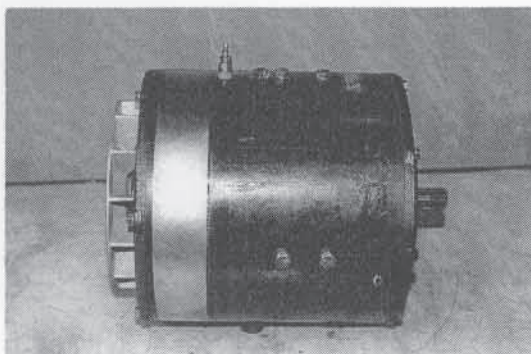


MOTOR

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DRIVE MOTOR ASSY

GENERAL



Drive Motor

BAR20-2

SPECIFICATIONS

(STD)

Item		1 ton series	2 ton series	3 ton series
Type		DC series-wound open type	←	←
Nominal voltage	V	48	←	72
Rated output	kW	6.6	9.2	9.7
Insulation class		F	←	←
Brush size	mm (in)	40×34×12.5 (1.57×1.34×0.49)	40×34×16 (1.57×1.34×0.63)	←
Number of brushes		4	←	←
Weight	kg (lb) [N]	70 (154) [686]	110 (240) [1080]	120 (260) [1180]

(Dustproof)

Item		1 ton series	2 ton series	3 ton series
Type		DC series-wound closed type	←	←
Nominal voltage	V	48	←	72
Rated output	kW	6.8	7.6	9.2
Insulation class		F	←	←
Brush size	mm (in)	40×34×16 (1.57×1.34×0.63)	←	←
Number of brushes		4	←	←
Weight	kg (lb) [N]	110 (240) [1080]	←	125 (276) [1226]

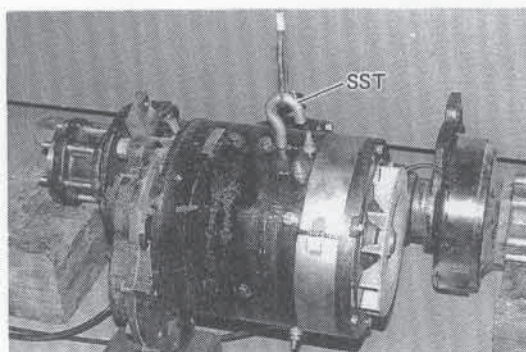
REMOVAL

1. Disconnect the battery plug.
2. Remove the mast. (See the mast removal section on page 14-5.)
3. Remove the front tires. (See the tire removal section on page 9-7.)
4. Remove the drive unit. (See the drive unit removal section on page 6-5.)
5. Slightly suspend the drive unit with a hoist.
SST 09010-10260-71
6. Remove the drive motor.
 - (1) Mounting bolts
 - (2) Set bolts
 - (3) Drive motor



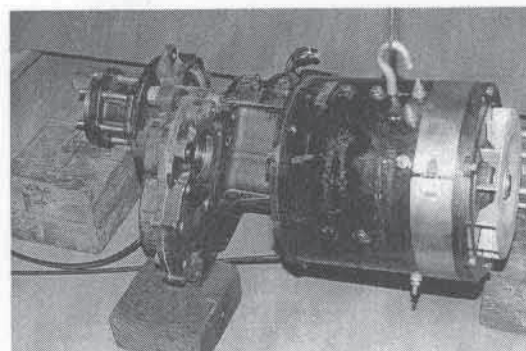
Disconnecting the Battery Plug

BAT3-28



Hoisting the Drive Motor

BAR20-4



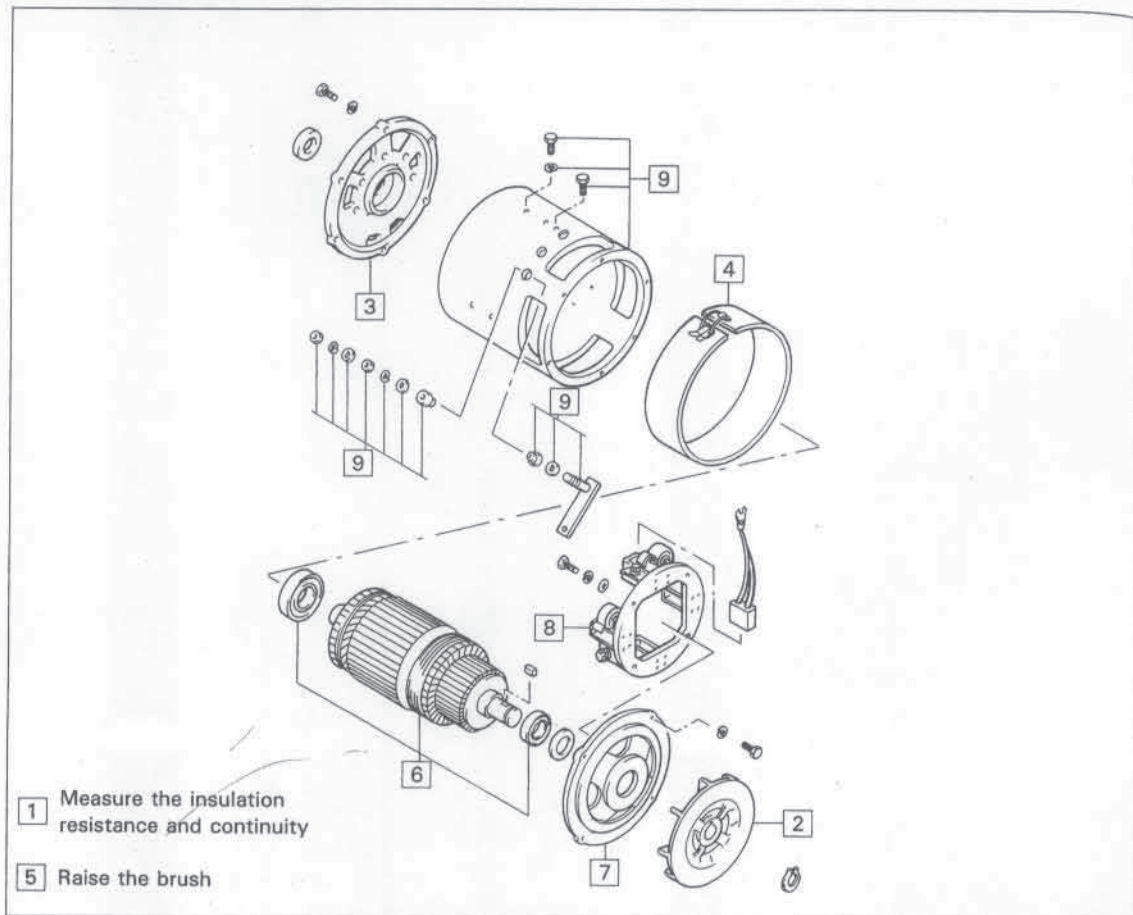
Removing the Drive Motor

BAR20-3

INSTALLATION

The installation procedure is the reverse of the removal procedure.

DISASSEMBLY, INSPECTION AND REASSEMBLY



Disassembling the Drive Motor

BATM68

DISASSEMBLY PROCEDURE

1. Measure the insulation resistance and continuity [Point 1]
2. Remove the fan. [Point 2]
3. Remove the front bracket. [Point 3]
4. Remove the brush cover.
5. Raise the brush.
6. Remove the armature. [Point 4]
7. Remove the rear bracket. [Point 5]
8. Remove the brush holder. [Point 6]
9. Remove the yoke ASSY. [Point 7]

REASSEMBLY PROCEDURE

The reassembly procedure is the reverse of the disassembly procedure.

POINT OPERATIONS**[Point 1]**

Disassembly
and reassembly:

Measure the insulation resistance between each motor terminal and motor body.

Standard: 1 M Ω or more



Measuring the Insulation Resistance

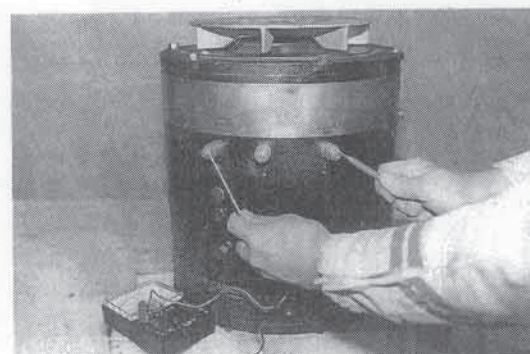
BAR31-22

Disassembly
and reassembly:

Measure the continuity of the field coil.

Between terminal F and E

Standard: 0 Ω



Measuring the Field Coil Continuity

BAR31-23

Disassembly
and reassembly:

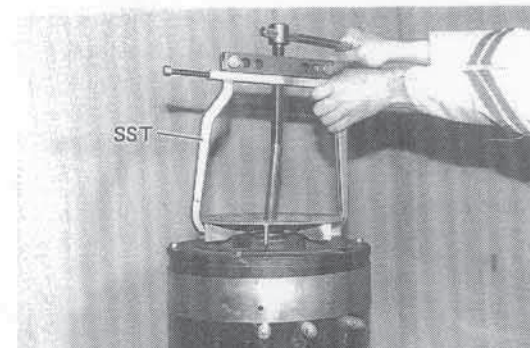
Measure the continuity of the armature coil.

Between terminals A and B

Standard: 0 Ω

[Point 2]

Disassembly: SST 09950-20017



Removing the Fan

BAR30-26

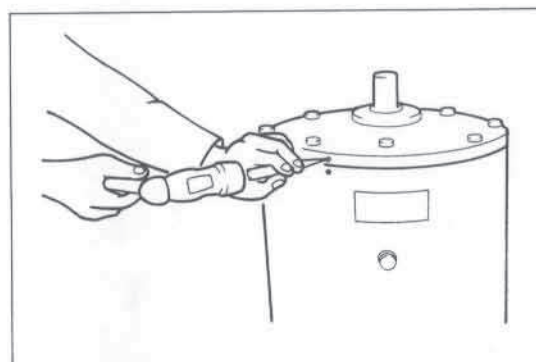
[Point 3]

Disassembly:

Punch the match mark on the front bracket and yoke.

Reassembly:

Perfectly align the match marks on the front bracket and yoke.



Punching the Match Mark

BATS65

[Point 4]

Disassembly and
reassembly:

Pull out straight to prevent the
armature coil and field coil
from damage.

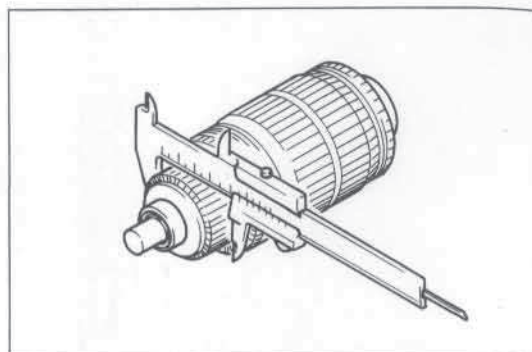


Removing the Armature

BAR30-31

Inspection: Inspect the commutator for wear.

	5FB 10-18	30-5FB10-18 5FB/30-5FB20 5FB/30-5FB25 5FB/30-5FB30
Standard	105 mm (4.13 in)	150 mm (5.91 in)
Wear limit	102 mm (4.02 in)	147 mm (5.79 in)

Measuring the Commutator Outside
Diameter

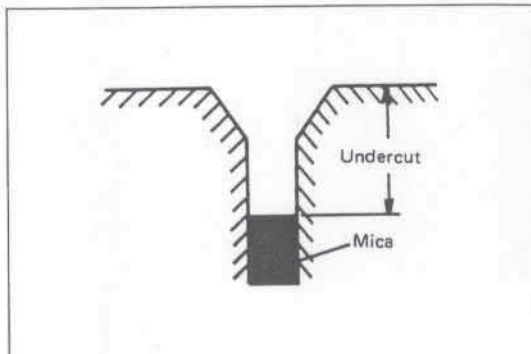
BATS74

If the commutator surface is roughened, correct it
with sandpaper (#600) and clean well with com-
pressed air.

If heavily roughened, correct with a lathe. After cor-
rection with a lathe, undercut the mica.

Standard undercut: 1.0 mm (0.039 in)

Undercut limit: 0.5 mm (0.020 in)

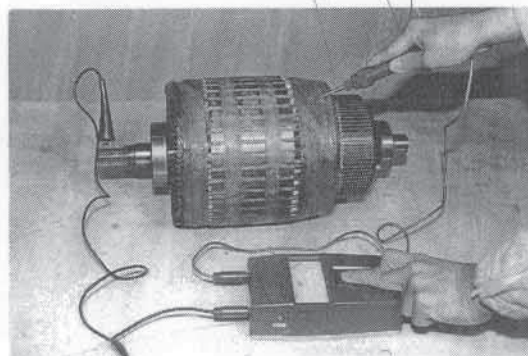


Undercut Dimension

BABS11

Inspection: Armature coil insulation resistance
measurement

Standard: 1MΩ or more

Measuring the Armature Coil Insulation
Resistance

BAR31-5

Inspection: Inspect the bearing at both ends of the armature, and replace them if any abnormal sound or unsmooth rotation is observed.

Disassembly: SST 09950-20017

Reassembly: (Front)

SST 09608-35014

(1.0 ton series STD)

09370-20270-71

(1.0 ton series Dustproof)

09370-20270-71

(2.0~3.0 ton series)

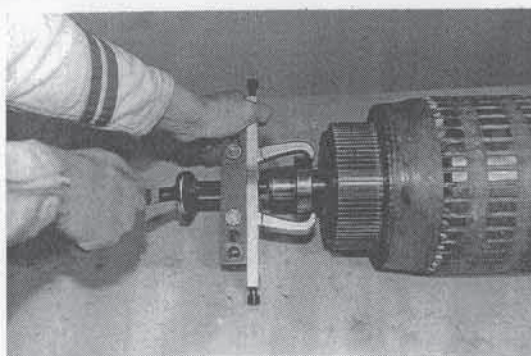
(Rear)

SST 09411-41800-71

[Point 5]

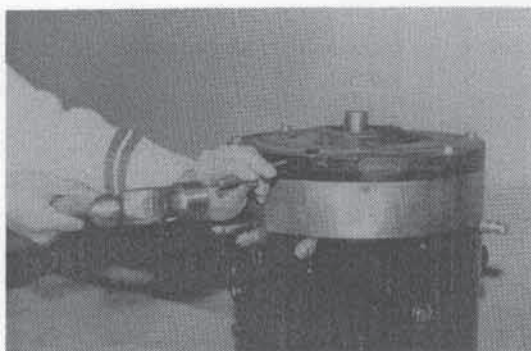
Disassembly: Punch the match mark on the rear bracket and yoke.

Reassembly: Perfectly align the match marks on the rear bracket and yoke.



Replacing the Armature Bearing

BAR31-6



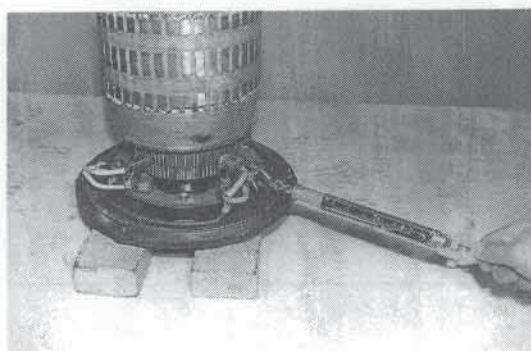
Punching the Match Mark

BAR30-27

[Point 6]

Inspection: Measure the brush pressure.

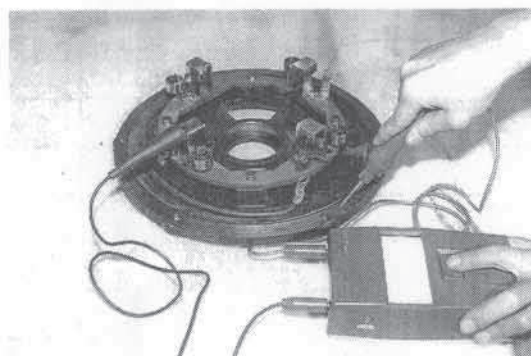
Vehicle type	Standard value
1 ton series	1.22~1.48 kg (2.69~3.26 lb) [11.96~14.51 N]
2, 3 ton series	1.44~1.76 kg (3.16~3.88 lb) [14.12~17.26 N]



Measuring the Brush Pressure

BAR31-13

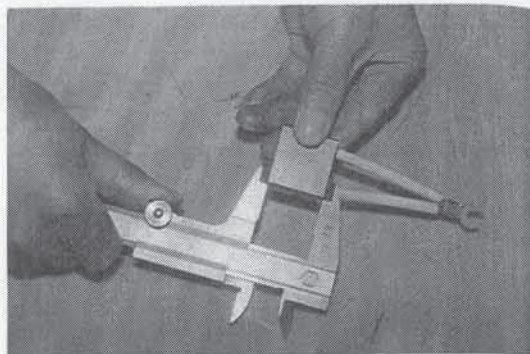
Inspection: Measure the insulation resistance between the brush holder and bracket.
Standard: 1 MΩ or more



Measuring the Brush Holder Insulation Resistance

BAR31-12

Inspection: Measure the brush length
Standard: 34 mm (1.34 in)
Wear limit: 15 mm (0.59 in)



Measuring the Brush Length

BAN19-14

[Point 7]

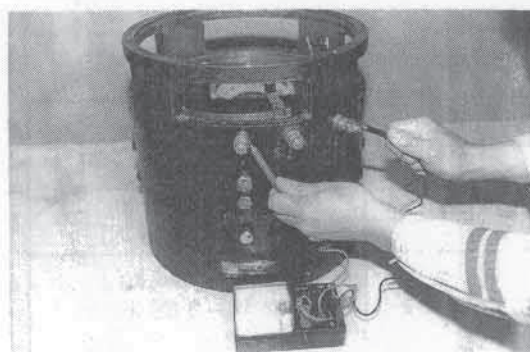
Inspection: Measure the insulation resistance of the field coil
 Between terminals E and F
Standard: 1 M Ω or more



Measuring the Field Coil Insulation Resistance

BAR31-7

Inspection: Measure the field coil continuity.
 Between terminals E and F
Standard: 0 Ω



Measuring the Field Coil Continuity

BAR31-9