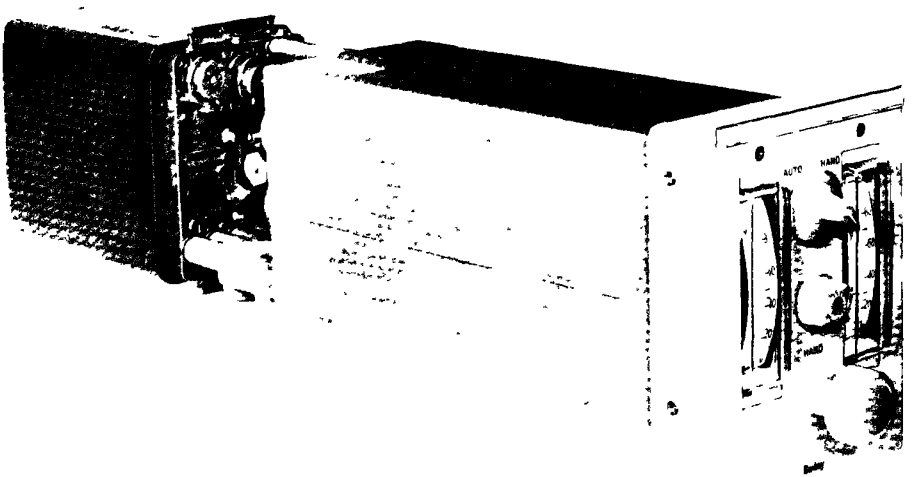
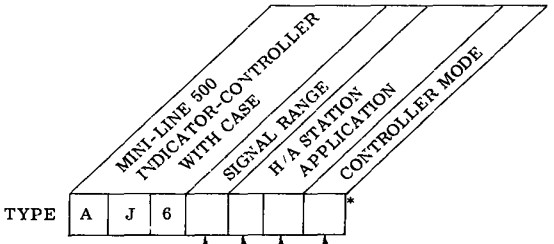


Mini-Line® 500 Indicator-Controller Type AJ6

Bailey Babcock & Wilcox

EXPLANATION OF NOMENCLATURE



1	3 to 15 psig
2	3 to 27 psig

1	Proportional Only
2	Proportional + Integral
3	Proportional + Integral + Derivative
4	Proportional + Derivative

		Application	Left Scale Legend	
			Left**	Right**
A	1	Pneumatic Set Point	Meter	Set Point
A	5		Direct Reading	Set Point
B	1	H/A Transfer Only	Loading	
B	2		Loading	Position
B	5		Direct Reading	
D	1	Adj Tie Back Relay		Tie-Back

* An X in any position indicates a special feature
** Indicators

NOTE Complete nomenclature appears only on the Specification Sheet included in Instruction Books furnished on system or contract jobs When ordering parts, refer to this nomenclature If unit is not furnished as part of a system, give the part number of the individual component for which the part is desired Part numbers of the specific Type AJ H/A Station, Type AJ enclosure assembly, and Type AD Controller are given on the identification plates attached to the units (Integral and Derivative plug in units for the Controller are individually identified and must be ordered as separate items)

CROSS REFERENCES

Instrument or Equipment	Instruction Section
Type AJ Set Point H/A Station	P91 3
Type AJ H/A Station	P91 4
Type AJ Tie-back H/A Station	P91 6
Type AD Pneumatic Controller	P92 1

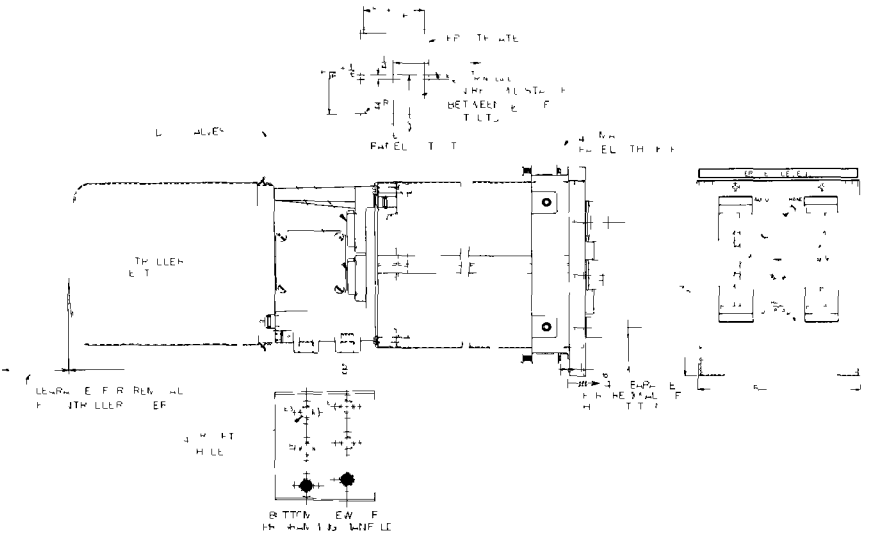


FIGURE 1 Bai ey MINI-LINE 500 Indicator-Controller, Mount ng D mens ons

INSTALLATION

1 Cut out panel mounting hole to dimensions shown in Figure 1

2. Slide mounting case thru cutout from front of panel. Place mounting clips (in bag tied to case) in position on mounting case. Tighten clip screw securely against panel.

3. Slide Hand/Automatic Station into mounting case and secure with two mounting screws on face plate

4. Plug Type AD Controller into rear of programming manifold and secure with three captive screws on Controller assembly (Figure 1).

5 Make tubing connections to bottom of programming manifold (Figure 1) as indicated in Figure 4, 5, or 6 or as given on Control Tubing Diagram for specific system

6 Adjust Type AD Controller for particular service desired (see Calibration" on page 5)

7. Set disc valves (Figure 1) to proper position in accordance with control system requirements (see "operation"). Lock disc valves in position with retaining screws.

8 Apply supply air to connection "S" (30 psig for 3 to 27 psig range, 18 psig for 3 to 15 psig range)

OPERATION

The Indicator Controller consists of a Type AD Pneumatic Controller connected to a Type AJ Hand/Automatic Station by means of a programming manifold.

The programming manifold contains six tubing connections (Figure 1) and four disc valves (Figure 2) Each disc valve has up to six rotational positions Each position provides a variation in the interconnecting air passages between the Selector Station and the Controller Figure 3 is a schematic drawing of the interconnecting air passages Table A is a tabulation of the interconnections for specific disc valve settings

Figures 4, 5, and 6 shows the Indicator Controller as it is used in three common control modes If an Indicator Controller is used as part of a control system, the required connections will be shown on the system schematic tubing diagram, and the disc valve settings will be given on the Controller calibration sheet

The operation of the Type AJ H'A Station and Type AD Controller are described in the applicable instructions sections listed in "Cross References" on page 2 The operation of these units is identical to that described in the specific instruction section except for the addition of the programming manifold

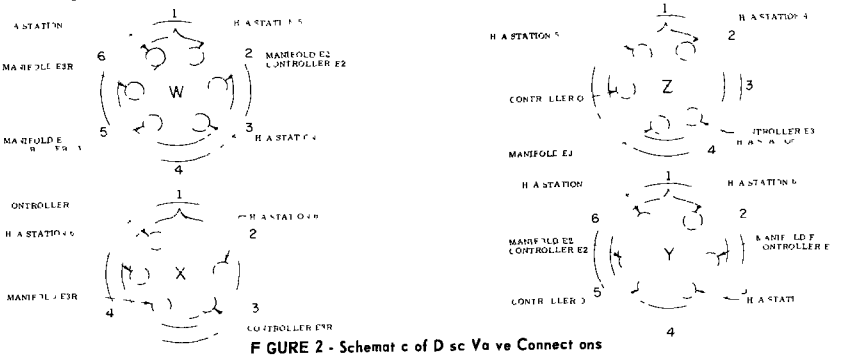


FIGURE 2 - Schematic of Disc Valve Connections

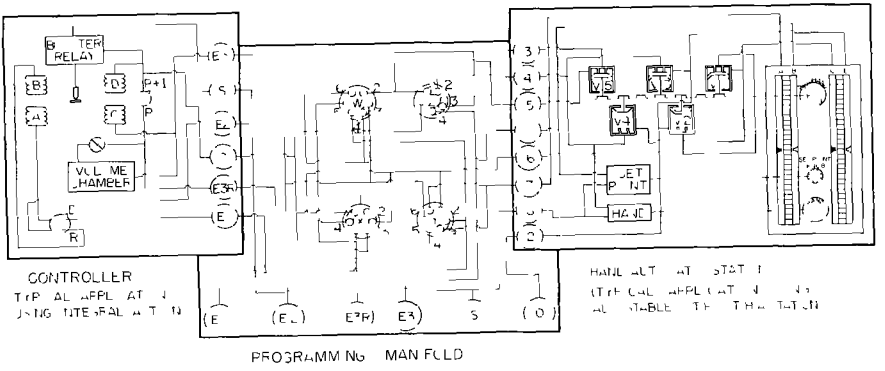


FIGURE 3 Schematic of Indicator Controller Showing Interconnections

CALIBRATION

Calibration of the Indicator-Controller consists of adjusting the Type AD Controller for service as described in Instruction Section P92 1 under "Adjustment and Calibration'. However, modify the procedure for making the required connections as follows

1 Disregard steps 1 thru 4 under Adjusting for Service" on page 7 of Instruction Section P92-1. Make required connections with Controller mounted on Indicator-Controller programming manifold

2. Set integral and derivative switches or plug in valves, direct reverse' switch, and "proportional-proportional plus integral switch to positions indicated in Table B (page 7) Set Controller gain adjustment at 1.0. (Lock gain arm in place each time it is positioned)

NOTE If integral or derivative plug in units are employed, valve will be open' or "closed" when adjusting screw is turned to full clockwise or counterclockwise position respectively.

3. Connect separate variable inputs to Indicator-Controller programming manifold (Figure 1) Plug output connection "O'. Set Indicator Controller disc valves (Figure 2) as follows

W 4 Y 4
X-3 Z 1

4. Apply midrange pressure to input connections. If full range is not used in particular system application, apply midrange pressure of actual input range employed, (i.e., for a range span of 10 to 15 psig, applied pressure should be 12.5 psig). Apply air to supply connection 'S", 30 psig for 3 to 27 psig range, 18 psig for 3 to 15 psig range.

5. Place Type AJ H/A Station in HAND position. Read input pressures applied to programming manifold on H/A Station gages

Gage A reads E1 pressure
Gage B reads E2 pressure
Gage C reads "O" pressure (Controller output)
Gage D reads E3 pressure

NOTE Refer to H/A Station instruction section for gage identification. On H/A Stations which do not include all the above gages (or if greater accuracy is required), attach separate gages or manometers to the variable input pressure lines.

6. Proceed with "Adjustment and Calibration" in Instruction Section P92-1, page 7, beginning with step 5.

The H/A Station requires no adjustments before placing in service. However, if operating faults occur which are traced to the H/A Station, refer to "Adjustments" in Instruction Section for particular Station.

TABLE A MANIFOLD CONNECTIONS VS DISC VALVE SETTINGS

Disc Valve	Position	Connection
W	1	Station 1 to manifold E3R
W	2	Station 1 to Station 5
W	3	Station 5 to manifold E2 and Controller E2
W	4	Station 1 to manifold E2 and Controller E2
W	5	Station 1 to manifold E1 and Controller E1
W	6	Manifold E3R to manifold E1 and Controller E1
X	1	Controller O to Station 6, Controller E3R to manifold E3R
X	2	Station 6 to manifold E3R
X	3	Station 6 to Controller O
X	4	Controller E3R to manifold E3R
Y	1	Station 7 to Controller E2 and manifold E2
Y	2	Station 6 to Station 7
Y	3	Station 6 to Controller E1 and manifold E1
Y	4	Station 7 to Controller E1 and manifold E1
Y	5	Station 7 to Controller output
Y	6	Controller output to Controller E2 and manifold E2
Z	1	Station 4 to Station 5, Station 3 to Controller E3 and manifold E3
Z	2	Station 3 to Controller E3 and manifold E3
Z	3	Controller output to manifold E3
Z	4	Controller output to Station 5, Controller E3 to manifold E3

MAINTENANCE

The air supply to the Indicator Controller must be clean and free from oil or moisture Felt filters are provided in the supply and out put ports of the programming manifold Check both filters shortly after the unit is first placed in operation and at regular intervals thereafter Replace the filters if they appear dirty

Check all connections to the programming manifold for leakage with a soapsuds solution All connections must be kept air tight if the unit is to function properly The disc valves (W, X, Y, and Z) should be checked for air leakage with a soapsuds solution each time repositioning is required If sufficient sealing pressure can not be obtained with the retaining screw, re place the disc valve

Maintenance of the H'A Station portion is covered in individual instruction section, see "Cross References", page 2 The AD Controller is covered in Section P92 1

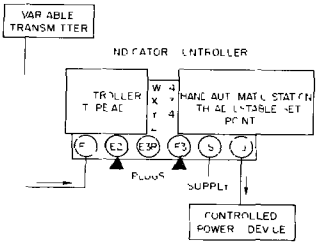


FIGURE 4 App tcat on of Ind cator Contro ler to S ng e E ement Contro System

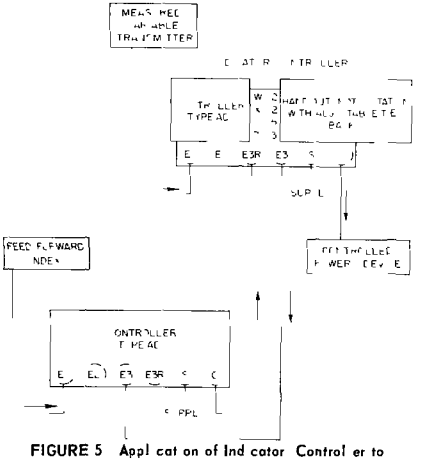


FIGURE 5 Appl cat on of Ind cator Control er to Ant c pator Computer Control System

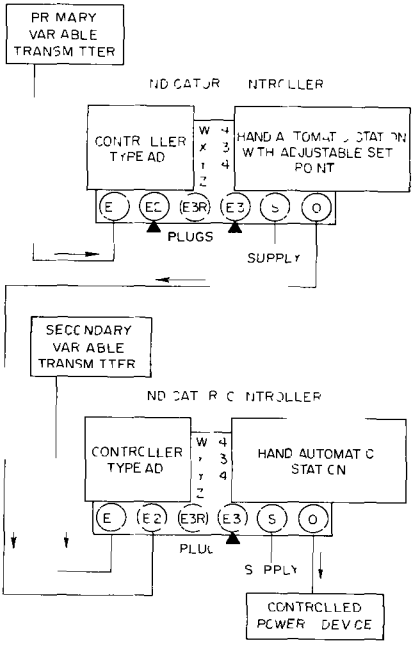


FIGURE 6 App cat on of Ind cator Contro ler to Cascade Contro System

TABLE B

CONTROLLER FUNCTION OR ACTION	DISC SWITCHES		DISC SWITCHES		PLUG-IN UNITS	
	D-R	P-P+I	Int.	Der	Int.	Der
Direct Prop.	D	P	Closed	Open	None	None
Reverse Prop	R	P	Closed	Open	None	None
Differential	D	P	Closed	Open	None	None
2 Element Controller	D	P	Closed	Open	None	None
Totalizing	D	P	Closed	Open	None	None
Signal (Range) Conversion	D	P	Closed	Open	None	None
Subtracting	R	P	Closed	Open	None	None
Floating (Pure Integral)	D	P+I	None	Open	Closed	None
Differential Floating	D	P+I	None	Open	Closed	None
Prop. Plus Integral	D	P+I	None	Open	Closed	None
Diff. Plus Integral	D	P+I	None	Open	Closed	None
Averaging, Damped Input	D	P	None	Open	Open	None
Prop Plus Derivative	D	P	Closed	None	None	Open
Diff. Plus Derivative	D	P	Closed	None	None	Open
Prop. Plus Int. Plus Der.	D	P+I(*)	None	None	Closed	Open
Diff. Plus Int Plus Der.	D	P+I(*)	None	None	Closed	Open

* P for adjustment, P+I in service

REPLACEMENT PARTS

Spare Parts Kit

The Spare Parts Kits referred to on the Parts Drawing (Figure 7) should be carried in stock. Specify the Spare Parts Kit part number to order a complete kit.

Ordering Individual Parts

A Parts Drawing for the Bailey Indicator Controller is shown in Figure 7. Normally this drawing will apply to the units furnished. However, there may be individual differences in specific units because of

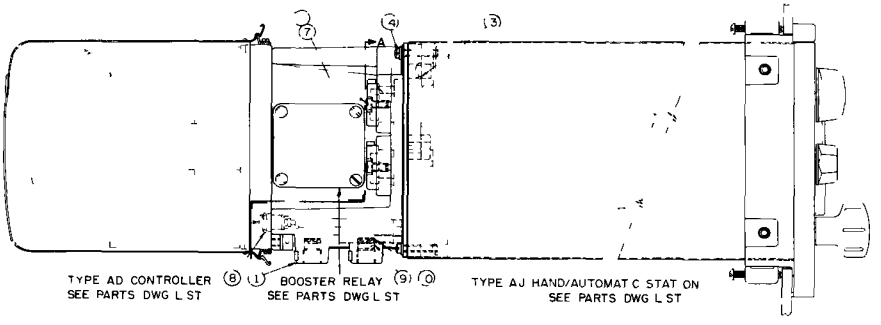
a. Design changes made since the printing of this Instruction Section.

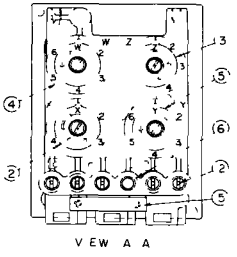
b. Special design of the Indicator Controller furnished to make it suitable for a special application.

Therefore, when ordering parts, assure the receipt of correct replacements for the Indicator Controller furnished by specifying on the order:

1. The Nomenclature and Part Number of the unit for which parts are desired.

2. The Parts Drawing on which each part is illustrated. (The Parts Drawing Number is given in the title for the Figure.)





ITEM	PART NO	NAME
1	5322320 1	PROGRAMMING MANIFOLD INCLUDES ITEMS 2 THRU 12
2	5322340 1	X SWITCH ASSY
3	5322346 1	Z SWITCH ASSY
4	5322343 1	W SWITCH ASSY
5	5322343 2	Y SWITCH ASSY
6	5322981 1	D CONN PLUG
7	10 32x3/8	FIL HD CAD PL STL SCREW, 4 REQD
8	5311428 11	O RING 6 REQD
9	5320414 1	FELT PAD, 6 REQD
10	5320413 1	WIRE MESH DISC 12 REQD
11	NO 10	SPRING LOCKWASHER CAD PL STL MED
12	5324066 1	VALVE CORE 5 REQD
13	5311428 3	O RING 8 REQD
14	10 32x5/16	PAN HD SLOT SEMS SCR 4 REQD
15	5325623 1	SWIVEL BLOCK ASSY

LIST OF ADDITIONAL PARTS DRAWINGS

INDICATOR CONTROLLER COMPONENT	INSTRUCTION SECTION	REFERENCE PARTS DRAWING
CONTROLLER	P92 1	P92 5
BOOSTER RELAY	P92 10	P92 7
SET POINT H, A STATION	P91 3	P91 9
H, A STATION (BASIC)	P91 4	P91 10
TIE BACK H A STATION	P91-6	P91 12

SPARE PARTS KIT NO 256126 1	
QTY	ITEM NO
6	8
6	9
12	10
8	13

FIGURE 7 Parts Draw ng P91 5, Ba ey M NI-LINE 500 nd cator Contro er

Product Warranty

Bailey Meter Company warrants the products manufactured by it to be free from defects in material and workmanship and will repair or replace, at its option, free of charge, f o b its factory such part or parts which prove defective within one year from date of shipment In respect to any products which are not an integral part of a product manufactured by the Company, the warranty given by the manufacturer thereof shall apply

Shipping Damage

We strongly recommend that you inspect and test your instrument as soon as you receive it If the instrument is damaged or operates improperly, not fy the carrier for inspection of the shipment The carrier's claim agent will prepare a report of damage, a copy of which should be forwarded to your nearest Bailey District Office (see back cover for location) The District Office will then tell you how to have the instrument repaired or replaced

Service

The Bailey Meter Company is vitally concerned that your Bailey instrument provides continued, fine performance This instruction manual is designed to fully describe the correct installation operation, and maintenance of your instrument under recommended conditions If the need arises, factory trained Service Engineers are on call for prompt, in plant maintenance Telephone or wire your nearby Bailey District Office to make arrangements for this service

Replacement Parts and Supplies

Complete parts drawings and recommended spare parts kit information are included in this instruction manual When replacement parts or supplies are required for maintenance of your Bailey instrument contact your nearest Bailey District Office (see back cover for location) Always specify complete data on the instrument nameplate on your inquiry or order for parts Common parts are available for shipment within 48 hours on a speed order basis

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