PUNCHES & DIES – SELECTION

Help Us Help You When Ordering

If any of the following information is available, please have it handy when ordering. This will help us prepare and ship your order more accurately and efficiently.

Tooling Talk

The use of keyways and locating spots or flats is very important for orienting shaped tooling properly. For positive location of a shaped punch when using coupling nut mountings, a keyway should be used between the punch stem and head of the punch. Ideally, the punch stem will have two keyways at 90°. Then, only one keyway of the same style and size is needed on the punch head.



Keyways are not furnished as a standard item because keying systems vary from machine to machine. Therefore, you must specify the specific tooling you need and what machine it will be used in so that we can furnish your tooling with the correct keyways. Non-stock sizes of a round, oblong, square, hexagonll and rectangular shape of standard tooling with keyways can be shipped





Machine manufacturer

• Style of punch and die (if not known,

• Use of keyways and/or spots to position

have a sample handy to refer to)

Die Die Material Pocket Die Holder

Ensure Long Life of Punches and Dies

Every tool manufactured by Cleveland Steel Tool is made of the highest grade of tool steel. For maximum performance, certain precautionary measures must be taken:

- **1.** Correct alignment of the punch with the die must be maintained.
- **2.** Correct placement of the stripper must be maintained to prevent tilting or cocking of the work piece during stripping.
- **3.** Coupling nuts and punch stems must be properly tightened to hold tooling securely.

CAUTION: Extreme pressures are generated in all metal punching applications. Use safety guards and all recommended safety precautions.

WARNING: It is the responsibility of the user to set up and use niachine and tooling in accordance with local and national OSHA laws and ANSI B11.5 safety standards. Do not allow unqualified personnel to set up or operate machines. Use extreme care at all times.

Standard Keyway Positions for Shaped Punches

Standard Ironworker Punches

D

B

k-S→

L

- **D** = Head Diameter
- **B** = Body Diameter
- L = Overall length of punch (not including center point)
- **S** = Punch size (hole size)
- F = Effective working length of punch (determined by punch diameter)

WE SELL TOOLING TO FIT MOST BRANDS OF IRONWORKERS CALL

Recommended Clearances for Punching Mild Steel

Thickness of Material	Total Clearance Between Punch and Die
1/2" and over	1/16"
3/16" through 15/32	2" 1/32"
3/32" through 5/32' 15 gauge through 1 16 gauge and lighte	1/64" 3 gauge _010" er006"





- Type of material being punched
- Material thickness
- Hole size (Note: hole size must be slightly larger than item being passed through material)

Determining Tonnage Required for Punching Mild Steel

(Tensile strength of approximately 65,000 PSI)

Round Holes

The following formula is the Cleveland Steel Tool recommended equation for computing the approximate tonnage required to punch a single round hole in mild steel.

Punch	Material			Tons of
Perimeter x	Thickness	х	80 =	Pressure
				Required

Example.

to punch a 1/2" hole through 1/4" thick mild steel: .500 x .250 x 80 = 10 tons

Shaped Holes

The following formula is the Cleveland Steel Tool recommended equation for computing the approximate tonnage required to punch a single shaped hole in mild steel.

1/3 of	Material			Tons of
Perimeter x	Thickness	х	80 =	Pressure
				Required

Example:

to punch a 9/16" x 1" rectangular hole through 1/2" thick mild steel:

(.33 x 3.124) x .500 x 80 = 41 tons

Multiplier

For punching materials with different tensile strength, first determine the tonnage required above, and use the multiplier below.

Material	Multiplier
Aluminum	
Brass	
Copper	
Steel (mild)	1.00
Steel (50% carbon)	1.50
Steel Cold Drawn	1.20
Stainless Steel (303)	1.50

NOTE: The thickness of the material should not exceed the punch diameter being used.

Standard Ironworker Dies



NOTE: Call the sales department for the recommended clearance for punching stainless steel or other material.