

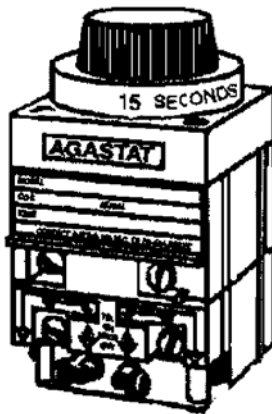
1. INTRODUCTION

This instruction sheet covers the installation and operation of the AGASTAT* Nuclear E7000 Series 2-Pole Timing Relays (Models E7012 and E7022). Read these instructions thoroughly before installing the relay.

NOTE Dimensions in this instruction sheet are in millimeters [with inches in brackets]. Figures are not drawn to scale.

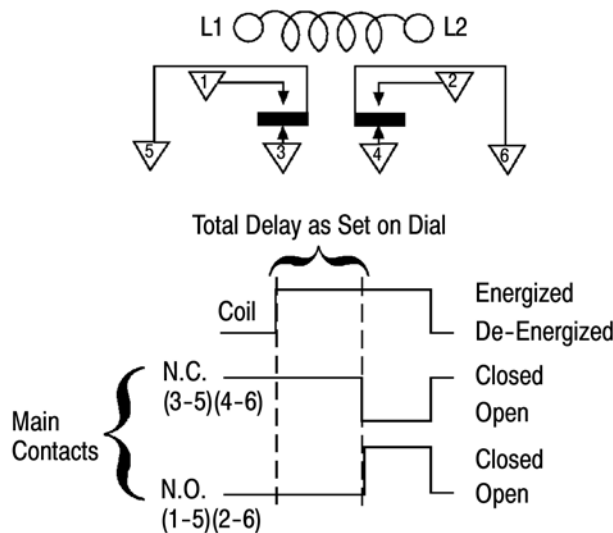
2. DESCRIPTION (Figure 1)

Each relay is a precise timing instrument which balances pneumatic, electrical, and mechanical forces using a minimum of moving parts.

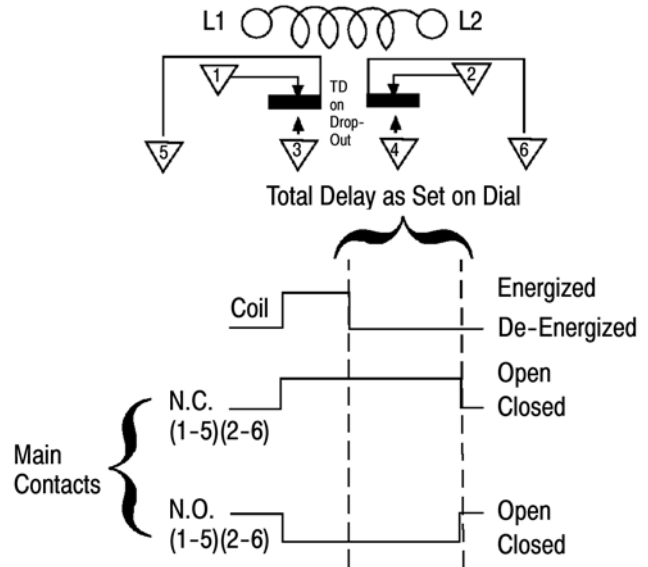


2-Pole Timing Relay (Typ)

On-Delay Model Nuclear E7012 (Delay on Pick-Up)



Off-Delay Model Nuclear E7022 (Delay on Drop-Out)



LINEAR TIMING RANGES	
TIME RANGE CODE	MODELS E7012 AND E7022
A	0.1 to 1 Second
B	0.5 to 5 Seconds
C	1.5 to 15 Seconds
D	5 to 50 Seconds
E	20 to 200 Seconds
F	1 to 10 Minutes
H	3 to 30 Minutes
I	6 to 60 Minutes
K	1 to 300 Cycles

Basic models are furnished with dials calibrated in linear increments covering the range selected. In addition, time-calibrated ranged B through K provide non-linear adjustment from 0.2 second to the beginning of the linear zone. For easiest adjustment and lowest cost, the shortest time range suitable for the application should be selected.

Repeat accuracy at any fixed temperature is $\pm 10\%$. The first time delay afforded by units with H (3 to 30 minutes) and I (6 to 60 minutes) time ranges will be approximately 15% longer than subsequent delays due to coil temperature rise.

NOTE: Dial settability with respect to the marking on the regulating dials is NOT included in the above repeatability value.

Figure 1 (Cont'd)

AC COIL UNITS			DC COIL UNITS	
CODE LETTER	RATED VOLTAGE AT 60 Hz	RATED VOLTAGE AT 50 Hz	CODE LETTER	RATED VOLTAGE
A	120	110	M	28
B	240	220	N	48
C	480	--	O	24
D	550	--	P	125
E	24	--	Q	12
F	--	127	R	60
G	--	240	S	250
H	12	--	T	550
I	6	--	U	16
J	208	--	V	32
			W	96
			Y	6
			Z	220

All units draw approximately 8 watts power at rated voltage.

Minimum operating voltages are based on vertically mounted Model E7012 (on-delay) units.

The AC units drop out at approximately 50% of rated voltage. The DC units drop out at approximately 10% of rated voltage. The operating voltage range of DC relays is 80% to 100% of nominal rated value.[†]

[†] All units may be operated on intermittent duty cycle at voltages 10% above the listed maximums. (Intermittent duty - maximum 50% duty cycle and 30 minutes "on" time.)

CONTACT RATINGS - NUCLEAR		
Resistive at 125 Vdc	1.0 A	
Resistive at 120 Vac 60 Hz	10.0 A	

CONTACT RATINGS - NON-NUCLEAR (Contact Capacity in Amperes - Resistive Loads)		
CONTACT VOLTAGE	MINIMUM 100,000 OPERATIONS	MINIMUM 1,000,000 OPERATIONS
30 Vdc	15.0	7.0
110 Vdc	1.0	0.5
120 Vac 60 Hz	20.0	15.0
240 Vac 60 Hz	20.0	15.0
480 Vac 60 Hz	12.0	10.0

Contact ratings are Listed under the Underwriters Laboratories Inc. Component Recognition Program for 100,000 operations:

10 A Resistive, 240 Vac (per pole)
 1/4 Horsepower, 120 Vac/240Vac (per pole)
 15 A, 30 Vdc (per pole)
 5 A, General Purpose, 600 Vac

Inductive and capacitive loads should not have inrush currents that exceed five times the normal operating load.

Figure 1 (End)

3. MOUNTING INSTRUCTIONS (Figure 2)

Normal mounting of the relay is in a vertical position, from the back of the panel. Four No. 8-32 tapped holes are provided in the back plate.



Mounting screws should not project more than 3.63 mm [5/32 in.] into the back of the unit, to prevent internal damage.

A bracket, lockwashers, and required screws are supplied with each unit for mounting the unit from the front. The bracket extends approximately 9.52 mm [3/8 in.] from each side of the unit.

Models E7012 and E7022 (Mounting Dimensions)

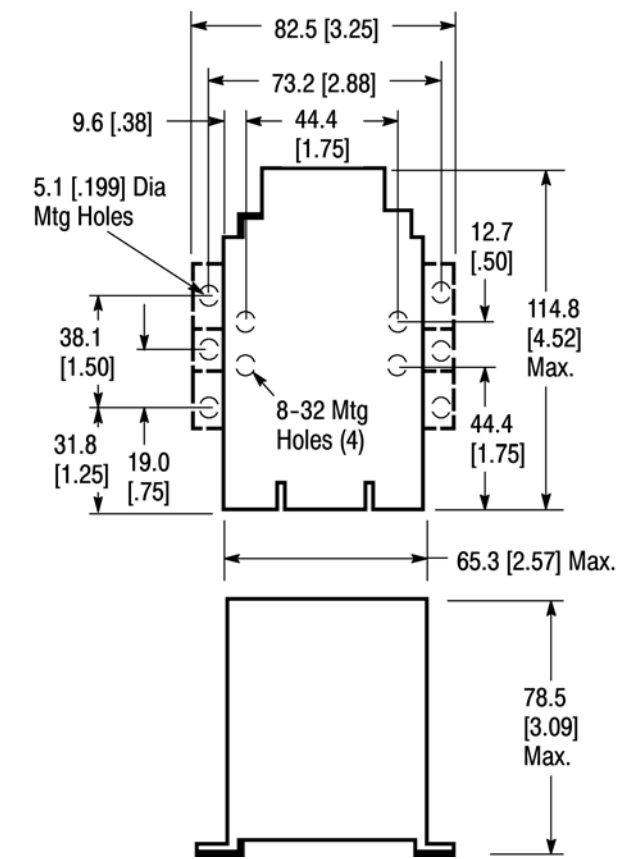


Figure 2

4. QUALIFICATIONS

The E7000 Series Nuclear Timing Relays are Listed by Underwriters Laboratories Inc. (UL) in File No. E15631, and Certified to the Canadian Standards Association (CSA) in File No. LR29186. The basic relays have been qualification tested to IEEE STD 323-1974 and IEEE STD 344-1975.

5. REVISION SUMMARY

Since the previous version of this document, the following changes were made:

- Removed sentence from Section 2.
- Updated document to corporate requirements.