INSTRUCTIONS

EM-SCSH40

COMMON SPECIMEN HOLDER

No. IEM-SCSH40
(EM760001)

Serving Advanced Technology
JEOL 日本電子

8604001

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1. WHEN USED WITH THE EM-QR QUICK CHANGE SPECIMEN RETAINER

1.1 General

The use of the EM-QR quick change specimen retainer with the EM-SCSH common specimen holder in a JEM electron microscope equipped with an EM-SEG side entry goniometer will greatly simplify specimen exchange and provide the capability for observation of tilted specimens.

1.2 Specifications

Specimen tilt angle:	Single axis tilt, AHP40: ±5°, AHP40L: ±30°.
Specimen tilt speed:	9° to 90°/min.
Retainer capacity:	2 specimens.

1.3 Removing the Specimen Holder from the Column

1. Turn on the AIRLOCK (EM control panel L1-23). Valves V1 and V3 close.

2. Set the X-tilt angle to 0.
   2a. Turn on the GCU40 POWER switch.
   2b. Set the X-tilt knob dial (Fig. 1) to 0.
   Note: The X-tilt speed can be changed with the GCU40 SPEED-X knob.

3. Turn off the FILAMENT (L1-9).

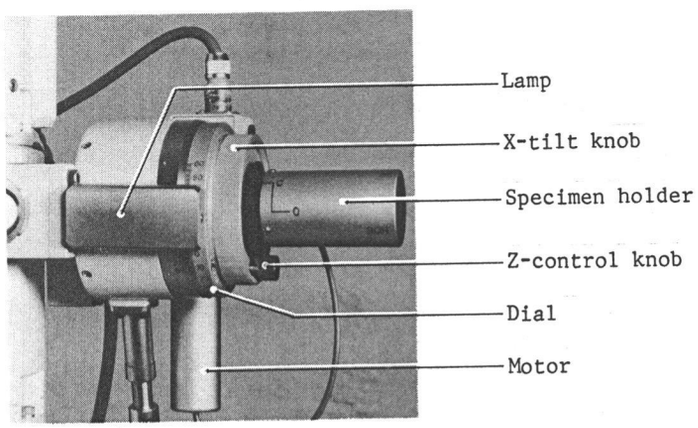

Fig. 1

4. Pull the specimen holder (IN → 1, Fig. 2), turn it counterclockwise (1 → 2, 90°), pull it again (2 → 3), turn it again counterclockwise (3 → 4, 15°), and wait for 5 or 6 seconds, as shown in Fig. 4.11-9. Air enters the goniometer.

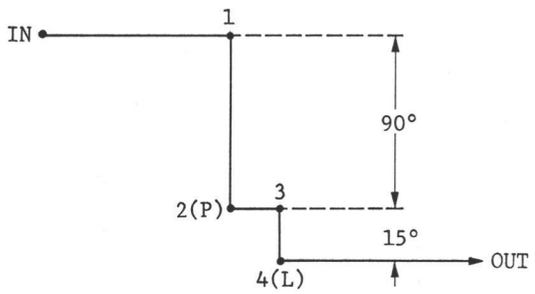

Fig. 2

5. Slowly pull out the specimen holder (4 → OUT, Fig. 2).
   Caution: Do not generate an electron beam while the specimen holder is out of the column (goniometer).

6. Exchange the specimen (see Subsect. 1.4), and insert the specimen holder into the column (see Subsect. 1.5). When another specimen holder (optional attachment) is to be used, cap the EM-SCSH40 holder with the protector and store the holder in the exclusive storage box (Fig. 3).

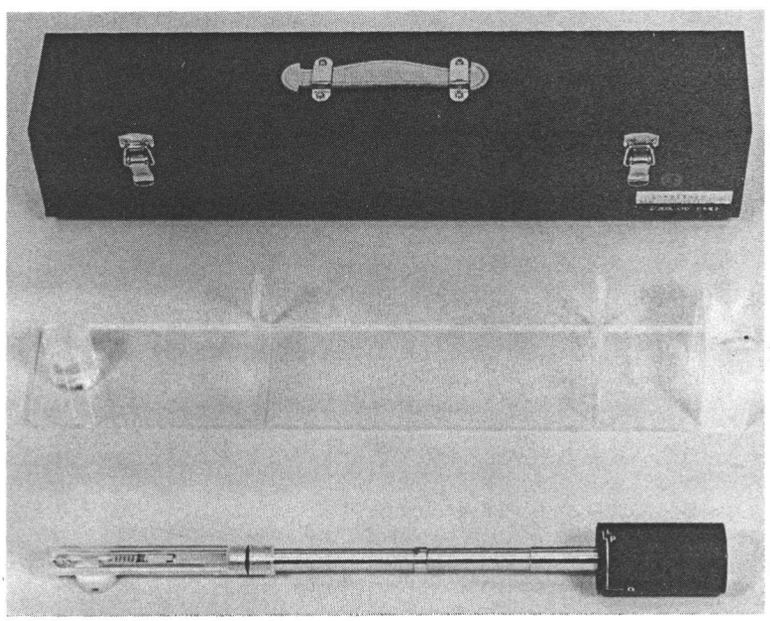

Fig. 3

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1.4 Loading a Specimen into the Specimen Holder

1. With the specimen holder in the specimen holder storage box, move part 1 in the direction indicated by the arrow until it stops. Then remove the specimen retainer from the specimen holder (see Fig. 4).

2. Move the claw in the direction indicated by the arrow (Fig. 4) in order to raise the specimen clamp.

3 Insert the specimen and lower the specimen clamp to its original position. Record the type of specimen and the specimen number indicated on the side of the holder.

4. With the specimen retainer in the specimen holder, push part 2 in the direction indicated by the arrow (Fig. 4). The specimen retainer is thereby secured.

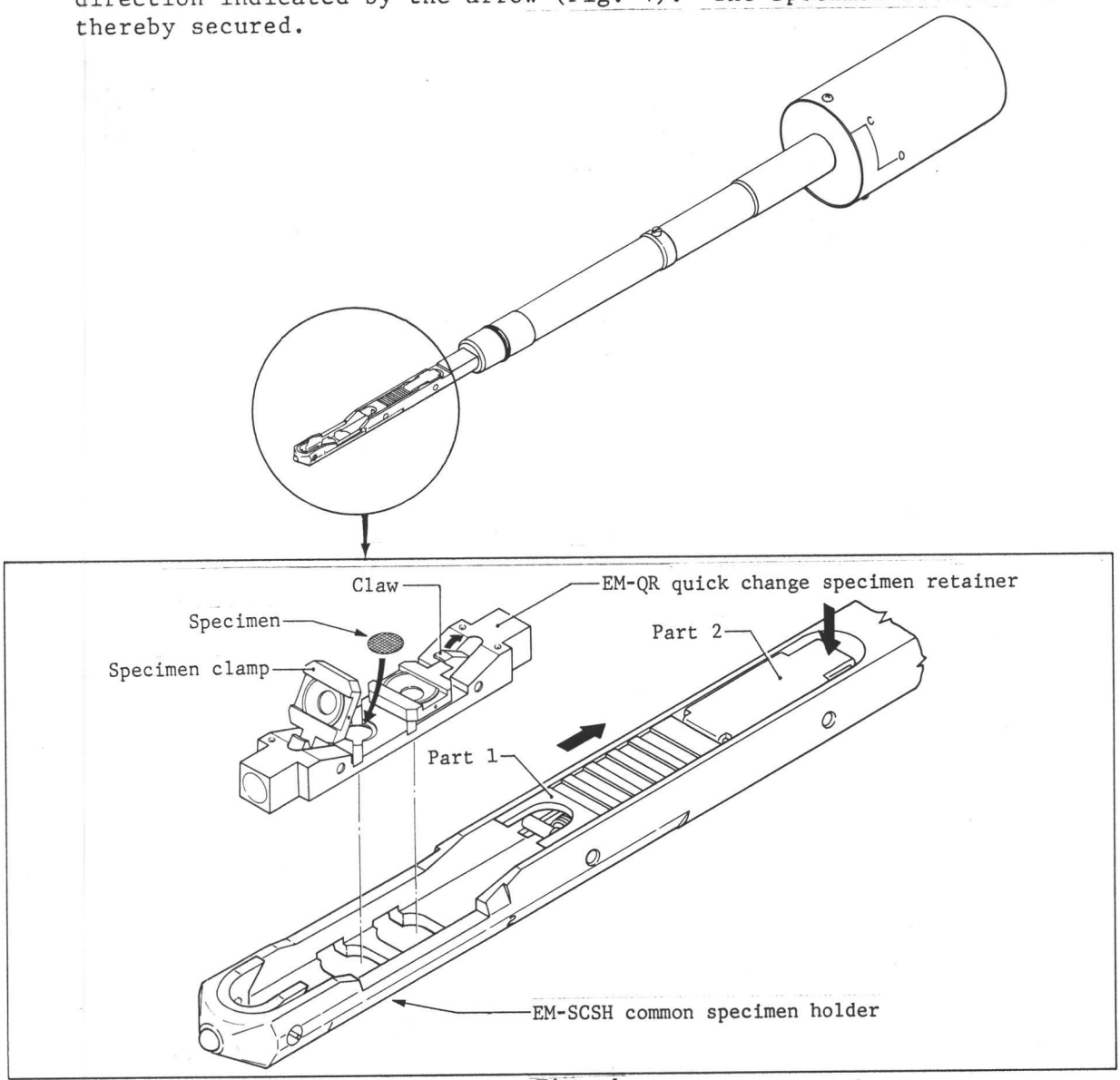

Fig. 4

1.5 Inserting the Specimen Holder into the Column

1. Turn on the AIRLOCK (EM control panel L1-23).

2. Set the X-tilt angle to 0 (refer to Step 2, Subsect. 1.3).

3. Set the FILAMENT (EM control panel L1-9) to OFF.

4. Make sure that there is no dust, fluff, etc., on the O-ring of the specimen holder, insert the specimen holder (OUT → 4, Fig. 2) in the goniometer (Fig. 1), slowly turn the holder clockwise (4 → 3, 15°), and fully insert it in the goniometer (3 → 2). The solenoid valve opens with a click and goniometer evacuation commences.

5. Wait until the lamp on the connector box (Fig. 5) lights up (about one minute), then turn the specimen holder clockwise (2-1, 90°) and insert it (1 → IN).

6. Turn off the AIRLOCK (EM control panel L1-23).

7. Set the X-tilt angle limiting screws (Fig. 5) to 5° when the EM-AHP40 polepiece is used and set it to 30° when the EM-AHP40L is used.

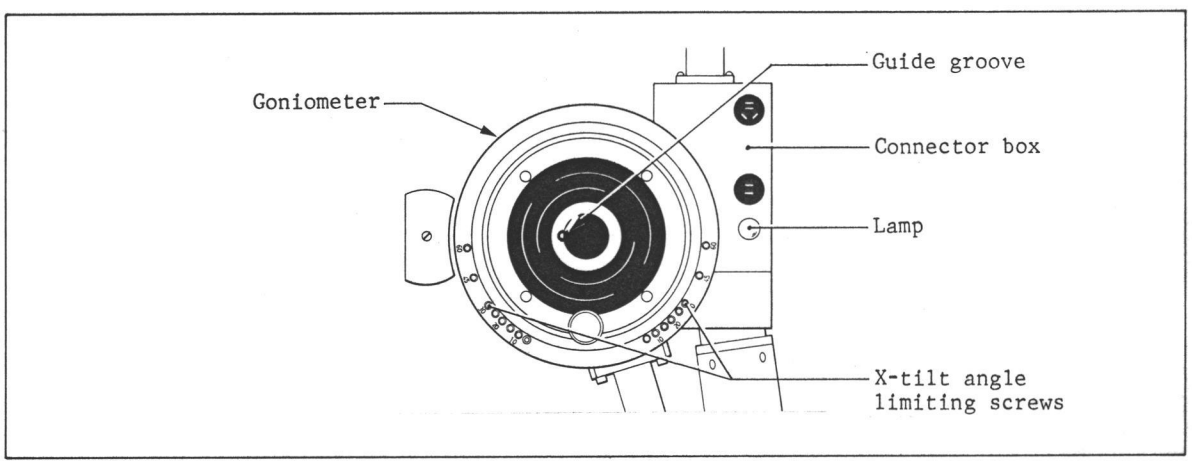

Fig. 5

2. WHEN USED WITH THE EM-BR BULK SPECIMEN RETAINER

2.1 General

The use of the EM-BR bulk specimen retainer with the EM-SCSH common specimen holder in a JEM electron microscope equipped with an EM-SEG side entry goniometer and EM-ASID scanning image observation device allows the secondary electron image of a bulk specimen to be observed. Refer to "EM-ASID Instruction Manual" to observe secondary electron images.

2.2 Specifications

Specimen tilt angle:	Single axis tilt, ±5°(AHP40), ±30°(AHP40L)
Specimen tilt speed:	9°/min. ∿ 90°/min.
Specimen size:	Less than 13.5 mm × 4.5 mm × 3.3 mm (thickness)

2.3 Extracting the Specimen Holder from the Column

Refer to Subsect. 1.3.

2.4 Loading a Specimen into the Specimen Holder

1. With the specimen holder in the specimen holder storage box, move part 1 in the direction indicated by the arrow until it stops. Then remove the specimen retainer from the specimen holder (Fig. 6).

2. Loosen screws A (two) on the frame of the specimen retainer and take the plate out of the frame (Fig. 7).

3. Prepare a specimen measuring less than 13.5 × 4.5 × 3.3 (thick) mm. If the specimen thickness is between 1.6 mm and 3.3 mm, bond the specimen to face A of the plate with conductive adhesive; and if the thickness is less than 1.6 mm, to face B (Fig. 8).
   Note: To make the specimen surface coincide with the tilt axis, bond the specimen to face A; however, the specimen thickness must be less than 1.0 mm.

4. Place the frame in the specimen height adjusting jig so that the frame contacts the bottom of the specimen height adjusting jig, and then secure it with screw B (Fig. 9).

5. Set the plate into the frame with the specimen facing up (Fig. 9).

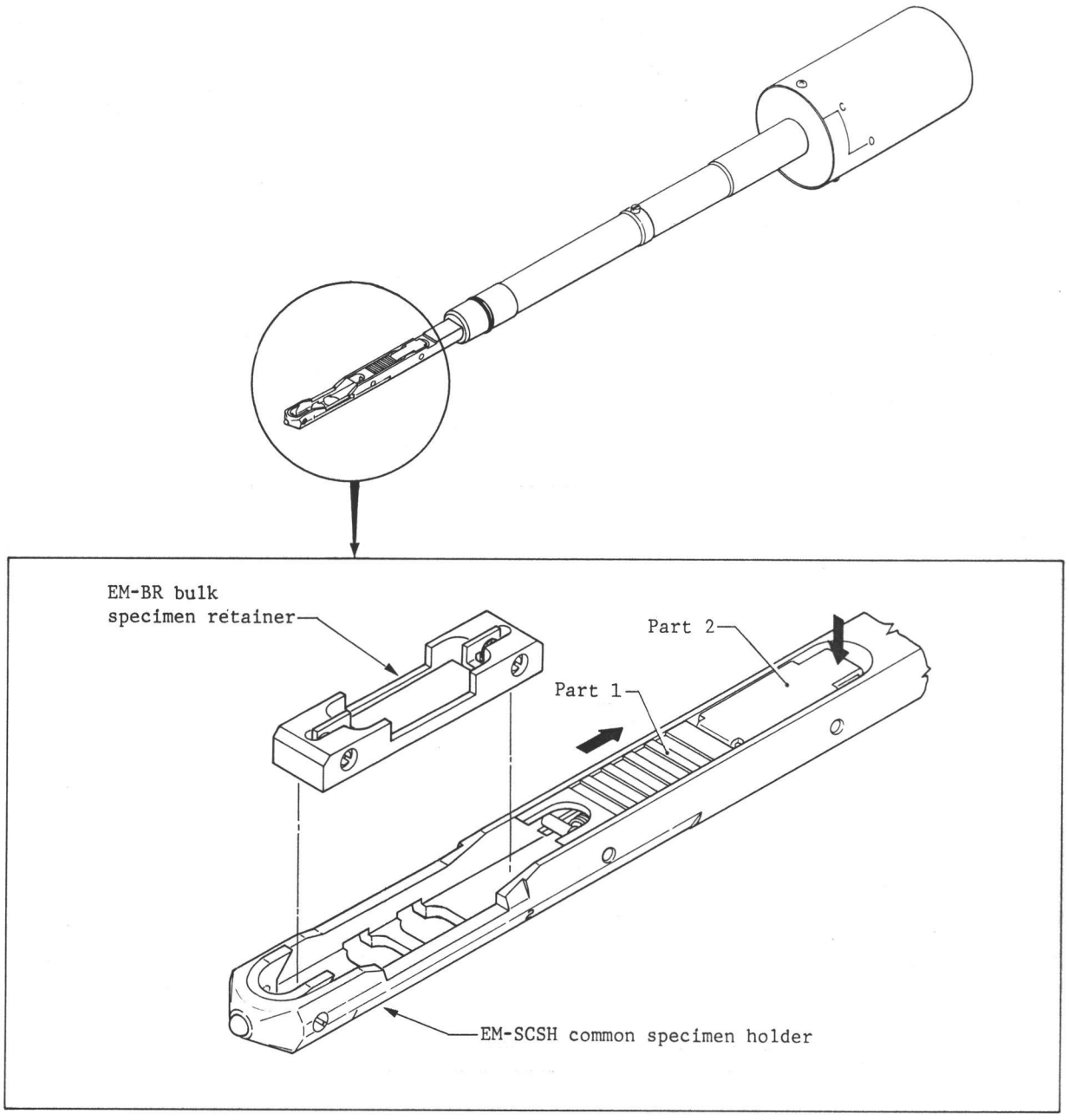
EM-BR bulk
specimen retainer
Part 2
Part 1
EM-SCSH common specimen holder

Fig. 6

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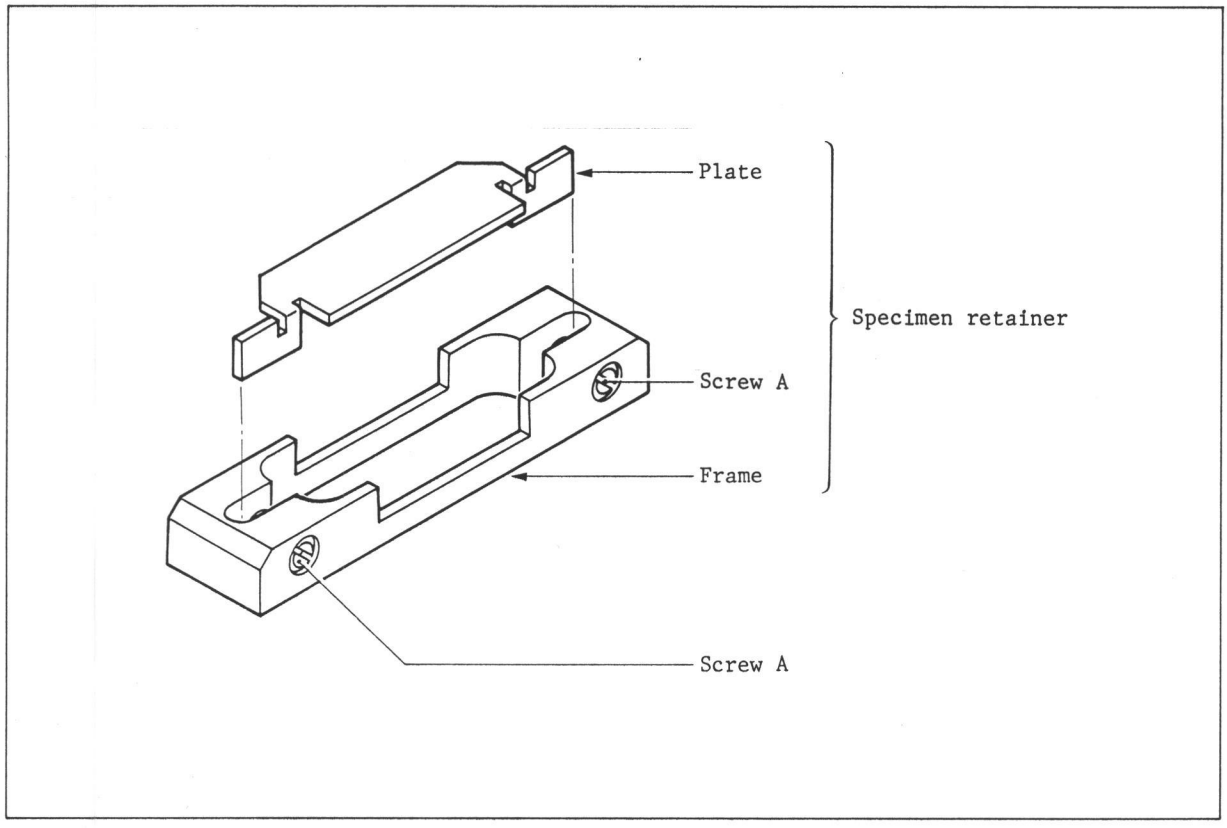
Plate
Specimen retainer
Screw A
Frame
Screw A

Fig. 7

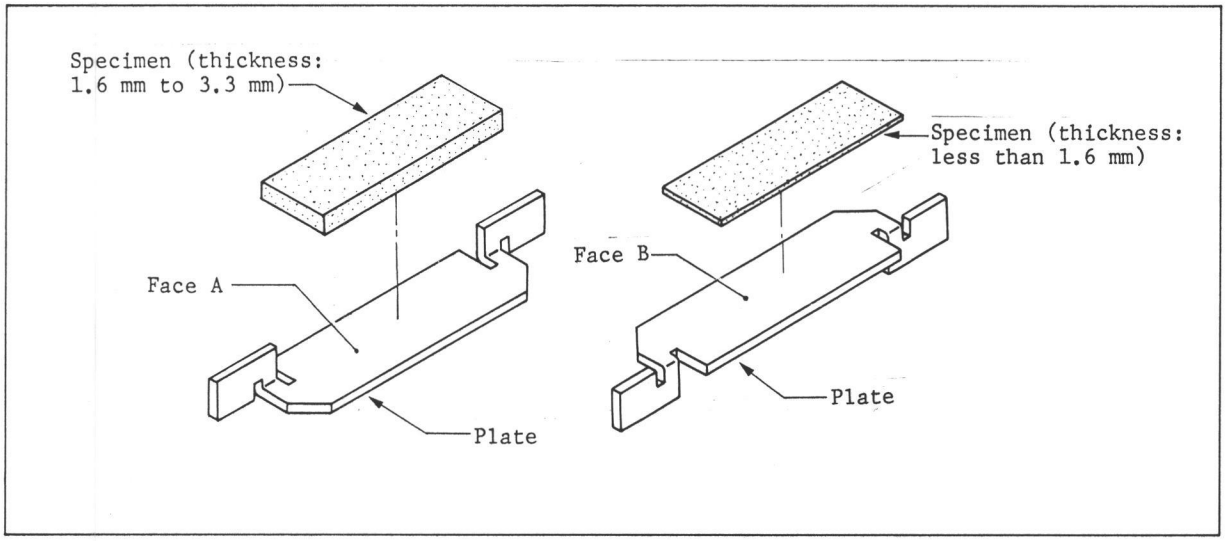
Specimen (thickness:
1.6 mm to 3.3 mm)
Face A
Plate
Specimen (thickness:
less than 1.6 mm)
Face B
Plate

Fig. 8

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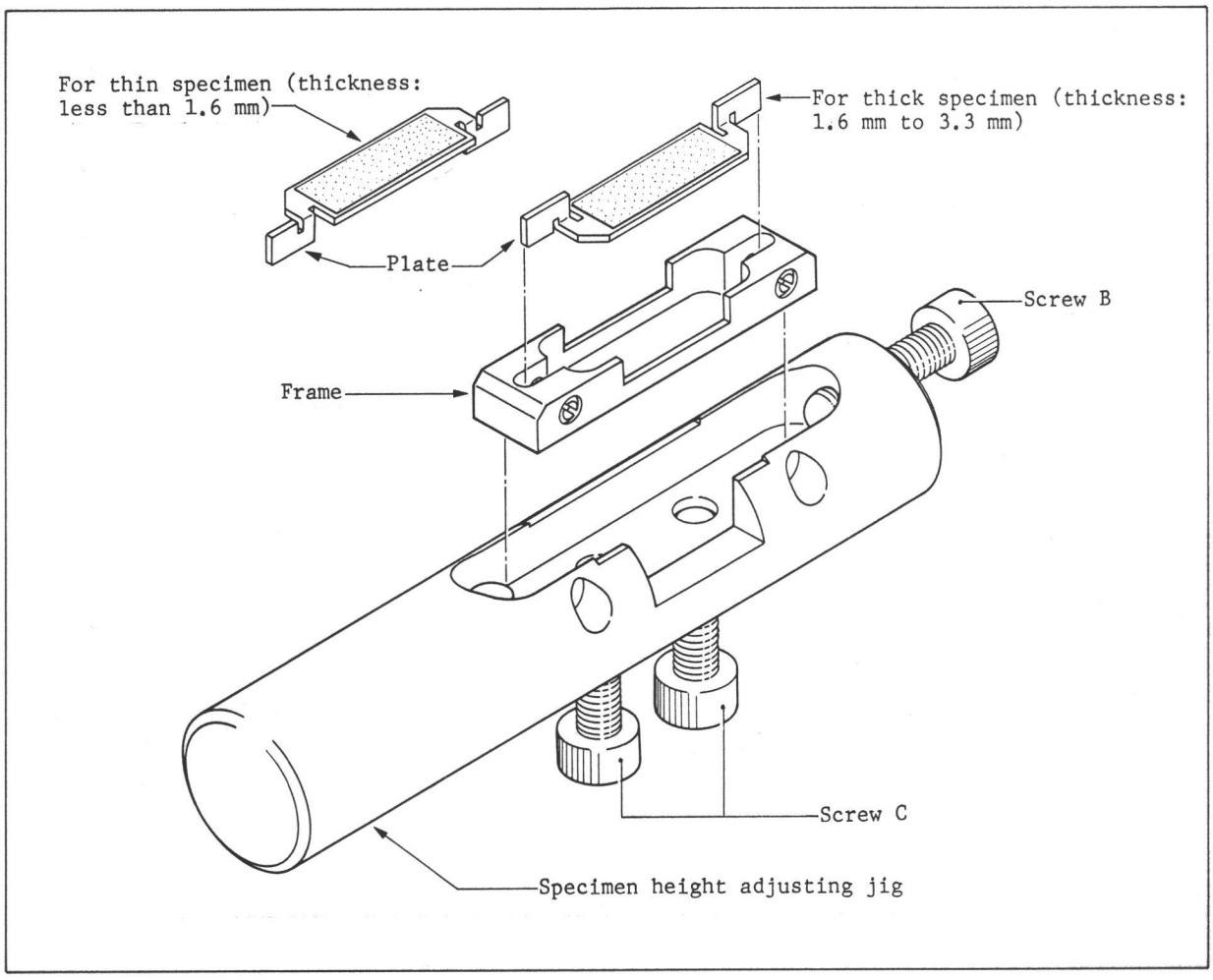
For thin specimen (thickness: less than 1.6 mm)
For thick specimen (thickness: 1.6 mm to 3.3 mm)
Plate
Screw B
Frame
Screw C
Specimen height adjusting jig

Fig. 9

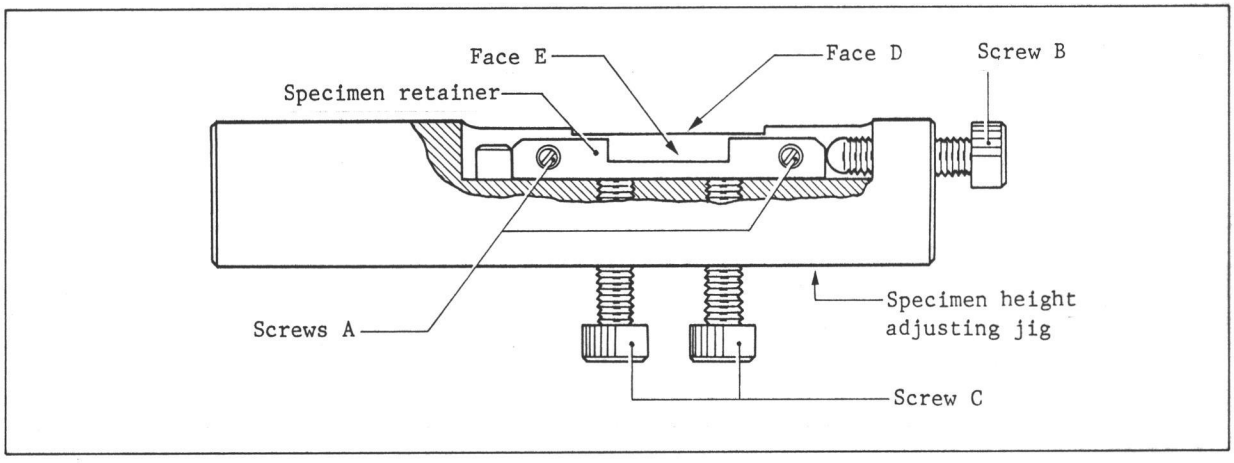
Face E
Face D
Screw B
Specimen retainer
Screws A
Specimen height adjusting jig
Screw C

Fig. 10

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6. Position the specimen surface flush with face D (upper face of the specimen height adjusting jig) with screw C (Fig. 10).
   Note: To make the specimen surface coincide with the tilt axis, align the specimen surface with face E (the upper face of the specimen retainer); however, the specimen thickness must be less than 1.0 mm.

7. After securing the plate to the frame with screws A (Fig. 10), loosen screw B and take the EM-BR out of the jig.

8. Place the specimen retainer in the specimen holder and push part 2 in the direction of the arrow (Fig. 6) in order to secure it.

2.5 Inserting the Specimen Holder into the Column

Refer to Subsect. 1.5.

3. WHEN USED WITH THE EM-SR GRAPHITE SPECIMEN RETAINER

3.1 General

The use of an EM-SR graphite specimen retainer with the EM-SCSH common specimen holder in a JEM electron microscope equipped with the EM-ASID scanning image observation device and the NDS energy dispersive X-ray spectrometer permits X-ray analysis of microareas of the specimen.

3.2 Extracting the Specimen Holder from the Column

Refer to Subsect. 1.3.

3.3 Loading a Specimen into the Specimen Holder

1. With the specimen holder in the specimen holder storage box, move part 1 in the direction of the arrow until it stops. Then remove the specimen retainer from the specimen holder (Fig. 11).

2. Unfasten the springs from both sides of the specimen retainer to separate the upper and lower parts (Fig. 12).

3. Place the specimen in the lower part of the retainer and then attach the upper part with the springs.

4. Put the specimen retainer into the specimen holder and push part 2 in the direction indicated by the arrow (Fig. 11). The specimen plate is thereby secured.

3.4 Inserting the Specimen Holder into the Column

Refer to Subsect. 1.5.

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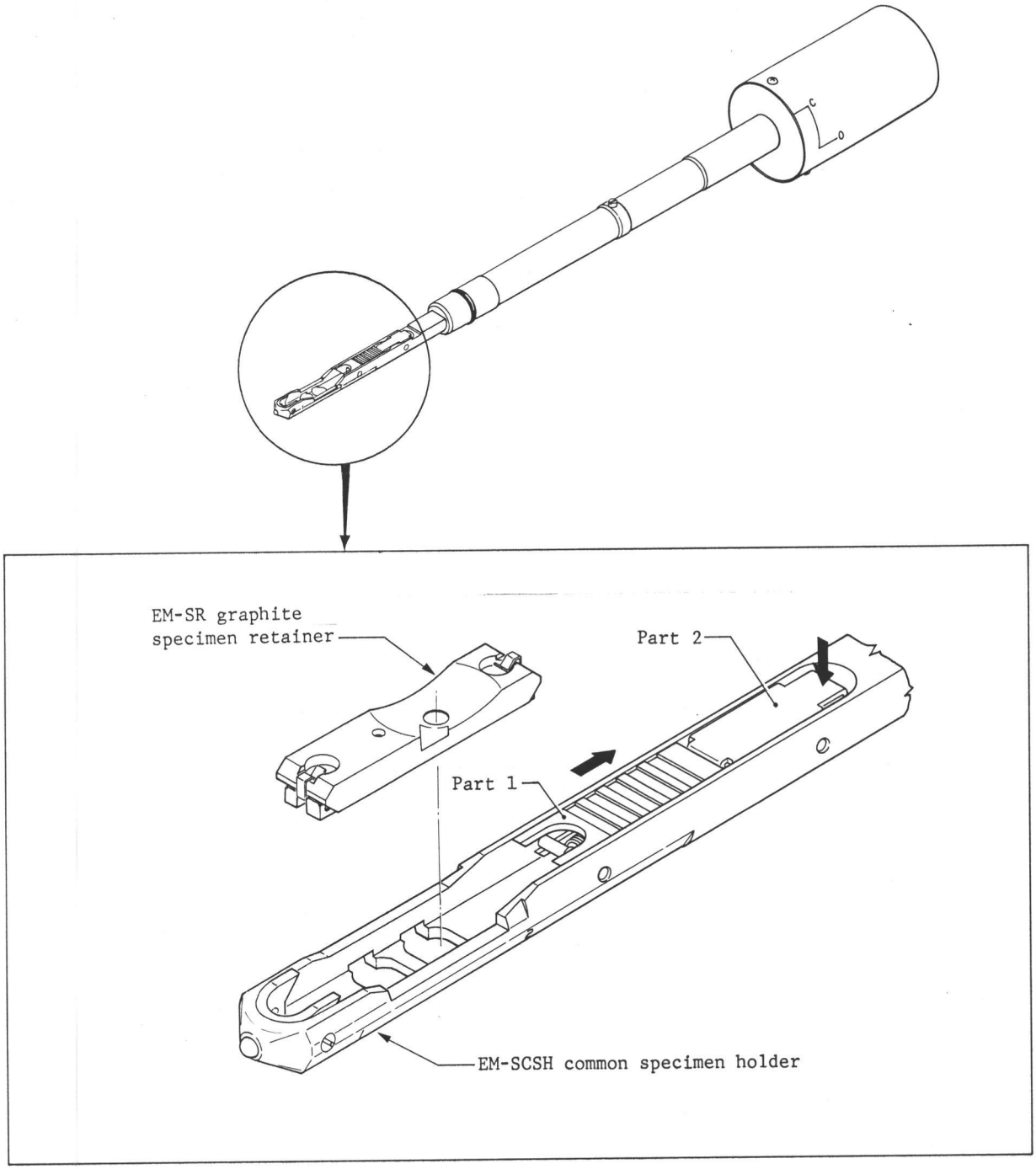
EM-SR graphite
specimen retainer
Part 2
Part 1
EM-SCSH common specimen holder

Fig. 11

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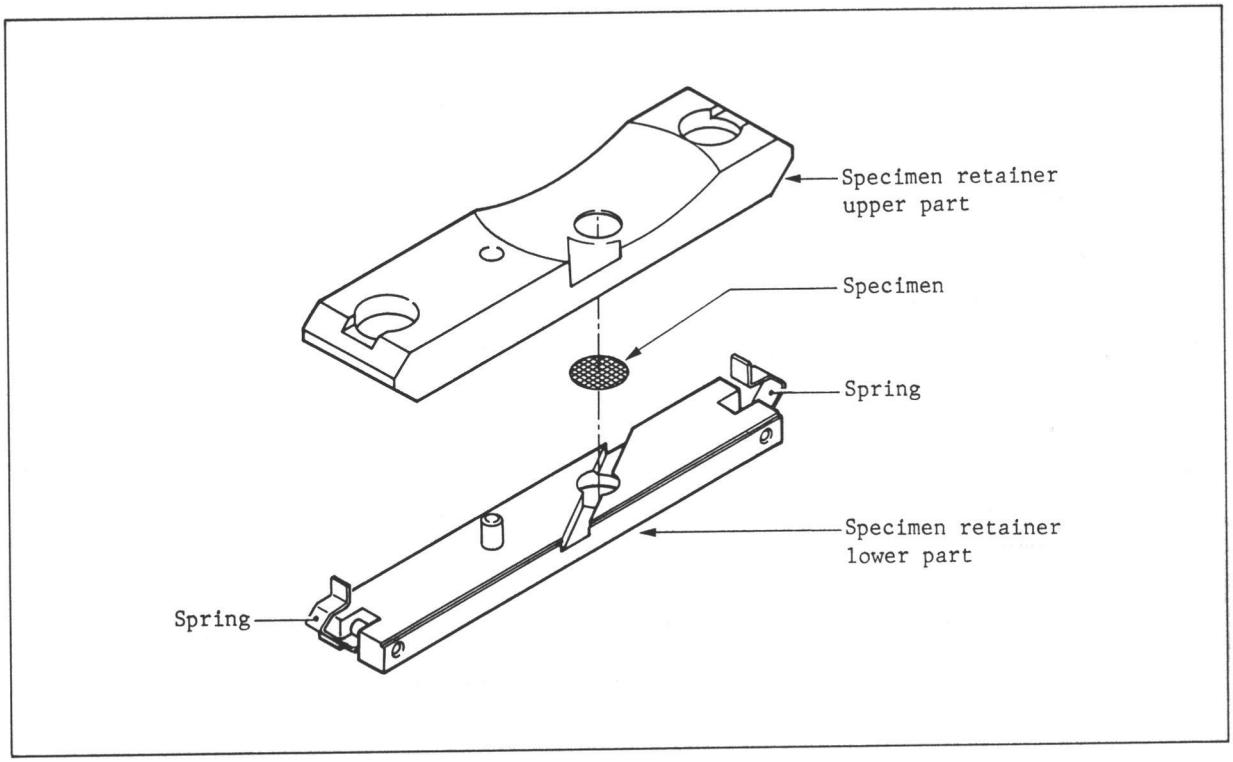
Specimen retainer
upper part
Specimen
Spring
Specimen retainer
lower part
Spring

Fig. 12