

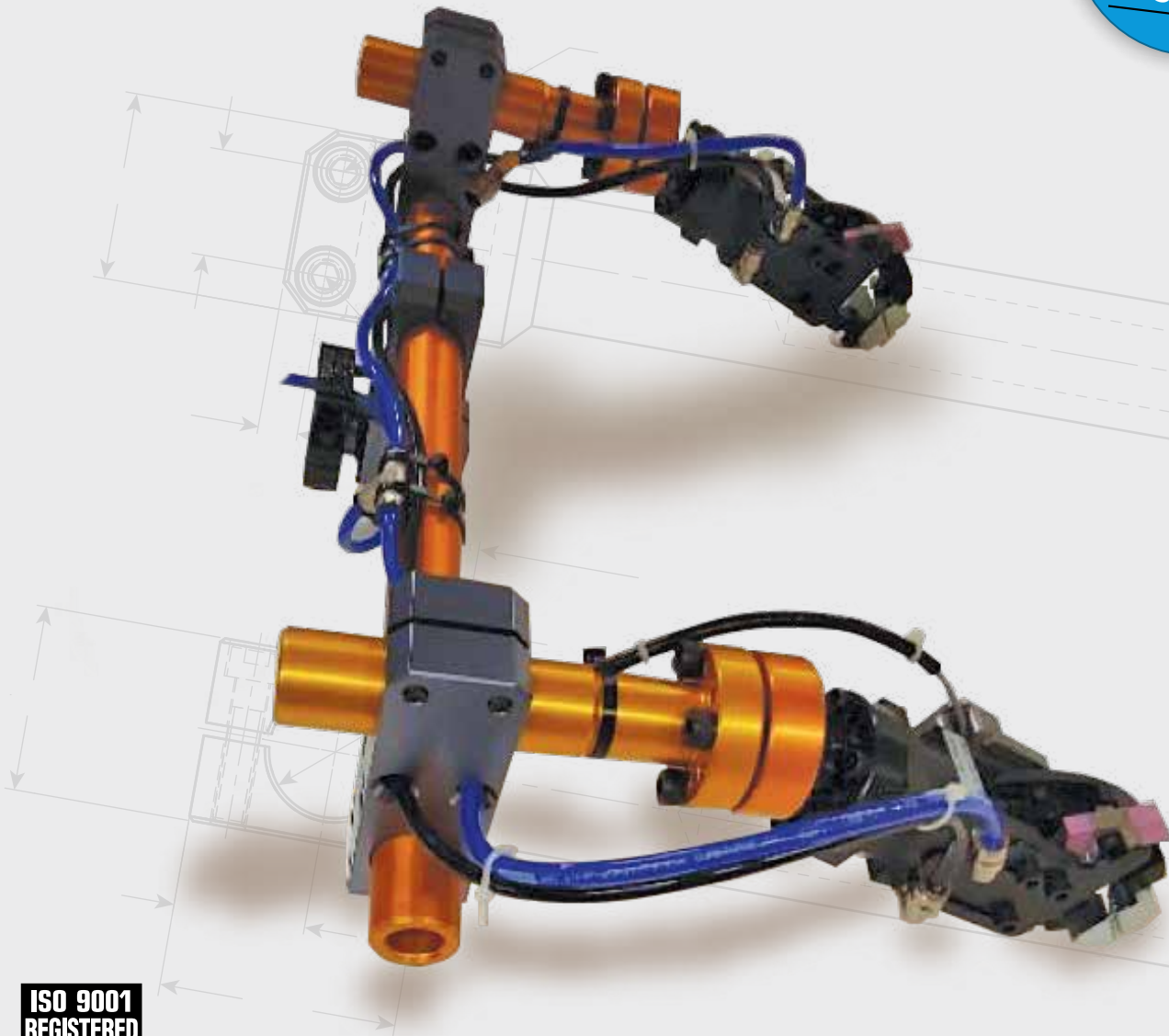
Modular Tooling

Tri-Axis Transfer Press

1-1/4" Components Series

- Simpler, stronger, and more economical solution
- Precision fit, eliminating movement when torquing
- Components are completely interchangeable

One-piece construction, maximized for weight & rigidity



**ISO 9001
REGISTERED**
Quality Management
System Certified

TAT00L01



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TRI-AXIS TRANSFER PRESS MODULAR TOOLING



Tri-Axis Transfer Press Modular Tooling components are designed to provide a stronger and lighter weight while providing greater versatility for superior tooling systems delivering high performance. These components are one-piece construction, completely interchangeable, and have been maximized for light weight and rigidity. Additionally, multiple bolt patterns have been utilized where possible to keep the interchangeability and ordering process as simple as possible. PHD provides assistance with your tri-axis press needs, whether it is individual components, system design, full build, implementation, or improvements to existing operations.

These systems combined with the industry-leading PHD Series GRM family of automated sheet metal handling clamps now provide a total solution delivering optimal performance to your high-speed tri-axis transfer presses.

- **Arm Clamps**
- **Double Hole Clamps**
- **Collar Clamps**
- **Gripper Mounts**
- **Aluminum Extension Tubes**
- **Swivel Ball Mount/Clamps**
- **Swing Plate Assembly**
- **Flange Mounts**
- **Gripper/Clamp Adaptability**



ARM CLAMPS

TAC

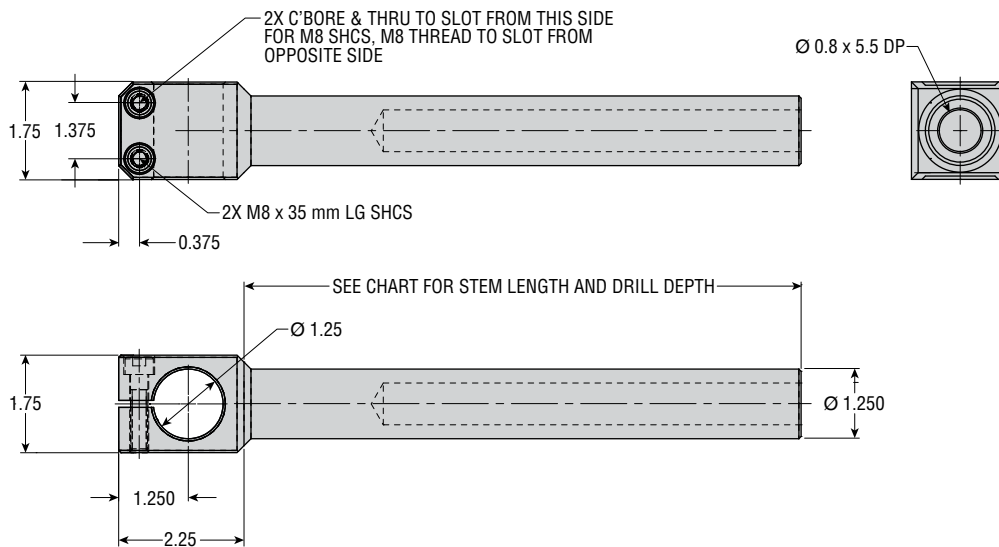
Benefits

- Optimized design for lighter weight and rigidity
- Solid one-piece construction for ease of adjustability and superior strength
- Clamps down using two 8 mm socket head cap screws for ultimate grip force
- Clamping force of 280 ft/lbs when screws are handtightened (approx. 18 ft/lbs). No torque wrench required.
- Seven standard stem lengths, from 2 to 14 inches, are available for application flexibility
- Precision bore fit so finger assembly doesn't move when tightening bolts
- Anodized aluminum for superior appearance and protection



STEM LENGTH (in)	PART NO.	WEIGHT
2	TAC1-125-125 x 2	10.3 oz
4	TAC1-125-125 x 4	12.75 oz
6	TAC1-125-125 x 6	1 lb 0.6 oz
8	TAC1-125-125 x 8	1 lb 4.2 oz
10	TAC1-125-125 x 10	1 lb 8 oz
12	TAC1-125-125 x 12	1 lb 12.2 oz
14	TAC1-125-125 x 14	2 lb

NOTE: Length is stem only. Does not include the head.



All dimensions are reference only unless specifically tolerated.

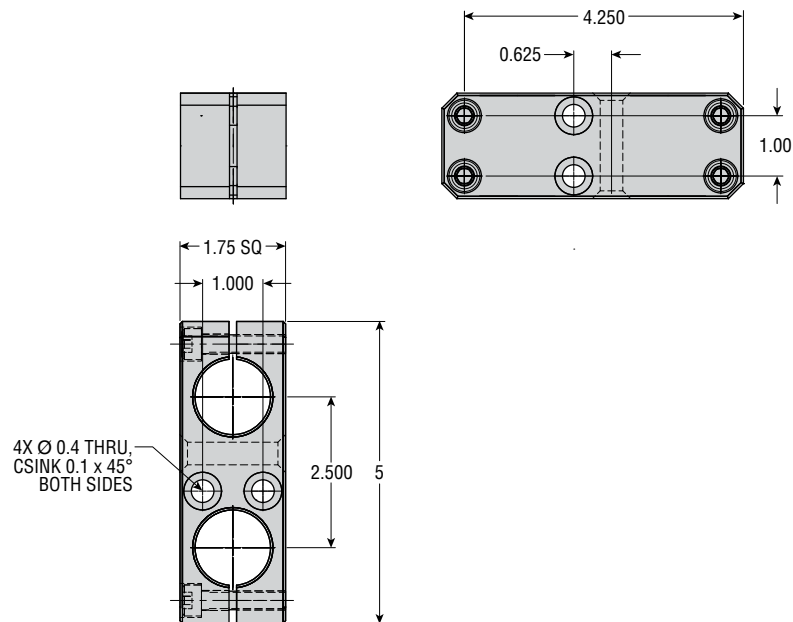
TDC

Benefits

- Inline, 90 Degree, and Rotational Double Hole Clamps combine with other modular tooling components, such as arm clamps and tubes, in parallel, perpendicular or rotational orientations
- Highest strength and versatility for superior tooling systems
- All mounts lock using two 8 mm socket head cap screws per end for ultimate clamping force
- Additional holes for secure routing of air lines
- Anodized aluminum for superior appearance and protection, providing longer service life

MODEL	PART NO.	WEIGHT
Inline	TDC1-000-125-125	1 lb
Rotational	TDC1-360-125-125	1 lb 2 oz
90 degree	TDC1-090-125-125	1 lb

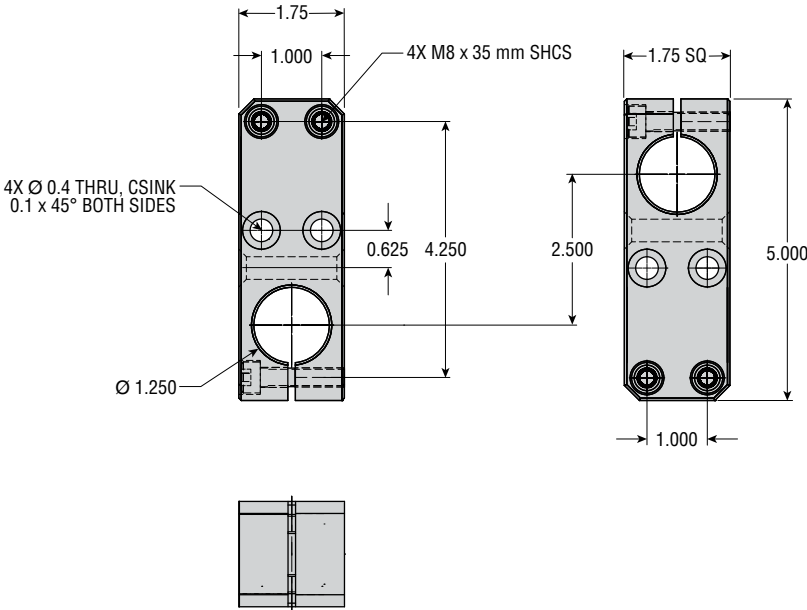
INLINE MOUNT - TDC1-000



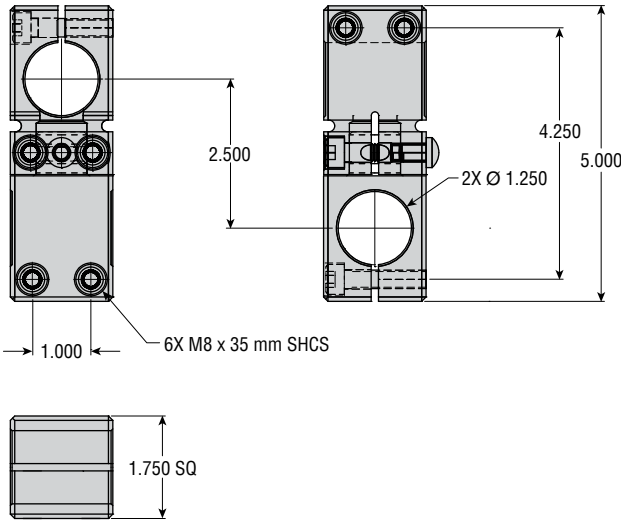
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DOUBLE HOLE CLAMPS

90 DEGREE MOUNT - TDC1-090



ROTATIONAL MOUNT - TDC1-360



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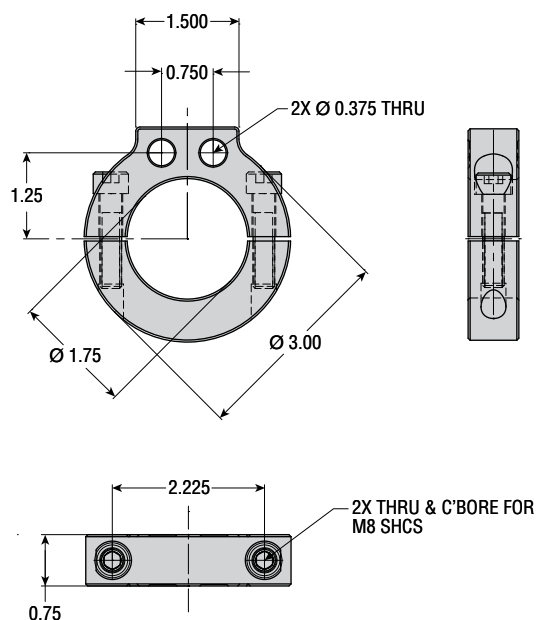
TCC

Benefits

- Collar Clamps secure modular tooling components to receiver adapters or female flange mounts
- Flat top design permits etching of job and assembly number for quick identification
- Additional holes for secure routing of air lines
- Rugged black oxide coating protects steel surface
- Feature 1.75" ID and utilize two 8 mm socket head cap screws for superior clamping force
- Compatible with standard receivers or PHD Series TFFM - Flange Finger Mounts



MODEL	PART NO.	WEIGHT
Collar Clamp	TCC1-175	14 oz



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GRIPPER MOUNTS

TGM

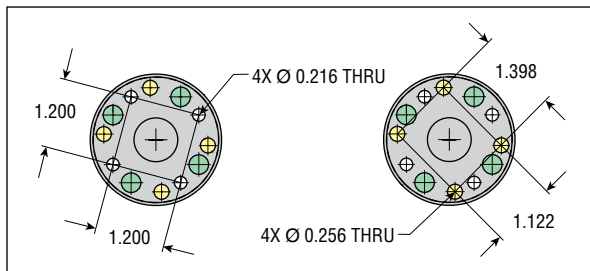
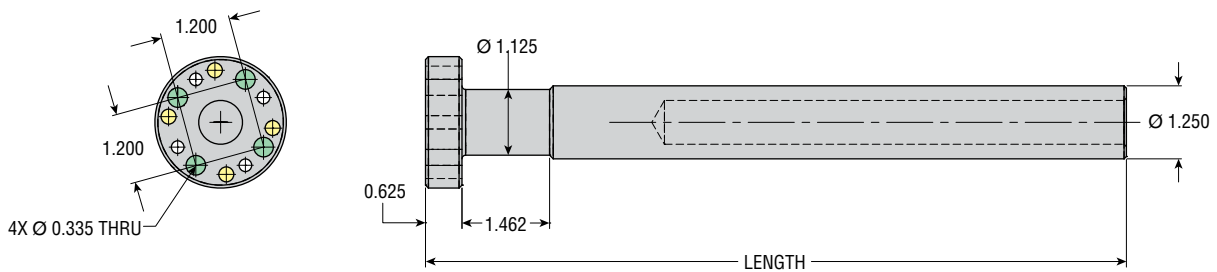
Benefits

- Gripper Mounts for mounting and combination of common grippers and shovels to modular tooling systems
- Three common bolt patterns (5, 6, and 8 mm) for application flexibility
- Six standard shaft lengths are available from 4 to 14 inches
- Covers common gripper or shovel bolt patterns
- Dome in center allows use with ball swivel and application flexibility
- Anodized aluminum for superior appearance and protection



OVERALL SHAFT LENGTH (in)	PART NO. *	WEIGHT
4	TGMx-125 x 4	8 oz
6	TGMx-125 x 6	11 oz
8	TGMx-125 x 8	14.5 oz
10	TGMx-125 x 10	1 lb 2.5 oz
12	TGMx-125 x 12	1 lb 6 oz
14	TGMx-125 x 14	1 lb 10 oz

*See x Code chart below.



x CODE	FASTENERS	MOUNTS
2	6 mm	GRM2 Clamps, or TGUM/TGUS Adapter Plates
5	5 mm	Other Grippers/Clamps
7	8 mm	Tri-Axis Components: Ball Swivel Clamp, Swing Plate

ALUMINUM EXTENSION TUBES

TAT

Benefits

- Aluminum Extension Tubes combined with other modular tooling components, such as arm clamps and tubes, in parallel, perpendicular or rotational orientations.
- 0.200 inch wall thickness providing superior strength and support
- Available from 3 to 24 inches in 3 inch increments for ease of system design and durability. Weight is 0.07 lb per inch.
- Custom lengths also available for application flexibility
- Anodized Aluminum



OVERALL SHAFT LENGTH (in)	PART NO.	WEIGHT
3	TAT1-125x3	3.4 oz
6	TAT1-125x6	6.7 oz
9	TAT1-125x9	10.1 oz
12	TAT1-125x12	13.4 oz
15	TAT1-125x15	1 lb 0.8 oz
18	TAT1-125x18	1 lb 4.2 oz
21	TAT1-125x21	1 lb 7.5 oz
24	TAT1-125x24	1 lb 10.9 oz

All dimensions are reference only unless specifically tolerated.

SWIVEL BALL MOUNTS/CLAMPS

TSB

Benefits

- Swivel Ball Mount/Clamp attaches to Gripper Mount and provides holding force of 180 ft/lbs when all four screws are hand tightened (approximately 18 ft/lbs).
- Covers most common gripper and shovel patterns

MODEL	PART NO.	WEIGHT
Swivel Ball Mount	TSBMx-1-125*	13 oz

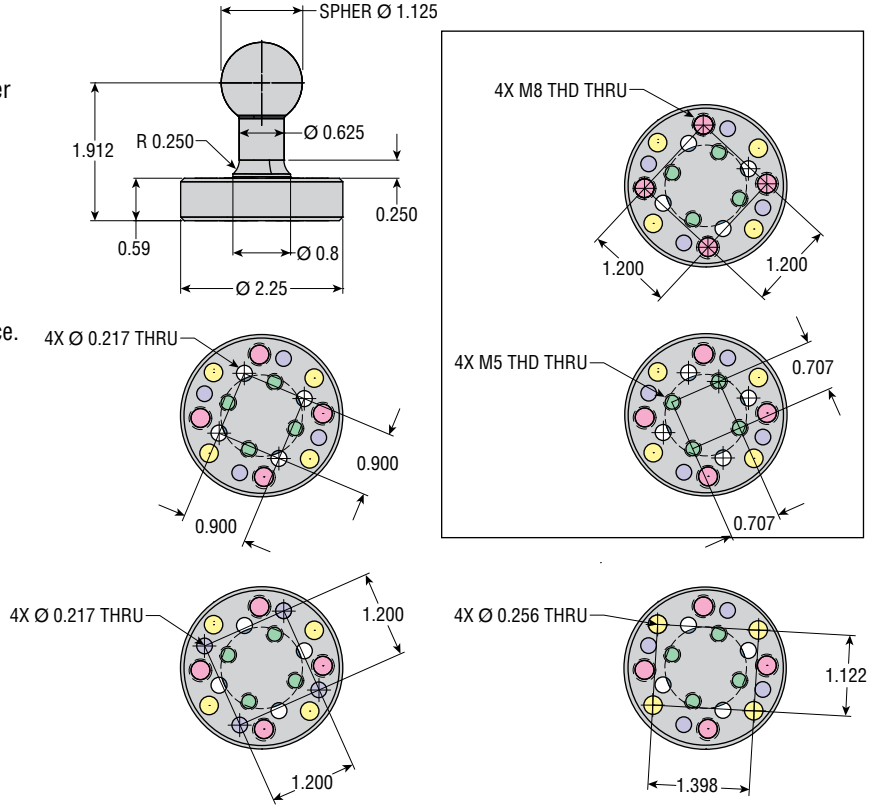
*See x Code chart below.

x CODE	FASTENERS	MOUNTS
2	6 mm	GRM2 Clamps, or TGUM/TGUS Adapter Plates
5	5 mm	Other Grippers/Clamps
7	8 mm	Tri-Axis Components: Ball Swivel Clamp, Swing Plate

SWIVEL BALL MOUNT - TSBM

Benefits

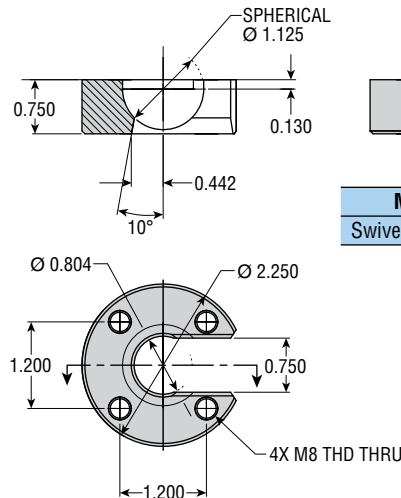
- Swivel Ball Mounts allow for the mounted gripper to rotate up to 80 degrees and free spinning for system set-up.
- Available in five different bolt patterns of the most common grippers and shovels for design flexibility. All patterns are on all units.
- Locks with four M8 SHCS, ensures clamp orientation
- Rugged black oxide coating protects steel surface. Aluminum anodized available, consult PHD.



SWIVEL BALL CLAMP - TSBC

Benefits

- Combines with Swivel Ball
- Rest of assembly can remain square to grid while providing for gripper compound angle adjustment
- Bolts directly to gripper mount for easy setup
- Anodized aluminum for superior appearance and protection



MODEL	PART NO.	WEIGHT
Swivel Ball Clamp	TSBC1-125	3 oz

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SWING PLATE ASSEMBLY

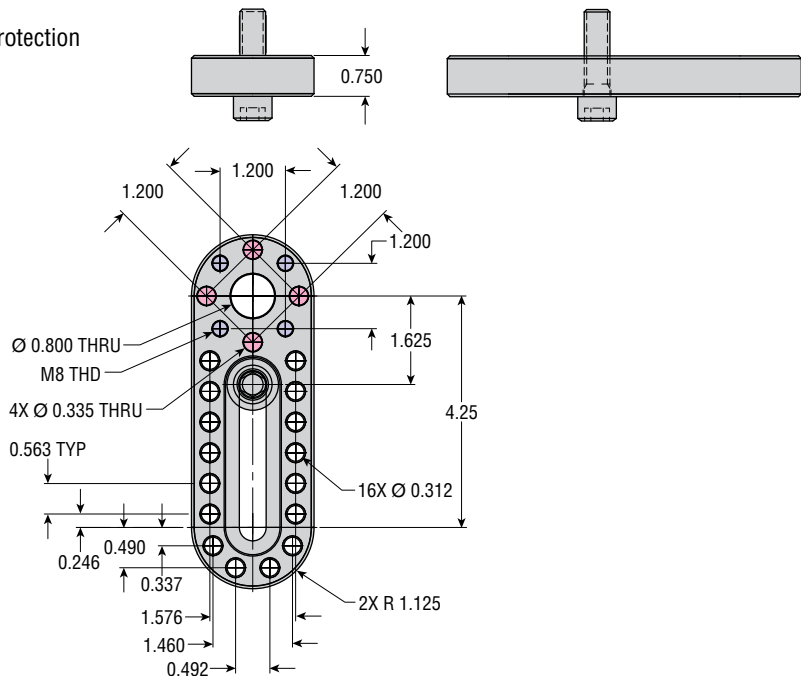
TSP

Benefits

- Simple, flexible design
- Economical plate delivers adjustable mounting from receiver to gripper when ombined with the swing plte mount. Solves problem of close to center alignment adjustment.
- Bolts directly to gripper mount for easy setup
- Assembles with M12 socket head cap screw for easy and fast setup
- PHD GRM2 bolt pattern for easy setup
- Offer multiple bolt patterns for many different styles of grippers or shovel assemblies. All patterns are on all units.
- Anodized aluminum for superior appearance and protection

MODEL	PART NO.	WEIGHT
Swing Plate	TSP1-125 x 65	11 oz

SWING PLATE - TSP1



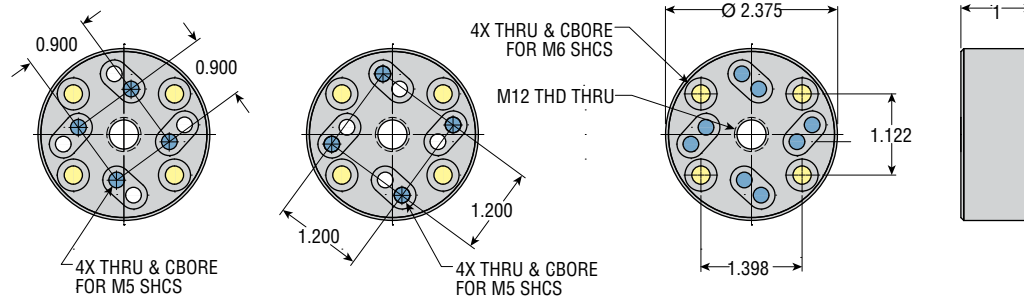
SWING PLATE MOUNT - TSPMx



MODEL	PART NO.	WEIGHT
Swing Plate Mount	TSPMx-1-125*	5.5 oz

*See x Code chart below.

x CODE	FASTENERS	MOUNTS
2	6 mm	GRM2 Clamps, or TGUM/TGUS Adapter Plates
5	5 mm	Other Grippers/Clamps



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FLANGE MOUNTS

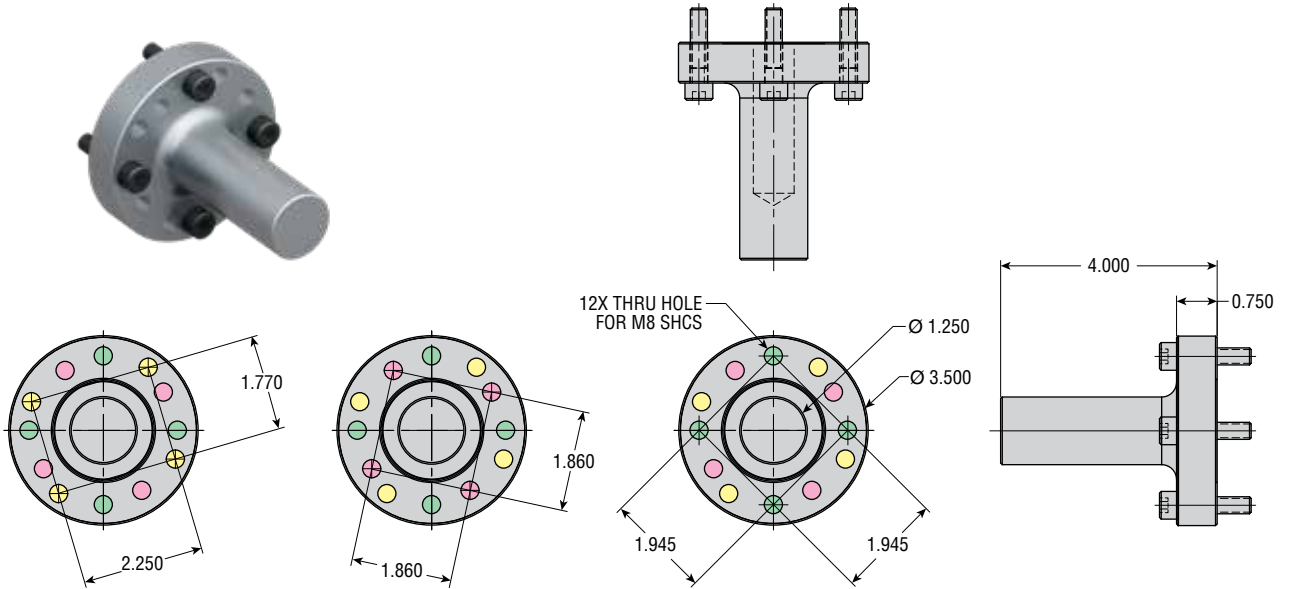
TFxM

Benefits

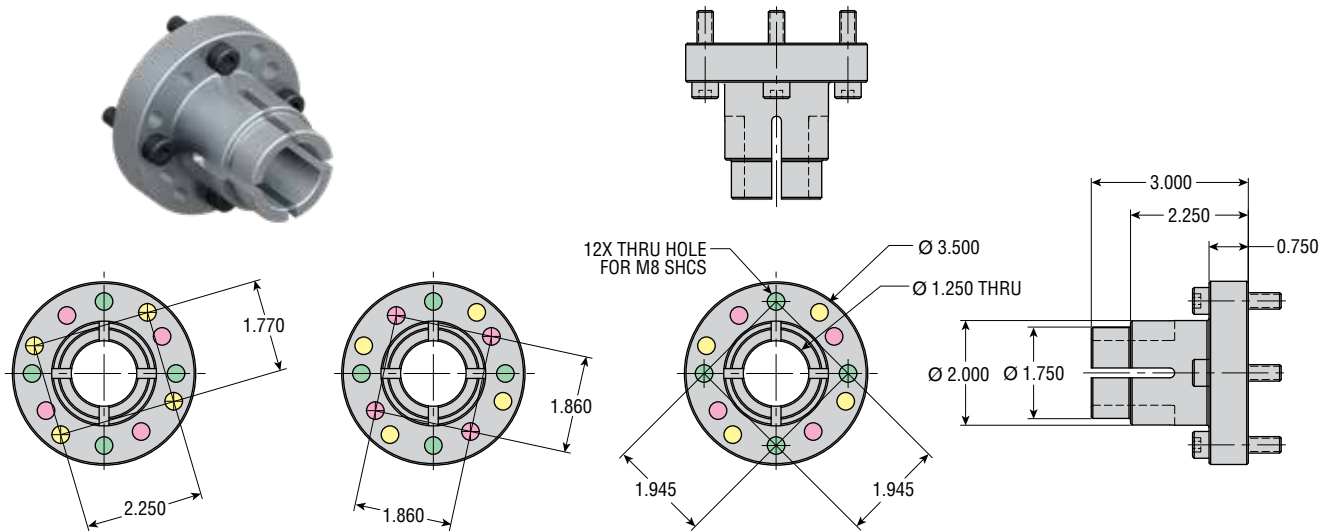
- Provides for mounting of arm clamps and tubes directly to transfer bar, extruded beam, or removable plates or in replacement of a receiver adapter
- Provides flange with 1.25 inch diameter tube as alternative mounting of other modular tooling components
- Anodized aluminum for superior appearance and protection

MODEL	PART NO.	WEIGHT
Flange Finger Mount	TFFM1-1-125 x 3	14 oz
Flange Tube Mount	TFTM1-1-125 x 3	14 oz

FLANGE FINGER MOUNT - TFFM



FLANGE TUBE MOUNT - TFTM



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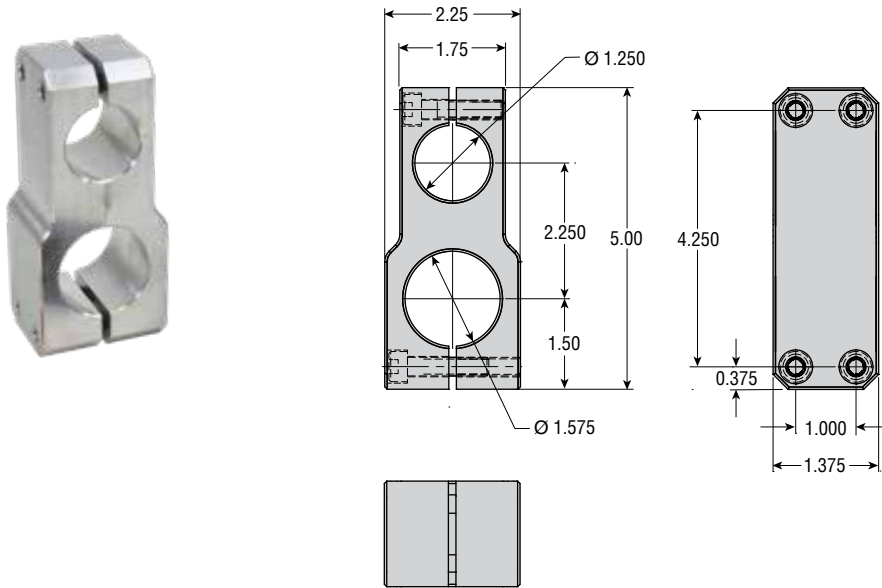
GRIPPER/CLAMP ADAPTABILITY

Benefits

- Standard bolt patterns fit most common grippers
- Used with PHD adapter plates and mounts, any gripper or shovel can take advantage of entire product range
- Contact PHD for gripper adaptability

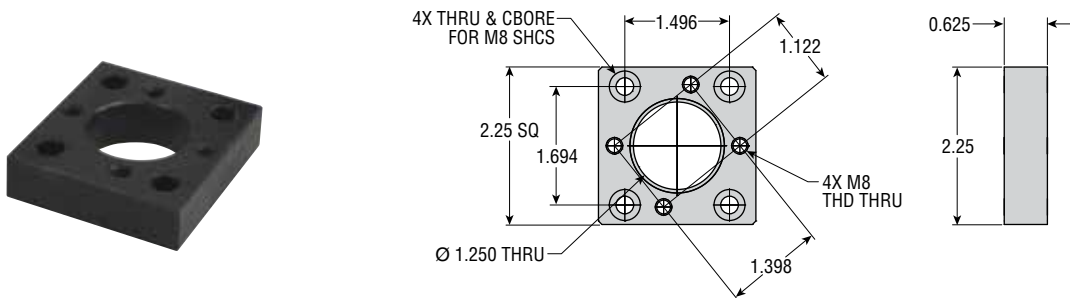
MODEL	PART NO.	WEIGHT
40 mm Gripper Mount	TDC9-000-125-40	1 lb
GRM4 Universal Mount	TGUS4-1-125	10 oz
GRM0 & 1 Universal Mount	TGUM1-1-125	3 oz
PUM-011 Universal Mount	TPUM1-1-125	3 oz

40 mm GRIPPER MOUNT - TDC9



GRM4 UNIVERSAL MOUNT - TGUS

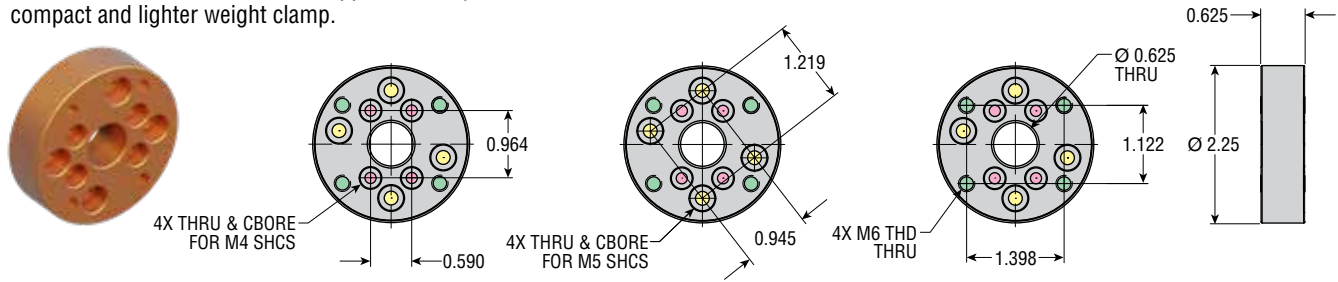
- Provides flexibility to use PHD Series GRM4 Clamps with modular tooling components and systems
- Series GRM4 is used when higher clamping forces are necessary in transfer process



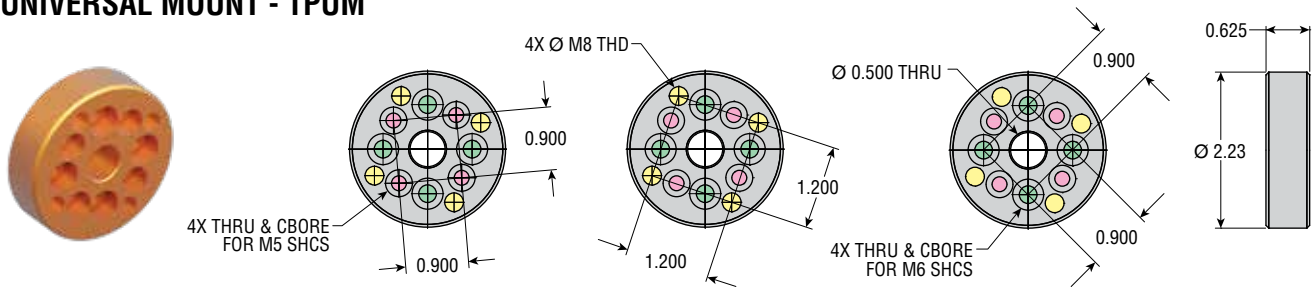
GRIPPER/CLAMP ADAPTABILITY

GRM0 & 1 UNIVERSAL MOUNT - TGUM

- Provides flexibility to use PHD Series GRM1 and GRM0 Clamps with modular tooling components and systems. GRM1 and GRM0 are an ideal solution when application requires a more compact and lighter weight clamp.

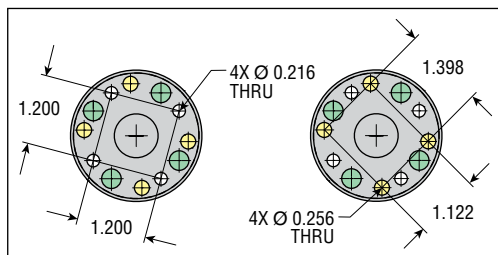
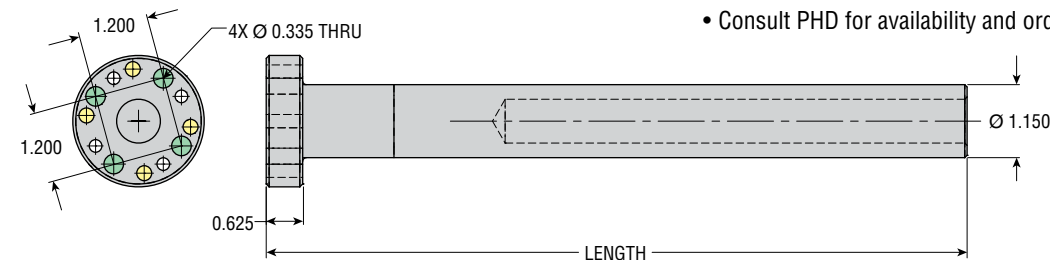


UNIVERSAL MOUNT - TPUM

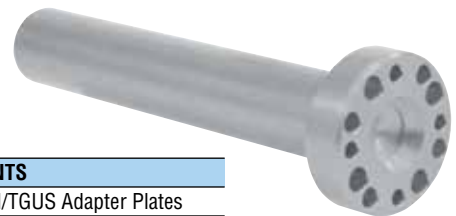


TELESCOPING GRIPPER MOUNT

- Telescoping gripper mounts are for mounting and combination of common grippers and shovels to modular tooling systems.
- Three common bolt patterns (5, 6, and 8 mm) for application flexibility
- Six standard shaft lengths are available from 4 to 14 inches, in 2 inch increments
- Covers common gripper or shovel bolt patterns
- Dome in center allows use with ball swivel and application flexibility
- Consult PHD for availability and ordering



FASTENERS	MOUNTS
6 mm	GRM2 Clamps, or TGUM/TGUS Adapter Plates
5 mm	Other Grippers/Clamps
8 mm	Tri-Axis Components: Ball Swivel Clamp, Swing Plate



ROTATOR AND SLIDE MOUNTS

Provide your specifications and we can design and create required mounts. Contact PHD Customer Service for more information.

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