

INSTRUCTIONS

EM-SRH10

SPECIMEN ROTATING HOLDER

No. IEM-SRH10
(EM567001)

1. GENERAL

The use of the EM-SRH specimen rotating holder in a JEM electron microscope equipped with a side entry goniometer enables specimens to be tilted as well as rotated.

2. SPECIFICATIONS

- Specimen tilt angle: $\pm 25^\circ$ with SHP.
(single tilt) $\pm 30^\circ$ with HMP.
 $\pm 60^\circ$ with SAP.
- Rotation angle: $\pm 180^\circ$.
- Specimen grid: 3 mm dia. grid.
- Effective field of view: 2 mm dia. (at tilt angle 0°).

3. COMPOSITION (Fig. 3.1)

1. Specimen holder box
2. Specimen holder (incl. protection cylinder)
3. Specimen holder stand
4. Specimen exchange mount A
5. Specimen clamp
6. Specimen exchange mount B
7. Specimen exchange tool

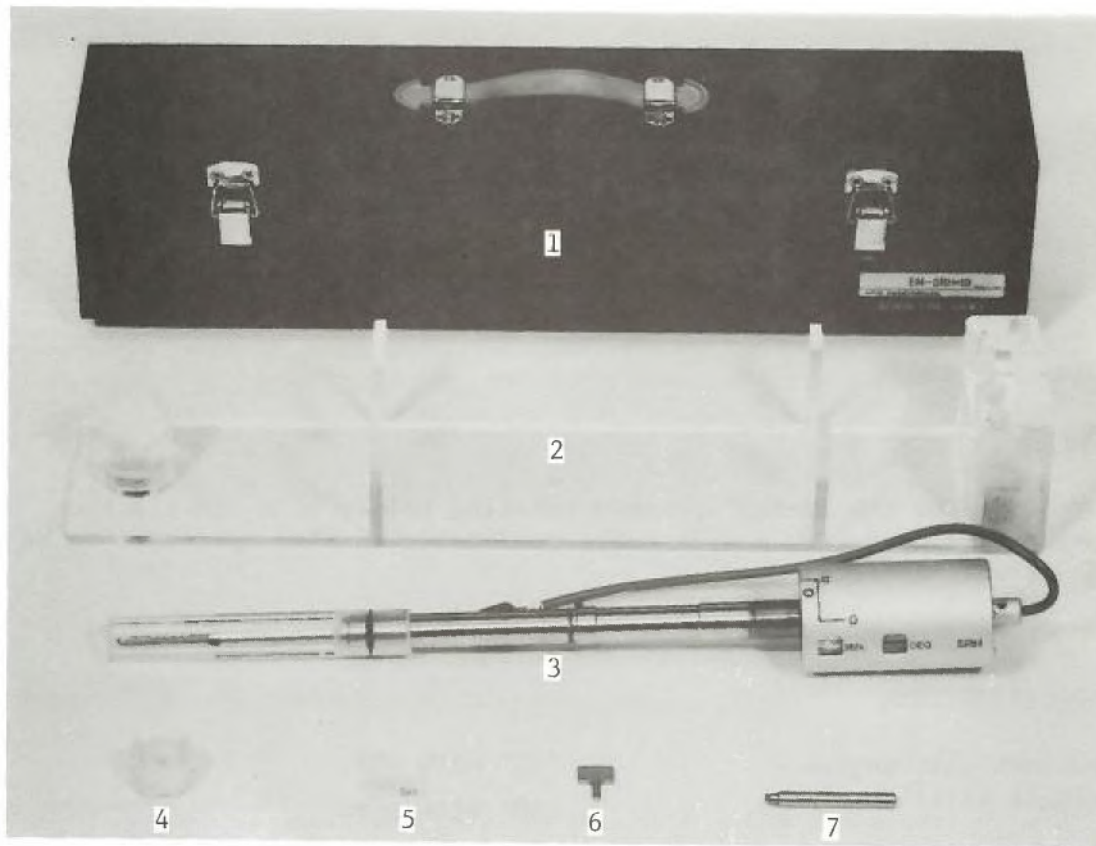


Fig. 3.1 Composition

4. OPERATION

4.1 Removing the specimen holder from the column

1. Set the FILAMENT (EMISSION) knob to OFF.
2. Disconnect the specimen holder cable.
3. Withdraw the specimen holder as far as it will go, turn it fully counterclockwise, and remove it.
4. Cover the specimen holder with the protection cylinder and store it in the specimen holder box.

4.2 Specimen exchange

1. Remove the specimen holder stand from the specimen holder box and mount specimen exchange mount B on specimen exchange mount A (see Fig. 4.1).

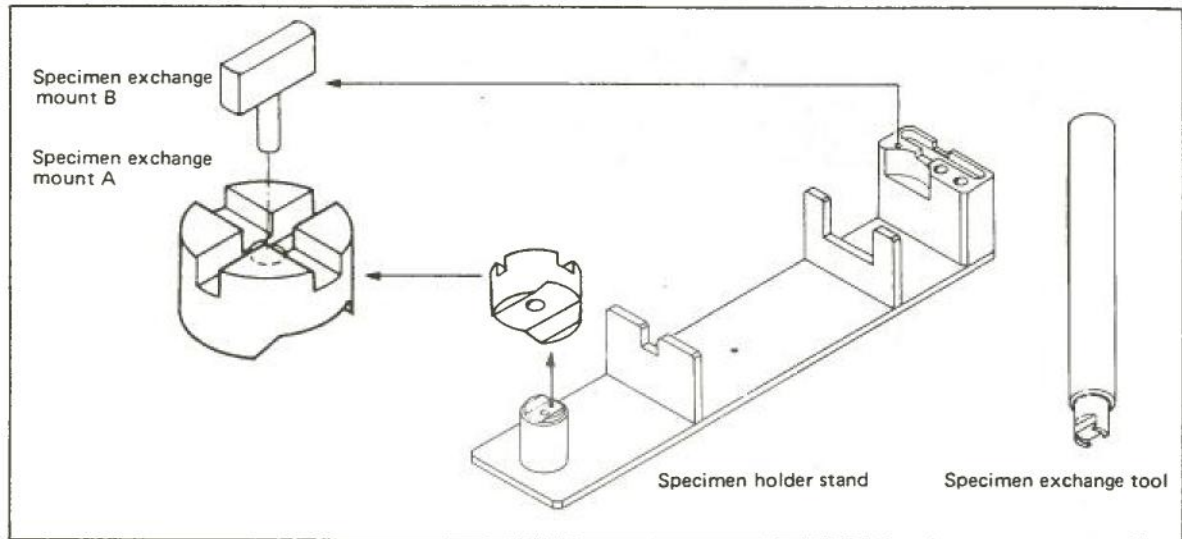


Fig. 4.1 Specimen exchange mounts

2. Place specimen exchange mount A in the specimen holder stand so that mount B is oriented as shown in Fig. 4.2.

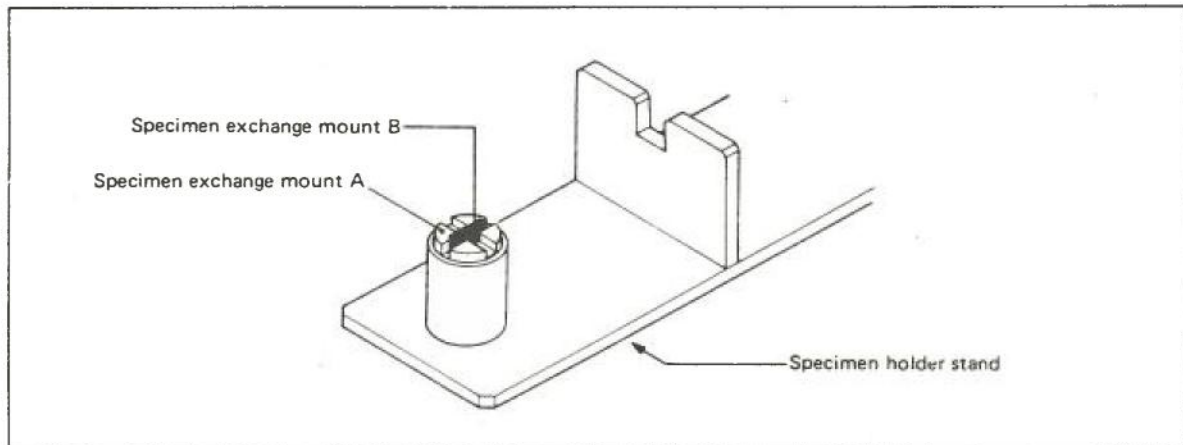


Fig. 4.2 Mounting the specimen exchange mounts

3. Place the specimen holder on the specimen holder stand with the holder shaft pin facing downward as shown in Fig. 4.3.

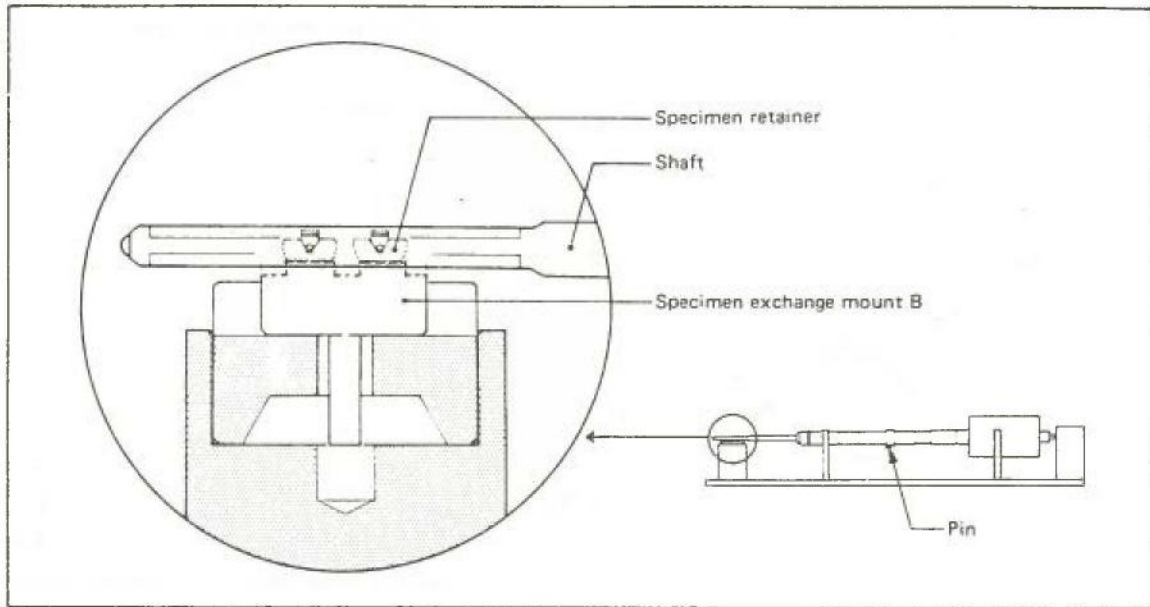


Fig. 4.3 Mounting the specimen holder on the holder stand

4. Remove the used specimen from the specimen holder as follows (Fig. 4.4):
 - a. Orientate the clawed tip of the specimen exchange tool in the

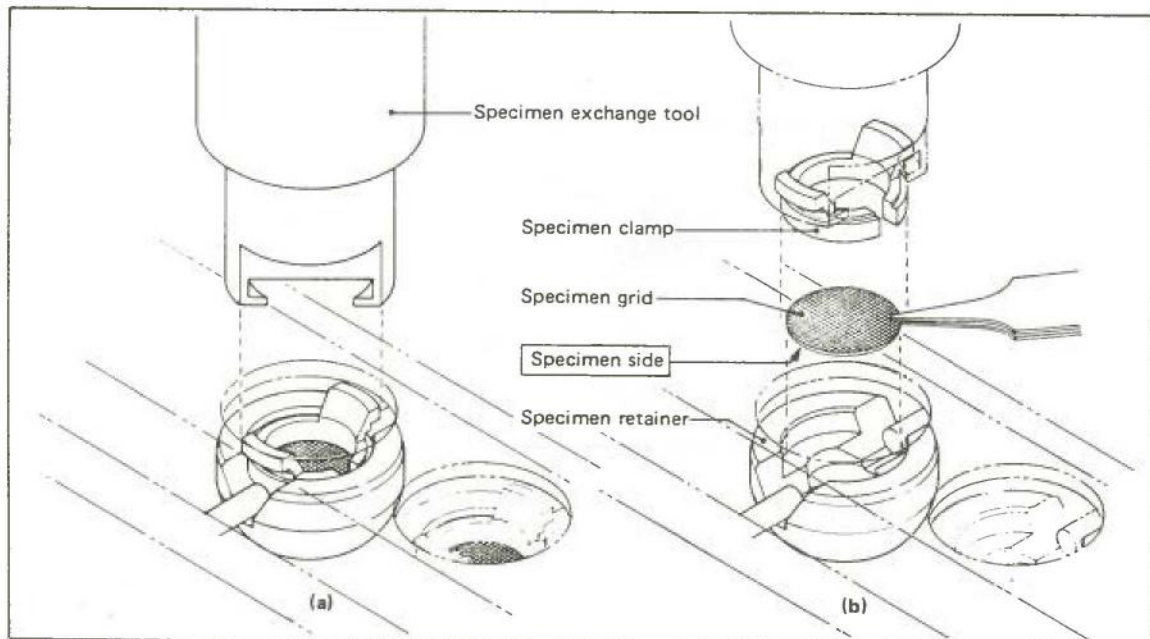


Fig. 4.4 Specimen exchange

- specimen retainer so that the two claws do not align with the arms of the specimen clamp (Fig. 4.4a), then, while lightly applying downward pressure on the tool, turn the tool so that it engages with the tipped rim of the clamp and remove the clamp by lifting the tool straight up (Fig. 4.4b).
- b. Remove the specimen holder from the holder stand, and the specimen from the holder by turning the holder upside down.
 - c. Return the specimen holder to the stand (Fig. 4.3).
5. Load a new specimen in the specimen holder as follows:
- a. Place the specimen grid in the specimen retainer with the specimen facing downward (Fig. 4.4b).
 - b. Attach the specimen clamp to the specimen exchange tool and insert the tool into the specimen retainer.
 - c. Detach the tool from the clamp by turning the tool sufficiently to disengage it from tipped rim of the clamp. The specimen is now secured in the specimen retainer.
 - d. Make a note of the specimens in the 1 and 2 specimen retainers.

4.3 Inserting the specimen holder into the column

1. Limit the X-tilt angle as follows:
 - a. Turn the X-tilt speed control knob fully clockwise and set the X-tilt dial to 0° by operating the X-pedal switches.
 - b. Set the two X-tilt angle limiting screws (Fig. 4.5) to 25° , 30° or 60° when SAP, HMP or SAP is used, respectively.
2. Confirm the following:
 - a. That the V7 of the JEM-1200EX is closed, or the HIGH and AIRLOCK OPEN lamps of the JEM-100/200CX are lit.
 - b. That the FILAMENT (EMISSION) knob is set at OFF.
3. After checking that there is no dirt or dust on the specimen holder O-ring, align the specimen holder guide pin with the goniometer guide

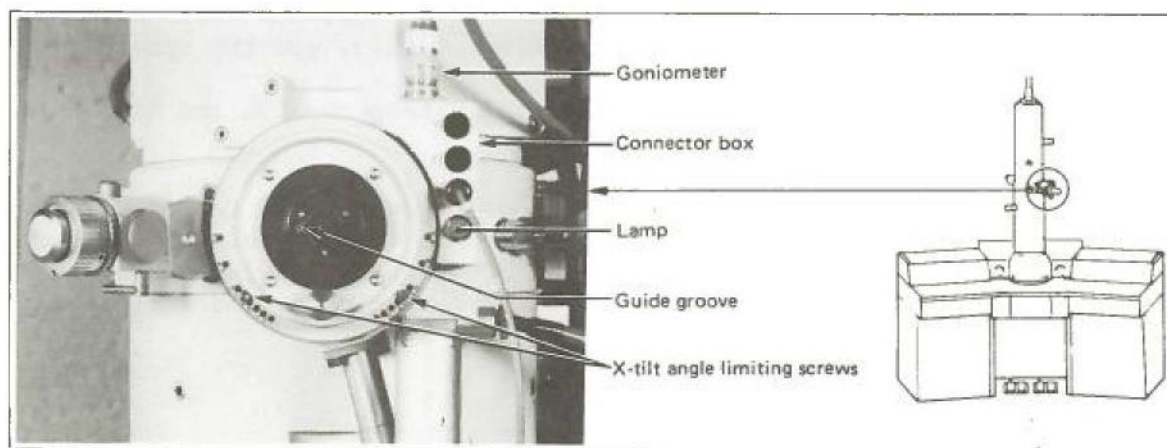


Fig. 4.5 Goniometer

- groove (Fig. 4.5), push the holder into the goniometer as far as it will go and hold it there until the connector box lamp (which lights up indicating the commencement of goniometer evacuation) goes out.
4. When the connector box lamp goes out indicating that goniometer evacuation is complete, turn the specimen holder fully clockwise and push it in fully.
 5. Connect the holder cable to socket H1 on the connector box.
 6. Set the specimen number indicator (Fig. 4.6) to the desired number with the specimen selector.

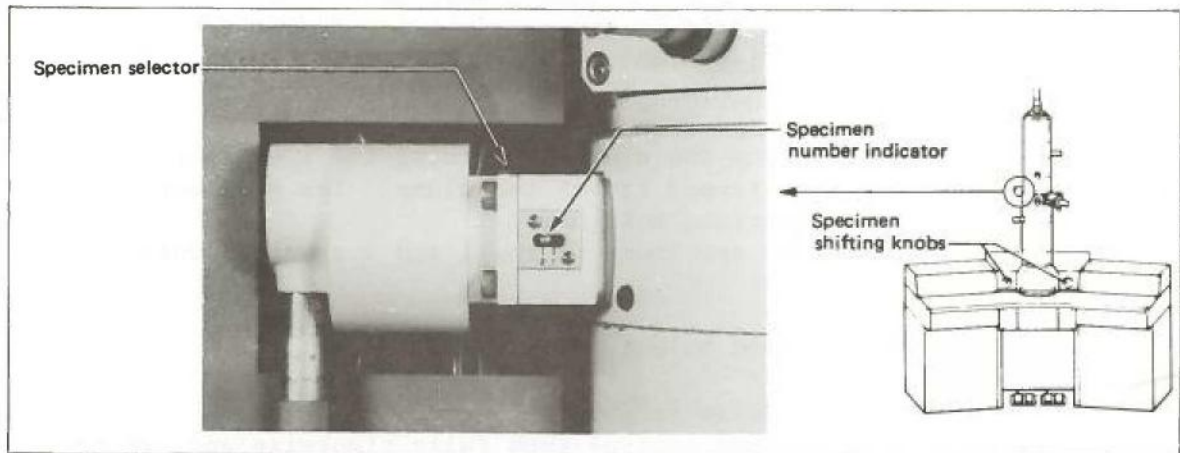


Fig. 4.6 Specimen selecting device

4.4 Specimen rotation

1. Select the desired specimen rotating speed with the Y-tilt/rotation speed control knob.
2. Rotate the specimen by operating the Y pedal switches while observing the image. To select the desired field of view, use the specimen shifting knobs.
3. If necessary, read off the rotation angle from the DEG and MIN indicators on the specimen holder.

Reading off the rotation angle

One graduation on the DEG indicator corresponds to 12 degrees, and one graduation on the MIN indicator corresponds to 10 minutes. The red and black digits represent rotation from 0° in the clockwise and counter-clockwise directions, respectively. For example, if the indicators read as shown in Fig. 4.7a, that is

$$\text{DEG: } 96^{\circ} + (12^{\circ} \times 3) = 132^{\circ}$$

$$\text{MIN: } 350' = 5^{\circ}50'$$

the rotation angle is $137^{\circ}50'$ in the clockwise direction.
 If the indicators read as shown in Fig. 4.7b, that is

DEG: 48°

MIN: $330' = 5^{\circ}30'$,

the rotation angle is $53^{\circ}30'$ in the counterclockwise direction.

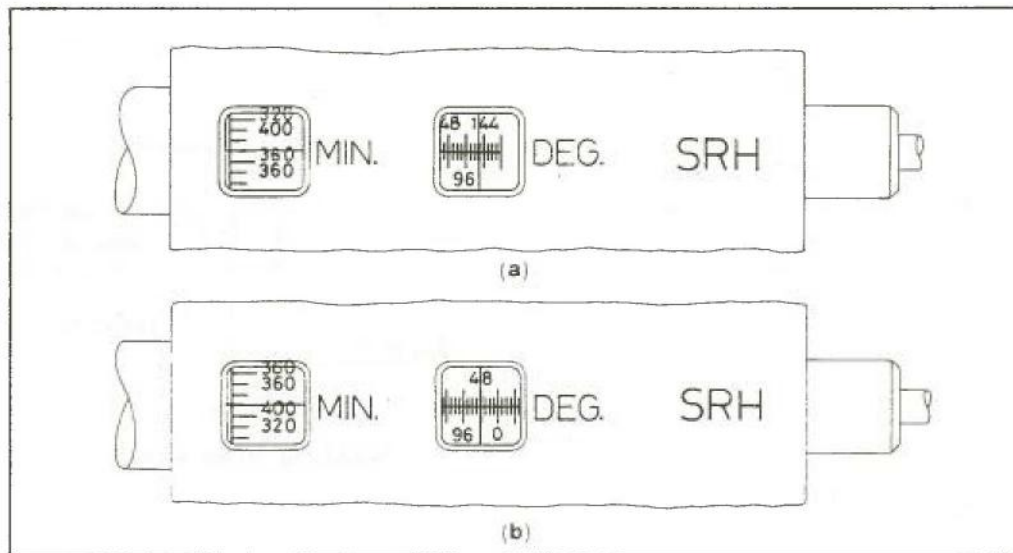


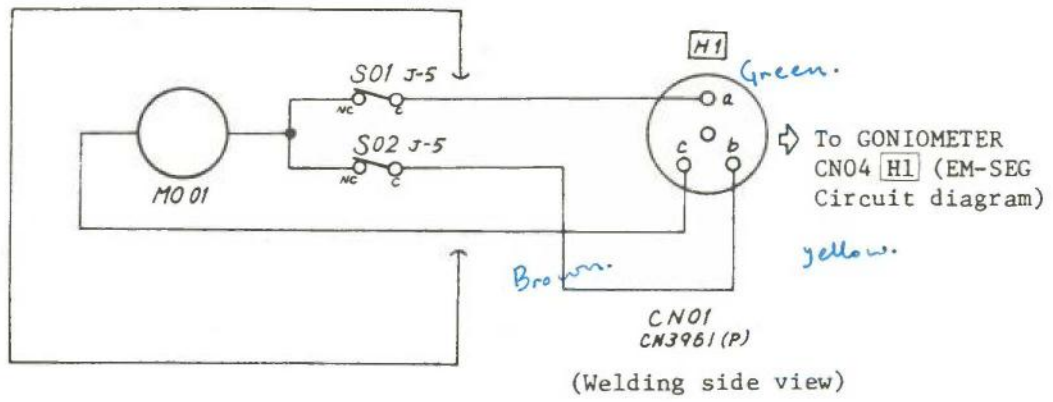
Fig. 4.7 Rotation angle indicators

Specimen tilting;

JEM-100CX: Refer to EM-SEG Instructions.

JEM-200CX: Refer to JEM-200CX Instructions.

JEM-1200EX: Refer to JEM-1200EX Instructions.



SPECIMEN TILT AND ROTATION HOLDER

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