User's
Manual

YEWSERIES 80

Model SIHM
Indicator (with Housing)

IM 1B4B6-01E

YOKOGAWA ◆
Yokogawa Electric Corporation

IM 1B4B6-01E
8th Edition

Notices

■ Regarding This User's Manual

(1) This manual should be passed on the end user. Keep at least one extra copy of the manual in a safe place.

(2) Read this manual carefully and fully understand how to operate this product before you start operation.

(3) This manual is intended to describe the functions of this product. Yokogawa Electric Corporation (hereinafter simply referred to as Yokogawa) does not guarantee that the functions will suit a particular purpose of the user.

(4) Under absolutely no circumstances may the contents of this manual in part or in whole be transcribed or copied without permission.

(5) The contents of this manual are subject to change without prior notice.

(6) Every effort has been made to ensure accuracy in the preparation of this manual. Should any error or omissions come to your attention however, please contact your nearest Yokogawa representative or our sales office.

■ Regarding Protection, Safety, and Prohibition against Unauthorized Modification

(1) In order to protect the product and the system controlled by it against damage and ensure its safe use, make certain that all of the instructions and precautions relating to safety contained in this manual are strictly adhered to. Yokogawa does not guarantee safety if products are not handled according to these instructions.

(2) Be sure to use the spare parts approved by Yokogawa when replacing parts or consumables.

(3) Modification of the product is strictly prohibited.

(4) Reverse engineering such as the disassembly or decompilation of software is strictly prohibited.

(5) No portion of the software supplied by Yokogawa may be transferred, exchanged, leased or sublet for use by any third party without the prior permission of Yokogawa.

■ Force Majeure

(1) Yokogawa does not make any warranties regarding the product except those mentioned in the WARRANTY that is provided separately.

(2) Yokogawa assumes no liability to any party for any loss or damage, direct or indirect, caused by the user or any unpredictable defect of the product.

2004.05.01-00

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•	**POWER SUPPLY TERMINALS for PANEL-MOUNTED INSTRUMENTS (for /HTB)**	**IM 1B4F1-11E**

1. INTRODUCTION.

1-1. Inspection.

This instrument was thoroughly tested at the factory before shipment. However, when you receive this instrument:

- Inspect for visible damage.
- Confirm that the model and suffix codes shown on the nameplate at the rear of the instrument are the same as those on your order sheet.

If you have any questions about this instrument, please contact either your nearest Yokogawa Sales & Service Office or Yokogawa Electric Corporation, Tokyo, Japan.

2. GENERAL.

The SIHM indicator is a moving coil type indicator contained in a housing and indicates one or two input signals.

Figure 2-1 shows the SIHM indicator.

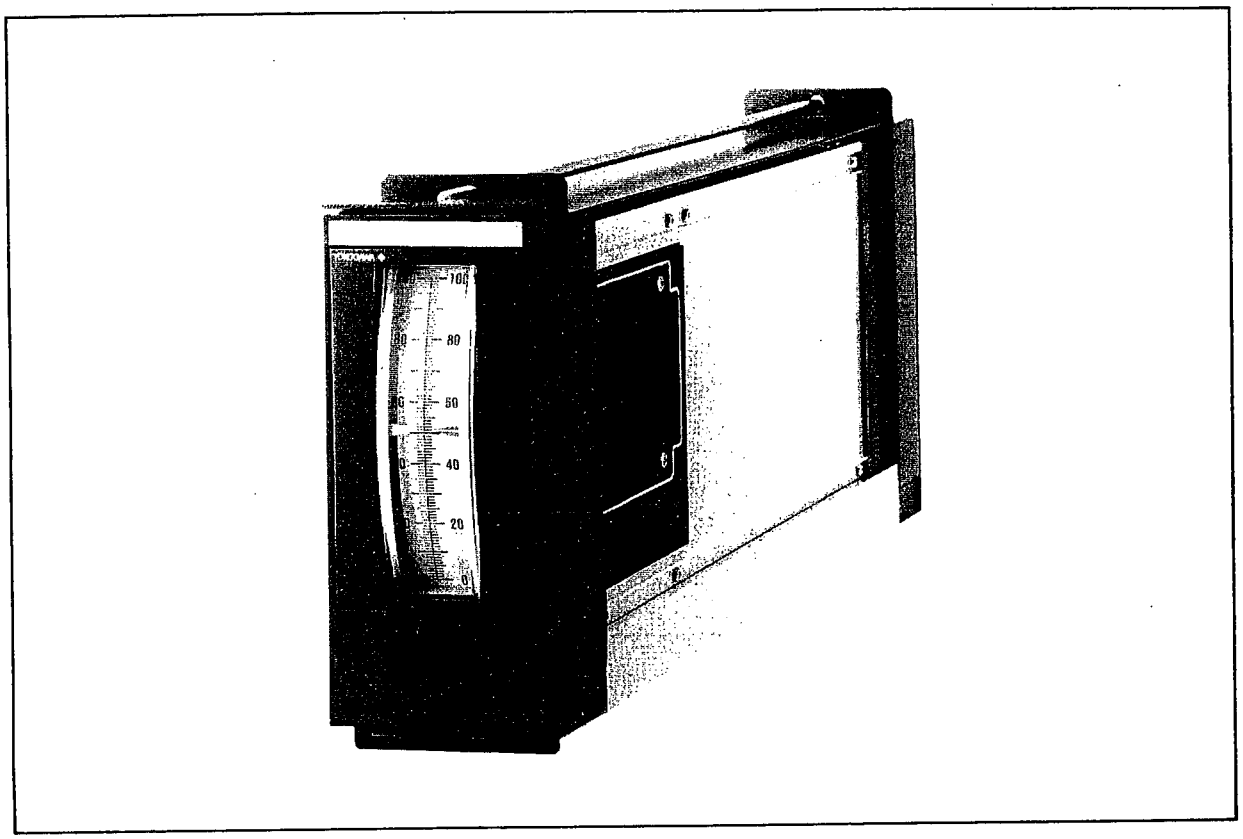


Figure 2-1. SIHM Indicator.

2-1. Standard Specifications.

Input Signal

Analog Input: 1 to 5 V DC. (Input signals are not isolated from each other.)

Input Resistance: 2 kΩ.

Indicator

Indicator Type: Moving coil meter.

Pointer Color:

1-point . . . Red (Right)

2-point . . . Red (Left), Blue (Right)

Indication Range: 0 to 100%.

Scale: 100 mm long, interchangeable.

Mounting: Flush panel mounting. Instruments are is 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 fronts). (Indicator zero may need readjustment).

Wiring:

Signal Wiring from the Field: ISO M4 size (4 mm) screws on terminal block.

Housing Dimensions: 182.5 (H) X 87 (W) X 480 (D): depth behind panel) (mm).

Weight:

Indicator: 3 kg (excluding housing).

Housing: 2 kg (excluding mounting kit).

Normal Operating Conditions

Ambient Temperature: 0 to 50°C.

Ambient Humidity: 5 to 90% relative humidity (non-condensing).

2-2. Options.

/A2ER: 220 V power supply version. The SIHM Indicator requires no power supply; however, it is wise to order the same housing (power supply) version for all instruments on a panel, so that any instrument can be used in any housing — this makes panel layout easy.

/MTS: Indicator supplied with kit for individual mounting.

/SCF-G□M: Mounting kit bezel color change from standard color (black).

/NHS: No housing, instrument only. Order housing separately.

/NPE: Letters engraved on front panel nameplate.

2-3. Model and Suffix Codes.

Model	Suffix Code		Description
SIHM	. . . . .		Indicator
Inputs	-1		One input
	-2		Two inputs
	00		Always 00
Style Code	*B		Style B
Options		/A2ER	220 V power supply version
		/MTS	With mounting kit
		/SCF-G□M . .	Bezel color change
		/NHS	Without housing
		/NPE	Nameplate engraving

3. INSTALLATION AND WIRING.

3-1. Installation.

For the installation details, refer to instruction manual IM 1B4F1-01E "Installation Manual for Panel Mounted Instruments".

3-2. Wiring.

Connect external wires to the terminals (use 4 mm screws) located on the rear of the housing. The terminal designations and the corresponding signal descriptions are listed in Table 3-1. The arrangement of the terminals on the terminal board is shown in Figure 3-1.

Table 3-1. Terminal Numbers and Signal.

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

* In Model SIHM-200*B
(Input 1: Red Pointer
Input 2: Blue Pointer)

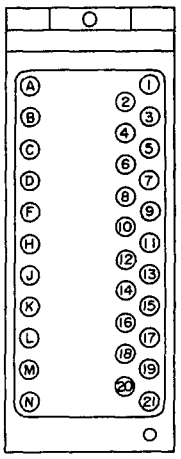


Figure 3-1. Terminal Layout.

(1) When connecting external wires to the terminals, install round solderless crimp-type lugs (use 4 mm screws) on the ends of each wire. (See Figure 3-2.)

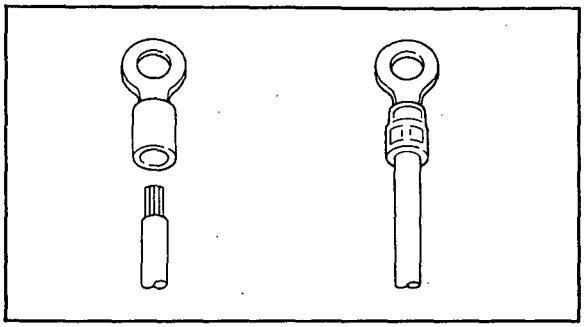


Figure 3-2. Crimp-On Solderless Lugs.

(2) After completing the wiring, always replace the terminal board cover. (See Figure 3-3.)

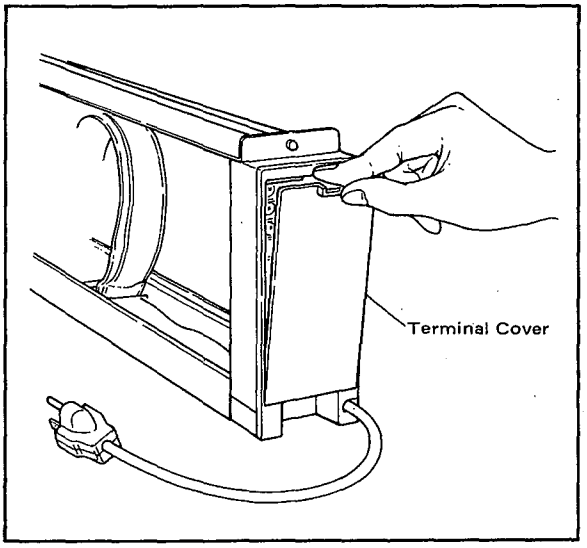


Figure 3-3. Removing and Installing Terminal Cover.

4. PRINCIPLE OF OPERATION.

This instrument is a moving-coil type indicator which receives 1 to 5 V DC signals and indicates them on a wide-angle scale.

This indicator employs a taut-band suspension system as this provides less hysteresis and greater resistance to shocks and vibration.

Figure 4-1 shows the circuit diagram for this instrument.

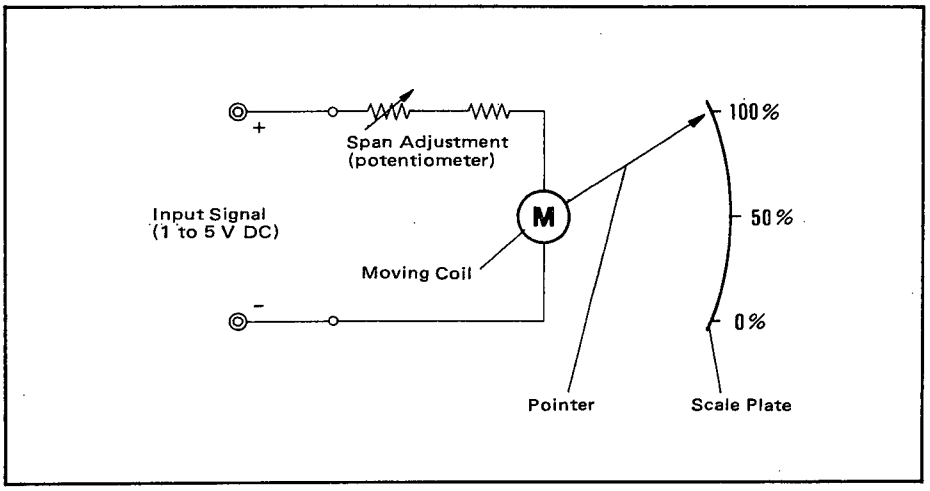


Figure 4-1. Circuit Diagram.

5. OPERATION.

5-1. Names of Components.

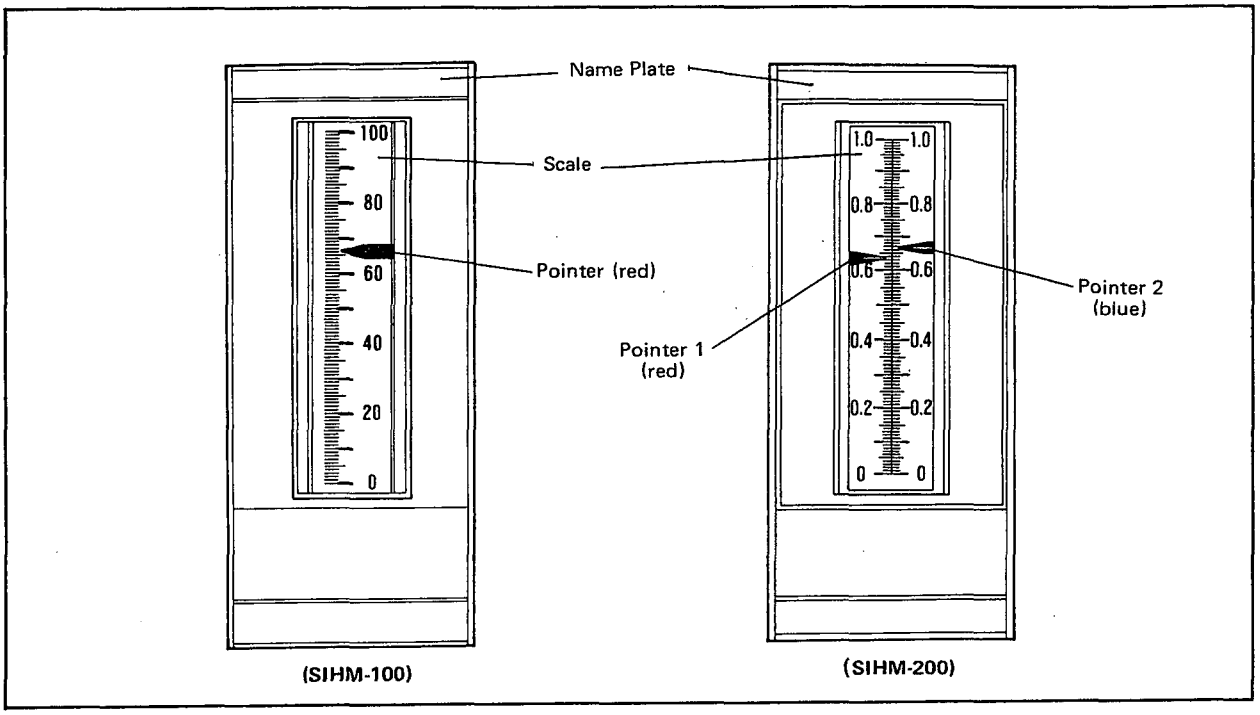


Figure 5-1. Front View.

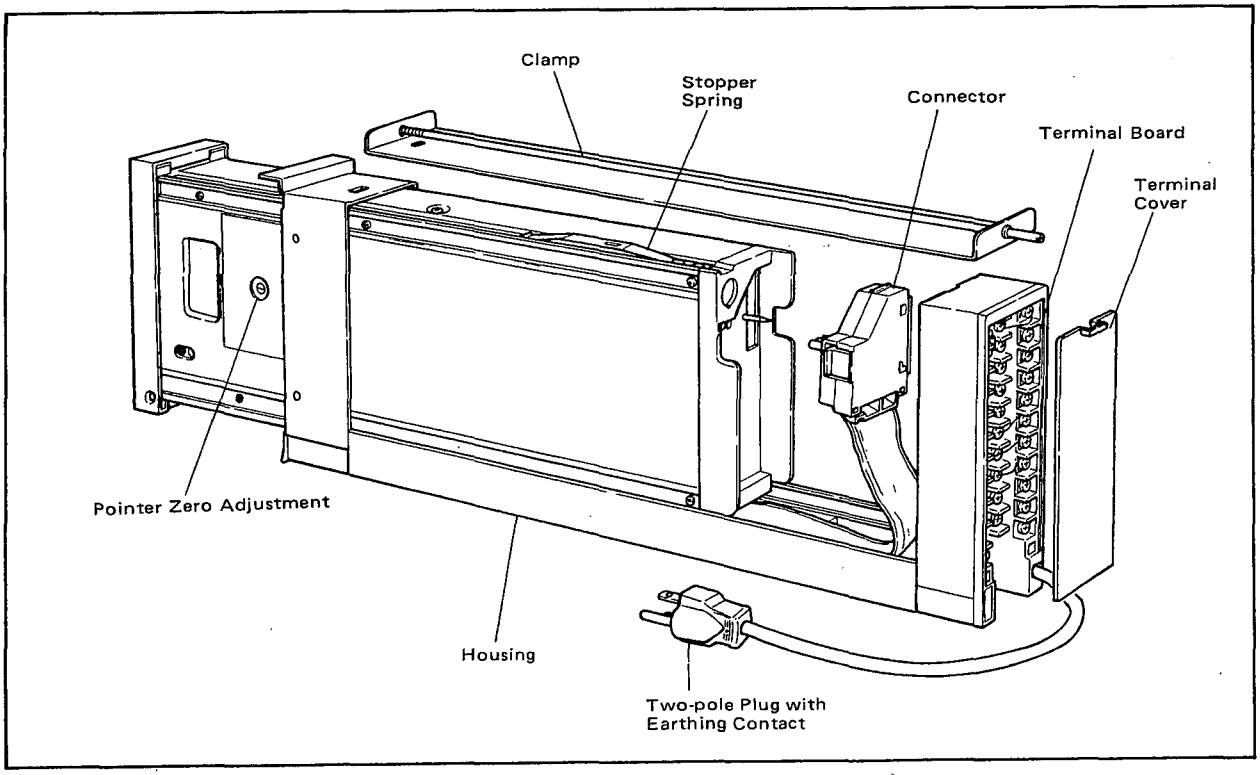


Figure 5-2. Side View.

5-2. Withdrawing the Indicator Body.

Pull the internal instrument out from the housing while pushing up on the latch located on the bottom front of the indicator.

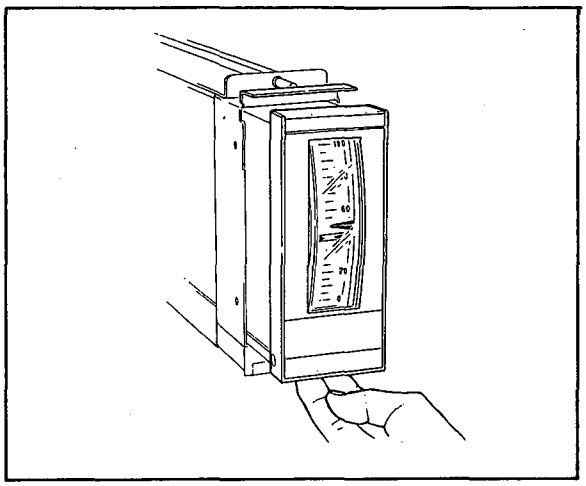


Figure 5-3. Extending the Indicator Body (1).

The indicator body locks as it is pulled partially out from the housing. To pull the indicator body out further, press down the stopper spring located on the top of the indicator body, and pull the body out of the housing. (See Figure 5-4.)

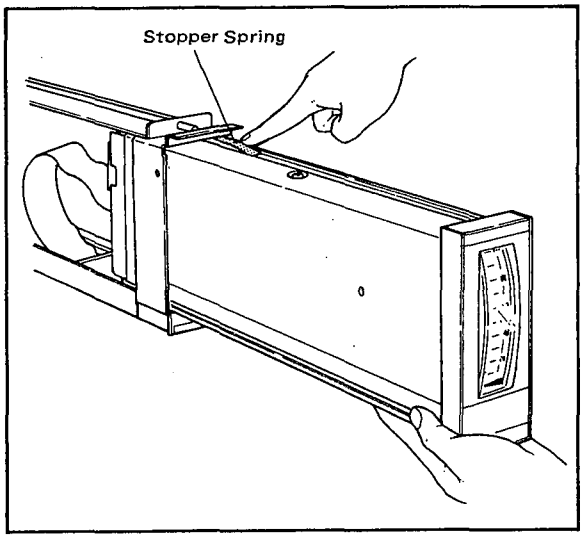


Figure 5-4. Extending the Indicator Body (2).

5-3. Electrical Connector.

The indicator body is electrically connected to the housing by means of a connector. (Figure 5-5.)

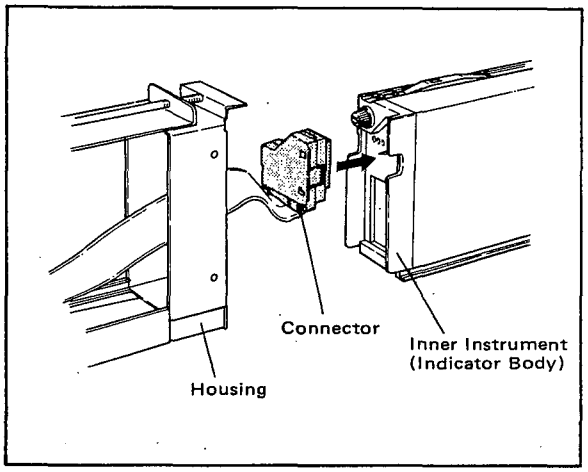


Figure 5-5. Electrical Connection Between Case and Body.

5-4. Pre-Operational Checks.

Inspect and check the following points before entering the unit into normal operation.

(1) Check that the housing case connector is securely connected to the internal unit.
(2) Insure that the external wires are securely connected to the correct terminals on the terminal board.
(3) Inspect the scale plate and nameplate on the instrument to insure that both are correct.

NOTE

This instrument needs no power supply, and normally operates without the power cord connected to an external power outlet.
However, the power cord may be connected to a power outlet if this is required from the viewpoint of safety (grounding) or to avoid confusion during troubleshooting.

6. MAINTENANCE.

This chapter explains simple indicator adjustments and parts replacement procedures.

6-1. Test Equipment.

For efficient maintenance of this indicator, the user is advised to have available the following test equipment manufactured by Yokogawa or its equivalent from another manufacturer before the need for maintenance arises.

- Portable DC Voltage/Current Standard
  Model 2554 . . . . . 1 unit

6-2. Zero Adjustment.

Connect this instrument to the test equipment as shown in Figure 6-1. Turn on the power to the instrument and test equipment and allow a warm-up period of approximately five minutes.

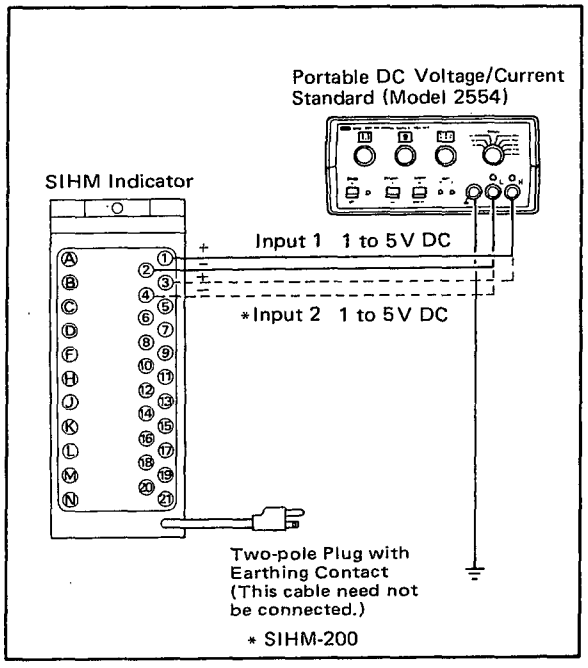


Figure 6-1. Wiring Diagram.

Zero Adjustment for SIHM-100:

(1) Apply 1 V. 2 V, 3 V, 4 V and 5 V DC signals from a DC vollage/current standard across input terminals 1 (+) and 2 (–).
(2) Check that the pointer (red) indicates the 0%, 25%, 50%, 75% and 100% positions on the scale that corresponds respectively to these input signals.
(3) If the pointer indication is not accurate within ±1.0% (of span) at all points, set the input signal to 3 V DC.
(4) Turn the zero adjustment until the pointer exactually indicates the 50% position of the scale. (Figure 6-2.)
(5) Repeat steps (1) to (4), to insure that the indicating accuracy at each voltage position is within ±1.0% of span.

Check the pointer at the position where line of sight and the pointer are horizontal.

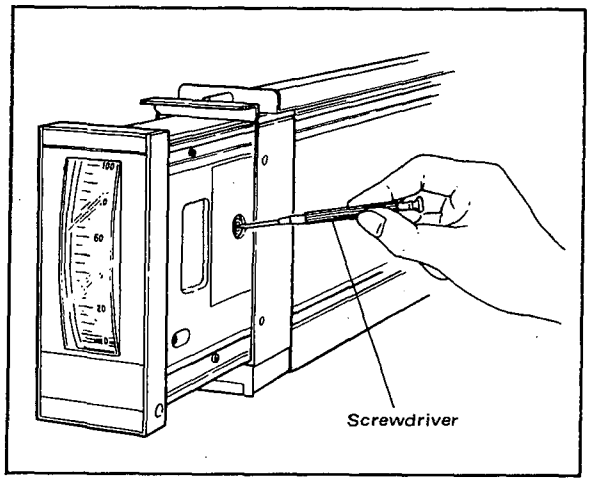


Figure 6-2. Zero Adjustment.

Zero Adjustment for SIHM-200:

(1) Apply 1V, 2V, 3V, 4V and 5V DC signals from a DC voltage/current standard across input terminals 3 (+) and 4 (−).

(2) Adjust using the same procedure as described in steps (2) thru (5) for SIHM-100. The zero adjustment for input 1 pointer (red) is the left side of the instrument and it for input 2 pointer (blue) is the right side of the instrument (see Figure 6-3 and 6-4).

(3) If the instrument is inclined, carry out the zero adjustment in the inclined condition.

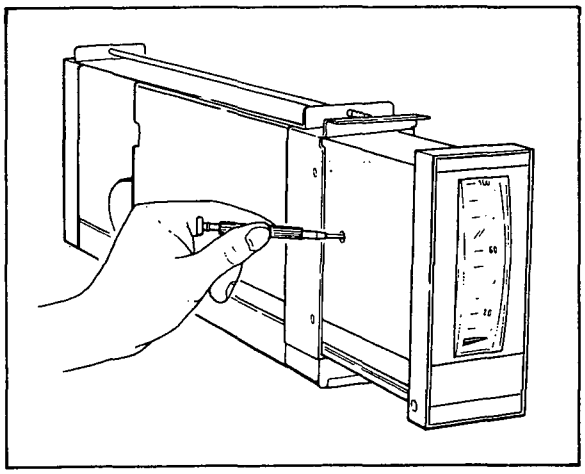


Figure 6-3. Zero Adjustment for Pointer 1 (Red).

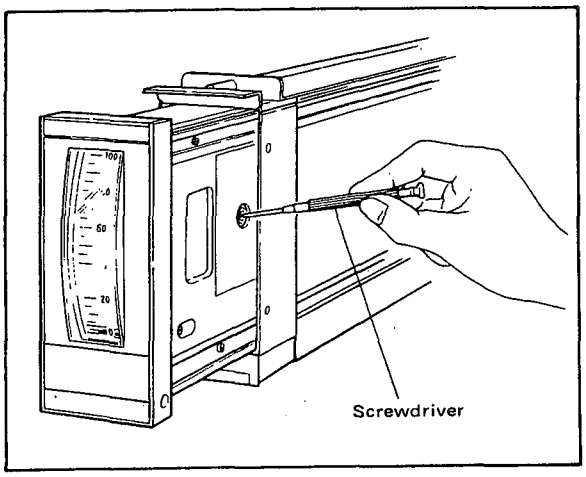


Figure 6-4. Zero Adjustment for Pointer 2 (Blue).

6-3. Parts Replacement.

6-3-1. Replacing the nameplate.

Pull the inner instrument partially out from the housing, and open the top front cover. Slide out the old nameplate and insert the desired nameplate. (See Figure 6-5.)

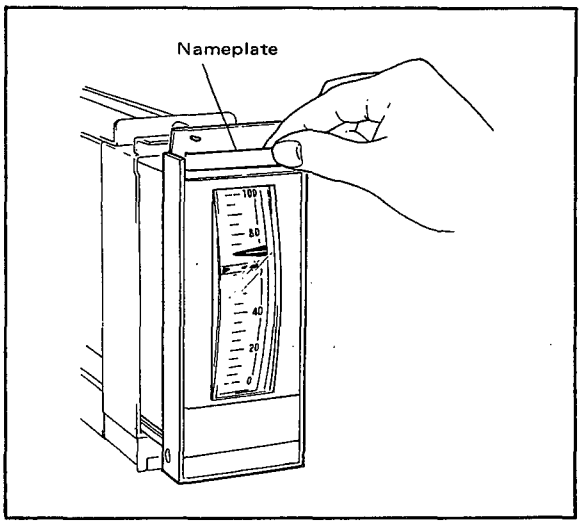


Figure 6-5. Replacing the Nameplate.

6-3-2. Replacing the scale plate.

(1) Pull the inner instrument partially out from the housing and open the top front cover.

(2) Slide out the scale plate retainer using a pair of tweezers and remove the scale plate. (See Figure 6-6.)

(3) Insert a new scale plate, and refit the scale plate retainer in position.

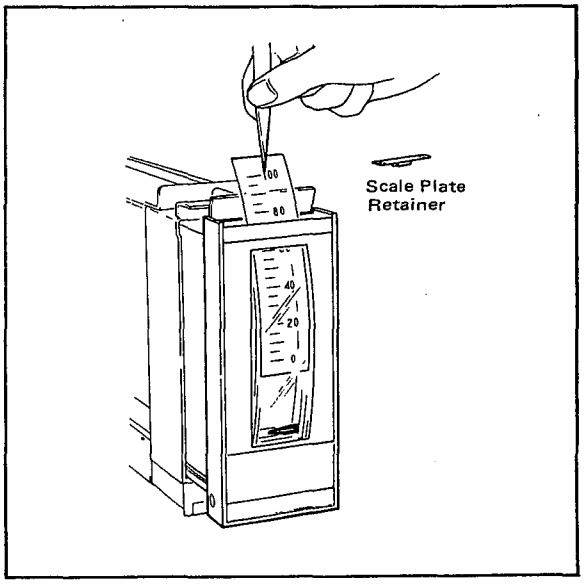
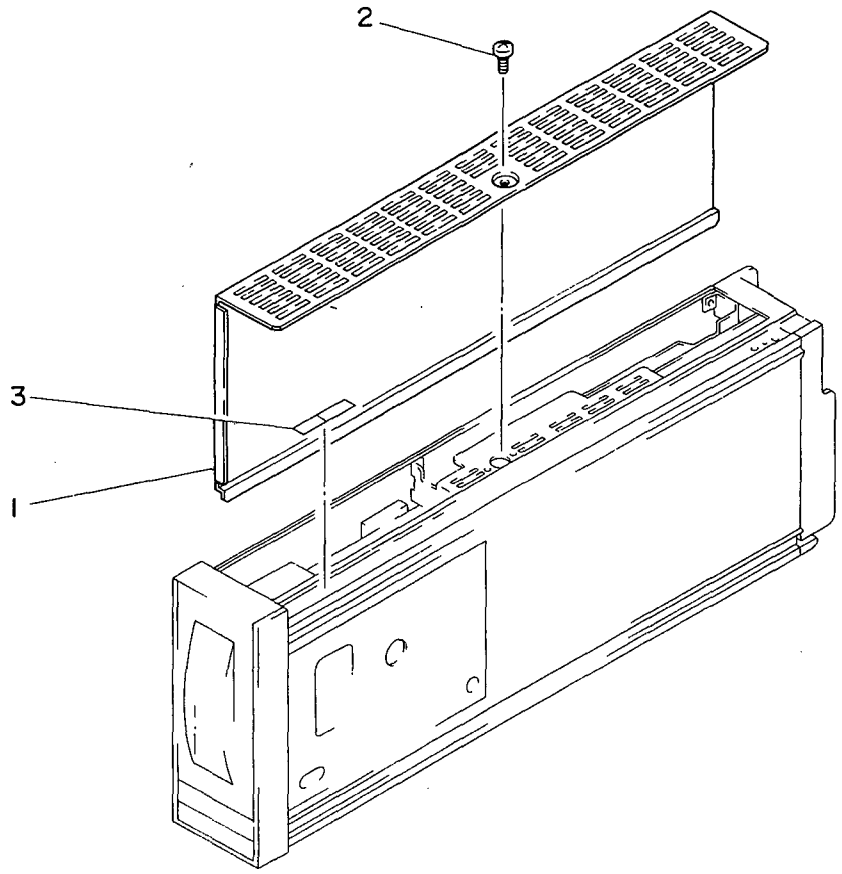


Figure 6-6. Replacing the Scale Plate.

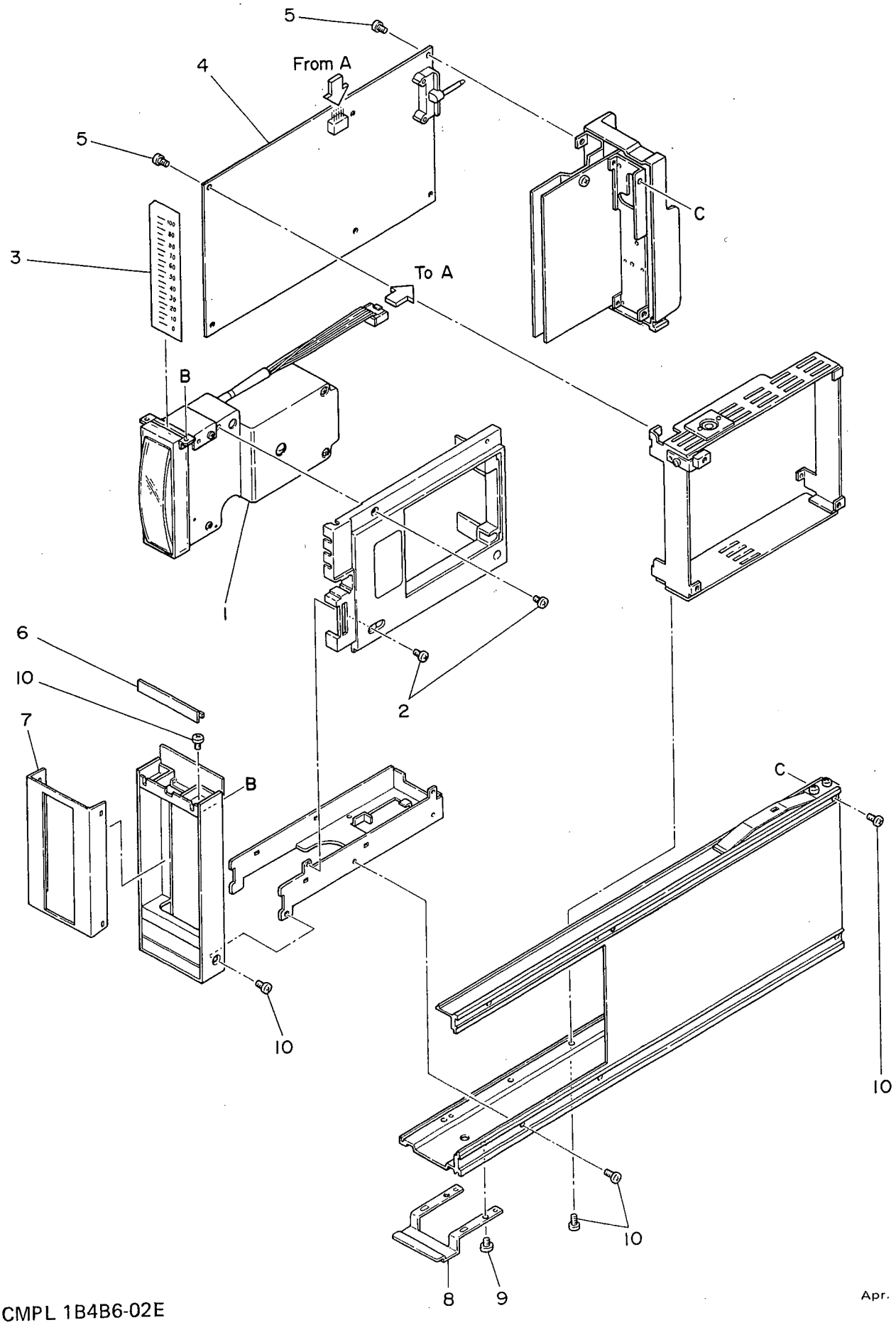
Customer Maintenance Parts List

Model SIHM (Style B)
Indicator (With Housing)

YEWSERIES 80



Item	Part No.	Qty	Description
1	E9711TG	1	Cover
2	Y9405LB	1	B.H. Screw, M4 x 5
3	Y9422NP	1	Tag No. Label (blank)


5
From A
4
5
C
3
To A
B
1
2
6
10
7
B
C
10
10
10
8
9

Item	Part No.	Qty	Description
1	Below	1	Meter Assembly
	E9714AL		For Model SIHM-100*B
	E9714AK		For Model SIHM-200*B
2	Y9306JB	5	Pan H. Screw, M3 x 6
3	—	1	Scale*
—	—	1	Control Assembly
4	E9716JA	1	Main Card
5	Y9306JB	6	Pan H. Screw, M3 x 6
6	E9711FG	1	Plate (blank)
7	E9711HH	1	Bracket
8	E9711TD	1	Stopper
9	E9711TE	2	Screw
10	Y9306JB	12	Pan H. Screw, M3 x 6

*Note: Specify model, range, unit and characteristic.

Instruction Manual

/ HTB
Power Supply Terminal Connections for Panel - mounted Instruments (Option)

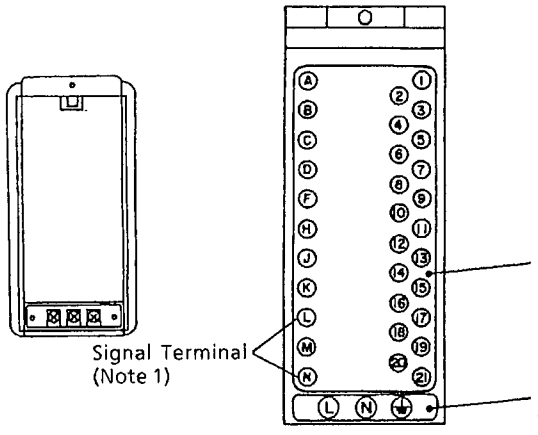
1. GENERAL.

If you specify the terminal board to which the power source is directly connected (suffix code / HTB), the external wiring to the terminal board is necessary.

2. APPLICABLE INSTRUMENTS.

Model	Description
SRVD	Strip Chart Recorder
SIHM	Indicator (With Housing)
SIHF	Bar Graph Indicator (With Alarms)
SIHK	Indicator (With Alarms)
SLCD	Indicating Controller
SLPC	Programmable Indicating Controller
SLMC	Programmable Indicating Controller with Pulse → Width Output
SMLD	Manual Station
SMST	Auto / Manual Station
SMRT	Ratio Set Station
SCMS	Programmable Computing Station
SBSD	Batch Set Station
SLCC	Blending Controller
SLBC	Batch Controller
STLD	Totalizer

3. NAME OF COMPONENTS AND TERMINAL DESIGNATION OF POWER SUPPLY



Terminals Layout

Terminal Designation	Description
L	AC or DC Power Supply (DC : polarity reversible)
N	
⏚	Ground

(Note 1) Be careful for which Signal Terminals have L, N terminals, too.

4. POWER SUPPLY AND GROUND WIRING.

(1) All cable ends must be furnished with crimp - on type solderless lugs (for 4mm screw).

(2) Examples of applicable cables.

Cross - sectional area of the cable conductor : 2.0mm^2.*

Note * : Power supply cables should be determined from the instrument power consumption - they must have conductors with cross - sectional area of at least 1.25mm^2.

Applicable cable : 600V vinyle insulated cable (IV), conforming to JIS C3307.
Vinyle sheathed cables for electric appliances (KIV), conforming to JIS C3316.

(3) After completing the power supply and ground wiring, mount the power terminal cover.

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