

## Shimpo DT-700 Series Digital Stroboscope



8.0 SPECIFICATIONS

Flashing Range	40 – 12,500 FPM (Flashes Per Minute)
Accuracy	±0.02% of reading
Resolution	0.1 , 40.0 – 4,999.9 FPM 0.2 , 5,000.0 – 7,999.8 FPM 0.5 , 8,000.0 – 9,999.5 FPM 1.0 , 10,000.0 – 12,500.0 FPM
Display	5-Digit LED, 0.3" (8mm) height
Rate	Divide by 2, Multiply by 2
Update Time	Ext. mode: varies with flashing rate
Operating Time	1 hour when fully charged (Model DT-725) Continuous (Model DT-721)
Flash Tube/Power Live	Xenon, 10 W, 100 million flashes
Flash Duration	10 – 15 $\mu$ s
Signal Output	NPN Open Collector (24 VDC max., 50 mA) 150 $\mu$ s typical
Phase Shift	Internal mode only by using the “+” and “–” switches
Ext. Trigger	a) 12-24 VDC thru a 3-wire NPN output sensor (requires external power supply) b) 12 VDC thru a 2-wire proximity sensor (leakage current 1 mA max., Load current 8 mA min.) c) Switch or Relay contact
Input Signal	
Operating Temp.	32°–104° F (0 – 40° C)
Dimensions	9" L x 4.3" W x 8.5" H (228.6 x 109.2 x 216.9mm) (Height includes handle)
Weight	DT-725 2.75 lbs (1.25 Kgs) DT-721 1.5 lbs. (0.7 Kg)

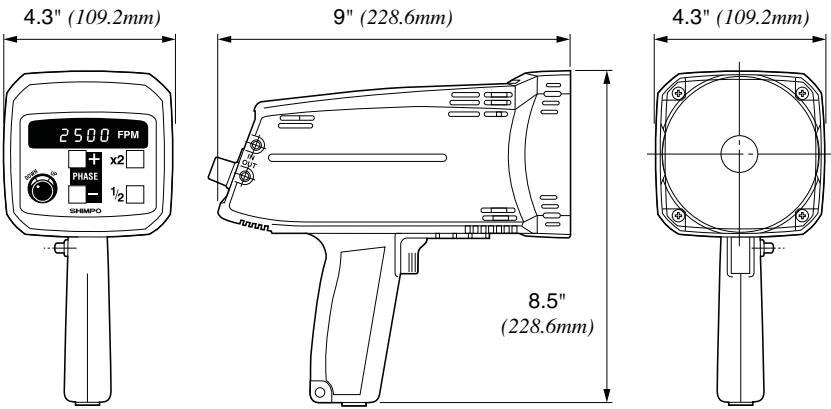



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**WARNING**

1. Do not look at the emitted light for long periods of time, it can be harmful to the eyes.
2. Do not disassemble or repair the unit while in operation.
3. Do not operate or store the instrument in the following places: explosive areas, areas near water, oil, dust or chemicals, or areas where the temperature is above 104°F (40 °C).

## 1.0 INTRODUCTION

The Check•Line® DT-721(AC-powered) and DT725 (battery powered) Digital Stroboscopes are highly stable, industrial-quality instruments for non-contact RPM measurement as well as for inspecting and observing moving parts by “freezing” or “slowing down” the action.

## 2.0 OVERVIEW

### 2.1 Control Panel

**Setter:** The setter changes the flash rate. Tune CW to increase the rate, turn CCW to decrease the rate.

**x2 Switch;** Pressing “x2” will double and display the flashing rate.

**1/2 Switch:** Pressing the “1/2” will divide flashing rate by two and display it.

**Plus (+) Switch:** When object appears to be standing still, pressing “+” will give the illusion that the object is moving towards the opposite direction of rotation. This action increases the rate slightly (phase shift) and is used to place the object in desired position.

**Minus (–) Switch:** When object appears to be standing still, pressing “–” will give the illusion that the object is moving towards the rotating direction. This action decreases the rate slightly (phase shift) and is used for the same reason as above.

#### Input and Output Connectors:

*Phonejack (3.5 mm)*

*Tip: Signal*

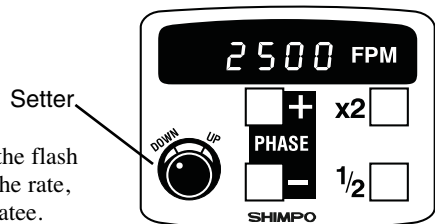
*Sleeve: GND*

#### Power switch with lock option

**Power cord** (DT-721 only, not shown)

### 2.2 Kit Option

A “Kit” option is offered which also includes a carrying case and spare flash tube at minimal additional cost.



## 7.0 FLASH TUBE REPLACEMENT

When FPM reading is displayed but unit is not flashing, the flash tube may need to be replaced. The procedure is as follows:

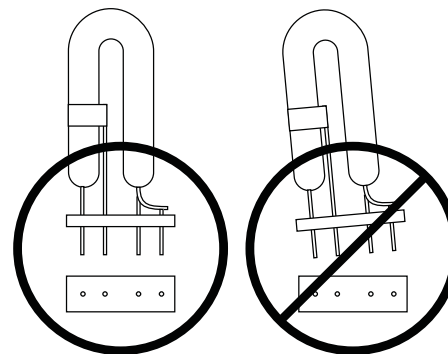
1. Unplug line cord from power line (DT-721). Turn power switch OFF.

**IMPORTANT:** Wait a few minutes until stroboscope is cool before replacing flash tube.

2. Remove protective window by removing the four (4) screws on the face of the instrument.
3. Use a rag and pull the tube out of its socket by rocking it slightly back and forth.

**IMPORTANT:** Do not use bare hands to remove the tube, it may break and cause injury.

4. Insert new tube using the technique mentioned above. Make sure that the tube is placed vertically in the socket (see diagram below) otherwise it will touch the reflector. Tube should be set symmetrically within the neck of the reflector.



5. Replace the protective window.

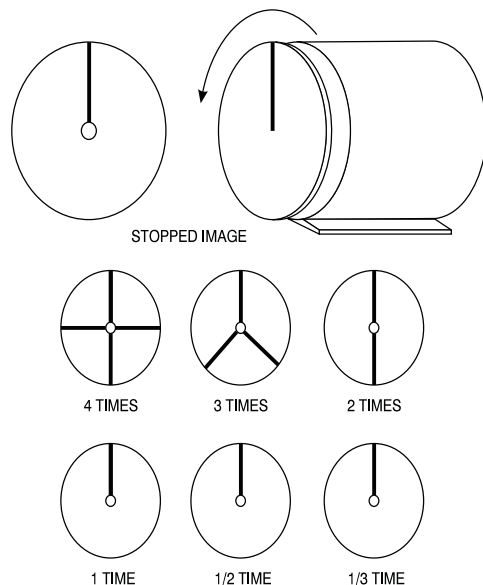
## 5.0 MEMORY

When the strobe is turned off and on again at a later time, it will start to flash at the previous displayed rate regardless if the setter has been moved or not.

## 6.0 TRUE RPM

All strobes give the illusion of stopped motion when flashing in submultiples of the true speed.

To obtain the correct rpm, turn knob from highest fpm downward. When the first single image appears, read the true rpm. To verify it, press the "1/2" key. A single image will appear again.



Rotation of shaft (rpm)	Number of flashes (rpm)	Flashes/ rpm shaft	Number of stopped images
at 1,500 rpm	6,000	4 times	4
	4,500	3 times	3
	3,000	2 times	2
	1,500	1 times	1
	750	1/2 times	1
	500	1/3 times	1

## 3.0 BATTERY USAGE (DT-725 ONLY)

Model DT-725 is equipped with an internal, lead acid, rechargeable battery that provides one hour of continuous operation.

**NOTE:** Charge battery for approx. 15 hrs. before using the instrument for the first time.

When battery power is low, the **Low Batt** indicator on the display will light up.

### 3.1 Charging the battery

1. Turn power off.
2. Insert AC adapter into the receptacle in the bottom of the instrument handle..
3. Approximate charging time: 2 hours.

**NOTE:** The charger adapter may also be used to power the instrument continuously.



Only charge the instrument using the AC adapter/charger provided.



AC adapter/charger receptacle

### 3.2 Replacing the battery

The life of the built-in battery should be approximately 300 charges. When the time period between charges becomes increasingly shorter, replace the battery.

## 4.0 OPERATION

### 4.1 Internal Triggering

1. **DT-721 only:** Firmly plug the power cord into a 100 VAC (Japan), 120 VAC (US) or 230 VAC (Europe) power source.  
  
**DT-725 only:** Charge battery for approx. 15 hrs. before using strobe for the first time (see section 2.3).
2. Aim light beam at the object under observation. The best distance between the strobe and moving object is approximately 2 ft (61 cm).
3. Measure rpm by turning setter. Turn the setter to adjust the flashing rate to the rotational speed of the object. To reach the desired rate faster, use the 1/2 or x2 switches (see Section 2.1).

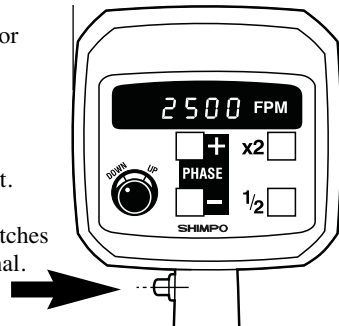
### 4.2 External Triggering

1. Connect wires according to connector pin designation:

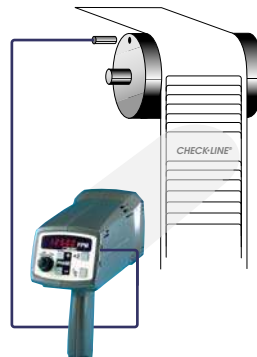
Tip: *signal*

Sleeve: *Gnd (ground)*

2. Pull power trigger switch and lock it. When the ext phone jack is inserted in unit, the strobe automatically switches from the internal mode to the external.

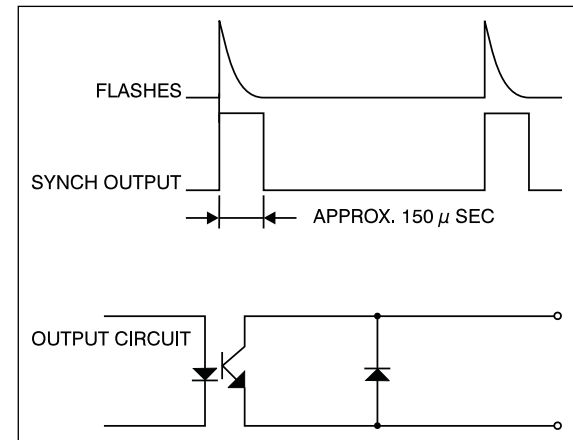


3. The strobe will flash every time the sensor puts out a pulse. Input signal requirements are listed below:
  - a. 12 – 24 VDC thru a 3-wire NPN sensor. (Requires external power supply).
  - b. 12 VDC thru a 2-wire proximity sensor. (Leakage Current 1 mA max. Load current 8 mA min.)
  - c. Switch or Relay Contact.
4. If the input signal frequency exceeds upper or lower limits, the alarm mark will be displayed and the strobe will stop flashing.



### 4.3 Synchronous Output Signal

The Synchronous output signal appears on the tip of the output phone jack. See below



### 4.4 Using A Tripod

1. To mount the strobe on a tripod or any other mounting surface, place a 1/4– 20unc screw, 8mm or shorter, through the tripod screw hole on the bottom.

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## 9.0 WARRANTY

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