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## **Instructions for Mounting and Operation of Princeton Instruments Model TS-428 250 Watt Tungsten-Halogen Light Source**

Ver 2.1

## **Description:**

The Princeton Instruments Model TS-428 is a 250 watt tungsten-halogen light source system designed for use with Acton series spectrometers. It consists of a 250 watt lamp as specified on the enclosed drawing, a housing with light collection mirror, and power supply with variable brightness control (250 watts to approximately 10% of maximum). The lamp is factory installed and aligned prior to shipment. Adjustments are provided on the light collecting mirror mount in the event that realignment becomes necessary.

## Installation Instructions

### TS-428 and TS-428-DC

**Important:** These instructions are valid for TS-428 and TS-428-DC Light Sources bearing certain serial numbers.

If the digits of the serial number that immediately follow 428 are 261 or greater please use these instructions. If the digits of the serial number that immediately follow 428 are less than 261 then disregard these instructions.

Your TS-428 or TS-428-DC 250 Watt Tungsten / Halogen Light Source is shipped with an installation kit which includes the following parts.

Part	Quantity	Description	Acton Part No.
Mounting Screws	3	8-32 X 1¼" Black Alloy	100-120-015
Mounting Screws	2	8-32 X ½" Black Alloy	100-120-010
Shoulder Screws	2	8-32 Attached to spacer	100-107-005
Spacer	1	¾"	8401-025-66
Spacer	1	¼"	8401-025-65
Hex Wrench	1	1/16"	700-025-002
Hex Wrench	1	9/64"	700-100-008

There are two variations for the installation of the **TS-428 and TS-428-DC**. One set up assumes the use of either of the two optional Filter Wheel Assemblies **FA-448** and **FA-448-2**. The other set up is designed for using the **TS-428 or TS-428-DC** without a filter wheel.



TS-428 / TS-428-DC

## Light Source Installation (With Filter Wheel)

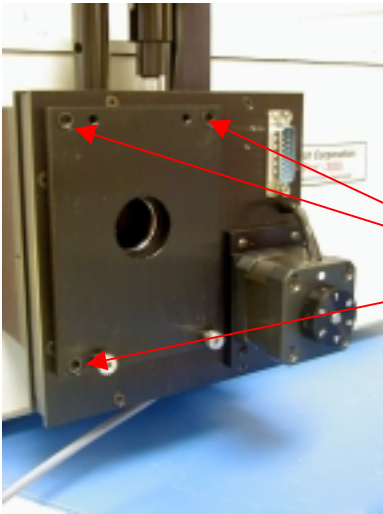
- 1) Be sure that there are no cable connections made to the TS-428 / TS-428-DC Light Source and that it has had sufficient time to cool.
- 2) Insert the three 8-32 x 1 ¼" black alloy screws into the recessed holes of the ¼" Spacer as shown in step one.
- 3) Lay the ¼" Spacer against the Filter Wheel and push the screws through the holes provided in the filter wheel as shown in step 2.
- 4) Using the 9/64" Hex Wrench, tighten the Filter Wheel / ¼" Spacer combination onto the entrance slit of the instrument as shown in step 3.
- 5) Using the 1/16" Hex Wrench, remove the cover to the TS-428 / TS-428-DC. See step 5.
- 6) Align the TS-428 / TS-428-DC's shoulder screw slots with the shoulder screws that are attached to the ¼" Spacer. Attach the TS-428 / TS-428-DC. See step 6.
- 7) Insert and tighten the two 8-32 X ½" black alloy screws into the mounting holes on the inside of the TS-428 / TS-428-DC. See step 7.
- 8) Replace the cover of the TS-428 / TS-428-DC.



Step 1.



Step 2.



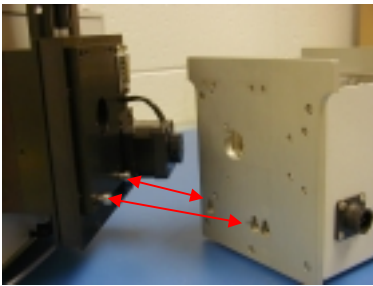
Step 3.

Tighten these

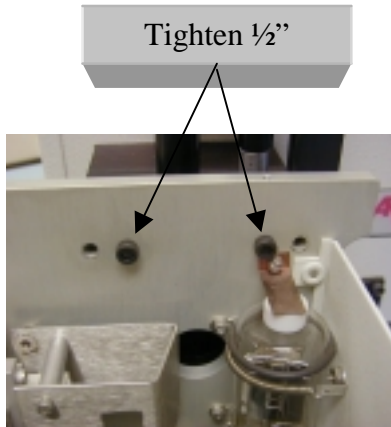
Remove  
Cover Screws



Step 4.



Step 5.



Step 6.

### **Light Source Installation (No Filter Wheel)**

Perform all the above steps except substitute the  $\frac{3}{4}$ " Spacer for the Filter Wheel.



$\frac{3}{4}$ " Spacer

**Mounting** (for serial numbers following 428 that are less than 261 **ONLY**):

For proper operation, the lamp housing should be mounted to the entrance slit of the spectrometer. The light collection mirror, located in the lamp housing, is designed to focus light from the lamp onto the entrance slit of the spectrometer. To mount the lamp housing to entrance slit, use the following procedure:

1. Locate the two (2) shoulder screws and the two (2) 8-32 cap screws supplied with the TS-428. Insert the shoulder screws into the two bottom outside tapped holes of the entrance slit of the spectrometer and tighten. These are used to mount the lamp housing.
2. Remove the four (4) slotted screws from the top of the lamp housing, then remove the cover.

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**Do not touch the lamp (bulb) or the surface of the focusing mirror**

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3. Carefully slide the two (2) “key hole” type slots of the lamp housing mounting flange over the shoulder screws in the entrance slit of the spectrometer. Insure that the top two holes of the lamp housing mounting flange align properly with the top two tapped holes of the spectrometer entrance slit.
4. Insert the two (2) 8-32 cap screws in the top two holes of the lamp housing mounting flange and tighten.
5. Replace the lamp housing cover.
6. Remove the (2) shoulder screws from the plastic bag. Insert the (2) shoulder screws in the (2) tapped holes along the lower edge of the adapter plate.
7. Remove the four (4) slotted screws from the top of the light source, then remove the cover.

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**Do not touch the lamp (bulb) or the surface of the focusing mirror**

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8. Carefully slide 2 of the 3 “key hole” type slots in the light source mounting flange over the 2 shoulder screws in the adapter plate. The light source mounting flange has (4) clearance holes in line near the top edge. Assure that the inner pair of clearance holes in

the light source mounting flange align properly with the two tapped holes along the upper edge of the adapter plate.

9. Insert the (2) 8-32 x 1/2" cap screws from the plastic bag in the inner pair of clearance holes in the light source mounting flange and tighten.
10. Replace the light source cover.

The FA-448 Filter Assembly and Modified Light Source are now ready for use. Refer to the filter assembly and the light source instructions for operation.

### **Operation : (All Serial Numbers)**

For operation, connect the cable between the lamp housing and power supply, then plug in the power supply. Press the power on/off button on the front of the power supply and adjust brightness to desired level. To shut off the light source, press the power on/off button.

**Note:** The light source may be turned on or off at any of the brightness settings without damage to the lamp.



**Supplemental Instructions  
for TS-428DC  
Tungsten-Halogen Light Source**

The TS-428DC is a 250 watt tungsten-halogen light source powered by an adjustable regulated DC power supply. The lamp is rated for 250 watts at 24 volts. Refer to the TS-428 instruction manual for mounting the source housing into the Acton monochromator. Refer to the enclosed OEM instruction manual for operation of the DC power supply and delete the section in the TS-428 instruction manual referring to the standard issue power supply. Connect the power cable supplied with the TS-428DC between the lamp housing and the circular connector on the rear panel of the DC power supply. Adjust the current limit to the maximum on the power supply and use the voltage control of the power supply to adjust the intensity of the lamp. When the power switch to the DC power supply is turned on, the fan in the lamp housing will turn on simultaneously.

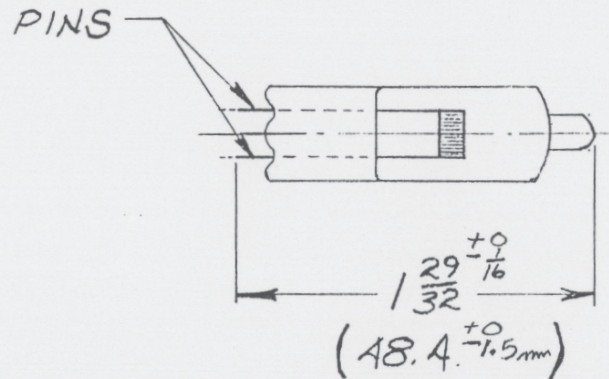
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REV.

DESCRIPTION

DATE

IF NECESSARY, TRIM PINS WITH WIRE CUTTERS TO LENGTH SHOWN



NOTES:

1. DUE TO SIZE RESTRICTIONS, LAMPS MUST BE GTE/SYLVANIA TYPE EHJ DATE CODE "XT" OR LATER (NO SUBSTITUTIONS).
2. DO NOT HANDLE LAMP WITH BARE FINGERS. USE WHITE GLOVES OR PROTECTIVE PAPER SLEEVE SUPPLIED WITH LAMP.

UNLESS OTHERWISE SPECIFIED		MATERIAL SEE NOTE #1		FINISH SEE NOTE #2	
DIMENSIONS ARE IN INCHES TOLERANCE ON		SCALE: FULL		DRAWN BY KRA	
FRACTIONS	DECIMALS	ANGLES	1ST #12897		QTY 1
± 1/64	.xx ± .010	± 15 MIN	DATE: 12-6-90		NEXT ASS'Y
	.xxx ± .005				
MACH. SURFACE 32✓ MAX. REMOVE ALL BURRS & BREAK SHARP EDGES .010R. MAX.				15 DISCOVERY WAY ACTON, MA 01720	
DWG. TITLE 250 WATT LAMP SPECIFICATION'S		SIZE A	DWG NO. 8401-107-17		REV.

15-4126

FOTOBAM/BROOKSIDE

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