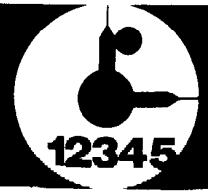


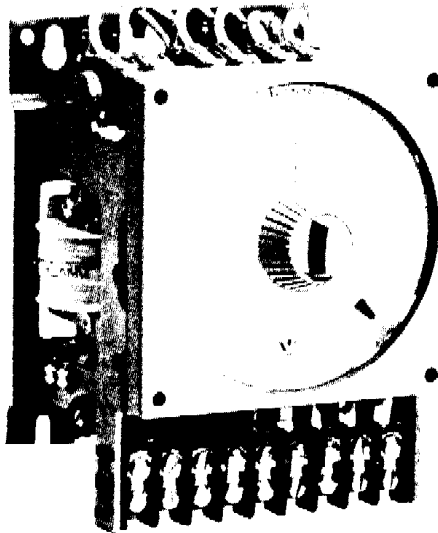
# TIME CONTROL



## HA MICROFLEX® SERIES RESET TIMERS

HA

## SPECIFICATIONS



The MICROFLEX® is a synchronous motor driven reset timer. The unit is available in 9 time ranges from 20 seconds to 120 hours. A solenoid operated clutch engages motor driven gear assemblies and closes or opens 3 sets of 15 ampere silver contacts in any of 6 separate sequences. Sequence changes are made by the orientation and location of 3 different trip bar lugs. The timer has 5 field selectable methods of starting and resetting including reverse action clutch. The reverse action clutch will not reset on power failure. Changing from standard action to reverse action clutch will not alter switch operating sequences. The timer has a 4" diameter outer dial and a smaller inner dial with a 20-1 turn ratio providing micrometer type adjustments. A cycle progress pointer and a locking setting knob are standard features.

Options include:

- Key lock on setting knob to prevent tampering (HA10-361).
- Back of panel mounting with front of panel adjustability.
- Flush panel mounting

### OPERATION

Application of power to the motor and clutch solenoid starts the timer. As the clutch closes, a contact lift bar raises, closing or opening three sets of contacts. The contacts are supported by fingers which ride on trip bar lugs, positioned on a trip bar.

At time out the trip bar shifts, dropping the contact fingers and changing the contacts position. The timer will remain in this position until reset.

### Time Ranges

Sym	Dial	Minimum Setting	Dial Divisions	No. of Divisions on Inner Dial	Accuracy
0	20 Sec	1/15 Sec	1/100 Sec	100	±0.02 Sec
1	60 Sec	1/5 Sec	1/20 Sec	60	±0.06 Sec
2	120 Sec	2/5 Sec	1/10 Sec	60	±0.12 Sec
10	5 Min	1 Sec	1/4 Sec	60	±0.3 Sec
3	20 Min	4 Sec	1 Sec	60	±1.2 Sec
4	60 Min	15 Sec	5 Sec	36	±3.60 Sec
5	120 Min	25 Sec	5 Sec	72	±7.2 Sec
6	20 Hr	4 Min	1 Min	60	±1.2 Min
8	120 Hr	25 Min	5 Min	72	±7.2 Min

### Repeat Accuracy

1/10 of 1% maximum. Resetting accuracy constant with micrometer dial setting.

### Reset Time

700 ms Full Scale Setting

### Voltage/Frequency

120 VAC (+10% -15%) 50/60 Hz  
240 VAC (+10% -15%) 50/60 Hz

### Operating Voltage

+10% to -15% of rated voltage.

### Contact Rating

15 Amps, Resistive, 120 VAC, 60 Hz  
10 Amps, Resistive, 240 VAC, 60 Hz

### Burden

Clutch Coil	Inrush	Maintained
120 VAC 50/60 Hz	272	36 VA
240 VAC 50/60 Hz	168	60 VA

Motor — 5 Watts Maximum

### Operating Temperature

0°F to +140°F (-18°C to 60°C)

### Contact Life

2,000,000 at Contact Rating

### Vibration

Unaffected by 2.5G sinusoidal vibration magnitudes in both directions of three perpendicular mounting axes imposed from 10 to 1000 Hz.

### Laboratory Testing

U.L. Recognition E-81735  
F.M. Approved

### Ordering Information

See back page of this bulletin.

### Enclosures and Accessories

Refer to Bulletin 2500

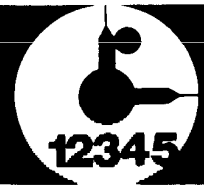
### Approximate Weight

3 lb. 13 oz.

## Eagle Signal Controls

A Mark IV Industries Company  
8004 Cameron Road, Austin, Texas 78753 U.S.A.

BULLETIN 110



## CONTACT OPERATION

Each contact is designated by a sequence number.

1st Pos. — Method of Starting and Resetting

2nd Pos. — Sequence of L.H. Contact

3rd Pos. — Sequence of Center Contact

4th Pos. — Sequence of R.H. Contact

Specify proper code designations on wiring diagrams and when ordering.

**B 2 1 2**

The letter symbol designation representing the method of starting and resetting, together with three numerical symbols, designating each of three contact actions, condenses the information into an OPERATING ARRANGEMENT symbol, i.e., A212, B213, C222, etc.

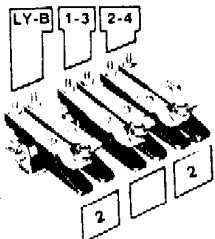
## METHODS OF STARTING AND RESETTING

A	For use with momentary contact start switch. Energize to start. Automatically resets at end of timing. Resets on power interruption.
B	For use with maintained contact control switch. Energize to start. Deenergize to reset. Resets on power interruption.
C	For use with momentary contact switch which may stay closed indefinitely. Energize to start. Deenergize to reset. Resets on power interruption.
D	For use with stop-start button. Push start button to begin timing. Push stop button to reset. Resets on power interruption.
R	For use when opening control switch starts timing; close control switch to reset. A power interruption stops timer motor without resetting to "0".

## CLUTCH COIL OPERATION

Symbol "A-B-C-D" indicates clutch coil is energized to start and deenergized to reset.

Symbol "R" indicates clutch coil is energized to reset and deenergized to start.



Timer will be shipped set for arrangement B212 unless otherwise specified.

For a complete explanation of operating arrangements and adjustments, request Bulletin 110-C. Also available is Bulletin 110E, timer parts list.

## CONTACT SEQUENCE

The numerical symbols designate action of the timer switches. The MICROFLEX® has 3 positions during its operating cycle. Each timer switch can be OPEN or CLOSED in each position.

Left contact (LY-B) or left contact and center contact (1-3) are normally used as internal timer control circuits.

Contact LY-B must always be sequence "2" when used with a momentary start impulse.

## LOAD CONTACT CHART

O - CONTACTS OPEN  
X - CONTACTS CLOSED

Sequence Number	SWITCH POSITIONS		
	Reset	Timing	Timed-Out
1*	O	O	X
2	O	X	O
3* †	X	X	O
4†	X	O	X
5	O	X	X
6	X	O	O

\* Sequence 1 and 3 should not be used with starting method "A" or "C" where unit automatically resets. Contact closure time is short and not useable.

† Contact bounce may be a problem when sequence 3 or 4 is used for holding circuit for motor starter or relay.

A slight time loss occurs due to acceleration of the timer motor to synchronous speeds. The percentage error is negligible except on time settings less than one or two seconds. Where necessary to insure 0.1 second accuracy on the 120 second timers, the timer motor should be wired to run before the clutch becomes engaged.

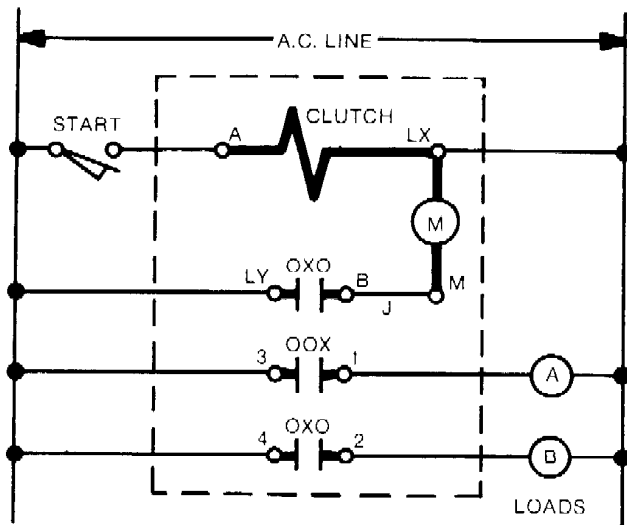
In these applications, it is recommended that the motor be wired in series with contact 1-3, the same as arrangement C, with contact 1-3 set for sequence 3. The operating arrangement would then be C23. Thus the motor will run in reset and timing but will be cut off in Timed-Out condition.



## WIRING DIAGRAMS

**Bold Lines are Internal Wiring**

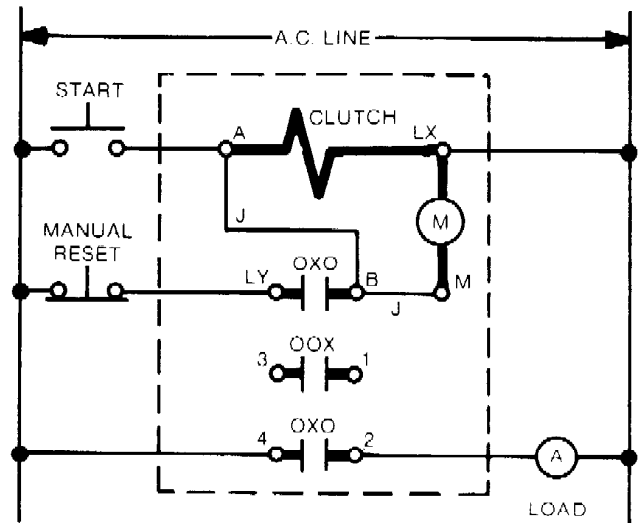
**J** Indicates Factory Installed Jumpers Which Are Easily Removable



**OPERATING ARRANGEMENT B212**

*Figure 1*

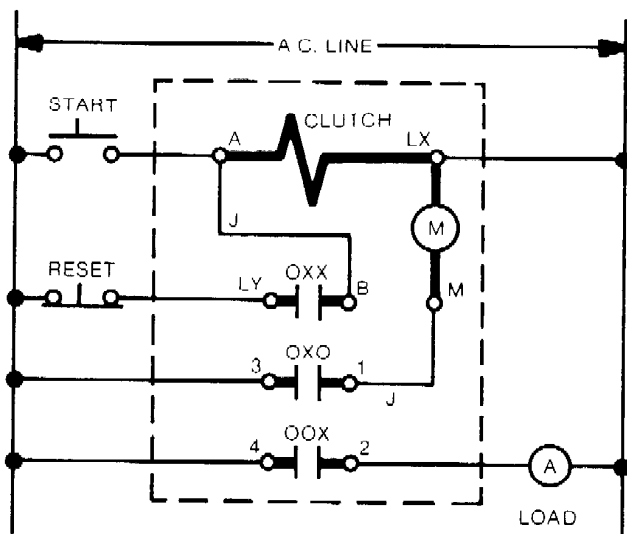
Sustained Start — Close to Start, Open to Reset.  
Resets on power failure.



**OPERATING ARRANGEMENT A212**

*Figure 2*

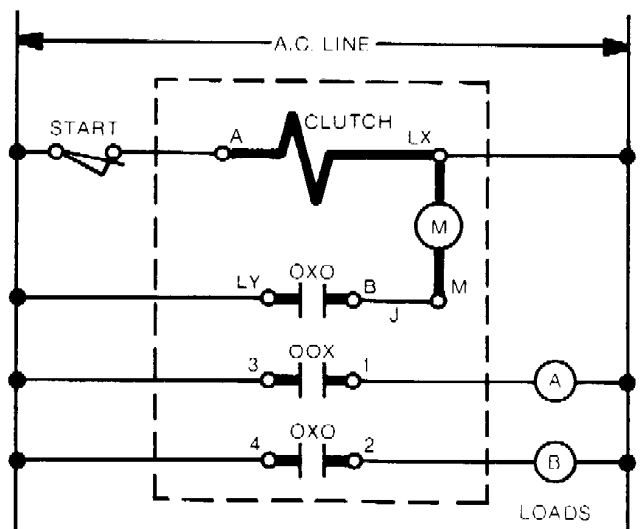
Momentary Start — Close to Start, Automatic Reset.  
Manual reset is optional. Resets on power failure.



**OPERATING ARRANGEMENT D521**

*Figure 3*

Momentary Start, Manual Reset — Resets on power failure.



**OPERATING ARRANGEMENT R212**

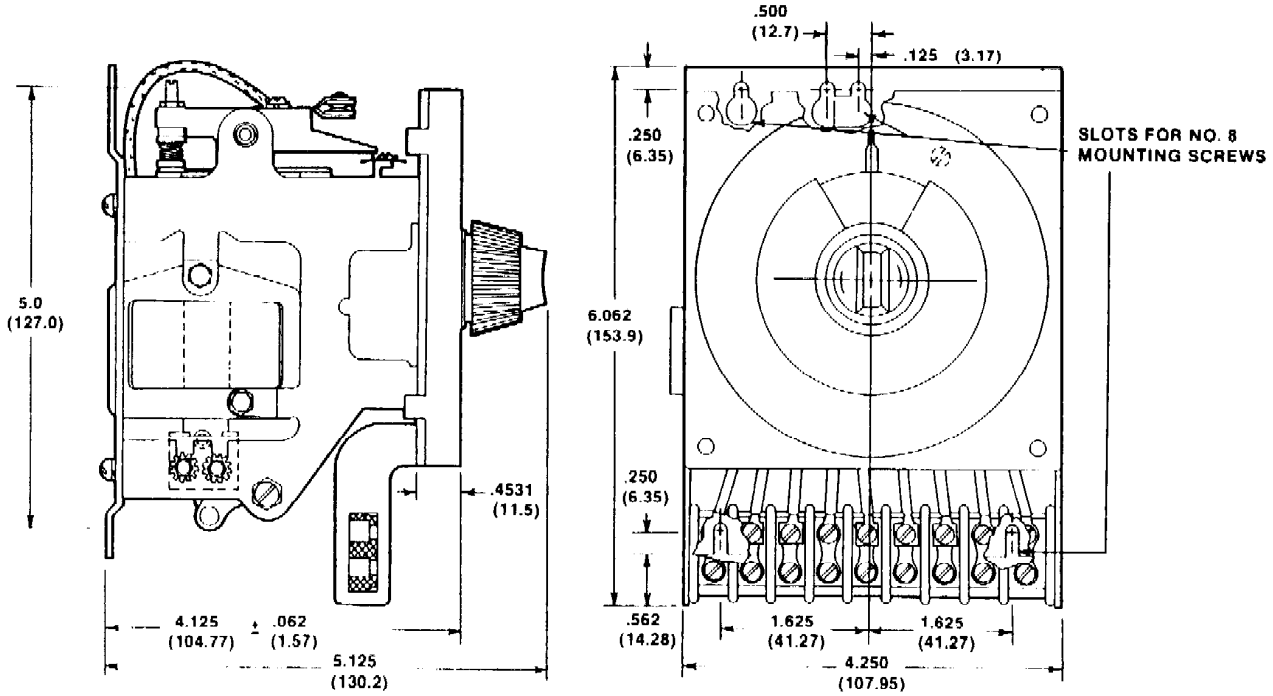
*Figure 4*

Close to Reset - Open to Start. Does not reset on power failure.

# TIME CONTROL



## MOUNTING DIMENSIONS



NOTE: Lubrication and cleaning is important on this instrument. See Bulletin 110-C.

## ORDERING INFORMATION

Consult Eagle for availability of other voltages and frequencies.

