestal access cover 	N/A	1	
3	Bracket 	N/A	1	
4	Junction box 	N/A	1	

NO.	PART NAME	PART NUMBER	QTY.	REF.
5	Junction box cover 	N/A	1	
6	Waterproof connector 	N/A	4	
7	Screw 	N/A	7	M4 for securing charger unit pedestal cover in place
8	Screw 	N/A	2	M4 for securing bracket
9	Bolt 	N/A	2	M6
10	Bolt 	N/A	2	M8
11	Grommet for securing conduit 	N/A	2	

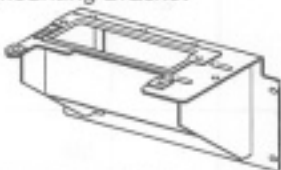



PARTS LIST







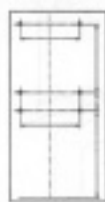
<Wall mount type>

Charger unit

NO.	PART NAME	PART NUMBER	QTY.	REF.
1	Charger 	G9090 - 42030	1	
2	TCG2000 Inductive Charger Owner's Manual 	N/A	1	
3	TCG2000 Inductive Charger Installation Manual 	N/A	1	

Wall mount kit : KIT NUMBER (G9093 - 42040)

NO.	PART NAME	PART NUMBER	QTY.	REF.
1	Bottom Mounting Bracket 	N/A	1	
2	Top Mounting Bracket 	N/A	1	
3	Hook for attaching charger 	N/A	1	
4	Wood screw 	N/A	6	

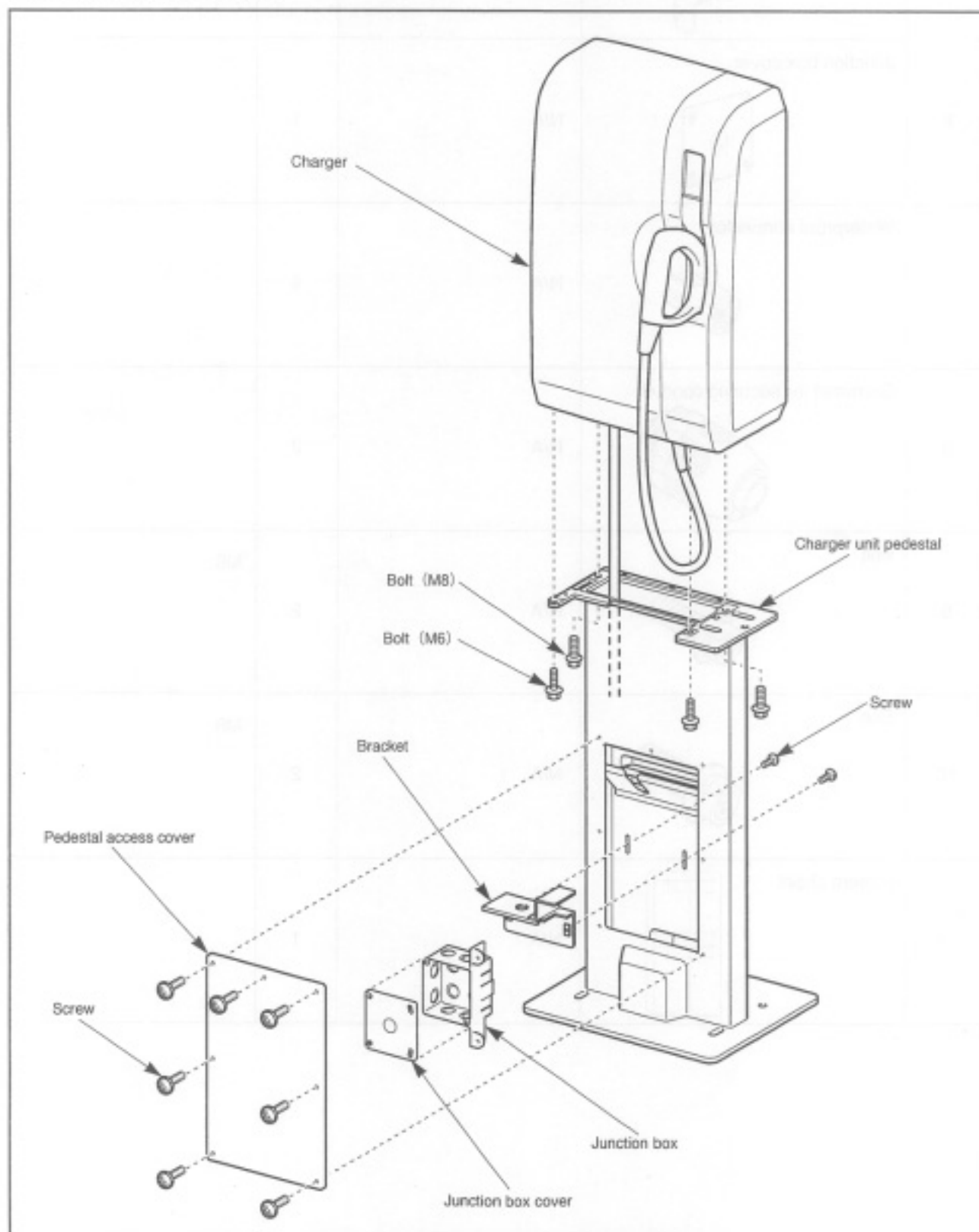
NO.	PART NAME	PART NUMBER	QTY.	REF.
5	Junction box 	N/A	1	
6	Junction box cover 	N/A	1	
7	Waterproof connector 	N/A	4	
8	Grommet for securing conduit 	N/A	2	
9	Bolt 	N/A	2	M6
10	Bolt 	N/A	2	M8
11	Pattern sheet 	N/A	1	

Tools Required for Installation

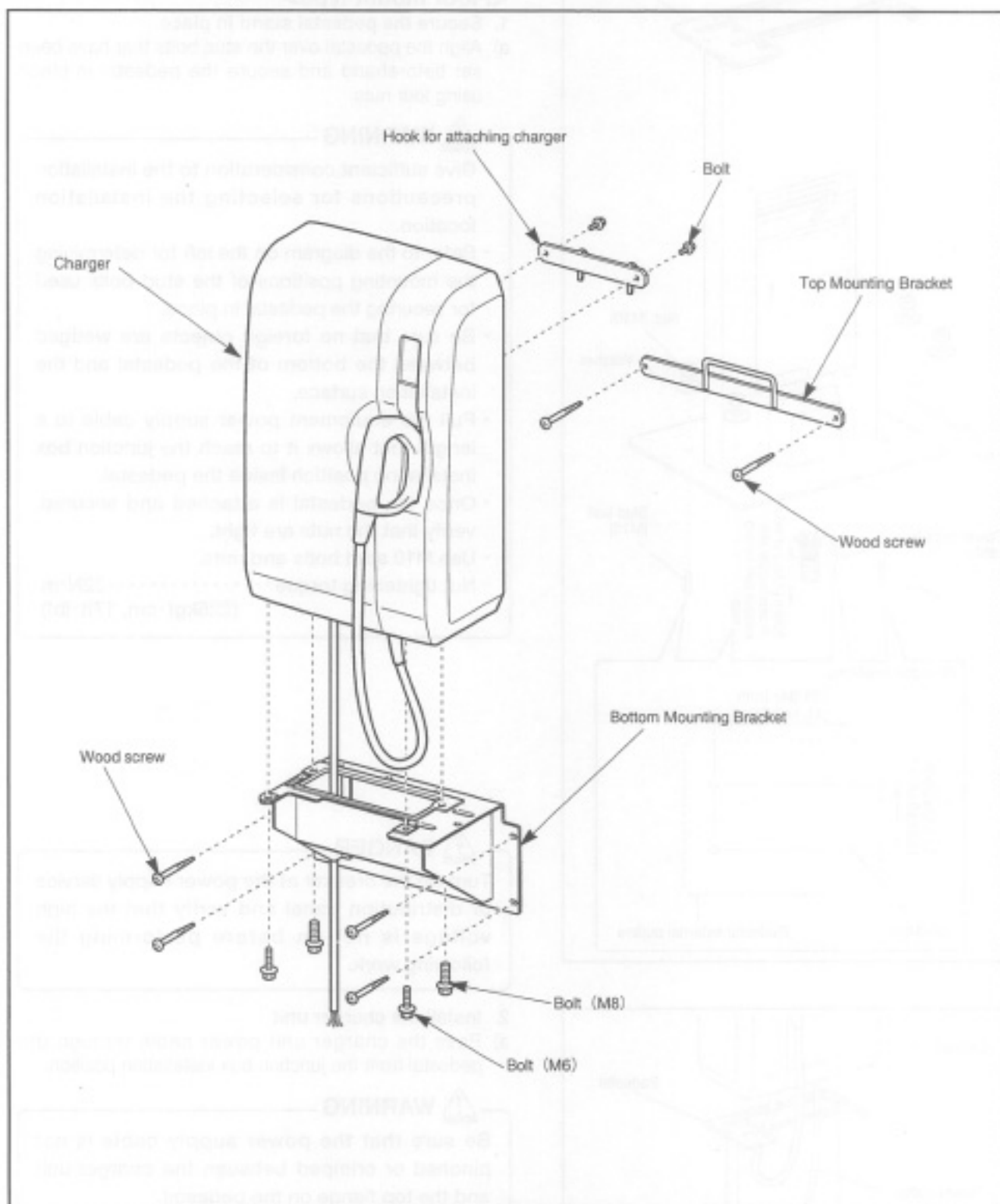
Common hand tools, knife, torque wrench, torque socket wrench (T20, Floor mount type), and drill (wall mount type)

Overview of Installation

<Floor mount type>

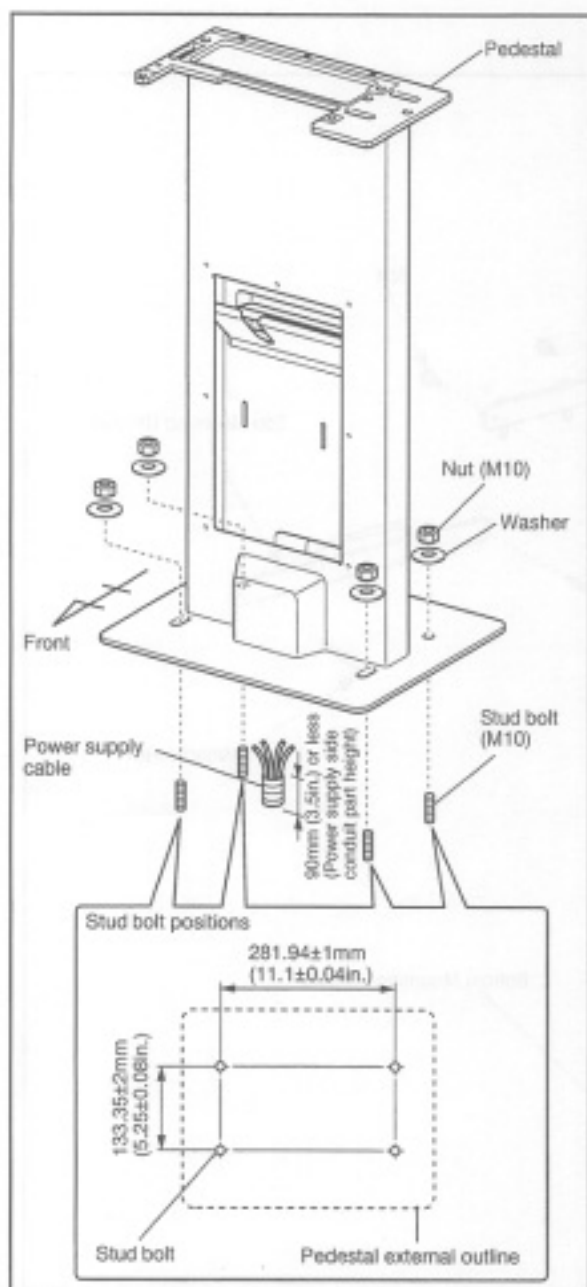


<Wall Mount Type>



Checks Before Installation

1. Remove the charger from the packing container.
Note that the container and packing material are re-useable.
Please either save these or return them to your distributor.
2. Verify that the coupler paddle is in its holster.



Installation Details <Floor mount type>

1. Secure the pedestal stand in place

- Align the pedestal over the stud bolts that have been set beforehand and secure the pedestal in place using four nuts.



WARNING

- Give sufficient consideration to the installation precautions for selecting the installation location.
- Refer to the diagram on the left for determining the mounting positions of the stud bolts used for securing the pedestal in place.
- Be sure that no foreign objects are wedged between the bottom of the pedestal and the installation surface.
- Pull the equipment power supply cable to a length that allows it to reach the junction box installation position inside the pedestal.
- Once the pedestal is attached and secured, verify that the nuts are tight.
- Use M10 stud bolts and nuts.
- Nut tightening torque22N·m
(225kgf·cm, 17ft·lbf)



DANGER

Turn off the breaker at the power supply service or distribution panel and verify that the high voltage is not on before performing the following work.

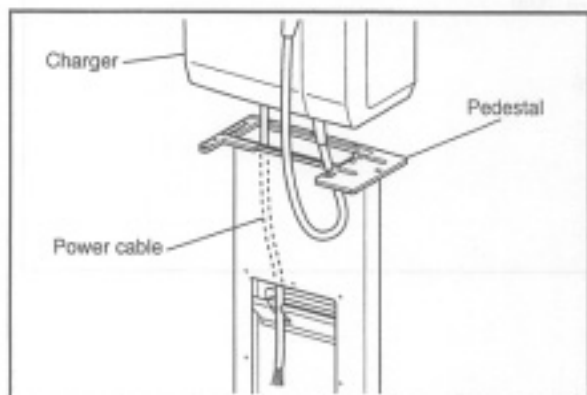
2. Install the charger unit

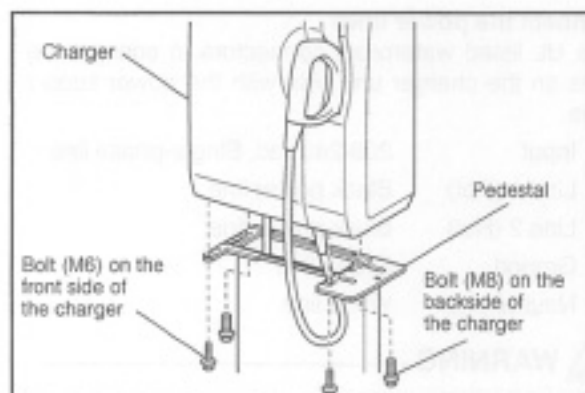
- Pass the charger unit power cable through the pedestal from the junction box installation position.



WARNING

Be sure that the power supply cable is not pinched or crimped between the charger unit and the top flange on the pedestal.



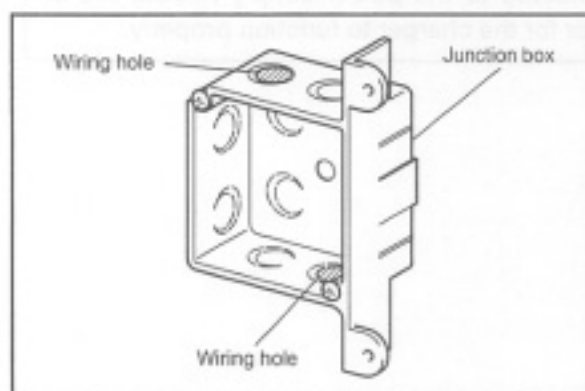


- b) Use four bolts to mount the charger unit to the pedestal.



WARNING

- Be careful not to drop the bolts used for mounting the charger, inside the pedestal.
- Tightening torques
 - M6 bolts on the front side of the charger
 -4.5N·m
(46kgf·cm, 3.5ft·lbf)
 - M8 bolts on the backside of the charger
 -11N·m
(113kgf·cm, 8ft·lbf)



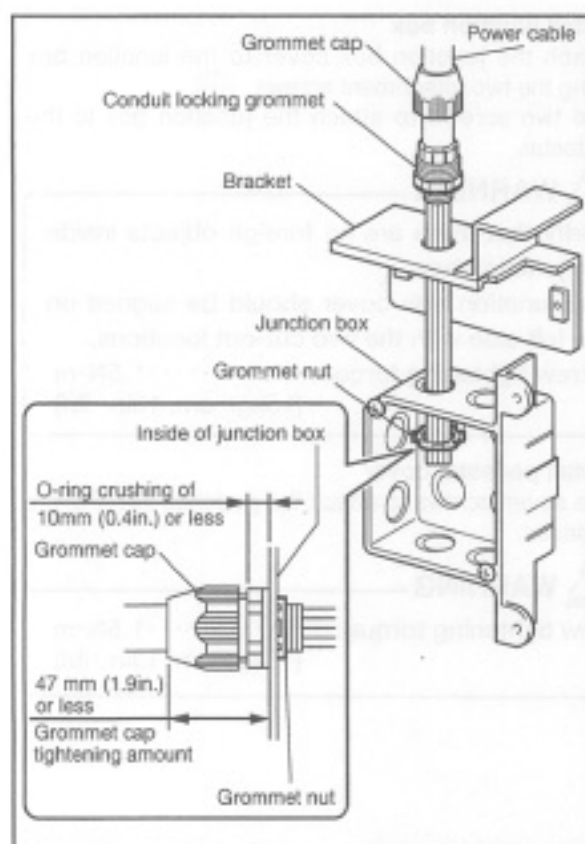
3. Prepare the junction box

- a) Use a knife to cut out the two cable wire knockout holes in the junction box in the locations shown in the diagram.



WARNING

- There are two knockout hole sizes. Be sure to use the smaller holes.
- Clean off the knockout holes so that no burrs remain and the surface of the openings are smooth.



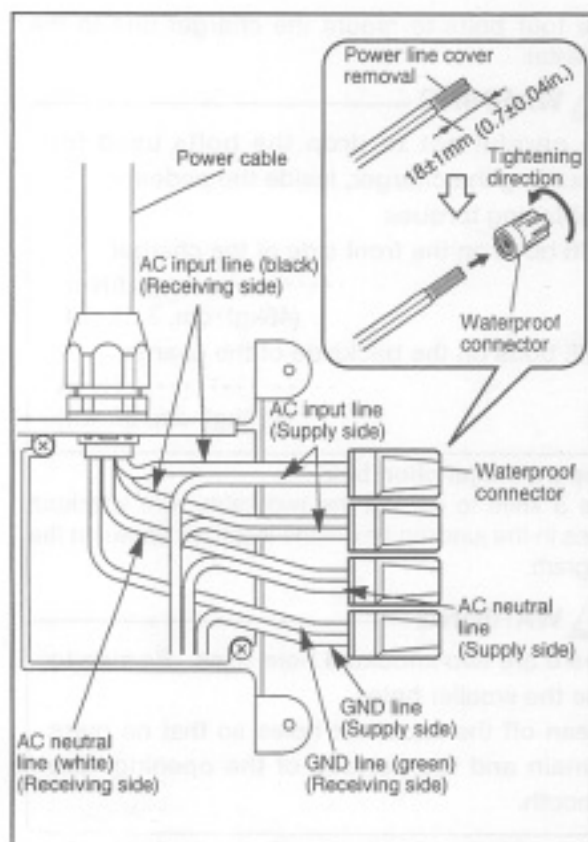
4. Assemble the junction box and conduit locking grommets

- a) As shown in the figure, pass each cable through the conduit locking grommet and secure to the junction box.



WARNING

- The upper conduit locking grommet and bracket are tightened together.



5. Connect the power lines

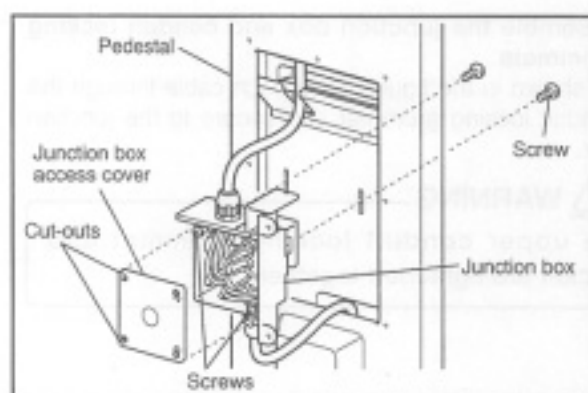
- a) Use UL listed waterproof connectors to connect the lines on the charger unit side with the power supply lines.

• Input	208-240Vac, Single-phase line
• Line 1 (Hot)	Black power line
• Line 2 (Hot)	Black power line
• Ground	Green line
• Neutral point	White line



WARNING

The neutral line on the charger must be connected to the power supply neutral line in order for the charger to function properly.



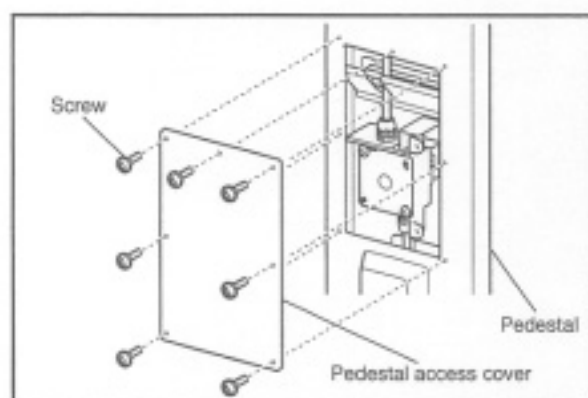
6. Install junction box

- a) Attach the junction box cover to the junction box using the two attachment screws.
- b) Use two screws to attach the junction box to the pedestal.



WARNING

- Verify that there are no foreign objects inside the junction box.
- The junction box cover should be aligned on the left side with the two cut-out locations.
- Screw tightening torque1.5N·m (15kgf·cm, 13in.·lbf)



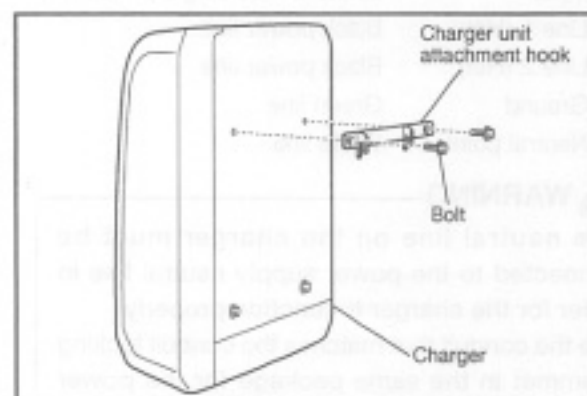
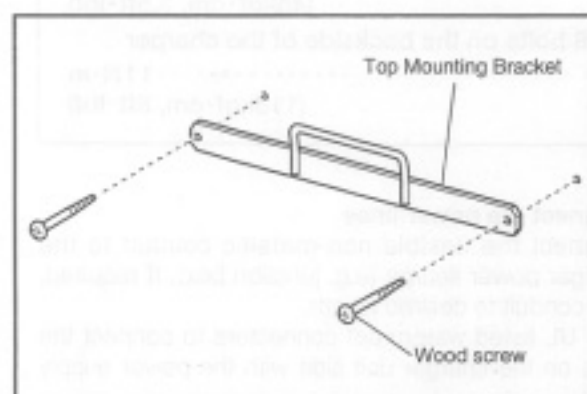
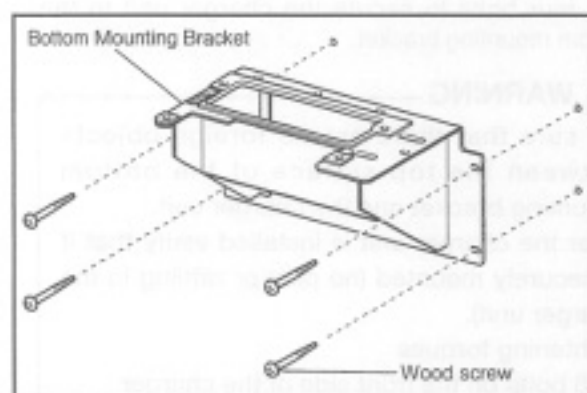
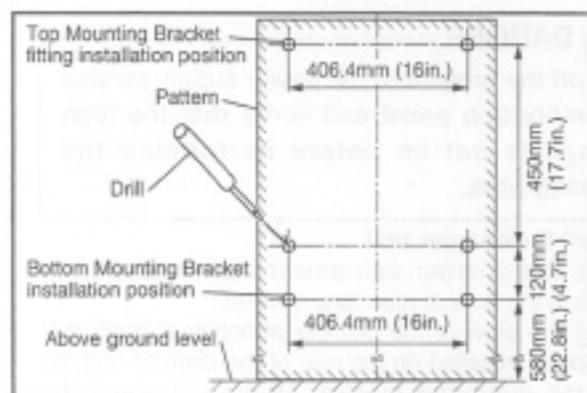
7. Install pedestal cover

- a) Use seven screws to attach the pedestal cover to the pedestal.



WARNING

Screw tightening torque1.5N·m (15kgf·cm, 13in.·lbf)



<Wall Mount Type>

1. Open holes for installation position

- Affix the pattern (accompanying document) to the wall surface at the specified height.



WARNING

Give sufficient consideration to the installation precautions for selecting the installation location.

- Use the drill to open the screw holes in the center of each hole in the pattern.
- Remove the pattern.

2. Install the bottom mounting bracket

- Use four wood screws to install the bottom mounting bracket in the prescribed position.



WARNING

- Be sure that there are no foreign objects between the bottom mounting bracket and the surface of the wall.
- After the bottom mounting bracket is installed verify that it is securely mounted (no play in the bracket).

3. Install the top mounting bracket

- Use two wood screws to secure the top mounting bracket fitting in the prescribed position.



WARNING

- Be sure that there are no foreign objects between the top mounting bracket fitting and the surface of the wall.
- After the top mounting bracket fitting is installed verify that it is securely mounted (no play in the plate).

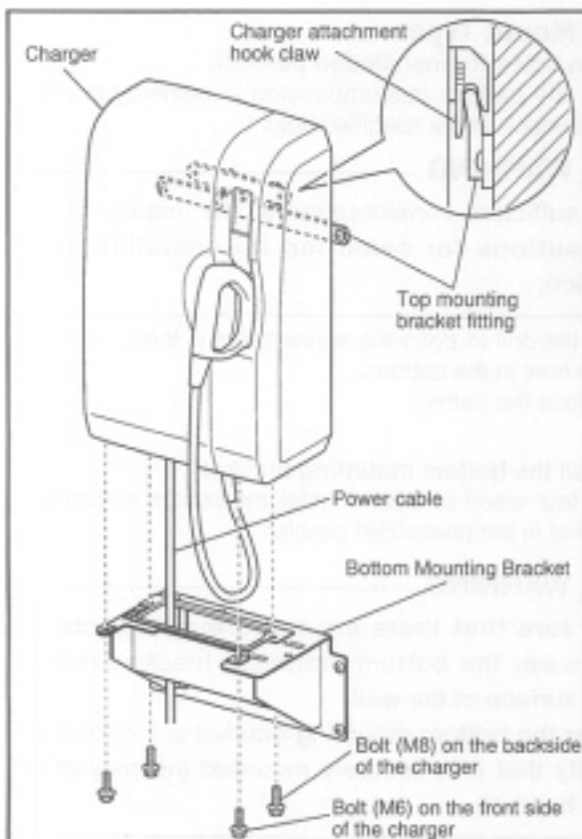
4. Install the charger unit attachment hook

- Remove the two bolts on the top rear side of the charger unit and install the charger unit attachment hook.



WARNING

- Do not remove the two bolts on the bottom of the charger unit.
- Bolt tightening torque3.5N·m
(36kgf·cm, 2.7ft·lbf)



DANGER

Turn off the breaker at the power supply service or distribution panel and verify that the high voltage is not on before performing the following work.

5. Install the charger unit

- Pass the charger unit power cable (receiving) through the bottom mounting bracket.
- Hang the claw of the charger attachment hook that has been installed on the rear of the charger unit, on the top mounting bracket fitting and place the charger unit on the bottom mounting bracket.
- Use four bolts to secure the charger unit to the bottom mounting bracket.



WARNING

- Be sure that there are no foreign objects between the top surface of the bottom mounting bracket and the charger unit.
- After the charger unit is installed verify that it is securely mounted (no play or rattling in the charger unit).
- Tightening torques
 - M6 bolts on the front side of the charger
 -4.5N·m
(46kgf·cm, 3.5ft·lbf)
 - M8 bolts on the backside of the charger
 -11N·m
(113kgf·cm, 8ft·lbf)

6. Connect the power lines

- Connect the flexible non-metallic conduit to the charger power source (e.g. junction box). If required, trim conduit to desired length.
- Use UL listed waterproof connectors to connect the lines on the charger unit side with the power supply lines.

• Input	208-240Vac, Single-phase line
• Line 1 (Hot)	Black power line
• Line 2 (Hot)	Black power line
• Ground	Green line
• Neutral point	White line



WARNING

- The neutral line on the charger must be connected to the power supply neutral line in order for the charger to function properly.
- Use the conduit that matches the conduit locking grommet in the same package for the power supply lines.

- Reinstall the junction box cover.

Inspection After Installation is Complete

1. Installation checks

- (1) Check that components such as the pedestal and plate fitting are securely attached and verify that the power lines are correctly connected and that no undue force is being exerted on these lines.
- (2) Also check one final time that all bolts and screws have been firmly tightened.

2. Operation check

- (1) Turn on the service panel breaker.

At this point, confirm that the charger display lights up temporarily and then goes out.

- (2) Confirm the operation of the Charger Circuit Interrupt Device (CCID) with the Charger Circuit Interrupt Device (CCID) test (as explained in the owner's manual).
- (3) Confirm that the display lights up temporarily and then goes out when you remove the charger paddle from the paddle holder.
- (4) Return the paddle to its paddle holder.

This completes the charger unit preparations.

3. Clean up

- (1) Gather all of the packing materials for return to the distributor.
- (2) Throw away all garbage that has been generated during the course of this work and clean up.
- (3) Turn the owner's manual and installation manual over to the user.

Power: 1.5 kW

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LISTED

EV BATTERY CHARGER
25EK