

# UNITED SCIENTIFIC SUPPLIES, INC.

## OPERATING INSTRUCTIONS AND ACTIVITY GUIDE

### OPTICAL BENCH SET

OBSET3

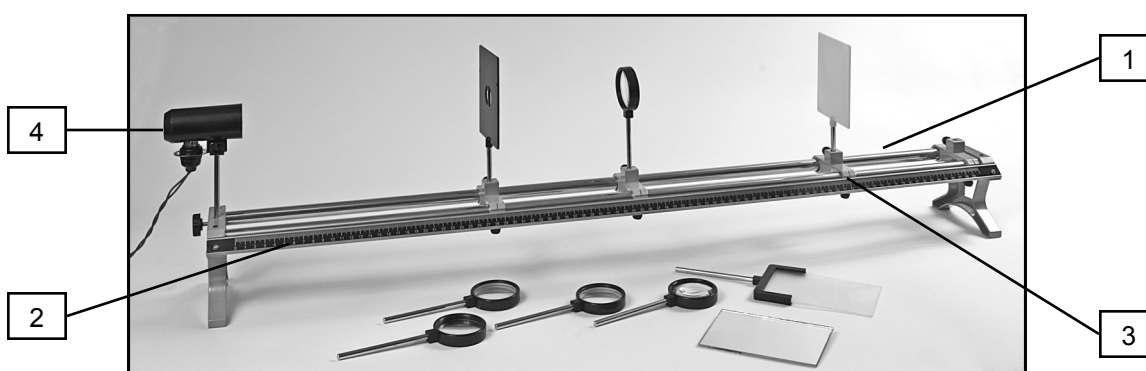


Figure 1

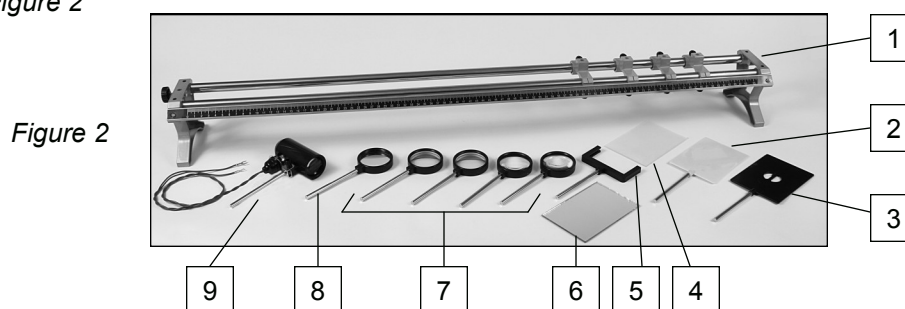
#### 1. Description

The Optical Bench Set includes a carefully-chosen set of high quality mounted optical elements and a sturdy, lightweight optical bench that allow a full range of simple imaging experiments to be carried out easily and precisely. The parallel bar optical bench (1) has a permanently-mounted millimeter scale (2) and four captive riders (3) with index marks. The riders slide smoothly on the bars and can be arrested in any position without disturbing the adjustment. Optical elements mounted on rods fit into the central holes of the riders. The adjustable illuminator (4) can be mounted in a hole on the bench end support, or on any of the riders.

#### 2. Components and Specifications

##### Components

Refer to Figure 2



- |                                       |                           |
|---------------------------------------|---------------------------|
| 1. Optical Bench, Scale & Riders      | 6. Plane Mirror           |
| 2. Mounted Opaque Screen              | 7. Mounted Lenses (4)     |
| 3. Mounted Object Diaphragm           | 8. Mounted Concave Mirror |
| 4. Frosted Glass Screen (translucent) | 9. Illuminator            |
| 5. Screen & Mirror Holder             |                           |

## Specifications

### Optical Bench:

Overall length:	98 cm
Usable scale length:	90 cm
Height:	12 cm
Bar separation:	5.75 cm
Bar diameter:	1.6 cm
Weight:	940 g

### Riders:

	<b>4</b>
Width:	1.7 cm
Mounting hole diameter:	6.4 mm
Thumbscrews:	2 (arresting, rod attachment)

### Optical Components:

Lenses :	4
Diameter:	50 mm
Mounting rod:	93 mm x 6.0 mm
Material:	Optical glass
Types:	Biconvex, $f = 50$ mm Biconvex, $f = 100$ mm Biconcave, $f = -125$ mm Convex meniscus, $f = 300$ mm

### Mirrors:

Plane mirror, 12 cm x 8 cm
Concave mirror, 50 mm diameter, $f = 100$ mm

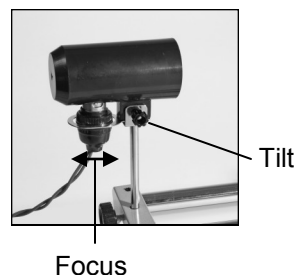
Object diaphragm: 11 cm x 8 cm with opaque figure "1" on 2.5 cm circular aperture

Screens: Opaque white screen, mounted, 11 cm x 8 cm  
Frosted glass screen, 12 cm x 8 cm

Screen holder on rod for frosted glass screen and plane mirror.

### Illuminator:

Incandescent lamp, 12V/6W in housing with built-in lens  
Bulb holder slides for focus  
Tilt adjustment for aligning light beam  
Housing dimensions: 8 cm long x 4 cm diameter  
Replacement bulb: Auto bulb type 90  
12V/6W, bayonet base



### Accessory needed:

To operate the illuminator you need a power supply capable of providing 12V, 0.6A, d.c. or a.c. The connectors should accommodate spade lugs with a 4 mm wide fork.

## 3. Safety

Use of most of the components of the Optical Bench Set does not present any safety hazards. However, care should be taken with the use of the illuminator:

- **Make sure the power supply is turned off before connecting or disconnecting the illuminator. Disconnect the illuminator before changing the bulb.**
- **Do not exceed 12V, this will cause the bulb to burn out.**
- **In use, the illuminator will become hot. Do not touch the hot illuminator and allow it to cool before removing for storage.**

