

Appendix 1 – Electrical Component Information and Wiring Diagrams

MOUNTING:

Three mounting feet and screws are packed separately. They screw into threaded holes at the bottom of the timer. The 324C can be three-point mounted either on

its end or on its base, but the main shaft must be horizontal for best operation and long life. For best switch operation, install the timer on a vibration-free surface.

MOTOR:

Standard 324C motors are equipped with one-way slip clutches. They allow the motor and cam shaft to be turned freely by hand *only* in the normal direction—

that is, so the drop-off edges of the cams move away from the tips of the switch actuator fingers. Rotation in the opposite direction can damage clutch and motor..

CAM ASSEMBLIES:

The two halves of the split cam are independently adjustable to permit programming of (1) the point *where* the switch will be actuated in the cycle, and (2) *how long* it will be actuated. Since these precision switches are single-pole, double-throw, they can be wired to provide either normally-open or normally-closed operation.

Switch action occurs at two points: (1) when the actuator finger drops off the sharp edge of the cam, and (2) when the finger travels back up the rise to the higher cam surface. The switch will be actuated whenever the follower is on the high portion; not actuated when it is on the low.

Either half of the cam can be used to set the START actuation point, and the other half will then be used to set the END actuation point in the program. Each quarter turn of the adjusting screw changes the cam setting by 1/2% of the cycle. To actuate earlier in the cycle, turn the screw clockwise; to actuate later, turn it counter-clockwise. Use a screwdriver with a blade no more than 1/8" wide, to avoid damage. As you adjust, be sure that the drop-off portion of the cam does not *press* against the switch actuator finger and deform it. Either raise the actuator by hand, or advance the cam nearly all the way around by hand.

USE THE SETTING DISC IN ADJUSTING THE CAMS:

1. Lay out your program on a straight line chart with 100 equal divisions representing 0-100% of the program cycle. Note the points on this line where each action should begin and end. The divisions correspond to the marks on the setting disc.
2. With power off the timer, advance the cam shaft

so the setting disc shows the number where the first contact actuation should occur. Turn the adjusting screws clockwise for either cam-half (or both, if necessary) until the actuator finger just drops off the high point. Advance the cam shaft all the way around and adjust as necessary to "fine tune" your setting.

3. Advance the cam shaft so the setting disc shows the number where the contact actuation should *end*. Turn the adjusting screw for the other half of the cam assembly and listen carefully until you hear the pre-

cision switch click. Then the cam is set for the two operate-points in the program you have selected.

4. Repeat with all cams for all switches.

PREVENTIVE MAINTENANCE:

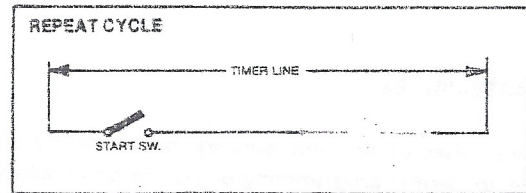
Cams should be kept clean, *but not lubricated*, as lubricant picks up grit and causes increased wear of the actuator fingers.

The sealed, permanently lubricated motor requires no maintenance.

BASIC APPLICATIONS:

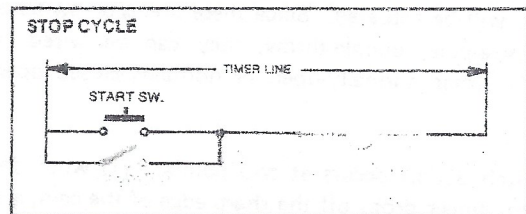
Repeat Cycle

The timer runs continuously, repeating cycles as long as power is applied to the motor through an external *start* switch. The timer stops when power is cut off, and resumes the interrupted cycle when power is restored.



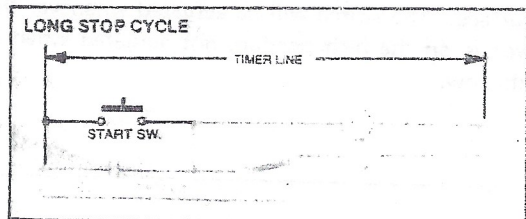
Stop Cycle

Power is applied to the motor through a *start* switch which the user wires in parallel with one of the timer's cam-operated *stop* contacts and in series with the motor. Whenever the *start* switch is closed for at least 1% of cycle, the *stop* contact maintains the motor circuit for one full cycle; the timer then stops.



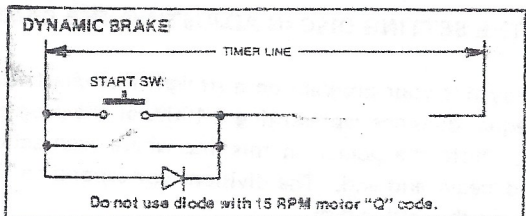
Long Stop Cycle

Used when the timer must operate from a momentary *start* signal that is less than 1% of cycle time, this circuit includes a factory-supplied and wired holding relay. The relay maintains the motor circuit for 1% of cycle until the cam switch transfers. The cam switch maintains the motor circuit for the balance of the cam rotation, ending the cycle when the cam switch opens.



Dynamic Brake

This circuit prevents coasting, stopping the timer instantly when power is removed from the motor. The brake consists of a diode assembly (Part No. 230026056) which the user wires in parallel with one of the timer's cam operated *stop* contacts. It is required in all stop cycle timers with a cycle time of 120 seconds or less, except those that use the 15 RPM permanent magnet motor Q which needs no brake.



DIMENSIONS:

NOTE: THREE MOUNTING FEET, LOCKWASHERS AND SCREWS SUPPLIED WITH EACH TIMER. TIMER CAN BE MOUNTED HORIZONTAL OR VERTICAL. HORIZONTAL MOUNTING SHOWN. VERTICAL MOUNTING SHOWN BY DOTTED LINES.

