

# **CM Round Punches**

## **Technical Data Sheet**

**CMT** COLUMBIA  
MARKING  
TOOLS



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### Why use an air impact marker for assembly operations?

An air cylinder is a pneumatic device that uses compressed air to generate linear motion. The force it produces is determined by the air pressure and the piston area, as described by the equation  $F = P \times A$ . The calculation of air cylinder “force” based on the model 88 parameters is 80 lbs (calculation shown in image on next page).

On the other hand, an air impact marker, like the model 288, operates on the principle of force equals mass times acceleration ( $F=MA$ ). In this case, the acceleration of the rod/stamp holder contributes to the high force output, even though the air pressure may be relatively low. The impact force of 6000 lbs by the Model 288 is generated by 80 psi.

In summary, an air impact marker is not the same as an air cylinder. The force calculation for an air impact marker involves the acceleration of the moving parts, leading to a high force output compared to what would be expected based solely on air pressure and piston area as in a traditional air cylinder.

## Force Comparison

Model 288

Bore Size: 1.25"

Air Cylinder Pressure: 80 lbs

Air Impact Pressure; 6,000 lbs

Cylinder type	Single-acting ▾
Cylinder pressure (P)	80 psi ▾
Piston diameter (D)	1.125 in ▾
Piston area (A <sub>u</sub> )	0.994 in <sup>2</sup> ▾
Cylinder force	
Outward stroke force (F <sub>1</sub> )	79.52 lbf ▾

## Answer: Compact Design

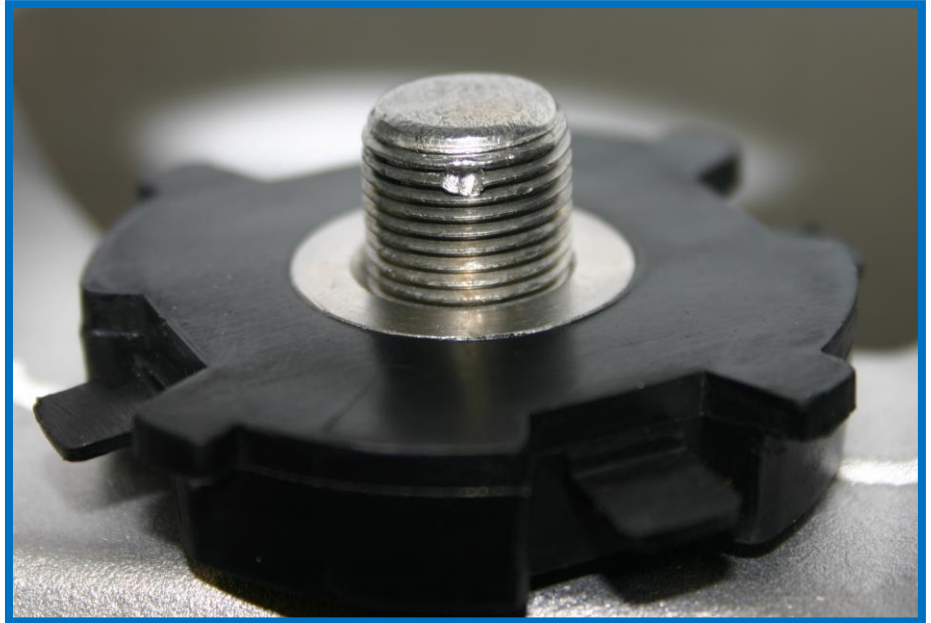
An air cylinder would require a bore of almost 10" to provide the same force.

Using an air impact cylinder is more economical and saves on space.



### Example Applications

- Deform thread to stop parts coming apart
- Assembly operation by deforming two parts together.



## Standard Conical Points



Picture above shows – from left to right.

- CM7XP120 1/4" round punch with 120 degree conical tip
- CM8XP90 3/8" round punch with 90 degree conical tip
- CM9XP60 1/2" round punch with 60 degree conical tip

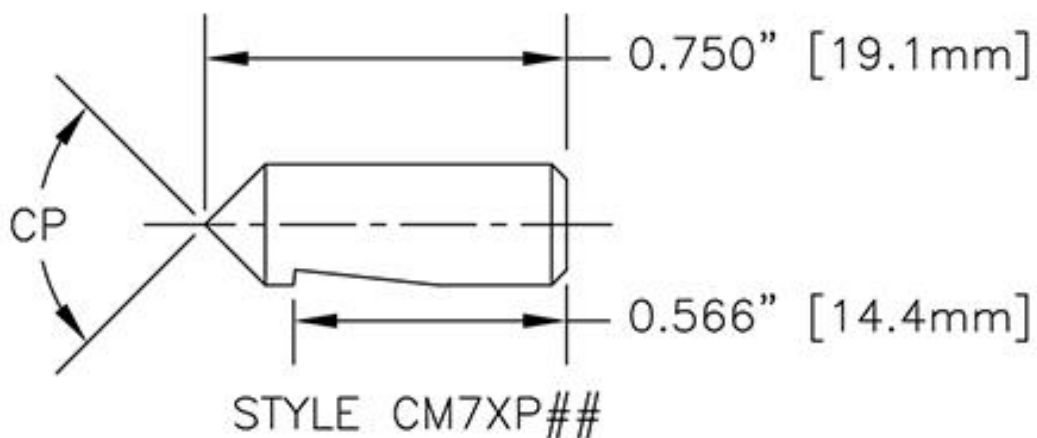
The (3) different cone sizes are applied in the following applications.

- 1) 120-degree punch offers the widest and most blunt force for the largest depression
- 2) 90-degree conical point is considered all purpose and is the most used.
- 3) 60-degree conical point is used when a more precise and limited area is required.

### CM7X – 1/4" Round Punches

CM7X round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. These punches are used in the CMT air impact marker Model 78 "OB" Rod.

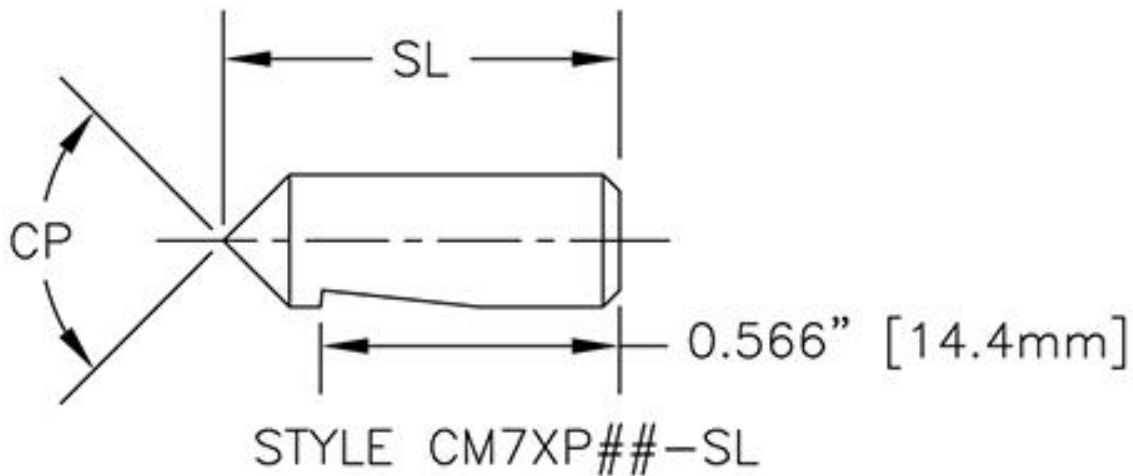
Catalog Number	Concical Point
CM7XP60	74 Degrees
CM7XP90	90 Degrees
CM7XP120	120 Degrees



## CM7X-SL – 1/4" Round Special Length Punches

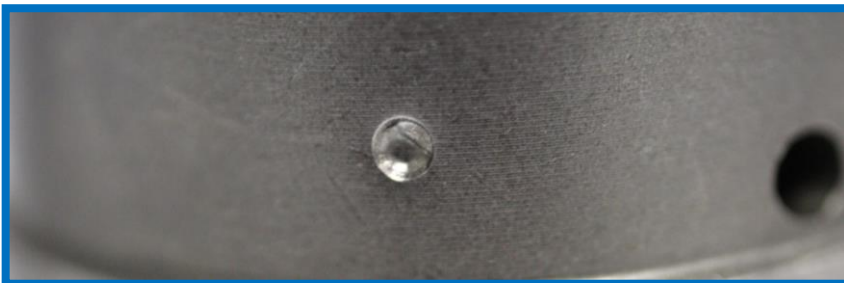
CM7X round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. The SL (special length) are great for extra reach. These punches are used in the CMT air impact marker Model 78 "OB" Rod.

Catalog Number	Concical Point	SL
CM7XP60	74 Degrees	1/2" To 2.50" 12.7mm To 63.5mm
CM7XP90	90 Degrees	
CM7XP120	120 Degrees	



To order individual **SPECIAL LENGTH** Punches add SL### notation to part number as shown.

CM7XP	90	SL100
Style	Conical Point Notation	SL###, replace ### with the length required.

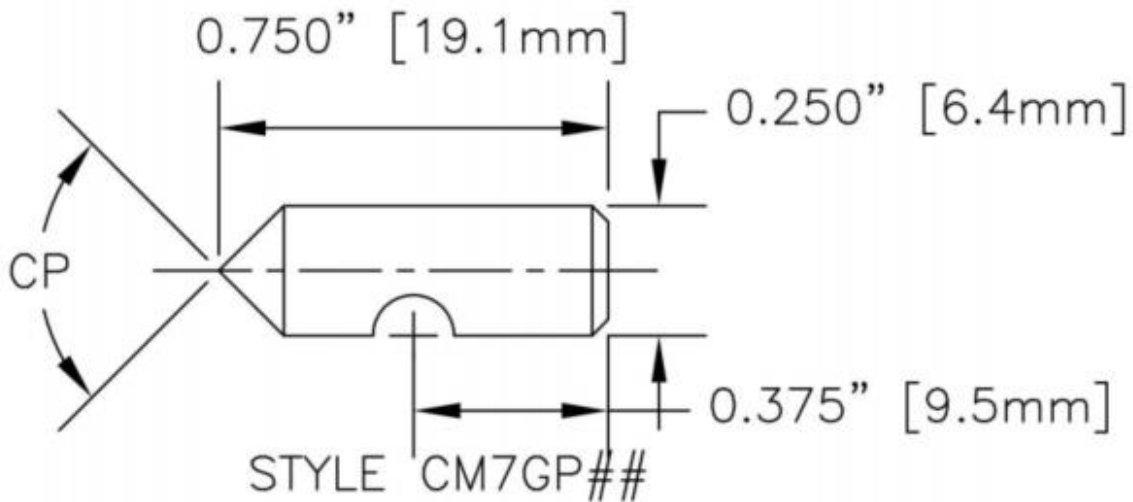


The CM Round punches are perfect for material deformation. The results are clear and may be used as an acceptance mark.

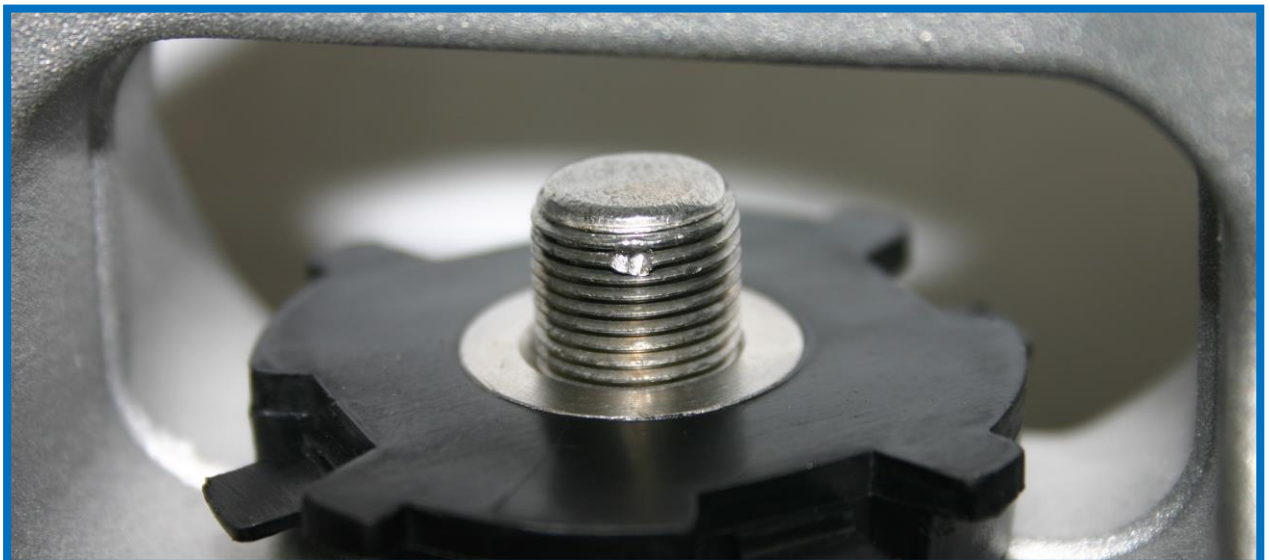
### CM7G – 1/4" Round Punches

CM7X round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. These punches are used in the CMT air impact marker Model 78 "GB" Rod.

Catalog Number	Concical Point
CM7GP60	74 Degrees
CM7GP90	90 Degrees
CM7GP120	120 Degrees



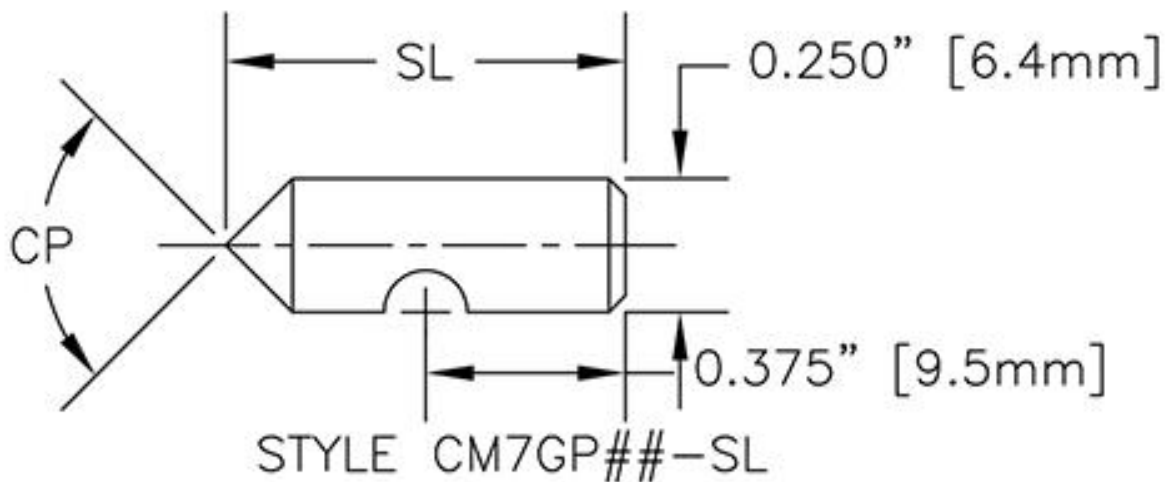
The model 78 is used in combination with the CM7 Prick Punch to provide disruption of threads as a locking application.



## CM7G-SL – 1/4" Round Special Length Punches

CM7X round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. The SL (special length) are great for extra reach. These punches are used in the CMT air impact marker Model 78 "GB" Rod.

Catalog Number	Conical Point	SL
CM7GP60	74 Degrees	1/2" To 2.50" 12.7mm To 63.5mm
CM7GP90	90 Degrees	
CM7GP120	120 Degrees	



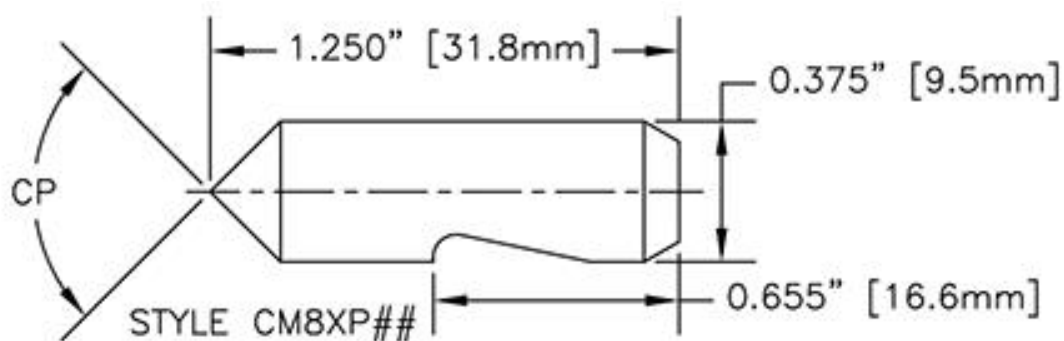
To order individual **SPECIAL LENGTH** Punches add SL### notation to part number as shown.

CM7GP	90	SL100
Style	Conical Point Notation	SL###, replace ### with the length required.

### CM8X – 3/8" Round Punches

CM8X round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. These punches are used in the CMT air impact marker Model 88/288 "OB" Rod.

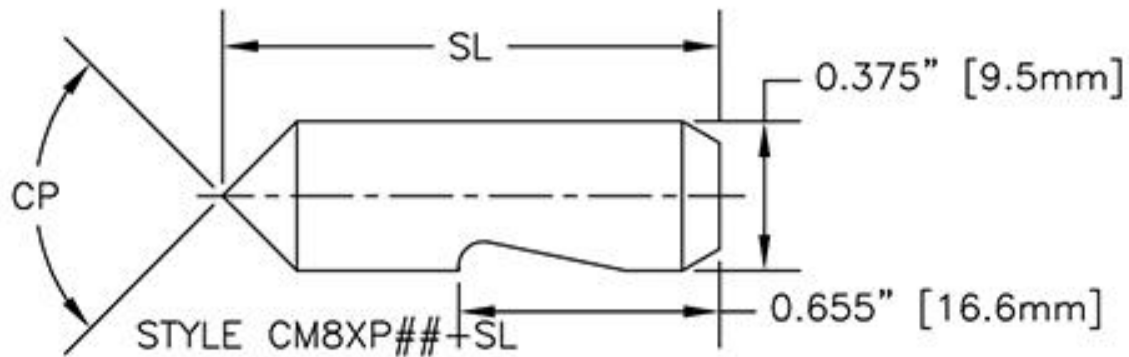
Catalog Number	Concical Point
CM8XP60	60 Degrees
CM8XP90	90 Degrees
CM8XP120	120 Degrees



## CM8X-SL – 3/8" Round Special Length Punches

CM8X round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. The SL (special length) are great for extra reach. These punches are used in the CMT air impact marker Model 88/288 "OB" Rod.

Catalog Number	Conical Point	SL
CM8XP60	60 Degrees	1/2" To 2.50" 12.7mm To 63.5mm
CM8XP90	90 Degrees	
CM8XP120	120 Degrees	



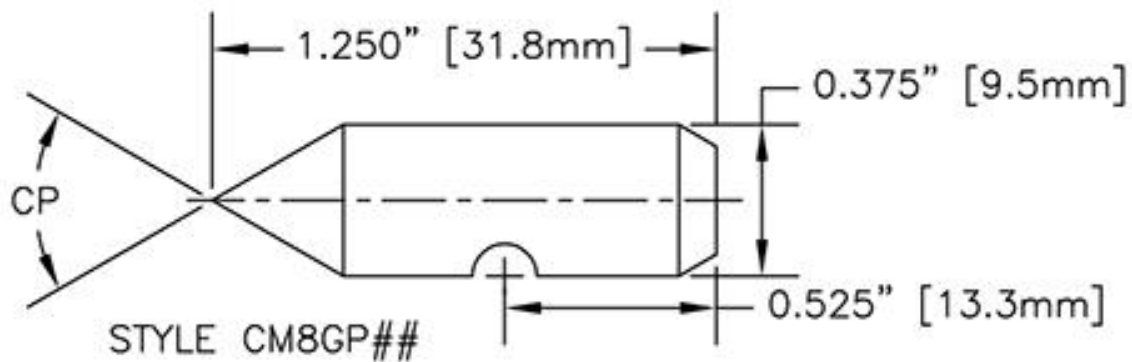
To order individual **SPECIAL LENGTH** Punches add SL### notation to part number as shown.

<b>CM8GP</b>	<b>90</b>	<b>SL100</b>
Style	Conical Point Notation	SL###, replace ### with the length required.

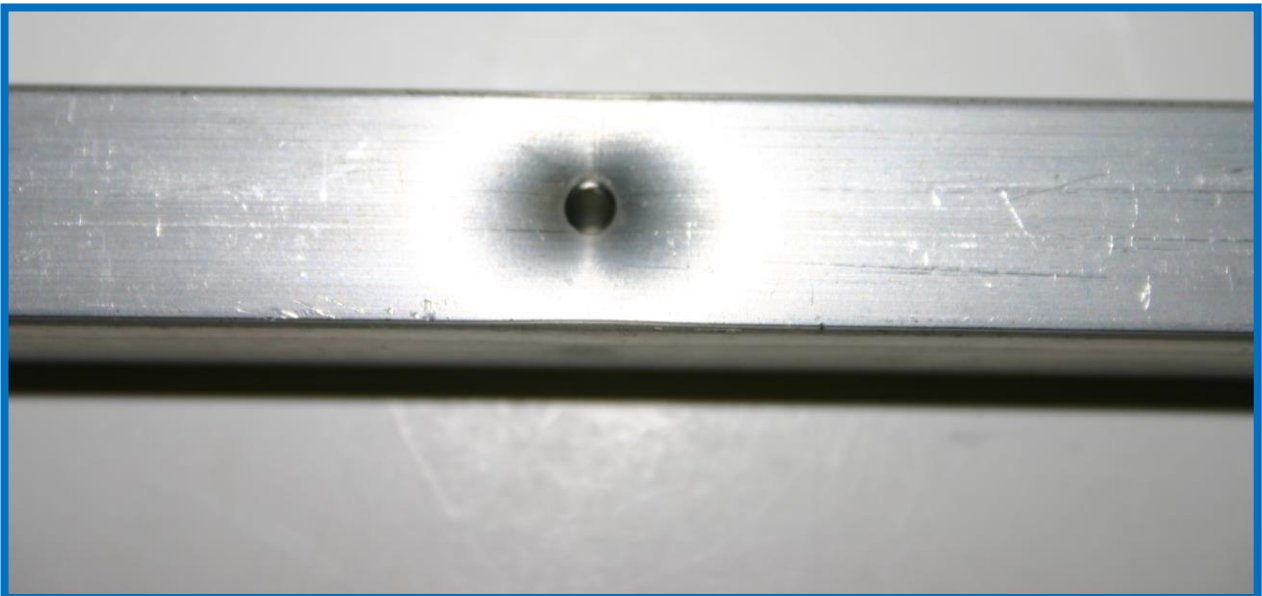
### CM8G – 3/8" Round Punches

CM8G round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. These punches are used in the CMT air impact marker Model 88/288 "GB" Rod.

Catalog Number	Concical Point
CM8GP60	60 Degrees
CM8GP90	90 Degrees
CM8GP120	120 Degrees



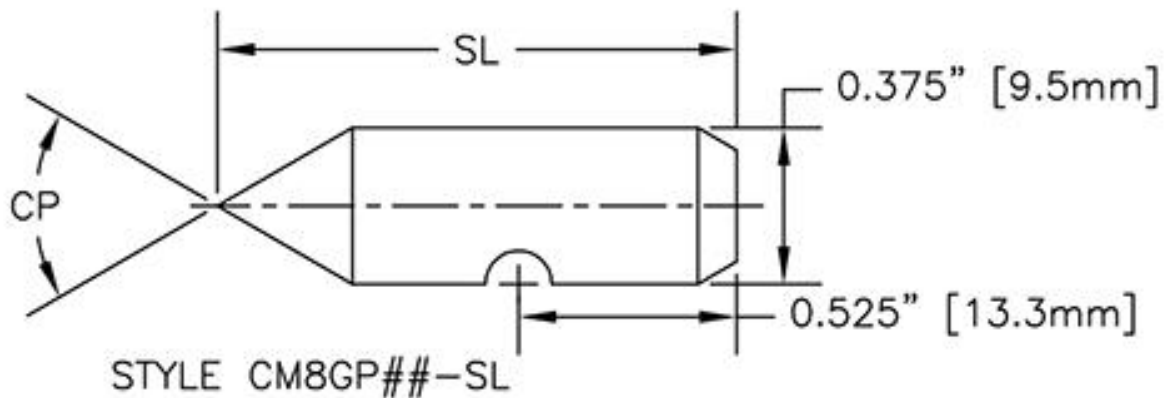
Punches used in combination with the compact air impact markers are a perfect tool for assembly operations.



## CM8G-SL – 3/8" Round Special Length Punches

CM8G round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. The SL, special length, are great for extra reach. These punches are used in the CMT air impact marker Model 88/288 "GB" Rod.

Catalog Number	Concical Point	SL
CM8GP60	60 Degrees	1/2" To 2.50" 12.7mm To 63.5mm
CM8GP90	90 Degrees	
CM8GP120	120 Degrees	



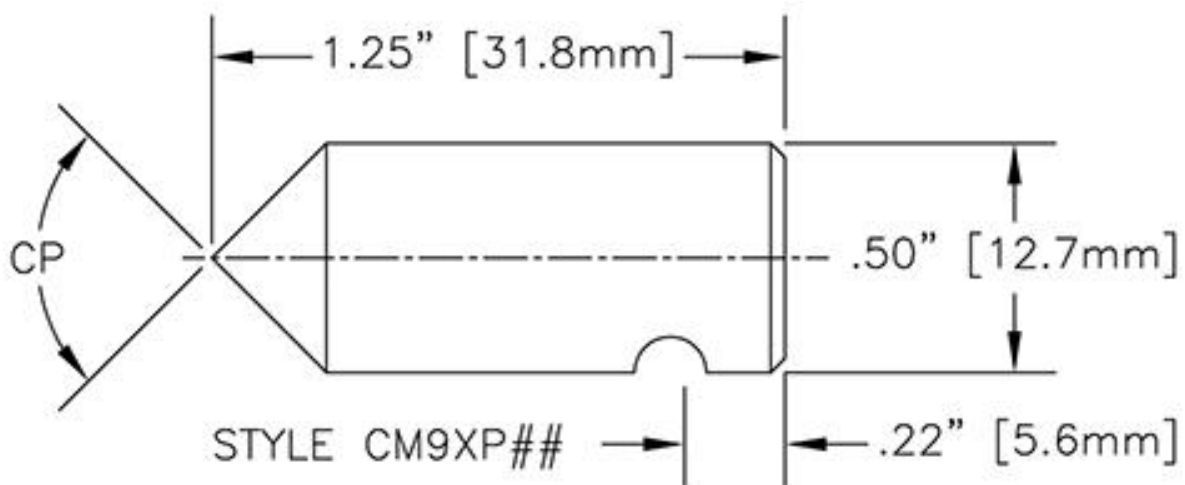
To order individual **SPECIAL LENGTH** Punches add SL### notation to part number as shown.

CM8GP	90	SL100
Style	Conical Point Notation	SL###, replace ### with the length required.

### CM9X – 1/2" Round Punches

CM9X round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. These punches are used in the CMT air impact marker Model 98/298 "OB" Rod.

Catalog Number	Concical Point
CM9XP60	60 Degrees
CM9XP90	90 Degrees
CM9XP120	120 Degrees



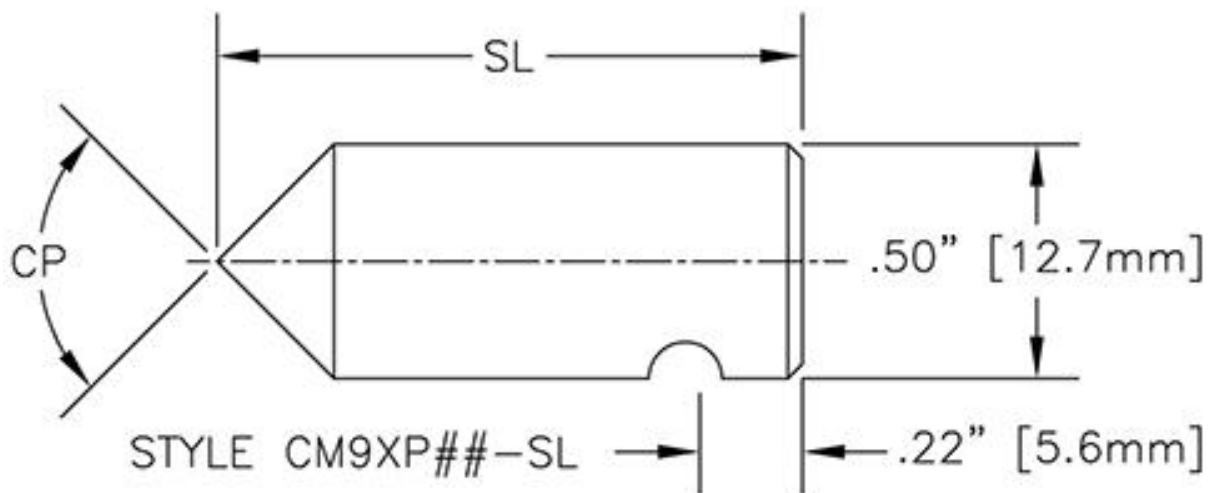
60 degree angle shown in picture.



## CM9X-SL – 1/2" Round Special Length Punches

CM9X round punches are perfect for non-marking applications. They are used for acceptance marks, assembly, or staking operations. The SL (special length) are great for extra reach. These punches are used in the CMT air impact marker Model 98/298 "OB" Rod.

Catalog Number	Conical Point	SL
CM9XP60	60 Degrees	1/2" To 2.50" 12.7mm To 63.5mm
CM9XP90	90 Degrees	
CM9XP120	120 Degrees	



To order individual **SPECIAL LENGTH** Punches add SL### notation to part number as shown.

CM9XP	90	SL100
Style	Conical Point Notation	SL###, replace ### with the length required.

### Custom Round Punches

Columbia Marking Tools can design and manufacture custom step type and dies. CMT can provide a quotation to any customer custom print. The print or the request may be sent to [quotes@columbiamt.com](mailto:quotes@columbiamt.com).



Parameters:

- CP – Conical point
- D – Diameter
- L – Length
- DG - Dimensions of Groove
- LG – Location of Groove
- Dimensions of Step
- Tapped hole
- Linear Punch – length and angle

