



Series 7206.30 INSTRUCTION MANUAL
Basic Function Manual/Auto Stations
with Switched Input and Switched Output

This manual covers Model 7211-330-00

SAFETY WARNINGS

(Safety symbols and terminology per ANSI Z21.)

Failure to comply in full with the following safety requirements can result in equipment damage and personal injury/death.

1. Read the entire manual to become familiar with the use and operation of this device.
2. Only qualified personnel should attempt to install, wire, commission, startup, service or operate this device.
3. This device is not suitable for use in an explosive ambient atmosphere.
4. Before working on this device, be sure that you understand the processes affected by this device completely.
5. Before working on this device, be sure that any process affected by this device is secure and safe for servicing.
6. Take appropriate precautions to avoid electric shock when working with this device near water.
7. Exercise caution while wiring or working on this device. Multiple voltage sources may be present: take appropriate precautions to avoid electric shock.

CLEVELAND CONTROLS, INC.

A SUBSIDIARY OF COMBUSTION EQUIPMENT ASSOCIATES INC.

1111 BROOKPARK RD.

CLEVELAND, OHIO 44109

216/741-9444

TELEX 98-5485

**CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000
INSTRUCTION MANUAL****CONTENTS**

1. INTRODUCTION
 - 1.1 DESCRIPTION
 - 1.2 SPECIFICATIONS
 - 1.3 MODEL NUMBERING SYSTEM
 - 1.4 INDICATORS & OPERATOR CONTROLS
 - 1.5 SERVICE CONTROLS
2. INSTALLATION
 - 2.1 MECHANICAL
 - 2.2 ELECTRICAL INSPECTION
 - 2.3 FIELD WIRING
3. OPERATION
4. CIRCUITRY
5. MAINTENANCE
 - 5.1 FACTORY SERVICE
 - 5.2 REPLACEABLE PARTS

ILLUSTRATIONS**FIGURE 1
DIMENSIONS – INSTALLATION****FIGURE 3
FIELD WIRING****FIGURE 2
FRONT PANEL****FIGURE 4
SCHEMATIC
MODELS 7211-33X-00**

**CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000**

1 INTRODUCTION

1.1 Description:

The Cleveland 7211-33X-00 Station is one of a series of panel mounted electronic instruments designed to generate or condition standard process control signals. The station has two modes of operation, manual and automatic. In the manual mode, the station permits direct manual control of a 120 v remote actuator and provides position indication for any actuator equipped with a position potentiometer. In the automatic mode, the station output is connected to a remote 120 v increase-decrease signal source.

1.2 Specifications:

POWER REQUIREMENTS:	120 vac nominal 105-130 vac 50-60 hz, .03a
ISOLATION:	300 v maximum ac lines to case or ac lines to dc lines
INPUT SIGNAL:	120 vac
OUTPUT SIGNAL:	120 vac
OUTPUT LOAD:	1.9 a maximum
OPERATING AMBIENT TEMPERATURE RANGE:	5 to 50° C. 41 to 122° F.

Actuator Position Potentiometer Requirements:

ACTIVE RANGE:	60% minimum
RESISTANCE:	135 to 5000 ohms

1.3 Model Numbering System:

The Station is described by its model number as indicated below. The last two digits will normally be 00 unless the station contains a special feature which has been assigned a suffix number by the factory. Special features are described in an instruction manual supplement.

**CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000**

7 A B C - D E F - G G

A. Type:		
Manual - Automatic Station		2
B. Function:		
Basic		1
C. Power Supply:		
Internal		1
D. Input:		
Switched		3
E. Output:		
Switched		3
F. Auxiliary Meter:		
None		0
4 to 20 ma		1
1 to 5 v		2
GG. Special Feature:		
None		00

1.4 Indicators and Operator Controls:

1.4.1 Position Meter:

The POSITION meter, located at the top of the front panel, indicates the actuator position in percent of maximum actuator travel.

1.4.2 Auxiliary Meter (Optional):

The AUXILIARY meter, located below the POSITION meter, is isolated from all other station circuitry, allowing it to be connected to any circuit without additional isolation.

1.4.3 Man-Auto Switch:

The MAN-AUTO switch, located at the right center of the front panel, is used to select either the manual or automatic operating mode. In automatic operation, the actuator is connected directly to the station input terminals and the INCREASE-DECREASE switch is inoperative. In the manual mode, the input signal is turned off and the operator controls the actuator with the INCREASE-DECREASE switch.

**CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000**

1.4.4 Increase-Decrease Switch:

The INCREASE-DECREASE switch, located at the left center of the front panel, is a three position, normally off, momentary switch, used by the operator to manually increase or decrease the actuator position.

1.5 Service Controls:

The single turn span control is used to adjust the POSITION meter for 100% indication when the actuator is at its desired maximum "increase" position. Turning the control clockwise increases the meter indication. The span control does not affect the actual position of the actuator. The POSITION meter is zeroed by adjusting the actuator position potentiometer for 0 v at terminals 4 and 5 when the actuator is at its 0% position.

2 INSTALLATION

2.1 Mechanical:

Panel cutouts may be made by referring to figure 1. CAUTION! While the station is ruggedly constructed, meters are inherently susceptible to damage from rough handling or severe vibration. Do not install the station in a panel until the panel machining has been completed.

2.2 Electrical Inspection:

If desired, the station may be bench tested prior to installation to assure that it is working properly and to familiarize the user with its operation. Before proceeding, read section 1.4.

- 2.2.1 Switch the MAN-AUTO switch to MAN.
- 2.2.2 Connect the station to an actuator and to 120 v power shown in figure 3.
- 2.2.3 Operate the INCREASE-DECREASE switch and see that the actuator responds accordingly.
- 2.2.4 See that the POSITION indicator is working and that it can be scaled with the span control.
- 2.2.5 Switch the MAN-AUTO switch to AUTO.
- 2.2.6 Connect terminal 10 to terminal 1 to produce an increase signal.
- 2.2.7 See that the actuator moves in the increase direction.
- 2.2.8 Remove the connection to terminal 10 and connect terminal 1 to terminal 11.

**CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000**

7206.30

INSTRUCTION MANUAL

2.2.9 See that the actuator moves in the decrease direction.

2.3 Field Wiring:

The station should be wired as shown in figure 3 with particular attention given to the 120 v phasing. Note that the terms "increase" (inc) and "decrease" (dec) as used in this manual, refer only to the direction of actuator travel, not the actual result of that travel. An actuator may, therefore, be used to decrease a flow, temperature, etc. when it moves in the "increase" direction.

The direction of actuator travel may be reversed by interchanging the connections to motor terminals 8 and 9. The position indication may be reversed by interchanging the wires connected to terminals 3 and 5.

3 OPERATION

The operator should familiarize himself with the function of front panel controls described in section 1.4 of this manual. There will normally be no need to disturb the service adjustment on the rear panel. When needed, such adjustment should be made only by qualified service personnel. The station requires no regular maintenance.

4 CIRCUITRY

Transformer T1 isolates the POSITION meter circuitry from the ac line and provides low voltage ac to rectifiers D1 and D2. The rectified output of T1 is filtered by C1 to provide +5.1 vdc to zener diode D3. D3 supplies a constant +5.1 v to voltage regulator transistor Q1. The regulated 4.4 v output of Q1 appears at terminal 3. The return voltage from the wiper of a remote position potentiometer is connected to terminal 4 and passes through R4 to Q2. Q2 is used as a voltage limiter to protect POSITION meter M1. Span control R8 provides an adjustable series resistance to span M1. Q3 protects optional AUXILIARY meter M2 in the same manner. Fixed resistors R3 and R5 span suppressed ZERO meter M2 for a 1 to 5 v input range. R6 converts 4 to 20 ma signals to 1 to 5 v.

S1 provides the increase and decrease output signal by connecting either terminal 8 or terminal 9 to 120 vac at terminal 1. S2 connects motor terminals 8 and 9 either to S1 for manual operation or to input terminals 10 and 11 for automatic operation.

5 MAINTENANCE

5.1 Factory Service:

It is recommended that repairs be attempted only by persons thoroughly familiar

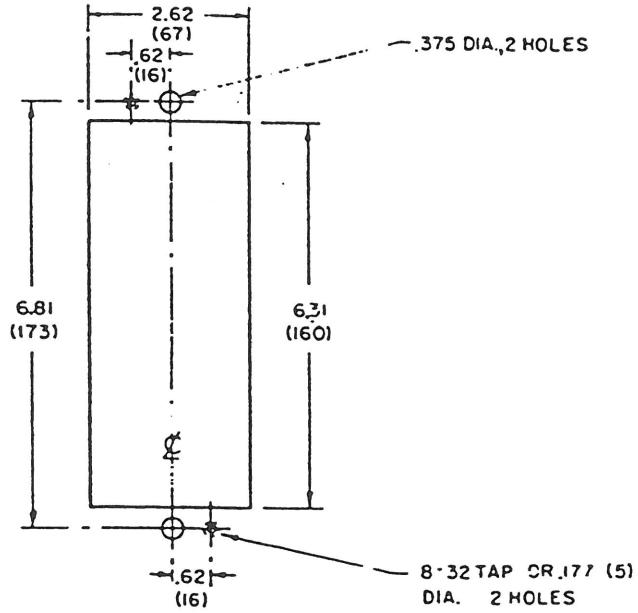
**CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000**

with solid state analog control circuitry. A defective station may be returned to the factory for repair service. Factory authorization must be obtained before shipping. Pack the station securely and include a detailed description of the difficulties experienced. Replacement parts may also be obtained from the factory. Include model and serial number in the order.

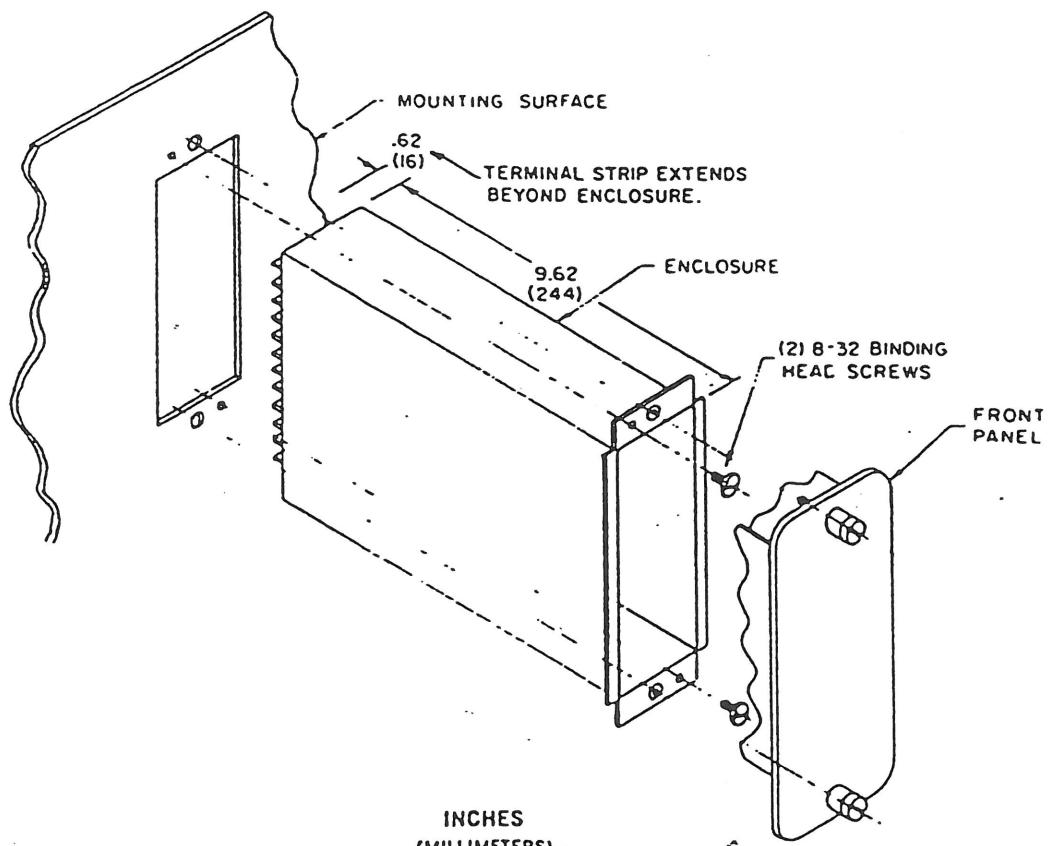
5.2 Replaceable Parts:

ITEM	PART NO.	DESCRIPTION
C1	AC14482	Capacitor, 250 mf. 50 v electrolytic
D1	AC18102	Diode, 1N5060
D2	AC18102	Diode, 1N5060
D3	AC15873	Diode, 1N4733A
F1	AC10957	Fuse, 2 amp quick acting
M1	AC16766	Meter, 0-200 microampere
M2	AC20299	Meter, 50-250 microamp (optional)
Q1	AC14526	Transistor, 2N3053
Q2	AC15682	Transistor, 2N3417
Q3	AC15682	Transistor, 2N3417
R1	AC16291	Resistor, 150 ohms 5% 1/2 watt carbon composition
R2	AC13549	Resistor, 1000 ohms 5% 1/2 watt carbon composition
R3	AC20306	Resistor, 4,640 ohms 1/4 watt metal film
R4	AC15528	Resistor, 4,700 ohms 1/2 watt carbon composition
R5	AC20307	Resistor, 15,000 ohms 1/4 watt metal film
R6	AC17374	Resistor, 250 ohms 3 watt wire wound
R7	AC14132	Resistor, 5,600 ohms 1/2 watt carbon composition
R8	AC21064	Potentiometer, 20,000 ohms Beckman 72 PM
S1	AC11193	Switch, S.P.S.T., toggle
S2	AC10927	Switch, D.P.D.T., toggle (models 7211—only)
T1	AC20746	Transformer, special power
TS1	AC20762	Block, 11 pole barrier
	AC13940	Pad, transistor
	AC10958	Post, fuse

CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000



MOUNTING SURFACE CUT-OUT

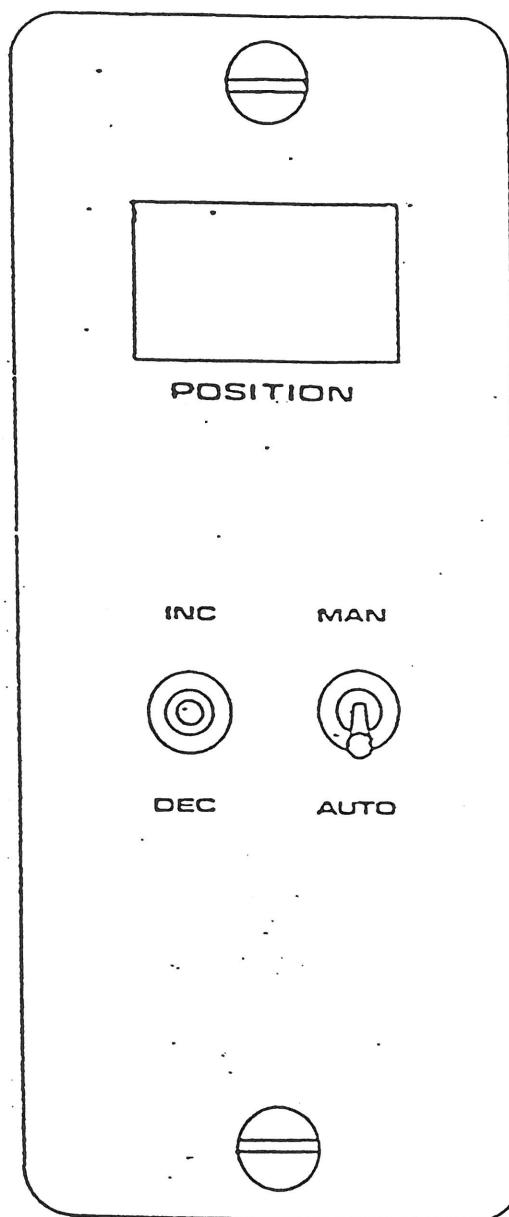


INCHES
(MILLIMETERS)

DIMENSIONS — INSTALLATION

FIGURE 1

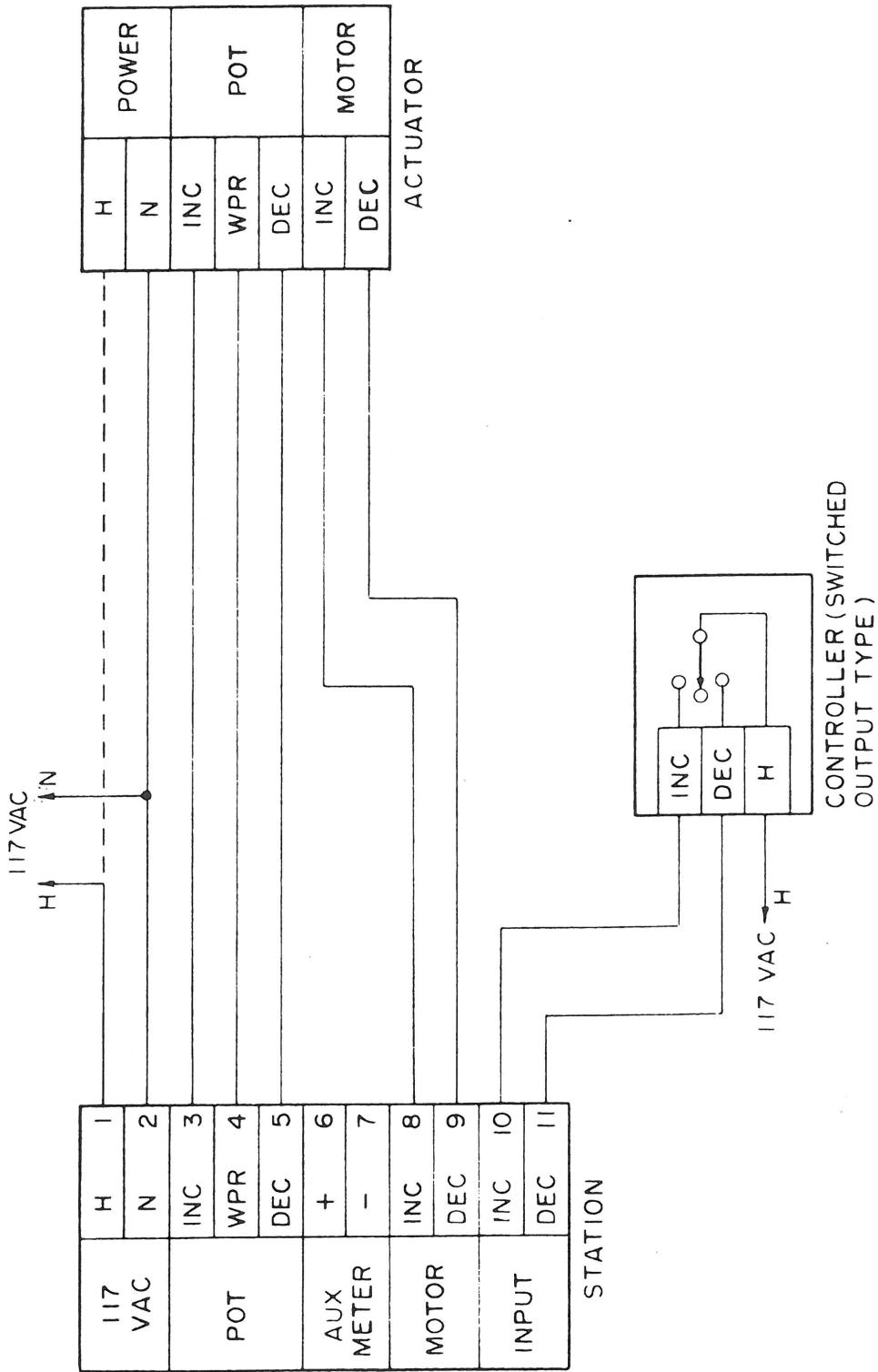
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SWITCHED FUNCTION
SERIES 7000



MANUAL/AUTO BASIC STATION WITH POSITION METER ONLY

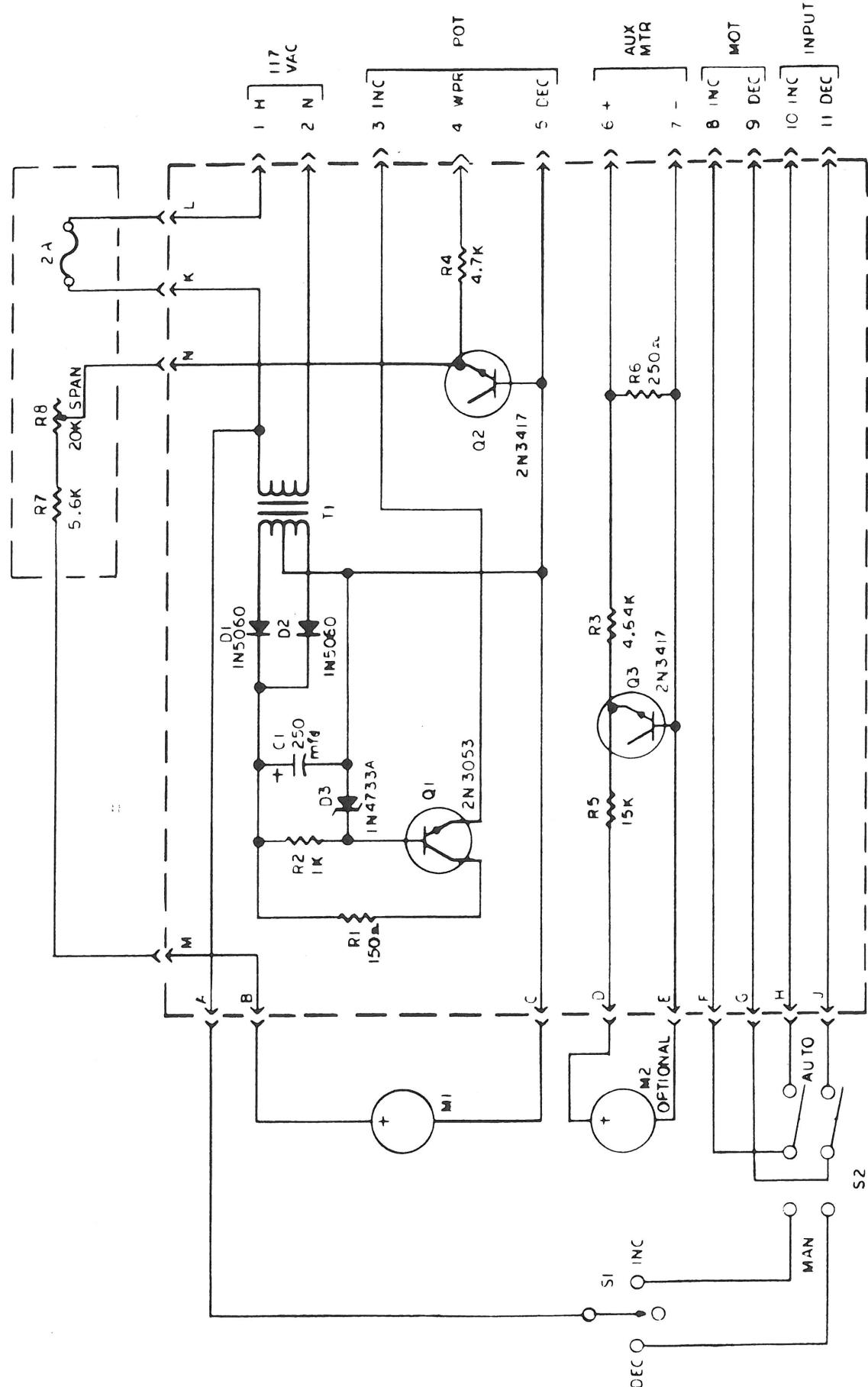
FRONT PANEL
FIGURE 2

**CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000**



FIELD WIRING FIGURE 3

CLEVELAND MANUAL/AUTO STATIONS
SWITCHED FUNCTION
SERIES 7000



SCHEMATIC
MODELS 7211-33X-00
FIGURE 4

CLEVELAND MANUAL/AUTO STATIONS
 SWITCHED OUTPUT FUNCTION
 SERIES 7200

ADDENDUM

DIGITAL POSITION METER

POSITION ADJUSTMENTS:

- 1) Apply a 0% signal to the input and adjust the zero control to move the actuator to the desired minimum position.
- 2) Apply a 100% input signal and adjust the span control to move the actuator to the desired maximum position.
- 3) If unable to adjust for steps 1 and 2, check the feedback potentiometer calibration. Place actuator in the minimum position. Remove field wiring from terminals X1, Y1, and Z1. Set potentiometer for 10 ± 2 ohms for a 1K potentiometer, or 40 ± 8 ohms for a 4K potentiometer.

METER ADJUSTMENTS:

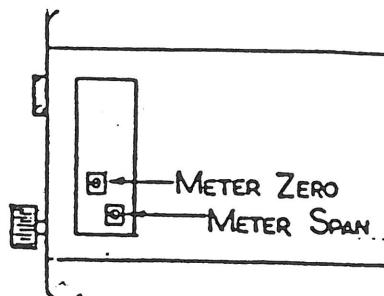
- 1) To gain access to the meter adjustments, loosen the two front panel screws and slide the chassis out until the adjustments are in view. Take care not to ground any line voltage terminals. The adjustments are located on the meter pc board.
- 2) Apply a 0% signal to the input (minimum position).
- 3) Set the meter "zero" potentiometer so that the digital meter reads "00".
- 4) Apply a 100% signal to the input (maximum position).
- 5) Set the meter span potentiometer so that the digital meter reads "100".

NOTE: PARAGRAPH 1.4.1, "Position Meter", in this manual,
 NO LONGER APPLIES.

REPLACEABLE PARTS:

P/N 30050 Digital Meter
 P/N 30044 PC Board Assembly

METER ADJUSTMENT LOCATIONS





CUSTOMER SERVICE INFORMATION

Contacts

Hays Cleveland Sales Office

1903 South Congress Avenue

Boynton Beach FL 33426

Telephone: 561.734.9400

Fax: 561.734.8060

email: salescombustion@unicontrolinc.com

Hays Cleveland Customer Service Department

1111 Brookpark Road

Cleveland OH 44109

Telephone: 216.398.4414

Fax: 216.398.8556

email: customerservice@unicontrolinc.com

Visit us on the WEB!

<http://www.hayscleveland.com>

Repairs

Damaged or defective units may be returned to the factory for repair. However, factory authorization must be obtained before shipping whether warranty or non-warranty service is required, and all units must be shipped prepaid.

A letter of transmittal that includes the following information should accompany the returned instrument:

1. Location, type of service, and length of time in service of the unit.
2. Description of the faulty operation of the device and the circumstances of the failure.

3. Name and telephone number of the person to contact if there are questions about the unit.
4. Indicate whether warranty or non-warranty service is requested.
5. Attach Purchase Order for all out-of-warranty repairs.
6. Complete shipping instructions for the return of the repaired instrument.
7. Original purchase order number and date of purchase.
8. Return Goods Authorization number provided by the factory when you called.

Clearly label the shipping container:

RETURN FOR REPAIR

Model _____

RG # _____

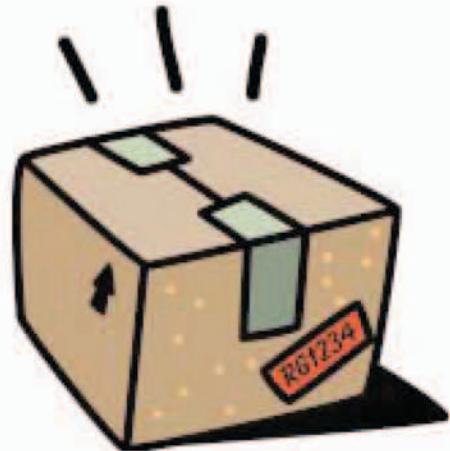
Ship prepaid to:

HAYS CLEVELAND

1111 Brookpark Road

Cleveland OH 44109-5869

216-398-4414



Please follow this procedure. It expedites handling of the returned item, and avoids unnecessary additional charges for inspection and testing to determine the problem before repairing it.

Service

A Maintenance and Service Contract can ensure trouble-free, economical operation of **Hays Cleveland** equipment for many years. One-time on-site service by a factory-trained service engineer can also be provided as needed. Contact Hays Cleveland for information on these service options.

Standard Terms and Conditions of Sale

TERMS OF SALE: 1% discount if paid in ten (10) days, net amount due and payable in thirty (30) days.

AGREEMENT OF SALE: Acceptance by Seller of any order placed for goods whether submitted on Buyer's purchase order form or on seller's Sales Order Acknowledgment form, shall be subject to Seller's Standard Terms and Conditions of Sale and is conditioned upon the Buyer's acceptance of these Standard Terms and Conditions.

TERMS OF CONTRACT: Any terms or conditions of the buyer's order which are inconsistent with these terms and conditions shall not be binding on the Seller and shall not be considered applicable to the sale or shipment of goods or materials. Unless buyer shall notify Seller in writing to the contrary within ten (10) days after the mailing of the Sales Contract by Seller, acceptance of the terms and conditions hereof by Buyer shall be indicated and, in the absence of such notification, the sale and shipment by Seller of the goods and materials covered hereby shall be conclusively deemed to be subject to the terms and conditions hereof.

PRICES: All prices and specifications and applicable discounts are subject to change without notice. Sales contracts which call for delivery in the future will be billed at prices in effect at the time of shipment. Shipping weights shown are approximate and subject to change without notice.

SHIPMENT AND PAYMENTS: All prices contained on the Sales Contract are F.O.B. factory in Cleveland, Ohio. No freight is allowed on any shipments. Shipments and deliveries shall at all times be subject to the approval of Seller's Credit Department, and at any time seller may require payment in advance or satisfactory security or guarantee that invoices will be promptly paid when due. If buyer fails to comply with any terms of payment, seller, in addition to its other rights and remedies, but not in limitation thereof, reserves the right to withhold further deliveries or terminate the Agreement, and any unpaid amount thereon shall become due immediately. Terms of payment shall be as set forth on the Sales Contract.

DELAYS AND DEFAULTS: Delays or defaults in delivery by Seller of the goods and materials covered by the Sales Contract shall be excused so far as the same is caused by fire, strikes, accident, governmental regulation, or any delays unavoidable or beyond reasonable control of Seller. In no event shall Seller be liable for any consequential, special, or contingent damages on account of any default or delay in delivery.

NONCANCELLATION: Orders are not subject to suspension, reduction, or cancellation, except on terms that will indemnify Seller against loss.

SPECIFICATIONS: Seller relies on specifications and other data furnished by the Buyer, an architect, contractor, or consulting engineer in all phases of the work covered by the Sales Contract. Seller shall be responsible to check quantities only. Alterations to or changes in specifications, approval of samples, changes in delivery instructions and all other instructions must be submitted in writing to Seller.

In the event Seller performs design or engineering work at the request of Buyer, an architect, contractor, consulting engineer, or representative in any phase of the work covered by the Sales Contract, Seller shall not be responsible for any damages claimed by Buyer as a result of alleged errors or defects in such design or engineering work.

WARRANTY AND LIMITATION OF LIABILITY: Seller warrants that the goods supplied by it have been manufactured in accordance with its standard manufacturing practices and conform to the contract or catalog description set forth in the order. Seller further warrants that the goods supplied by it are fit for the ordinary purpose or purposes specified in its catalog for which such goods are used when installed in accordance with Seller's recommended installation procedures. Except as stated herein, Seller makes no express warranty with respect to goods supplied by it and Seller makes no warranty that the goods are fit for any particular purpose.

When the use of materials not manufactured by Seller is suggested by Seller's recommended installation procedures or otherwise, Seller makes no express warranty with respect to such materials nor that such materials are merchantable or fit for any particular purpose.

Seller will, at its sole option, credit, repair or replace, any goods supplied by it which its examination shall disclose to its satisfaction are defective in workmanship or material and are returned to it within one year from the date of shipment and any claim not made within this period shall conclusively be deemed waived by Buyer. Credit, repair or replacement will be preconditioned upon examination of the goods by Seller, and, if requested by Seller, return of the goods to Seller at its direction and expense. No goods are to be returned to Seller without its written consent. Seller shall not be liable for any expense incurred by Buyer in order to remedy any defect in its goods. Seller shall not be liable for any consequential, special, or contingent damage or expense, arising directly or indirectly from any defect in its goods or from the use of any defective goods. The remedies set forth herein shall constitute the exclusive remedies available to Buyer and are in lieu of all other remedies.

CLAIMS: Claims for shortage of goods or for mistakes or errors in billing must be presented within forty-five (45) days from the date of shipment of goods and must state the packing slip number and container number applicable to the claim. Any claim not so presented will be conclusively deemed waived.

TAXES: Any federal taxes or other government charges on the sale, shipment, or installation of the goods or equipment covered by the Sales Contract shall be added to the price and paid by Buyer, or, in lieu thereof, the Buyer shall furnish the Seller with tax-exemption certificates acceptable to the taxing authority. The procedure also applies to duty and other similar charges on export sales. Seller is not responsible for sales and/or use tax in any state other than Ohio. The purchase made under this Sales Contract must be exempt or paid directly by Buyer. If Seller is required to pay any such tax, there shall be added to the prices quoted herein all such state and local taxes. Buyer agrees to reimburse and save Seller harmless from all such state and local taxes, including interest and penalties thereon, which may at any time be payable to any state or local government unit with respect to the sale of any goods or materials covered by the Sales Contract.

CORRECTIONS: Typographical or clerical errors contained in the Sales Contract, including prices, are subject to correction by the Seller.

FAIR LABOR STANDARDS: All goods covered by the Sales Contract have been produced in conformity with all applicable provisions of the Fair Labor Standards Act of 1938 as amended.

RENEGOTIATION: Unless advised by Buyer in writing, Seller assumes that Buyer's order and the Sales Contract are not renegotiable under the Renegotiation Act of 1951.

APPLICABLE LAW: All questions arising out of the Sales Contract, which shall be deemed an Ohio contract, shall be governed by the laws of the state of Ohio.

EXCLUSIVE TERMS: The Sales Contract shall constitute the complete contract between the parties, and no one has authority to depart from the terms and conditions set forth therein, nor to make any representations or arrangements other than those printed thereon whether in the execution or in the performance of the Sales Contract, unless the same are written on the face of the Sales Contract or are given in writing with it or in pursuance of it, and are fully approved in writing by an officer or authorized employee of the Seller.

LIMITATION FOR SUITS: Any controversy or claim arising out of or relating to this Sales Contract or the breach thereof, must be commenced within one (1) year after the cause of action accrued.

