Superior Solutions For Sheet Metal Fabricators

Mate Pilot™

Turret Calibration System

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Mate Pilot™ Turret Calibration System

PATENT PENDING

Introducing the Mate Pilot™ Turret Calibration System!

The Mate Pilot™ Turret Calibration System is the most accurate system available today for ensuring precision concentric and angular alignment of your punch press turret.

Superior piece part quality, extended machine life and longer tool life is achieved when the upper and lower turrets of a punch press are precisely aligned. New turrets are aligned by the factory technicians and are verified during installation. Over time, used turrets often require some realignment.

Mate Pilot™ Thick Turret Calibration Instruments provide a simple and accurate way to verify the precise alignment of your punch press and perform turret alignment of your punch press when required.

The Mate Pilot Turret Calibration System operates in two modes.

- **Verification Mode** – Used to confirm the precise concentric and angular alignment of your turret to maintain high quality piece parts, extend machine life, improve tool life, and increase productivity.
- **Alignment Mode** – Used to restore the concentric and angular alignment of each station with the same or better precision as the initial machine installation. Achieving precise alignment improves piece part quality, extends machine life, extends tool life, and increases productivity.

The Mate Pilot™ Turret Calibration System is simply the best system available.

Accurate:
Each calibration instrument is machined from a single piece of high quality tool steel. The upper and lower halves are separated near the end of the production process, just prior to installation of the hardware. This eliminates the possibility of cumulative tolerances adversely affecting the accuracy of the finished instrument.

Simple to Use:
Install the two halves of the calibration instrument into the turret station to be aligned. Use the adjustment handle to draw the two halves of the calibration instrument together.

The interlocking design of the interface between the two halves causes the loosened die holder to be drawn into concentric and angular alignment relative to the upper bore as the two halves of the calibration instrument engage.

The tri-color LED indicator light will glow green to confirm accurate concentric and angular alignment of the tool station.

Comprehensive:
The Mate Pilot Calibration system with the interlocking design and tri-color LED indicator lights is available to suit 1-1/4" B, 2" C, 3-1/2" D, and 4-1/2" E stations. The alignment tools for 1/2" A stations and Finn-Power Multi-Tool stations use a twin dowel pin design. The Mate Pilot calibration system is also available in two packages to suit thick turret and Finn-Power punch presses.

Dimensions in Inches (millimeters)

Mate Pilot™ Turret Calibration System – Features

Matched Set:
The upper and lower calibration instruments are produced from the same piece of tool steel. The two halves are separated near the end of the production process. This ensures both items are precisely matched.

Interlocking Geometry:
The interlocking geometry of the interface between the two halves causes the loosened die holder assembly, to be drawn into concentric and angular alignment relative to the upper turret bore or tool holder as the two halves of the calibration instrument engage.

Concentricity

Angularity

Position

Indicator Light:
The Pilot Turret Calibration system is equipped with a tri-color LED indicator light to confirm when the two halves are fully engaged and the upper turret bore or tool holder and lower die holder are accurately aligned.

- Engaged, but not aligned
- Angularity and concentricity within 0.0012(0.030) - adequate for most punching applications.
- Angularity and concentricity within 0.0003(0.008) - recommended for 0.048(1.20) material thickness or less.

Adjustment Handle:
Includes knurled tensioning knob to prevent over tightening in verification mode, and T-bar for use in alignment mode.

Release Button:
Actuates the spring-loaded lock pawl which maintains separation of the upper and lower assemblies during turret rotation.

Dimensions in Inches (millimeters)

Patent Pending

Mate Pilot™ Turret Calibration System – Components

A Station-1/2" (12.70)

- Two dowel pins on the upper assembly engage with two precision machined holes on the lower assembly for precise alignment.
- Integral lifter handle adds convenience.

B Station-1-1/4"(31.70)

- Interlocking design of interface between two halves draws lower turret into concentric and angular alignment with upper turret.
- Tri-color LED indicator confirms when precise alignment has been achieved.
- Integral adjustment handle adds convenience.
- Hardened and ground double-D shaped pin on lower assembly for precise engagement with keyway in lower turret.

C Station-2"(50.80)

- Interlocking design of interface between two halves draws lower turret into concentric and angular alignment with upper turret.
- Tri-color LED indicator confirms when precise alignment has been achieved.
- Precision ground keyways in upper and lower assemblies for precise engagement with alignment keys on turret.
- Integral adjustment handle adds convenience.

D Station-3-1/2"(88.90)

- Interlocking design of interface between two halves draws lower turret into concentric and angular alignment with upper turret.
- Tri-color LED indicator confirms when precise alignment has been achieved.
- Robust construction with hardened and ground surfaces for extended service life
- Integral adjustment handle adds convenience.

Dimensions in Inches (millimeters)

Mate Pilot™ Turret Calibration System – Care Instructions

E Station – 4-1/2" (114.30)

- Interlocking design of interface between two halves draws lower turret into concentric and angular alignment with upper turret.
- Tri-color LED indicator confirms when precise alignment has been achieved.
- Integral adjustment handle adds convenience.

Multi-Tool Station (Finn-Power)

- Two pins on the upper assembly engage with two holes on the lower assembly for precise alignment.
- Precision ground surfaces ensure convenient and accurate installation into turret furniture.
- Integral lifter handle adds convenience.

Accessory Kit

Operation of the Mate Pilot Calibration system requires the use of an accessory kit which is sold separately. Note the same kit can be used for each station.

Accessory Kit Comprises:

- Alignment Bar – precision ground bar mounted to the upper assembly. Used in conjunction with dial-test-indicator (not included) to indicate alignment of upper turret with punch press frame.
- Adjustment Bar – used in conjunction with the Alignment Bar to adjust the alignment of the upper turret.

Complete Mate Pilot™ Calibration Systems

Two complete Mate Pilot calibration systems are available to suit thick turret and Finn-Power punch presses for added ordering convenience.

Station	Part Number	Package A MATE00665	Package F MATE00672
A Station 1/2” (12.70)	MATE00670	●	
B Station 1-1/4” (31.80)	MATE00666	●	●
C Station 2” (50.80)	MATE00667	●	●
D Station 3-1/2” (88.90)	MATE00668	●	●
E Station 4-1/2” (114.30)	MATE00669	●	
Multi-Tool Station	MATE00671		●
Accessory Kit	MATE00662	●	●

Dimensions in Inches (millimeters)

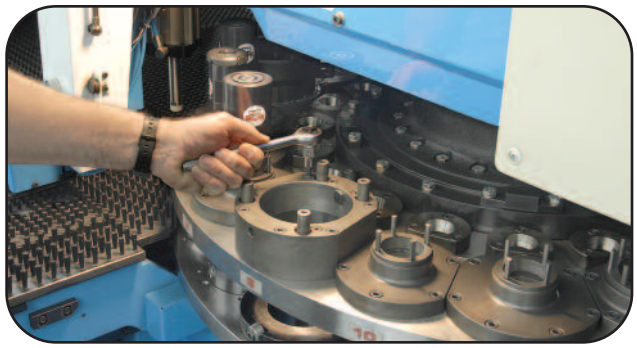
Patent Pending

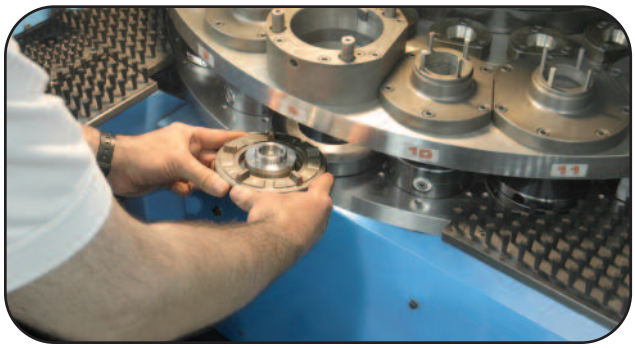
Mate Pilot™ Turret Calibration System – Instructions

Alignment Mode

Step 1

Loosen the retaining bolts of the upper and lower tool holder of the station to be aligned. This will allow the upper and lower holders to move to achieve alignment with the machine axis, and with each other.*





Step 2

Install the lower calibration instrument into the die holder and tighten the clamp screw(s) as you would for a die.

Step 3

Install the upper calibration instrument into upper holder, gently lowering the instrument until the lock pawl rests on the top of the turret key in the machine.

Caution: Do not allow the upper instrument to drop onto the turret key or through the turret bore as this may damage the instrument and/or the turret bore.

Step 4

Rotate the turret until the station to be verified is positioned under the ram. **Note: The turret must be locked in place.** For auto-index stations, the auto-index must be engaged.

Lower the upper instrument gently, by depressing the release button and lowering the instrument using the adjustment handle, until the threaded end of the adjustment handle rests on the top of the lower instrument.

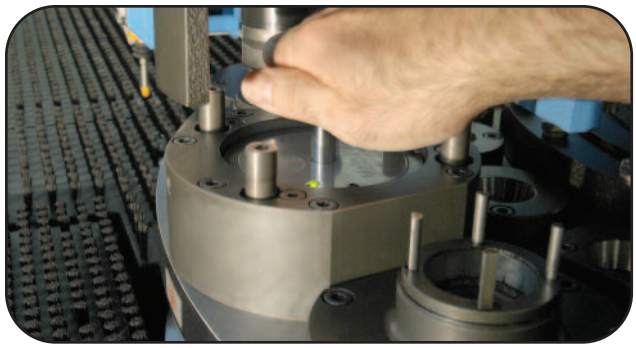
Caution: Do not allow the upper instrument to drop through the turret as this may damage the instrument and/or the machine.

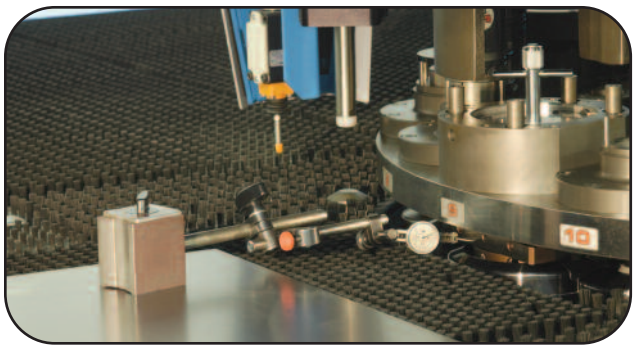
* Some turrets have fixed upper tool holders. Thus only the lower tool holders can be loosened.

Mate Pilot™ Turret Calibration System – Instructions

Step 5

Reach into the machine and tighten the adjustment handle using the T-bar until the interlocking teeth of the upper and lower instruments are fully engaged. The tri-color LED indicator light will change color from red, to yellow, and then to green. During this process the upper and lower tool holders will be adjusted into precise concentric and angular alignment.





Step 6

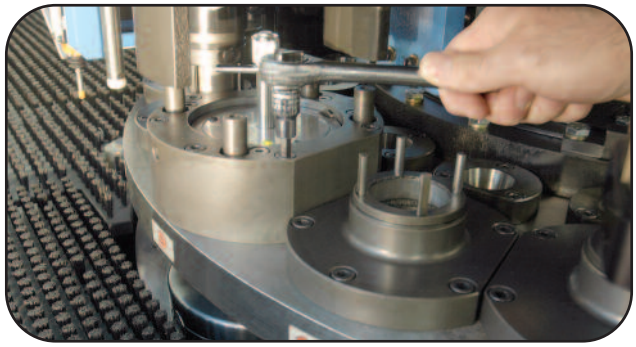
Attach the alignment bar to the upper calibration instrument. Insert the adjustment rod. Use the manual jog mode on the machine control to move a dial-test-indicator (DTI) attached to a piece of sheet metal along the full length of the alignment bar. The total indicator reading (TIR) will be <0.001(0.02) when the tool holder is correctly aligned.

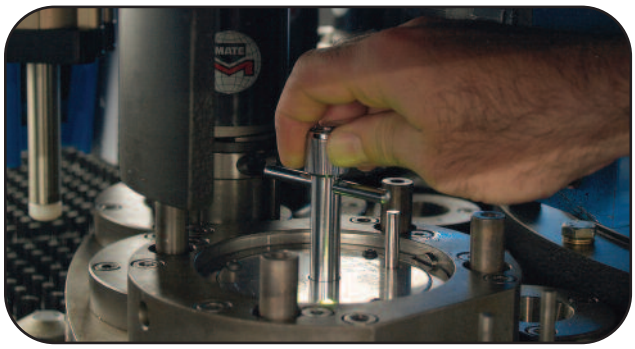
Step 7

Loosely tighten the fastening bolts on the lower and upper* turret where appropriate. Re-check the alignment of the holders, using the DTI. If the TIR is greater than 0.001(0.02), then repeat step 6. Once the alignment is confirmed, lift the upper instrument gently, using the length adjustment handle, until the lock pawl rests on the top surface of the turret key. Rotate the turret until the station that has been aligned is returned to the tool change position.

Fully tighten the upper and lower tool holder.

Follow the verification mode to confirm nothing has moved during tightening.





Verification Mode (Follow steps 2 to 4 above)

Reach into the machine and rotate the tensioning knob on the adjustment handle until the interlocking teeth of the upper and lower instruments are fully engaged and the tensioning knob starts to click. View the color of the tri-color LED indicator light.

Red – Alignment is not confirmed. Perform an alignment as described in steps 1 to 7.

Yellow – Angularity and concentricity within 0.0012(0.030) - adequate for most punching applications.

Green – Alignment is confirmed to within 0.0003(0.008) - recommended for 0.048(1.20) material or less.

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