Date 20. Oct. 2021

No. FF-00368H

Messrs.

SPECIFICATION

Charging connector with cable

For electric vehicle quick charger

Project:

Reference:

Reception stamp or signature

Please return one copy after stamp or signature your acceptance sign on this specification. When there is no return two months from the date of the issue, this specification will be regarded as accepted.

Prepared by T. Yoshikawa

Engineering Department

Approved by K. Shinohara

Group Manager

Engineering Department

Japan Energy Components Co., Ltd.

1. Scope

This specification is applicable to lead the charge connector and cable to be used for quick charger for electric vehicles.

2. Reference Standard

IEC62196-3:2014 Plugs, socket-outlets, vehicle connectors and vehicle inlets
- Conductive charging of electric vehicle -
Part3: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers

3. Model

Table 1 Model

Model number (※1)	Rated voltage (V)	Rated current (A)	Main conductor
E55057-35-L	DC500	125	35mm^2
E55057-25-L	DC500	100	25mm^2
E55057-10-L	DC500	60	10mm^2

※Note 1: [L] of model number shows a cable length.
The length of the cable depends on the specification of your company (1m unit).
Example) E55057-35-6

4. Ambient temperature

Temperatures : －30 ～ 50 ℃

5. Construction of Connector

Connector confirms to IEC62196-3 : 2014, and consist of the housing, terminal pins, Illuminations unit, and electric locking system. Between the conductive part and non-conductive part are insulated. In addition, accessories are non-rewiring.
Construction of connector is shown by Fig.1.

5.1 Connector

5.1.1 Housing

Housing consist of V-0(UL94) plastic material, and terminal pins can’t be touch easily by hand.

5.1.2 Eject button

Connector must not withdrawal from inlet while after complete insert and push a eject button.

5.1.3 Indication lamp

Connector has red Illumination unit that indicate charging condition.

5.1.4 Electric locking system

Connector must not withdrawal from inlet while charging.

Coil resistance : 38Ω±10% at 20℃

Voltage : DC 12V±10%

Required current : 0.316A (DC 12V at coil temperature 20℃)

Duty cycle : 100% (Continuous)

5.2 Cable

Table 2 Specifications of Connector cable

Conductor	Annealed copper wire
Insulation	XLPE
Identification of cable	Shown in drawing of “Identification of cable”
Sheath	PUR(Black)
Printings	Certification mark CE , TUV

Table 3 35mm^2 Cable structure list

Voltage(V)		600		
Number of cores		2	5	2pair
Conductor	Cross section (mm^2)	35	0.75	0.75
	Outer diameter（mm）	7.7	1.1	1.1
Outer diameter of insulation (mm)		10.3	2.2	2.2
Outer diameter	Standard (mm)	25.9		
	Maximum (mm)	27.2		
Weight (kg/km)		1039		
Testing Voltage(V/1min)		3000	3000	3000
Maximum conductor resistance at 20℃ (Ω/km)		0.554	26.0	26.0
Insulator resistance at 90℃ (MΩ･km)		0.1		
Bending radius (mm)		≧156		

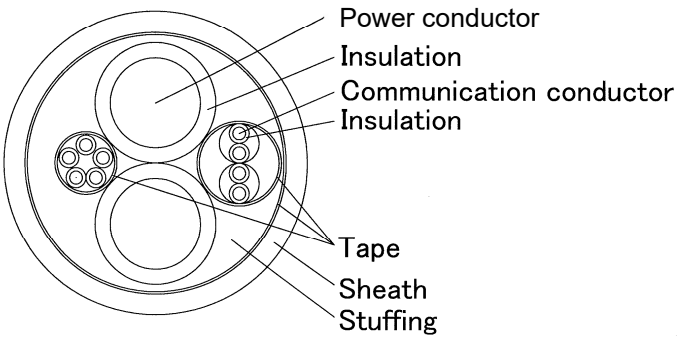
Table 4 25mm^2 Cable structure list

Voltage(V)		600		
Number of cores		2	5	2pair
Conductor	Cross section (mm^2)	25	0.75	0.75
	Outer diameter（mm）	6.8	1.1	1.1
Outer diameter of insulation (mm)		9.2	2.3	2.3
Outer diameter	Standard (mm)	23.6		
	Maximum (mm)	24.9		
Weight (kg/km)		760		
Testing Voltage(V/1min)		3000	3000	3000
Maximum conductor resistance at 20℃ (Ω/km)		0.780	26.0	26.0
Insulator resistance at 90℃ (MΩ･km)		0.1		
Bending radius (mm)		≧142		

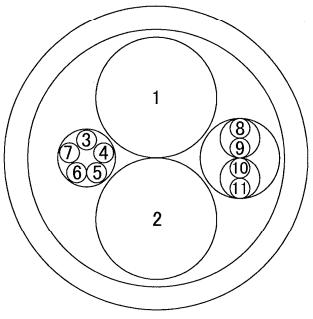
Table 5 10mm^2 Cable structure list

Voltage(V)		600		
Number of cores		2	5	2pair
Conductor	Cross section (mm^2)	10	0.75	0.75
	Outer diameter（mm）	4.1	1.1	1.1
Outer diameter of insulation (mm)		6.1	2.2	2.2
Outer diameter	Standard (mm)	19.3		
	Maximum (mm)	20.6		
Weight (kg/km)		457		
Testing Voltage(V/1min)		3000	3000	3000
Maximum conductor resistance at 20℃ (Ω/km)		1.91	26.0	26.0
Insulator resistance at 90℃ (MΩ･km)		0.1		
Bending radius (mm)		≧116		

SIZE	No.	Identification	No.	Identification
35㎟	1	BLACK	2	WHITE
0.75㎟	3	Blue/Numberring 1	4	Blue/Numberring 2
	5	Blue/Numberring 3	6	Blue/Numberring 4
	7	Blue/Numberring 5	8	Blue/Numberring 6
	9	Blue/Numberring 7	10	Blue/Numberring 8
	11	Blue/Numberring 9		



Section view



Identification of cables

6. Specifications

Specifications of Connector is shown as Table 6.

Test items showed in Table 6 are requirements of IEC62196-3：2014.

Table 6 Specifications of Connector

Test items	Specification	Performance test
Resistance to ageing of rubber and thermoplastic material (IEC62196-3 15)	Must have sufficient resistance to deterioration	(70±2)℃ and 10days(240h),for rubber (80±2)℃ and 7days(168h),for thermoplastic material.
Insertion force test (IEC62196-3 16)	Less than 100N	Fitting of the connector when the power of operation.
Degree of protection (IEC62196-3 20)	Not Mated IP44 Mated IP45	Accessories shall meet the minimum degrees of protection as required in IEC 61851-1：2010.
Insulation resistance (IEC62196-3 21)	100MΩ or more	Insulation resistance is measured with a d.c. voltage of approximately 500 V applied, the measurement being 1 minute after application of the voltage. Immediately after the test, it shall be verified that for accessories with enclosures of thermoplastic material, the means of providing non-interchangeability have not been impaired.
Dielectric Withstand Test (IEC62196-3 21)	No Breakdown	AC2000V/1min, between terminal pin and earth, each nearby terminal pin.
Breaking capacity (IEC62196-3 22)	After test, electric test	Three making and breaking operations under the indicated load.
Endurance Test (IEC62196-3 23)	After test, No damage and electric test	Operation of insertion and withdraw the connector. 10,000 cycles

Temperature rise test (IEC62196-3 24)	Allowable temperature of the portion that may be held in normal operation as follows. Metal parts below 50℃ Non-metal parts below 60℃ For parts which may be touched the permissible temperature are Metal parts below 60 ℃ Non-metal parts below 85 ℃ Less than 50K (terminal)	E55057-35-L test current： rated current 125 A E55057-25-L test current： rated current 100 A E55057-10-L test current： rated current 60 A The test shall be continued until thermal stabilization is reached.
Flexible cables and their connection (IEC62196-3 25)	Maximum displacement : < 2mm During the test, the cable shall not be damaged	[Test 1] Tension：240N×1sec×100 cycles [Test 2 (after test 1)] Torque：1.5Nm×1min
Drop impact test (IEC62196-3 26)	After test, No damage.	Leave for at least 16 hours in a chamber at -30 ± 2 ℃. Drop 8 times from height 1 m. The total length of the cable is 2.25 m.
Vehicle drive over (IEC62196-3 33)	There shall be no serious cracks, damage, and deformation.	Tire Size P225/75R15 tires or equivalent Tire pressure (2.2 ± 0.1) bar Crash force (5000 ± 250) N Rotated at a speed of (8 ± 2) km / h.

7. Laboratory tests

Table7 Experimental data

Test items	Specification	Performance test
Weather(UV) resistant	No cracks or defects	(ISO4892-2 Method A 720h) Xenon-arc lamps Irradiance : 60W/m2(300nm to 400nm) Black-panel temperature : 65±3℃ 65±5%Rh 18min of spraying 102min dry The face sprayed water: the exposed face.

8. Product inspection

Product inspection of Connector is shown as Table 8.

Table 8 Product inspection of Connector

Test items	Specification	Performance test
Visual inspection	No abnormalities	
Conductor test	No disconnecting	
Insulation resistance test	100MΩ or more	DC500V, between terminal pin and earth, each nearby terminal pin
Dielectric Withstand Test	No Breakdown	AC2000V/1min, between terminal pin and earth, each nearby terminal pin.
Illumination unit lighting test	Lighting red Illumination unit	DC12V at Illumination unit circuit
Electrical locking test	Don't move Eject button	DC12V at electrical locking system circuit

9. Packing

9.1 Packing Label

The following particulars are legibly printed or marked on the packing material surface.

- Order Number
- Specification Number (if applicable)
- Product Name (if applicable)
- Model number(example) "E55057-35-6"
- Manufacturing Year and Month (example) "2019-10"
- Quantity
- Manufacturer's Name or Trade Mark (example) Japan Energy Components

10. Notice to Purchaser

10.1 The user should determine the suitability of the product for its intended use before utilizing the product. The user assumes all risk and liability associated with such use.

10.2 The warranty period of the product shall be one year from the date of purchase. If this product is defective with in the warranty period stated above, the manufacture's only obligation is to repair or to deliver the substitution, at manufacturer's option.

10.3 The manufacturer will not be liable for any loss or damage arising from this product, whether direct, indirect, special, incidental, or consequential regardless of the legal theory asserted, except where prohibited by law.

10.4 Please be sure to read the instruction manual of the target product before use. Contains precautions for safe use. Also, please check the contents of the product. Please contact us if you find any abnormalities such as missing items or damage.

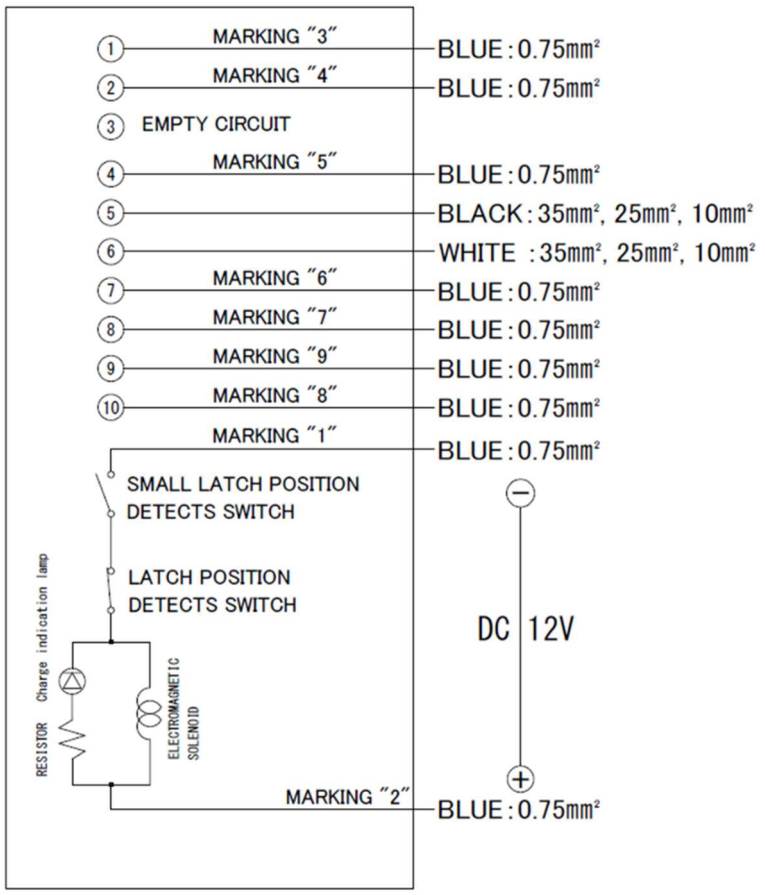
10.5 If the electric lock of the connector is not working, there is a possibility that sufficient current is not flowing through the solenoid (actuator) of this product. Check if the input power of DC12V is insufficient.

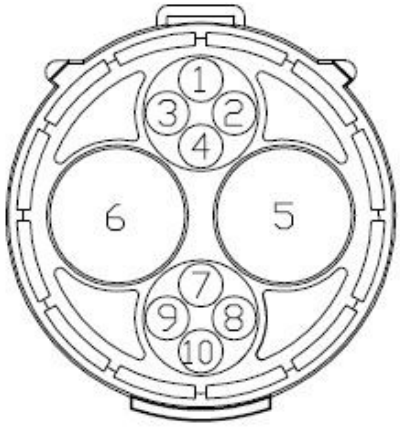
10.6 Please use the cable without twisting so that it will not be bent below the allowable bending radius. There is a risk of disconnection if it is repeatedly subjected to severe loads.

10.7 If the cable is cut by an external force during charging, the electric lock will be released. Please be careful.

10.8 Please note that due to product improvement, items not described in this specification may be changed without notice.

11. Connection diagram



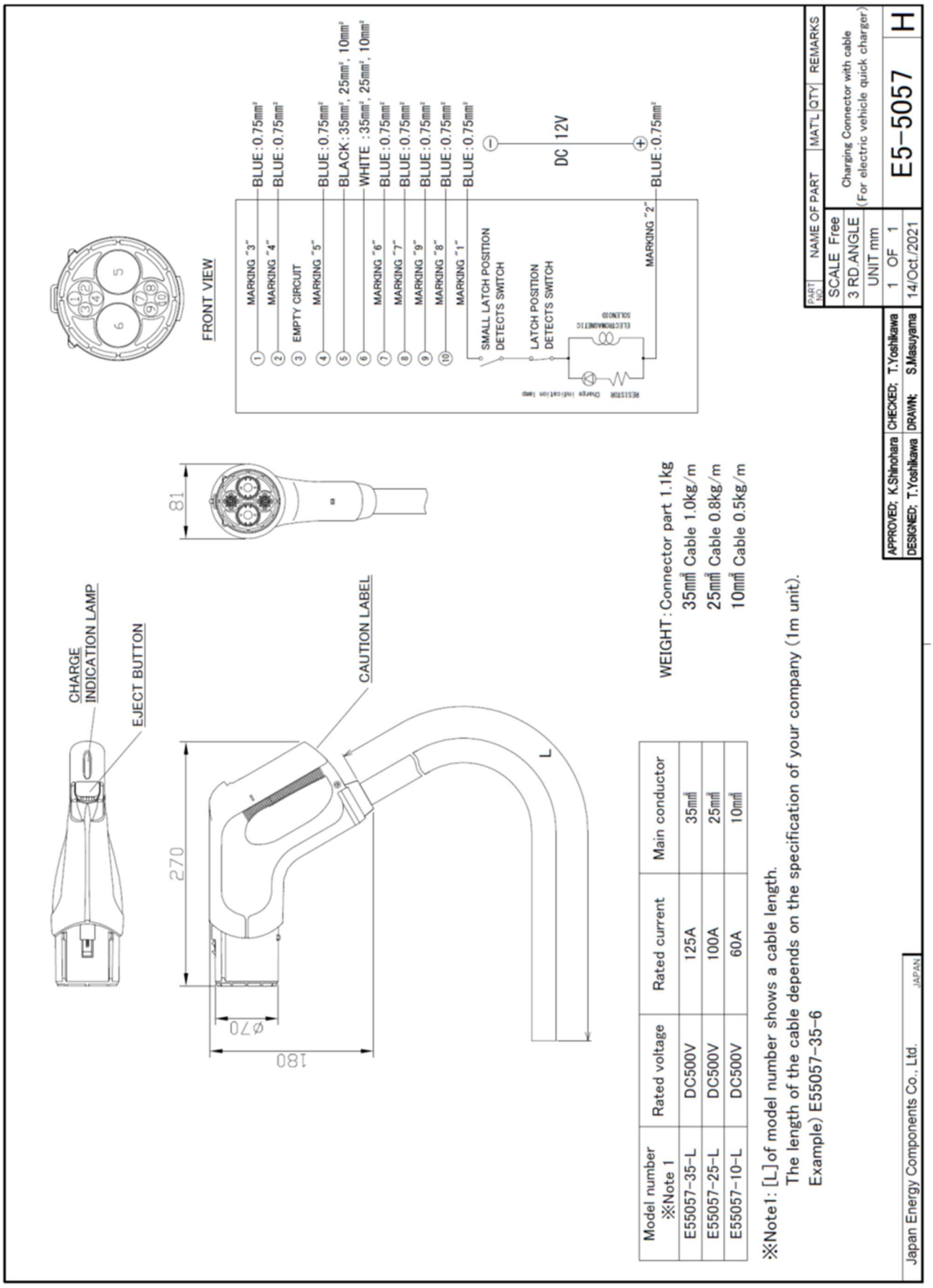


FRONT VIEW

Warning:

If the MARKING"1" and MARKING"2" are connected with the wrong polarity, the LED lamp will be damaged.

Fig.1



Model number ※Note 1	Rated voltage	Rated current	Main conductor
E55057-35-L	DC500V	125A	35mm²
E55057-25-L	DC500V	100A	25mm²
E55057-10-L	DC500V	60A	10mm²

Fig.2

Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
R 50384492

Blatt *Sheet*
0003

Ihr Zeichen *Client Reference*	Unser Zeichen *Our Reference*	Ausstellungsdatum	*Date of Issue*
FTF-00354	ZJL-MAS-50000829 008	19.10.2021	*(day/mo/yr)*

Genehmigungsinhaber *License Holder*
Japan Energy Components Co., Ltd.
4-2 Kashiwabara
Ishioka-shi, Ibaraki
315-0002 Japan

Fertigungsstätte *Manufacturing Plant*
Yonezawa Electric Wire Ltd.
1-10-53 Higashi
Yonezawa-shi, Yamagata
992-0026 Japan

Prüfzeichen *Test Mark*

TÜVRheinland CERTIFIED
Type Approved
Safety
Regular Production
Surveillance
www.tuv.com
ID 1419049405

Geprüft nach *Tested acc. to*
EN 62196-3:2014
IEC 62196-3:2014

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

Connector EV connector, as sheet 0001

Change

Name of License Holder: FUJIKURA COMPONENTS Ltd.

Address of Factory: 1-10-53 Higashi
Yonezawa-shi, Yamagata
990-0026 Japan

changed to: (see above)

TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierungsstelle

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg
http://www.tuv.com/safety E-mail: markcheck@tuv.com
Fax: +49 221 806-3935

Zertifizierungsstelle

Yoshihiro Sugita

To our customers:

ⅦT-8322B

Japan Energy Components Co., Ltd.

Operating Instructions
for
Connector
for
DC Quick charger
(One-Push Type　CHAdeMO connector)

Japan Energy Components

Before using the product

1. Please read the instruction manual before using the product. It contains precautions for safe use.

2. Please make sure that this product is suitable for your purpose before use.

3. When you shake this product, you may hear a "rattling" sound. This is the sound of parts touching each other due to the gap between the moving parts. The sound is not abnormal.

4. For the purpose of product enhancement, items not listed in this specification are subject to change without notice.

《Precautions for handing》

Warning · Caution

The meanings of "warning" and "attention" are as follows.
Since it is related to safety, please be sure to observe it.

WARNING	Contents that are assumed to cause death or serious injury if it is handled erroneously.
Caution	Content that can be expected to cause injury or only physical damage if it is handled erroneously.

The circle and diagonal symbol mark mean "you must not do".
This symbol mark means "General prohibition".

The circle and diagonal symbol mark mean "you must not do".
This symbol mark means "Do not touch".

The circle and diagonal symbol mark mean "you must not do".
This symbol mark means "Fire prohibition".

The circle and diagonal symbol mark mean "you must not do".
This symbol mark means "Disassembly prohibition".

The triangular symbol mark means "you must be careful".
This symbol mark means "Electric shock hazard".

The triangular symbol mark means "you must be careful".
This symbol mark means "Fire hazard".

The symbol mark of the filled circle means "you must do".
This mark means "General instruction".

WARNING

●Do not twist the cable.

The inside of the cable may be damaged, leading to fire or electric shock. Also, if the cable twists, please return to the charging stand after restoring.

●Do not force the cable to bend.

The inside of the cable may be damaged, resulting in fire or electric shock.

●Do not step on the cable or run over it by the vehicle.

The inside of the cable may be damaged, leading to fire or electric shock.

●Do not use absolutely, when serious scratches or breakage are found in connectors and cables.

There is a danger of fire, electric shock, or burns.

●Do not operate with wet hands absolutely.

There is a danger of electric shock.

●Do not intentionally pour water or liquid to the connector.

There is a danger of breakdown, electric shock, fire.

In the unlikely event you drop it into a puddle, contact the management company immediately.

●Do not touch absolutely the metal contacts at the apertural area of the connector.

There is a danger of electric shock.

●Do not bring products that emit heat like fire and air dryer close.

There is a danger of breakdown, fire.

●Do not let children operate it absolutely.

There is a danger of electric shock, injury or burns.

●Do not swing the connector while holding the cable.

There is a danger of breakdown or injury.

WARNING

●When you notice abnormalities such as offensive smell or smoke, stop charging immediately and contact the management company.

There is a danger of fire or electric shock.

●Do not pour water or liquid directly to the connector during charging.

There is a danger of breakdown, electric shock, fire.

●Do not lean on the connector or load objects during charging.

There is a danger of breakdown, electric shock, fire.

●Do not pull out the connector during charging. It is very dangerous.

There is a danger of fire, electric shock, or burns. Do not touch connector or cables absolutely during charging.

●Do not run the vehicle while loading the connector.

It may cause car breakdown or accident.

●Please use voltage and current within the rated value range of connector specifications.

There is a danger of fire or electric shock.

●Do not use extension cables or adapters absolutely.

There is a danger of electric leakage and fire.

●Do after turning off the charger main unit absolutely, when doing maintenance.

There is a danger of electric shock.

●When it gets dirty please wipe it with a dry cloth.

Do not use organic solvents such as detergents, benzine, thinner, etc., nor water jet, steam jet absolutely.

WARNING

●**Do not stuff anything in the connector fitting part.**
There is a danger of breakdown, electric shock, fire.

●**Please remove it when adhesion of foreign matter is found on connector fitting part.**
There is a danger of breakdown, electric shock, fire.

●**Do not pull the connector forcibly.**
It may cause malfunction or injury.
Adjust the position with the car and install it comfortably.

●**Do not float the cable off the ground.**
It will be the cause of the failure.
Crawl long cables on the ground before use.

●**Do not disassemble, repair, or modify connectors absolutely.**
There is a danger of fire, electric shock, or injury.

Caution

●**If the release button of the connector does not return, pull out the connector while pressing the release button once, and then reconnect.**
The connector may be damaged and cannot be removed from the vehicle.

●**Be careful when touching connectors in the hot sun or cold climates.**
There is a danger of burns or frostbite.

●**Please do not drop the connector on the ground.**
It will be the cause of the breakdown.

●**When charging is completed, be sure to return the connector to the charging stand.**
It will be the cause of the breakdown.

●**When the cable of the connector touches the ground, please protect it with the spiral tube etc.**

Designation and role of each part

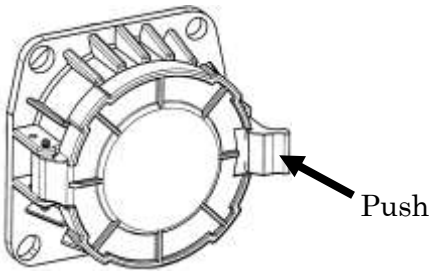
GRIP	This part is grasped and operated when the connector is used.
EJECT BUTTON	The connector is pulled out while pushing this part when the connector is detached.
CHARGE INDICATION LAMP	The LED lights red while charging, and when the charge is completed, it turns off.
LATCH	The connector and the inlet on the vehicle side are locked.
SMALL LATCH	It is a mechanism to detect the destruction of the inlet on the vehicle side. It does not relate to the operation of the connector.

How to handle the connector

【Operations for connecting the connector to the vehicle side】

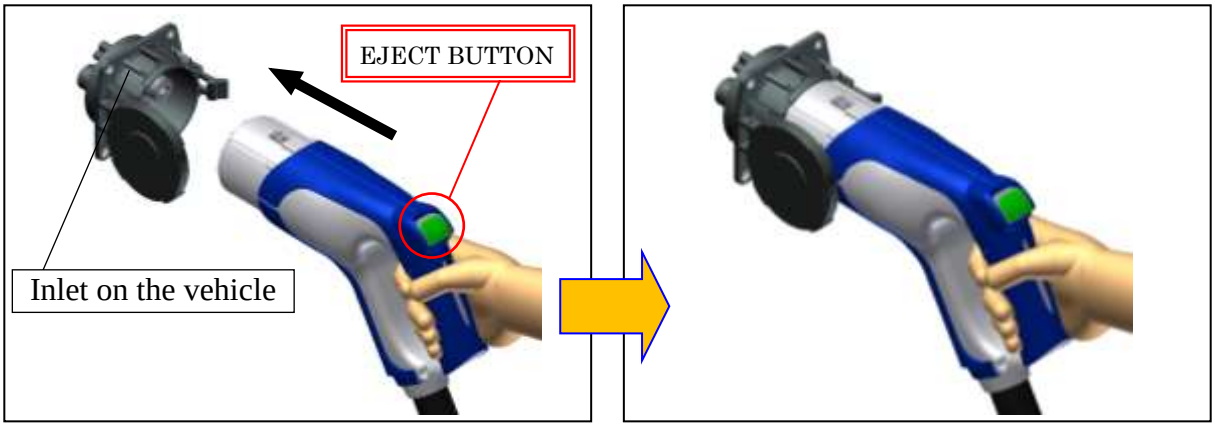
① Preparation for vehicle side

Open the cap of the inlet on the vehicle side.



② Installation operation of connector

Grasp the grip part of the connector without touching eject button, and insert it straight in the vehicle side inlet slowly horizontally.

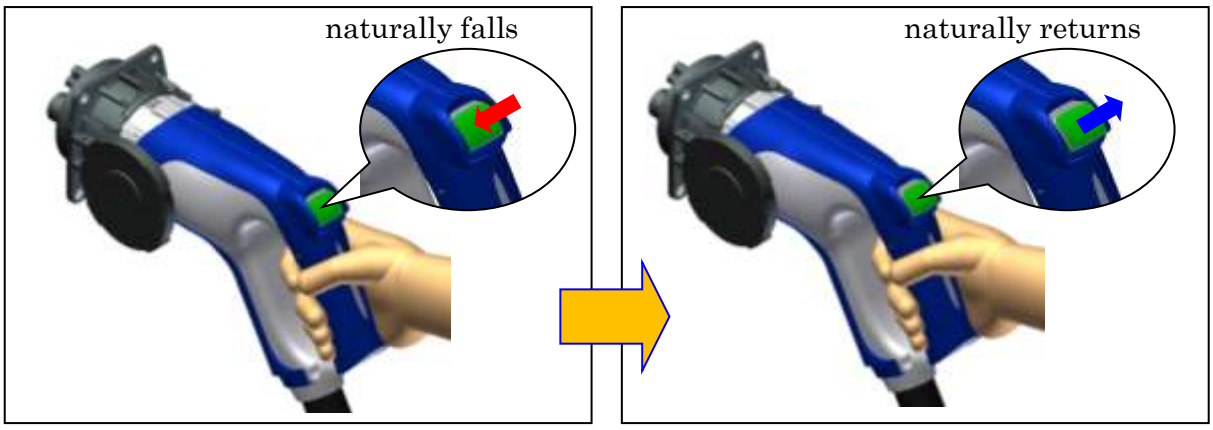


③ Confirmation of connector installation completion (Signal of connector installation completion)

Eject button naturally falls when Latch slips into the vehicle side inlet. (Left figure)

Eject button naturally returns to former position with clicking sound when the connector is pushed further. (Right figure)

Confirm the connector is pulled forward lightly and it does not fall out.



⚠	Caution	If the charger connector eject button does not return smoothly, pull the connector back while pushing eject button once and
⚠	Caution	It is not abnormal though the grip might become hot by the multiple continuous charge .
⚠	Warning	Don't touch the connector and the cable if the charge is begun.

How to handle the connector

【Operating for pulling the connector from the inlet on the vehicle side】

① Indispensable confirmation matter before connector is detached

Confirm Charge indication lamp has been turned off when the charge is completed.

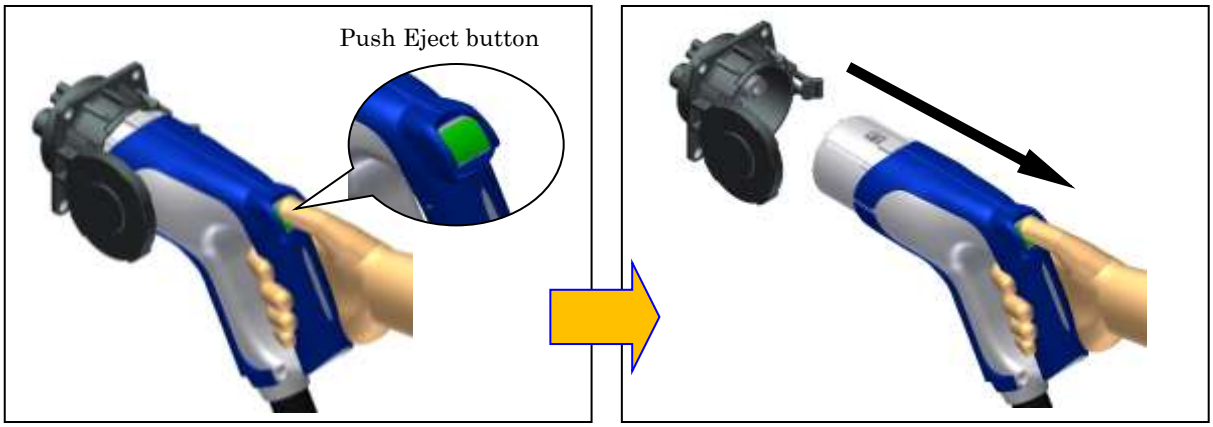
Stop charging by pushing the STOP switch on the charger side if you discontinue charging before the charge stops automatically (The state that Charge indication lamp lights).

Warning	When the connector is forcibly pulled out while charging (The state that Charge indication lamp lights), it is very dangerous. There is a risk of fire and burns.

② Detaching operation of connector

Firmly grip the connector grip and push Eject button into the interior by the thumb.

Under such a condition, pull out the connector slowly forward.



Caution	Do not pull out the connector with Eject button pushed halfway. There is a possibility of damaging the vehicle side inlet and the connector.

③ Processing of vehicle side

Push the cap of the vehicle side inlet completely until the click sound is heard.