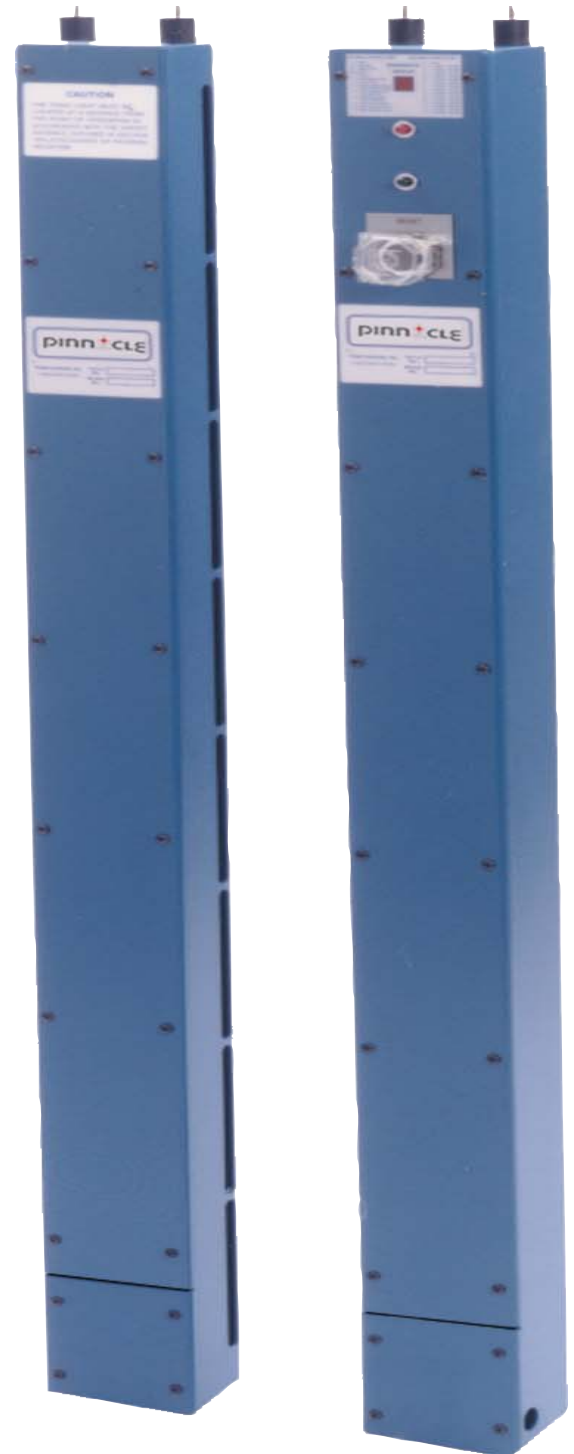


# PPG Series

## Perimeter Guarding



# PPG Series (Perimeter Guarding)

Perimeter Guards utilize wider beam spacing than safety light curtains protecting personnel from “pinch point” or “point of operation” hazard zones. Perimeter Guards are designed to detect when an operator or passerby penetrates the perimeter of a hazardous zone. The Perimeter Guard safety light curtain will then initiate a stop signal to the machine control.

Perimeter Guards also incorporate latching safety relays. This requires a manual reset after each penetration into the guarded zone. This is an additional safety feature to protect the intruder from an inadvertent machine actuation while the intruder is within the work area.



## Ordering Procedure

Example Part #

**PPG - 36 - 3.0 - 45 - (Options)**

Prefix	Scanning Height	Beam Spacing	Scanning Distance
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1. Specify height of unit
2. Specify beam spacing
3. Specify scanning distance — 90' (27m) maximum

### Pylon Sizes (Protected Area)

**Inches:** 24, 30, 36, 48, 60, 72, 84, 96

**Millimeters:** 609.6, 762, 914.4, 1219.2, 1524, 1828.8, 2133.6, 2438.4

### Beam Spacing

**1.5** - 1.5" (38.1mm) Spacing of Beams

**3.0** - 3.0" (76.2mm) Spacing of Beams

**6.0** - 6.0" (152.4mm) Spacing of Beams

**12.0** - 12.0" (304.8mm) Spacing of Beams

### Options

**Auxiliary Output Contact.** Provides an isolated (dry) contact output to be used as a signal line. Specify N.O. or N.C. output. Add suffix AO to light curtain Model Number.

**External Relay Check.** This option monitors the control relays of the guarded machine to assure that the machine control relays change state when the safety light curtain sends a stop signal. Add suffix ER to light curtain Model Number.

**24VDC Power Source.** Add suffix DC to light curtain Model Number.



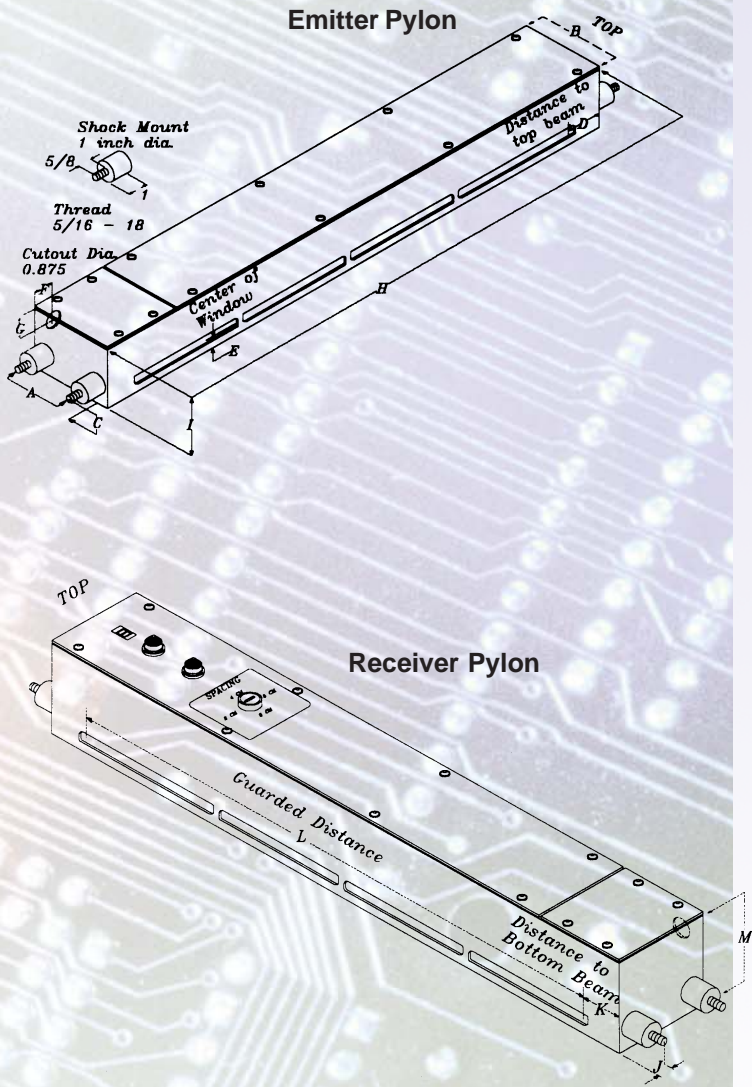


# PPG Series Dimensions

**All Models**

Dim A	3.00" (76mm)
Dim B	4.25" (108mm)
Dim C	1.00" (25mm)
Dim D	1.87" (48mm)
Dim E	0.62" (16mm)
Dim F	1.00" (25mm)
Dim G	1.00" (25mm)
Dim I	3.25" (83mm)
Dim J	0.62" (16mm)
Dim M	4.25" (108mm)

Model	Dim H (box length)	Dim K (last to end)	Dim L (first to last beam)
PPG-24	28.87" (733mm)	1.87" (48mm)	25.22" (641mm)
PPG-30	36.25" (921mm)	2.87" (73mm)	31.52" (801mm)
PPG-36	42.12" (1070mm)	2.87" (73mm)	37.82" (961mm)
PPG-42	48.37" (1229mm)	2.87" (73mm)	44.12" (1121mm)
PPG-48	54.75" (1391mm)	2.87" (73mm)	50.42" (1281mm)
PPG-60	67.25" (1708mm)	2.87" (73mm)	63.02" (1601mm)
PPG-72	79.75" (2026mm)	2.87" (73mm)	75.62" (1921mm)
PPG-84	91.75" (2330mm)	2.87" (73mm)	88.22" (2241mm)
PPG-96	103.75" (2635mm)	2.87" (73mm)	100.82" (2561mm)



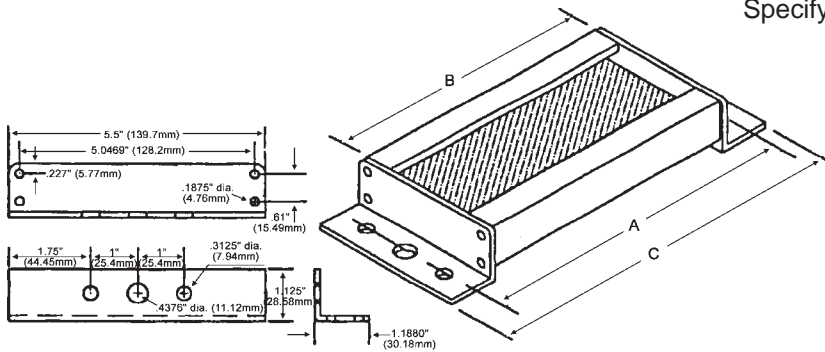
# Accessories

## (For Both SLT and PPG Series)

### Cornering Mirror Dimensions

Through the use of cornering mirrors, multiple sides or work envelopes can be guarded which enhance safety and reduce downtime related to mechanical and electrical interlock systems. Include a 5% reflectivity loss per mirror when calculating the total scanning distance of the light curtain.

Model	Dim A (hole to hole)	Dim B (mirror)	Dim C (total)
TRM-12	19.45" (494mm)	18.25" (464mm)	20.50" (521mm)
TRM-18	25.45" (646mm)	24.25" (616mm)	26.50" (673mm)
TRM-24	31.45" (799mm)	30.25" (768mm)	32.50" (825mm)
TRM-30	37.45" (951mm)	35.25" (895mm)	38.50" (978mm)
TRM-36	43.45" (1104mm)	42.25" (1073mm)	44.50" (1130mm)
TRM-42	49.45" (1256mm)	48.25" (1226mm)	50.50" (1282mm)
TRM-48	55.45" (1408mm)	54.25" (1378mm)	56.50" (1435mm)
TRM-60	67.45" (1713mm)	66.25" (1683mm)	68.50" (1739mm)
TRM-72	79.45" (2018mm)	78.25" (1988mm)	80.50" (2045mm)
TRM-84	91.45" (2323mm)	90.25" (2292mm)	92.50" (2350mm)
TRM-96	103.45" (2628mm)	102.25" (2597mm)	104.50" (2654mm)



**Ordering Procedure**  
Specify Mirror Model Number and Quantity

### Pedestal Dimensions (Model 8000)

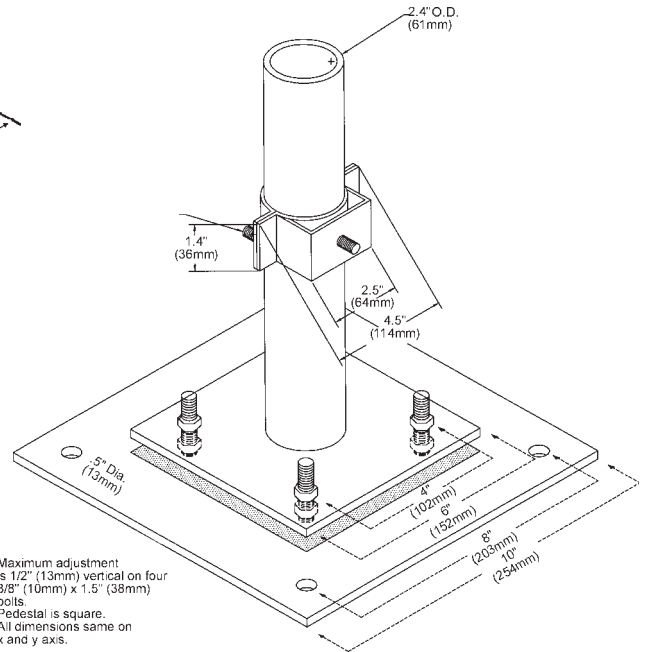
The heavy duty, all welded steel pedestal floor mounts can be used for mounting either the SLT Series, the PPG Series, or cornering mirrors. Sliding mounts on the pedestal are of universal design and are supplied standard. Unique floating base on pedestal is designed to compensate for uneven floors.

**NOTE: Pedestals must be bolted to the floor, they must not be movable (ANSI B11.19-1990).**

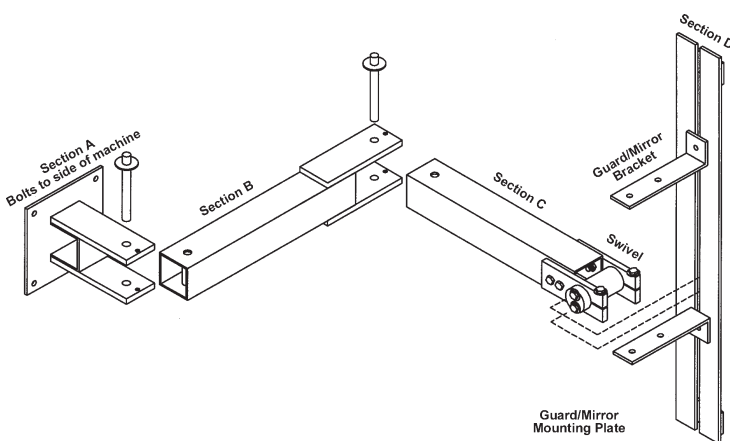
1. Sliding mounts supplied
2. Standard height is 72" (1829mm) - Model #8000  
Optional 96" (2438mm) - Model #8096
3. Painted OSHA yellow
4. Pedestal is 12 gauge steel  
Base Plate is 1/4" (6.35mm) steel plate

### Ordering Procedure

Specify Pedestal Model Number and Quantity



### Model 9000 Swing Mount Brackets



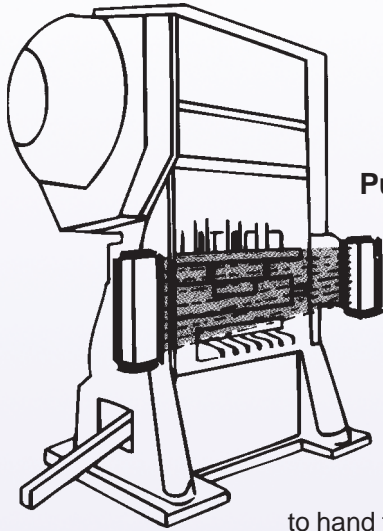
Excellent method of mounting light curtain on press brakes or when light curtain is to be removed for die setups or machine maintenance. Model 9000 consists of three 180 degree pivot points along with light guard diagonal movement capability for virtually unlimited light guard positioning. Two-inch square tubing (3/16" or 4.76mm thick) painted OSHA yellow which mounts directly onto the machine housing and makes for a heavy duty, yet versatile mounting bracket. Specify dimensions "B" and "C."

### Ordering Procedure

- Specify Pedestal Model Number and Quantity
- Specify Model 9000 Swing Mount Brackets and quantity
- Specify B & C dimensions
- Specify light curtain or mirror size to be mounted



# Applications

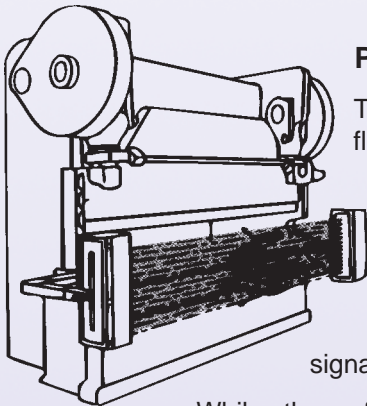
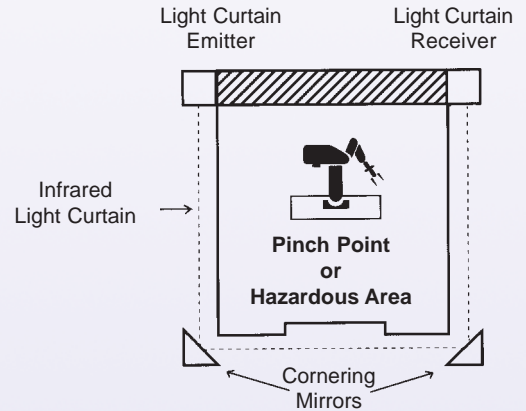


## Punch Presses

The SLT Series is designed to accept coil stock movement with no press shutdowns or adjustments to the light curtain. No adjustments are necessary to the light curtain for die height changes or from automatic to hand fed secondary operations.

## Robotic and Automation Multi-Sided Guarding Systems

Easily installed cornering mirrors, combined with the easy alignment characteristics of the SLT Series, provide multi-sided protection which allows complete visibility and access to the protected pinch point or hazardous zone for a fraction of the cost of physical barriers.

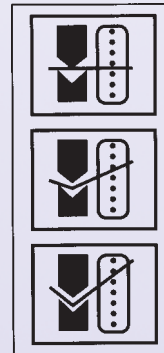


## Press Brakes

The Floating Blank light curtain provides the flexibility necessary to effectively guard all types of power press brakes. The Floating Blank permits work pieces to be formed vertically or horizontally through the guarded area without shutting down the machine. Entry into the protected area by the operator or passerby will prevent the start or, if the machine is in motion, will provide a signal to stop the machine.

While other safety devices must be altered to allow materials to feed through, the Floating Blank is controlled by a keyed selector switch that will allow a work opening of up to 8cm based on 2cm increments.

Blanking adjustments required when die heights change are not necessary. The Floating Blank light curtain automatically adjusts to the various feed positions providing production with protection. The Floating Blank light curtain adapts to mechanical, air clutch, and hydraulic press brakes.



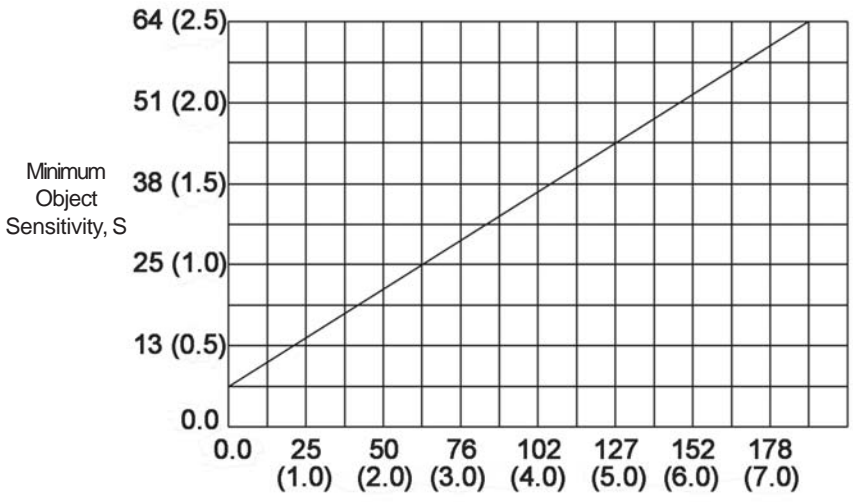
# Formula for Calculating Light Curtain Safety Distance

The effective sensing field of the device shall be located at a distance from the nearest recognized hazards such that the operator or others cannot reach the hazard with a hand or other body part before cessation of motion during the hazardous portion of the machine cycle.

The point at which a device responds to an intrusion may vary. The devices should be located or adjusted such that the device always responds to the intrusion at or prior to the safety distance. Care should be exercised when installing the device to ensure that it does not detect false signals from other devices in the area.

Usually the electro-optical presence-sensing device is used in a manner that provides a protected zone in front of the primary work area with auxiliary devices or guards used to protect secondary access areas. In some cases, however, mirrors may be used in conjunction with the device to provide 2-, 3-, 4-, or 5-sided protection.

The machine stop time should be measured with the machine running at its fastest speed with its heaviest die or tooling and the stop time being measured at the 90° position in the downstroke.



$$Dpf = 3.4 (S - 7) \text{ mm}$$

$$(Dpf = 3.4 (S - 0.275) \text{ in})$$

### Penetration factor, Dpf, for presence-sensing devices used in a vertical application with object sensitivity less than 64 mm (2.5 inches)

Dpf, the distance added to the safety distance due to the penetration factor compensates for varying object sensitivities of electro-optical presence-sensing devices.

When blanking features are used and when the blanked area is not completely filled by the workpiece or part, or by mechanical guarding, the minimum object sensitivity can be calculated as:

$$\text{Object sensitivity} = \text{size of the blanked area plus minimum object sensitivity without blanking.}$$

Once this value is found, then determine Dpf.

If the entire blanked area is filled with mechanical guarding or other fixed material or guards, use the device's object sensitivity to determine Dpf.

The following formula should be used when calculating the safety distance:

$$Ds = K \times (Ts + Tc + Tr + Tbm) + D(pf)$$

- Ds = Minimum safety distance between the device and the nearest point of operation hazard (in inches).
- K = Hand speed constant. This value has been determined by various studies and, although these studies indicate speeds of 63 in/sec to over 100 in/sec, they are not conclusive determinations. The employer should determine this value by considering all factors, including physical ability of the operator.
- Ts = Stop time of the machine tool measured by a stop time measurement device.
- Tc = Response time of the control system (usually is taken care of by the measurement device).
- Tr = Response time of the presence-sending device and it's interface, if any, as stated by the manufacturer or measured by the employer.
- Tbm = Additional time allowed for the brake monitor to compensate for variations in normal stopping time.
- D(pf) = Depth Penetration Factor. Added distance as indicated by the above chart. The minimum object sensitivity is stated by the manufacturer.