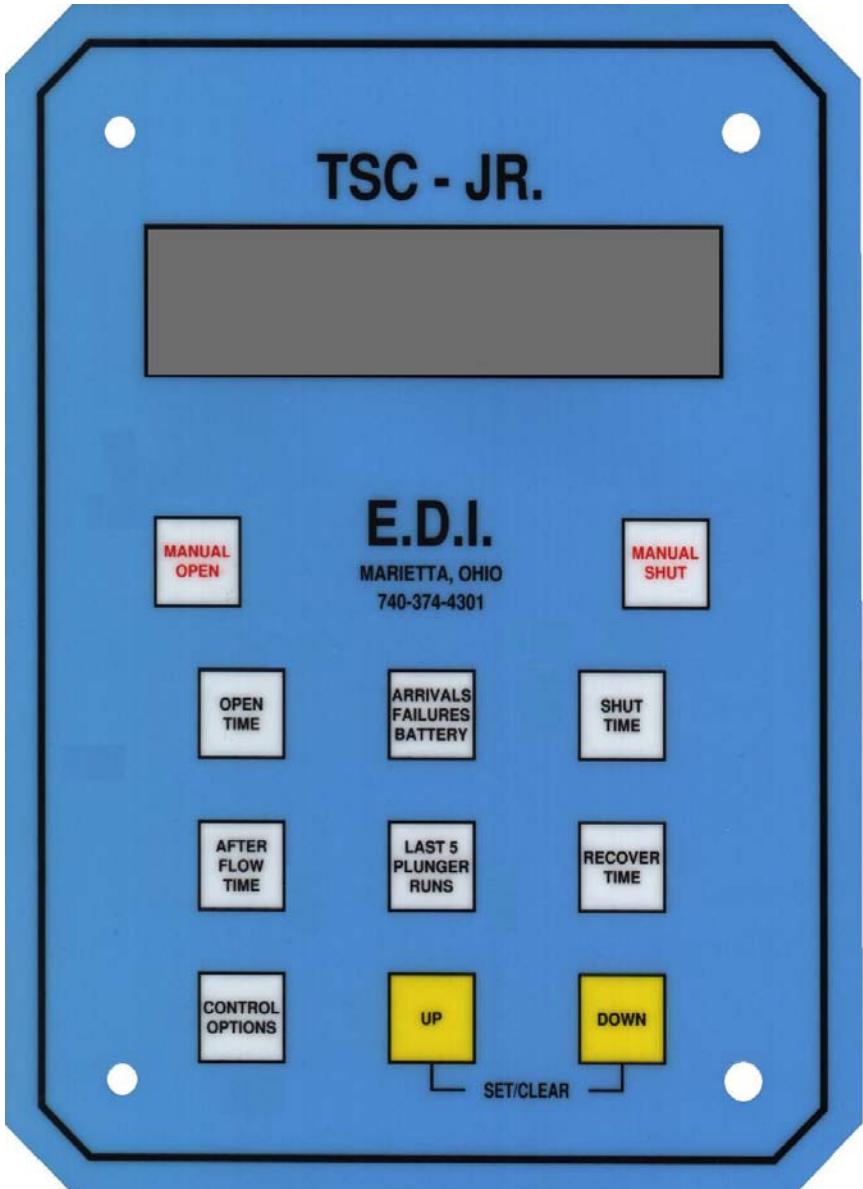


# TSC-JR Manual

SERIES 2A



# **TSC-JR**

# **Timed Sequence Controller**

Revised: June 11, 1999

## **Operation Manual**

**Distributed By:**

## DESCRIPTION

The TSC-JR is a single valve timer designed to be reliable and operator friendly. It is simple enough to act as a basic on off timer, yet elaborate enough to allow the user to customize it by setting up to five options. EDI has developed a quality timer with all the best functions and delivered it in the TSC-JR.

## FRONT PANEL CONTROLS

### TIME PERIOD BUTTONS:

There are four time period buttons. These buttons allow the operator to display or set time period data. Their designations and functions are as follows:

1. **“OPEN TIME”:**

Allows the operator to set/read the valve’s open time period.

2. **“SHUT TIME”:**

Allows the operator to set/read the valve’s shut time period.

3. **“AFTER FLOW TIME”:**

Allows the operator to set/read the valve’s after flow time period. The **“After Flow Time”** follows the **“Open Time”** after the plunger reaches surface. The **“After Flow Time”** allows additional open time after the plunger has reached surface.

4. **“RECOVER TIME”:**

Allows the operator to set/read the valve’s recovery time period. The **“Recover Time”** follows the **“Open Time”** if the plunger fails to reach the surface. The **“Recover Time”** is additional shut time to allow for well recovery. **“Shut Time”** will follow **“Recover Time”** to complete the cycle.

If option #1 is altered (**USE LOAD CONDITION**), **“Recover Time”** will allow a second attempt to surface the plunger before going into the load condition. If the plunger fails to reach the surface on the second attempt the operator will see **“Recover Time 2nd”** on the LCD. The system will follow with **“Shut Time”** and then go into a **“Load Condition”**. See Option #1 - Page 6.

When any one of the time period buttons is pressed and held, the **“Up”** or **“Down”** buttons may be used to alter the time period to any value.

If the keypad is unused for one minute, the unit will go to sleep, conserving power. Pressing any button will wake the display.

When holding in on the **“Up”** and **“Down”** buttons, changing time actions will speed up.

#### **MANUAL VALVE CONTROL BUTTONS:**

These buttons allow the operator to manually open and shut the valve.

If Option #4 reads “Valve and Time”, pressing the manual open button will also start timing a new open time cycle and pressing the manual shut button will start a new shut time cycle.

If Option #4 reads “Valve Only”, a new open/shut time cycle will be started only if the **“Up”** or **“Down”** button is simultaneously pressed with the manual open/shut buttons. See Option #4 - Page 7.

**LAST 5 PLUNGER RUNS BUTTON:**

This button allows the operator to display the last 5 plunger travel times. Each time the button is pressed, the next plunger travel time will be displayed. The order they are displayed is as follows: #1(most current)-#2-#3-#4-#5, then they repeat the same order. In the following description the characters shown in [brackets] are what the operator will see on the LCD display; X stands for the actual digits.

**1. Plunger travel time #1 (most current).**

[Plunger Travel 1]  
[Xd XXhr XXmn XXs]

**2. Plunger travel time #2**

[Plunger Travel 2]  
[Xd XXhr XXmn XXs]

**3. Plunger travel time #3**

[Plunger Travel 3]  
[Xd XXhr XXmn XXs]

**4. Plunger travel time #4**

[Plunger Travel 4]  
[Xd XXhr XXmn XXs]

**5. Plunger travel time #5**

[Plunger Travel 5]  
[Xd XXhr XXmn XXs]

If Plunger Travel Time #1 is viewed during a plunger run, the actual timing in progress may be observed.

## **ARRIVALS, FAILURES, BATTERY BUTTON, AND TOTAL OPEN TIME:**

This button allows the operator to display or clear data.

Data is displayed each time the button is pressed. In the following description, the characters shown in [brackets] are what the operator will see on the LCD display.

The order in which data will be displayed is as follows:

- |                                  |   |
|----------------------------------|---|
| <b>1. Plunger arrival count.</b> | <b>[PLUNGER ARRIVALS]<br/>[0000]</b>        |
| <b>2. Plunger failure count.</b> | <b>[PLUNGER FAILURES]<br/>[0000]</b>        |
| <b>3. Battery Voltage</b>        | <b>[BATTERY VOLTAGE]<br/>[0.00V]</b>        |
| <b>4. Total Open Time</b>        | <b>[TOTAL OPEN TIME]<br/>[Xd XXhr XXmn]</b> |

To clear the plunger arrival count, plunger failure count, and the total open time, the operator, while holding this button, can press the “**Up**” or “**Down**” buttons, and the displayed value will be cleared to [0000].

NOTE: “**Total Open Time**” is displayed in days, hours, and minutes.

## OPERATIONAL DESCRIPTION for EXTERNAL INPUTS

### EXTERNAL INPUTS:

There are three external inputs available to the operator. The two switch gauge inputs “Open” or “Close”, and the “MSO” (magnetic shut off) input.

### SWITCH GAUGE INPUTS:

These inputs are referred to as the “Open” inputs and “Close” inputs. These inputs may be connected between “Open”, “Close”, and “Common”.

The switch gauge inputs are labeled “Open”, “Close”, and “Common”. The “Open” input, when connected to the “Common” input, causes an open valve response. The “Close” input, when connected to the “Common” input, causes a close valve response.

When the “Open” inputs are closed the valve will open and the **“Open Time”** is loaded. The **“Open Time”** will start counting when the contacts open. The operator shall be warned of an “Open” condition. The operator will see [**OPEN TIME HOLD EXT OPEN FOR**] and the time displayed will tell the operator how long the “Open” contacts have been closed. When the “Open” contacts open, the time will start counting.

When the “Close” inputs are closed the valve will shut and the **“Shut Time”** will be loaded. The **“Shut Time”** will start counting when the contacts open. The operator shall be warned of a “Close” condition. The operator will see [**CLOSE TIME HOLD EXT CLOSE INPUT FOR**] and the time displayed will tell the operator how long the “Close” contacts have closed. When the “Close” contacts open, the time will start counting.

## **MAGNETIC SHUT OFF (MSO) INPUT:**

The “MSO” inputs are labeled “+” and “-”. These inputs are designed to connect to the E.D.I. PS4 plunger sensor. Most dry contact inputs will work.

## **CONTROLLER OPTIONS:**

The options button allows the operator to read or set the five options of the TSC-JR. To view the current value of an option, press this button. Each time the button is pressed, the next option will be displayed.

### **Option 1 normal (factory set) - IGNORE LOAD CONDITION:**

Normal timing continues.

### **Option 1 altered - USE LOAD CONDITION:**

Time counting shall stop after the “**Shut Time**” has timed out and no MSO input is detected. The unit shall remain stopped until the operator presses a manual button to clear the load condition. Also, the external “Open” inputs will clear the load condition and perform its prescribed action. The operator shall be warned of a “LOAD CONDITION”. The operator will see [**LOADED FOR**] and the time displayed will tell the operator how long the well has been loaded.

### **Option 2 normal (factory set) - IGNORE FALL TIME:**

Normal timing continues.

### **Option 2 altered - USE FALL TIME:**

“**Fall Time**” is available by pushing the “**Recovery Time**” button twice. Keep the button pressed while setting the desired time.

\* “**Fall Time**” overrides external “Open” inputs, allowing the plunger to reach bottom.



**Option 3 normal (factory set) - CONTINUOUS CYCLE:**

Normal timing continues.

**Option 3 altered - STOPPED CYCLE:**

Time unit stops timing after “**Shut Time**”, until external “Open” inputs, restart the cycle. Then, the valve opens and resumes timing. The manual open button will also resume timing. The operator shall be warned of a “STOPPED CONDITION”. The operator will see [**STOPPED FOR**] and the time displayed will tell the operator how long the well has been stopped.

**Option 4 normal (factory set) - VALVE AND TIME:**

Normal timing continues.

**Option 4 altered - VALVE ONLY (Sequential Timing):**

The manual shut button, MSO or Close inputs will shut the valve while timing continues through the full cycle. This keeps the controller in sequence with “real” time, which allows all controllers operating into the same gas line to operate in a set sequence.

**Option 5 normal (factory set) - SET TIME IN MINUTES:**

Allows the operator to set times in one-minute increments.

**Option 5 altered - SET TIME IN SECONDS:**

Allows the operator to set times in one-second increments.

## OPTION TABLE

	NORMAL (FACTORY SETTINGS)	ALTERED
1.	IGNORE LOAD CONDITION	USE LOAD CONDITION
2.	IGNORE FALL TIME	USE FALL TIME
3.	CONTINUOUS TIME CYCLE	STOPPED CYCLE
4.	VALVE AND TIME	VALVE ONLY (SEQUENTIAL TIME)
5.	SET TIME IN MINUTES	SET TIME IN SECONDS

All options are factory set for normal operation. To alter an option, the operator, while holding this button, presses the “**Up**” or “**Down**” buttons and the option being viewed will be altered.

## ELECTRICAL INFORMATION:

### POWER SUPPLY:

(1) 6-volt alkaline lantern battery, Eveready #529 recommended.

### SOLAR PANEL:

The unit may be equipped with a rechargeable 6-volt battery instead of the 6-volt lantern battery. This battery is kept fully charged by a solar panel supplied with this option.

### POWER CONSUMPTION:

Supply voltage	6.5 volts maximum.
Current drain	120 micro-amps average.
Power	780 micro-watts average.

### BATTERY LIFE:

The 6-volt battery should last 18 to 36 months, depending on how often the front panel controls are used.

The unit shall continue to operate reliably, and shall warn the operator, in the event the battery supply fail. The characters shown in **[brackets]** are what the operator will see on the LCD display. **[LOW BATTERY]**

### TEMPERATURE RANGE:

The unit is designed to operate reliably from -30 degrees Celsius to +85 degrees Celsius, -22 degrees Fahrenheit to +185 degrees Fahrenheit.

## SYSTEM ENCLOSURE:

- Non-Metallic
- Non-Corrosive
- Fiberglass Reinforced
- Approximately 7 ½ pounds
- Dimensions: 8x6x4 inches



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