Mate ULTRA® IMT™ Multi Tool Assembly
Tooling Installation Instructions

8-Station Uppers: STANDARD—MATE01840, JFY—MATE02068, BAYKAL—MATE02007
8-Station Lowers: STANDARD—MATE00050, DURMA—MATE02060
3-Station Uppers: STANDARD—MATE01850, JFY—MATE02069, BAYKAL—MATE02010
3-Station Lowers: STANDARD—MATE00697, DURMA—MATE02058

Installation and assembly instructions for Mate ULTRA® IMT™ Multi Tool Punch and Die Holder assemblies. 8-Station is shown. 3-Station uses the same procedure.

Lubrication Port

Keep top lubricated (for machine ram to slide during rotation)

Striker Body

Release/Zero Mark Position Indicator

Punch Carrier

Punch Holder Body

Note: Do NOT loosen these screws

Stripper Pocket

Punch Tip

Stripper

Recommended Equipment:
- 2.5mm hex wrench
- Torque wrench with 2.5mm hex bit socket
- Oil can with DTE25, DTE26 or SAE-20 W or similar

Accessories Available:
- 8 Station spring replacement field service package (MATE01862)
- 3 Station spring replacement field service package (MATE01861)

Tips and Troubleshooting

Machine Speed Recommendation

These multi tools experience side loading not seen in a single punch station. Mate recommends a maximum machine speed of 60% or 500 Hits Per Minute (HPM) to avoid damaging the multi tool.

Recommended pre-lubrication and interval lubrication

It is essential to keep the multi tool lubricated. Use Mobil DTE025, DTE026 (ISO grade 46-68) or SAE-20 or similar through the top lubrication port.

- The multi tool has many sliding fits. Strictly relying on the machine oiler to properly oil the multi tool will most likely not be enough lubrication.
- Lubricate once every 50,000 hits of operation.
- Lubrication Procedure:
    1. Pre-lubricate the punch/punch-head diameters before installing.
    2. Lubricate any rotating/sliding surfaces before installing striker body.
    3. Install the striker body.
    4. **CRITICAL!** Generously lubricate the top of the Striker Body to allow the machine ram to rotationally slide to prevent accidental internal Multi Tool ram rotation
    5. Add oil through top lubrication port to fill internal reservoirs.
        - Set striker body to station 1. This position will allow the oil to port to all reservoirs and station 1 punch and punch head. Any other position will not align the oil ports effectively.
        - Use 10 ml (.33oz) to 15ml (.50 oz) of oil. If using an oil squirt can, use 4 to 6 full squirts depending on the oil can. Measuring the amount per squirt is advisable for accuracy. Wait 20 seconds for the oil to reach the internal reservoirs.
        - To properly oil the other stations: rotate the striker body to each station and add approximately an additional 3ml (.1oz) of oil to pre-lubricate each station. A pause between each station of 5 seconds is necessary to give the oil time to reach its destinations.

Tool sharpening

Sharpen punches and dies as needed. Sharpen when the hole quality has depreciated or when a significant increase in noise occurs which can indicate a tool has become dull.

For accidental machine stop during tool change (example: light beam interruption)

Reset the machine and software to station 1. Then manually rotate the multi tool to station 1 (Align zero mark). ***CAUTION: Failure to manually rotate the multi tool to station 1 could damage the multi tool or machine.***

Finn-Power users:
Tulus machines - After the operator physically rotates the striker body to the zero mark to set the tool at station 1, the button on the controller must be pushed to tell the control it is on station 1.

Controllink machines - in the controller, change to MDA mode: Run the MDA program to remove the IMT from the turret, then run the MDA program to re-install the IMT into the turret. This will reset the controller to station 1.

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Machine hardware and software

To use these multi tools, your machine requires a mechanical pin which can engage and dis-engage the slots at the top of the multi tool.

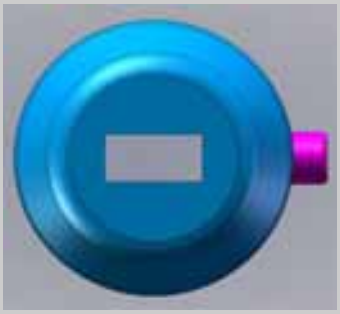
Special programming software is also required.
- For Finn-Power users; a new sta. file specific to Mate IMT™ multi tools is required.

Tips for angle setting adjustment

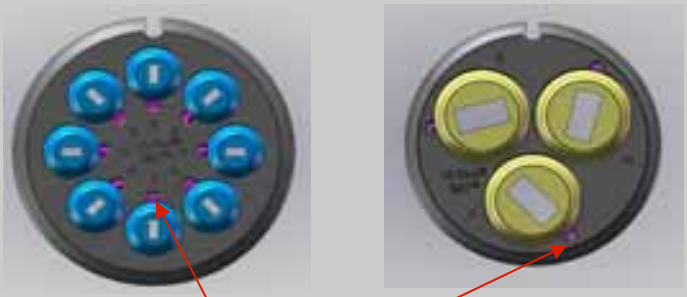
These multi-tools have keying locations that are non-standard. The operator must enter a load angle for the tools within the multi-tool (90° CCW adjustment for 8 station and 315° CCW for the 3 station) so that the machine can orient the tools correctly.

Please note that the load angle adjustment will be the same for all stations. The machine first rotates to the active station position before adjusting for the load angle.

With these settings, regular programming can be performed, and the machine will achieve the desired punching angles. Program should be based on the shape keyed at 0°.



Single station normal orientation at zero degree setting for Thick Turret stations A and B



Active station position.
The location of the die pins is non-standard

Use of the hardened shim (MATE02330) supplied with each standard die carrier (part numbers MATE00050 and MATE00697 **ONLY**):

- Prevents damage (indentation) to the die holder of the machine by the individual die positions
- Strengthens the die carrier for customers punching heavier material by dissipating the stresses into the die holder more effectively
  - o Without the shim, stress is very focused in the small area of where the dies are seated

* Please note that the shim will raise the die height by the amount of the thickness (.020in/.51mm) of the shim

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Material Thickness and Tonnage Limitations

CAUTION!
6mm is the max material thickness Multi Tools can punch. Material thickness is additionally limited by tonnage: 7 tons (62kN) for the A-ULTRA Punches and 16 tons (142 kN) for the B-ULTRA Punches. Exceeding tonnage will break the tools.

Tonnage = Punch Perimeter x Material Thickness x Material Tonnage Value x Material Multiplier
(punch shear reduces tonnage but is not included in the above formula)

Material Tonnage Value

Metric (Metric Tons/mm^2)	Inch (U.S. Tons/in^2)
0.0352	25

Metric example for 6mm mild steel

8mm x 6mm x .0352 x 1 = 1.69 metric tons

Convert to KN: 1.69 x 9.81 = 16.6 KN

Material Type	Material Multiplier
Aluminum (soft sheet)	0.3
Aluminum (1/2 hard)	0.38
Aluminum (full hard)	0.5
Brass (soft sheet)	0.6
Brass (1/2 hard)	0.7
Copper (rolled)	0.57
Mild Steel	1
Hot Rolled Steel	1.4
Cold Rolled Steel	1.2
Stainless Steel	1.5

NOTES

Die Installation

Step 1—Install Dies

- Install the die into the appropriate pocket. (photo 1)
- Repeat until all of the dies are installed. Note: A consistent die height should be maintained in order to eliminate the risk of sheet marking. Use die shims to return dies that have been reground to their original height of 1.187(30.15).

1

Step 2—Tighten Set Screws

- Tighten the radial set screws around the outside diameter of the die holder while pushing die down with finger, one screw per die. Use torque wrench and 2.5mm hex bit socket—35 in-lbs, or 4.0 Nm. (photo 2)
- Your Mate Ultra® Multi Tool die holder assembly is now ready to be installed in your punch press.

2

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Punch and Stripper Installation

Step 1—Remove the Striker Body

- Stand the multi tool punch holder assembly upright on a work surface.
- Rotate the striker body to the release position and lift off. (Photo 1) Use the T-handle to assist.
- Rotate skid plate opening until it is rotated to the station you are changing.
- Lift one of the punch drivers straight up to remove it from the punch guide assembly.
- Inspect surfaces for obvious signs of damage including grit and shavings.

Step 2—Install the Punch to the Punch Driver

- Screw the punch driver onto the punch.
  - The key on the punch and the key on the punch driver need to be aligned during installation. (Photo 3b)
- For 1.2mm stripper lead, set overall length of punch and punch driver assembly to approximately 154.4mm (6.080”). For new punches, screw the punch completely into the punch driver and then reverse until the key in the punch is aligned with the key in the punch driver. For ground punches, use guide body OD relief edge to set length by placing punch point against flange and rotating punch driver until spiral grooved OD edge closest to punch is aligned with edge on guide body. (Photo 2)

Step 3—Install the Punches and Strippers

- Turn the multi tool punch holder assembly on its side on a work surface.
- With stripper lock plate in open position, slide the stripper into the appropriate stripper pocket. (Photo 3a)
- Slide the punch into the corresponding punch pocket. (photo 3b) Note: You may need to rotate the stripper to allow the punch tip to fully engage with the opening in the stripper. You will also need to rotate the skid plate to the clearance position of that station. The punch key will only fit into the longer slot, the other two slots are for the punch driver to fine tune the stripper lead. Install with keys aligned.
- Repeat until all of the punches and strippers are installed. Rotate the stripper lock plate to the closed position. Button needs to be locked into its hole. (Photo 3c)
- For proper multi tool function, all stations should be filled at all times during punching.


1

2

3a

3b

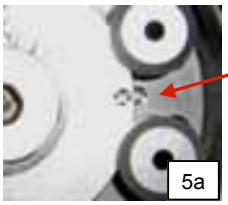

3c

Step 4—Set the Stripper Face to Punch Tip Lead

- Observe the distance from the stripper face to the punch tip. This distance should be between 0.020(0.50) and 0.060(1.50). Proceed as follows if required.
- Withdraw the punch driver until the key on the punch driver just disengages with the keyway in the punch holder.
- Rotate the punch driver counter clockwise to reduce the stripper lead or clockwise to increase the stripper lead. (Photo 4)
    - 8-station—one revolution equals 0.048(1.21), with 3 steps per revolution.
    - 3-station—one revolution equals 0.064(1.63), with 3 steps per revolution.
- Reinstall the punch driver into the punch holder. Note: You may need to rotate the stripper to allow the punch tip to fully engage with the opening in the stripper.
- Recheck the punch to stripper lead, and adjust as required.
- Repeat until all of the punches and strippers are adjusted.

Step 5—Re-install the Striker Body

- Lubricate sliding and rotating surfaces of striker body with oil.
- Stand the multi tool upper assembly upright on the work surface.
- Turn skid plate until the divot in the skid plate aligns with the divot in the punch carrier.
- Lower the striker body onto the punch carrier, with the divot in the striker body aligned with the release position divot so that the tabs on the striker body align with the reliefs on the punch carrier. (Photo 5a)
- Once completely against the punch carrier, rotate to zero mark to position striker ram over station 1. (Photo 5b)
- If necessary, reset the machine control to station 1.



Apply lubricating oil generously through the Lubrication Access. (See Figure 1 overleaf). Use Mobil DTE025, DTE026 (ISO grade 46-68) or SAE-20 or similar. Also lubricate sliding surface of punch carrier and top surface of striker body.

- Your Mate ULTRA® IMT™ Multi Tool punch holder assembly is now ready to be installed into the press.

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