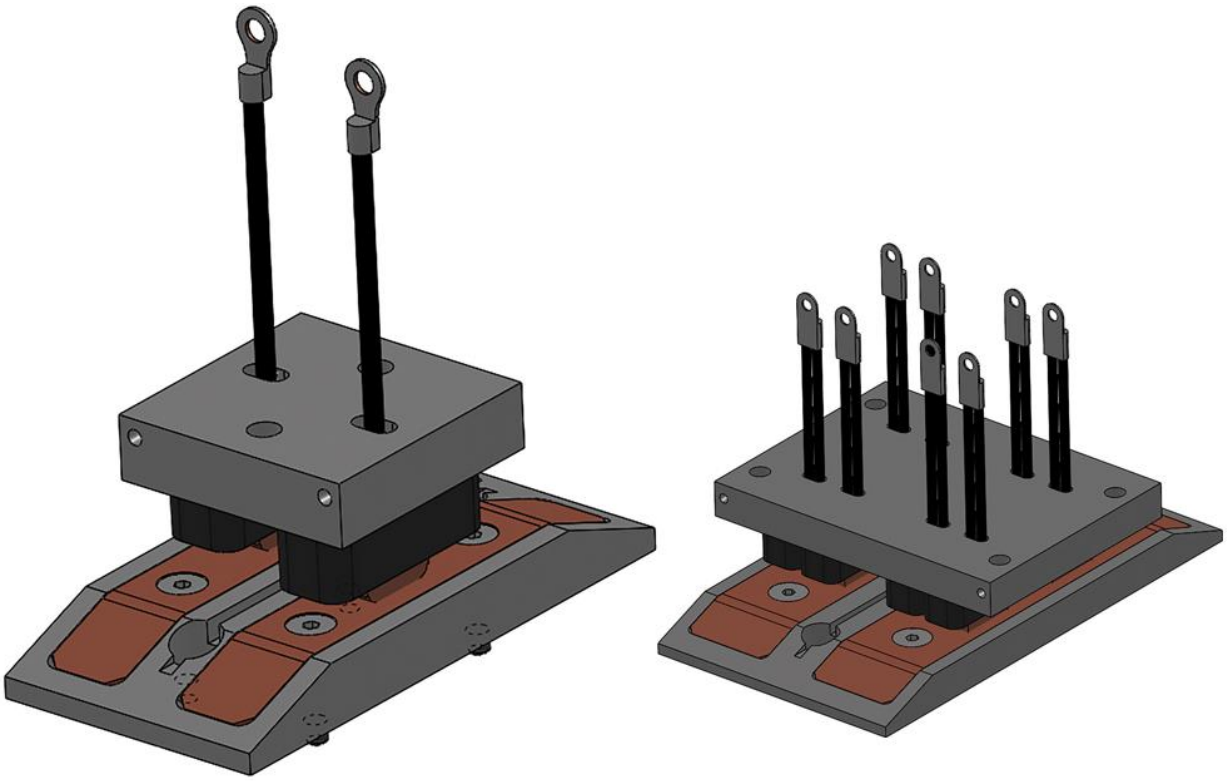
Operating Instructions

Charging Contact



These operating instructions are based on: XA-568705 | 15.12.03

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1 Safety

1.1 Electrical warnings

Install the charging contact system in accordance with the National Electric Code (NEC) or local codes and/or ordinances applicable in your region.

DANGER!

Danger of injuries by electrical shock!

→ Always disconnect the power before starting to perform any service function and secure against unintentional restart.

Do not use charging contacts with electrical loads greater than the rated current and voltage. Information regarding electrical current and operating voltage of each contact are listed on the identification plate of the component. For further details see our product catalog.

CAUTION!

Please observe and read the operating instructions!

→ Read these entire operating instructions prior to attempting to make any installation and/or maintenance of this product.

1.2 Operational warnings

Means for the final installation and integration of this equipment is the responsibility of the system manufacturer.

Modifications of this equipment may cause excessive wear or failure and will void the warranty.

Modifications may cause safety and fire hazards, the end user takes sole responsibility for any modifications made to the product and in doing so absolves Conductix-Wampfler from any liability.

1.3 Maintenance warnings

Exercise care while installing, servicing, adjusting and operating the charging contacts and charging system.

Periodically check all fasteners and hardware to ensure they are properly tightened. Reference the drawing provided with the product for fastener torque specifications.

If you have any questions concerning the use or installation of your product, contact Conductix-Wampfler:

North and South America: +1 (800) 521-4888

Europe and Asia: +49 7621 6620

1.4 Specifications and listings

The charging contact products are built to comply with UL and IEC specifications and standards, but are not generally certified and listed by an independent body.

Some charging contact products may be CE-listed, please consult Conductix-Wampfler for additional details.

1.5 Voltage and ampere ratings

The current and voltage rating of each contact is recorded on the component type label. Further details can be found in the product catalog.

Charging contacts can be supplied with a large variety of connections, voltage ratings and ampere ratings. Consult Conductix-Wampfler for additional details.

1.6 Product markings

Each basic charging contact and vehicle collector is marked with a type label containing the Conductix-Wampfler name and logo, the product catalog number, and the voltage and ampere rating for the product.

2 Technical data

Temperature range: -25 to +50°C

Voltage: max. 60 V DC/25 V AC

Max. Positioning tolerances

Horizontal width offset	X: ± 5 mm
Horizontal length offset	Y: ± 5 mm
Vertical offset	Z: ± 2 mm

2.1 Ampere rating

Ampere Rating		Part Number	
100% Duty Cycle	**50% Duty Cycle**	**Collector**	**Base Plate**
20 A	40 A	XA-BCC020A2W0	
			XA-BCB020A2W0
50 A	100 A	XA-BCC050A2W0	
			XA-BCB050A2W0
75 A	150 A	XA-BCC075A2W0	
			XA-BCB075A2W0
100 A	200 A	XA-BCC100A2W0	
			XA-BCB100A2W0
150 A	300 A	XA-BCC150A2W0	
			XA-BCB150A2W0
200 A	400 A	XA-BCC200A2W0	
			XA-BCB200A2W0
300 A	600 A	XA-BCC300A2W0	
			XA-BCB300A2W0
200 A + 20 A	400 A + 40 A	XA-BCC200A2WP	
			XA-BCB200A2WP
300 A + 20 A	600 A + 40 A	XA-BCC300A2WP	
			XA-BCB300A2WP

Table 1: Ampere rating

NOTE!

Consider requirements for the remaining system components!

→ When using a low voltage system (ELV) and protective low voltage system (SELV), consider the requirements for the remaining system components, such as voltage source.

2.2 Measurements

Part Number		Depth in mm (in.)	Width in mm (in.)	Installation Depth in mm (in.)
Collector	Base Plate			
XA-BCC020A2W0		57.2 (2.25)	57.2 (2.25)	14.3 (0.56)
	XA-BCB020A2W0	127 (5.00)	63.5 (2.50)	11.4 (0.45)
XA-BCC050A2W0		63.5 (2.50)	63.5 (2.50)	14.3 (0.56)
	XA-BCB050A2W0	139.7 (5.50)	73 (2.88)	19.2 (0.76)
XA-BCC075A2W0		76.2 (3.00)	76.2 (3.00)	15.9 (0.63)
	XA-BCB075A2W0	146.1 (5.75)	81 (3.19)	16 (0.63)
XA-BCC100A2W0		109.6 (4.31)	63.5 (2.50)	14.3 (0.56)
	XA-BCB100A2W0	187.3 (7.38)	73 (2.88)	19.2 (0.76)
XA-BCC150A2W0		122.3 (4.81)	76.2 (3.00)	15.9 (0.63)
	XA-BCB150A2W0	200 (7.88)	81 (3.19)	19.2 (0.76)
XA-BCC200A2W0		109.6 (4.31)	127 (5.00)	15.9 (0.63)
	XA-BCB200A2W0	215.9 (8.50)	120.7 (4.75)	19.2 (0.75)
XA-BCC300A2W0		122.3 (4.81)	168.3 (6.63)	15.9 (0.63)
	XA-BCB300A2W0	206.4 (8.13)	134.6 (5.30)	16 (0.63)
XA-BCC200A2WP		109.6 (4.31)	120.7 (7.25)	15.9 (0.63)
	XA-BCB200A2WP	215.9 (8.50)	198.1 (7.80)	19.2 (0.76)
XA-BCC300A2WP		122.3 (4.81)	206.4 (8.13)	15.9 (0.63)
	XA-BCB300A2WP	206.4 (8.13)	217.4 (8.56)	16.4 (0.65)

Table 2: Measurements (see Fig. 3)

3 Installation

3.1 Handling

Never support the unit by brush leads or connecting cable. Always transport the unit by supporting the plastic base plate or collector plate.

3.2 Application types

Common applications include (but are not limited to) battery or capacitor charging in the following applications: Automatic guided vehicles (AGVs), pallet shuttle systems and material handling systems.

Charging contact assemblies can be purchased as a complete set (base charging contact + collector), or as individual component. Further details can be found in Fig. 1

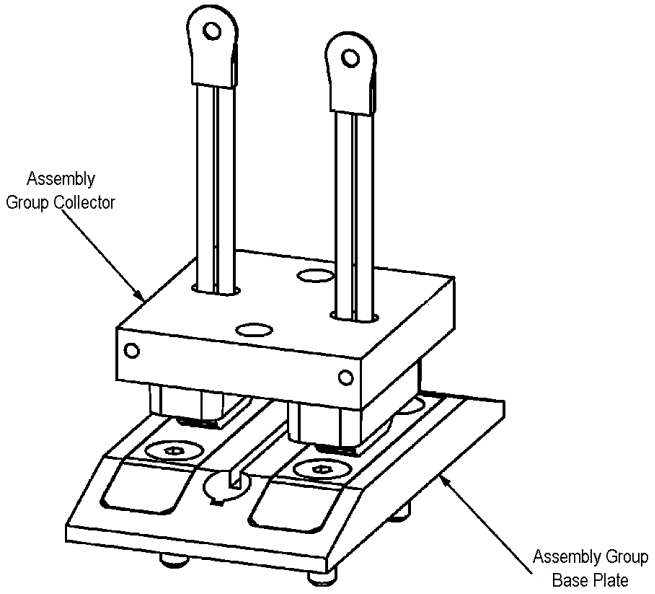

Fig. 1: Charging contact assembly components, collector and base plate

The base plates with the contact lines are provided for installation on the ground or to other horizontal or vertical surfaces. The collector units are provided for surface installation. Covering the connections is provided on site.

3.3 General assembly instructions

For the selection of the fixation type (e.g. hexagon head screws) ensure that the screw head will not exceed the contour and that the screwing is properly secured against loosening (e.g. Loctite screw locking device or locknut).

3.4 Mounting

3.4.1 Collector

Mount the collector assembly using the provided clearance holes for Socket Head Cap Screws, as shown in Fig. 2.
The collector assembly should be supported around the clearance hole location, up to a minimum diameter of 2 times the clearance hole diameter.

Care must be taken to ensure that the brush lead wires are not damaged during the installation process, and have sufficient room to allow the movement of the brush pack. Brush pack movement is limited to the 5.5 mm (0.22 in.) as shown in Fig. 2.

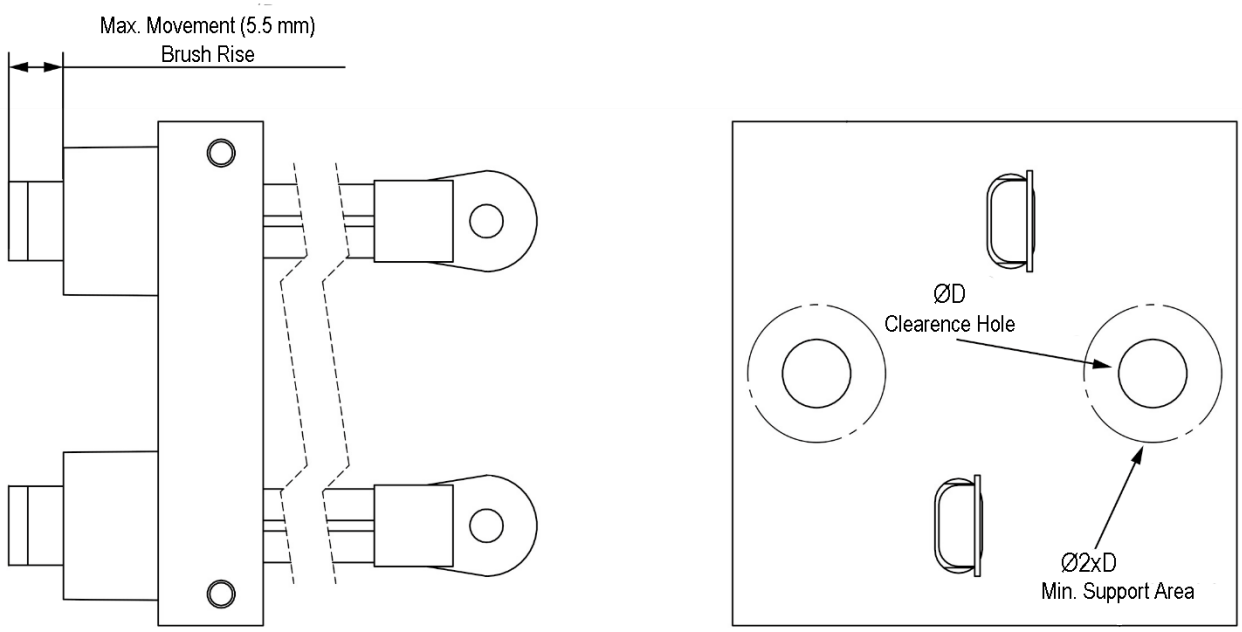

Fig. 2: Allowable brush pack movement (left). Top of collector showing mounting hole and minimum support area (right).

At the factory the connecting cables of the brushes have been provided with a ring cable lug. For connection care must be taken for the correct polarity and sufficient room for the movement of the connecting cables. Ensure that sufficient cable will be available for wear and tear of the brush leads. In case of insufficient room for movement, wear of the brushes may lead to a loss of contact and burning of the contacts (spark formation, loss of contact material).
In no case shall the collector cables be provided or fixed with core identification, protective hoses or cable ties.
When installing the collector at the underside of a vehicle, consider the appropriate height.

Table 3 shows the installation dimensions and collision measurements for a rebound brush:

Part Number		Installation Dimensions in mm (in.)	Deep of Collectors (rebound) in mm (in.)
Collector	Base Plate		
XA-BCC020A2W0		50.1 (1.97)	38.9 (1.53)
	XA-BCB020A2W0		
XA-BCC050A2W0		51.7 (2.00)	38.9 (1.53)
	XA-BCB050A2W0		
XA-BCC075A2W0		53.3 (2.10)	40.5 (1.59)
	XA-BCB075A2W0		
XA-BCC100A2W0		51.7 (2.00)	38.9 (1.53)
	XA-BCB100A2W0		
XA-BCC150A2W0		53.3 (2.10)	40.5 (1.59)
	XA-BCB150A2W0		
XA-BCC200A2W0		53.9 (2.12)	40.5 (1.59)
	XA-BCB200A2W0		
XA-BCC300A2W0		56.4 (2.22)	40.5 (1.59)
	XA-BCB300A2W0		
XA-BCC200A2W0		53.3 (2.10)	40.5 (1.59)
	XA-BCB200A2W0		
XA-BCC300A2W0		56.4 (2.22)	40.5 (1.59)
	XA-BCB300A2W0		

Table 3: Installation dimensions and collision measurements for a rebound brush

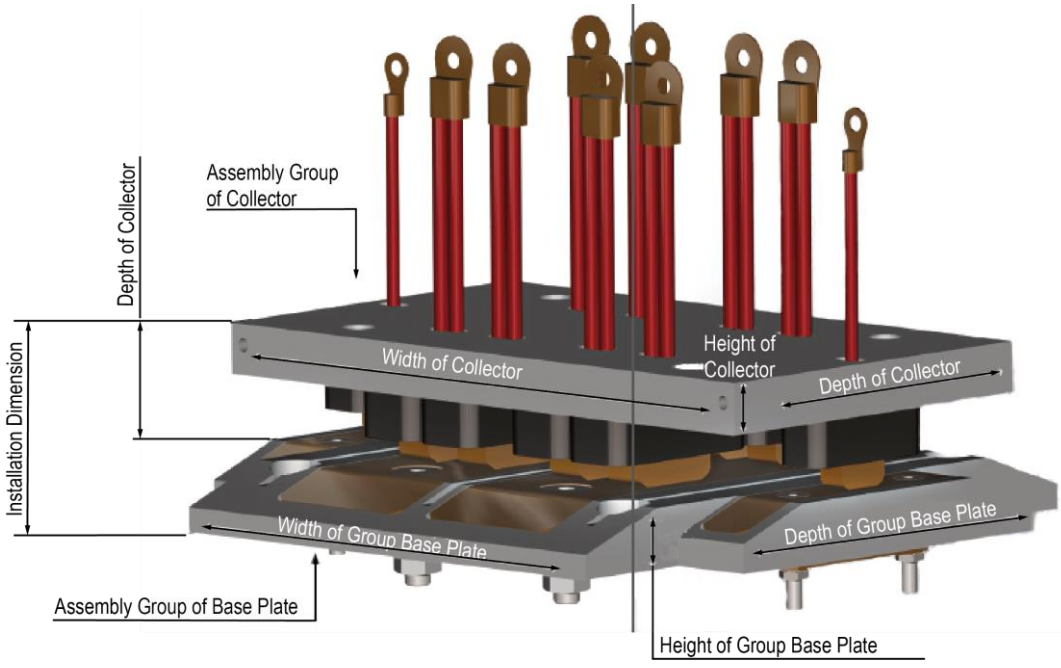

Fig. 3: Base plate and collector

Mechanical functional test

After successful assembly and control of the correct polarity, check the mobility of the brushes under off-circuit conditions and the dimension with a rebound new brush and the installation dimension (distance mounting surface to the floor).

3.4.2 Base plate

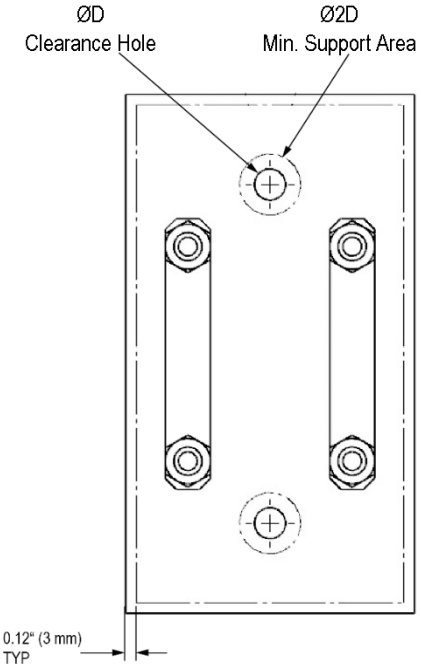

Fig. 4: Bottom of base plate with illustration of the mounting holes and the minimum support area

The base plate with the charging contacts must lay flat around the mounting holes (min. 2xD) and at the outer edges (min. 3 mm) (see Fig. 4).
The electrical connection of the contact plates is realized via the stay bolts by means of a ring cable lug (not included in the shipment). Select type and size on site on the basis of the bolt diameter and the on-site connecting cable.

3.4.3 Floor assembly

For the floor assembly provide a sealing in the area of the edges with the help of an appropriate sealing agent, to protect the connection area from liquid penetration (leaking liquids or the presence of liquids during floor cleaning).
The installation area should be away from traffic routes and must be adequately labeled, in order to avoid crossing by other vehicles or stumbling over the contact.
It is recommended to do the assembly e.g. in charging bays or buffer sections.

3.4.4 Wall assembly

For assembly in a housing or a support pillar the connection area must be protected/covered according to the environmental conditions.
For 60 Vdc (25 Vac.) operation, with IEC 60664-1 (UL 840), degree of contamination 3, it is required to keep a minimum distance and creepage distance of 2.2 mm (0.09 in.) between each phase and from phase to earth, as shown in Fig. 5. This value can deviate, depending on the voltage, type of housing and regional standards.

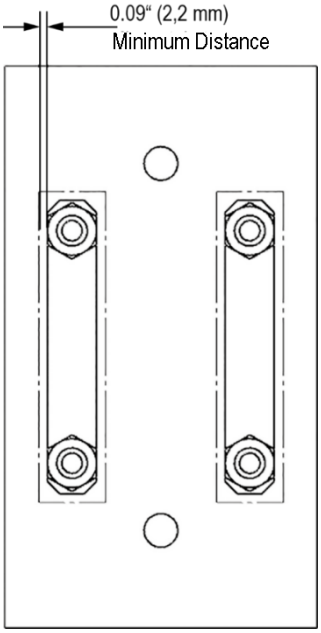

Fig. 5: Bottom of base plate with illustration of the minimum distance

4 Maintenance

CAUTION!

Danger of injuries by electrical shock!

→ Disconnect the power supply prior to carrying out any inspections and/or maintenance works and observe the safety measures

→ Secure power supply from restarting

4.1 Inspection of the system

After the assembly it is recommended to perform an inspections of the components after approx. 100 duty cycles. During this inspection all mechanical and electrical connectors must be checked. Moreover check the compression of the brushes and the free movement of the connection cables at the collector.
Check the observance of the maximum positioning offset depending on the application and installation position with appropriate means. Exceeding the tolerances under full load may cause overload of the contacts and brushes.
Periodical inspections are required every 15.000 to 20.000 charging cycles. Ensure that all electrical connectors are properly secured during this inspection.

4.2 Wear and tear of the brushes

Inspect all brush leads at the collectors for wear. If the distance from the bottom of the brush holder to the brush surface shown in Fig. 6 is less than 7.0 mm (0.28 in.), replace the collector.

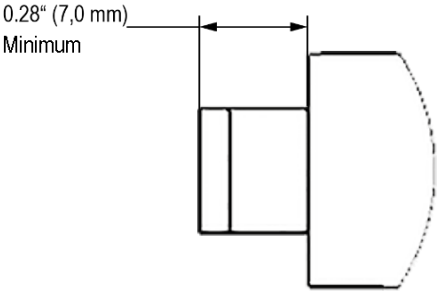

Fig. 6: Brush height dimension

Inspect the brush leads to ensure proper function and alignment with the clearance holes in the collector.
Inspect the contact surfaces on the base plate for wear. Remove dirt, oxidation, pitting and other contaminants from the contact surfaces by means of a brass brush or sand paper (grit 320).

CAUTION!

Risk of damage!

→ Do not use solvents to clean the contact surfaces and/or brushes.

4.3 Brush springs

Inspect and test the brush springs to ensure proper contact pressure. Measure the force required to depress the brush assembly. If the contact force falls below the Table 4, replace the entire collector assembly.

Brush	Minimum Force (N)	Minimum Force (lbf)
20 A	11	2.5
50A	29	6.5
75A	37	8.4

Table 4: Minimum brush contact force

4.4 Connectors

Inspect all electrical connectors for corrosion. Ensure that all fasteners are properly tightened. Poor electrical connections can lead to increased electrical resistance and poor charging performance.

5 Storage and transport

5.1 Packaging

When storing the charging contacts of sub-assembly components care must be taken to ensure that the brush contact face and contact plate are protected from dirt, debris, abrasion, oils, grease and corrosion.

Plastic bags are recommended to protect the charging contacts or sub-assembly components.

5.2 Long-term storage

Store charging contacts or assembly components in a dry environment to prevent the formation of corrosion or oxidation on the contact surfaces.

Before use, clean the brush and contact surfaces to remove dirt, oxidation, pitting and other contaminants by means of a brass brush or sand paper (grit 320).

6 Troubleshooting

Potential problems and solutions are shown in Table 5, for additional support contact Conductix-Wampfler.

Problem	Possible Cause	Solution
Intermittent charging of loss of charging current	Mechanical alignment	Inspect the charging contact set for mechanical alignment. Further details on the supplied drawing.
	Electrical connections	Inspect the electrical connections to the base plate and contact brushes.
	Brush contact	Inspect the brush pressure, brush and contact plate.
Damage to brush or contact plate	Mechanical alignment	Inspect the charging contact set for mechanical alignment. Further details on the supplied drawing.

Table 5: Troubleshooting, potential cause and solution

7 Replacement parts

Replacement parts are shown in Table 6, for additional support or a quotation contact Conductix-Wampfler.

CAUTION!

Electrical hazard!

→ Only mate collectors and base plates with matching collectors or base plates! Observe that the brush ampere ratings have to be equal!

CAUTION!

The following parts lists are not complete. If you do not see the part number you require in these tables, please contact Conductix-Wampfler.

Observe that the brush ampere ratings have to be equal!	Collector Part Number	Base Plate Part Number
20A	BCC020A2WO	BCB020A2WO
50A	BCC050A2WO	BCB050A2WO
75A	BCC075A2WO	BCB075A2WO
100A	BCC100A2WO	BCB100A2WO
150A	BCC150A2WO	BCB150A2WO
200A	BCC200A2WO	BCB200A2WO
300A	BCC300A2WO	BCB300A2WO
400A	BCC400A1WO	BCB400A1WO
600A	BCC600A1WO	BCB600A1WO
200A + 20A	BCC200A2WP	BCB200A2WP
300A + 20A	BCC300A2WP	BCB300A2WP
400A + 20A	BCC400A1WP	BCB400A1WP
600A + 20A	BCC600A1WP	BCB600A1WP

Table 6: Replacement collector and base plate assemblies

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