CHAPTER 2

DESCRIPTION OF PANELS

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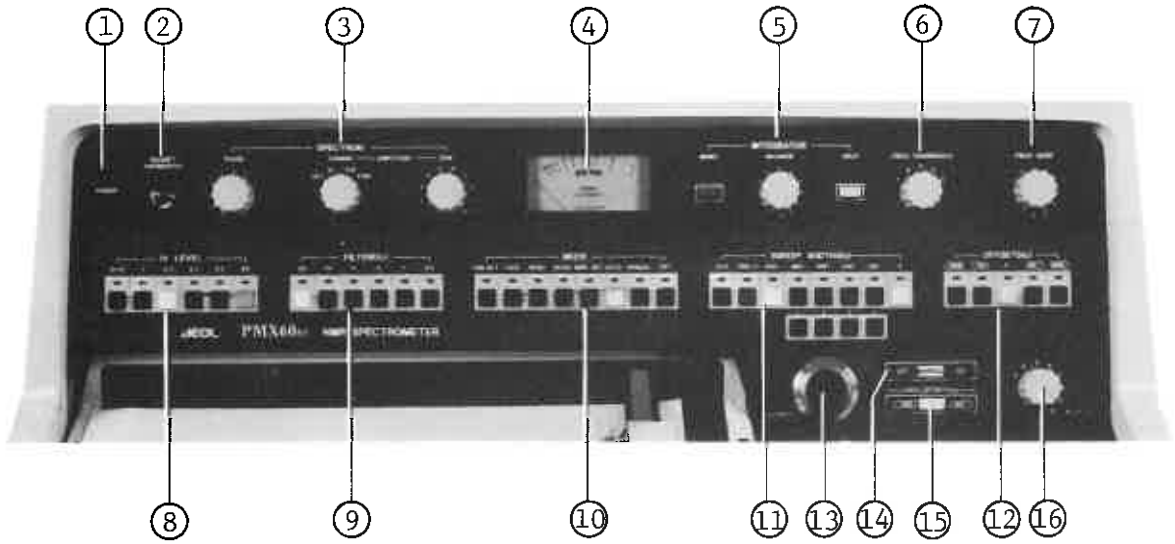
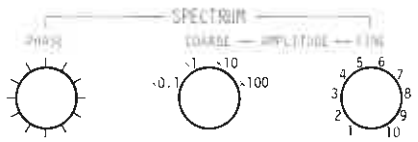
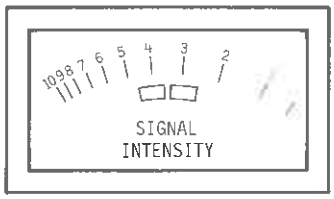
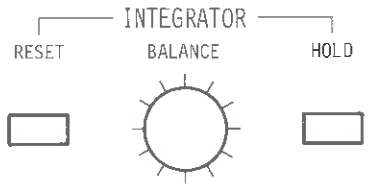
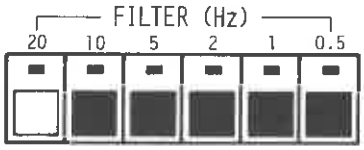
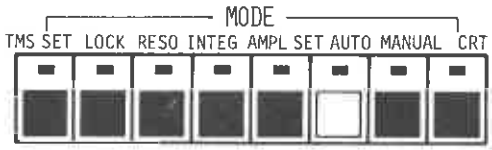
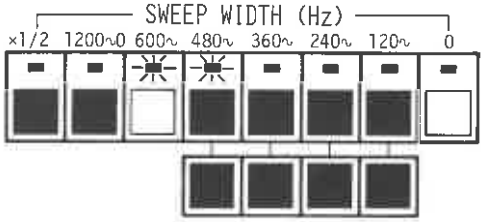
2.1 SPECTROMETER FRONT PANEL



No.	Panel control	Description
①	POWER switch	Power switch for spectrometer. Spectrometer starts when the upper (dot) side of this switch is pushed.
	POWER lamp	Stays lit while POWER switch is on.
②	MAGNET THERMOSTAT lamp	Lights up when POWER switch on magnet console rear is turned on. Temperature controller in reservoir operates while the lamp is lit.
③	SPECTRUM  AMPLITUDE knobs	Used for adjusting the signal amplitude observed on the recorder and oscilloscope. COARSE knob: Variable in four steps FINE knob: Variable in 10 steps between each COARSE step

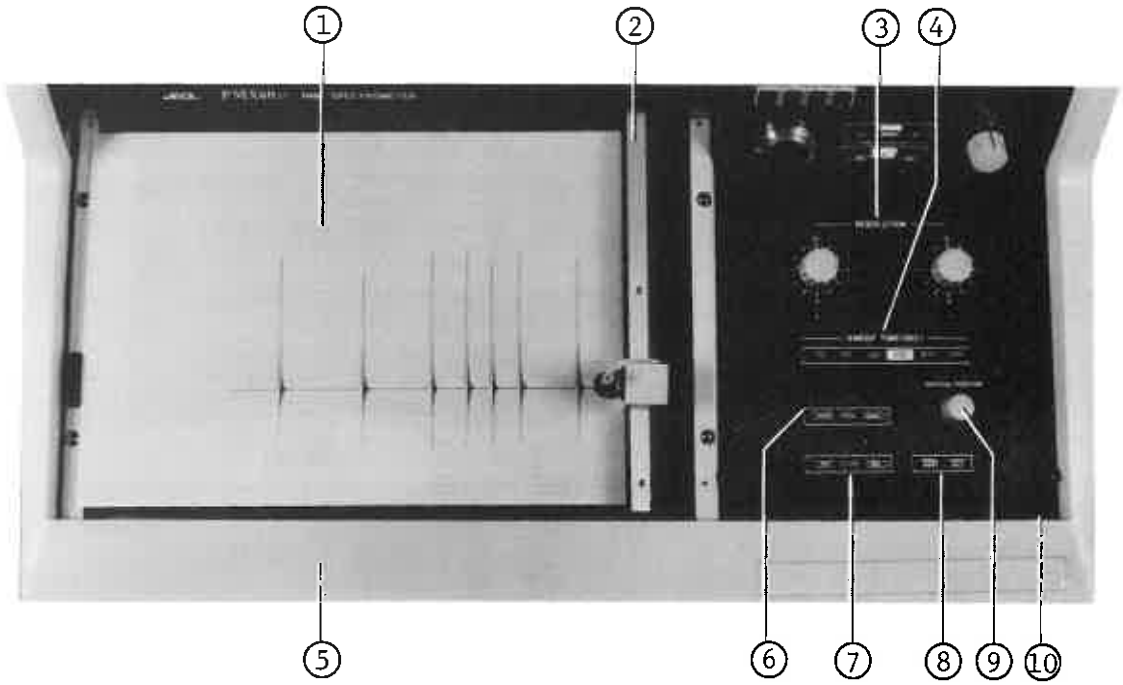
No.	Panel control	Description
	PHASE knob	Adjusts the waveform of the observation signal. Normally, it is adjusted so that an absorption waveform can be obtained.  Absorption waveform
④	SIGNAL INTENSITY meter	 Monitors the signal when MODE switches LOCK, RESO or AMPL SET are pushed.
⑤	INTEGRATOR	 Integrates the NMR signal.
	RESET button	Resets the integrator. (Integrator output becomes zero.) Push this button just prior to integration start-up.
	BALANCE knob	Halts pen drift in the absence of input signals.
	HOLD button	Integration is not performed while this button is depressed. When this button is pushed during integration, sweep is continued at the level that existed just prior to the button-pushing. It is used when the integration value is adjusted to the desired amplitude.
⑥	FIELD COARSE knob	Shifts the NMR signal to the desired position. It is to be used when the signal shift is large.
⑦	FIELD ZERO knob	Used when setting the TMS signal to 0 ppm (on chart) and fine-shifting the signal to the desired position.

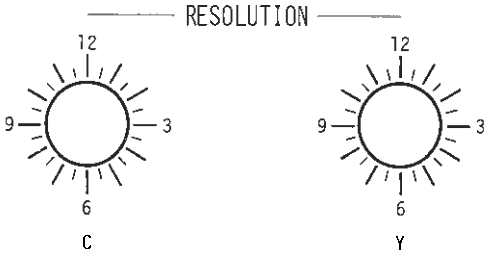
No.	Panel control	Description
⑧	H_1 LEVEL	 Selects the intensity of the high frequency magnetic field (H_1) to be applied to the sample. × 1/10: By pushing this key, the H_1 level of the settings on the right is reduced to 1/10. SD: Setting for spin decoupling. Although the set value will differ according to the sample type and sweep time, most samples can be measured by pushing the white (0.5) key.
⑨	FILTER (Hz)	 Suppresses the noise components in the recording signals. The set value differs according to the sweep width and the signal line width.
⑩	MODE	 Selects the measurement mode. TMS SET: Recorder pen is automatically set to 0 Hz. LOCK: Always holds the magnetic field to the resonance point. RESO: Used in order to adjust resolution. INTEG: Used when integrating the NMR signal. AMPL SET: Permits adjustment of the signal so that the maximum observation signal peak can be recorded over full scale of the chart paper. AUTO: Most samples can be easily measured by pushing the keyboard white keys and AUTO key.

No.	Panel control	Description
		MANUAL: For manual key setting and signal recording. CRT: For observing the signal on the oscilloscope.
⑪	SWEEP WIDTH (Hz)	 Selects the sweep width. The range above a lit lamp indicates the sweep width. As shown above, the sweep width is set to 600 ∿ 360 Hz. × 1/2: When this lamp is lit, the sweep width set with the keyboard to the right is reduced by 1/2. 1200 ∿ 0: The sweep width is set to 1200 ∿ 0 Hz when this lamp is lit. The 600 ∿ 0 lamp goes out at this time. 600 ∿ 0: By pushing this key at the same time as the 0 key, all of the lamps in between will light up. To reduce the sweep width, the lamp to the left of the pushed key will go out when only the upper keys are pushed. The pushed key and those to its right will go out when the lower keys are pushed.
⑫	OFFSET (Hz)	 These keys serve to offset the signal (calibrated shift).
⑬	H_2 FREQ dial	Sets the irradiation position at the time of spin decoupling measurement. When carrying out NMR lock, it is used for lock frequency adjustment. When H_2 FREQ nears 8 kHz, the upper left lamp flashes; at 8 kHz, the lamp goes out.

No.	Panel control	Description
⑭	INT/NORMAL/SD button	 These buttons select the mode. INT: Push to perform NMR lock. NORMAL: Push to perform normal measurement. Usually, NORMAL is depressed. SD: Push to perform spin decoupling.
⑮	FREQ OFFSET (Hz) buttons	 These buttons set the frequency at the time of spin decoupling measurement.
⑯	H_2 LEVEL knob	Adjusts the intensity of the irradiation frequency (H_2 FREQ) when NMR lock is performed.

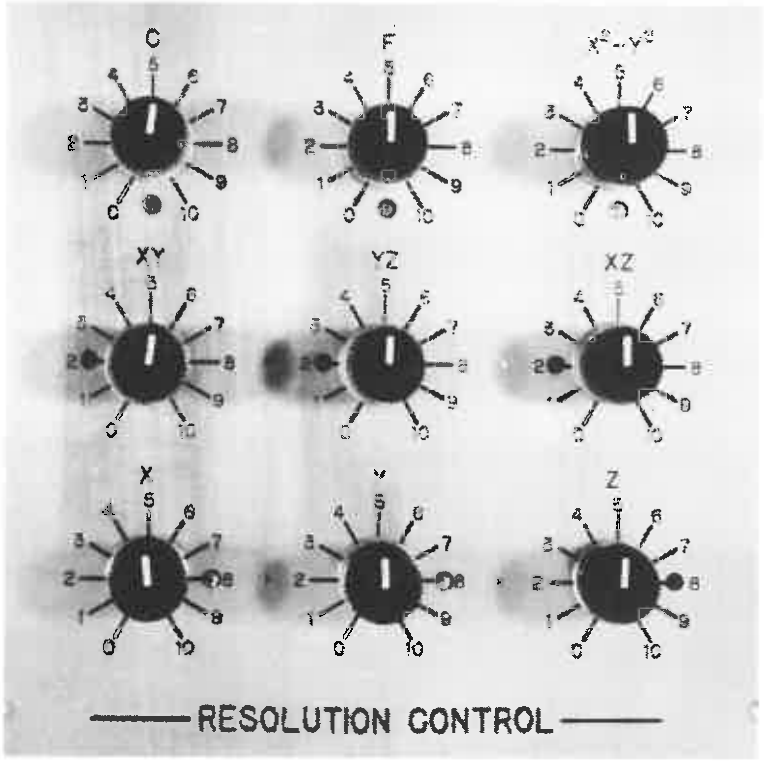
2.2 SPECTROMETER TABLE PANEL



No.	Item	Description
①	X-Y recorder	
②	Carriage arm	
③	RESOLUTION knobs	 Resolution fine-adjust knobs. Adjustment of these two knobs is normally sufficient for resolution adjust.
④	SWEEP TIME (SEC) buttons	SWEEP TIME (SEC) 25 | 50 | 100 | 250 | 500 | 1000 Buttons for sweep-time selection.

No.	Item	Description
⑤	Chart tray	
⑥	QUICK/PEN/QUICK buttons	 QUICK: The carriage arm will shift quickly in the direction of the arrow. When either is pushed, the pen rises automatically. PEN: Pen contacts the chart paper when PEN is depressed. However, operation will not commence until one of the REC buttons is pushed.
⑦	REC/STOP/REC buttons	 Recording buttons REC: Sweep is performed in the direction of the button depressed. STOP: Halts the sweep.
⑧	SIGNAL SHORT/CHART HOLD buttons	 SIGNAL SHORT: Recorder input is shorted and signal is not recorded. The signal can only be recorded when this button is in the release (up) position. CHART HOLD: Chart paper is held to recorder surface by static electricity. Chart paper is released by again pushing this button (pops up). To sweep the recorder and record the signal, this switch must always be down (depressed). Do not move the carriage arm by hand when the CHART HOLD button is down.
⑨	VERTICAL POSITION knob	Adjusts the base line position.

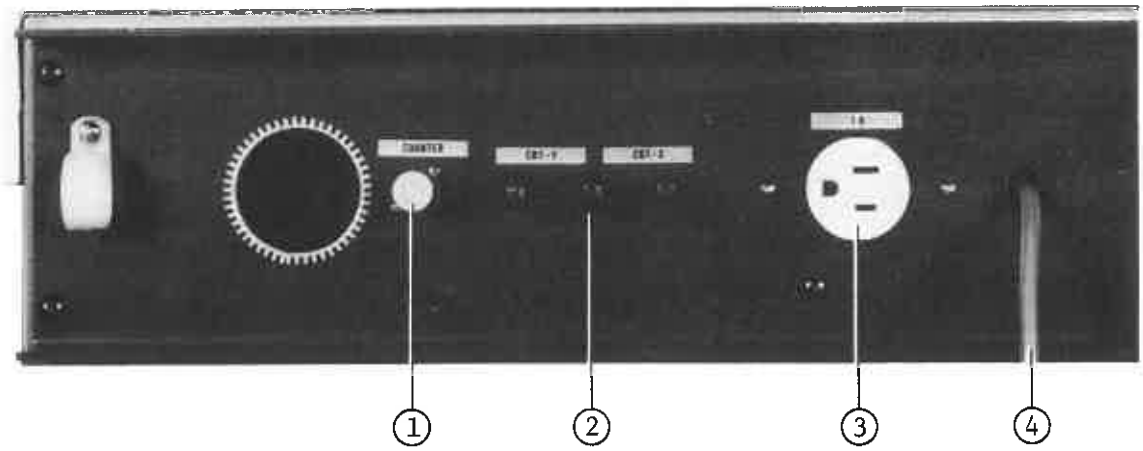
No.	Item	Description
⑩	RESOLUTION CONTROL unit	The following controls come into view when the panel cover is lifted.



These controls correct non-uniformity of the magnetic field and adjust resolution.

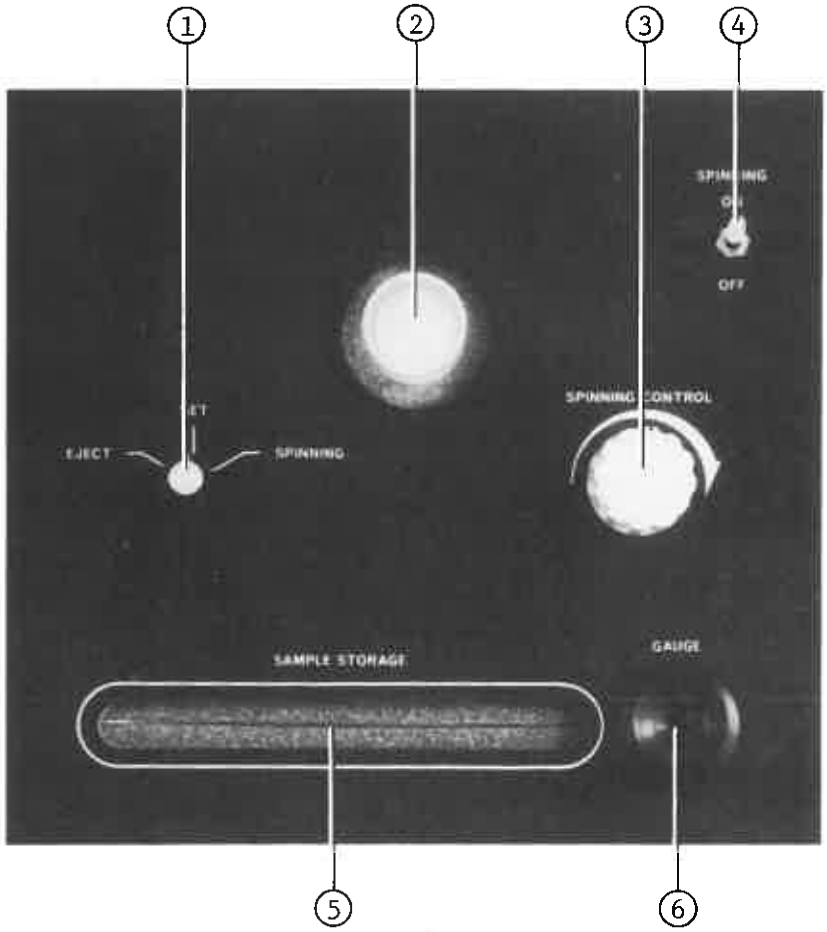
Note: This unit should only be adjusted by a JEOL engineer or by a highly experienced operator. Control F should never be turned or even touched.

2.3 SPECTROMETER REAR PANEL



No.	Item	Description
①	COUNTER connector	Connects the frequency counter, so that the frequency used for spin decoupling can be monitored.
②	CRT Y/CRT X connectors	These signal output connectors are used for connecting the oscilloscope. CRT Y: This sweep signal output connector connects up with the oscilloscope Y axis. CRT X: This NMR signal output connector connects up with the oscilloscope X axis.
③	1 A outlet	This AC 100 V outlet services the oscilloscope, etc.
④	Cable	AC 100 V/115 V input cable. To be connected to SPECTRUM outlet on rear of magnet console.

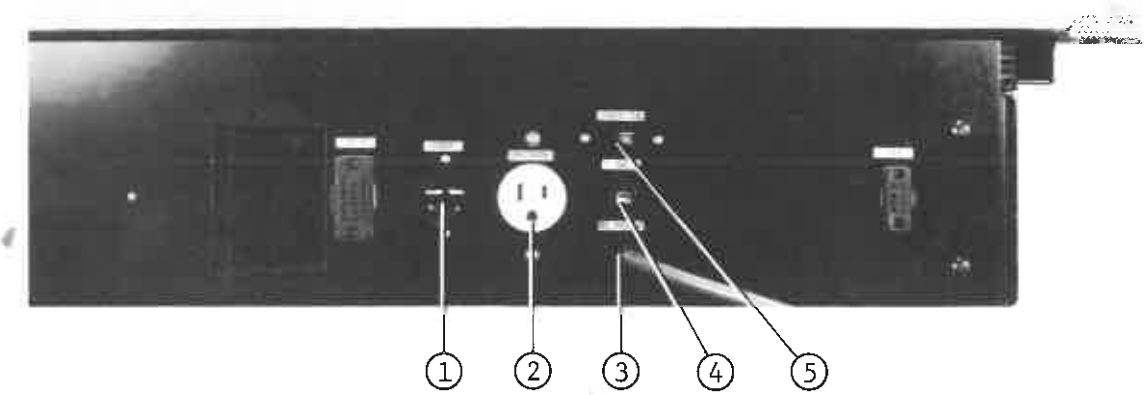
2.4 MAGNET CONSOLE: TOP



No.	Item	Description
①	Sample tube lever	EJECT: Sample tube pops up for easy removal. SET: Sample tube is set in probe. SPINNING: Sample tube is rotated.
②	Sample tube inlet	
③	SPINNING CONTROL knob	Controls the rotating speed of the sample tube.
④	SPINNING ON/OFF switch	The compressor starts to operate and the sample tube starts to rotate when this switch is turned on.
⑤	SAMPLE STORAGE bin	Serves as sample tube storage bin and sample preheating chamber.

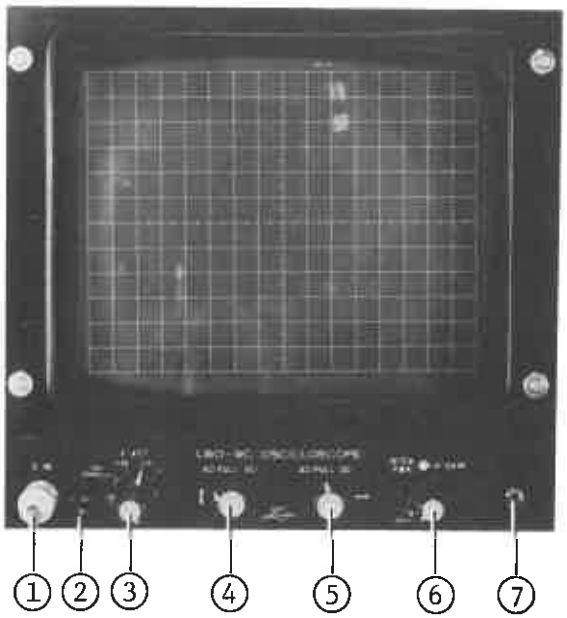
No.	Item	Description
⑥	GAUGE	Positions the sample tube rotor and checks the sample tube simultaneously. *Note: Do not use a sample tube that does not smoothly enter the gauge.*

2.5 MAGNET CONSOLE: REAR



No.	Item	Description
①	COMP outlet	AC 100 V, 2 A outlet for spinner compressor.
②	SPECTROM outlet	Outlet for spectrometer.
③	AC POWER	Connector for AC 100 V input cable.
④	5 A fuse	
⑤	POWER switch	Power switch for instrument proper. The temperature controller in the constant temperature bath starts to function when this switch is pushed to the right (• mark).

2.6 OSCILLOSCOPE (OPTIONAL)



No.	Item	Description
①	V IN connector	Input connector for vertical axis.
②	DC BAL volume	Balance adjust volume for vertical axis.
③	V ATT knobs	Sensitivity attenuator for vertical axis. When the outer knob is set to CAL, a calibration voltage of 0.02 Vp-p appears on the screen.
④	↕ knob	For vertical spot adjustment
⑤	↔ knob	For horizontal spot adjustment
⑥	INTEN PWR knob	Power comes on when knob is turned clockwise. Brightness is maximum when knob is turned fully clockwise.
	H GAIN knob	For adjusting gain of horizontal axis.
⑦	Power display lamp	Stays lit when power is on.