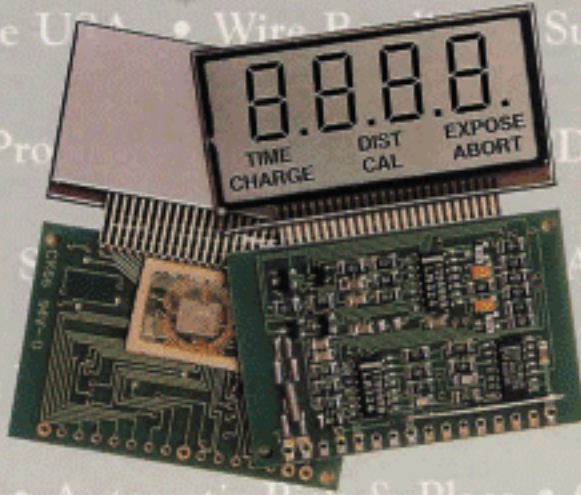


# MODEL 1093

# HEAT SEAL PRESS



***Design Concepts Inc.***

**Instrumentation for Industry**

# THE PROCESS AND MATERIALS –

## APPLICATIONS

The Model 1093 Heat Seal Press is an air operated press that is used to laminate Heat Seal Connectors (HSC) to LCD's, PC boards or similar material. Some benefits of HSC's are cost reduction, mechanical versatility, vibration and shock resistance and improved interconnect quality in your assembly. HSC's are attached by applying both heat and pressure. The Model 1093 utilizes constant heat as opposed to pulse heat equipment. The 1093 has decreased cycle time since it does not require changes in the bonding head temperature during the bonding cycle.

**Heat seal materials** compatible with the Model 1093 press are supplied by the following companies. Others may also be compatible.

ELFORM: Reno, Nevada (702) 829-1905 • 3M: Barrington, Illinois (708) 726-1401 • SHIN-ETSU: Union City, California (510) 475-9000 • HITACHI: Beacon Falls, Connecticut (203) 720-7525 • METHODE: Chicago, Illinois (708) 867-9600

## THE MODEL 1093 HEAT SEAL PRESS

- **Heat Source:** Heat is provided by a 3" long, 400 watt cartridge heater that is surrounded by a precision machined bonding head. (Custom heater and bonding heads are available.)
- **Pressure:** Bond force is applied by a 1½" bore air cylinder that is regulated from the front panel
- **Cycle control:** The bonding cycle is controlled by an internal microprocessor based instrument. The controller provides several functions: 1. Temperature control and display. 2. Cycle time control and display. 3. External thermocouple display (used in the initial setup and temperature profiling of new assemblies.)

### APPROXIMATE PRESSURES FOR 120" WIDE BONDING BLADE

REGULATOR  
ADJUSTMENT

PSI

130

120

110

100

90

80

70

60

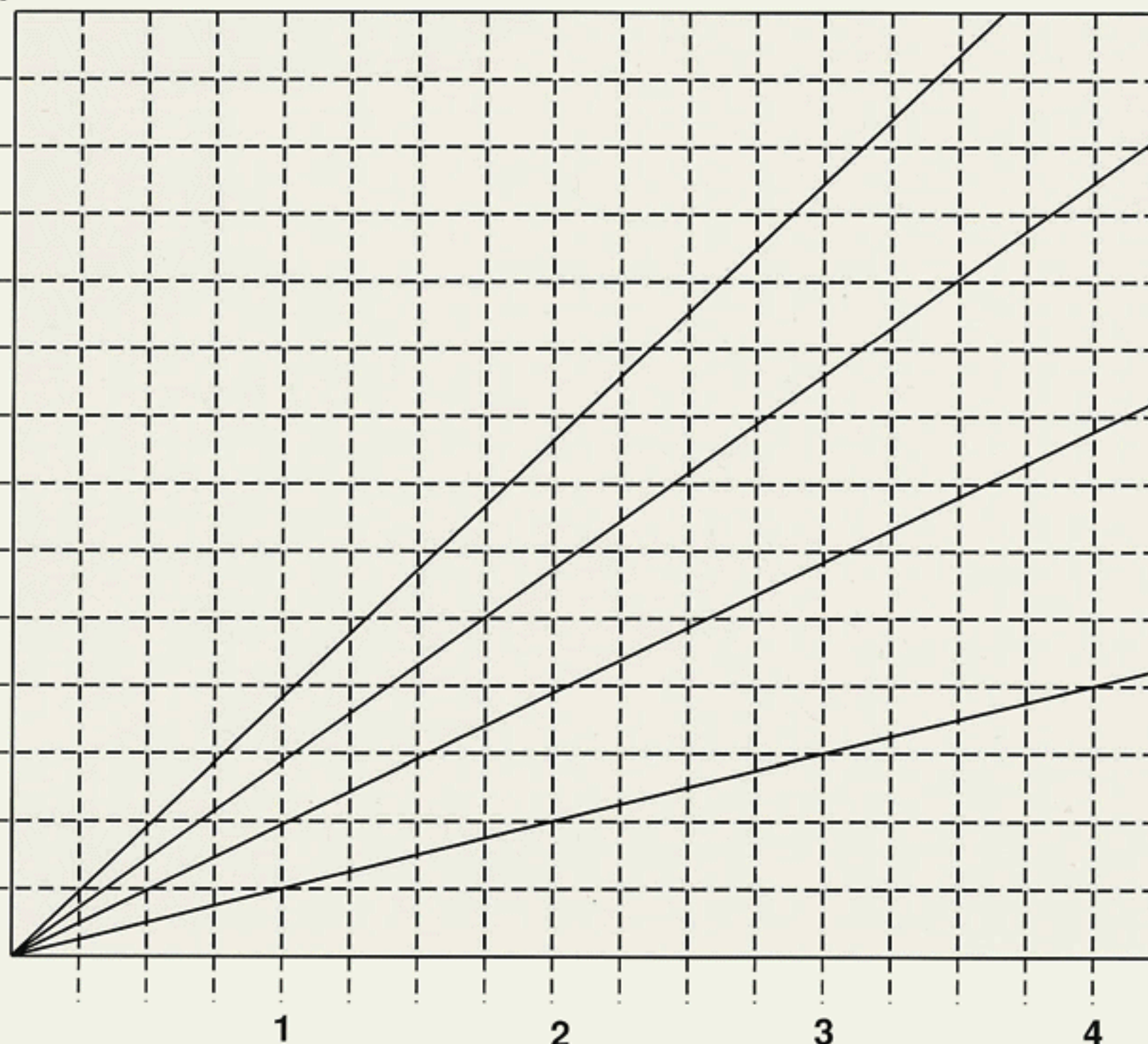
50

40

30

20

10



570 PSI OR 40Kg/CM SQ

427 PSI OR 30Kg/CM SQ

285 PSI OR 20Kg/CM SQ

145 PSI OR 10Kg/CM SQ

1

2

3

4

BOND LENGTH IN INCHES

### FORMULA FOR PRESSURE REGULATOR

REGULATOR SETTING = (AREA OF BOND / 1.77) REQUIRED BONDING PRESSURE IN PSI

# FEATURES –

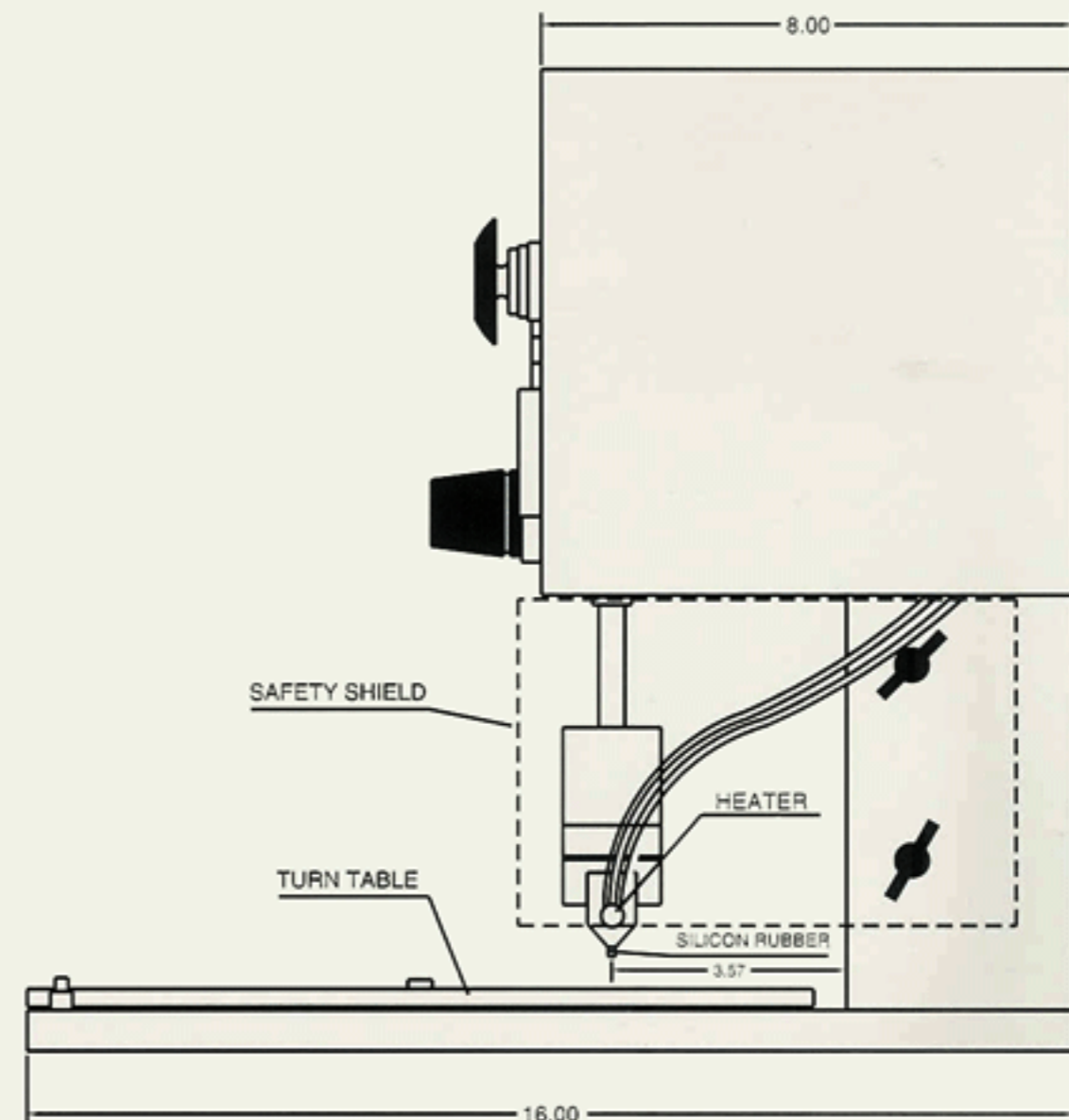
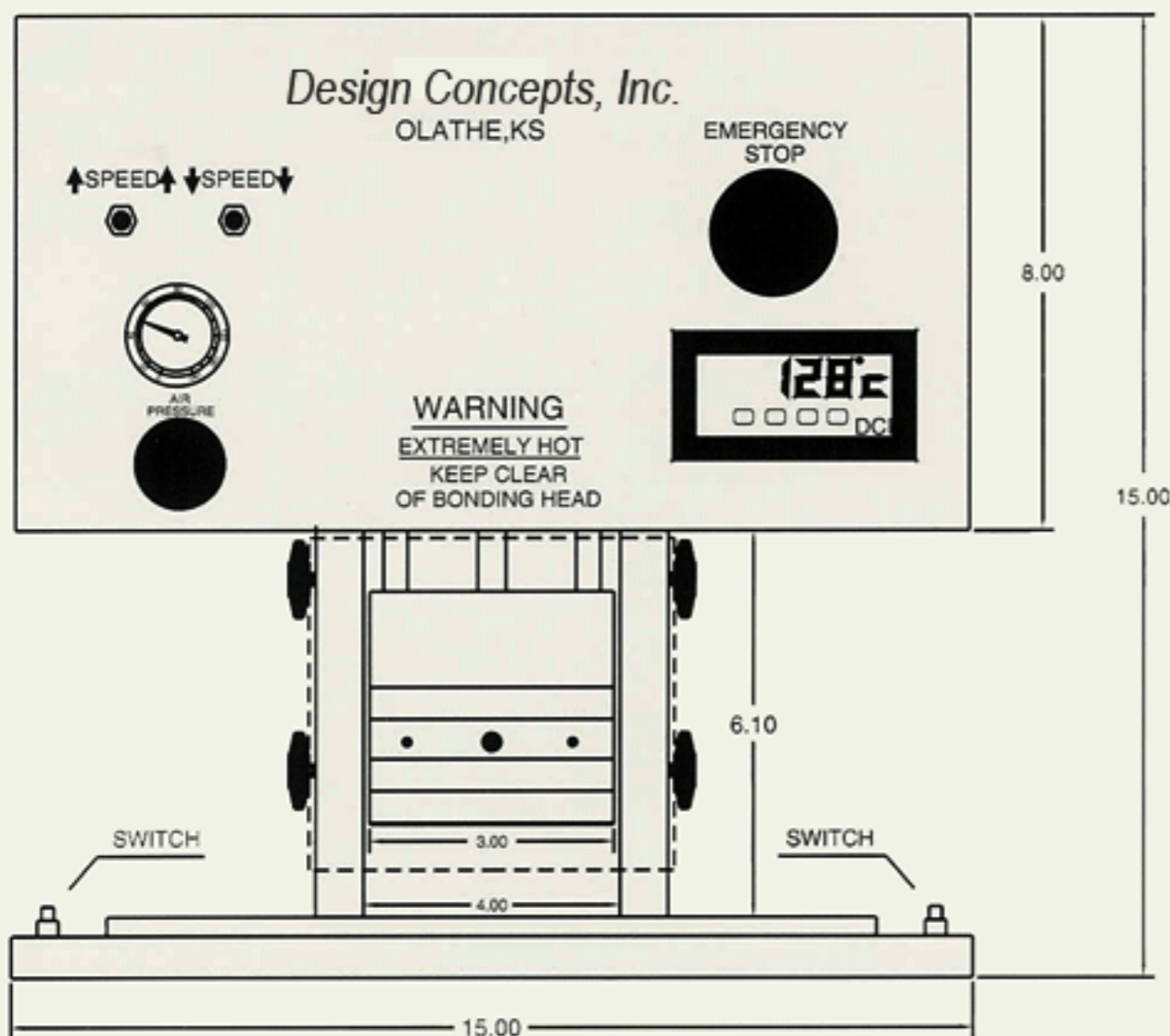
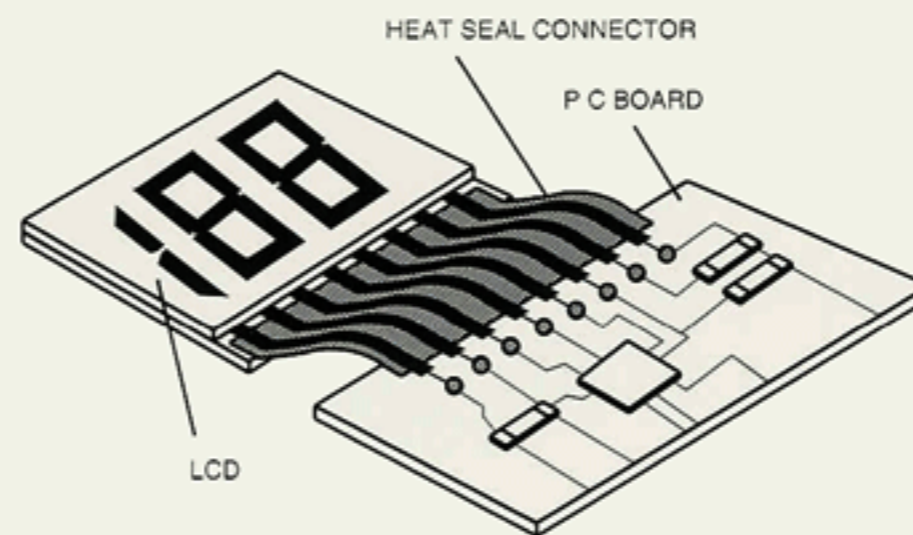
- Heat sealing up to 3" in length standard
- Temperature adjustable from 25 degrees Celsius to 300+ degrees Celsius
- Adjustable pressure
- Bonding head Z axis travel speed fully adjustable
- Bonding time adjustable from 1 second to 100+ seconds
- Bond surface temperature measurable with optional thermocouple
- Unique turntable allows loading and unloading operations to be performed internal to the bonding cycle, while one part is bonding another may be aligned
- Quick interconnect air fittings accepts 1/4" OD flexible air line
- Table Top installation (only 50 lbs. total weight).

## SAFETY FEATURES:

- Dual hand switches
- Automatic heater shutdown when not in use for 1 hour
- Plastic safety shield
- Emergency shut down switch on front panel.

## OPTIONS

- Foot switch for hands free operation
- External thermocouple for measuring (point of bond) temperature
- Color video optical alignment system
- Custom micrometer alignment fixturing
- Custom bonding head
- Additional turntables or fixtures for quick changeover.



# OPTICAL ALIGNMENT OPTION -

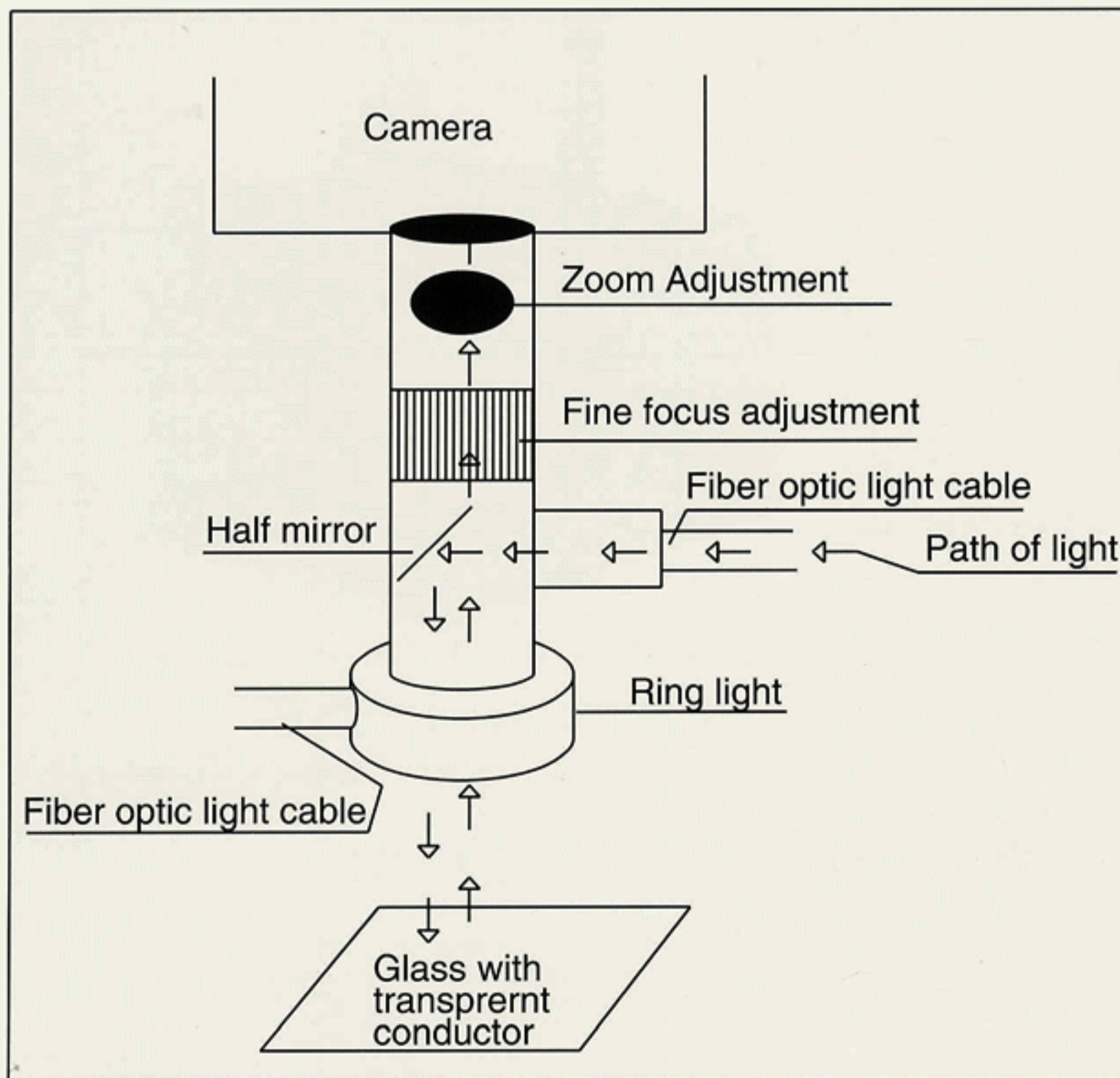
The Optical Alignment Option on the 1093 Heat Seal Press allows alignment of very high density heat seal connectors. Heat seal connectors that have a pitch of .030" or less usually require optical alignment. Other uses are for TAB Bonding. Tape Automated Bonding is the direct attachment of a TAB driver assembly to the LCD.

## SPECIAL FEATURES OF THE OPTICAL SYSTEM:

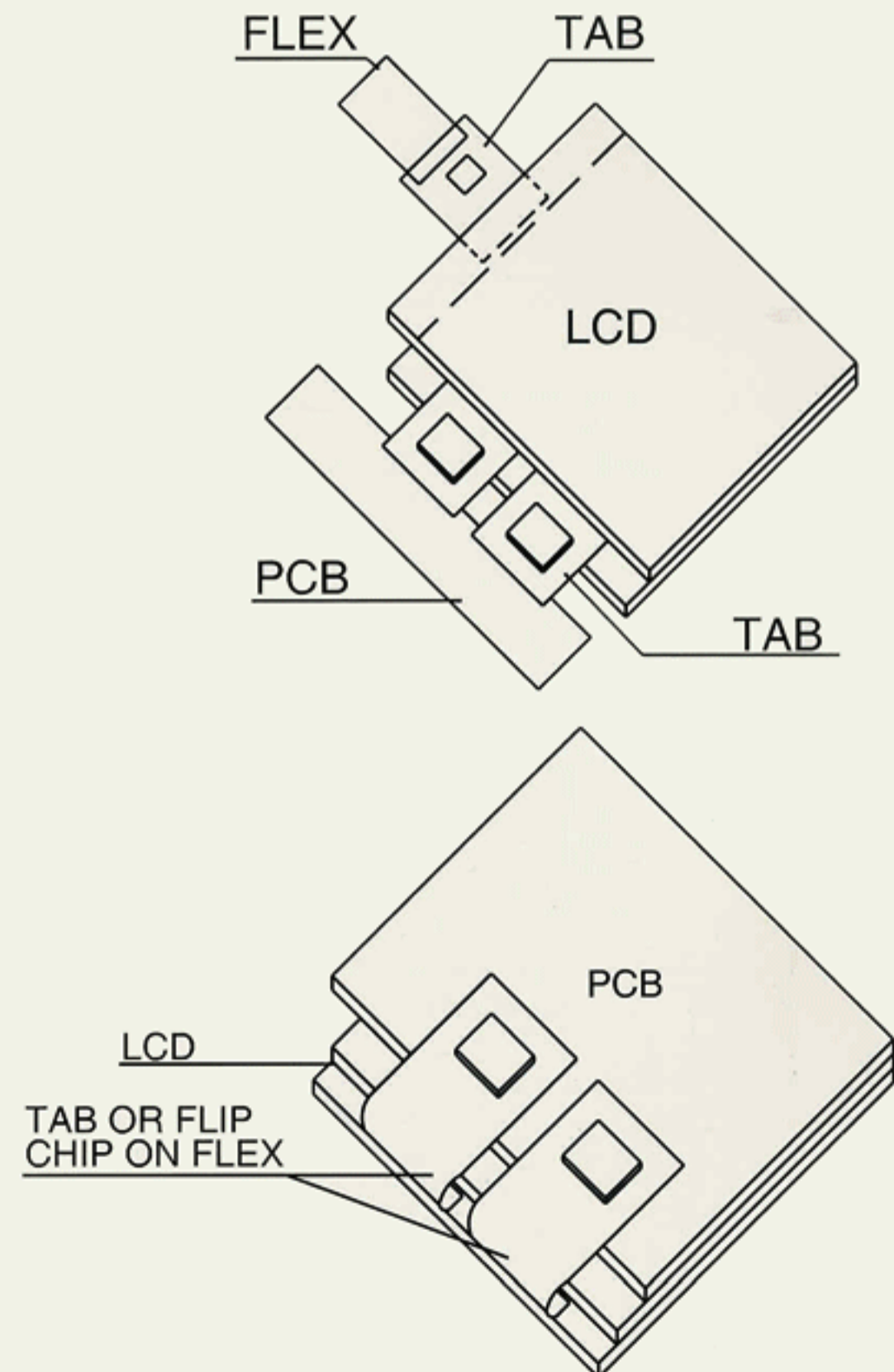
- Single chip color video camera with an 8.8 mm x 6.6 mm sensing area and resolution of 460 "TV" lines
- 13" high resolution, color monitor with 450 "TV" lines
- External mini ring light with a working distance of 1.5"–3.0" and a 30" long cable
- Two 150 watt fiber optic light sources with variable intensity adjustment controls on the front panel. Each is equipped with soft start "lamp saver" circuitry
- Internal coaxial illuminated zoom lens. This special arrangement allows the ability to view the transparent conductive coatings that are present on many types of displays. LCD's (Liquid Crystal Displays), EL's (Electro Luminescent Displays), VFD's (Vacuum Florescent Displays), and other displays that have similar transparent coatings. This special lens takes light that is emitted from one of the fiber optic light sources and passes it through a half reflective mirror that is set at a 45 degree angle inside the lens. The light is directed down to the substrait, the light then bounces off of the transparent conductive coating directly into the lens and camera. See diagram below.

The standard magnification has zoom that at its lowest magnification has 0.38 sq. in. filling the screen, to .06 sq. in. filling the screen. The working distance is 2.9" throughout the zoom range. The actual magnification is 21X to 135X. This range will work for alignment of TAB (Tape Automated Bonding) down to less than .006" pitch, .003" lines and spaces.

OPTICAL SYSTEM DIAGRAM

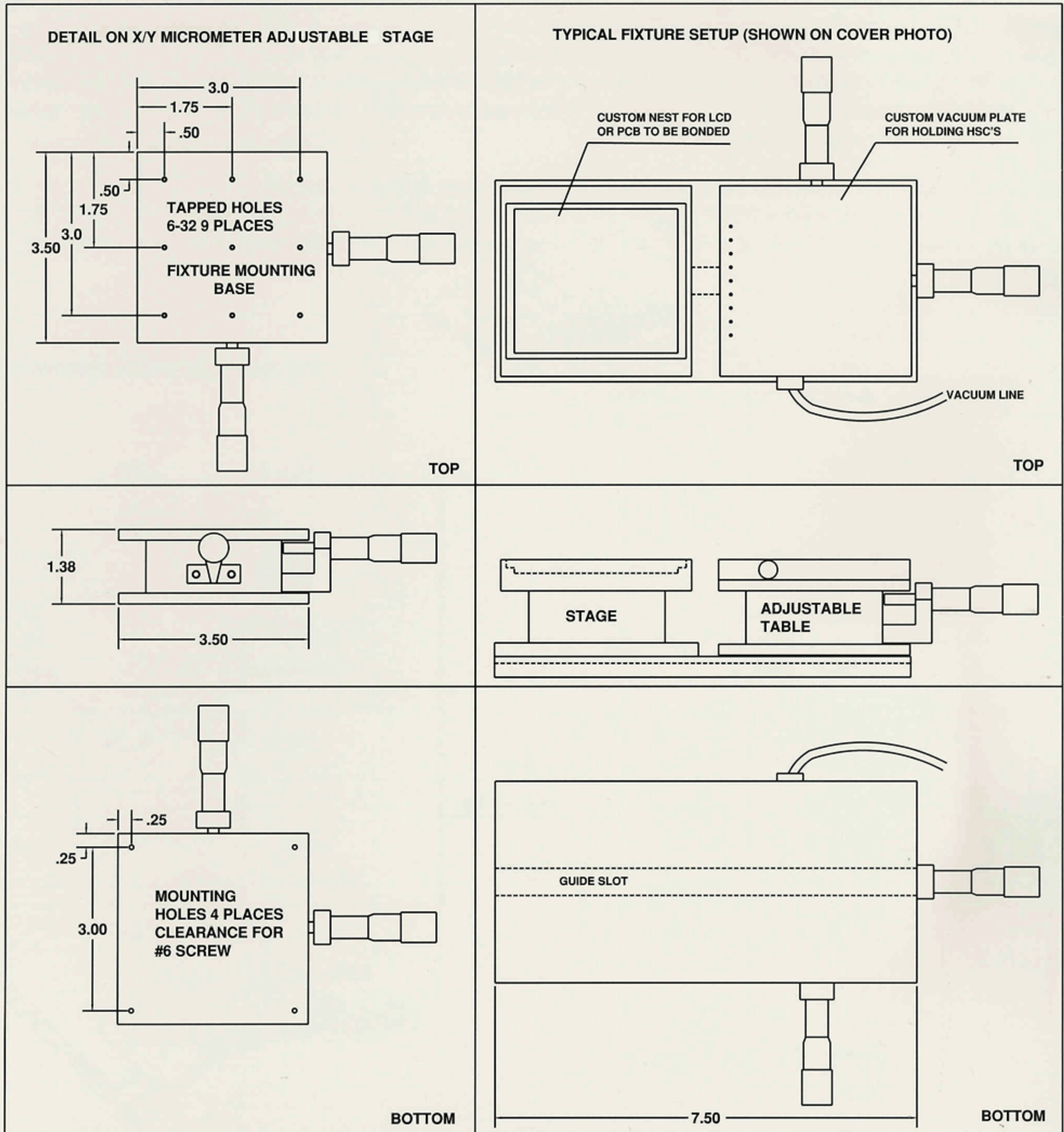


TAB (TAPE AUTOMATED BONDING)



# FIXTURES -

Precision fixtures are necessary for heat sealing that requires the optics option or any time that extreme accuracy is desired. Precision micrometer alignment stages may be used in place of the turntable for very fine pitch HSC alignment. The turntable is easily removed and replaced with an adjustable alignment stage shown below. We will supply custom fixturing for your application, to be used with the 1093 press. The alignment stage is available with and without the custom nest and vacuum plate. Custom fixtures are quoted separately. Please contact us for additional information.



# REQUIREMENTS –

## STANDARD MODEL 1093

- 6 Amps at 115 VAC
- Compressed air: Filtered and dry, 80 to 120 PSI. Machine accepts 1/4" OD flex tubing
- Vacuum (only necessary on models equipped with vacuum holding fixtures).

## MODEL 1093 WITH COLOR OPTICS

- 6 Amps at 115 VAC
- Compressed air: Filtered and dry, 80 to 120 PSI. Machine accepts 1/4" OD flex tubing
- 85 Watts at 115 VAC for monitor
- 23 Watts at 115 VAC for camera power supply
- 6 Amps at 115 VAC for fiber optic light source for ring light
- 6 Amps at 115 VAC for internal coaxial illuminated lens
- Vacuum (only necessary on models equipped with vacuum holding fixtures).