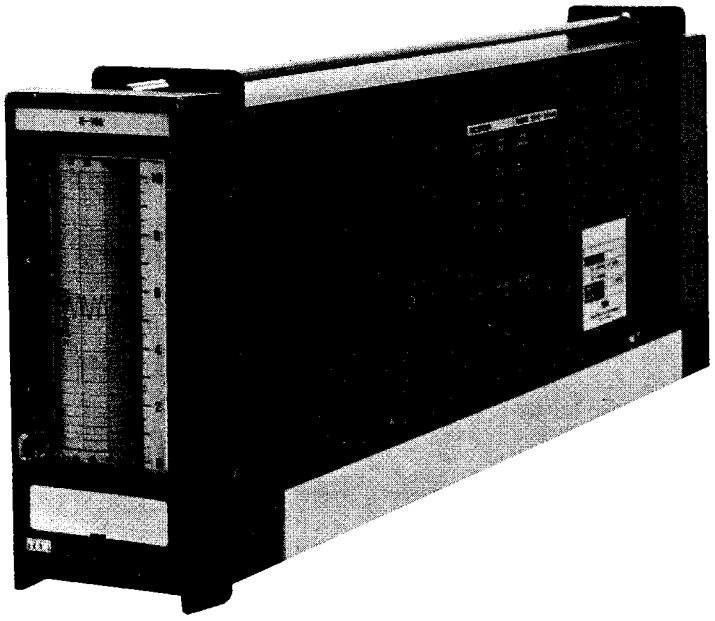
Instruction Manual

YEW SERIES 80

Model SRVD
STRIP CHART RECORDER



YEW
YOKOGAWA ELECTRIC WORKS

IM 1B4B1-01E

CONTENTS

1. INITIAL INSPECTION.

This instrument has been thoroughly tested at the factory before shipment. When the recorder is received, perform a visual inspection to ascertain that no damage occurred during shipment.

1-1. Model and Suffix Codes.

The Model and suffix codes are indicated on the nameplate attached to the side of this instrument. Ascertain that the instrument satisfies the user's specifications by checking these indications against the model and suffix codes given on the GS sheet at the end of this manual. (See Figure 1-1.)

1-2. Accessories.

Ascertain that the instrument is delivered with the accessories listed in the table on the GS sheet at the end of this manual.

If you have any problems or questions, please contact your nearest Yokogawa (YEW) service center or sales agent.

2. DESCRIPTION.

The SRVD Recorder is vertical instrument which receives and records 1 to 5 V DC signals from converters, transmitters, etc.

There are two types of SRVD recorders: 1-pen and 2-pen types. Each pen can be provided with a high/low limit alarm if required. Figure 2-1 shows an SRVD recorder.

The features of the SRVD Recorder are as follows:

- Brushless DC balancing (servo) motor assures stable long term recording.
- Non-Contact Position Determining Function (See Chapter 4) provided in the balancing motor feedback circuit minimizes problems causes by wear.
- Disposable felt-tip recording pens assure smooth wiring.
- Off-scale protection.
- Adjustable input filters.
- Chart paper drive has fast forwarding.
- Recording can be halted.
- Easy ZERO and SPAN adjustments.

(See Chapter 5 for details of these features.)

This instruction manual covers opration, switch and dial settings, and the features listed above. This volume should be read carefully before operating the instrument.

Install and wire this instrument while referring to IM 1B4F1-01E (YEW SERIES 80 Panel Instrument Mounting).

2-1. Standard Specifications.
2-2. Options.
2-3. Accessories.
2-4. Model and Suffix Codes.

See the GS (General Specifications) sheet at the end of this manual for Sections 2-1 to 2-4.

2-5. Consumables.

(1) Chart Paper.
Chart paper is available from Yokogawa (YEW) and sales agents. When ordering chart paper, specify chart paper numbers, scales, and quantities.

(2) Felt-tip Pen.
Part number: E9718JY (red)
E9718JZ (green)

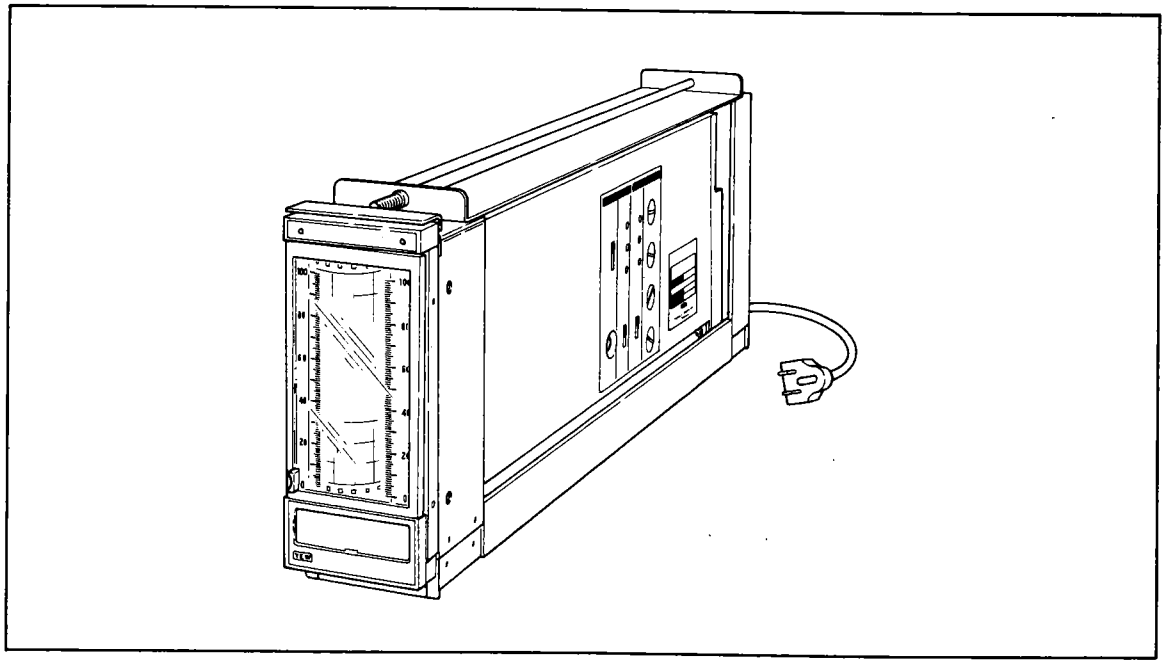


Figure 2-1. SRVD Strip Chart Recorder.

3. INSTALLATION.

3-1. Mounting.

Refer to IM 1B4F1-01E for mounting instructions.

3-2. Wiring Precautions.

(1) External Wiring to Screw Terminals on the Housing Terminal Board.
Solderless lugs (M4 screw type) must be used for wiring terminals (Figure 3-1).

(2) SRVD Recorder with Alarms.
The wiring instructions given below must be followed to drive external equipment via the alarm contact.

- Loads exceeding the contact rating must not be connected. (Contact rating: 30 V DC 200 mA resistance load).
- To drive equipment containing inductance elements such as relays, protective diodes (surge absorbers) must be connected in parallel with the loads (See Figure 3-2).
- When connecting the power supply load, ensure that the polarity matches the indications on the terminal board (See Figure 3-8).
- Loads containing AC power sources must not be connected directly. Instead, use relays to operate such loads (See Figure 3-3).

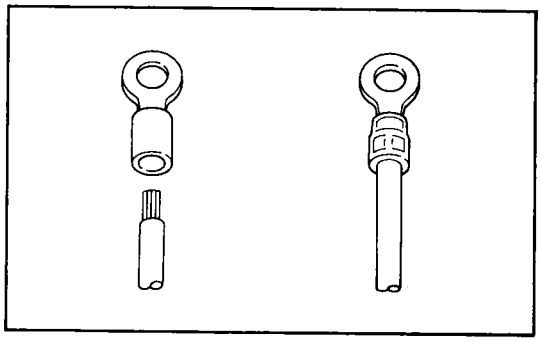


Figure 3-1. Solderless Lugs.

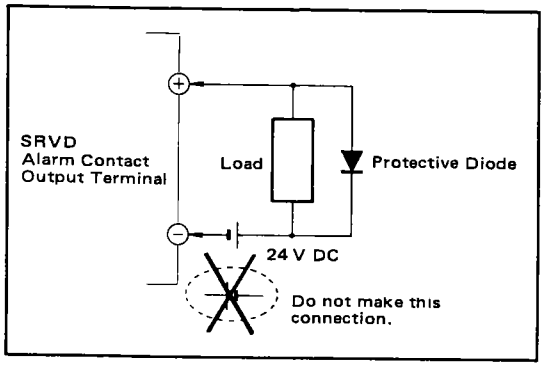


Figure 3-2. Load Connection to Alarm Contact Output Terminal.

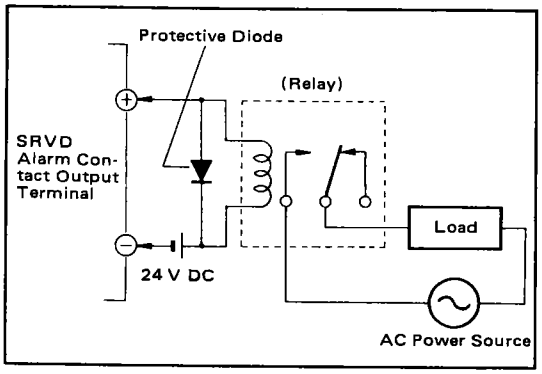


Figure 3-3. Connection of Loads Containing AC Power Source.

3-3. Wiring.

Connect external input wires to the terminal board on the rear of the controller housing with 4 mm screws. Table 3-1 shows the typical wiring connections for this controller. Connect wires in accordance with the model and suffix codes.

After external wiring is finished, the terminal cover must be replaced (Figure 3-4).

Figure 3-5 shows the terminal layout.

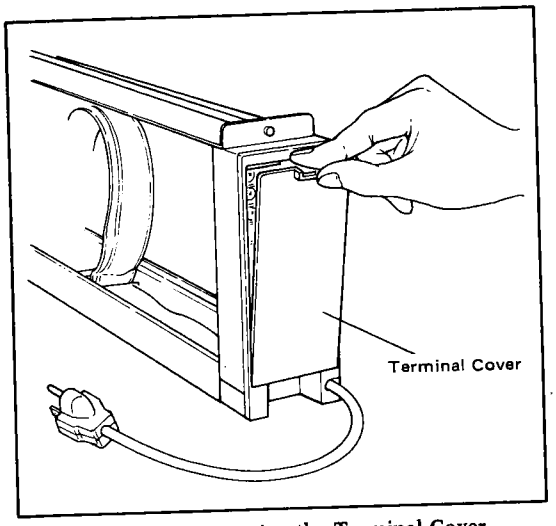


Figure 3-4. Removing the Terminal Cover.

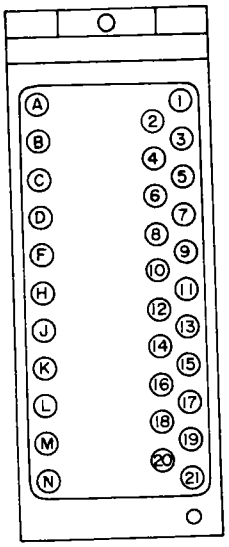


Figure 3-5. Terminal Layout.

Table 3-1. Terminal Board Wiring (a).

SRVD-100		SRVD-110	
Terminal Designation	Description	Terminal Designation	Description
1	+ Input Signal 1 (1 to 5 V DC)	1	+ Input Signal 1 (1 to 5 V DC)
2	−	2	−
3		3	
4		4	
5		5	
6	*1	6	*1
7		7	
8		8	
9		9	
10		10	
11		11	
12		12	
13		13	
14		14	
15		15	
16		16	
17		17	
18		18	
19		19	
20		20	
21		21	
A		A	
B		B	
C		C	
D		D	
F		F	
H		H	
J		J	+ Input 1, High Limit Alarm Output
K		K	−
L		L	+ Input 1, Low Limit Alarm Output
M		M	−
N		N	

Table 3-1. Terminal Board Wiring (b).

SRVD-200		SRVD-220	
Terminal Designation	Description	Terminal Designation	Description
1	+ Input Signal 1 (1 to 5 V DC)	1	+ Input Signal 1 (1 to 5 V DC)
2	–	2	–
3	+ Input Signal 2 (1 to 5 V DC)	3	+ Input Signal 2 (1 to 5 V DC)
4	–	4	–
5		5	
6	*1	6	*1
7		7	
8		8	
9		9	
10		10	
11		11	
12		12	
13		13	
14		14	
15		15	+ Input 2, High Limit Alarm Output
16		16	–
17		17	
18		18	
19		19	+ Input 2, Low Limit Alarm Output
20		20	–
21		21	
A		A	
B		B	
C		C	
D		D	
F		F	
H		H	
J		J	+ Input 1, High Limit Alarm Output
K		K	–
L		L	+ Input 1, Low Limit Alarm Output
M		M	–
N		N	

*1 A jumper is connected across terminals 6 and 8 at the factory. There is no need to remove it during operation.

4. PRINCIPLES OF OPERATION.

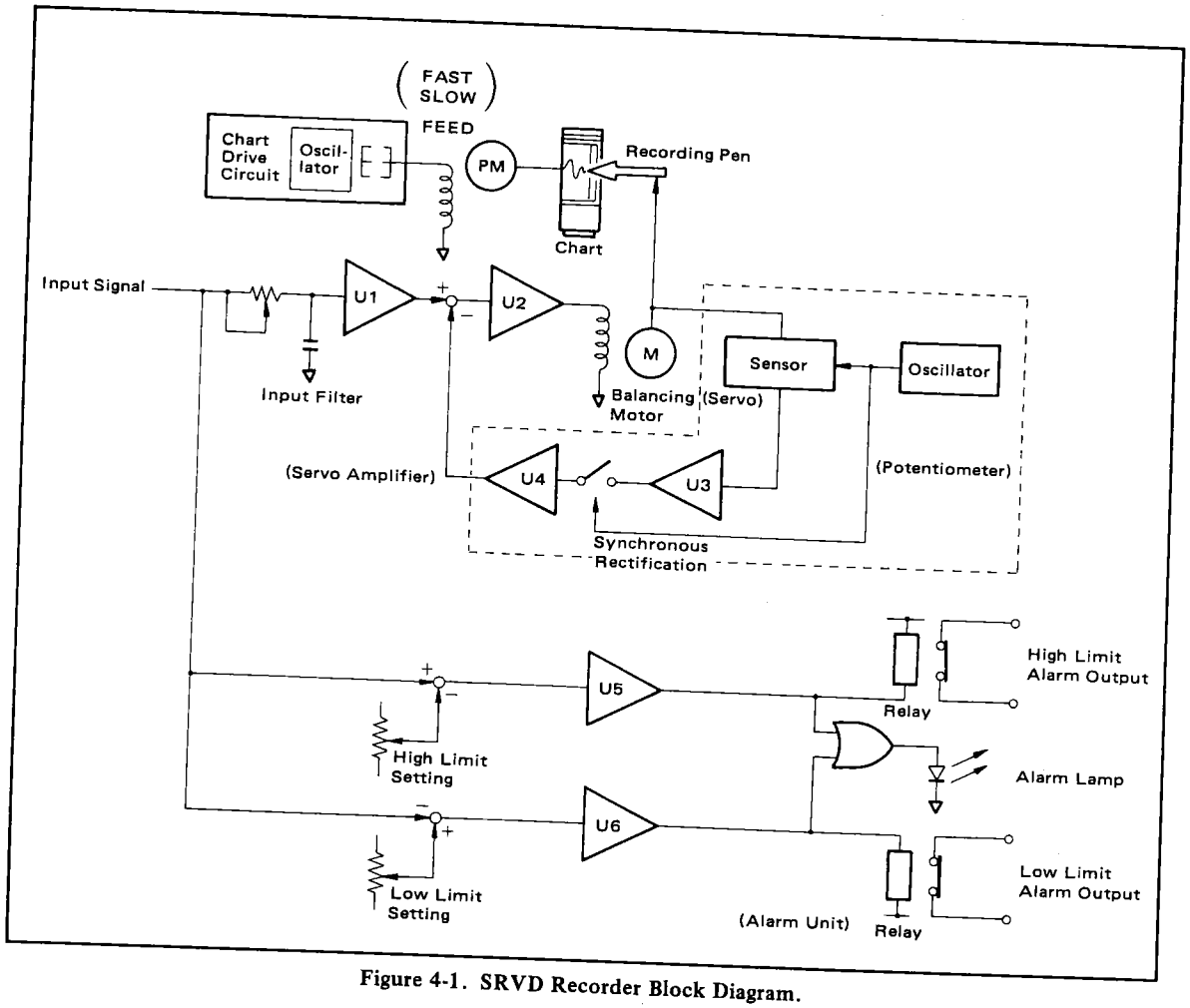


Figure 4-1. SRVD Recorder Block Diagram.

Figure 4-1 is a block diagram of the SRVD Recorder with Alarm. The SRVD recorder circuits are outlined below in conjunction with this diagram.

The input signal enters a buffer (U1) via an input filter. The deviation from the present position is fedback (U4), and the deviation signal enters a drive amplifier (U2) to drive the DC servo (balancing) motor, causing a displacement of the motor rotor.

A sensor is linked to this rotor determines the amount of displacement between the recording pen and the rotor. This sensor is called the contactless Position Determining Function.

The rotor displacement determined by this sensor is amplified by U3 and converted into DC after synchronous rectification. This signal is input to U4 and the output represents the deviation between it and the input signal. The deviation is input to U2.

If the U2 input (deviation between the input and feedback signals) is not zero, and rotor displacement occurs in the DC servo motor to correct the U2 input.

Thus, the recording pen can record values corresponding to input signals with high accuracy.

The chart drive unit consists of an oscillator and a pulse motor. The oscillator generates three different frequencies of drive pulses corresponding to the three chart speeds (FAST, SLOW, and FEED). When these pulses are received, the pulse motor gears down and forwards chart paper. The chart speeds can be selected by using the slide and push-button switches provided on the side of the instrument.

Alarms are activated as follows: Input signals are compared to the set points for the high and low limits. If either set point is exceeded, a high or low limit contact signal is output. (The contact is open when an alarm is activated). At the same time, the alarm lamp on the front panel of the instrument illuminates.

5. OPERATION.

5-1. Names of Components.

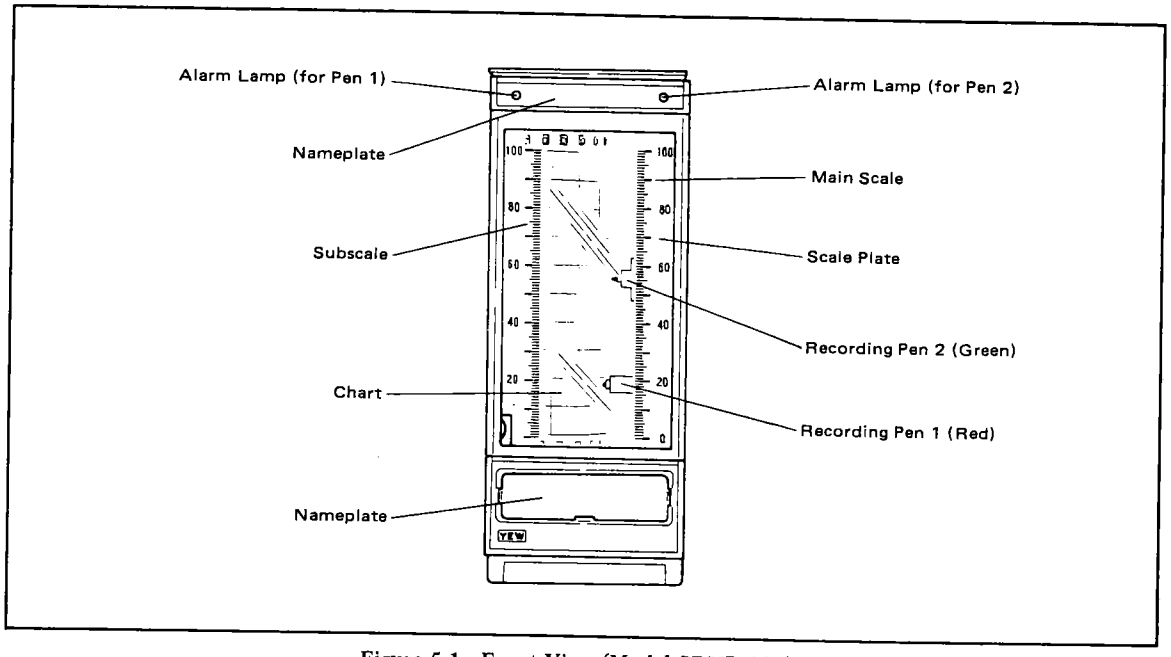


Figure 5-1. Front View (Model SRVD-220).

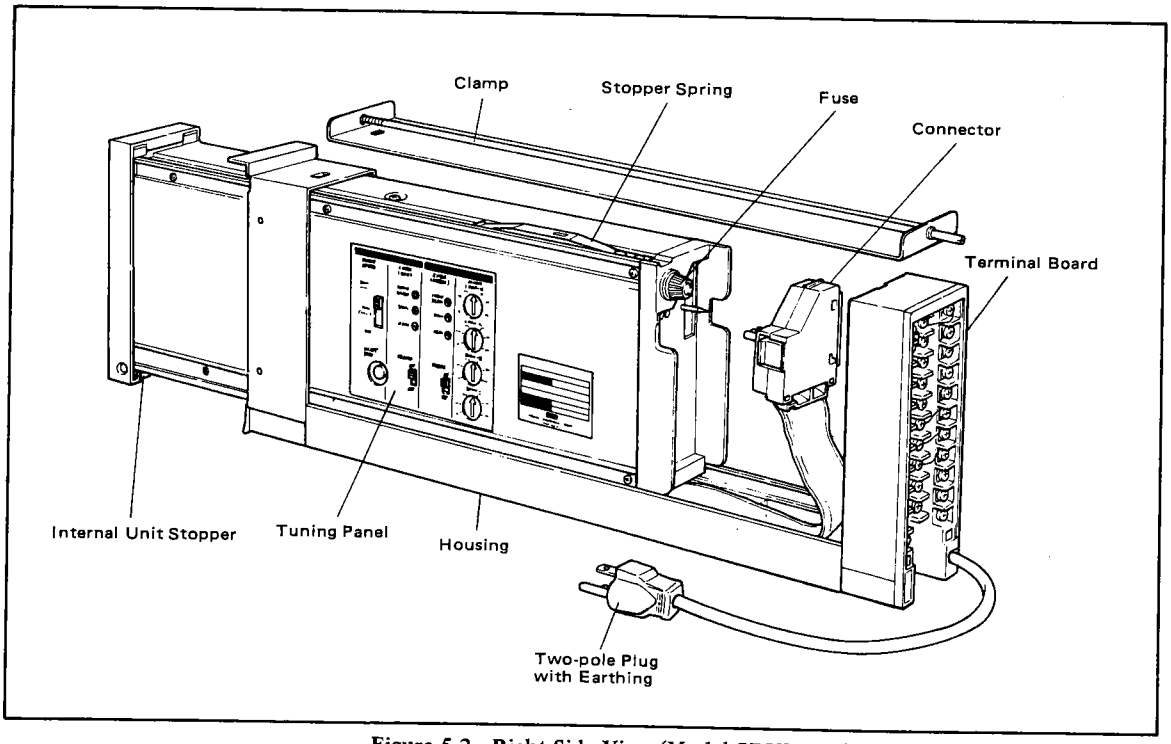


Figure 5-2. Right Side View (Model SRVD-220).

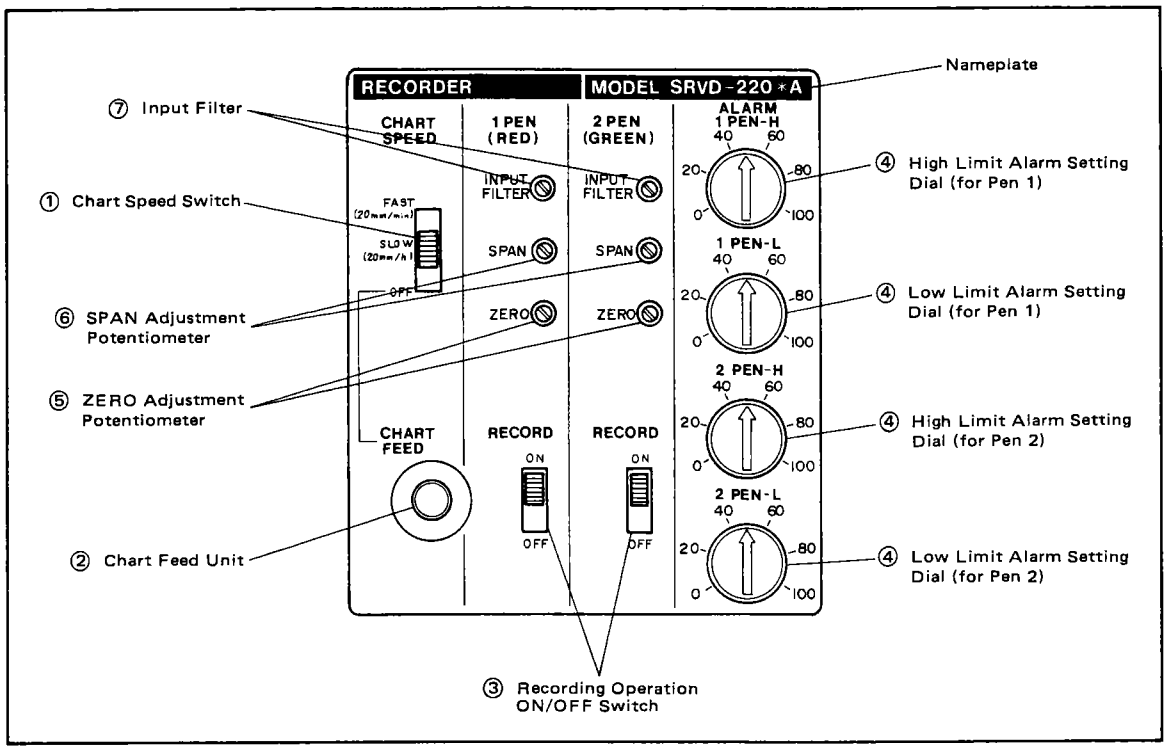


Figure 5-3. Tuning Panel (Model SRVD-220).

5-2. Preparation for Operation.

Check the following items and confirm that each part of the instrument is set correctly prior to operating the SRVD Recorder.

(1) Remove the SRVD recorder grounding type power plug from the power outlet.
(2) Pull the SRVD recorder internal unit out from the housing, and confirm that a fuse of the correct rating is installed in the fuse holder located on the rear of the internal unit (See Figure 5-4 for withdrawing the internal unit).
(3) As the internal unit is being pulled from its housing, it locks at an intermediate position before being fully extended. The internal unit can be pulled out further by pushing down the stopper spring provided on the top of the internal unit (See Figure 5-5 for the stopper spring).
(4) Confirm that the connector connecting the housing and the internal unit is installed correctly (See Figure 5-4).
(5) Confirm that the input signal line and, for recorders with the alarm function, the alarm output line to the terminal board (located on the rear of the housing) is properly connected (see paragraph 3-2 for the wiring).
(6) Confirm that the proper scale plate and nameplate are attached to the front of the instrument.
(7) Load chart paper (See 5-4-1 for chart loading).
(8) Install the pen assembly (See 5-4-2 for installation instructions). The pen assembly is stored in the accessory box.

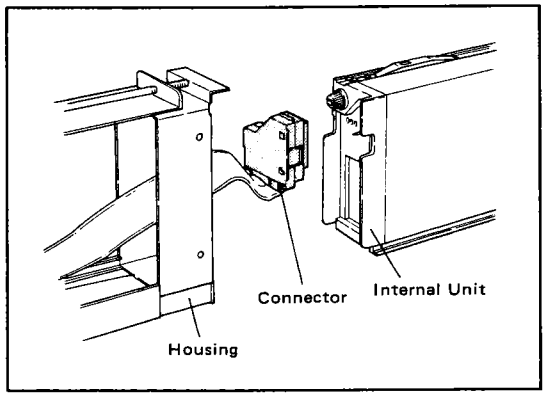


Figure 5-4. Housing Connector.

5-3. Operation.

5-3-1. Tuning Panel.

This section describes the functions and operation of the components on the tuning panel, including slide switches, adjustment, and setting dials. The tuning panel is located on the right side of the recorder (See Figure 5-3).

Figure 5-3 shows a tuning panel equipped with two pens and two alarms. Some of the items may

not apply to individual recorders and they also differ depending upon the recorder specifications.

The numbers given in Figure 5-3 are referred to in the description below.

① **Chart Speed Switch (CHART SPEED):**
The recorder chart speed can be set as follows by using this switch.
FAST: 20 mm/minute
SLOW: 20 mm/hour
OFF: stopped
(See ② for chart fast forwarding).

② **Chart Feed Unit (CHART FEED):**
This unit has fast forwarding speed for the chart paper. Set the chart speed switch (① above) to the OFF position, and press the chart feed pushbutton switch. The chart then moves forward at a speed of about 80 mm/minute while the button is pressed.
This function can be used for the following purposes.
- Fast forwarding speed for the chart paper.
- Set the record at the beginning when required.
- Eliminating chart paper slack.

③ **Recording Operation ON/OFF Switch (RECORD):**
The recording operation can be halted by setting this slide switch to OFF. This switch should be set to OFF when recording is halted for an extended period of time or the recording pen is replaced with a new one. This switch should be set to ON for normal operation. (Refer to paragraph 6-2-3 for details.)

④ **High/Low Limit Alarm Setting Dials (ALARM):**
These dials set the high and low limit alarm points. When the input signal level exceeds these points, the corresponding high or low alarm is activated. The high and low limits can be set independently.
Setting range: 0 to 100 (%)
When the alarm is activated, a yellow lamp (one per input line for both high and low limit alarms) on the front of the recorder illuminates to report the conditions. At the same time, contact signals (open when the alarm is activated) and output. See 3-2 for the alarm contact output terminals and wiring.

⑤ **ZERO Adjustment:**
This potentiometer adjusts the recording pen zero point.

⑥ **SPAN Adjustment:**
This potentiometer adjusts the recording pen span.

⑦ **Input Filter (INPUT FILTER):**
This potentiometer adjusts the recording pen response time. (The time required to reach 63% of full scale from 0% when a 100% step function is input).
Response time adjustment (no scale):
1 to 3.5 sec

5-3-2. Internal Unit Withdrawal.

(1) Push up the stopper at the bottom fornt of the instrument and pull out the internal unit (See Figure 5-5).

(2) As the internal unit is being pulled from the housing, it locks at an intermediate position without being fully extended. The internal unit can be pulled out further by pushing down the stopper spring provided on the top of the internal unit (See Figure 5-6).

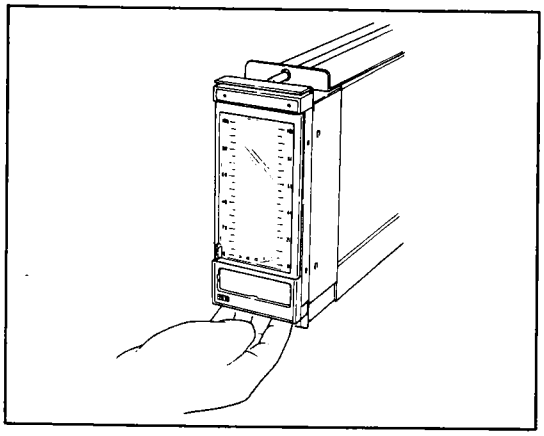


Figure 5-5. Pulling Out Internal Assembly (1).

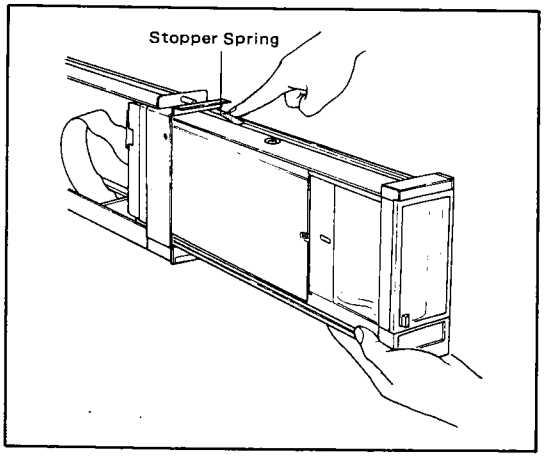


Figure 5-6. Pulling Out Internal Assembly (2).

5-4. Normal Maintenance.

5-4-1. Chart Loading.

Load chart paper as follows.

(1) Pull the internal unit out from the housing until it locks at an intermediate position.

(2) Open the acrylic front door and push the chart drive assembly out from the left. (See Figure 5-7).
(3) "Fan" the chart paper sufficiently prior to loading it. Refer to Figure 5-8.
(4) Open the chart cover and insert the chart paper. (See Figure 5-9).
(5) Pull out the chart end. Carefully engage the square holes in the chart (both at the top and bottom) with the sprocket teeth (See Figure 5-10) and then attach the chart paper bail.
(6) Eliminating Chart Slack.
Chart paper slack causes incorrect recording and improper chart feeding. It can be eliminated as follows.
- Set the chart speed switch on the tuning panel (located on the side of the recorder) to OFF.

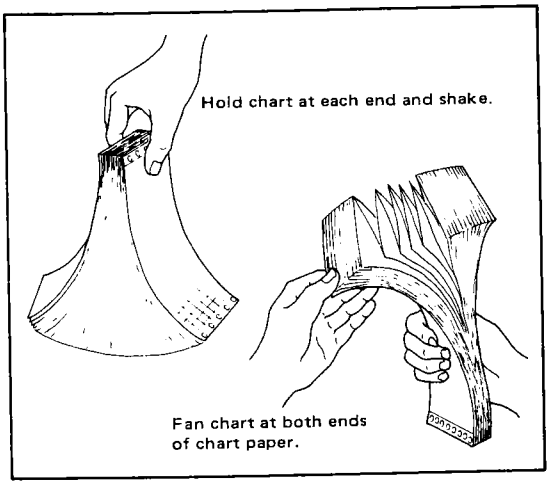


Figure 5-8. Fanning Chart.

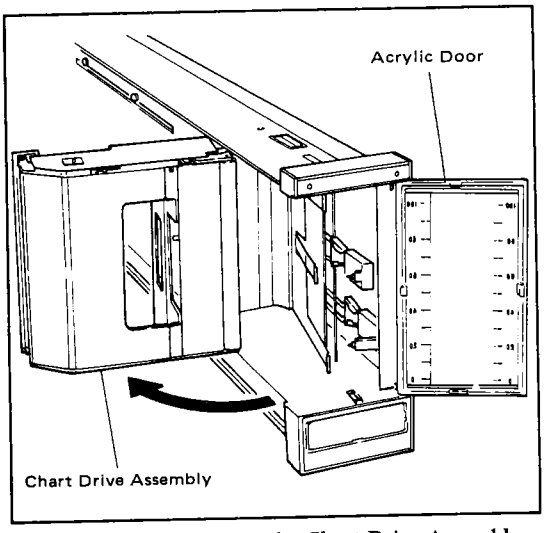


Figure 5-7. Pushing Out the Chart Drive Assembly.

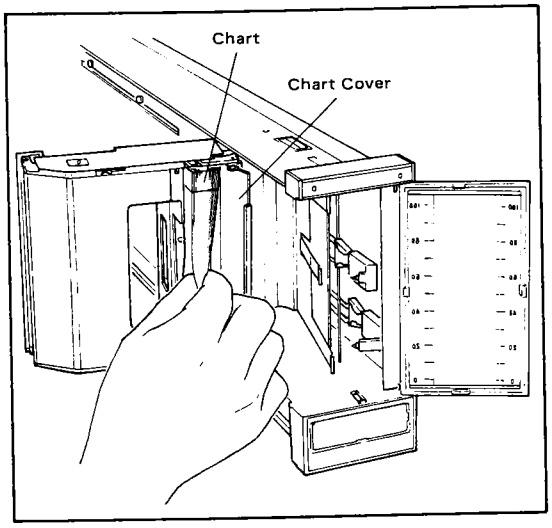


Figure 5-9. Chart Loading (1).

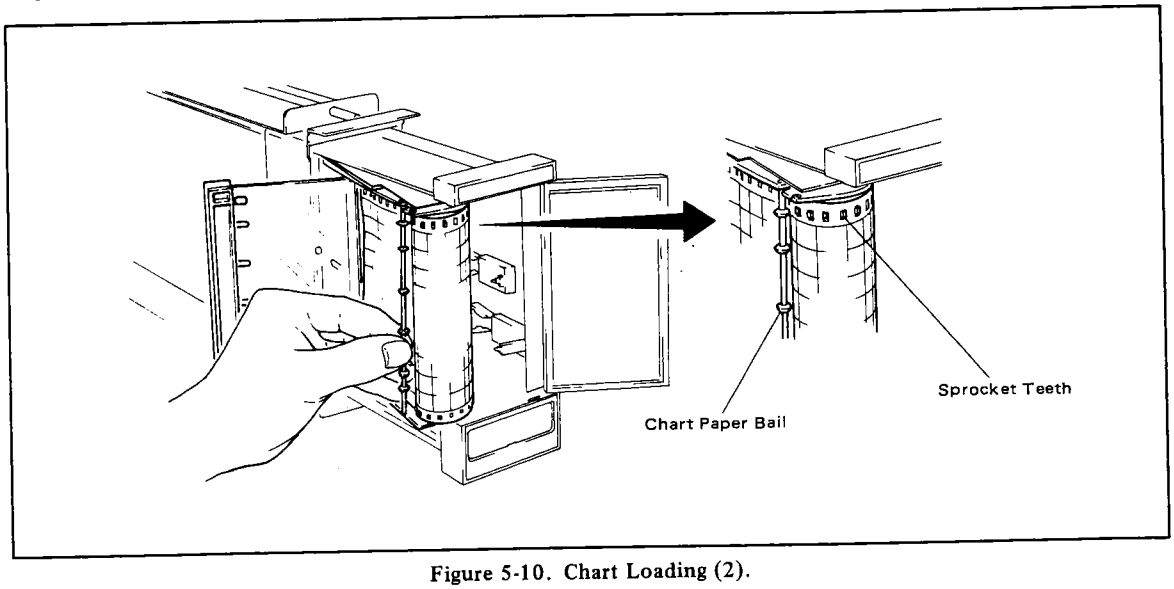


Figure 5-10. Chart Loading (2).

- Press the chart feed pushbutton switch (located on the same panel). As a result, the chart goes into a fast forward mode (See Figure 5-11) and the slack is eliminated.
- After this adjustment, set the chart speed switch to the normal speed position.

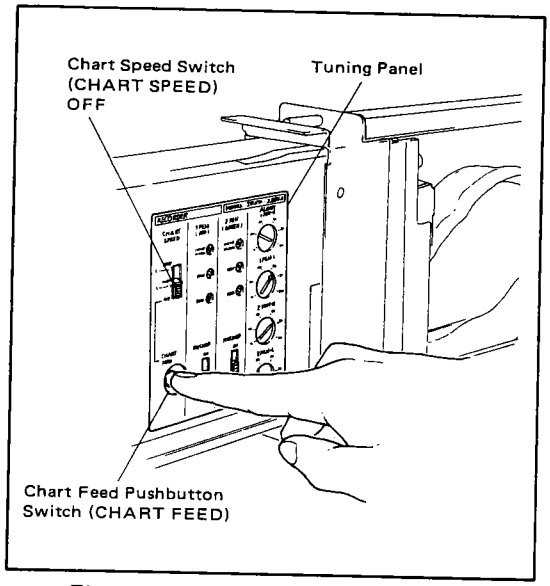


Figure 5-11. Fast Forward Chart Mode.

5-4-2. Recording Pen Removal and Insertion.

The SRVD recorder uses disposable felt-tip recording pen cartridges (Figure 5-12). Cartridges which cannot provide satisfactory recording should be replaced with new ones.

(1) Recording pen insertion.

- Pull the internal unit out from the housing until it locks at an intermediate position.

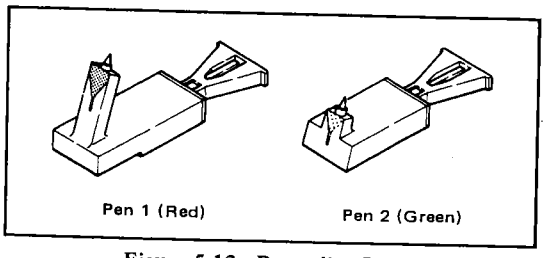


Figure 5-12. Recording Pens.

- Open the acrylic front door and push the chart drive assembly out.
- Grip the recording pen firmly. Hold it against the pen holder, and pull it toward the front to insert it. For 2-pen recorders, insert the green recording pen into the pen holder closest to the chart and the red recording pen into the remaining holder.
- Remove the cap from the recording pen tip.

(2) Recording pen removal.

- Reverse the procedure described in (1). Holding the recording pen firmly, push it in slightly to remove it from the holder.
- If pen 1 overlapps pen 2, remove pen 2 first, and then replace pen 1 with a new one.

(3) Pen assembly handling and storage instructions.

- The pen assembly is supplied in a polypropylene case. To maintain the airtightness, the inside of the case has been subjected to an aluminum foil laminating process and its openings to a thermal fusing process. Use care so as not to puncture or otherwise damage the case.
- Once the case is unsealed, the pen assembly should be placed in use.

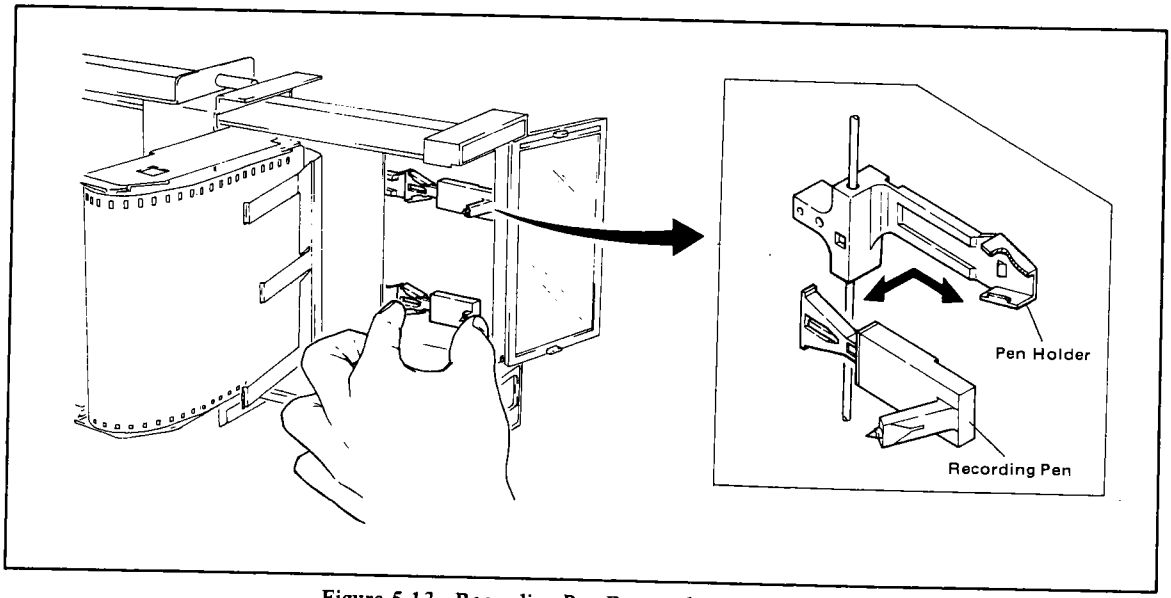


Figure 5-13. Recording Pen Removal and Insertion.

6. MAINTENANCE.

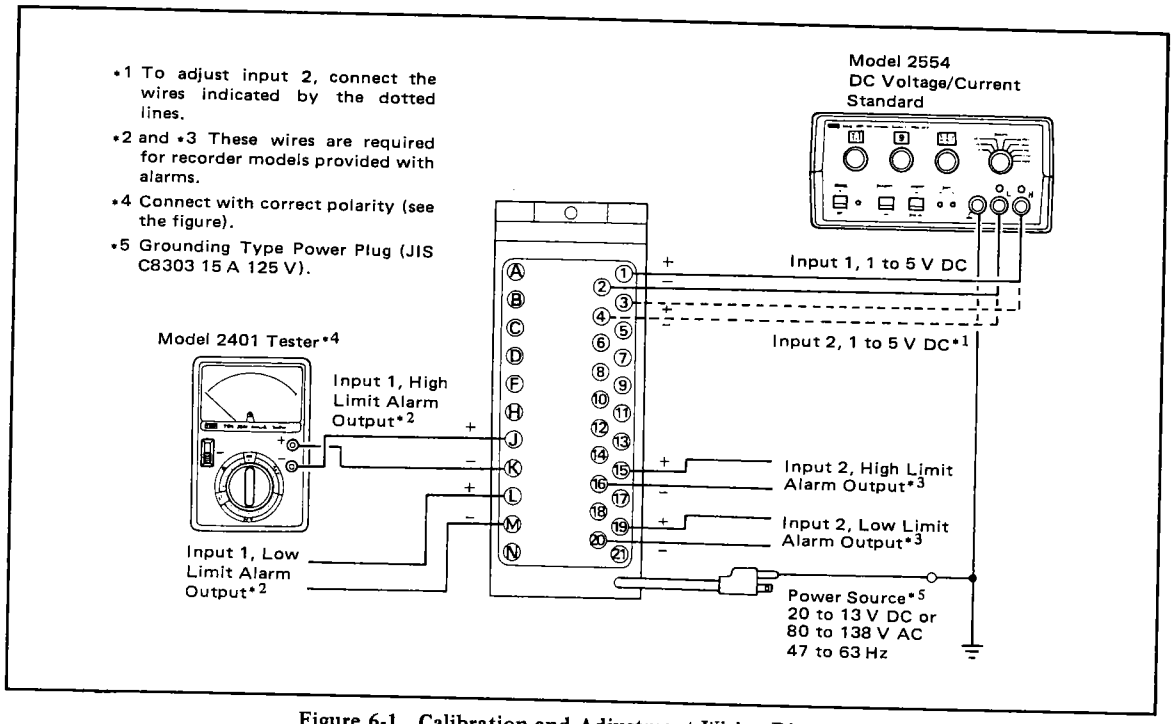


Figure 6-1. Calibration and Adjustment Wiring Diagram.

This section explains calibration, adjustment, parts replacement, and maintenance which can be easily carried out primarily by the operators and service engineers.

6-1. Test Equipments.

(1) DC voltage/current standard (Model 2554):1.
(2) Multimeter (Model 2401): 1.

6-2. Calibration and Adjustment.

6-2-1. ZERO and SPAN Adjustments.

(1) Wire the SRVD recorder and test equipments in accordance with Figure 6-1.
(2) Turn on the SRVD recorder and test equipments and allow about five minutes for them to stabilize before performing adjustments.
(3) Turn the ZERO adjustment on the tuning panel (located on the side of the recorder) until a 0% reading is recorded when the input value is set to 1 V DC (0%) (Figure 6-2).
(4) Turn the SPAN adjustment potentiometer on the tuning panel (located on the side of the recorder) until a 100% reading is recorded when the input value is set to 5 V DC (100%).
(5) After performing steps (3) and (4), confirm that the recorded set value is within ±0.5% of span when the input value is set to:
    1 V DC (0%)
    2 V DC (25%)
    3 V DC (50%)
    4 V DC (75%)
    5 V DC (100%)

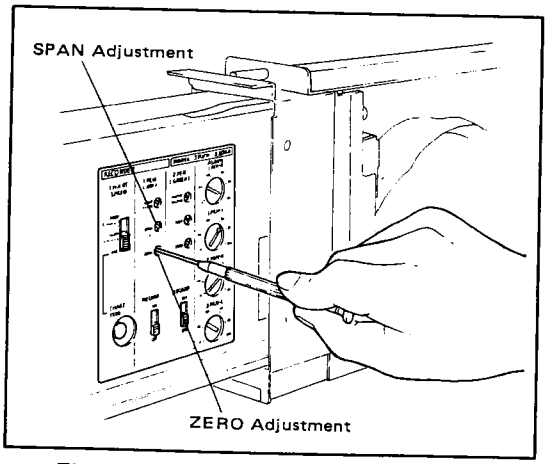


Figure 6-2. ZERO and SPAN Adjustments.

6-2-2. Pen Pressure Adjustment.

No pen pressure adjustment is required during normal SRVD recorder maintenance. (The pen pressure refers to the pressure with which the recording pen presses on the chart). If a pen pressure adjustment is required when the instrument is overhauled, follow the procedure described below.

(1) Remove two screws from the right side (See Figure 6-3).
(2) Set the recording pen to the approximately 50% position on the chart.
(3) Adjust the pen pressure control (located in the pen holder) using a 3 mm Allen Wrench (See Figure 6-4).

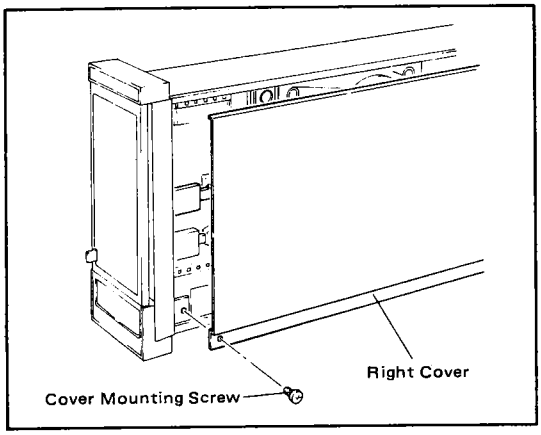


Figure 6-3. Side Cover Removal.

6-2-3. Remedies for Servo Motor Halt.

Do not manually block or move the servo motor or recording mechanism while the recorder is operating. If these mechanisms are interfered with, the servo mechanism will stop. However, this is not considered a servo mechanism failure, but is equivalent to the recorder being stopped by the underrange or overrange protect function.

When an underrange or overrange input falls within range after underrange or overrange protection has been activiated by an input outside the 1 to 5 V DC range, the above phenomenon may not occur. In this case, the recorder reverts to the normal operating condition.

If the servo mechanism or recording mechanism is accidentally stopped, turn the ON/OFF (RECORD) switch on the tuning panel once to OFF and then back to ON. They will cause the recorder to revert to the normal operating conditon.

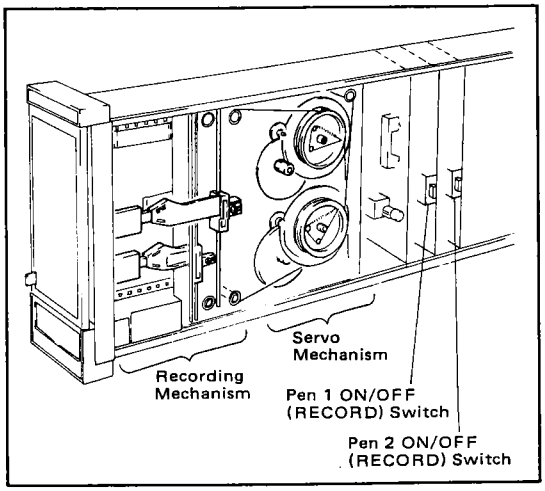


Figure 6-5. Servo Mechanism and Chart Drive.

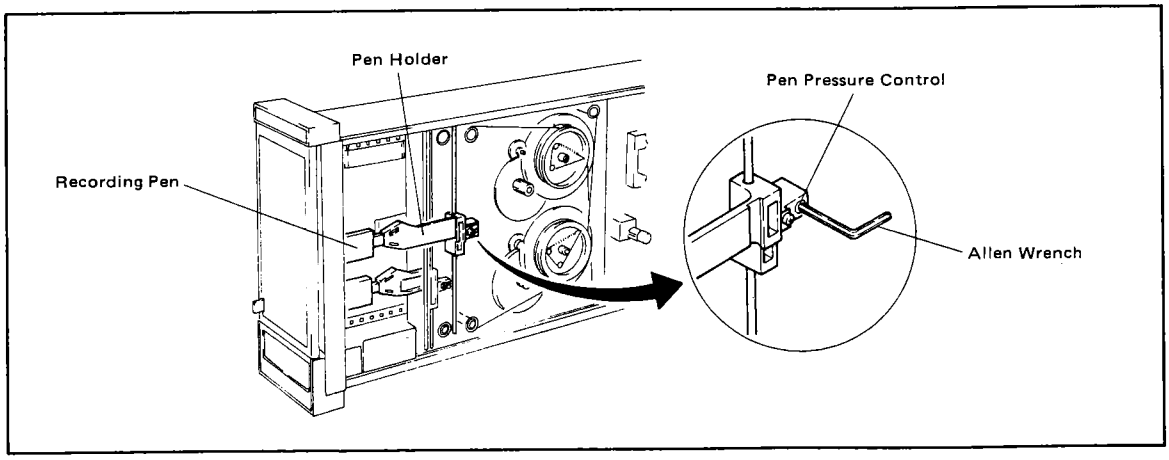


Figure 6-4. Pen Pressure Adjustment.

6-2-4. Alarm Output Contact and Alarm Lamp Illumination Check (for SEVD-□$\frac{1}{2}$0 Type).

(1) Wire the instrument as shown in Figure 6-1 using the SRVD recorder and test equipment.
(2) Turn on the recorder and test equipment and allow about one minute for them to stabilize before performing adjustments.
(3) Set the high and low limit alarm setting dials to the desired alarm points (See Figure 6-6).
(4) With an ohmmeter connected across the alarm output terminals. Vary the input value from 1 to 5 V (0 to 100%), and confirm that the alarm lamp on the front panel illuminates at the alarm set point. At the same time, an alarm contact signal should be output (the contract is open when the alarm is activated).

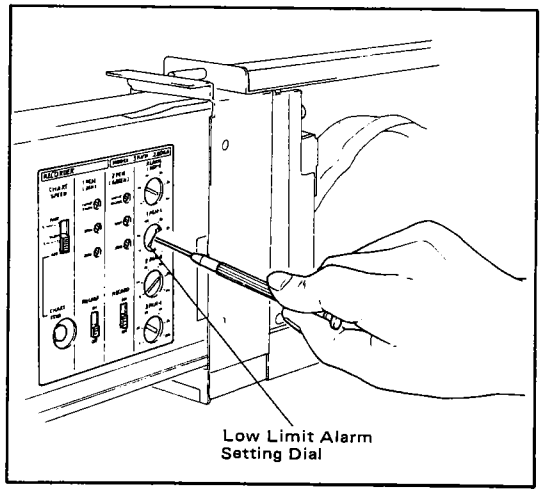


Figure 6-6. Alarm Point Setting.

6-3. Parts Replacement.

6-3-1. Nameplate Replacement.

(1) Pull the internal unit out about 5 cm from the housing, and remove the upper lid. The upper lid must be removed by lifting the rear edge as shown in Figure 6-7.

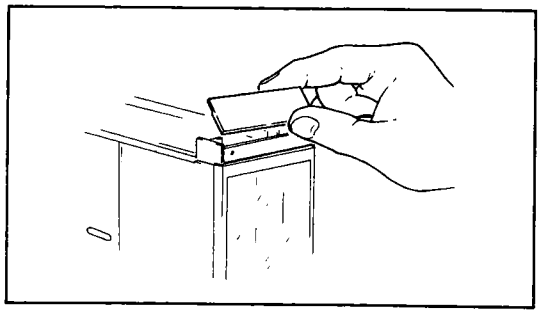


Figure 6-7. Removing the Upper Lid.

(2) Attach the nameplate (See Figure 6-8).

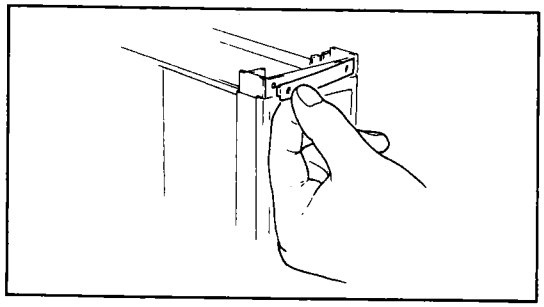


Figure 6-8. Attaching the Nameplate.

6-3-2. Replacing the Lower Front Panel Nameplate.

The nameplate located at the lower portion of the front panel can be removed by placing a screwdriver in the cutout on the plate and raising the plate with the screwdriver (See Figure 6-9).

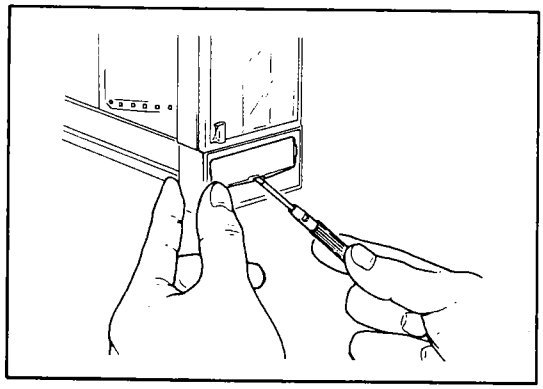


Figure 6-9. Removing the Front Nameplate.

6-3-3. Replacing the Scale Plate.

(1) The scale plate can be removed by working it free at the lugs with a screwdriver.
(2) The scale plate is installed inside the acrylic front door.
(3) Fit the four lugs on the sides of the scale plate into their corresponding holes in the door (See Figure 6-10).

[Scale Plate Details]

SRVD recorders with the /SCC option have both a major scale and a subscale (on the same scale plate).

The plate is made of transparent polyester film.

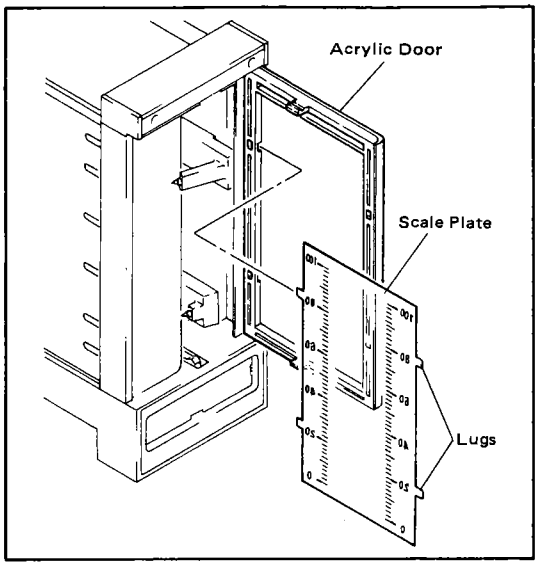


Figure 6-10. Scale Plate Installation.

6-3-4. Fuse Replacement.

Unscrew the fuseholder (located at the rear of the internal unit) and replace the tubular fuse with a new one (See Figure 6-11). Screw the fuseholder cap firmly.

Fuse Rating: 1 A

Part Number: G9001ZF

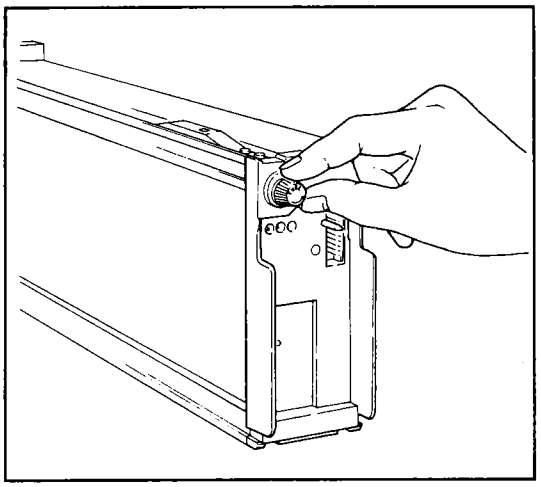


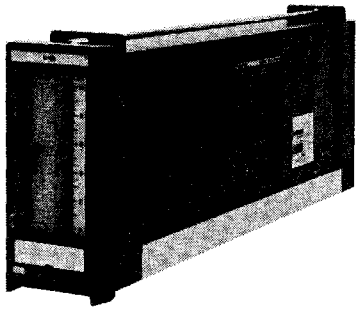
Figure 6-11. Replacing the Fuse.

General Specifications

YEW SERIES 80

Model SRVD
STRIP CHART RECORDER

The SRVD 1- and 2-pen recorders use disposable felt-tip pens for smooth writing. Input signal (high/low) limiting protects the pen servo. Pen servo time constant is adjustable.



STANDARD SPECIFICATIONS.

Input Signal
Analog Input: 1 to 5 V DC.
Input Resistance: 1 MΩ.

Indicator/Recorder
Scale: 100-mm long vertical scale, single set of graduations with numbers.
Accuracy: ±0.5% of span.
Recording Pens: Disposable felt-tip pens.
Pen Life: Approx. 2 months or 600 m long recording.
Number of Pens: 1 or 2.
Pen Step Response Time: Adjustable 1 to 3.5 seconds.
Ink Color:
Red for 1-pen recorder, and for pen 1 of 2-pen recorder.
Green for pen 2 of 2-pen recorder.
Chart Speed: Switch selectable – 20 mm/min., 20 mm/hr. and OFF. The chart speed select switch is on instrument side panel.
Chart: Z-fold type, recording width 100 mm. Length approximately 8 m – chart lasts more than 16 days at 20 mm/hr.
Chart Feed: Chart feed pushbutton on side panel.

Alarm Options
Alarms: Applicable model codes SRVD-□10, -□20.
Pen 1: High/low limit alarms.
Pen 2: High/low limit alarms.
High Alarm Setting: 0 to 100%.
Low Alarm Setting: 0 to 100%.
Alarm Hysteresis: Less than 2% of span.
Alarm Contact Outputs: High/low limit alarm contact outputs, one point each, for both pens 1 and 2. Contact rating: 30 V DC, 200 mA (resistive load). Relay de-energized, relay contact open during alarm condition.
Alarm Indicator: ALM lamp on the front panel lights to provide visual alarm.

Normal Operating Conditions
Ambient Temperature: 0 to 50°C.
Ambient Humidity: 5 to 90% relative humidity (non-condensing).

Power Supply: AC or DC. (No change to instrument).
DC Supply: 20 to 130 V, polarity reversible.
AC Supply: 80 to 138 V, 47 to 63 Hz.

Maximum Power Consumption:

Model & Suffix Codes		24 V DC (mA)	100 V AC (VA)
SRVD-1		270	13.5
SRVD-2		470	20.2
Without alarms	0	—	—
Pen 1 alarm	1	+50	+1.8
Pen 1, 2 alarms	2	+100	+3.3

Insulation Resistance:
Between I/O Terminals and Ground: 100 MΩ/500 V DC.
Between Power and Ground: 100 MΩ/500 V DC.
Dielectric Strength:
Between I/O Terminals and Ground: 500 V AC for 1 minute.
Between Power and Ground: 1000 V AC for 1 minute.

Wiring:
Signal Wiring to/from the Field: ISO M4 size (4 mm) screws on terminal block.
Power and Ground Wiring: Two-pole plug with earthing contact (IEC A5-15, UL 498, JIS C8303: 125 V, 15 A) and 30-cm cord.
Mounting: Flush panel mounting. Instruments are in housings, and may be mounted individually or side-by-side. Instrument may be inclined with front up to 75° from vertical (rear of instrument lower than front). (Indicator zero may need readjustment).
Nameplate:
Size:8 X 65.3 mm, cream semi-gloss finish.
Lettering: In black, one or two rows each up to 14 alphanumeric characters long.

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GS 1B4B1-E
1st Edition: Sept. 1981

Bezel: Aluminium diecast, black baked-enamel finish.
Housing: Open front.
Housing Dimensions: 182.5 (H) X 87 (W) X 480 ((D): depth behind panel) (mm).
Weight:
Recorder: 3.2 kg for 1-pen model, 3.4 kg for 2-pen model (excluding housing).
Housing: 2 kg (excluding mounting kit).

OPTIONS.

/SSC: Single auxiliary scale. Major divisions are marked. See GS 22D1C1-E for styles available.
/MTS: Recorder supplied with kit for individual mounting. For mounting in groups, see GS 1B4F1-E.
/SCF-G□M: Mounting kit bezel color change from standard color (black). Choose color from set of optional colors (see GS 22D1F1-E). Specify color code in space □.
/NH: No housing, instrument only. See GS 1B4F1-E to order housing separately.
/NP: With marking on front panel nameplate.

ACCESSORIES.

Accessories	Qty		Remarks
	1-pen	2-pen	
Chart paper	6	6	
Felt-tip pen (RED)	3	3	Part No. E9718JY
Felt-tip pen (GRN)	–	3	Part No. E9718JZ
Fuse	1	1	1 A

MODEL AND SUFFIX CODES.

Model	Suffix Code		Description
SRVD .	. . . . .		Recorder
Number of Inputs	-1		1-pen model
	-2		2-pen model
Alarms	0		Without alarm
	1		High/low limit alarms for 1-pen model
	2		High/low limit alarms for 2-pen model
	0		Always 0
Style Code	*A		Style A
Option I		/SCC	With auxiliary scale
Options		/MTS	With mounting kit
		/SCCF-G□M	Bezel color change
		/NH	Without housing
		/NP	With nameplate marking

TERMINAL CONNECTIONS.

Terminal Designation	Description	Terminal Designation	Description
1	+ > Input 1 (1 to 5 V DC)	17	
2	– >	18	
3	+ > Input 2*1 (1 to 5 V DC)	19	+ > Input 2, low limit alarm*3
4	– >	20	– >
5		21	
6		A	
7		B	+ > Input 1, high limit alarm*2
8		C	– >
9		D	+ > Input 1, low limit alarm*2
10		F	– >
11		H	
12		J	
13		K	
14		L	
15	+ > Input 2, high limit alarm*3	M	
16	– >	N	

Notes:
*1: Pen 2 of 2-pen model
*2: Pen 1 alarm output
*3: Pen 2 alarm output

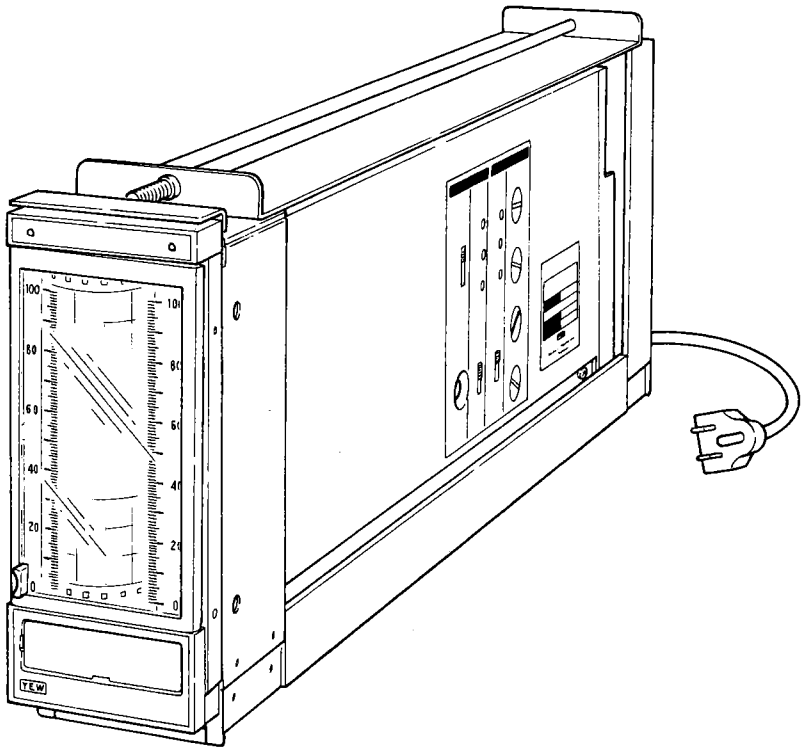
ORDERING INSTRUCTIONS

Specify the following when ordering:
1. Model, suffix and option codes.
2. Main scale and engineering units marking (see GS 22D1C1-E). Auxiliary scale also, for option code /SSC.
3. Type of chart paper (see list in GS 22D1B1-E).
4. Nameplate marking, if required.
5. Mounting kit (option /MTS) if the recorder is to be mounted individually.

Parts List

YEW SERIES 80

Model SRVD
STRIP CHART RECORDER



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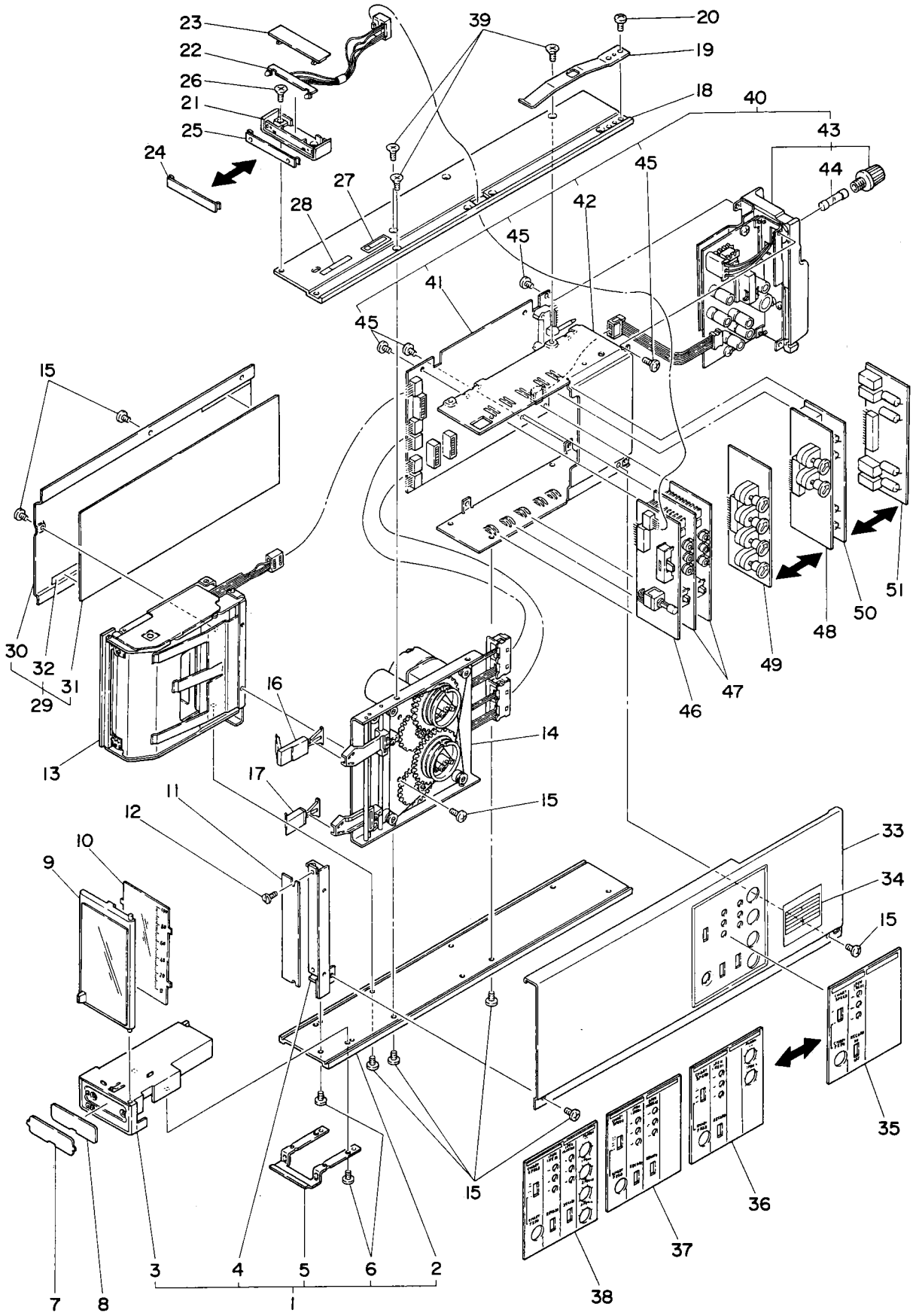
PL 1B4B1-01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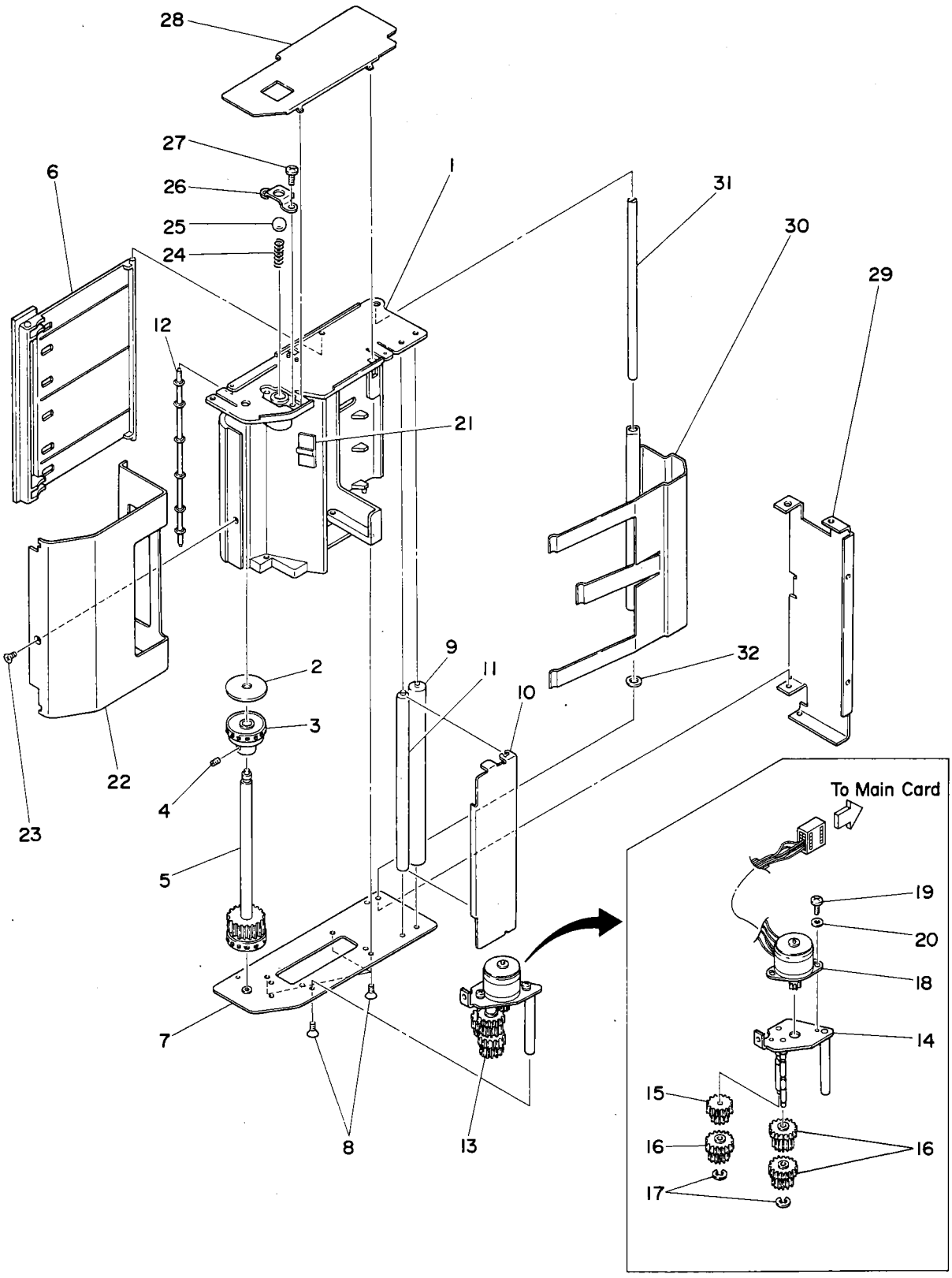
Item	Part No.	Model / Qty SRVD-100	SRVD-110	SRVD-200	SRVD-210	Description
1	E9718CA	1	1	1	1	Frame Assembly
2	E9718CC	1	1	1	1	Chassis
3	E9718CD	1	1	1	1	Frame Assembly
4	E9718CG	1	1	1	1	Bracket Assembly
5	E9711TD	1	1	1	1	Spring
6	Y9306JB	3	3	3	3	Pan H. Screw, M3 x 6
7	E9718CT	1	1	1	1	Plate
8	E9718CW	1	1	1	1	Plate
9	E9718CL	1	1	1	1	Cover
10	—	1	1	1	1	Scale*
11	E9718CX	1	1	1	1	Scale
12	Y9102HB	2	2	2	2	Pan H. Screw, M1.7 x 2
13	E9718KA	1	1	1	1	Chart Drive Assembly (see page 4)
14	—	1	1	1	1	Servo Unit Assembly (see page 6)
15	Y9306JB	14	14	14	14	Pan H. Screw, M3 x 6
16	E9718JY	1	1	1	1	Pen Assembly (red)
17	E9718JZ			1	1	Pen Assembly (green)
18	E9718CR	1	1	1	1	Chassis
19	E9711TC	1	1	1	1	Spring
20	E9711TE	2	2	2	2	Screw
21	E9718CS	1	1	1	1	Holder
22	E9716EK		1		1	Lamp Assembly
23	E9711FD	1	1	1	1	Cover
24	E9711FG	1		1		Plate
25	E9718BZ		1		1	Plate
26	Y9308EB	2	2	2	2	F. H. Screw, M3 x 8
27	—	1	1	1	1	Data Label
28	Y9422NP	1	1	1	1	Tag No. Label (blank)
29	E9718BE	1	1	1	1	Cover Assembly
30	E9718CY	1	1	1	1	Cover
31	E9718BF	1	1	1	1	Plate
32	E9712BD	4	4	4	4	Tape
33	E9718CZ	1	1	1	1	Cover Assembly
34	E9718MZ	1	1	1	1	Data Label
35	E9718MA	1				Nameplate
36	E9718MB		1			Nameplate
37	E9718MC			1		Nameplate
38	E9718MD				1	Nameplate
39	Y9304EB	7	7	7	7	F. H. Screw, M3 x 4
40	E9718BA	1	1	1	1	Main Card Assembly
41	E9716EC	1	1	1	1	Main Card
42	E9718BD	1	1	1	1	Bracket
43	E9716YC	1	1	1	1	Power Supply Unit (for 80 to 138 V AC 47-63 Hz and 20 to 130 V DC power supplies)
44	G9001ZF	1	1	1	1	Fuse — "1A"
45	Y9306JB	8	8	8	8	Pan H. Screw, M3 x 6
46	E9716EA	1	1	1	1	Chart Drive Card
47	E9716EB	1	1	2	2	Servo Drive Card
48	E9716EE		1			Alarm Tuning Card
49	E9716ED				1	Alarm Tuning Card
50	E9716EG		1			Relay Card
51	E9716EF				1	Relay Card

***Note:** Specify model, range, unit and characteristic.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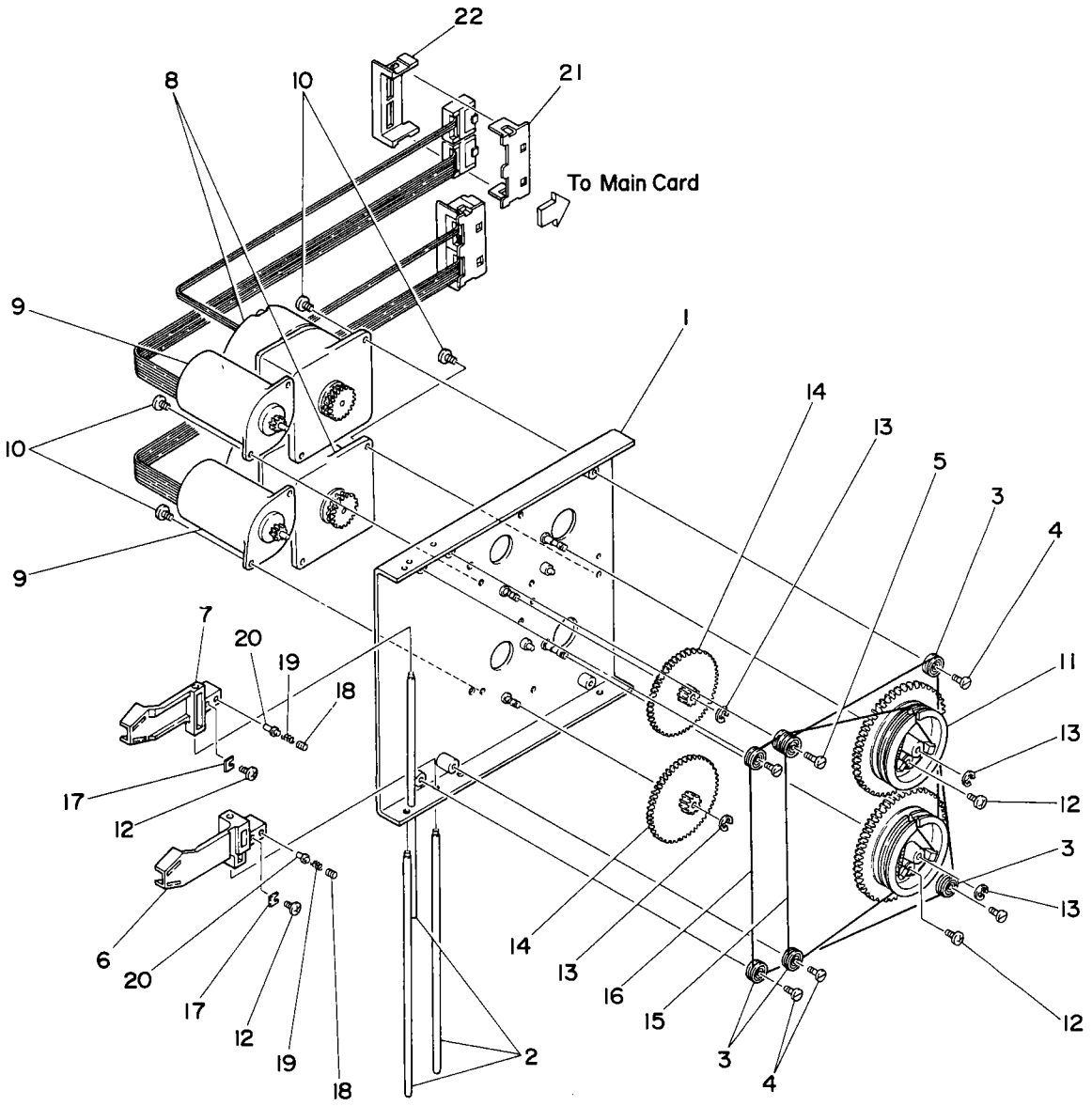
E9718KA Chart Drive Assembly

Item	Part No.	Qty	Description
• 1	—	1	Frame Assembly
• 2	—	1	Washer
• 3	—	1	Sprocket
• 4	—	1	Screw
• 5	—	1	Sprocket Assembly
6	E9718KL	1	Cover
7	E9718KM	1	Plate Assembly
8	Y9306EB	4	F. H. Screw, M3 x 6
9	E9718KP	1	Shaft
10	E9718KQ	1	Bracket
11	E9718KR	1	Shaft
12	E9718LQ	1	Shaft Assembly
13	E9718KS	1	Gear Assembly
14	E9718KT	1	Bracket Assembly
15	E9718LA	1	Gear
16	E9718LB	3	Gear
17	Y9200ET	2	Retaining Ring
18	E9718LC	1	Motor Assembly
19	Y9204JB	2	Pan H. Screw, M2.3 x 4
20	Y9200WB	2	Washer
21	G9320ES	1	Clamp
22	E9718LH	1	Bracket
23	Y9205EB	1	F. H. Screw, M2.3 x 5
24	E9718LJ	1	Spring
25	Y9364SB	1	Ball
26	E9718LK	1	Bracket
27	Y9306JB	2	Pan H. Screw, M3 x 6
28	E9718LP	1	Bracket
29	E9718LL	1	Bracket
30	E9718LN	1	Spring
31	E9718LM	1	Shaft
32	Y9300WB	1	Washer

Note: • These parts are not sold separately. For replacement, please order an entire E9718KA Chart Drive Assembly.

Servo Unit Assembly



Item	Part No.	Model	Qty SRVD-1□0	Qty SRVD-2□0	Description
–	E9718EN			1	Servo Unit Assembly } (Items 1 through 7)
	E9718EP		1		Servo Unit Assembly }
1	E9718DE		1	1	Bracket Assembly
2	E9718DT		2	3	Shaft
3	E9655XX		4	7	Pully
4	E9718DW		2	5	Screw
5	E9718DX		1	1	Screw
6	E9718ED		1	1	Holder
7	E9718EE			1	Holder
8	E9718FA		1	2	Potentio Assembly

Item	Part No.	Model	Qty SRVD-1□0	Qty SRVD-2□0	Description
9	E9718HA		1	2	Motor Assembly
10	Y9306JB		4	8	Pan H. Screw, M3 x 6
11	E9718DN		1	2	Pully Assembly
12	Y9204JB		2	4	Pan H. Screw, M2.3 x 4
13	Y9200ET		2	4	Retining Ring
14	E9718DQ		1	2	Gear Assembly
15	E9718DZ		1	1	String Assembly
16	E9718EA			1	String Assembly
17	E9718EF		1	2	Plate
18	Y9304SK		1	2	Set Screw
19	E9718EK		1	2	Spring
20	E9718EJ		1	2	Pin
21	E9718EG		1	2	Holder
22	E9718EH		1	2	Cover

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Printed in Japan; August 1982 / 200(Y)

Instruction Manual

YEW SERIES 80 Supplement

Model SRVD
STRIP CHART RECORDER

1. DESCRIPTION.

This instruction manual supplements that of the Style A SRVD Strip Chart Recorder (IM 1B4B1-01E). When using the Style B SRVD Strip Chart Recorder, read the Style A instruction manual together with this supplement. Some of the Style A instruction manaul must be changed to apply to the Style B SRVD (which contains functions which are not present in the Style A SRVD).

The parts of the Style A manual to be changed, the additional functions and their operations are as follows:

For the Style B SRVD Strip Chart Recorder with the alarm output, the alarm contact output is set to "NC: Normally closed (open during alarm)" before shipping. If the reverse alarm output is desired, refer to Section 3-2 Figure 3-3 in this supplement.

2. CHANGES IN THE STANDARD INSTRUCTION MANUAL.

The following parts of the standard instruction manual must be changed as follows:

2-1. Changing Alarm Contact Output.

Change the Section "Alarm Contact Output" in the General Specifications (GS 1B4B1-E) at the end of the standard instruction manual as follows:

Alarm Contact Outputs: High/low limit alarm contact outputs, one point each, for both pens 1 and 2. During alarm, open/closed (switch selectable); during power failure, open.

2-2. Changing Style Code.

Change the Style code – in the table of Model and Suffix Codes in the General Specifications GS 1B4B1-E at the end of the standard instruction manual – to "B".

2-3. Changing Part Numbers.

Change the part numbers in the Parts List (PL 1B4B1-01 page 3) at the end of the standard instruction manual as follows:

Item	Style A	Style B	Description
41	E9716AC	E9716FA	Main Card
48	E9716EE	E9716FB	Alarm Tuning Card
49	E9716ED	E9716FC	Alarm Tuning Card
50	E9716EG	E9716FD	Relay Card
51	E9716EF	E9716FE	Relay Card

3. ADDITIONAL FUNCTIONS AND OPERATIONS.

3-1. Alarm Output NO/NC Selecting.

The alarm output (contact) can be selected arbitrarily on the Style B SRVD.

3-2. Alarm Output Selecting Procedure.

Select the alarm output as follows:

(1) Pull the internal unit out of the housing to separate them.
(2) Remove two screws on the right side cover of the internal unit, and remove the side cover (see Figure 3-1).

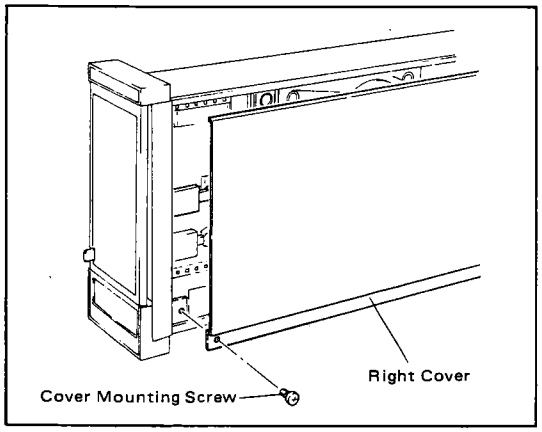

Figure 3-1. Side Cover Removal.

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(3) Using the card withdrawing tool, pull the Alarm Tuning card out of the unit (see Figure 3-2). (The card withdrauring tool is a component of the Model SSKD YewSeries 80 service kit.)

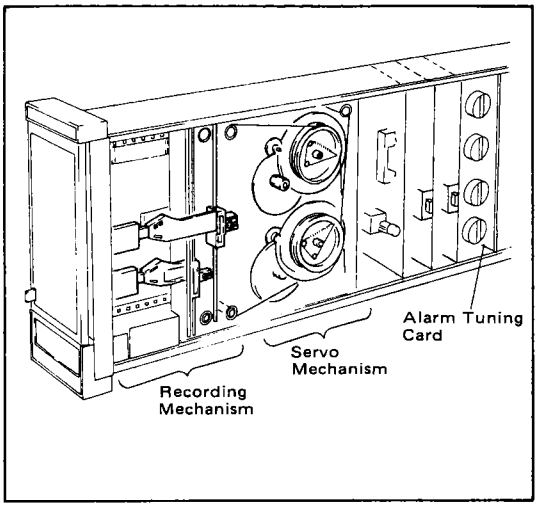

Figure 3-2. Drawout of Alarm Tuning Card.

(4) Alarm Contact Output Selection.
Set the Alarm Contact Output Selector switch on the Alarm Tuning Card to the desired output (NO or NC) as shown in Figure 3-3.
NO: Open normally ⇨ Closed during alarm.
NC: Closed normally ⇨ Open during alarm.
[The pen 1 and pen 2 alarm outputs are independent; set each selector switch for the desired output.]

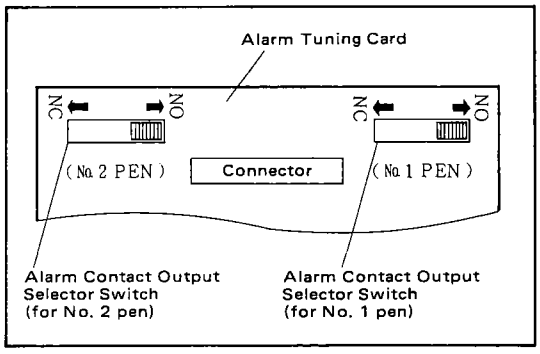

Figure 3-3. Alarm Contact Output Selector Switch.

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