4. DESCRIPTION OF COLUMN AND PANEL CONTROLS

4.1 Column (see Fig. 3.3-1)

No.	Name	Description
①	Condenser lens aperture assembly Knob 1 and lever	(see Fig. 4.1-1) The apertures are selected corresponding to the knob 1 position and lever direction.

Lever direction	Left			Right		
Knob 1 position	◎	◎	◎	◎	◎	◎
Aperture size	o	o	o	o	•	∞

	Knobs 2, 3, 4	Knobs 2 and 3 are used to move the apertures in X and Y directions when the lever is turned to the left. Knobs 2 and 4 are used when the lever is turned to the right.

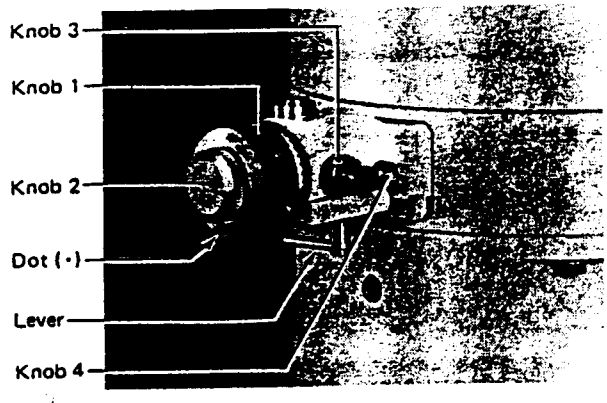


Fig. 4.1-1 Condenser lens aperture assembly

②	Condenser mini-lens shifting screws	For illumination system alignment.
③	Beam displacement compensating screws	Used for compensating for electron beam shift which results when the OBJ FOCUS knob (control panel R1) is manipulated.

No.	Name	Description
④	Objective lens aperture assembly Knob 1 and Lever	(see Fig. 4.1-2) The apertures are selected corresponding to the knob 1 position and lever direction.

Lever direction	Left			Right
Knob 1 position				Any position
Aperture size	o	o	o	∞

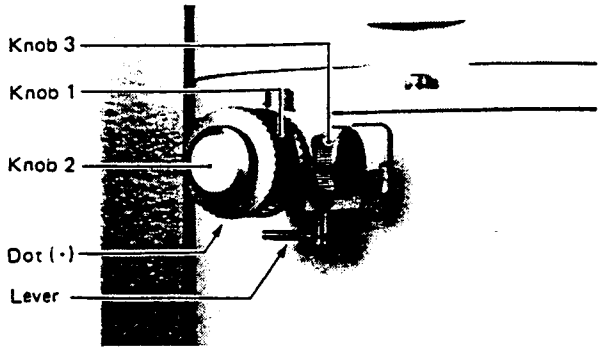


Fig. 4.1-2 Objective and field limiting aperture assemblies

⑤	Specimen selecting device Specimen selector	(see Fig. 4.1-3) Used for selecting either one of the two specimens mounted on the specimen holder.
	Specimen number indicator	Indicates which specimen (1 or 2) is being observed. Changeover from 1 to 2 or 2 to 1 is effected by manipulating the specimen

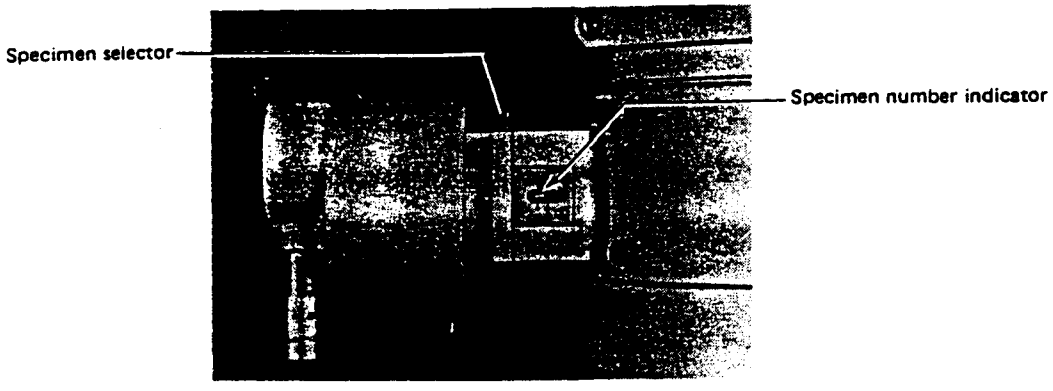


Fig. 4.1-3 Specimen selecting device

No.	Name	Description
		selector. 1 and 2 on the indicator correspond to the engraved numbers 1 and 2 on the specimen holder.
⑥	Axis alignment screws (4 pcs.)	Used for aligning the specimen tilt axis.
⑦	Goniometer	(see Fig. 4.1-4)
	X-tilt knob	Used for tilting the specimen around the X axis (i.e., around the axis of the specimen holder).
	Z control knob	Used for shifting the specimen vertically.
	X-tilt angle limiting screws (2 pcs.)	Used for confining the X-tilt angle.
	Lamp	Lights up when the motor is coupled to the goniometer.
	Motor	Drives the goniometer.

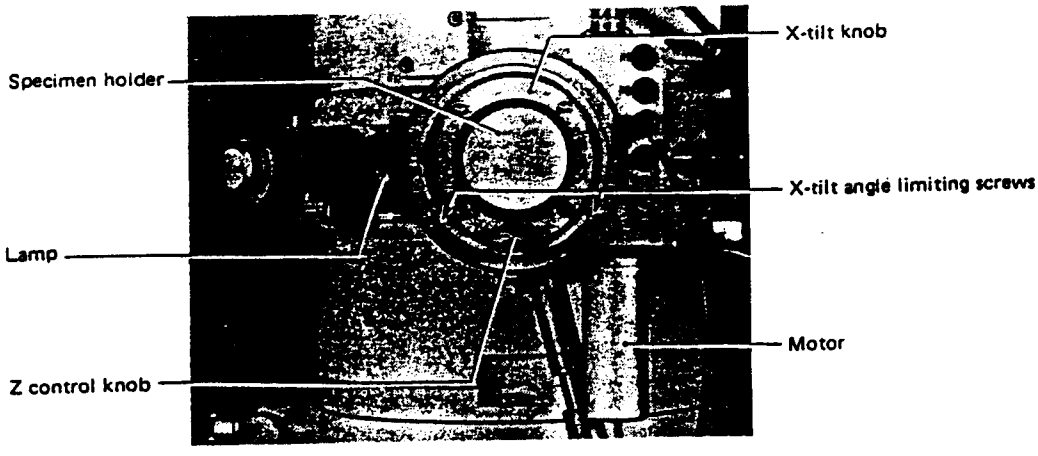


Fig. 4.1-4 Goniometer

⑧	Field limiting aperture assembly	Used for selecting, positioning, and aligning the field limiting apertures. See the description of the objective lens aperture assembly.
⑨	Intermediate lens shifting screws (4 pcs.)	Used for aligning the image forming system.
⑩	Projector lens shifting screws (4 pcs.)	Used for aligning the image forming system.
⑪	Specimen shifting knobs	Used for shifting the specimen to select the desired field of view. The position of the selected firld of view is displayed on the CRT (PAGE-2) on control panel R1 (Sect. 4.2.5).

No.	Name	Description
⑫	Screen lever	Used for changing the small fluorescent screen position.
⑬	Camera chamber door handle	Used for opening and closing the camera chamber door. By turning the handle clockwise as far it will go, air is admitted into the viewing and camera chambers, and the camera chamber door opens. By turning the handle fully counterclockwise with the door kept closed by hand, the two chambers are evacuated.
⑭	Pedal switches	(see Fig. 4.1-5)
	X pedal switches	By stepping on one of the pedals, the specimen is tilted around the X-axis in one direction and by stepping on the other pedal, the specimen is tilted around the X-axis in the opposite direction.
	Y pedal switches	When a specimen rotation holder is used, the specimen is rotated in one direction by stepping on one of the pedals and rotated in the opposite direction by stepping on the other pedal. When a specimen tilt holder is used, the specimen is tilted around the Y-axis (perpendicular to the axis of the specimen holder) in one direction by stepping on one pedal and tilted around the Y-axis in the opposite direction by stepping on the other pedal. Further, when a specimen elongating holder is used, the specimen is elongated by stepping on one pedal and compressed by stepping on the other pedal.

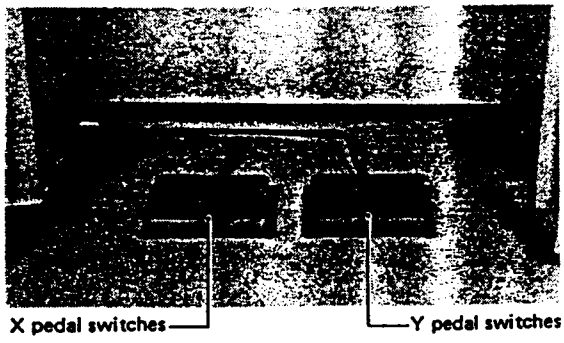


Fig. 4.1-5 Pedal switches

4.2 Control panels (see Fig. 3.4-1)

4.2.1 Control panel L1

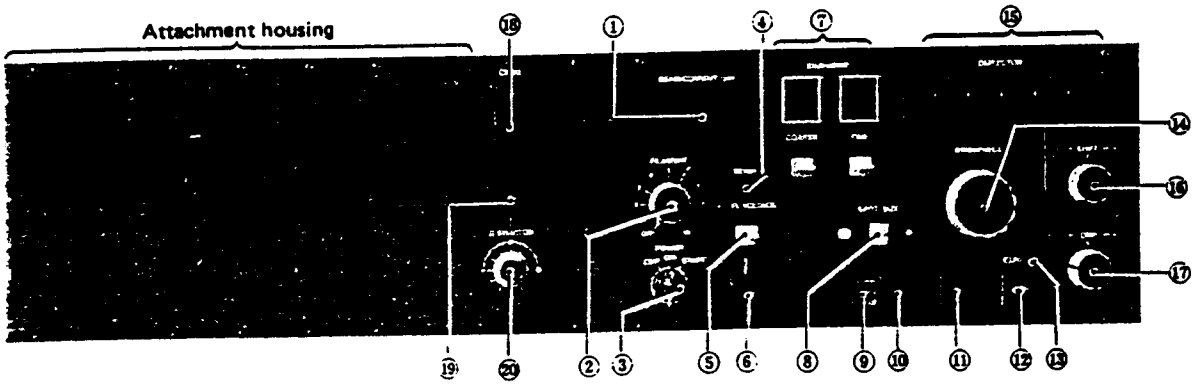


Fig. 4.2-1 Control panel L1

No.	Name	Description
L1-①	BEAM CURRENT	Indicates the sum of the beam current and the high voltage detecting current.
L1-②	FILAMENT	Used for controlling the electron gun filament heating current.
L1-③	POWER	Microscope main power switch.
L1-④	READY	Indicates that the microscope is ready for high voltage generation.
L1-⑤	ACCEL VOLTAGE	Setting this switch to the upper position raises the high voltage, and setting the switch to the lower position lowers the high voltage.
L1-⑥	HT	By depressing this button, the high voltage is switched on and the lamp lights up. By releasing the button, the high voltage is switched off and the lamp goes out.
L1-⑦	BIAS MODE (COARSE and FINE)	Used for selecting the electron gun bias. Setting either of these switches to the upper position increases the beam current (the value indicated by the indicators also increases), and brightens the image.
L1-⑧	SPOT SIZE	Setting this switch to the left position increases the spot size, and setting the switch to the right position decreases the spot size. The spot size value is displayed on the CRT (PAGE-1*) on control panel R1.

* See Sect. 4.2.8.

No.	Name	Description
L1-⑨	ROOM LIGHT	Used for turning on/off the room light.
L1-⑩	BRIGHT ZOOM	For the zoom circuit (see Subsect. 5.6.5).
L1-⑪	BRIGHT 16X	When this switch is turned on, the built-in lamp lights up and both the 2nd condenser lens current range (variable by the BRIGHTNESS knob on control panel L1) and the stigmator coil current range (variable by the OBJ STIG 1 and 2 on control panel L1) expand 16 times.
L1-⑫	PHOTO	By depressing this switch when the lamp is unlit, a film is advanced to the exposing position and the lamp lights up. By depressing this button when the lamp is lit, the film is exposed and after the exposure, the film is advanced from the exposing position and the lamp goes out.
L1-⑬	EXP	This lamp lights up and remains lit while the shutter is open.
L1-⑭	BRIGHTNESS	Used for converging and spreading the electron beam by varying the 2nd condenser lens current. The variable current range expands 16 times when the BRIGHT 16X switch (control panel L1) is turned on.
L1-⑮	DEFLECTOR	When one of these buttons is depressed, the depressed button lamp brightens and the current of the coil relating to the depressed button becomes variable with the DEF: X knob (control panel L1) and DEF: Y knob (control panel R1). The lamp darkens and the coil current is fixed when the button is released.
	OBJ STIG 1	Used when varying the objective lens stigmator coil current (or the intermediate lens stigmator coil current in the case of LOW MAG mode). By depressing this button, stigmator circuit 1 is actuated, the built-in lamp brightens, and the green lamp above the button lights up. The green lamp remains lit until the OBJ STIG 2 button is depressed. The variable current range expands 16 times when the BRIGHT 16X switch (control panel L1) is turned on.
	OBJ STIG 2	Same as the OBJ STIG 1 button except that stigmator circuit 2 is actuated by depressing this button. The green lamp remains lit until the OBJ STIG 1 button is depressed.
	COND STIG	Used when varying the condenser lens stigmator coil current.
	DARK TILT	Used when varying the condenser lens 1st and 2nd beam deflector coil current. By depressing this button, the condenser lens beam deflector DARK circuit is actuated, the built-in lamp brightens, and the green lamp above the button lights up. The green lamp remains lit until the BRIGHT TILT button is depressed.

No.	Name	Description
	BRIGHT TILT	Same as the DARK TILT button except that the condenser lens beam deflector BRIGHT circuit is actuated by depressing this button. The green lamp remains lit until the DARK TILT button is depressed.
	IMAGE SHIFT	Used for slightly shifting the field of view. By depressing this button, the 1st image shift coil power supply circuit is connected to DEF: X and Y, and the built-in lamp brightens. This button is effective only when the FUNCTION: MAG 1 or MAG 2 button (control panel R1) is depressed.
L1-⑯	SHIFT: X	Used for shifting the electron beam in the X direction by varying the condenser lens 1st beam deflector coil current. When this knob is set to its midway position, the left and right directional indicator lamps light up and when the knob is turned counterclockwise from the midway position the left lamp lights up and when it is turned clockwise the right lamp lights up.
L1-⑰	DEF: X	Used for varying the current of the X coil of the one set of coils selected by DEFLECTOR (control panel L1). When this knob is set to its midway position, the left and right directional indicator lamps light up and when the knob is turned counterclockwise from the midway position the left lamp lights up and when it is turned clockwise the right lamp lights up.
L1-⑱	CM	CM lens (condenser mini-lens) power switch.
L1-⑲	S	The lamp lights up, when depressed, indicating that the illumination mode is in the S mode. When redepressed, the lamp goes out and the illumination mode is turned into the L mode.
L1-⑳	α-SELECTOR	Selects the convergent angle with the illuminating area kept unchanged in size. The CM lens current decreases and illuminating angle becomes larger as this is turned clockwise. The CM lens current decreases to zero when this is turned fully clockwise. This does not function unless the S button is turned on.

4.2.2 Control panel R1

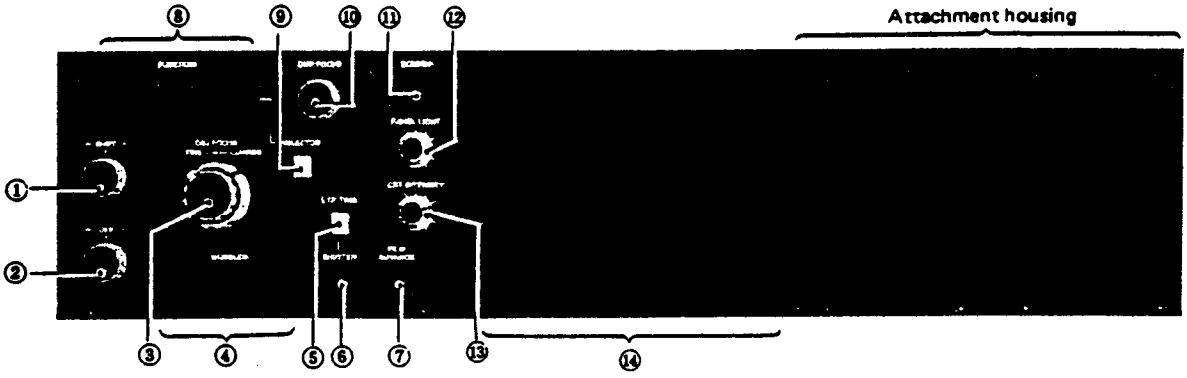


Fig. 4.2-2 Control panel R1

No.	Name	Description
R1-①	SHIFT: Y	Used for shifting the electron beam in the Y direction by varying the condenser lens 1st beam deflector coil current. When this knob is set to its midway position, the left and right directional indicator lamps light up and when the knob is turned counterclockwise from the midway position the left lamp lights up and when it is turned clockwise the right lamp lights up.
R1-②	DEF: Y	Used for varying the current of the Y coil of the one set of coils selected by DEFLECTOR (control panel L1). When this knob is set to its midway position, the left and right directional indicator lamps light up and when the knob is turned counterclockwise from the midway position the left lamp lights up and when it is turned clockwise the right lamp lights up.
R1-③	OBJ FOCUS	Used for adjusting the objective lens current (OM lens current in the case of LOW MAG mode) to focus the image.
	OBJ 16X	When this button is depressed, the button lamp lights up and the objective lens current range variable by the OBJ FOCUS knobs (control panel R1) enlarges 16 times.
R1-④	WOBBLER	Used for generating alternating current or imposing a small cyclic electrical variation on the related current or voltage.
	IMAGE X and Y	Used for focusing. The 1st beam deflector coil current and 2nd beam deflector coil current are made to be vary periodically when one of these buttons is depressed. If the image is out of foucs. it

No.	Name	Description
		wobbles in the X direction when the IMAGE X button is depressed and in the Y direction when the IMAGE Y button is depressed.
	OBJ	By depressing this button, the objective lens current is periodically varied, facilitating the current center alignment and astigmatism correction.
	HT	By depressing this button, the high voltage is periodically varied, facilitating the voltage center alignment.
R1-⑤	EXP TIME	Used for setting the exposure time in the manual exposure mode. Setting this switch to the left position decreases the exposure time, and setting the switch to the right position increases the exposure time. The exposure time set by this switch is displayed on the CRT (PAGE-1) on control panel RI.
R1-⑥	SHUTTER AUTO	When this button is depressed, the lamp lights up and the shutter is automtically controlled. When the button is released the lamp goes out and the shutter is controlled manually.
R1-⑦	FILM ADVANCE AUTO	When this button is depressed, the lamp lights up and unused films are successively advanced to the exposing position without depressing the PHOTO button (control panel L1). When the button is released, the lamp goes out and no film is advanced to the exposing position unless the PHOTO button is depressed.
R1-⑧	FUNCTION	Used for selecting an image forming mode. The magnification or camera length in the selected mode can be varied with the SELECTOR switch (control panel R1), and is displayed on the CRT (PAGE-1) on control panel R1. The magnification or camera length set by the SELECTOR switch is stored so that even if another mode is once selected, the magnification or camera length can be set to the stored value by selecting the original mode again.
	MAG 1	Used for selecting the normal magnification mode.
	MAG 2	By depressing this button, the basic magnification (see Subsect. 5.2.11q) is obtained. In this mode, the magnification can be increased or decreased from the basic magnification with the SELECTOR switch. The magnification set in this mode is not stored.
	LOW MAG	Used for selecting the low magnification mode.
	SAM/ROCK	Used for selecting the selected area magnification mode (or the rocking mode when the ASID scanning device is used).

No.	Name	Description
	DIFF	Used for selecting the diffraction mode. In this mode, a total of 30-step camera lengths can be selected with the SELECTOR switch, i.e. the camera lengths for selected area diffraction (15 steps), those for high dispersion diffraction (14 steps), and that for high resolution diffraction in the camera length ascending order. The selected camera length is displayed on the CRT (PAGE-1) on control panel R1.
R1-⑨	SELECTOR	Used for varying the normal magnification when the FUNCTION: MAG 1 or MAG 2 button (control panel R1) is depressed, the low magnification when the FUNCTION: LOW MAG button is depressed, the selected area magnification (or the rocking angle in case the ASID is used) when the FUNCTION: SAM/ROCK button is depressed, and the camera length when the FUNCTION: DIFF button is depressed. Setting this switch to the left position decreases the value and setting the switch to the right position increases the value. The magnification or camera length set by this switch is displayed on the CRT (PAGE-1) on control panel R1.
R1-⑩	DIFF FOCUS	Used for varying the 1st intermediate lens coil current for focusing the field limiting aperture when the FUNCTION: SAM/ROCK button (control panel R1) is depressed, and for focusing the diffraction pattern when the FUNCTION: DIFF button is depressed.
R1-⑪	SCREEN	Used for changing the large fluorescent screen position (horizontal or vertical). The built-in lamp lights up and remains lit while the screen is at the vertical position.
R1-⑫	PANEL LIGHT	When this knob is turned fully counterclockwise, the panel light goes out and when it is turned clockwise, the panel light becomes brighter.
R1-⑬	CRT INTENSITY	Used for adjusting the brightness of the CRT (control panel R1).
R1-⑭	CRT	Used for displaying information (see Sect. 4.2.8) as requested through the keyboard.

4.2.3 Control panel L2

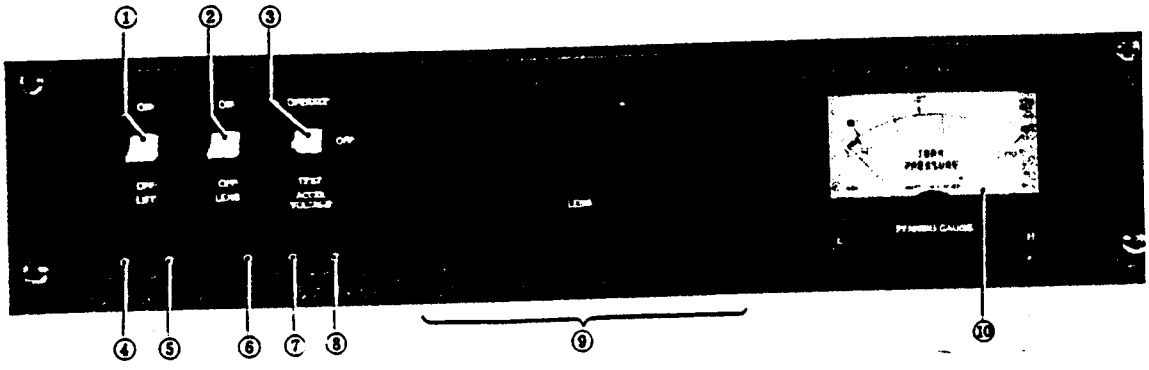


Fig. 4.2-3 Control panel L2

No.	Name	Description
L2-①	LIFT	Power on/off switch for the lift. By turning this switch ON and depressing the GUN AIR button (control panel L2), the lift is actuated to raise the electron gun.
L2-②	LENS POWER SUPPLY	By turning this switch OFF, the power supply circuits for all the lenses, beam deflector coils and stigmator coils are turned off and at the same time, the high voltage power supply is also turned off.
L2-③	ACCEL VOLTAGE	At OPERATE, the safety circuit for the high voltage is actuated, at TEST, the safety circuit is turned off and at OFF, the high voltage power supply is turned off.
L2-④	GUN AIR	The lamp lights up when this button is depressed and air is admitted into the anode chamber. When the LIFT switch (control panel L2) is set to ON, the lift is actuated to raise the electron gun after air is admitted into the anode chamber. When the button is released, the lamp goes out, the lift lowers to return the electron gun to its original position, and the anode chamber is evacuated.
L2-⑤	COL AIR	The lamp lights up and air is admitted into the column (except the viewing chamber) when this button is depressed. The lamp goes out and the column is evacuated when the button is released.
L2-⑥	ACD HEAT	Used for turning on/off the anticontamination device (optional) heating power.

No.	Name	Description
L2-⑦	BAKE OUT	Used for bake-out of the column.
L2-⑧	GUN SCAN	Used for finding the electron beam. The lamp lights up and the electron beam scans when this button is depressed.
L2-⑨	LENS	Power on/off switches for the respective lenses.
L2-⑩	PENNING GAUGE	Indicates the anode or specimen chamber pressure. When lamp H is lit, read the upper (outer) scale and when lamp L is lit, read the lower (inner) scale. See the EM-DCS/DVS Instruction Manual for further information.

4.2.4 Control panel R2

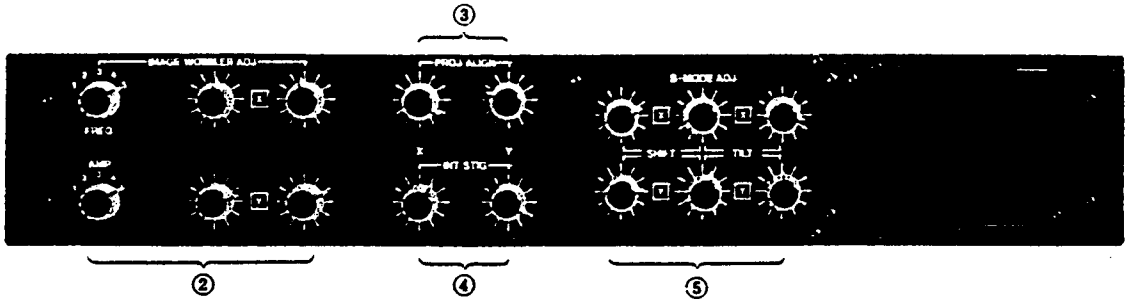


Fig. 4.2-4 Control panel R2

No.	Name	Description
R2-②	IMAGE WOBBLER ADJ	Used for aligning the condenser lens 1st and 2nd beam deflector coils. A pulsating current flows through the coils when the IMAGE X or Y button (control panel R1) is depressed.
	FREQ, AMP	Select the frequency and amplitude of the pulsating current.
	X and Y	Aligns the coils in the X and Y directions. The X knob functions when the IMAGE X button is depressed and the Y knob functions when the IMAGE Y is depressed.
R2-③	PROJ ALIGN: X and Y	Used for adjusting the projector lens beam deflector coil current in order to align the diffraction pattern center. These knobs are effective when the FUNCTION: DIFF button (control panel R1) is depressed.

No.	Name	Description
R2-④	INT STIG: X and Y	Used for correcting the intermediate lens astigmatism.
R2-⑤	S-MODE ADJ	For the column alignment in the S mode illumination system.
	SHIFT	Compensates diffraction pattern displacement when the SHIFT-X and Y (control panels L1 and R1) are turned.
	TILT	This is generally used at its midway positions.

4.2.5 Control panel GA

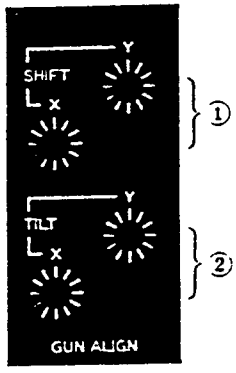


Fig. 4.2-5 Control panel GA

No.	Name	Description
GA-①	SHIFT: X and Y	Used for shifting the electron beam entering the condenser lens in order to align the electron gun with the condenser lens, by varying the electron gun 1st beam deflector coil current.
GA-②	TILT: X and Y	Used for tilting the electron beam entering the condenser lens in order to align the electron gun with the condenser lens, by varying the electron gun 1st and 2nd beam deflector coils currents.

4.2.6 Control panel GC

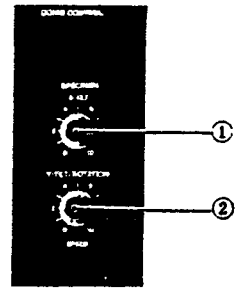


Fig. 4.2-6 Control panel GC

No.	Name	Description
GC-①	X-TILT	Used for varying the specimen tilting speed around the X-axis (i.e., around the axis of the specimen holder).
GC-②	Y-TILT/ROTATION	Used for varying the specimen tilting speed aroung the Y-axis (i.e., around the axis perpendicular to the axis of the specimen holder) when a specimen tilt holder is used, the specimen rotation speed when a specimen rotation holder is used, and the specimen elongation rate when a specimen elongating holder is used.

4.2.7 Keyboard (KB)

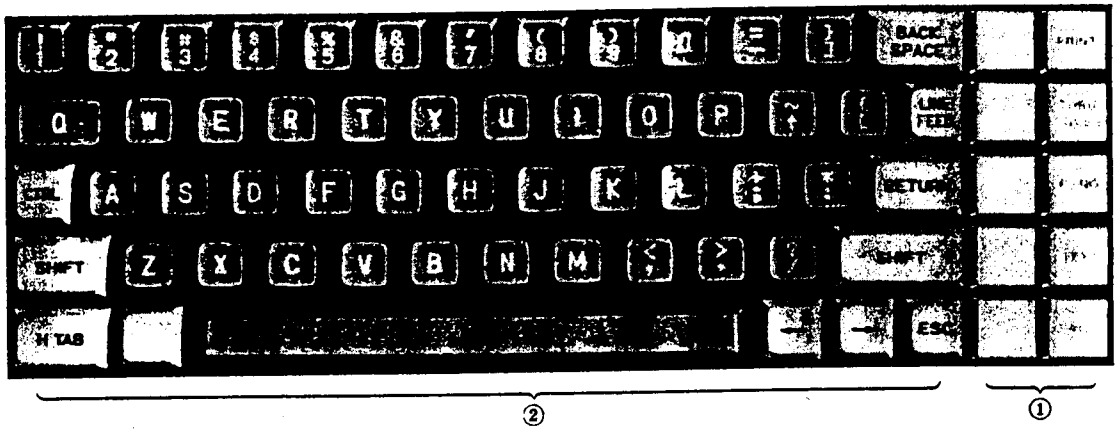


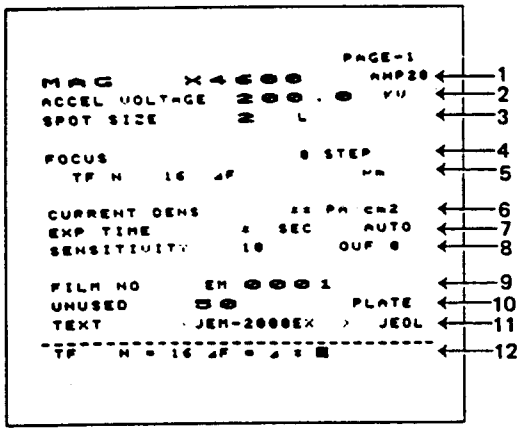
Fig. 4.2-7 Keyboard

No.	Name	Description
KB-①	PAGE	Every time this key is depressed, the PAGE displayed on the CRT (control panel R1) advances in the PAGE number in ascending order (PAGE-1 appears following PAGE-8). The displayed contents of each PAGE are as follows: PAGE-1: Magnification, type of objective lens pole piece, accelerating voltage, spot size, OBJ FOCUS knob position (step number), number of films to be exposed and focus step (step/film) for taking a through-focus series, current density on fluorescent screen, exposure time, exposure mode (automatic/manual), film sensitivity, OUF number, film number, number of unused films, type of camera, and TEXT (specimen name, etc.). PAGE-2: Specimen positions stored by the operator and the current specimen position (indicated by coordinates and graph). P and numbers represent the coordinates of the current position and stored positions, respectively. In the graph, the ■ mark and x marks indicate the current position and stored positions, respectively. PAGE-3: Open/closed status of each vacuum valve (indicated by vacuum system diagram) and readings of 4 Pirani gauges. PAGE-4: Voltage at each lens circuit check point. PAGE-5: Voltage at each beam deflector circuit check point. PAGE-6: Voltage at each stigmator circuit check point. PAGE-7: Operator's memorandum. The information written on this page is stored in the memory. PAGE-8: A part of PAGE-1.

No.	Name	Description
	THRU FOCUS	Used for setting the number of films to be exposed and the focus step (step/film) for taking a through-focus series. By depressing this key, "TF N" and "ΔF" are displayed on the bottom margin of PAGE-1. To set the number of films and focus step, make the CRT display "TF N" and "ΔF" in the bottom margin of PAGE-1 by depressing this button, input the desired values through the keyboard, and depress the RETURN key. If an input value is out of the allowable range, "ERROR" is displayed. In such case, redepress the THRU FOCUS key (the erroneous input value and "ERROR" are now erased), input a value within the allowable range, and depress the RETURN key. When the RETURN key is depressed, the characters on the bottom line are erased.
	F NO	Used for setting the film number and the number of unused films. By depressing this key, "FILM-NO" and "UNUSED" are displayed in the bottom margin of PAGE-1. Then, input the film number and the number of unused films on the right of "FILM-NO" and "UNUSED", respectively, through the keyboard, and depress the RETURN key. If a number out of the allowable range is input, "ERROR" is displayed. In such case, redepress the F NO key (the input number and "ERROR" are now erased), input a proper number, and then depress the RETURN key. When the RETURN key is depressed, the characters on the bottom line are erased and the input numbers are stored in the memory.
	TEXT	Used for writing information on the TEXT line of PAGE-1 and on any line of PAGE-7. By depressing this key once, "TEXT" is displayed in the bottom margin of PAGE-1 and by depressing this key twice, PAGE-7 is displayed. Further, by depressing this key three or more times, the information on PAGE-7 is erased. If information is to be written on the TEXT line of PAGE-1, depress this key once to make the CRT display "TEXT" in the bottom margin of PAGE-1, input required characters and symbols through the keyboard (see KB-2), and depress the RETURN key. By so doing, the TEXT information written at the bottom moves to the TEXT line, and is stored in the memory. At the same time, "TEXT" displayed at the bottom is erased.
	PRINT	By depressing this key, the information displayed on the CRT is recorded by the printer (optional attachment).
KB-②	BACK SPACE	Used for column alignment (Subsect. 5.3.2).
	LINE FEED	When depressed, the cursor on PAGE-7 moves downwards (Subsect. 5.2.11f).
	CTRL	Used to display the * mark on PAGE-1 (Subsect. 5.2.11e).
	RETURN	See Subsect. 5.2.11.
	SHIFT	Used to display the upper one of two characters on the key.
	H TAB	Not used.

No.	Name	Description
	ESC	Used to suspend the automatic operation being carried out as requested through the key board.
	← and →	Used to move the cursor on the CRT left and right.
	Space key	Used to erase the character under the cursor on the CRT.
	Other keys	Used to typewrite the desired characters under the cursor on the CRT.

4.2.8 CRT display



+ Overfocus

- Underfocus

The number before * is the change in the focal length for one click of the fine focus knob.

1: Next to "MAG", the magnification (or camera length) is displayed. The value of magnification or camera length can be varied by manipulating the SELECTOR switch (control panel R1). The displayed value is printed on the film.

At the right end of this line, the name of the objective lens pole piece being used is displayed (Subsect. 5.2.11e).

2: The accelerating voltage displayed on this line is generated by depressing the HT button (control panel L1). The accelerating voltage can be varied by manipulating the ACCEL VOLTAGE switch (control panel L1), and the displayed value is printed on the film.

3: A number indicating the electron beam spot size and an L or S indicating the illumination mode are displayed. The spot size can be varied by manipulating the SPOT SIZE switch (control panel L1). The larger the displayed number, the smaller the spot size. The illumination mode (L or S) is changed with the S button (control panel L1).

4: The OBJ FOCUS knob (control panel R1) turning amount is displayed in terms of number of OBJ FOCUS: FINE knob steps. (When the OBJ 16X button switch is on, the amount is not displayed). The displayed number is set to 0 when any of the magnification, accelerating voltage and imaging mode is changed.

5: The number of films to be exposed, an amount of focus change per notch of the OBJ FOCUS: FINE knob (control panel R1), and a number of OBJ FOCUS: FINE knob notches per film for taking a through-focus series are displayed. The displayed values can be varied through the keyboard (Subsect. 5.2.11n).

6: The current density on the film is displayed. Pico Amete

7: Next to "EXP TIME", the exposure time is displayed. In the case of manual exposure, the displayed value can be varied by manipulating the EXP TIME switch (control panel R1). At the end of this line, "AUTO" (auto-

matic exposure) or "MANUAL" (manual exposure) is displayed. The desired exposure mode can be selected with the SHUTTER AUTO button (control panel R1).

8: Next to "SENSITIVITY", a number indicating the exposure meter sensitivity is displayed. The larger the displayed number, the lower the sensitivity and the longer the exposure time. The sensitivity can be varied through the keyboard (Subsect. 5.2.11ℓ). Next to "OUF", an OUF number is displayed (Subsect. 5.2.11o).

9: The film number is displayed. Every time a film is exposed, the displayed number (low order four digits) advances by one. The film number can be changed through the keyboard and nonnumeric characters can be written into high order two digits (Subsect. 5.2.11j). The displayed value is printed on the film.

10: Next to "UNUSED", the number of unused films is displayed. Every time a film is exposed, the displayed number is reduced by one. This number can be changed through the keyboard (Subsect. 5.2.11j).
At the right end of this line, the type of film (camera) as selected with keyboard is displayed (Subsect. 5.2.11k).

11: On this line, the operator can write the specimen name, etc. through the keyboard. The displayed contents are printed on the film (Subsect. 5.2.11g).

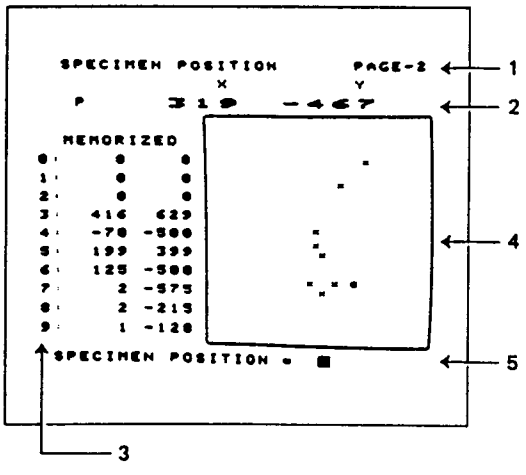
12: A desired character can be written through the keyboard at the position marked with ■. By depressing the ← or → key, the ■ mark can be shifted leftward or rightward and by depressing the space key, the character in the ■ mark can be erased. Further, by depressing the RETURN key, the characters written on this line are erased and are stored in the memory.

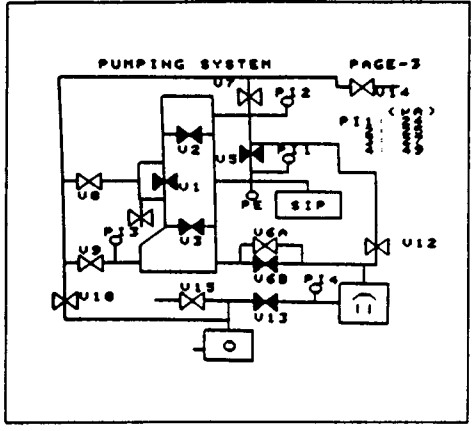
PAGE-2 is displayed by depressing the SP PO key on the keyboard.

1: X means the horizontal direction on the CRT or the X direction (specimen holder axial direction) on the specimen. When the left specimen shifting knob is turned, the specimen horizontally shifts on the CRT. Y means the vertical direction on the CRT.

2: The coordinates of the current specimen position are displayed. The current specimen position is represented by the ■ mark in the graph.

3: The coordinates of each stored specimen position are displayed. The stored specimen positions are represented by the x marks in the graph.





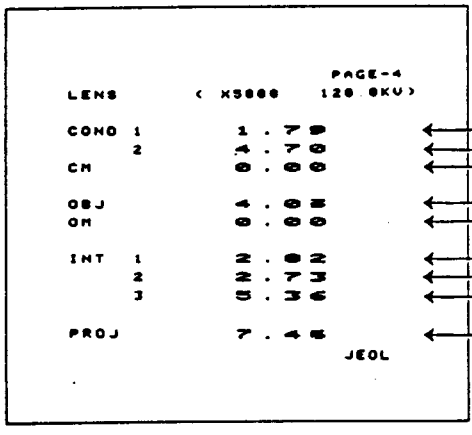
4: A circle inscribed in this frame corresponds to the specimen grid size.

5: This is displayed by depressing the keyboard (see Subsect. 5.2.11i).

PAGE-3 shows the status of the vacuum system.

⋈ : Indicates that the valve is closed.

⋈ : Indicates that the valve is open.



PAGE-4 shows the voltage at each lens circuit check point.

1: 1st condenser lens

2: 2nd condenser lens

3: Condenser mini-lens

4: Objective lens

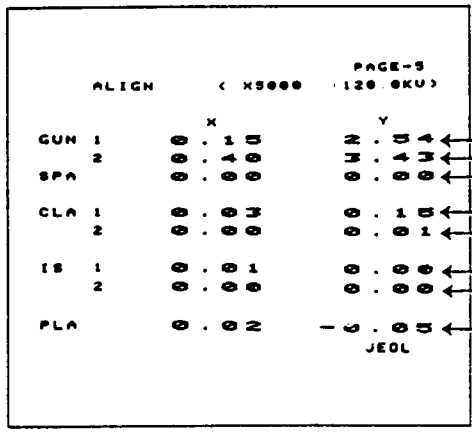
5: OM lens

6: 1st intermediate lens

7: 2nd intermediate lens

8: 3rd intermediate lens

9: Projector lens



PAGE-5 shows the voltage at each beam deflector circuit check point.

1: Electron gun 1st beam deflector coil

2: Electron gun 2nd beam deflector coil

3: Spot alignment coil

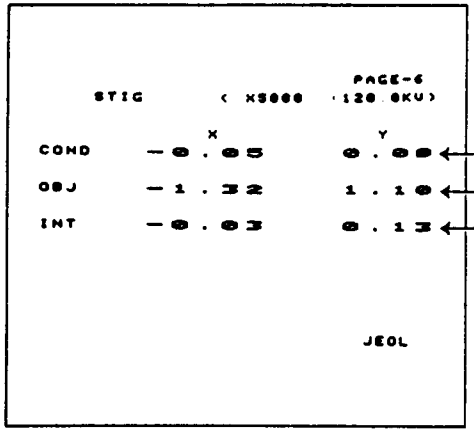
4: Condenser lens 1st beam deflector coil

5: Condenser lens 2nd beam deflector coil

6: 1st image shift coil

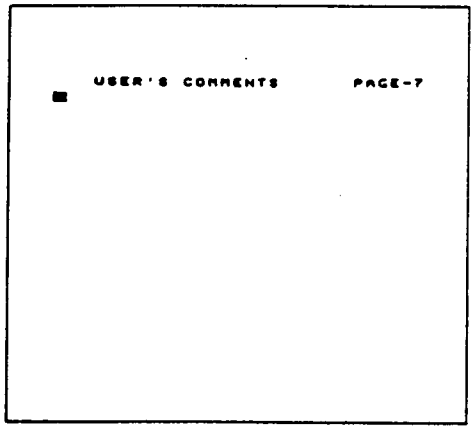
7: 2nd image shift coil

8: Projector lens beam deflector coil



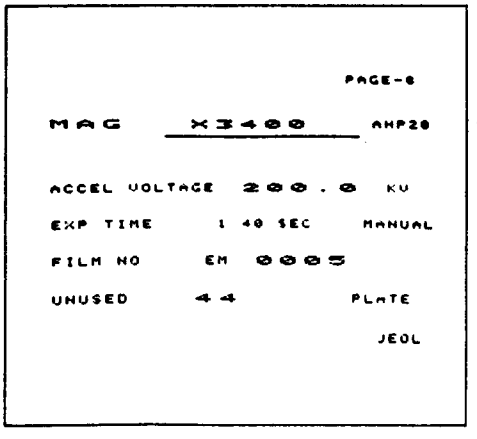
PAGE-6 shows the voltage at each stigmator circuit check point.

1: Condenser lens stigmator coil
2: Objective lens stigmator coil
3: Intermediate lens stigmator coil



A desired character can be written through the keyboard at the position marked with ■. By depressing the ← or → key, the ■ mark can be shifted leftward or rightward, and by depressing the space key, the character in the ■ mark can be erased. Further, by deprssing the RETURN key, the ■ mark can be brought to the first character position on the next line.

If the TEXT key is depressed with characters written on this PAGE, all the characters are erased (the erased characters are not stored in this case), and the ■ mark returns to the initial position. The written characters are stored in the memory by depressing the PAGE key.



1: Same as item 1 on PAGE-1.
2: Same as item 2 on PAGE-1.
3: Same as item 7 on PAGE-1.
4: Same as item 9 on PAGE-1.
5: Same as item 10 on PAGE-1.