

Basic Functions of the **MOYER Dual Escapement Timer**

The Moyer Dual Escapement Timer assists in the automation of manufacturing. By activating and deactivating a pair of air valves, with a proximity switch as its trigger, it can control the escapement of a vibratory bowl. It can also control other timed pneumatic processes.

The main run screen displays the status of both escapements, and allows the operator to see if the automation is currently running or jammed/deactivated. As you can see in figure 1, the timer is running, and the first escapement channel has been activated.

```
Moyer P&C Dual Timer
Escapement 1 On
Escapement 2 Off
Timer is Running
```

1 Running Timer

The automation is considered “jammed” if any one of the active escapements has not been triggered within a set period of time (defaulting to eight seconds). This usually happens if (for example) the dial of the grinder or tester stops moving, and the proximity switch no longer detects movement. If the automation jams, a message is displayed on the screen (see figure 2), the external jam light will turn on, and (optionally) a very loud SonAlert will sound. Additionally, the red LED will blink.

```
Moyer P&C Dual Timer
Escapement 1 Off
Escapement 2 Off
JAM IN PROGRESS!
```

2 Jammed Timer

The timer works like this: the first proximity switch activates the first air valve and starts a timer. When that timer reaches the pre-set value, the first air valve switches off. The second channel works the same way. If the delay value for an escapement channel is set to 0.00s, that channel will be disabled, and ignored for the purpose of jam detection. The green LED will be on while either channel is active.

SETUP

The delay values and a few toggle options can be changed in the setup menu. To get to the setup menu, just press the “Setup” button in the lower-right corner of the keypad. Numbers can be entered with the number buttons and erased with the “<-Toggle” key. After entering a number, press the “Setup” button again to go to the next option. If you make a mistake, you will need to enter the setup menu again.

The first page of the setup menu contains options for the various delays. These include the delays for the two escapement channels, and the delay for the jam detection Alarm Timer. The first two options are the timer values, in seconds. This is the delay between the time the proximity switch is triggered, and the escapement channel is deactivated. There is no delay time between the trigger and activation. The third option on this screen is the alarm time. This is the length of time (in seconds) since all of the activated channels have been triggered, and serves as a means to detect jammed automation.

```
* Timer Setup Menu *
->Delay 1      0.50s
Delay 2      0.50s
Alarm Timer  8.00s
```

3 Menu (page 1)

You may need to experiment to determine the correct values for the delays. High volume jobs tend to require shorter delays, and low volume jobs with slow-moving escapement mechanisms require longer delays. If you cannot successfully determine a delay value for your application, contact Moyer Process & Control.

The next screen of options are toggle options, rather than numbers. These may be changed by pressing the “<-Toggle” button. The first option turns the SonAlert on or off. As noted, this can be very loud — useful in a noisy factory environment. The second option selects the proximity switch triggering mode. In “each” mode, both timers are triggered by the corresponding proximity switch, but in “sync” mode they can both be triggered by a single switch, in either socket. The third option enables Hardware Test mode. For normal operation, set this to “No”.

```
* Timer Setup Menu *
->SonAlert           On
Prox Switch         Sync
HW Test             No
```

4 Menu (page 2)

TROUBLESHOOTING

I can't get to the setup menu / screen is scrambled...

First, try turning the power on and off. Then, check for any loose connections – intermittent proximity switches can cause lockups. Also, keep excessive heat or vibration away from the timer. If mount on a vibratory bowl, use proper shock mounting. If this does not fix the problem, call Moyer Process & Control Co., Inc.

The timer says “JAM IN PROGRESS” and the automation has stopped...

First, check the dial and the automation to make sure that a part has not become jammed. If a part is jammed, stop the process and **carefully** remove the jammed part. As the dial begins moving again, the “JAM IN PROGRESS” message will clear.

If there is no jam, check your timer settings. If the Alarm Timer setting is too low, a jam might be detected incorrectly. The default setting, eight seconds, should suffice for all but the slowest processes. Also, check the “Prox Switch” setting on Page 2 of the setup menu. If you only have one proximity switch running both channels, set this to “Sync”. If you have two proximity switches, set this to “Each”.

The timer says it's running, but the valves just stay on...

Check your delay values in the setup menu. If the delay timer is too long, the valve may not have time to turn off before the proximity switch is triggered again. For example, if 30 parts per minute are being fed into each row, the delay timer should be set to something less than two seconds. Try experimenting with different values. If the valves still don't work, even with very short delay times, there may be a physical problem with one of the valves. This is even more likely if one valve works while the other doesn't. Call Moyer Process & Control for assistance.

HARDWARE TEST

A Moyer Process & Control representative may request that you use the Hardware Test mode to determine the cause of a failure. Hardware Test mode displays all of the normal run information in abbreviated form, and also displays the status of the Prox Sync feature (SYNC/EACH). The bottom line of the display is a power log, listing the causes of timer shutdown and their frequency (ie. power loss, lock-up, etc). Many of these shutdowns are quite normal, and after long periods of operation these numbers will begin to accumulate. Press the “<- Toggle” button to clear the counts.

```
* Hardware Test *
Esc1: ON  Esc2: OFF
Prox: SYNC Jam: NO
WD: 0 PF: 17 CK: 0
```

5 Hardware Test

CONNECTING A NEW SENSOR

To connect a new proximity sensor to your Escapement Timer, you will need the following materials:

- One female DB9 connector
- Soldering iron with solder
- Heat shrink with heating tool (optional)
- One DB9 connector hood (optional)
- One proximity sensor cable (if necessary)

Heat shrink can help prevent accidental short circuits, but is not absolutely necessary. When replacing an existing proximity sensor, the DB9 connector hood can be reused. If you are installing a new proximity sensor with detachable cable, you will need to obtain one of these cables.

Connecting the new cable is fairly simple. The wires you will be using from the proximity sensor (or detachable cable) are the brown, black, and blue wires. Any additional wires (ie. white ones) can be trimmed.

First, strip back enough of the cable so that you can access the wires. You'll want at least an inch of wire to work with, possibly more if you are using heat shrink. Then, strip about a quarter-inch (or slightly less) back from each of the three wires, and trim any additional wires. Put heat shrink on the wires **BEFORE** you solder them in place.

Solder the wires to the DB9 connector as follows:

- Pin 1 - Brown
- Pin 3 - Black
- Pin 5 - Blue

After soldering, slide the heat shrink over the connections. Carefully apply heat with a heat gun or a cigarette lighter to shrink the plastic. Place the DB9 connector into its hood and screw it shut. Your new proximity sensor is now ready to be used.

This concludes the basic instructions for the Moyer Dual Escapement Timer. If you have any questions or comments, please contact Moyer Process & Control at (260) 495-2405. Thank you for using the Moyer Dual Escapement Timer.