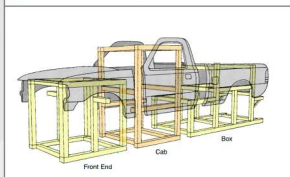
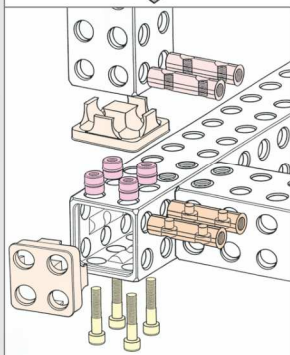
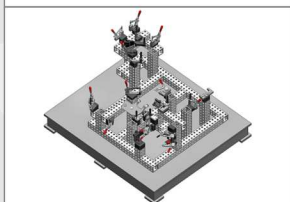
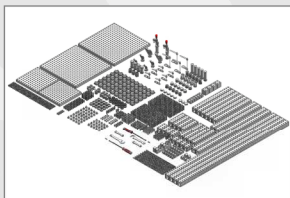


American Modular Tooling

C2
GAUGE & FIXTURE
Precision Modular Measurement & Testing Tools



**DECADES OF
EXPERIENCE**

**PROVEN
FIXTURING
EXCELLENCE**

AMERICAN MADE



C2
GAUGE & FIXTURE
American Modular Tooling

- ⊕ Established in 1991, Paul W. Marino Gages, Inc. is dedicated to providing the finest quality products and professional services to our customers.
- ⊕ In 2018 PWMG created a partnership with C2 Machining in Kentwood Michigan, C2 Gage & Fixture, to sell and manufacture American Modular Tooling as well as design and build fixtures of all types.
- ⊕ Our 5,000 sq. ft. design and 20,000 sq. ft. manufacturing facility, located in Kentwood MI, is home to our sales, design and manufacturing groups and includes a working showroom with demonstration and learning facilities.
- ⊕ Our customer service and sales groups are knowledgeable, professional and ready to assist you.
- ⊕ Our design group are specialists in several fields of design and support all typical file formats.
- ⊕ Our manufacturing and quality groups consist of knee mills, lathes, coordinate measuring systems and all associated equipment required for manufacturing with the future in mind.



C2 Gauge & Fixture, Kentwood Michigan

Widespread Acceptance

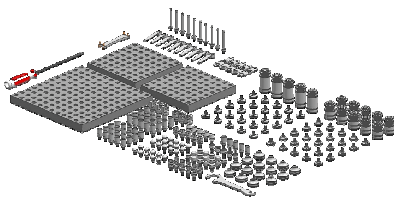
- | | | |
|------------------|-------------------|-----------------|
| ⊕ Aerospace | ⊕ Die Casting | ⊕ Ship Building |
| ⊕ Aircraft | ⊕ Electronics | ⊕ Steel |
| ⊕ Aluminum | ⊕ Instrumentation | ⊕ Tooling |
| ⊕ Automotive | ⊕ Machine Tool | ⊕ And growing |
| ⊕ Communications | ⊕ Medical | |
| ⊕ Defense | ⊕ Plastics | |

American Modular Tooling

The New Manufacturing

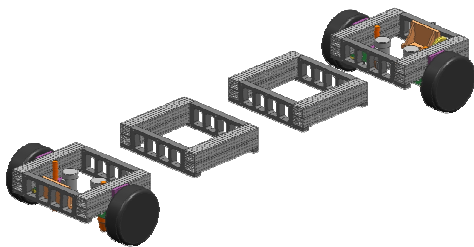
There is a worldwide movement to lean, efficient methods of manufacturing. The U.S. government is currently working with major manufacturers to implement modular, reconfigurable tooling. AMT fulfills the following:

- ⊕ Modular and reconfigurable
- ⊕ Rapid response and deployment
- ⊕ Light weight
- ⊕ Three E's...ecological, ergonomic and economic



AMT Advantages

- ⊕ Fixtures may be built rapidly and modified easily, resulting in immediate savings of time and money.
- ⊕ All components are completely reusable, unlike welded fixtures.
- ⊕ Aluminum is light in weight, resists corrosion and is ecologically sound
- ⊕ Modular elements make it easy to duplicate, or repeat, designs.
- ⊕ Large fixtures, such as body cubes, may be built in sections which can be assembled or dismantled quickly, permitting work at multiple locations.
- ⊕ A fixture may be assembled away from its site of design.



AMT is ideal for:

- | | | |
|---------------------------------------|---|--------------------------------------|
| ⊕ CMM Holding fixtures | ⊕ Checking fixtures, SPC and indicating | ⊕ Vacuum holding fixtures |
| ⊕ Attribute gages | ⊕ Body stacks, cube ups and bucks | ⊕ Multi-part pallet systems for CMMs |
| ⊕ Holding fixtures | ⊕ Armatures | ⊕ Shuttle systems |
| ⊕ Assembly fixtures | ⊕ Interior and exterior bucks | ⊕ Special machined details |
| ⊕ Welding fixtures | ⊕ Jigs and jiggling base plates | ⊕ Standard details |
| ⊕ Hand apply fixtures or gages | ⊕ Universal, multi-part holding devices | ⊕ Check rails, net pads, locators |
| ⊕ Layout fixtures | | ⊕ Clamping systems |
| ⊕ Checking fixtures, flush and feeler | | |

- ⊕ We have included several illustrations and photos of production AMT jobs throughout our catalog — refer to the Photo chapter on pages 139-150 for even more.

American Modular Tooling

Fast parts fixturing, rapid tool development, simplified machining and fast assembly make American Modular Tooling an ideal addition to the worldwide movement for lean, efficient methods of manufacturing. Every element has been designed for maximum efficiency and cross-system adaptability. Components are available individually, in kits or as custom fixtures designed and built per your part print.

Material Properties of AMT Components:

AMT "Construction Grade" Extruded Profiles and Locators

- ⊕ 6061-T6, Temper 6
- ⊕ KSI Tensile: 47,000 PSI
- ⊕ KSI Yield: 40,000 PSI
- ⊕ Hard Coat Anodized
- ⊕ Elongation Factor: 8%

AMT "Professional Grade" Extruded Profiles and Top Elements

- ⊕ 7075-T6, Temper 6
- ⊕ KSI Tensile: 78,000 PSI
- ⊕ KSI Yield: 68,000 PSI
- ⊕ Hard Coat Anodized
- ⊕ Elongation Factor: 6%

AMT "Special Duty" Extruded Profiles.

- ⊕ 6082-T6, Temper 6, Special Blend
- ⊕ KSI Tensile: 45,000 PSI
- ⊕ KSI Yield: 30,000 PSI
- ⊕ Hard Coat Anodized
- ⊕ Elongation Factor: 4.5–5.5%

AMT "Special Duty" Cast Products

- ⊕ 319, 0-T5 Sand Cast
- ⊕ KSI Tensile: 30,000 PSI
- ⊕ KSI Yield: 26,000 PSI
- ⊕ Hard Coat Anodized
- ⊕ Elongation Factor: 1.5%

AMT Connection Elements

- ⊕ 2024-T6
- ⊕ KSI Tensile: 69,000 PSI
- ⊕ KSI Yield: 57,000 PSI
- ⊕ Hard Coat Anodized
- ⊕ Elongation Factor: 10%

Benefits of the American Modular Tooling System

Manufacturing and Engineering:

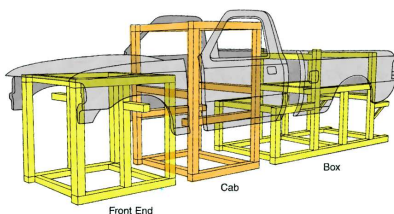
- | | |
|---------------------|--------------|
| ⊕ Facility Usage | 48% Less |
| ⊕ Lead Time | 60% Less |
| ⊕ Tooling Costs | 44% Less |
| ⊕ Tooling Labor | 60% Less |
| ⊕ Tool Design Costs | 50% Less |
| ⊕ Equipment Needs | 70% Less |
| ⊕ Reusable Material | 70% Reusable |

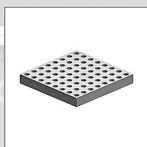
Manufacturing and Assembly:

- | | |
|-----------------------------|-------------|
| ⊕ Assembly Labor | 70% Less |
| ⊕ Through-put Increase | 45% More |
| ⊕ Accuracy of Assemblies | 50% Greater |
| ⊕ Periodic Inspection | 50% Less |
| ⊕ Reconfigurable | Priceless |
| ⊕ Modularity | Priceless |
| ⊕ Rapid Engineering Changes | Priceless |

Other Benefits:

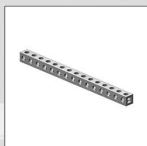
- ⊕ Fewer corrosion problems due to hard coat aluminum
- ⊕ Lower shipping costs due to lighter weight
- ⊕ Faster setup at customers facility
- ⊕ Good ROI on leasing of tool (70% reusable)
- ⊕ Can be used as temporary rate tool
- ⊕ Less space required for storage
- ⊕ Minimal maintenance requirements
- ⊕ Environmentally correct





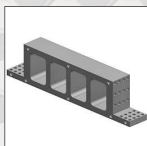
Grid Plates provide the basic structural foundation of almost any fixture.

Pages 7—16



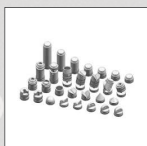
Light weight Hollows feature a channeled interior for high accuracy.

Pages 17—34



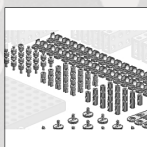
Special duty supports, gussets and foot plates provide added strength.

Pages 35—42



Locating and Clamping Elements hold and locate parts of many shapes and sizes.

Pages 43—72



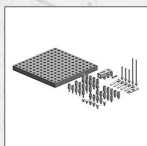
Connection Elements permit rapid assembly of fixtures.

Pages 73—86



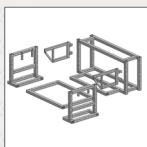
Tools and Storage Cabinets

Pages 87—92



Kits are designed to accommodate all varieties of fixturing requirements.

Pages 93—124



Studio Tools

Pages 125—138



Photos

Pages 139—150

American Modular Tooling

Testimonial of the Year:

Modular Tooling Reduces Fixturing Costs, Allows Conversion From One Make to Another.

"It's easy to learn, but there is so much there that you have to sort through it. Once you know what everything does, it's like working with one of those Erector® sets you had when you were a kid. It's very, very user friendly."

Bill Ralph, Quality Metalcraft, Inc.



Two sided modular tool converted for reuse after its initial run for a different manufacturer.

"I would recommend it to anybody. You are better off sticking with the people who know what to do with it."

"If it's going to cost us a measly \$3,000.00 to build a, say, \$100,000.00 fixture...we want to do it."



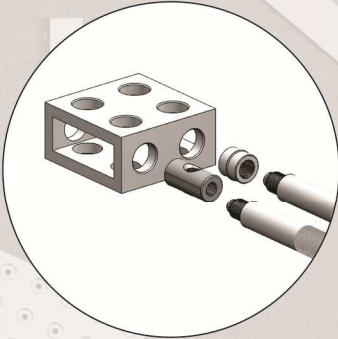
A close-up view showing a three-axis adjustable locating element holding a door in body position.

"It's part of our system now, they are definitely going to use it on the next big project. It should last for years."

Read the entire article in Quality Magazine, 2008 or online at www.qualitymag.com.

See more on our website, pmargage.com

American Modular Tooling



Grid Plates

Hollows

Special Duty

Locating & Clamping

Connection Elements

Tools & Storage

Fixturing Kits

Studio Tools

Photos

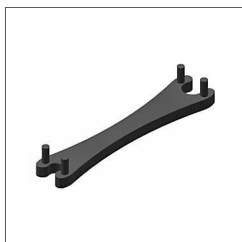


American Modular Tooling



Part No.	Material	System
AMT-10060	Steel	25 / 40

AMT Wrench effortlessly fastens and unfastens AMT locating elements. Steel with 13 mm and 28 mm ends.



Part No.	Material	System
AMT-10066	Steel	25 / 40

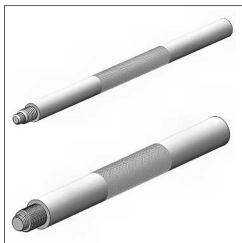
AMT Spanner tightens retention and screw elements. Durable steel handle with tool steel pins.

SOLUTIONS®

How it works

“AMT Work Tested Tools”®
for use with AMT sizes
25 and 40.



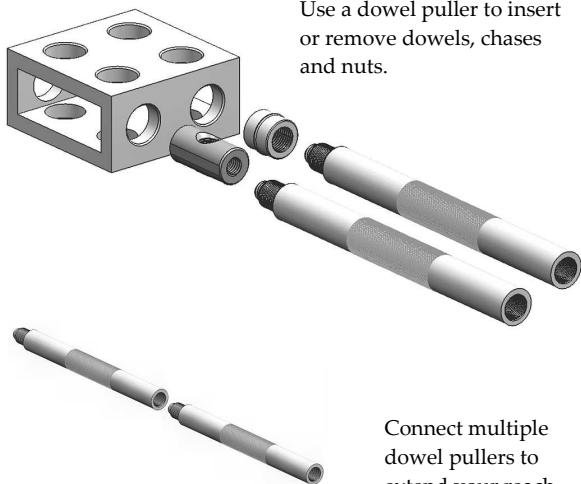


Part No.	Dimensions	Material
AMT-10061	AMT 25, M6	Aluminum
AMT-10063	AMT 40, M10	Aluminum

AMT Dowel Puller. This tool will fit into the threaded ends of all chases, nuts and dowels. It will allow you to insert or remove them easily.

SOLUTIONS®
How it works

“AMT Work Tested Tools”®
for use with AMT sizes 25 and 40.



Part No.	Dimensions	Material
AMT-10053	OAL 275	Steel / Poly Handle

AMT Hex and Screw Driver with interchangeable 3, 4, 5 and 8 mm hex heads and one straight slot head. All time favorite PWM driver for size 25 only.



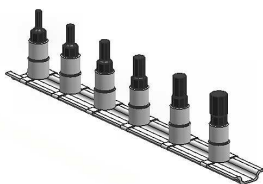
American Modular Tooling



AMT Hex Bit tools with polished chrome finish.

Part No.	Description
AMT-10080	Hex bit, 3 mm
AMT-10081	Hex bit, 4 mm
AMT-10082	Hex bit, 5 mm
AMT-10083	Hex bit, 6 mm
AMT-10084	Hex bit, 7 mm
AMT-10085	Hex bit, 8 mm
AMT-10086	Hex bit, 9 mm
AMT-10087	Hex bit, 10 mm
AMT-10088	Hex bit, 11 mm
AMT-10089	Hex bit, 12 mm

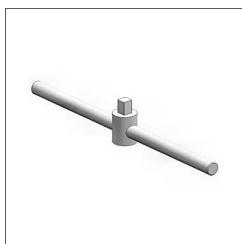
"AMT Work Tested Tools"[®]
Excellent quality, long lasting.



Tools & Storage

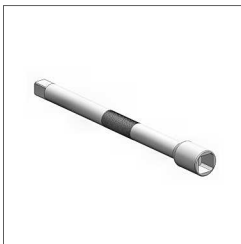
Part No.	Description
AMT-10099	Stand for 1/4" drive bits
AMT-10100	Stand for 3/8" drive bits

AMT Hex Bit Storage Stand keeps your bits organized and handy.



Part No.	Description
AMT-10097	T-handle, 1/4" drive
AMT-10092	T-handle, 3/8" drive

AMT "T" Handle with polished chrome finish.



Part No.	Description
AMT-10096	Extension, 1/4" drive
AMT-10091	Extension, 3/8" drive

Hex Bit Extension can be used alone as hand driver or with T-handle.



Part No.	Description
AMT-10094	Tool kit, 3/8" drive for AMT 40
Contents	1 each: Wrench, Spanner Tool, Dowel Puller, Extension, T-Handle, 7 Hex Bits 5—12mm

AMT Tool Kit works with all AMT 40 kits and components.



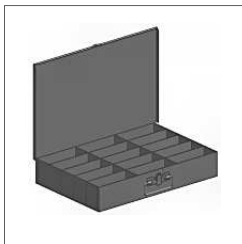
Part No.	Description
AMT-10095	Tool kit, 1/4" drive for AMT 25
Contents	1 each: Wrench, Spanner Tool, Dowel Puller, Extension, T-Handle, 6 Hex Bits 3—8mm

AMT Tool Kit works with all AMT 25 kits and components.



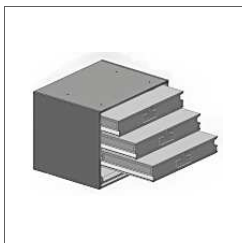
Spare wrenches, spanner tools and dowel pullers are shown on pages 88—89.

"AMT Work Tested Tools"®



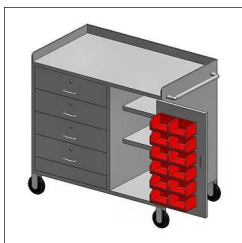
Part No.	Description
AMT-10043	Storage drawer with adjustable dividers

AMT Storage Drawers are supplied with each small kit and extension kit.



Part No.	Description
AMT-10040	Storage case

Four Drawer Cabinet has three drawers with differently configured dividers and one drawer with no dividers. Keep components organized and clean. Easily transport components to site to build or change fixtures.



Part No.	Description
AMT-10048	Storage cabinet

Rolling Cabinet is ideal for intermediate sized kits, providing a work surface to build on. Removable poly containers allow you to take parts and components where you need them.



Part No.	Description
AMT-10049	Large storage cabinet



Rolling Cabinet designed for large kits can hold hundreds of parts, up to 2000 mm long. An optional granite surface plate for the top is available.

American Modular Tooling

SYMBOL FOR:	ASME Y14.5M 1994	ISO
STRAIGHTNESS		
FLATNESS		
CIRCULARITY		
CYLINDRICITY		
PROFILE OF A LINE		
PROFILE OF A SURFACE		
ALL AROUND		
ANGULARITY		
PERPENDICULARITY		
PARALLELISM		
POSITION		
CONCENTRICITY (concentricity and coaxiality in ISO)		
SYMMETRY		
CIRCULAR RUNOUT		
TOTAL RUNOUT		
AT MAXIMUM MATERIAL CONDITION		
AT LEAST MATERIAL CONDITION		
REGARDLESS OF FEATURE SIZE	NONE	NONE
PROJECTED TOLERANCE ZONE		
TANGENT PLANE		
FREE STATE		
DIAMETER		
BASIC DIMENSION (theoretically exact dimension in ISO)		
REFERENCE DIMENSION (auxiliary dimension in ISO)		
DATUM FEATURE		
DIMENSION ORIGIN		
FEATURE CONTROL FRAME		
CONICAL TAPER		
SLOPE		
COUNTERBORE/SPOTFACE		
COUNTERSINK		
DEPTH/DEEP		
SQUARE		
DIMENSION NOT TO SCALE	15	15
NUMBER OF PLACES	5A	5A
ARC LENGTH		
RADIUS	R	R
SPHERICAL RADIUS	SR	SR
SPHERICAL DIAMETER	SØ	SØ
CONTROLLED RADIUS	CR	NONE
BETWEEN		NONE
STATISTICAL TOLERANCE		NONE
DATUM TARGET		
TARGET POINT		

* May be filled or not filled

About Us

We are dedicated to presenting the finest quality products to industry while providing reliability and service. Our mission is to supply the technological advances that enable the manufacturing process to work faster, with higher precision, than past practices. We utilize methods that recognize global economic, ergonomic and ecological considerations.

Over the years our highly skilled personnel, consistency in service, quality and innovative ideas have proven to be our greatest assets.

Distributor Network

American Modular Tooling® products are sold through our highly valued distributor network, world-wide. We make all efforts to protect those relationships and are looking for additional qualified distribution networks in many areas of the world.

If you are unable to locate a distributor in your area, or are interested in becoming a distributor, please contact us at the numbers below.

Contact Us

Paul W. Marino Gages, Inc.

413 NE Baker Road.
Stuart, FL 34994
United States

Phone (800) 528.9785

Email: pwminc@pmargage.com
Web: pmargage.com
eShop: shoppwm.com

⊕ Technical Sales & Consultation

C2 Gauge & Fixture

4017 Brockton Drive SE
Kentwood, MI 49512
United States

Phone (616) 554.5222

Email: c2gauge.com/contact
Web: c2gauge.com

⊕ Sales ⊕ Design & Build
⊕ Manufacturing ⊕ Logistics

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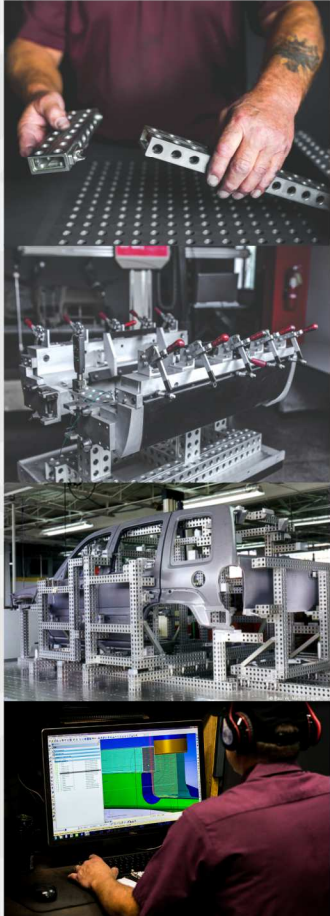
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