

Vol. 1

# unilock

ZERO-POINT  
CLAMPING SYSTEM



A PRODUCT OF:

**BIG KAISER**<sup>®</sup>  
PRECISION TOOLING INC.  
Higher Performance. Guaranteed.

# ZERO-POINT CLAMPING SYSTEM

# unilock

Meeting the challenge to setup every process as efficiently as possible with a simple clamping concept.

In a competitive environment, all production cells need efficient workpiece handling solutions. Production diversity should not be a barrier. Let Unilock, BIG Kaiser's zero-point clamping system, lead the way with efficient part loading solutions for low and high volume production runs. Unilock virtually eliminates all setup time and replaces it with production time.

Get lean and agile on your shop floor. Unilock is a comprehensive positioning and clamping system that can be applied to almost anything you manufacture or assemble.

If your company needs to increase its agility, Unilock will allow you to run any job on any available manufacturing cell. You can interrupt jobs without incurring setup time and then switch back as needed. When all of your manufacturing cells have Unilock, work can quickly flow to any available resource.



**OVERVIEW & APPLICATION EXAMPLES** ..... Pg. 4-9



**ROUND CHUCKS**

Overview..... Pg. 10-11  
 ESM 138 ..... Pg. 12-13  
 EFM 138 ..... Pg. 14-15  
 ASM 90 ..... Pg. 16-17  
 ASM 120 ..... Pg. 18-19  
 ISM 160 ..... Pg. 20-21  
 MSM 170 ..... Pg. 22-23  
 ESM 176 Turbo ..... Pg. 24-25  
 HSM 196 ..... Pg. 26-27



**RECTANGULAR CHUCKS**

Overview..... Pg. 28-29  
 ESM 100/75 ..... Pg. 30-31  
 AFM 105/65 ..... Pg. 32-33  
 EDM 100/150 ..... Pg. 34-35  
 AFM 146 ..... Pg. 36-37



**PRE-ASSEMBLED CHUCKS**

Overview..... Pg. 38-39  
 MLM 150 ..... Pg. 40-41  
 MCM 150 ..... Pg. 42-43  
 DLM 200 ..... Pg. 44-45  
 DCM 200 ..... Pg. 46-47  
 QC 400 ..... Pg. 48-49  
 Starter Kits..... Pg. 50-51



**KNOBS & PALLETS**

Overview..... Pg. 52-53  
 Clamping Knobs ..... Pg. 54-55  
 System 40 Pallets ..... Pg. 56-57



**AUTOMATION CHUCKS**

Overview..... Pg. 58-61  
 ESA 100 ..... Pg. 62-63  
 NSA 125 ..... Pg. 64-65  
 ESA 185 ..... Pg. 66-67  
 ASSF 170 ..... Pg. 68-69  
 ASSF 250 ..... Pg. 70-71  
 BALF 170 & BALF 250 ..... Pg. 72-73  
 Automation Pallet Systems ..... Pg. 74-75



**MULTI-AXIS SYSTEMS**

Overview..... Pg. 76-79  
 5-Axis Duo Bridge..... Pg. 80-81  
 First Grip ..... Pg. 82-83  
 Dovetail Grip ..... Pg. 84-85  
 5-Axis Riser Chucks..... Pg. 86-87



**MINERAL CAST SYSTEMS**

Overview..... Pg. 88-89  
 Columns ..... Pg. 90-91  
 Grid Columns ..... Pg. 92-93  
 Pallets, Riser Pads & Custom Solutions..... Pg. 94-95



**ROBOT INTERFACES**

Overview..... Pg. 96-97  
 Robot Grippers ..... Pg. 98-101



**ACCESSORIES**

Overview..... Pg. 102-103  
 Chuck & Subplate Air Fittings..... Pg. 104-106  
 Accessories & Repair Components..... Pg. 107

**SERVICE & OPERATING INSTRUCTIONS** ..... Pg. 108-109



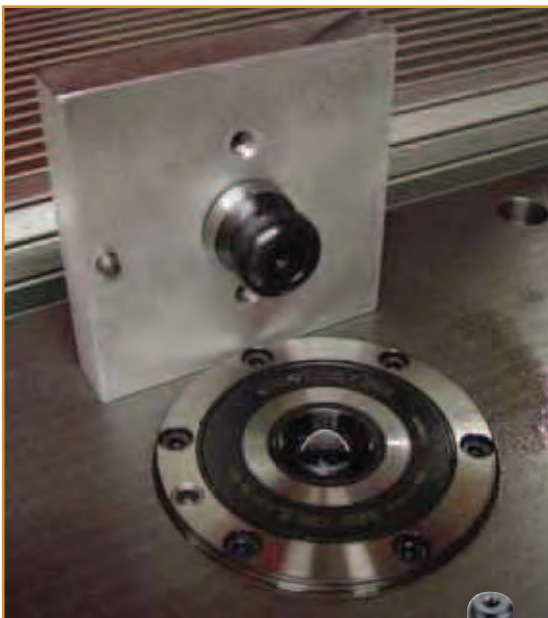
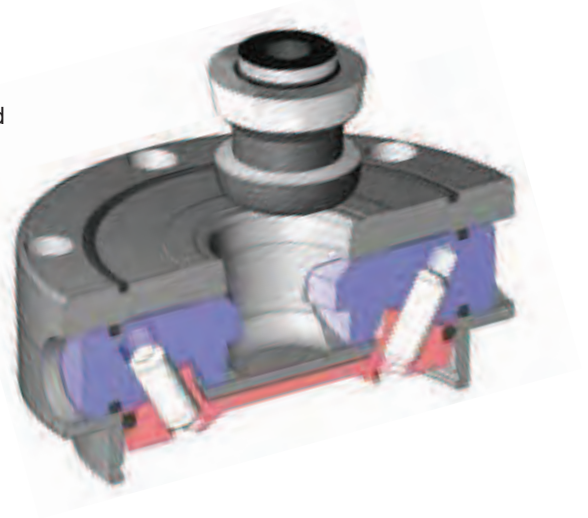
# OVERVIEW

## How it Works

Unilock utilizes spring pressure to drive multiple clamping pins against a tapered clamping knob. Air pressure is used to compress the springs to back the clamping pins off the clamping knob. This clamping process is achieved by bleeding the air pressure out of the chuck. To facilitate palletization, the clamping knob is attached to a base plate, fixture or directly to a workpiece. The result is quick and repeatable clamping. A hand locking version (no air required) is also available.

## Features:

- Clamping Mechanism: Heavy-duty die springs
- Chuck Opening: Air pressure to compress springs
- Clamping Stability: Low profile with matching taper wedges
- Positional Accuracy: Adaptable to workpiece conformation
- Unlocking Air Pressure: 75 PSI
- Turbo Assist Clamping



## Single Chuck Applications

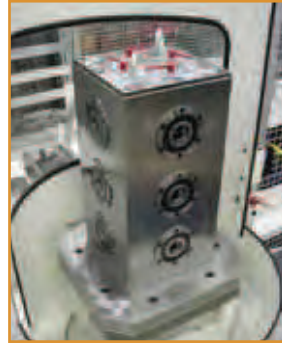
The Unilock clamping knob mates with the central taper in the chuck to establish the centerline location (XY reference in a Cartesian coordinate system). A timing pin or key locates in a notch or bushing to orient the coordinate system relative to XY and to restrict rotation. The Z reference in this same coordinate system is established by the bottom of the fixture or workpiece contacting the top ground surfaces of the chuck. These same mating surfaces (bottom of the fixture and top of the chuck) will control axial alignment.

The clamping knob can be used for locking down a workpiece without influencing location if external features are used for positioning.



## Multiple Chuck Applications

Unilock is not restricted to one clamping knob. When the fixture or workpiece exceeds the work range of a single Unilock chuck, additional clamping knobs and chucks can be used to provide the necessary support and stability required for the process. There are only a few limiting factors as to the size of an array of chucks or in the weight of a workpiece. Undersized knobs provide clearances for large parts or out of position locations.



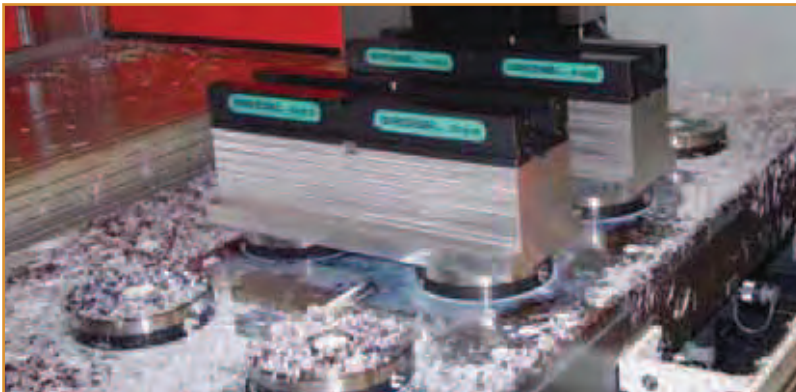
## Diametral Clearances

Type	mm	inch
SBC	.1	.004
SBBC	.3	.012
SBBC	.6	.024

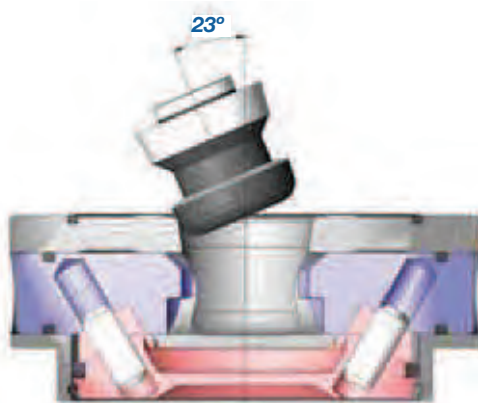
- SBA = Establishes centerline
- SBB = Orients about centerline
- SBC = Clamp only, no positioning

## Designed for Manufacturing

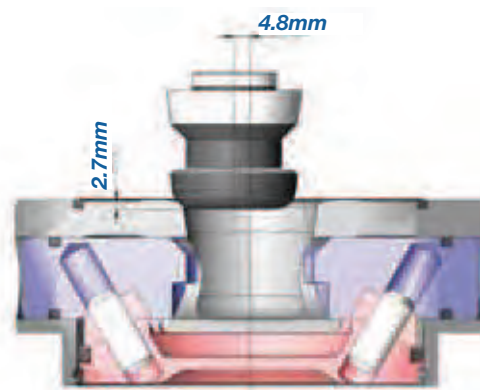
During day-to-day use, chucks can be cleaned with compressed air. The fit between the clamping rams and the chuck body will not allow air pressure to push chips inside of the chuck. If you get chips in the clamping pocket, simply blow them out with an air gun. When open, the wedges completely retract. The one-to-one length to diameter ratio of the pocket is easily cleaned. There is no need for a vacuum. The 40mm tall by 40mm diameter clamping knob is extremely stable and can double as a foot when moving fixtures and workpieces around the shop. You will not need protective sleeves or special shelving when storing or transporting Unilock palletized fixtures or workpieces. Male and female threads are available in multiple sizes.



## Self-Guiding Design



Unilock is designed to accept warped workpieces and fixtures. The shallow clamping pocket will allow a clamping knob to enter the chuck at an angle of up to 23 degrees. Undersized clamping knobs are also available. Standard and special Unilock clamping knobs will accommodate your out of position datums.



The radius on the smaller bottom diameter of the clamping knob addresses out of position loading conditions. When working with large workpieces that can warp, expand or contract, the knob can be used to help guide the clamping knobs to the center of the chuck.

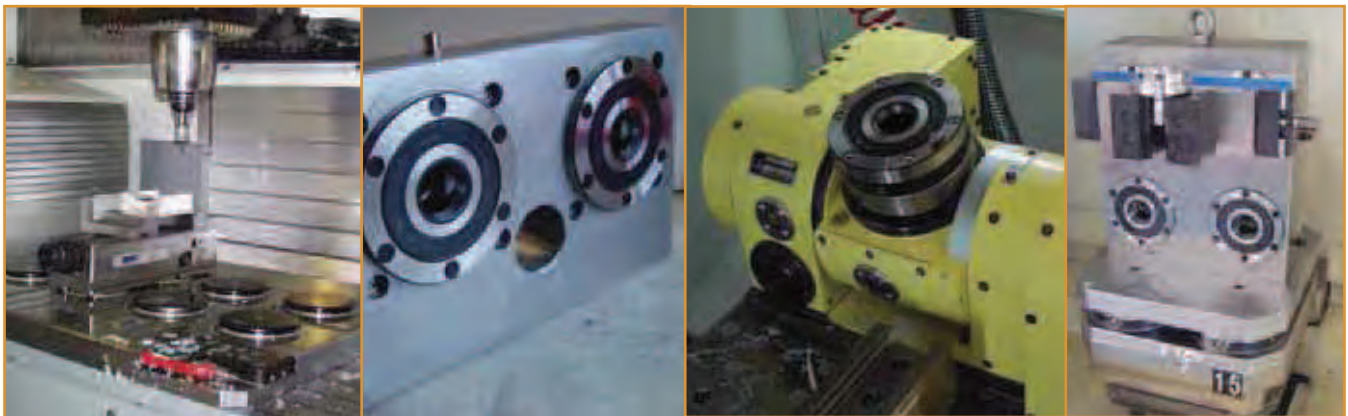
# OVERVIEW

## Process Your Way to Savings

Fixtures and workpieces are easily adapted to Unilock clamping knobs. Tremendous savings are available if the fixture or workpiece can be reoriented or transferred to machine additional features while remaining attached to the Unilock clamping components. On horizontal machines with columns, fixtures can be rotated 90 degrees or moved to the top. Transferring fixtured parts through as many operations as possible eliminates additional fixtures and clamping/unclamping time. Less clamping and unclamping of parts also reduces scrap and improves feature-to-feature accuracies.

## Transfer Workpieces Between Processes

- Vertical Machining Cells
- Horizontal Machining Cells
- High Speed Drilling and Tapping Centers
- Surface and Cylindrical Grinding Cells
- Horizontal and Vertical Lathes
- Coordinate Measuring Cells
- Welding, Plasma and Laser Cells



Once you grab the part, use Unilock to send it to as many operations as possible without removing the part from the fixture. Unilock positions and clamps from one face, leaving the other faces available for machining. Rotary tables, angle/sine plates and multi-sided tombstones facilitate part reorientation for subsequent operations.

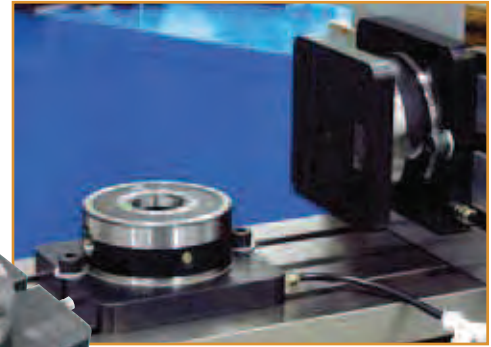


The user can expand the operational envelope of any Unilock chuck by adding external timing features and support for the portion of the workpiece or pallet that falls outside of the top of the chuck.



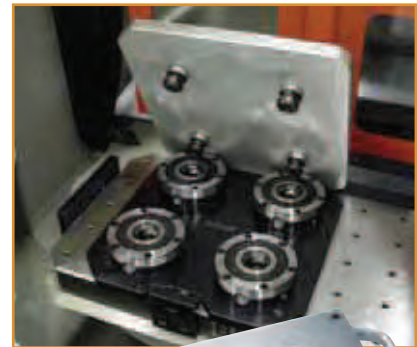
## It's Easy to Get Started

Starter Kits help save time between part changes. Chucks are mounted to a base plate which functions as a reference edge. With a single part number you get all the required components to be up and running immediately.



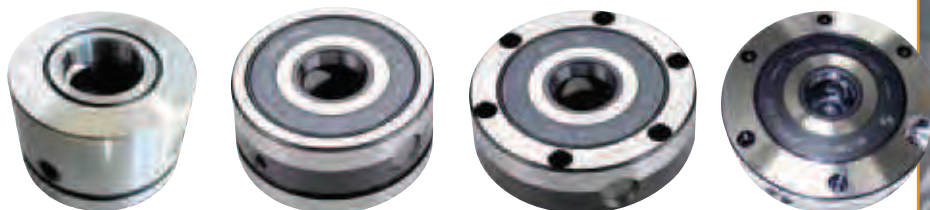
## Working Solutions in Minutes

Table chucks are mounted to base plates and are ready to be clamped to your workstation. These chucks are supported by pre-assembled pallets. Shown below are the Mono, Duo and Quad table chucks, along with their pallets. Pneumatic kits are also available so you can install a working solution in minutes.



## Build Your Own Custom Solutions

Unilock components can be purchased individually for incorporation into your own custom designs.

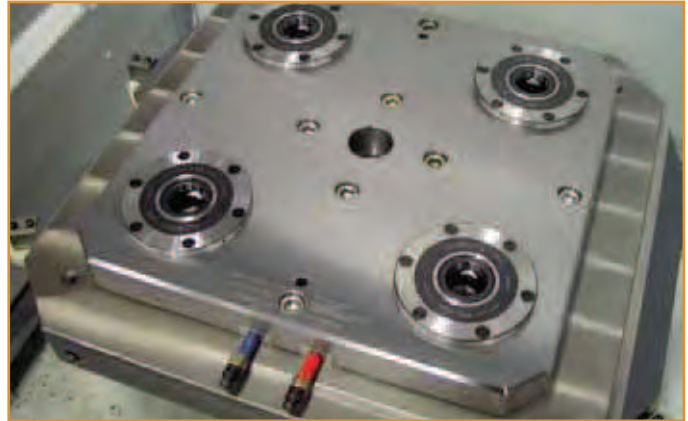


# APPLICATION EXAMPLES

## ***A Clamping System Flexible Enough to Change the Entire Table or Workpieces and Fixtures***

Unilock establishes predefined datums on all of your machines. When you load, lock and cycle start, there is no wasted time. A setup should always take the same amount of time.

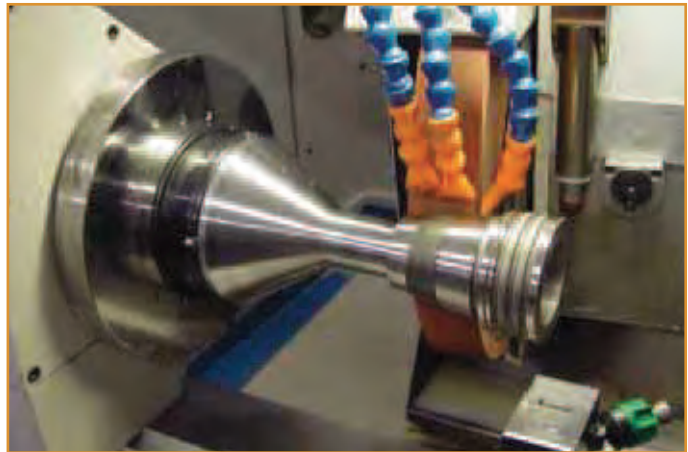
Unilock delivers scheduling flexibility and setup versatility. By using more than one chuck on a machine, you will be able to switch between multiple small parts or fewer large parts. Our predefined datums allow you to quickly and accurately convert your machining center from a headstock and tailstock setup to fixtures on the table.



## ***Applications Are Endless – Limited Only by Your Imagination***

You can align all of your rotary table fixtures in seconds. As you move away from the spindle nose, Unilock's heavy duty chucks will absorb the additional leverage and torque. Since individual Unilock components are sold separately, you can build specific solutions in-house, contact your tool and fixture provider or purchase them from one of our workholding associates.

Unilock can be used in any configuration and in almost any process. A heavy cut requiring six chucks to stabilize the part for machining can be accurately positioned on a coordinate measuring machine with two small chucks or a single chuck and a timing feature.

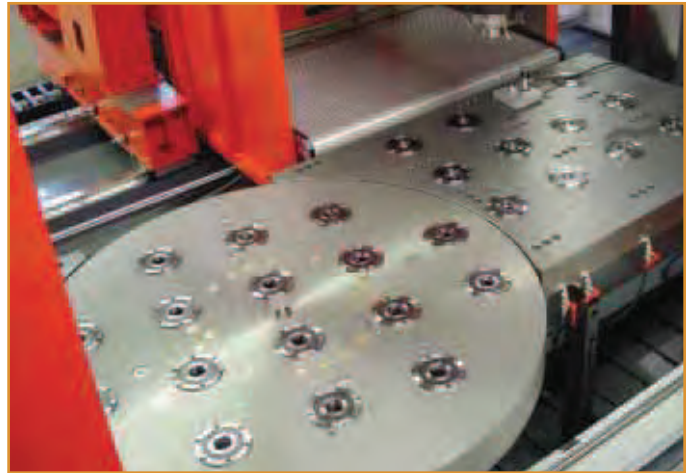




**Large Parts**

*Even Your Largest Machines Can Save Money Starting With Your Next Job*

Unilock provides undersized clamping knobs so you do not have to hold .0004" on fixture locations when your production tolerance is .005". These undersized knobs are a necessity if you want to mount knobs directly to warped or loosely toleranced workpieces. If you do not need to, or cannot hold a tight tolerance, simply select the appropriate undersized clamping knobs to accommodate your workpiece or fixture. Unilock's heavy-duty clamping knobs are a necessity when you are using a hoist to load and unload your machine. With a length-to-diameter ratio of 1-to-1, Unilock's 40mm clamping knob can be left on fixtures and workpieces without worry of damage during loading and unloading, storage or transfer.



**Diametral Clearances**

Type	mm	inch
SBC	.1	.004
SBCC	.3	.012
SBCC	.6	.024



**Small Parts**

*Remove Process Time – Save More Than Just Setup Time*

Before Unilock, three subsequent machining processes required the operator to clamp and unclamp the part three times. Now the same part is only clamped and unclamped once over these same three processes.

Even when the time spent clamping and unclamping the part is minimal, it creates unnecessary labor and a chance for errors. Use Unilock so you can immediately increase your spindle uptime and decrease scrap due to part positioning and clamping errors.

If a part has to be clamped and unclamped in a different fixture for each operation, considerable process time and money can be saved by leaving the part in the same fixture for as many operations as possible. The more expensive fixtures which hold machined parts for subsequent operations would also be eliminated.



Operation	Before Unilock		After Unilock		Savings
	Setup	Production	Setup	Production	
Op-10 Lathe	3 hours	4 hours	1 hour	4 hours	2 hours
Op-20 Lathe	2 hours	10 hours	1 hour	2 hours	9 hours
Op-30 Mill	4 hours	11 hours	1 hour	8 hours	6 hours
Total	10 hours	25 hours	3 hours	15 hours	17 hours

ROUND CHUCKS





## Round Chucks

The round Unilock chucks come in diameters from  $\varnothing 90\text{mm}$  to  $\varnothing 196\text{mm}$  ( $\varnothing 3.543"$  to  $\varnothing 7.716"$ ) and body styles to fit a wide variety of applications. Chucks can be supplied with single or multiple timing notches or bushing holes for timing. Most body forms allow the use of turbo assisted clamping for higher retention forces.



**ESM 138** .....Pg. 12-13



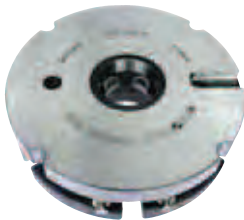
**EFM 138** .....Pg. 14-15



**ASM 90** .....Pg. 16-17



**ASM 120** .....Pg. 18-19



**ISM 160** .....Pg. 20-21



**MSM 170** .....Pg. 22-23



**ESM 176 Turbo** .....Pg. 24-25



**HSM 196** .....Pg. 26-27



# ESM 138 CHUCK

## Our Most Popular Chuck

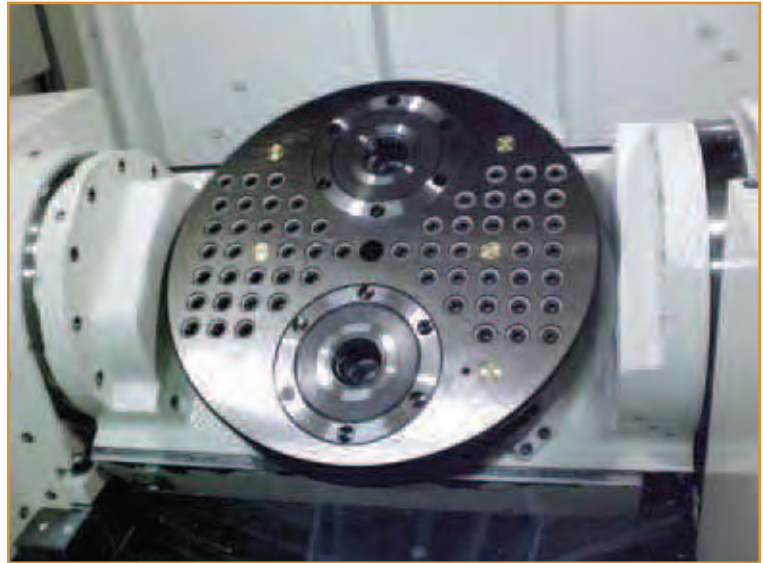
The ESM 138 Unilock chuck is easily mounted in custom fixture designs, and its versatility makes it our best seller.

### Features:

- Mid-sized diameter fits most applications
- Top side mounting for ease of integration
- Choose from air connections at bottom or side
- Optional timing notch in face of chuck
- Stainless steel body option (ESM 138-SS)



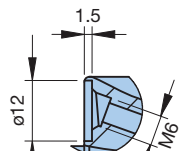
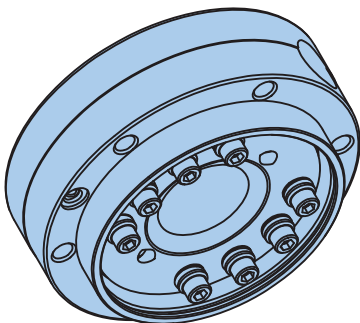
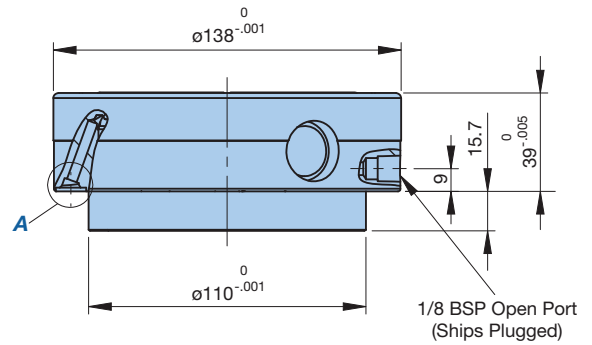
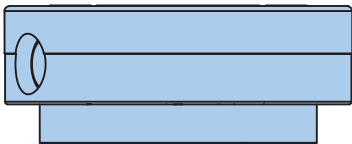
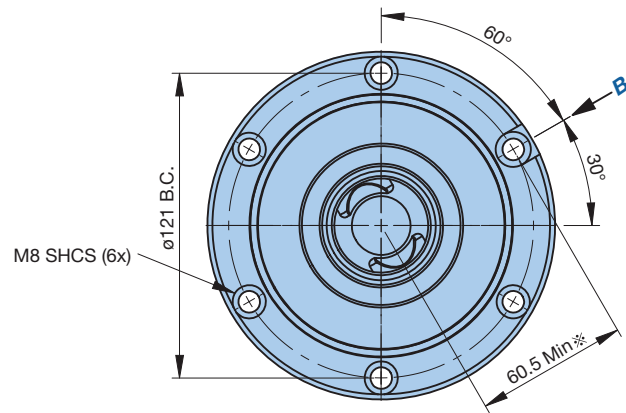
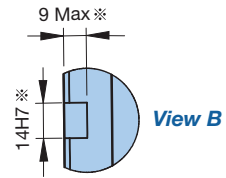
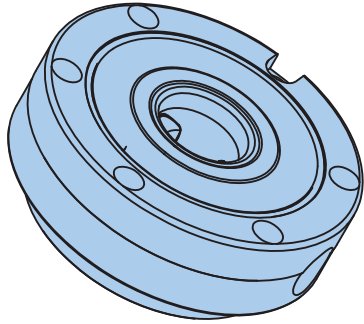
### Available with Notches



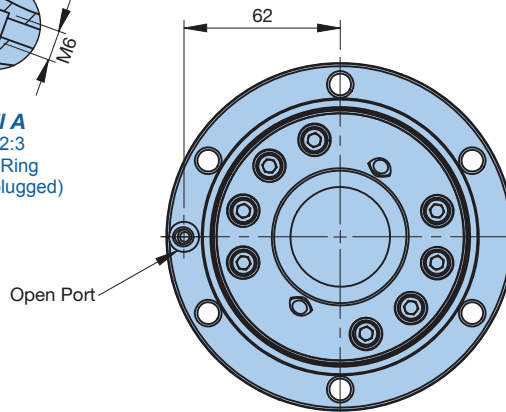
Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
ESM 138	15.270.100	—						990-1,320	3,300-3,520*	9.9	1/8	✓
	15.270.107	14H7 x 1	✓	✓	✓	✓	✓					
ESM 138-SS	15.276.100	—										

• Screws, screw covers and o-ring included  
 \* Sealed pocket required for Turbo Assist  
 † Optional

**DUST COVER PG. 107**



**Detail A**  
Scale 2:3  
ø8x2 O-Ring  
(Ships Unplugged)



- All dimensions are in millimeters
- Dimensions marked \* are for notch option

The EFM 138 Unilock flange mount chuck is easily mounted in custom fixture designs due to the reduced projection height. Especially suited for thinner walled tombstones.

**Features:**

- Mid-sized diameter fits most applications
- Top side mounting for ease of integration
- Optional timing notch in face of chuck
- Stainless steel body option (EFM 138-SS)



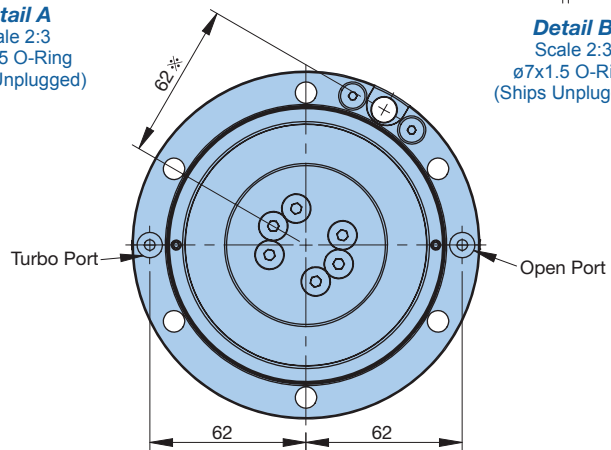
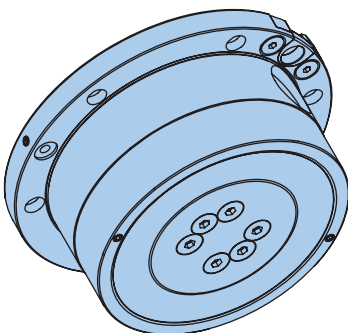
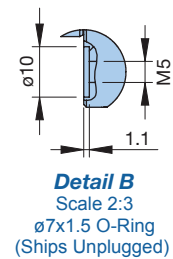
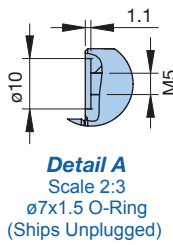
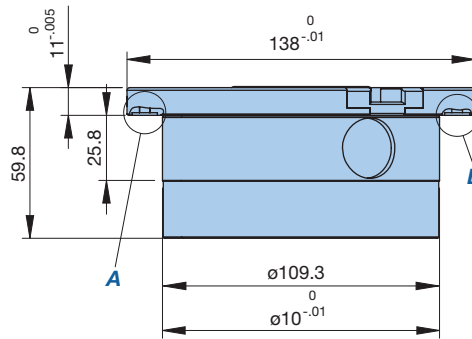
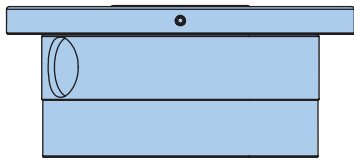
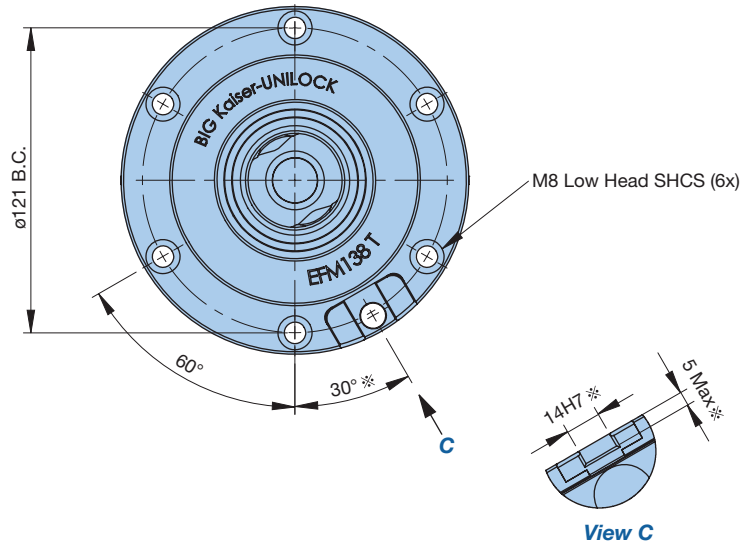
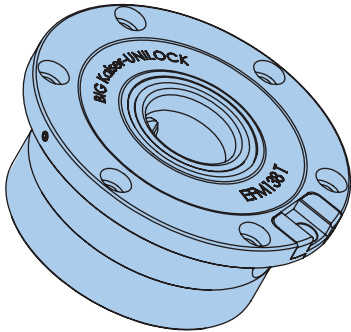
*Available with Notches*



Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
EFM 138	15.263.105	—						990-1,350	3,300-3,520	8	—	✓
	15.263.107	14H7 x 1	✓	✓	✓	✓	✓					
EFM 138-SS	15.276.107	14H7 x 1										

• Screws, screw covers and o-rings included  
 † Optional



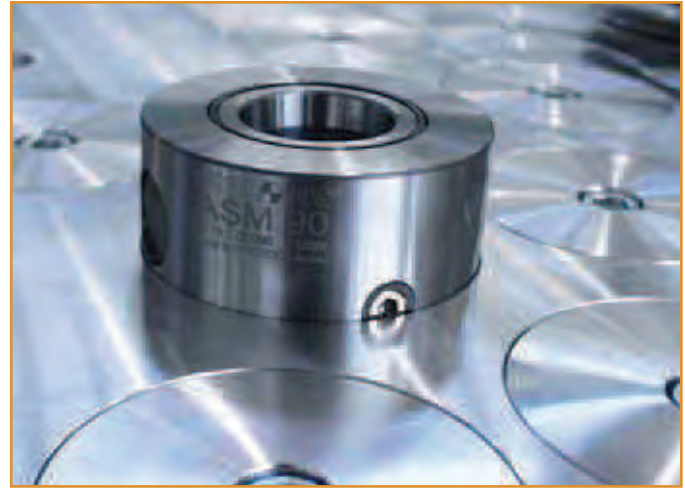


- All dimensions are in millimeters
- Dimensions marked \* are for notch option

## Smaller Application Chucks

### Features:

- Reduced diameter for small work or tight spaces
- Integrated toe clamp lip
- Turbo option for increasing holding power
- Air supply from bottom or side of chuck
- Optional reference notch in face of chuck



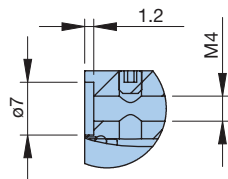
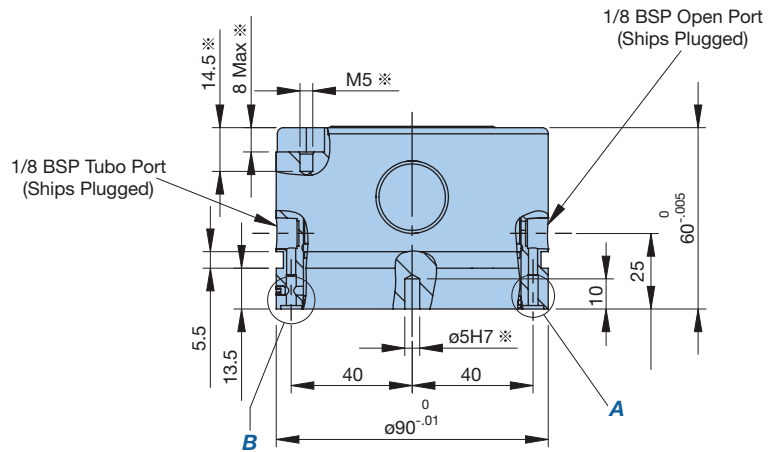
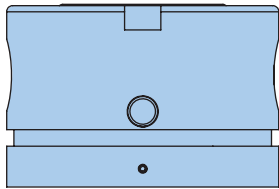
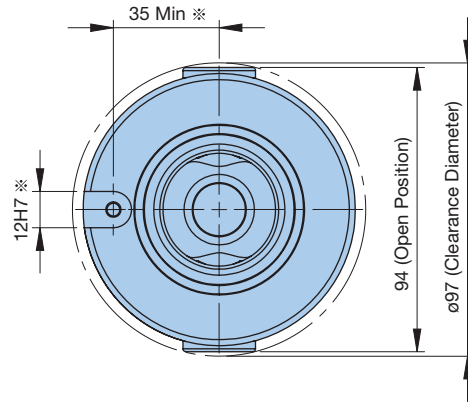
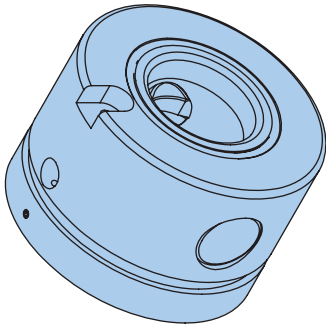
### Optional Through Hole



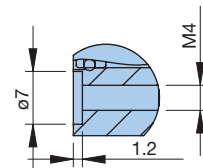
Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
ASM 90	15.240.090	—			—	—	—	550-660	1,540-1,760	5.1	1/8	✓
	15.240.091	12H7 x 1	✓	✓	—	—	—					

• O-rings included  
 † Optional

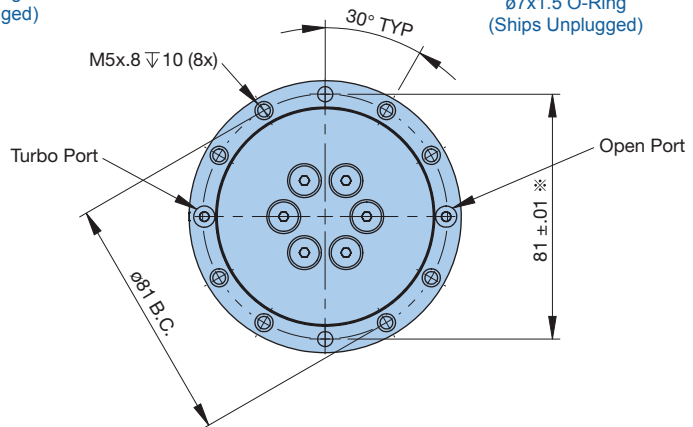
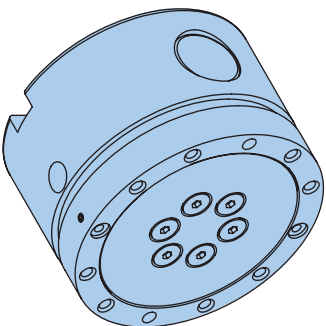
**DUST COVER PG. 107**



**Detail B**  
Scale 1:1  
ø7x1.5 O-Ring  
(Ships Unplugged)



**Detail A**  
Scale 1:1  
ø7x1.5 O-Ring  
(Ships Unplugged)

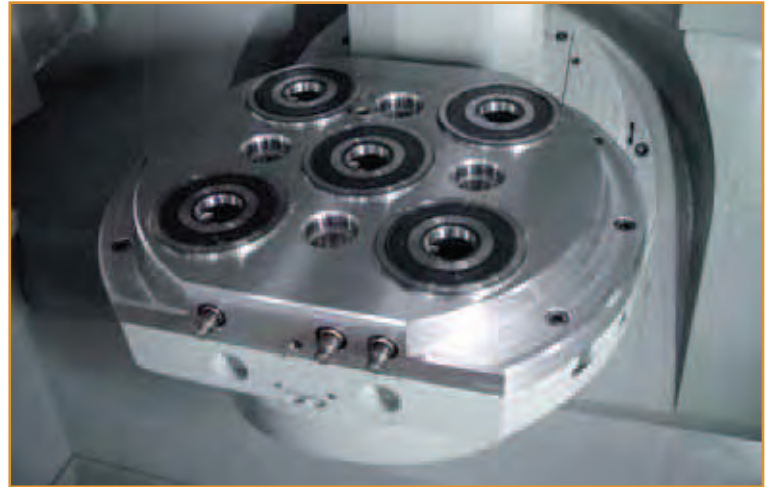


- All dimensions are in millimeters
- Dimensions marked \* are for notch option



## Features:

- Integrated toe clamp lip
- Reduced diameter for small work or tight spaces
- Jig ground reference pin location on bottom of chuck
- Air supply from bottom or side of chuck
- Optional reference pin hole in face of chuck
- Non-air mechanical version available

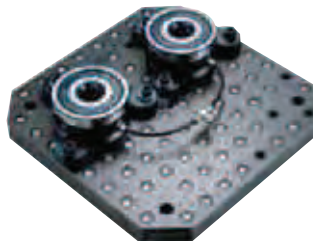


The manual version comes with a wrench for easy opening and closing.



The Model 120 chuck has a reference hole on center (shown here with a step pin). Threaded holes are also provided for mounting the chuck to a baseplate.

## Optional Timing Pin Feature



Toe clamps can also be used to clamp the chuck in place.

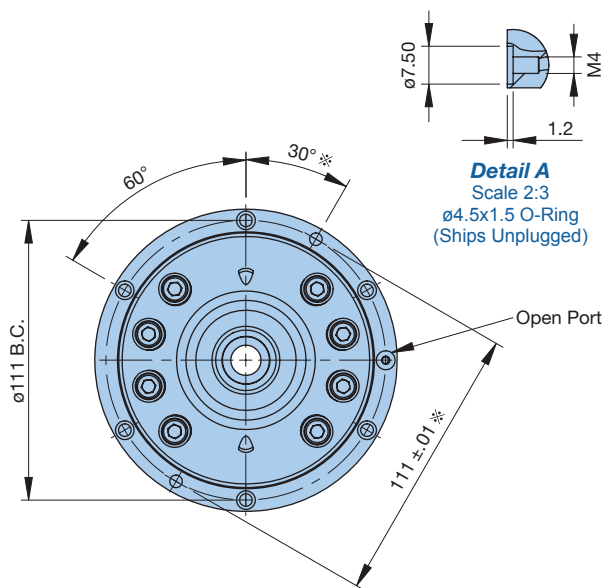
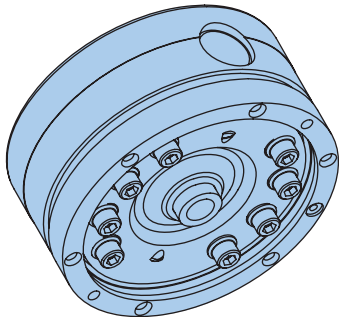
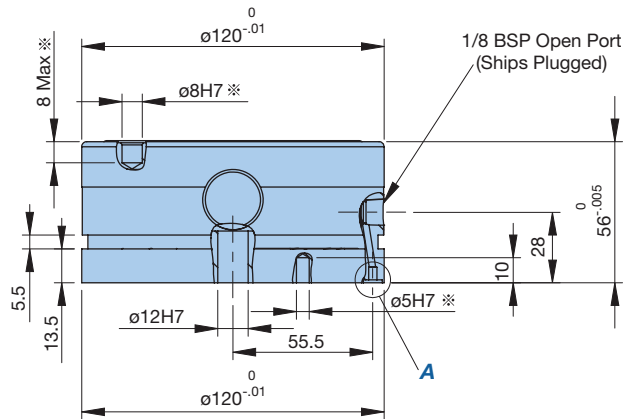
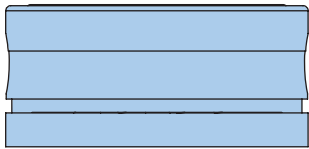
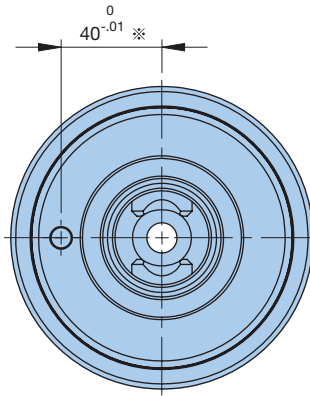
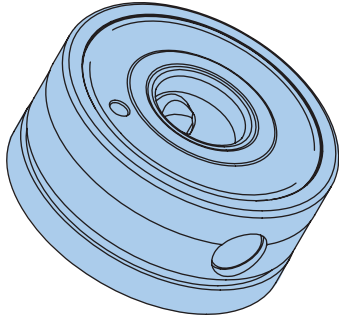
Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
ASM 120	15.270.150	—	✓	✓	—	—	—	770-990	2,860-3,300*	8.8	1/8	✓
	15.270.155	8H7 x 1										
	15.270.161	—										
	15.270.160	8H7 x 1										
ASM 120M	15.270.180	—	✓	✓	—	—	—	1,760-2,200	—	—	—	—
	15.270.185	8H7 x 1										

• O-rings included

\* Sealed pocket required for Turbo Assist

† Optional

**DUST COVER PG. 107**



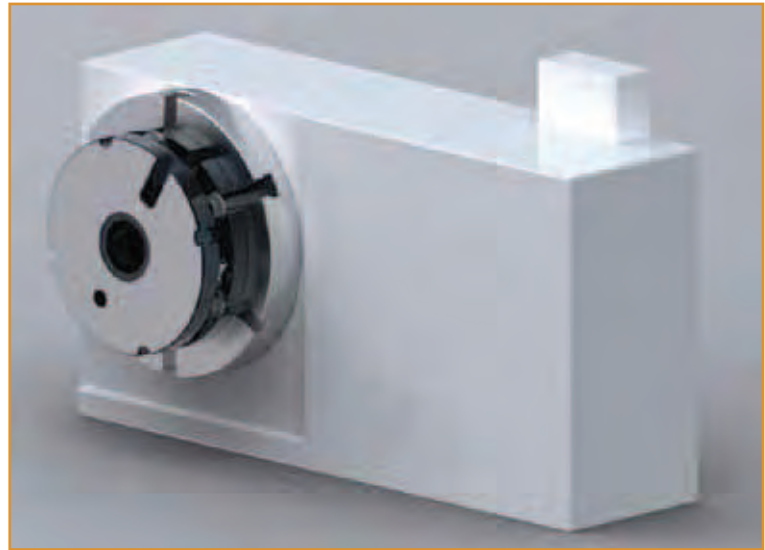
- All dimensions are in millimeters
- Dimensions marked \* are for notch option

# ISM 160

The ISM 160 chuck is a single chuck solution for the face of 4th and 5th axis rotary tables. Exterior timing features are compatible with MC 150 & MSM 170 chucks. Timing pin slot allows timing pin to match non-standard pallet sizes.

**Features:**

- Simple surface mount design
- Dowel pins into location
- Supports 60° and 90° T-slots
- Air assisted clamping option
- Low profile 46mm (1.811")
- Through hole eases cleaning
- Multiple indexing options



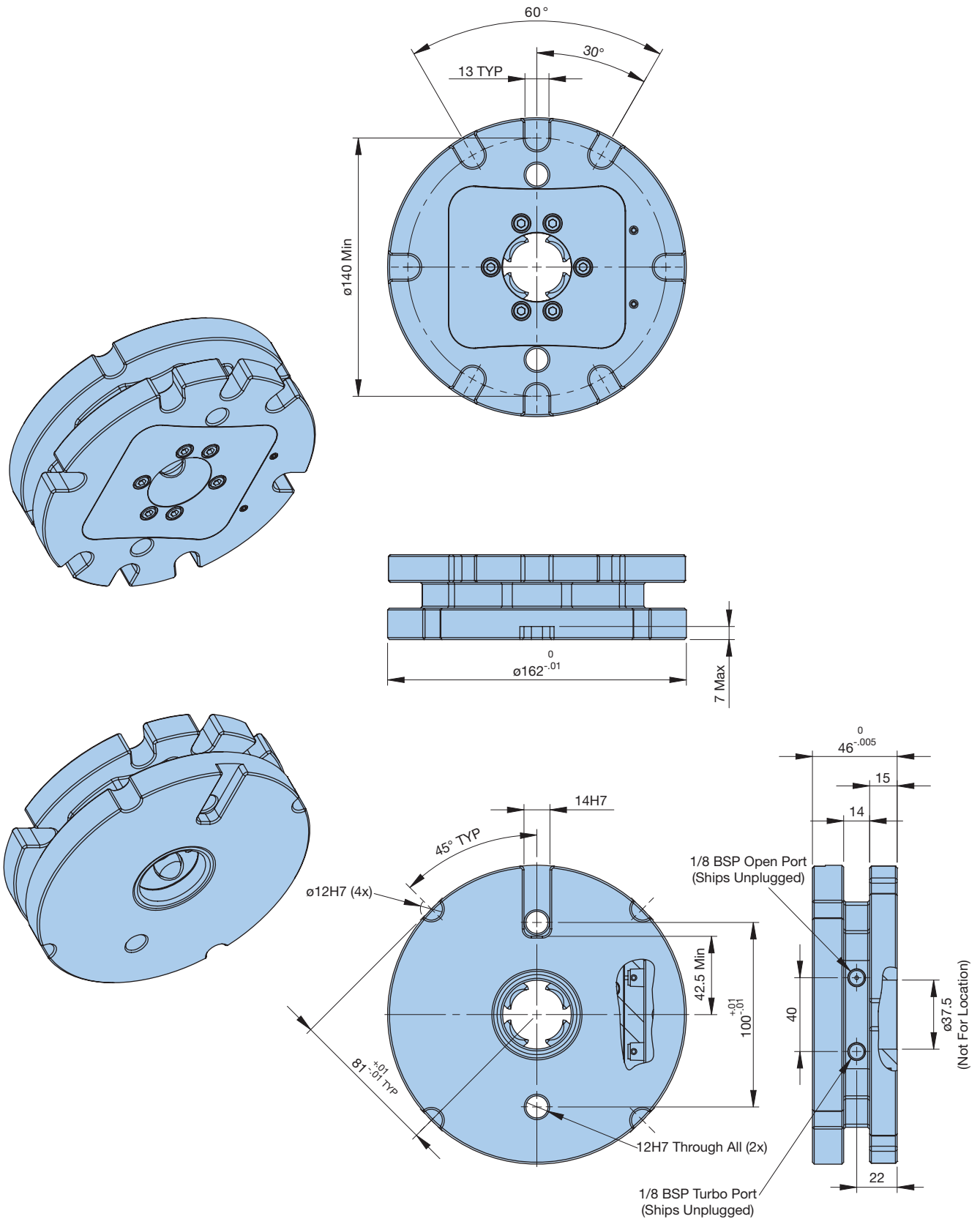
*Slot Allows for Variations in Radial Pin Location*



Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
ISM 160	15.260.160	14H7 x 1				—	—	1,100-1,540	3,300-3,740	12.1	1/8	✓
		12H7 x 4	✓	✓	✓	—	—					
		10H7 x 2										

• No hardware included  
 † Optional





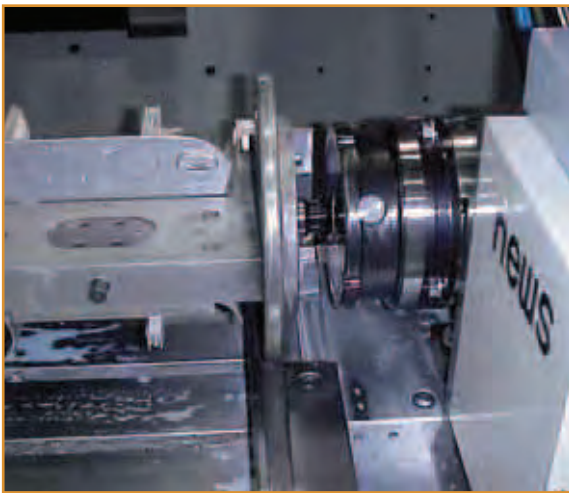
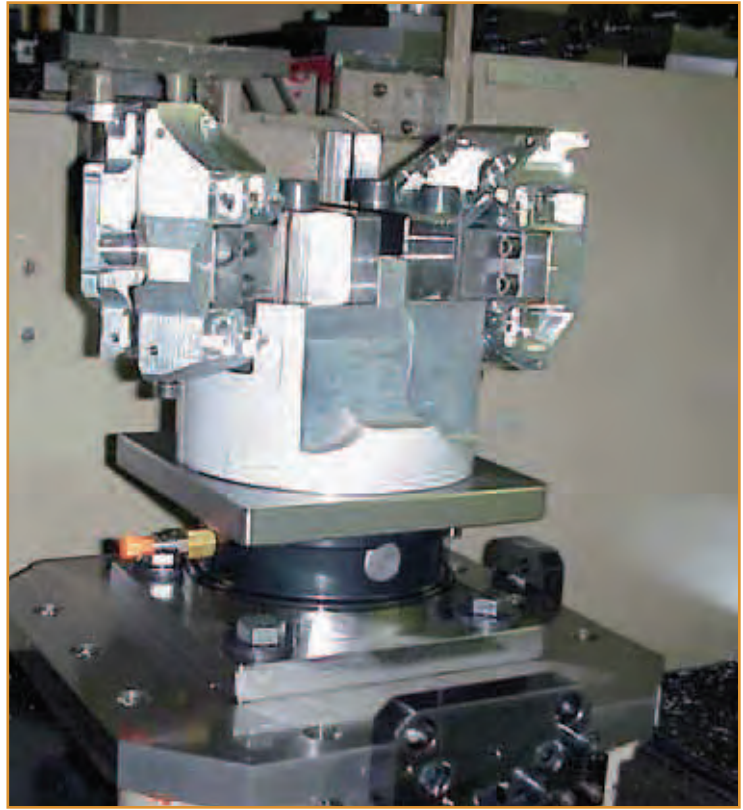
• All dimensions are in millimeters

# MSM 170

## Larger More Robust Chucks

### Features:

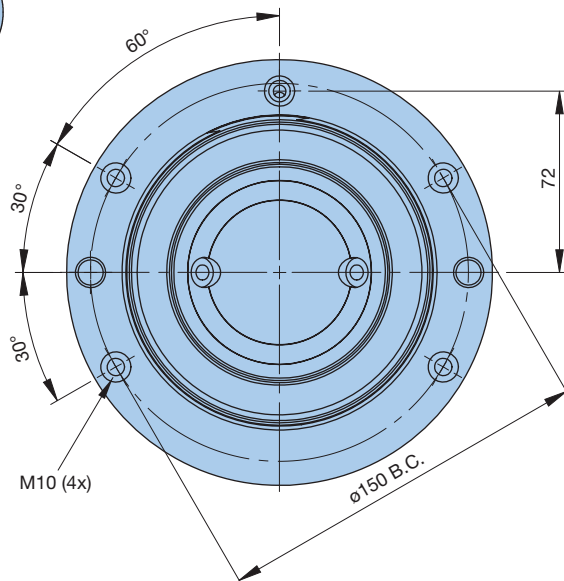
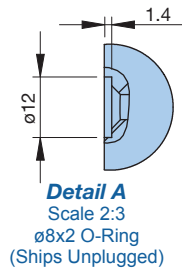
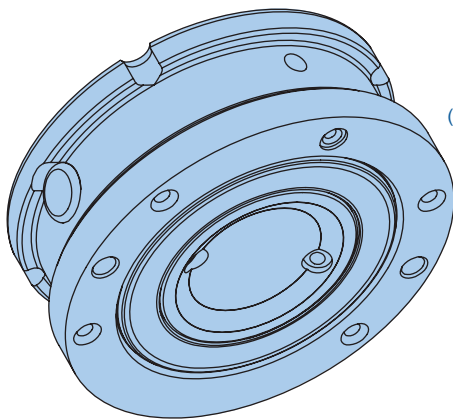
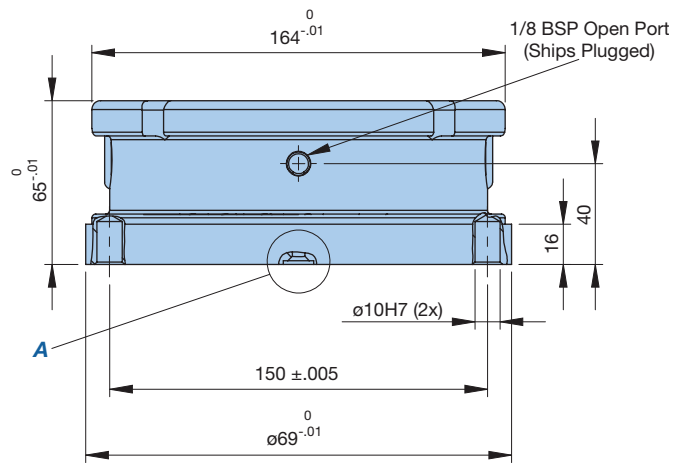
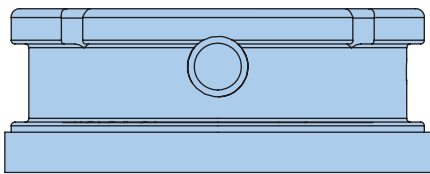
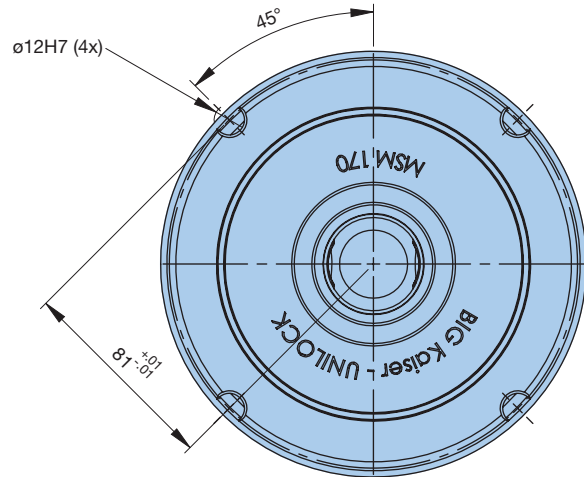
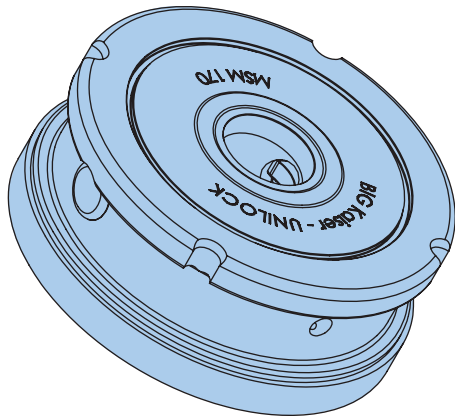
- Large diameter, heavy duty mechanical clamping
- Clamping lip for top side table clamping
- Threaded holes for bottom side clamping to plates
- Integrated timing pin locations every 90 degrees
- Air supply from bottom or side of chuck



Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
MSM 170	15.260.100	12H7 x 4	✓	✓	✓	✓	✓	1,650-1,980	3,520-4,400	16.5	1/8	✓

• O-ring included  
 † Optional

**DUST COVER PG. 107**



• All dimensions are in millimeters



# ESM 176 TURBO

## Features:

- Flange design for top side mounting
- Large diameter with turbo clamping for more rigidity
- Air supply from bottom or side of chuck
- Optional reference notch in face of chuck

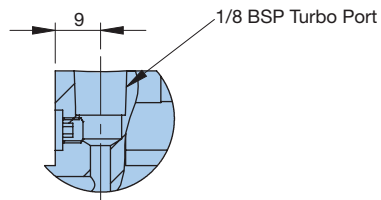
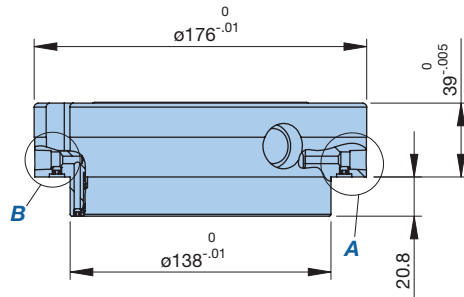
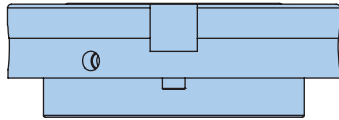
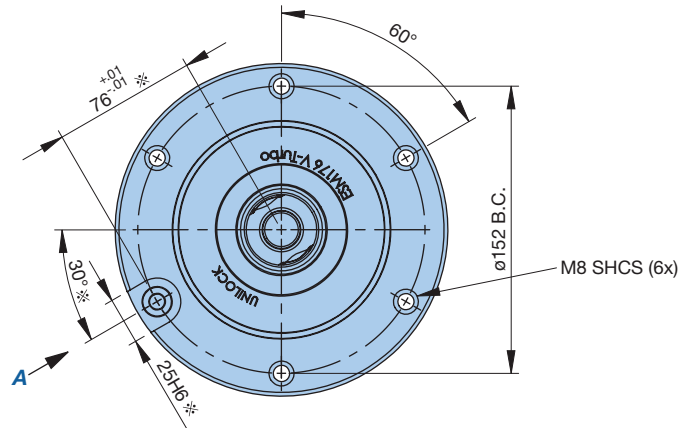
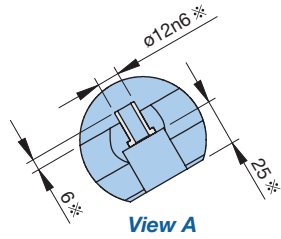
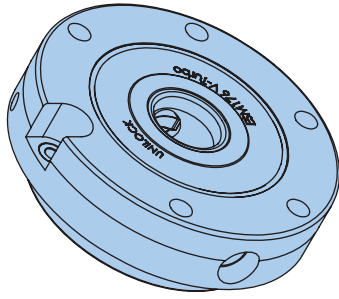


## Available with a Notch

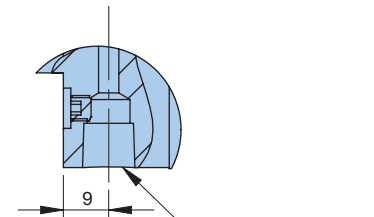


Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
ESM 176	15.272.170	—	✓	✓	✓	✓	✓	1,540-1,760	4,180-4,840	17.5	1/8	✓
	15.272.171	25H6 x 1										

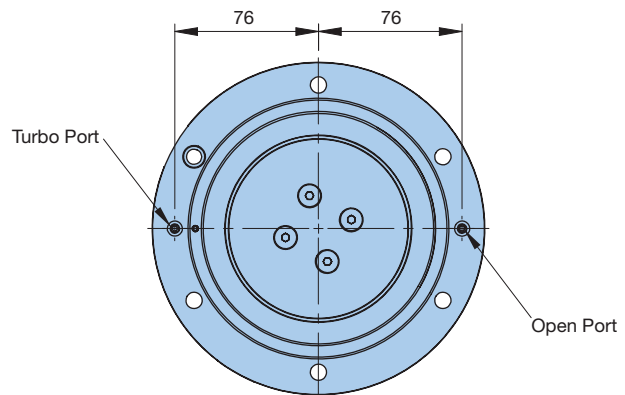
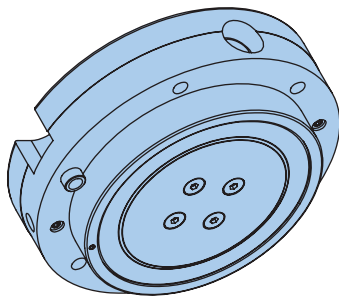
- Screws, screw covers and o-rings included
  - Notched version comes with timing bushing and all hardware listed above
- † Optional



**Detail B**  
Scale 2:3  
 $\phi 8 \times 2$  O-Ring  
(Ships Unplugged)



**Detail A**  
Scale 2:3  
 $\phi 8 \times 2$  O-Ring  
(Ships Unplugged)



- All dimensions are in millimeters
- Dimensions marked \* are for notch option

# HSM 196

The HSM 196 chuck can be used on the face of 4th and 5th axis rotary tables, lathes or mills where the center of rotation provides a through hole to bury the workpiece.

**Features:**

- 61mm (2.4") through capacity
- Work can pass through chuck
- Rotational limit = 3,000 RPM
- Air assisted clamping option
- Three clamping wedges for added stability
- Bolts into place from top side



*Available with a Notch*



Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes††					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
HSM 196	15.274.407	25H6 x 1	—	—	—	—	✓	1,980-2,200	4,400-5,060	19.3	1/8	✓

• Screws, screw covers, o-rings and timing bushing included  
 † Optional  
 †† M74 option (See Pg. 55)







## Rectangular Chucks

The rectangular chucks are well suited to mono-chuck applications. They are available in several sizes and when matched to the footprint of the workpiece, provide maximum access from the remaining five sides.

The EDM 100/150 has the lowest profile of all Unilock chucks. The AFM 105/65 and the ESM 100/75 are the two narrowest chucks in the Unilock family and can be placed very close to the edge of a fixture or workpiece.



**ESM 100/75** .....Pg. 30-31



**AFM 105/65** .....Pg. 32-33



**EDM 100/150** .....Pg. 34-35



**AFM 146** .....Pg. 36-37



## Chucks for Your Smaller Applications

### Features:

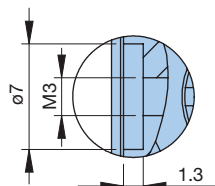
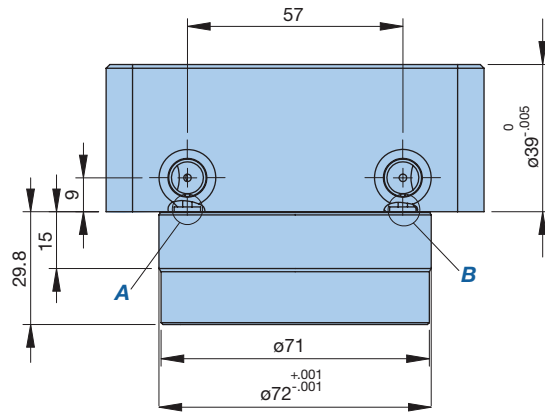
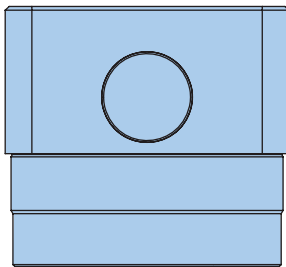
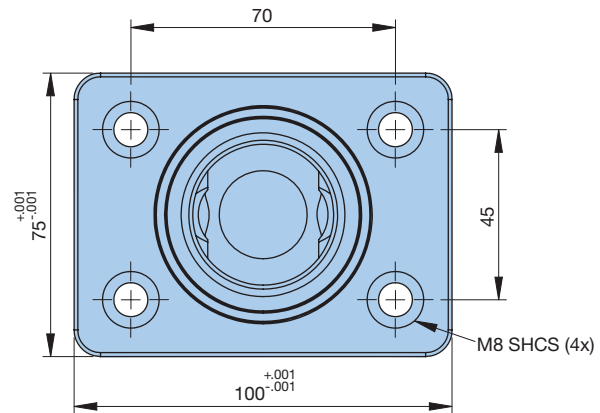
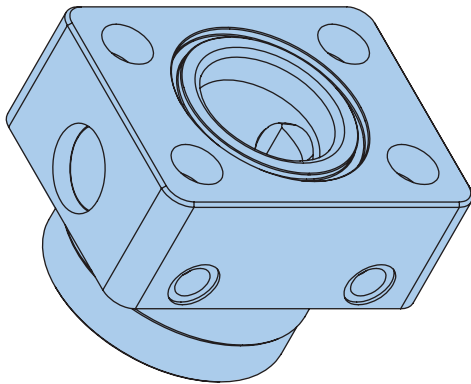
- Flange mounting design
- Reduced size for small work or tight spaces
- High clamping force in a small package
- Edge of chuck can be used as a timing surface
- Turbo option for increased holding power



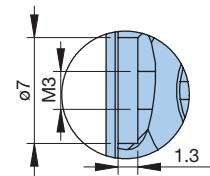
Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
ESM 100/75	15.272.175	—	✓	✓	—	—	—	440-660	1,650-1,870	4.5	1/8	✓

• Screws, screw covers and o-rings included

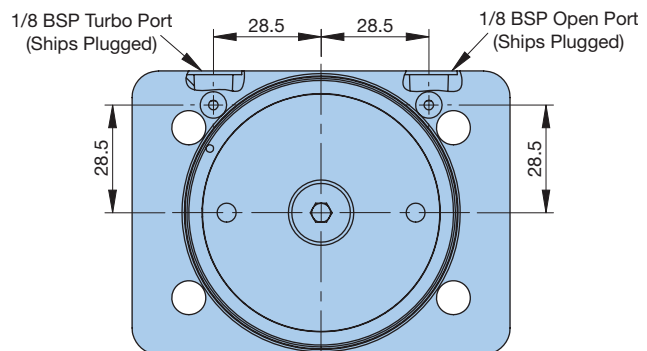
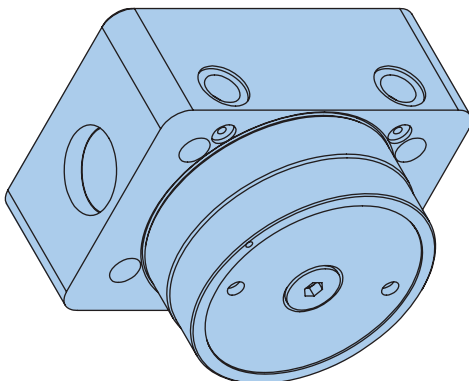
† Optional



**Detail A**  
Scale 2:1  
ø6x1 O-Ring  
(Ships Unplugged)



**Detail B**  
Scale 2:1  
ø6x1 O-Ring  
(Ships Unplugged)



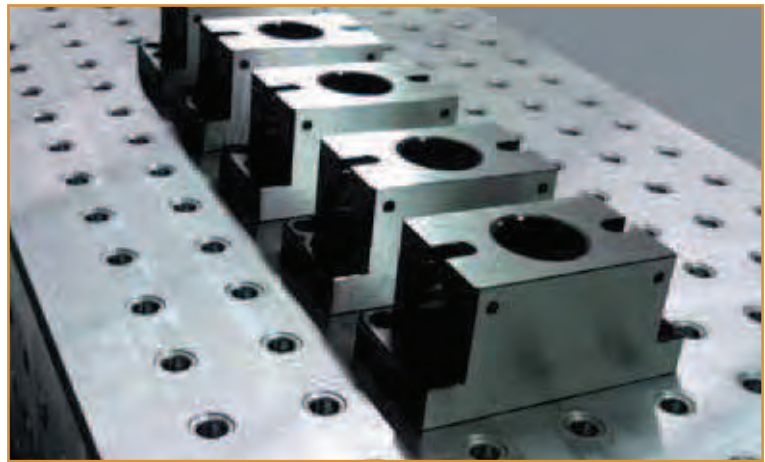
• All dimensions are in millimeters

# AFM 105/65

The AFM 105/65 chuck is an excellent choice for single chuck applications on multi-axis machines and work cells where clearance is needed to access the part.

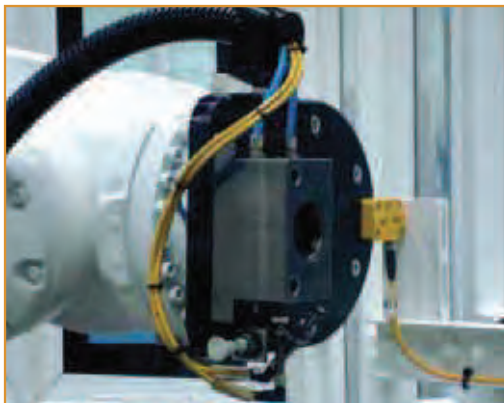
### Features:

- Simple surface mount design
- Dowel pins into location
- Bolt through or toe clamp
- Ground edges for orientation
- Air assisted clamping option
- Optional robot gripper version
- Supports 90 degree (4x) indexing
- Elevated for 5-axis accessibility



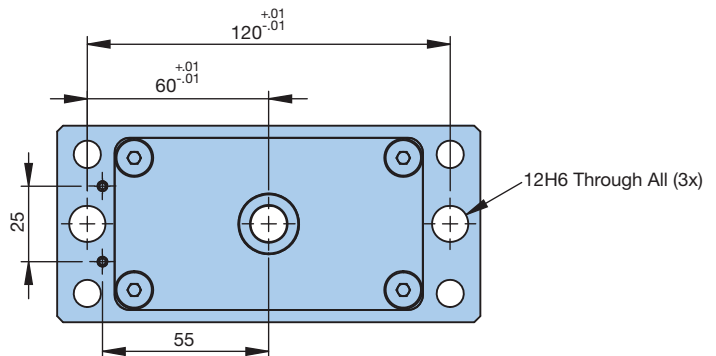
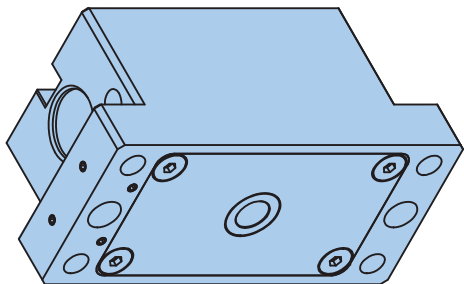
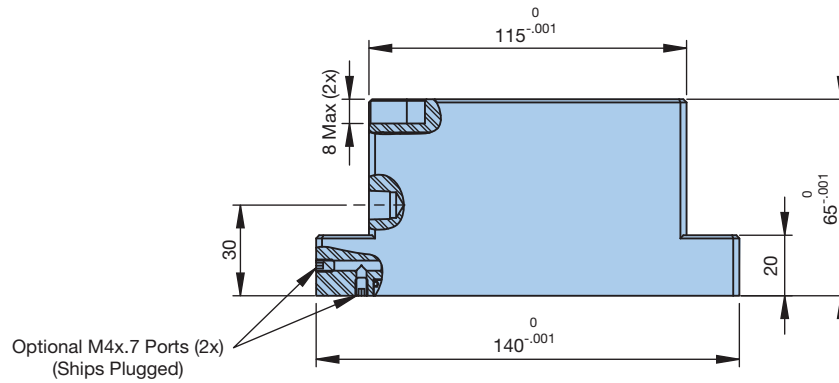
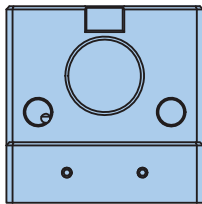
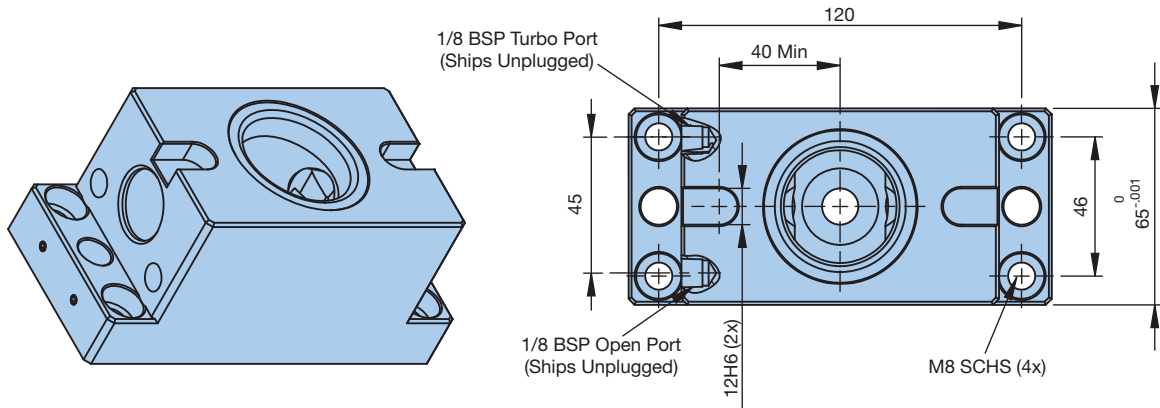
Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
AFM 105/65	15.272.165	—			—	—	—	660-880	1,980-2,200	6.3	1/8	✓
	15.272.167	10H6 x 2	✓	✓								

- No hardware included
- † Optional



*Available as Robot Gripper Option  
(See Pg. 100)*





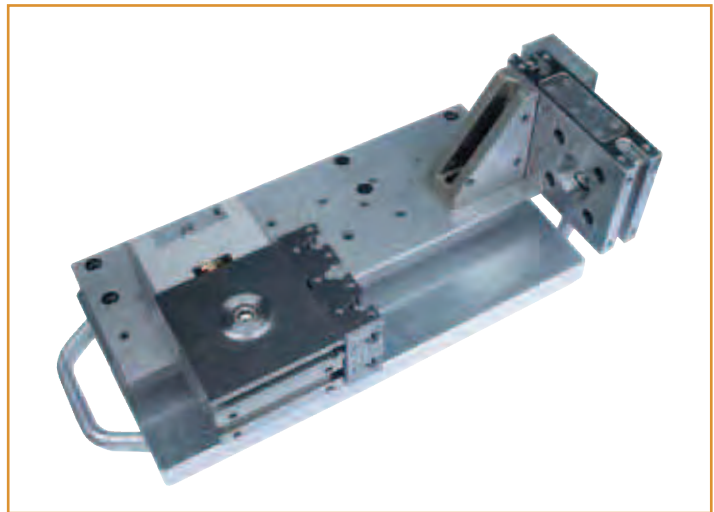
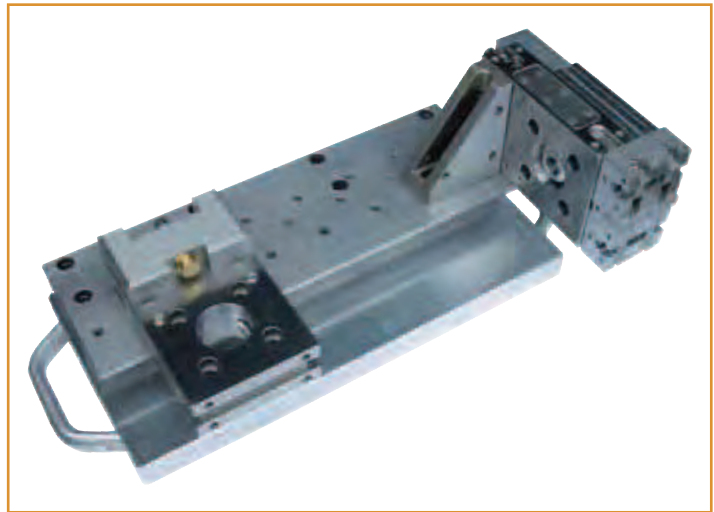
• All dimensions are in millimeters

# EDM 100/150

The EDM 100/150 chuck is designed to operate in submerged environments. Completely sealed and produced from stainless steel, this chuck can be used in Wire EDM and Water Jets. This chuck provides an open interface and clamping knobs can be loaded from the top or bottom side. This chuck is compatible with the entire Unilock product range as it uses the standard sized clamping knob. With a total height of 39mm (1.535"), this chuck delivers the lowest stack height in the Unilock family.

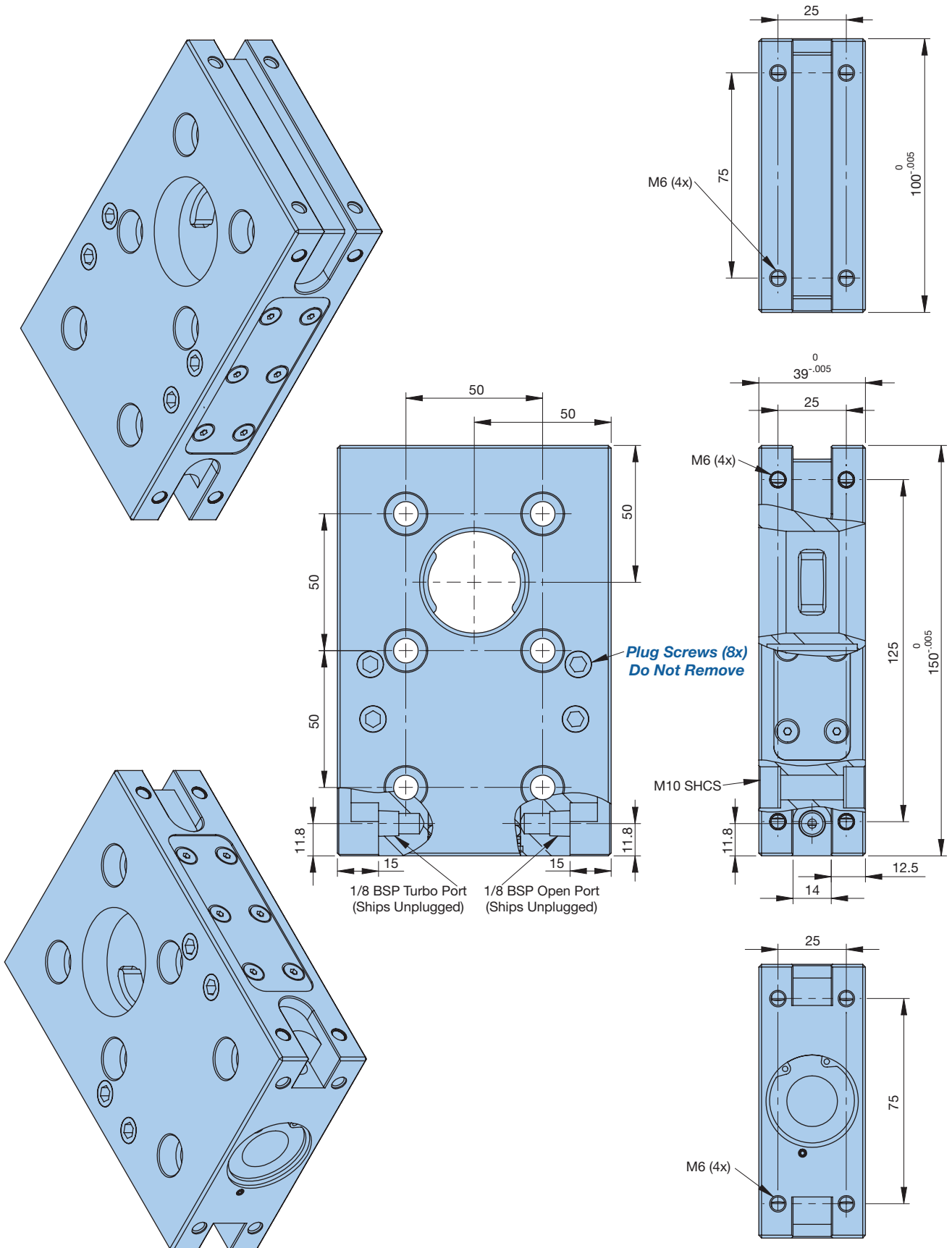
**Features:**

- Turbo option for increased holding power
- Weight: 3.35 kg (7.3 lbs)
- Knob can be retained from both sides
- Chuck can be mounted on any face



Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
EDM 100/150	15.272.150	—	✓	✓	—	—	—	440-550	1,100-1,350	7.3	1/8	—

• No hardware included  
 † Optional



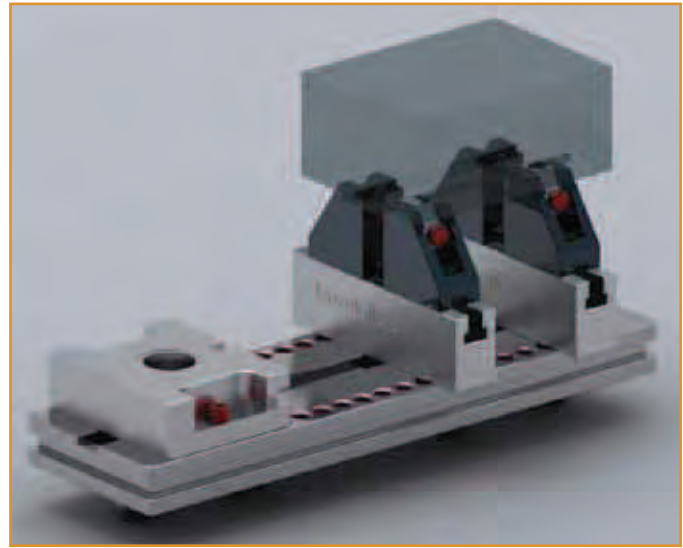
• All dimensions are in millimeters

# AFM 146

The AFM 146 chuck is an excellent choice for multiple chuck applications on multi-axis machine tables and other work cells where a low stack height is important.

**Features:**

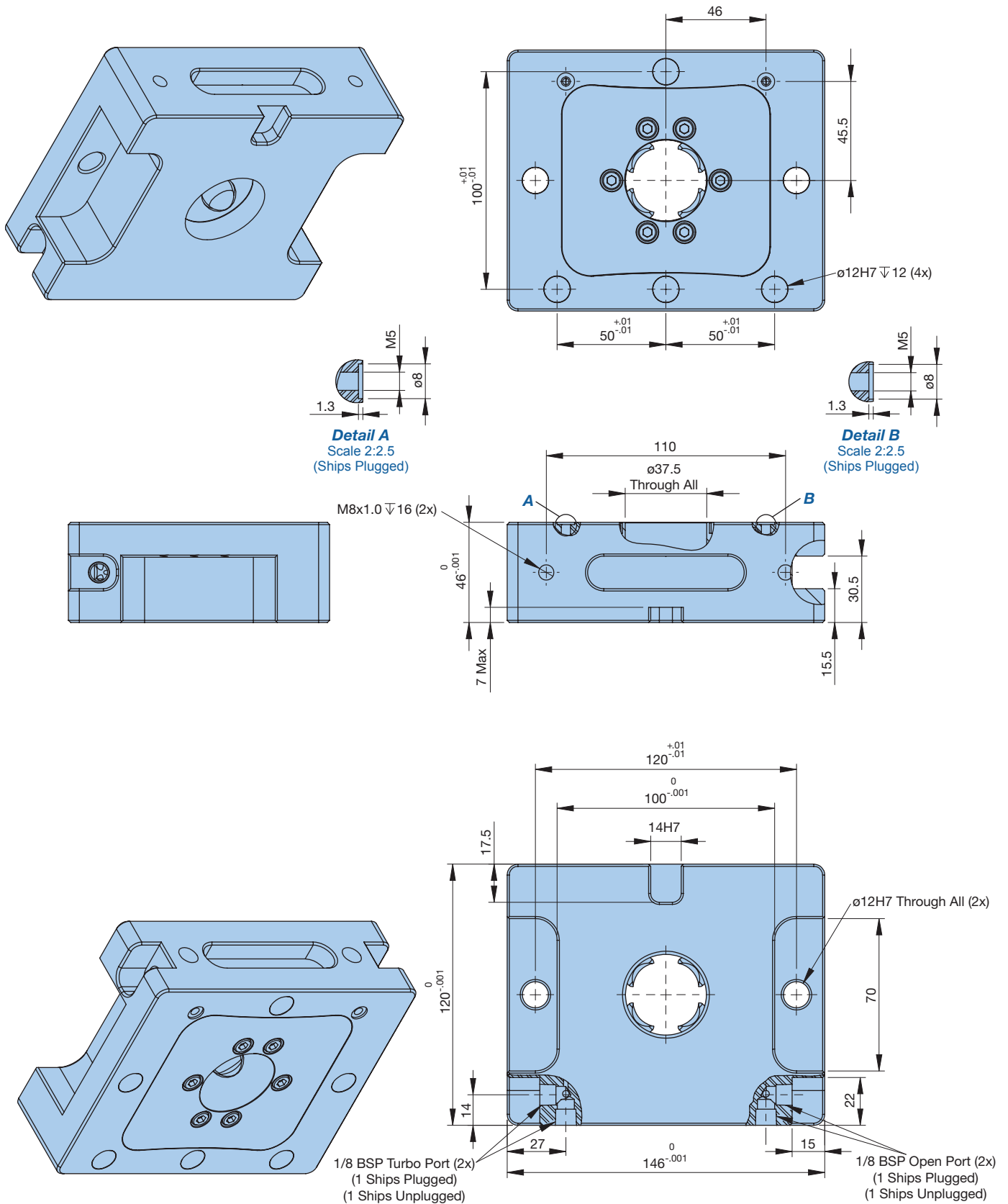
- Simple surface mount design
- Dowel pins into location
- Bolt through or toe clamp
- Ground edges for orientation
- Air assisted clamping option
- Low profile 46mm (1.811")
- Through hole eases cleaning



Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
AFM 146	<b>15.260.146</b>	14H7 x 1	✓	✓	✓	—	—	1,100-1,540	3,300-3,740	9.2	1/8	✓

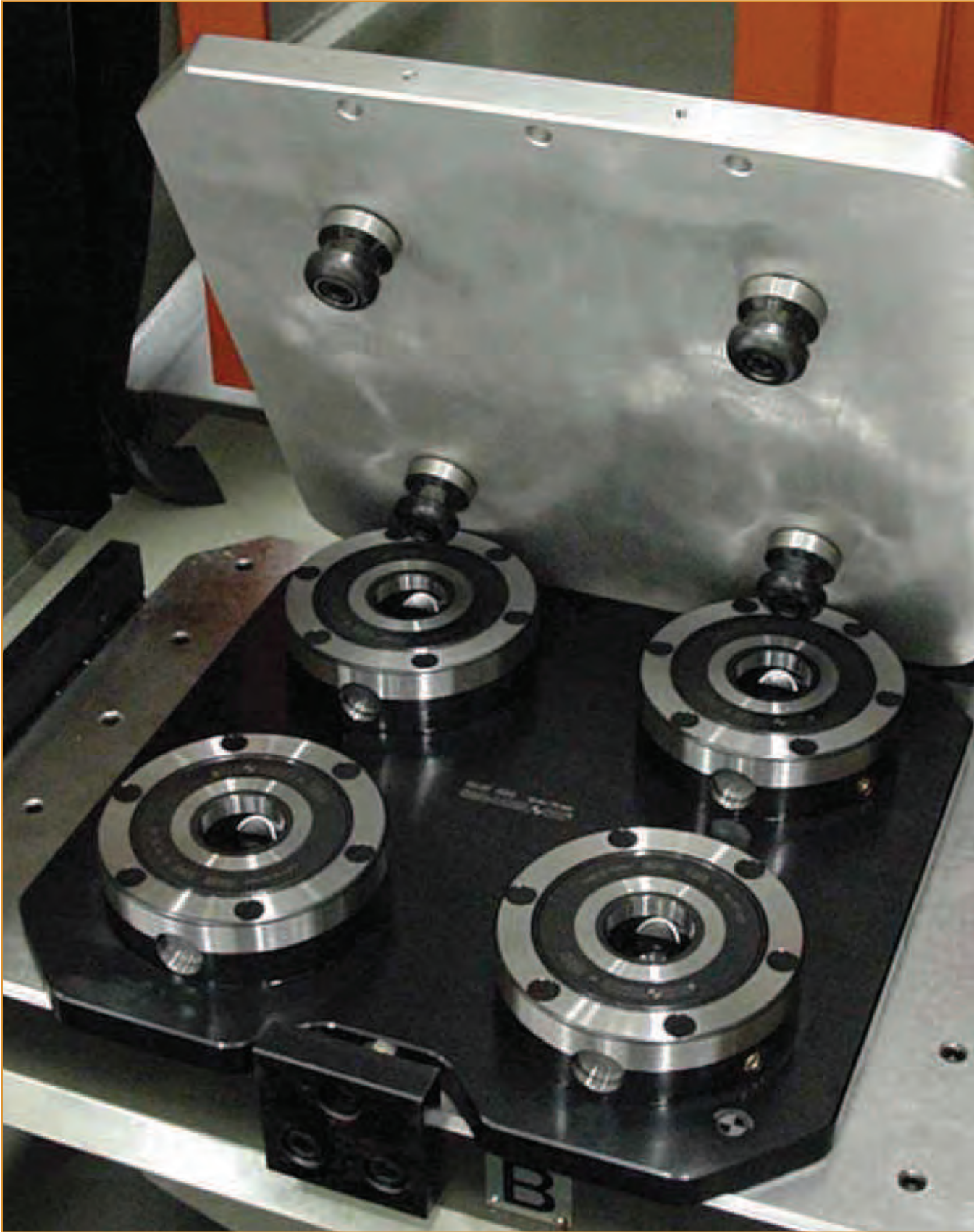
• No hardware included  
 † Optional





• All dimensions are in millimeters

PRE-ASSEMBLED CHUCKS

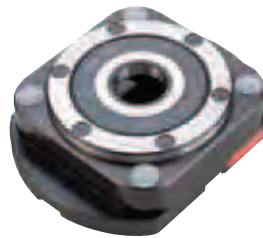


## Pre-Assembled Chucks

Just as the name implies, the chucks are sold mounted to a base plate. The base plate provides easy mounting of the chuck to the machine table as well as a pre-plumbed air supply. All bases provide either notches or a ground edge to square the chuck to the machine table.



**MLM 150** .....Pg. 40-41



**MCM 150** .....Pg. 42-43



**DLM 200** .....Pg. 44-45



**DCM 200** .....Pg. 46-47



**QC 400** .....Pg. 48-49



**Starter Kits** .....Pg. 50-51

# MLM 150

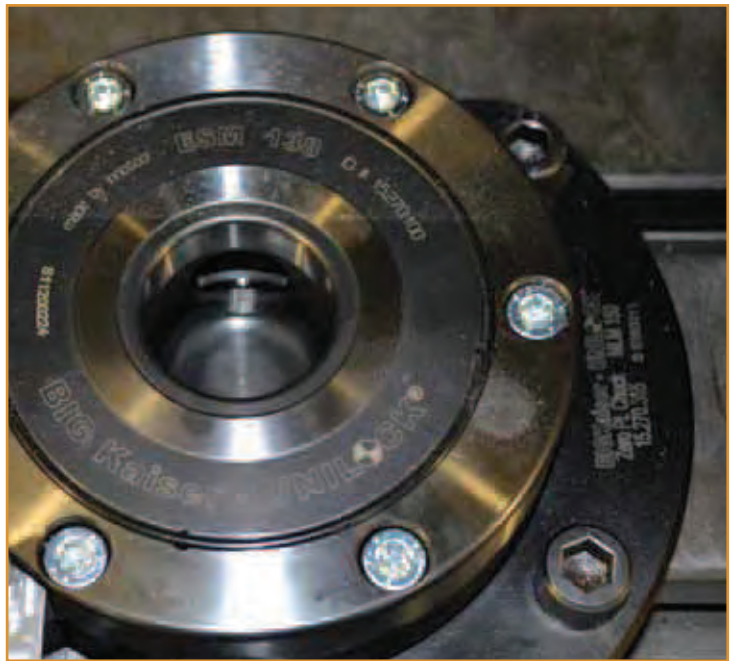
## Single Table Chucks

### Features:

- Base plate for mounting on machine tables
- Air supply from side of base plate
- Optional timing notch in face of chuck
- Keyways on bottom for positioning on work table



### Available with Notches

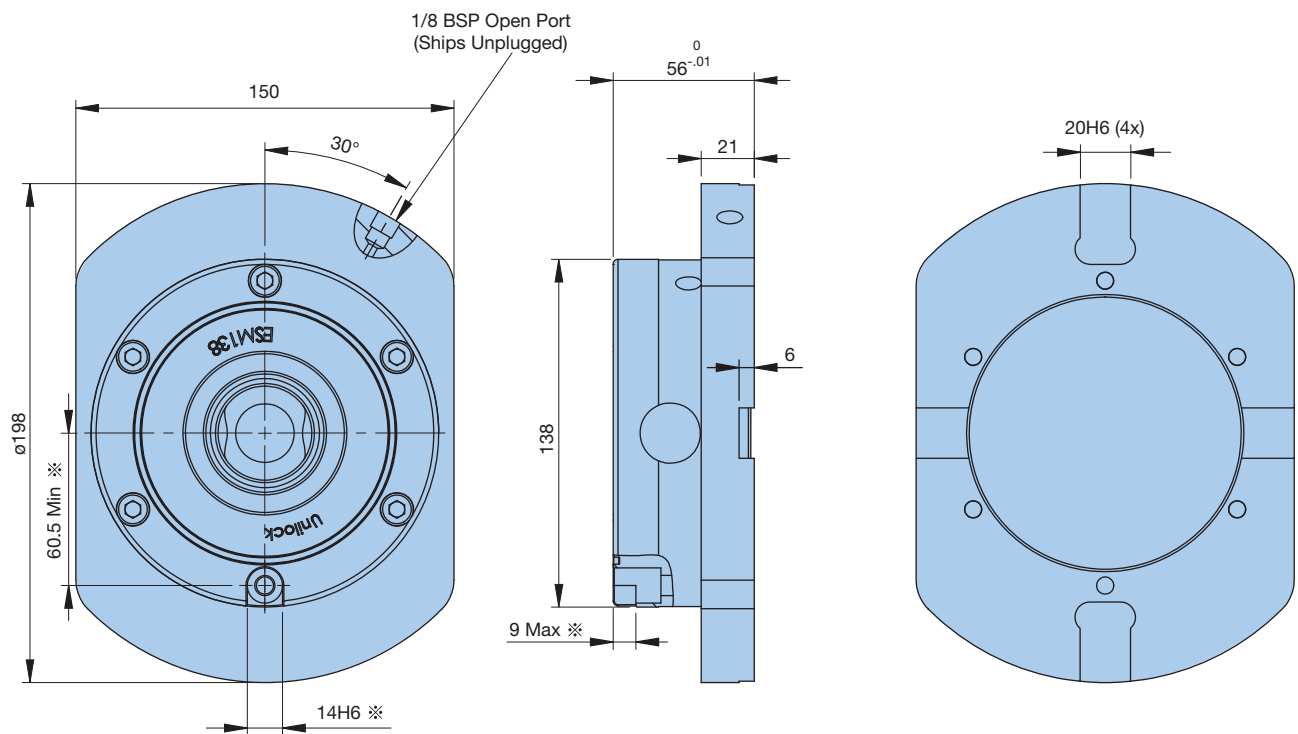
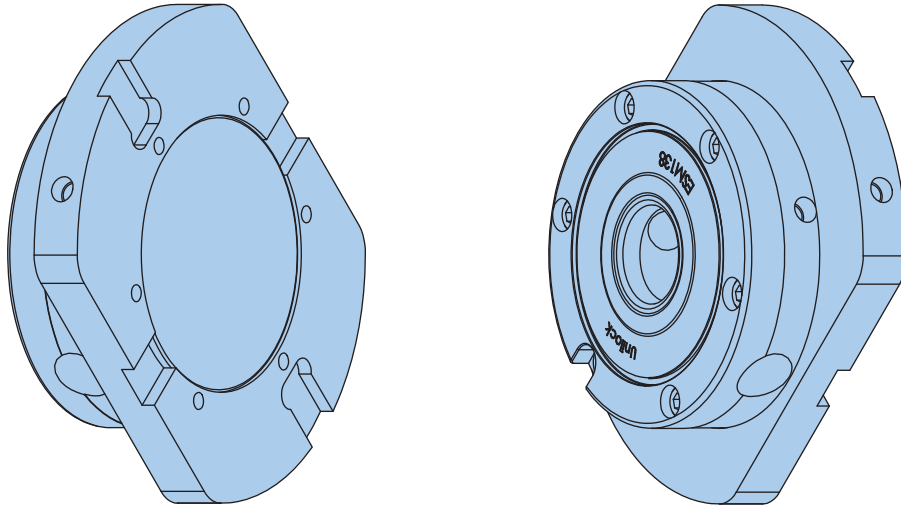


Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
MLM 150	15.270.350	—	✓	✓	✓	✓	✓	990-1,320	N/A	15.4	1/8	—
	15.270.355	12H6 x 4										

- No hardware included
- † Optional

 DUST COVER PG. 107





- All dimensions are in millimeters
- Dimensions marked ※ are for notch option

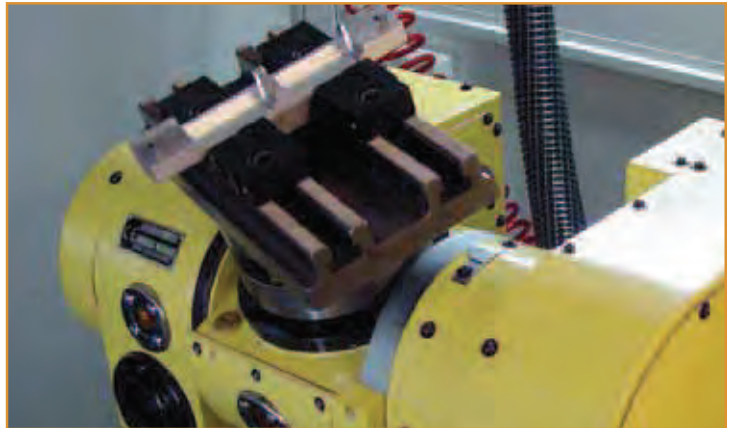
# MCM 150

## Single Table Chucks

The MCM 150 is prepared to accept four hardened 12mm index bushings, one every 90 degrees. Order one index bushing to orient a pallet with a single knob. If you need to execute multiple 90 degree indexes, additional bushings can be installed.

### Features:

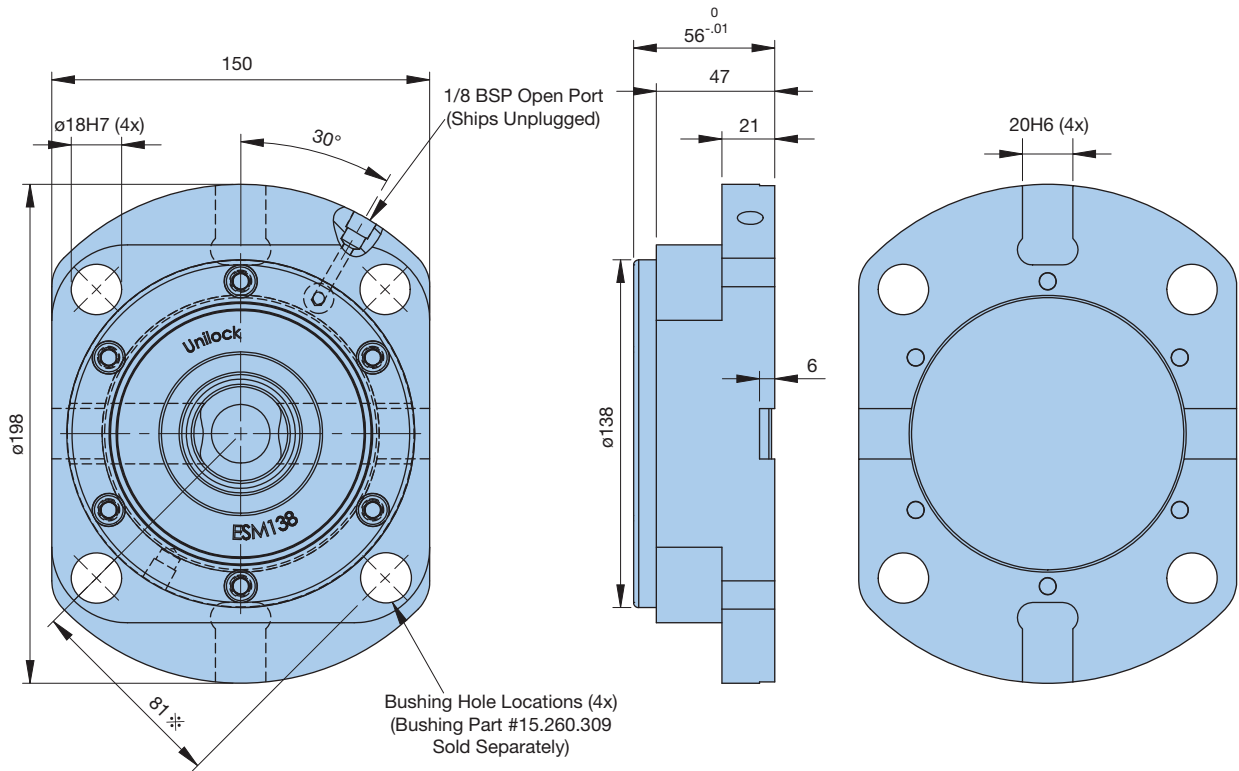
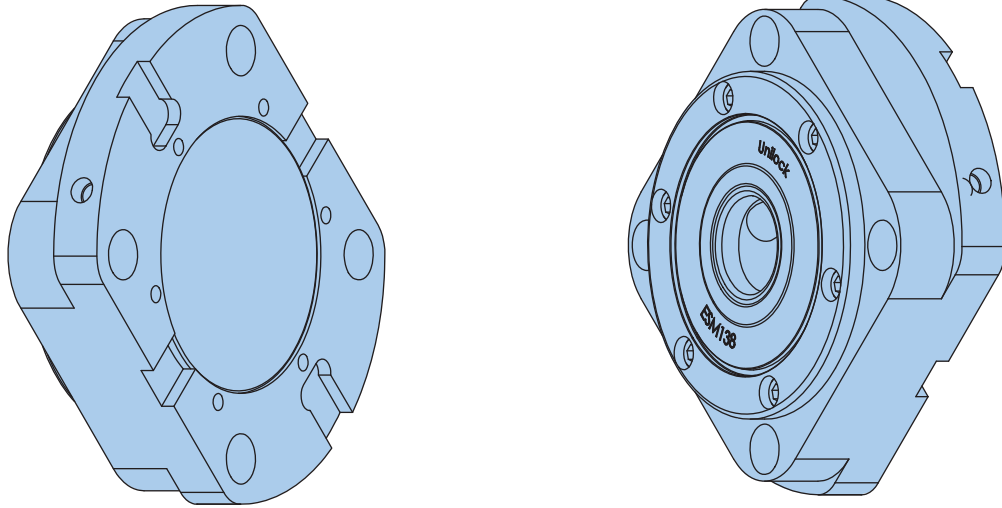
- Base plate for mounting on machine tables
- Air supply from side of base plate
- 90 degree (4x) indexing
- Keyways on bottom for positioning on work table



Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
MCM 150	15.270.250	12H6 x 4†	✓	✓	✓	✓	✓	999-1,320	N/A	17.8	1/8	—

• No hardware included  
 † Optional

**BUSHING PG. 107**  
**DUST COVER PG. 107**



- All dimensions are in millimeters
- Dimensions marked  $\ddagger$  are for notch option

## Double Table Chucks

### Features:

- Base plate for mounting on machine tables
- Air supply from side of base plate
- Optional timing notch in face of DLM chuck
- Keyways on bottom for positioning on work table



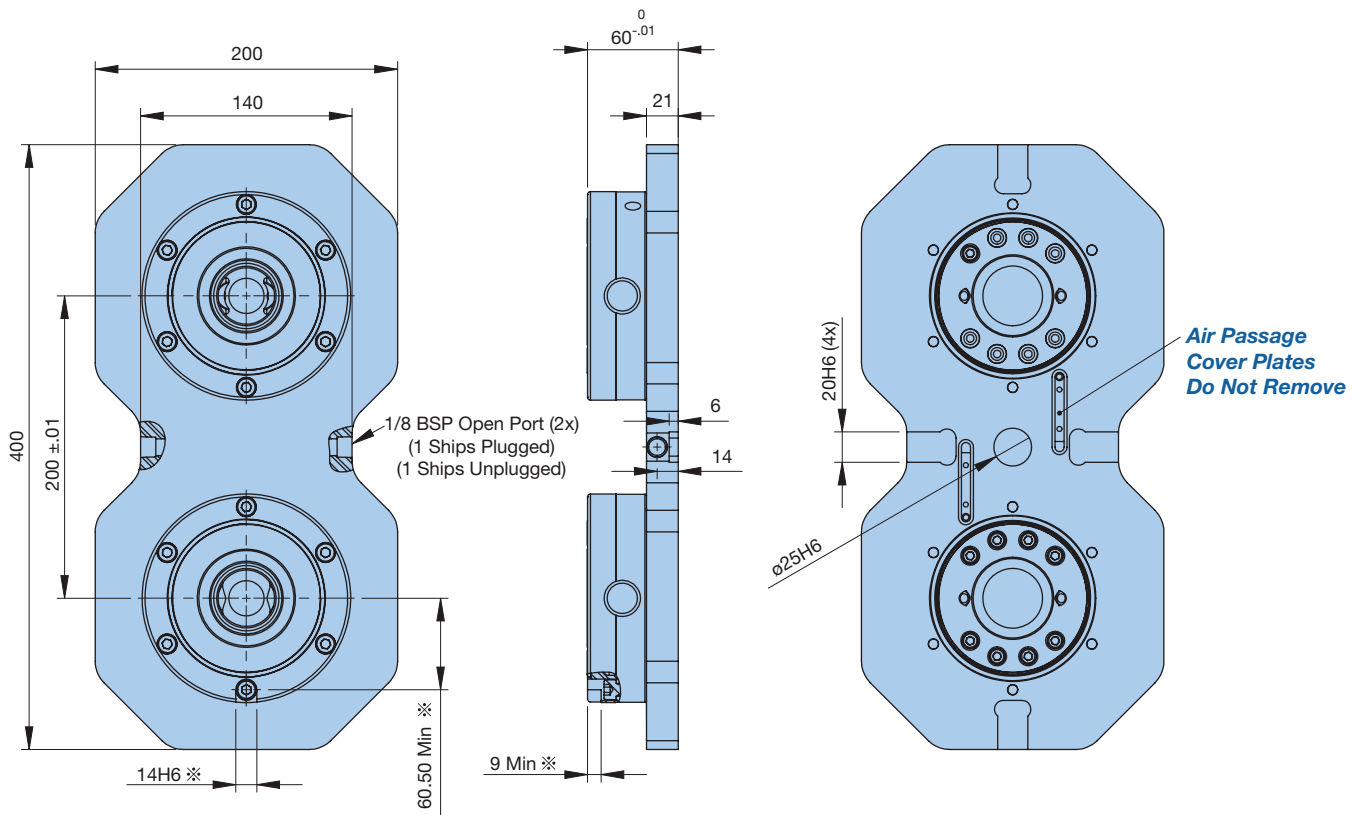
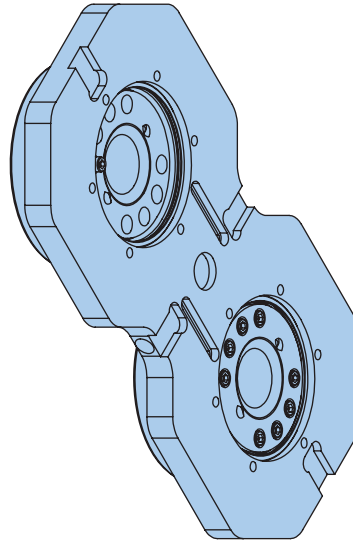
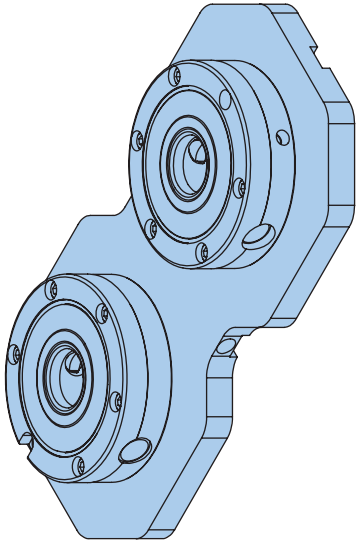
The DLM 200 chuck does not have timing pin bushing locations. If you want to orient a double pallet with this chuck, add one timing pin notch. If you need to run two single pallets, add a timing notch for each chuck.

Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
DLM 200	15.270.300	—	✓	✓	✓	✓	✓	1,980-2,640*	N/A	37.4	1/8	—
	15.270.307	14H6 x 1										

- No hardware included
- † Optional
- \* Combined value from individual chucks

 **DUST COVER PG. 107**





- All dimensions are in millimeters
- Dimensions marked ※ are for notch option

# DCM 200

## Double Table Chucks

The DCM 200 chuck is designed to process two single pallets or one double pallet. Each chuck has a position for a timing pin bushing every 90 degrees.

### Features:

- Base plate for mounting on machine tables
- Air supply from side of base plate
- 90 degree (4x) indexing
- Keyways on bottom for positioning on work table
- ø25mm locating hole
- Single chuck operation capability



Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
DCM 200	15.270.200	12H6 x 8	✓	✓	✓	✓	✓	1,980-2,640*	N/A	46.2	1/4	—

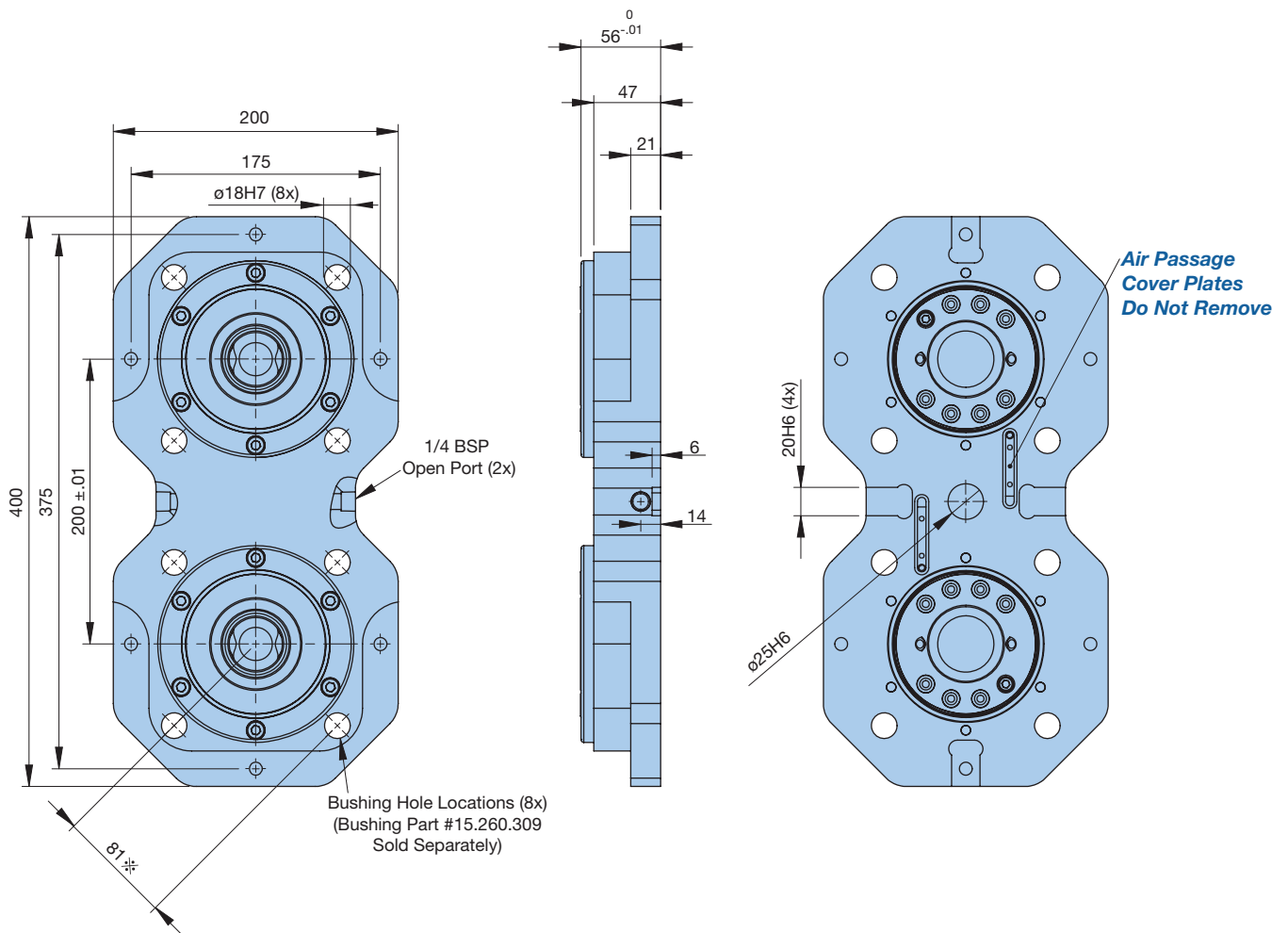
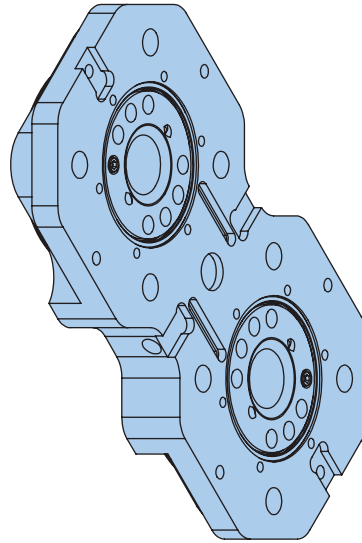
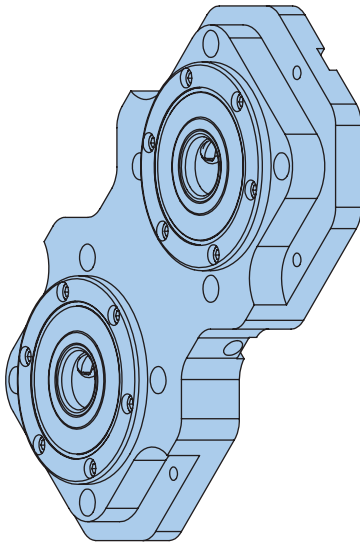
• No hardware included

† Optional

\* Combined value from individual chucks

 **BUSHING PG. 107**

 **DUST COVER PG. 107**



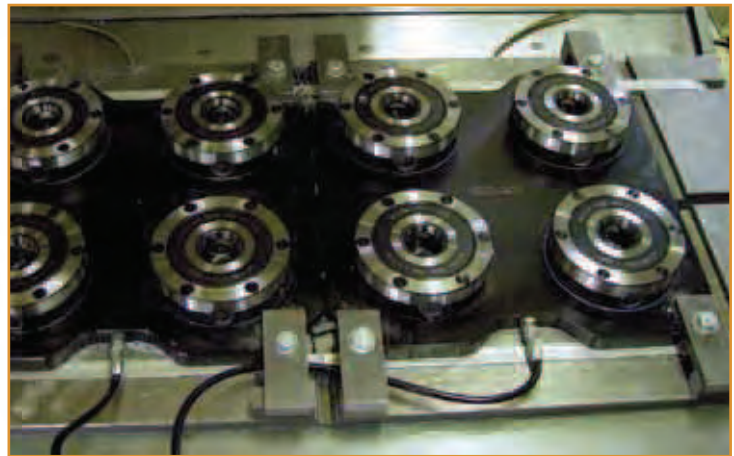
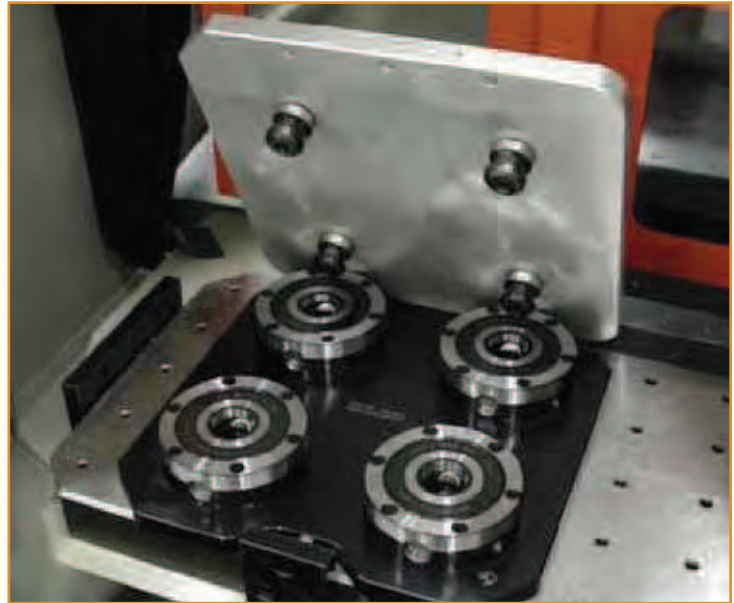
- All dimensions are in millimeters
- Dimensions marked \* are for notch option

## Quad Table Chucks

The Quatro-Light-Clamping base has four ESM 138 chucks fed with a single air connection from the side. The steel plate includes two G 1/4" air connections, on the front edge and on the back edge. One of the air connection points is plugged and the other is left open for the air connection.

### Features:

- Repeatability: .0001"-.0002"
- Air Connection (2x): G 1/4"
- Weight: 35.50 kg (78.3 lbs)
- Can be operated as duo

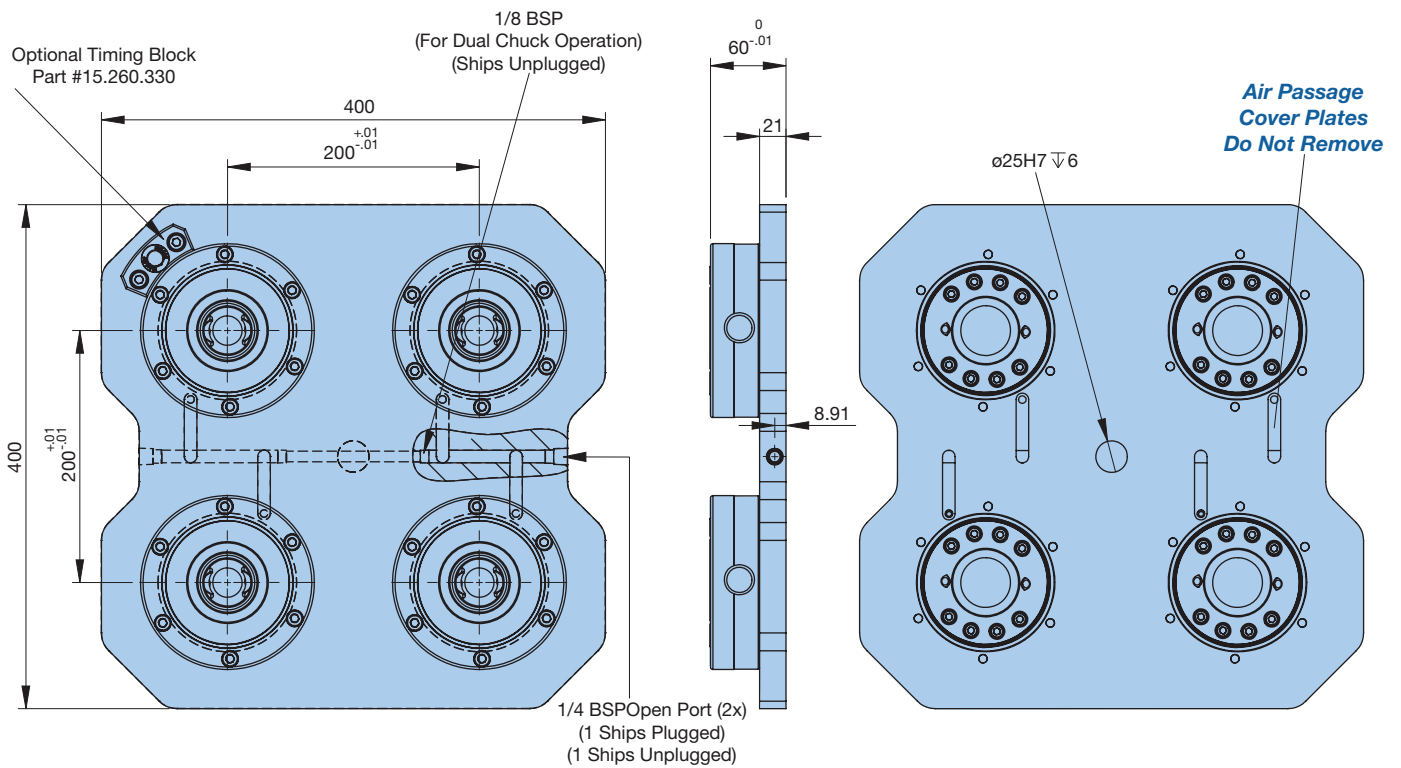
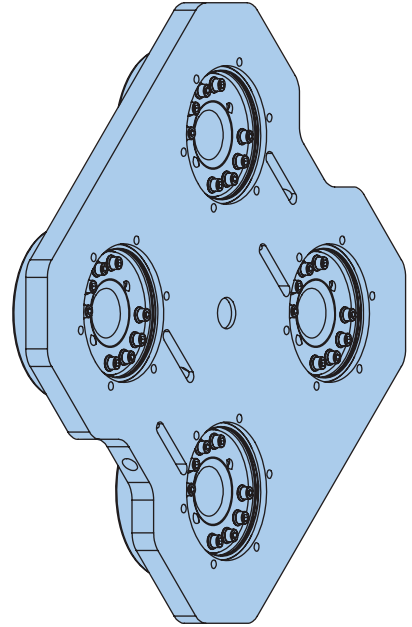
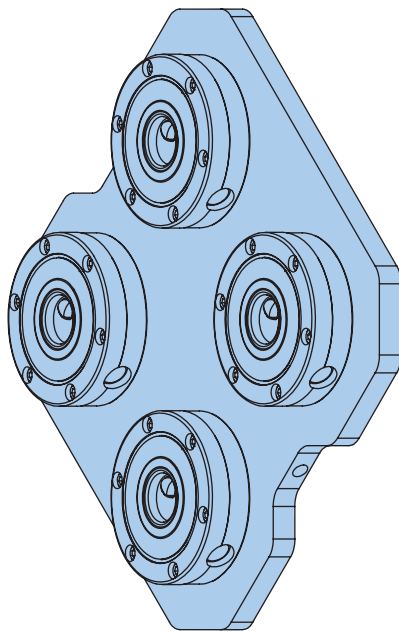


Chuck Model	Catalog Number	Notch (Width x Qty)	Recommended Bolt Sizes					Clamping Force (lbs)		Weight (lbs)	Air Connection	
			M10	M12	M16	M20†	M24†	Spring Only	Turbo Assist		Port Size	Flange
QC 400	15.270.340	—	✓	✓	✓	✓	✓	3,960-5,280*	N/A	78.3	1/4	—

- No hardware included
- † Optional
- \* Combined value of 4 chucks

 **DUST COVER PG. 107**



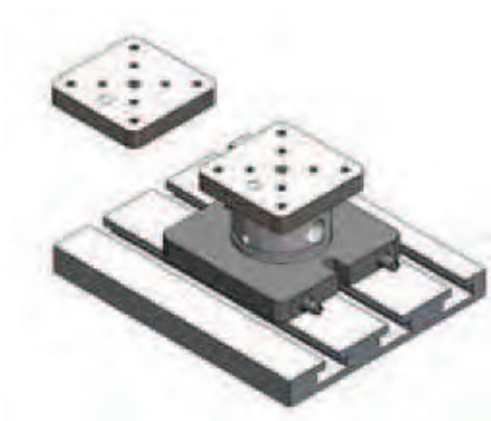
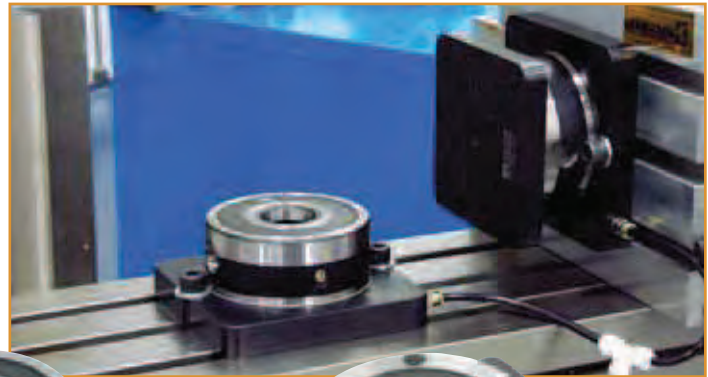


• All dimensions are in millimeters

# STARTER KITS

## Features:

- Chucks are mounted to universal base plates
- Reduced chuck diameters support tight work envelopes
- Base plate functions as a reference edge
- Air supply is through the base plate
- Pallet timing pin feature is integrated into chuck face
- 120mm chuck also has a manual option

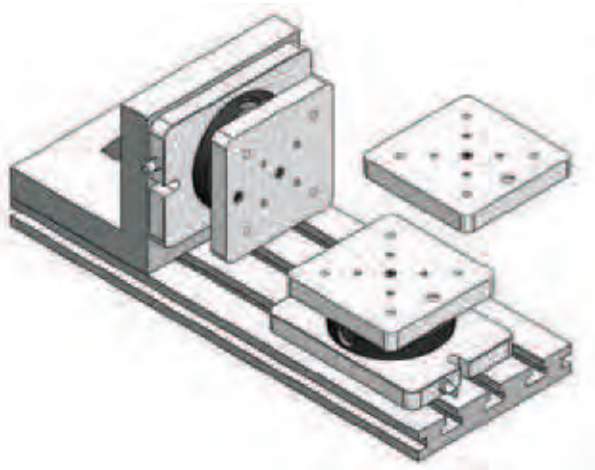


## Setup Reduction Kits

Setup Reduction Kits allow users to prep one job while another is running. These kits come with one chuck for the work cell and two pallets. One pallet can be loaded into the cell while the other is available for loading and unloading of fixtures or workpieces. When the job is completed simply change pallets and hit Cycle Start.

Catalog Number	Description
15.280.110	ASM 90 one-chuck two-pallet kit with air
15.280.210	ASM 120 one-chuck two-pallet kit with air
15.280.310	ASM 120 manual one-chuck two-pallet kit
15.280.410	ESM 138 one-chuck two-pallet kit with air

 **DUST COVER PG. 107**



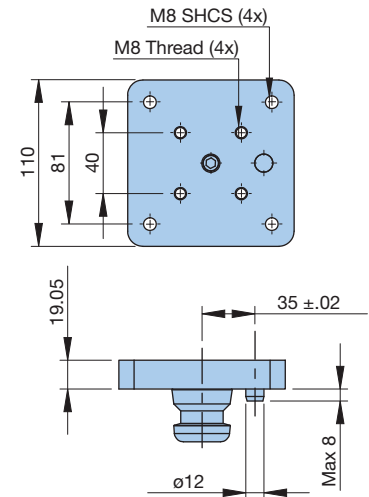
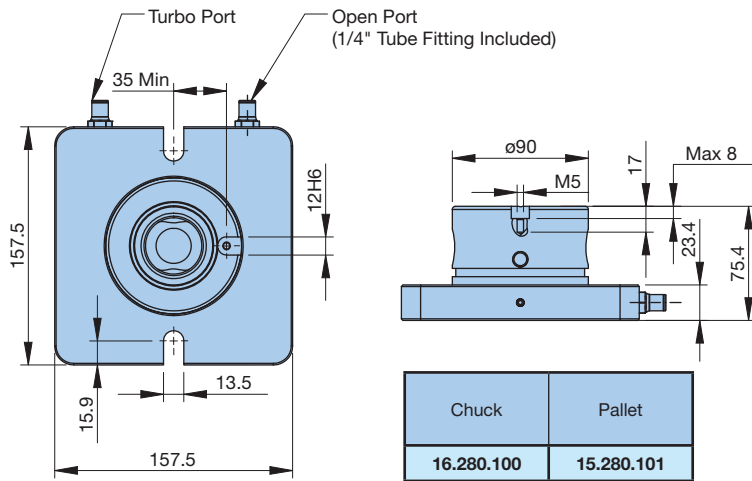
## Process Reduction Kits

Process Reduction Kits allow users to transfer parts between operations without unclamping the parts. A single pallet moves through multiple orientations while others follow as each operation is completed. Additional pallets are prepared while others are being processed.

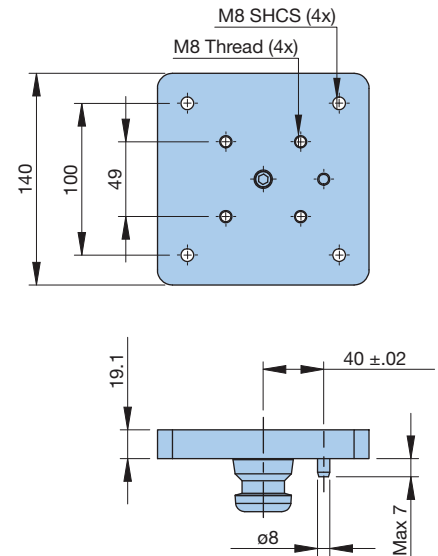
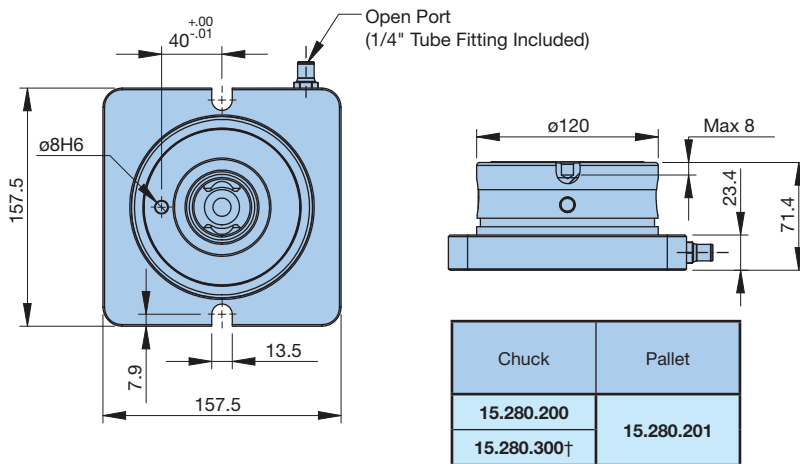
Catalog Number	Description
15.280.112	ASM 90 two-chuck three-pallet kit with air
15.280.212	ASM 120 two-chuck three-pallet kit with air
15.280.312	ASM 120 manual two-chuck three-pallet kit
15.280.412	ESM 138 two-chuck three-pallet kit with air

 **DUST COVER PG. 107**

## ASM 90

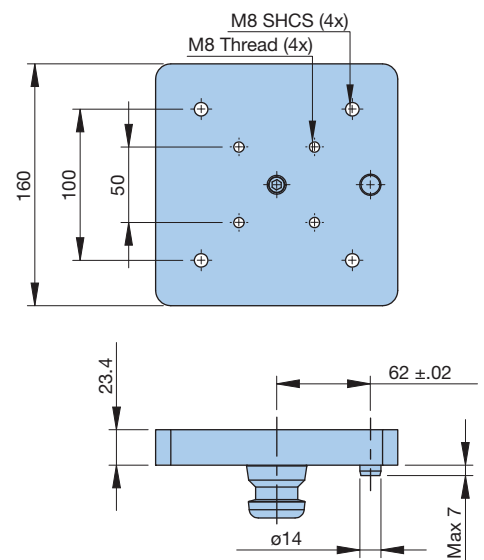
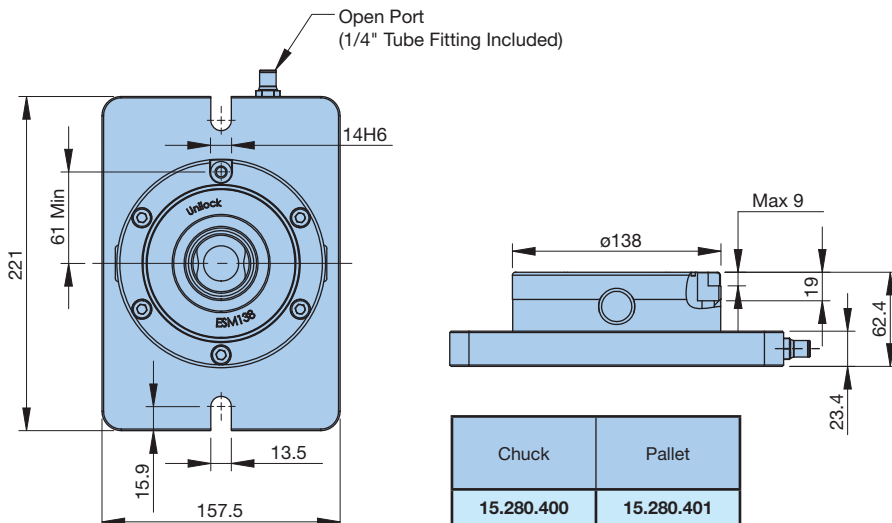


## ASM 120

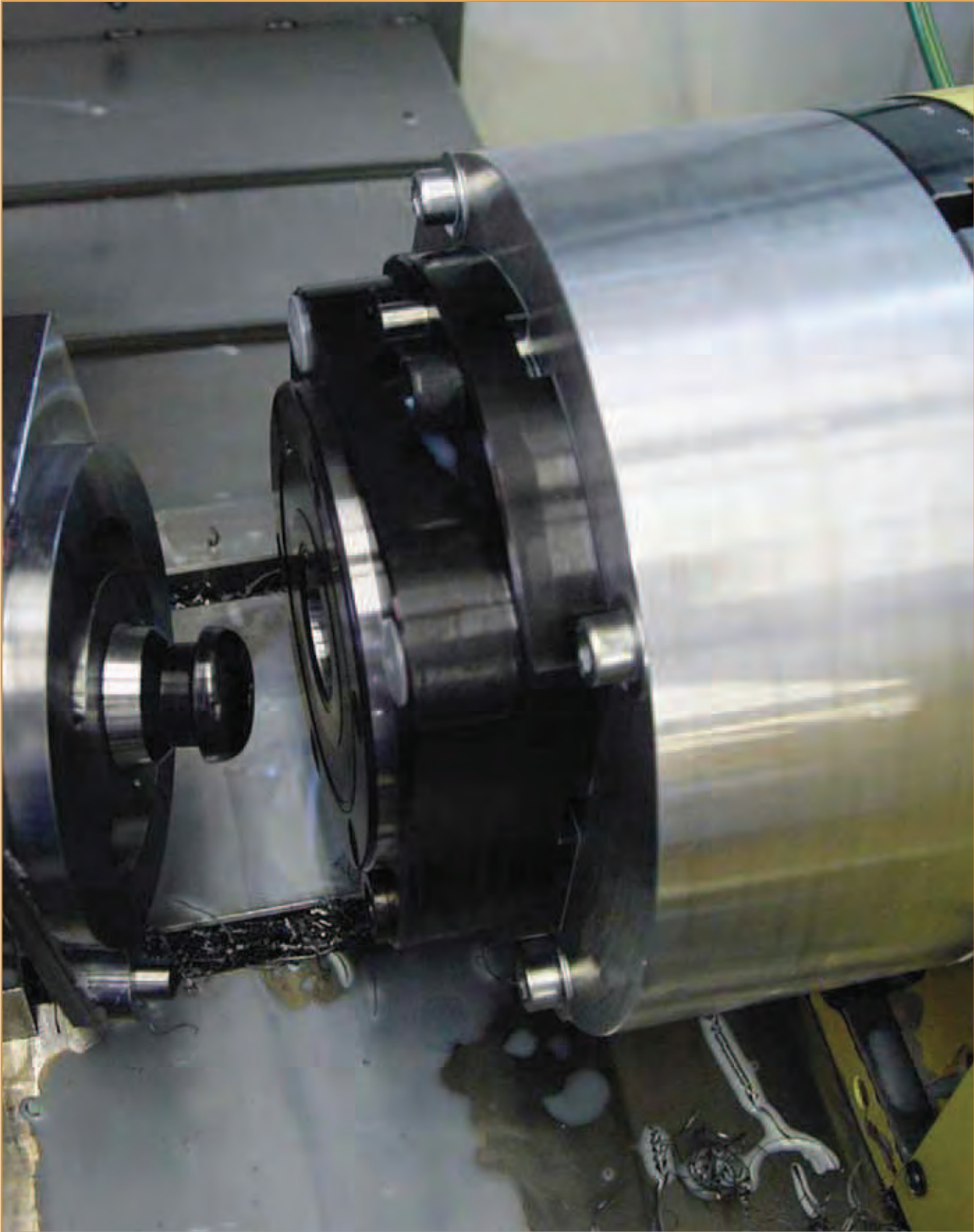


† Manual chuck, no air needed

## ESM 138



• All dimensions are in millimeters





## Knobs & Pallets

The Unilock retention knob is the heart of the system. It provides high accuracy location while also retaining the fixture. The knob comes in three forms for proper location of large fixtures with metric or inch fastening options. The fastening screw can be captivated within the knob protecting it from rough or improper handling.

Pallets are provided fully assembled with their required quantity of Unilock knobs and lifting handles, and are available in either steel or aluminum.



**Clamping Knobs** .....Pg. 54-55



**System 40 Pallets** .....Pg. 56-57

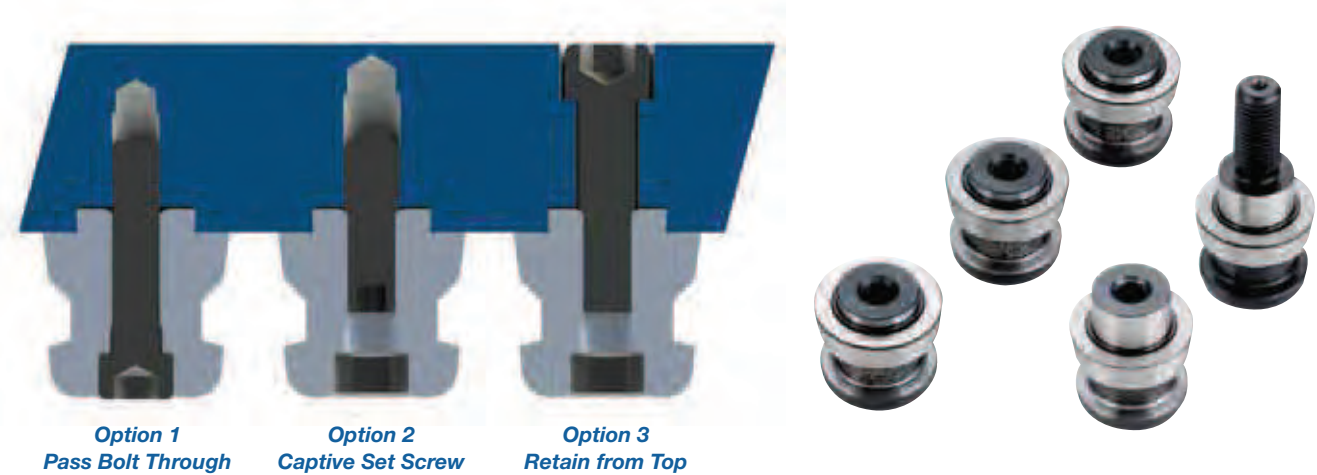
# CLAMPING KNOBS

Unilock clamping knobs can be attached to fixtures or directly to workpieces. Our standard knobs can be mounted in a blind hole from the bottom or pulled up from the top. Standard clamping knobs accept the following:

**Option 1** – Pass Bolt Through – The bolt is inserted past the clamping knob and threads into the workpiece or fixture.


**Option 2** – Captive Set Screw – The set screw is captivated between the knob and the workpiece or fixture.  
(Note: This option is not recommended for “B” type knobs as there is no timing control)


**Option 3** – Retain from Top – The bolt passes through the workpiece or fixture and pulls the knob into position.




• Option 2 not recommended for B type

Standard clamping knobs have a metric positioning boss which is  $\varnothing 25\text{mm}$  and ground to a fit of h6. This boss is 5mm tall. The overall measurements of the clamping knob is  $\varnothing 40\text{mm}$  by 40mm tall.

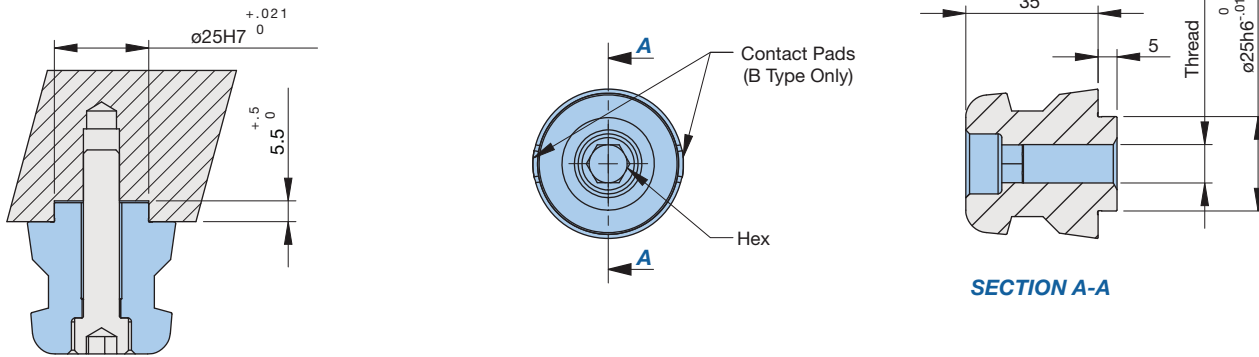
 The SBA Knob is ground to fit with the center ground taper of the chuck. This fit establishes centerline location. This location will repeat to better than +/- .0002".

 The SBB Knob is ground like a diamond pin and orients your work relative to the centerline of the SBA knob.

 The SBC Knob is ground undersize. It will bring the bottom of the workpiece or fixture down on the top of the Unilock chuck.

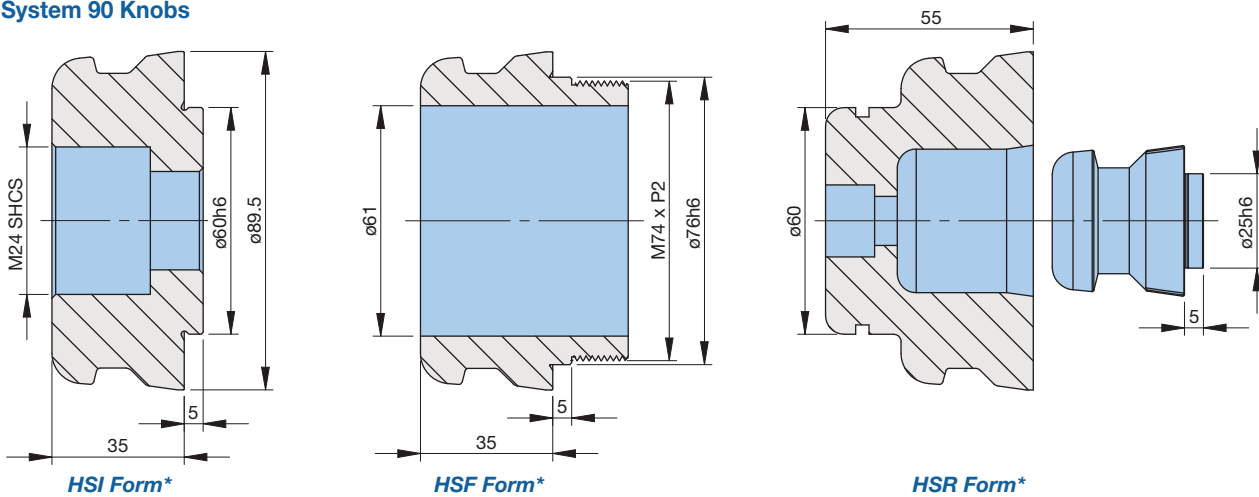


## System 40 Knobs



Knob Type	Catalog Number	Description	Undersize	Internal Thread	Pass Through Bolt Size	Hex
A	15.260.300	SBA Clamping Knob Absolute Position	.0002"	M12	M10	12mm
B	15.260.301	SBB Clamping Knob Orientation	.0002"	M12	M10	12mm
C	15.260.302	SBC Clamping Knob Undersized .1mm - Downward Clamping Only	.0040"	M12	M10	12mm
CC	15.260.303	SBCC Clamping Knob Undersized .3mm - Downward Clamping Only	.0120"	M12	M10	12mm
CC	15.260.304	SBCC Clamping Knob Undersized .6mm - Downward Clamping Only	.0240"	M12	M10	12mm
A	15.260.305	SBA Clamping Knob 3/4"-10 Thread	.0002"	3/4"-10	—	—
C	15.260.306	SBC Clamping Knob 3/4"-10 Thread.	.0002"	3/4"-10	—	—
A	15.260.313	SBA Clamping Knob 1/2"-13 Thread	.0002"	1/2"-13	3/8"-16	3/8"
B	15.260.314	SBB Clamping Knob 1/2"-13 Thread	.0002"	1/2"-13	3/8"-16	3/8"
C	15.260.315	SBC Clamping Knob 1/2"-13 Thread	.0040"	1/2"-13	3/8"-16	3/8"
A	15.260.400	SBA Clamping Knob M16	.0002"	M16	M12	17mm
B	15.260.401	SBB Clamping Knob M16	.0002"	M16	M12	17mm
C	15.260.402	SBC Clamping Knob M16	.0040"	M16	M12	17mm
—	16.260.310	Chip Guard Knob	—	M8	—	—

## System 90 Knobs



Knob Type	Catalog Number	Description	Undersize
A	15.274.300	HSI90 Clamping Knob – SBA	.0002"
B	15.274.303	HSI90 Clamping Knob – SBB	.0002"
A	15.274.301	HSF90 Clamping Knob – SBA	.0002"
A	15.274.303	HSR90 Clamping Knob – SBA	.0002"

\* For Use with HSM 196 Chucks Only

# SYSTEM 40 PALLETS

## Mono Pallet

Pallet is shown with 12mm timing pin for use with MCM 150, MSM 170, ISM 160 and DC 200 chucks. The model ESM 138 chuck accepts a 14mm key or pin. The ESM 176 chuck accepts a 25mm key or pin.



### Can be Configured for the Following Chucks:

- ESM 138
- MCM 150
- ISM 160
- MSM 170
- ESM 176 Turbo
- DCM 200

## Duo & Quad Pallet

Duo and Quad Pallet loads on the Model QC 400 or any set of chucks on 200mm spacing.



### Can be Configured for the Following Chucks:

- DLM 200
- DCM 200
- QC 400

While loading and unloading work into the fixture, the holes in the bottom of the pallet mate to setup plates that stabilize the pallet for safe operation outside of a Unilock chuck.

Pallet Type	Pallet Name	Catalog Number	Material	Weight (lbs)	Thickness	Length	Width	Length w/ Handles	Timing Pin T	Pin Dia. oP
Mono	AP 200	15.260.640	Aluminum	6.6	25mm	199mm	199mm	266mm	81mm	12mm
Mono	SP 200	15.260.540	Steel	15.4	20mm	199mm	199mm	266mm	81mm	12mm
Mono	AP 200-138	15.260.647	Aluminum	6.6	25mm	199mm	199mm	266mm	61mm	14mm
Mono	AP 200-176	15.260.645	Aluminum	6.6	25mm	199mm	199mm	266mm	76mm	25mm
Duo	AP 400	15.270.640	Aluminum	13.2	25mm	399mm	199mm	470mm	—	—
Duo	SP 400	15.270.540	Steel	30.8	20mm	399mm	199mm	470mm	—	—
Quad	AP 400 x 400	15.270.644	Aluminum	26.4	25mm	399mm	399mm	470mm	—	—

## Pallet Stand

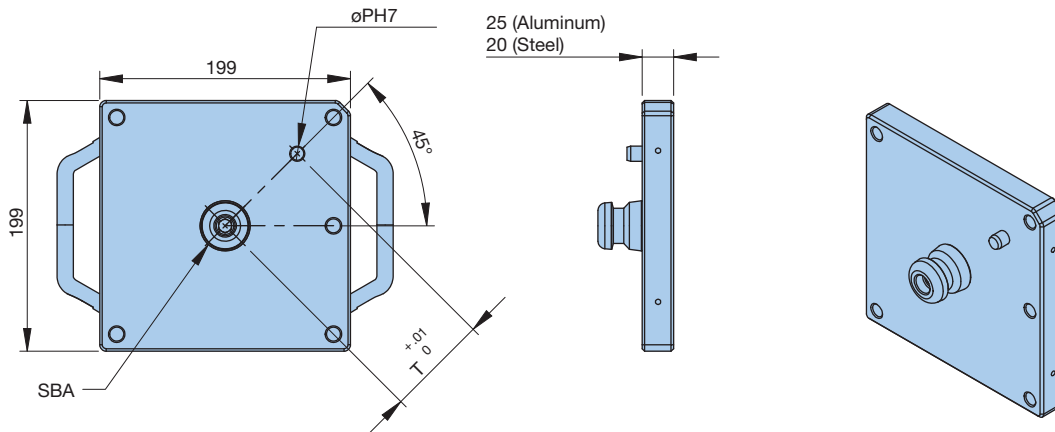
Used to stabilize pallet while it is being worked on outside of the machine.



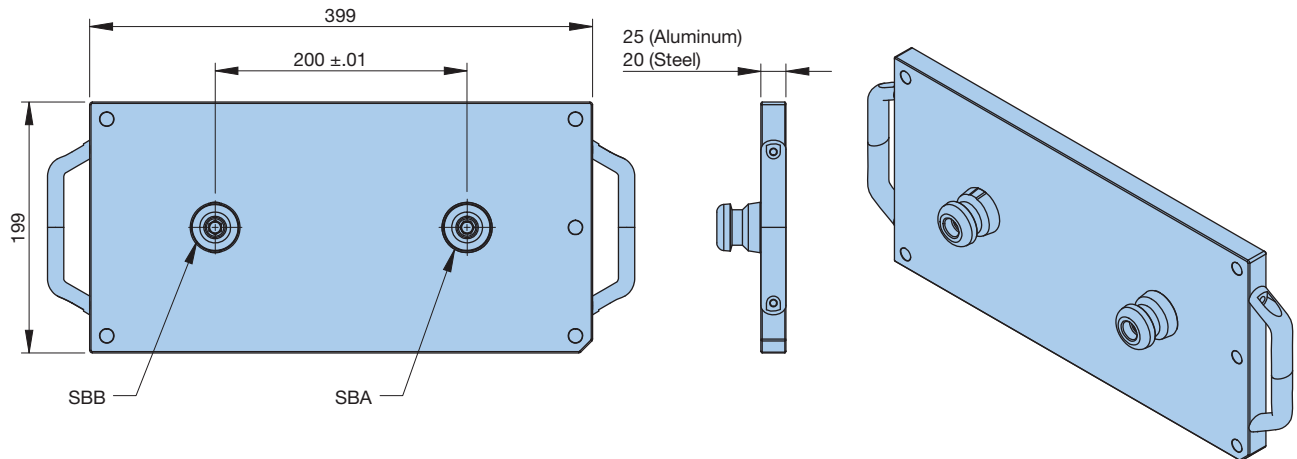
Stand Type	Catalog Number
Mono	15.260.800
Duo	15.270.800
Quad	



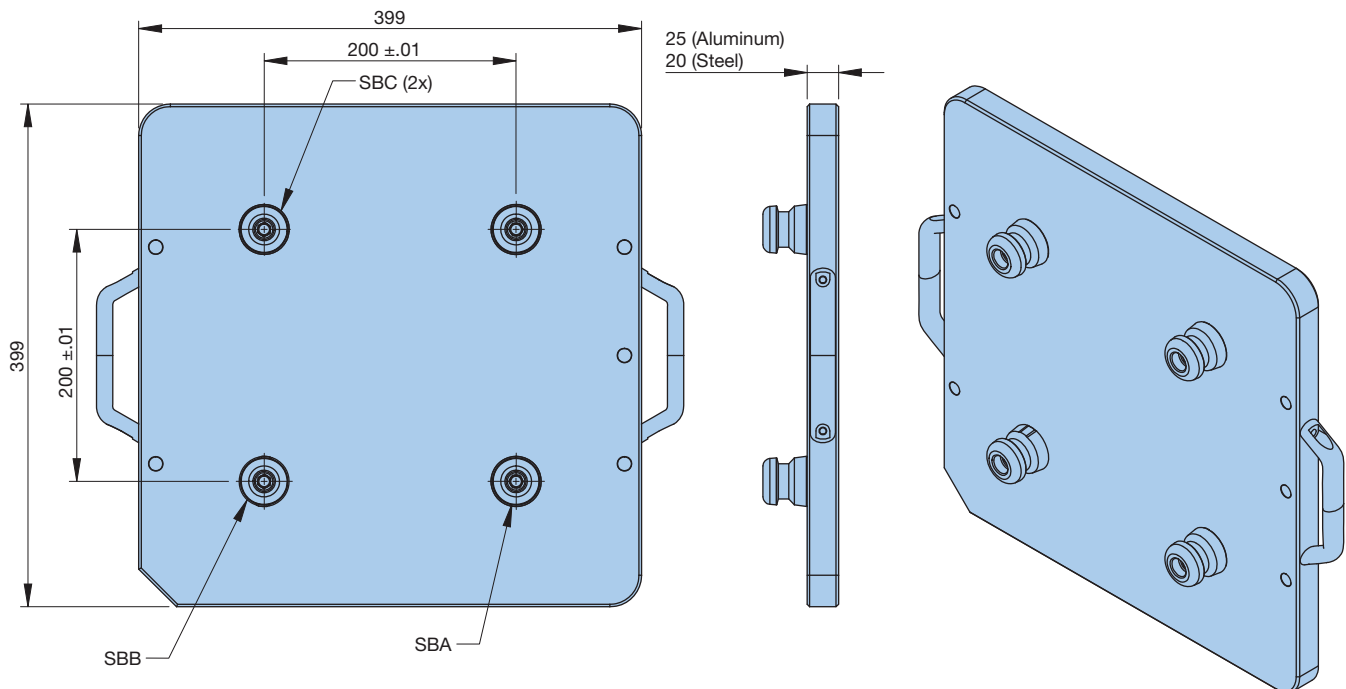
## Mono Pallets



## Duo Pallets



## Quad Pallets



• All dimensions are in millimeters



## Automation Chucks

Unilock automation chucks are expanding the role of air pressure beyond that of holding the chuck open during changeovers or assisting the springs in the clamping process. Automation chucks can confirm the presence of a clamping ring/fixture via air pressure monitoring. Air is also used to help clean the locating surfaces.



**ESA 100** .....Pg. 62-63



**NSA 125** .....Pg. 64-65



**ESA 185** .....Pg. 66-67



**ASSF 170** .....Pg. 68-69



**ASSF 250** .....Pg. 70-71



**BALF 170 & 250** .....Pg. 72-73



**Automation Pallets** .....Pg. 74-75

# AUTOMATION CHUCKS OVERVIEW

## Minimizes or Eliminates Flats and Recesses on the Mating Surfaces Where Chips can Collect and Interfere with the Positioning and Clamping Process

The clamping chuck has a ground cone projecting out of its base that is used to establish centerline. Chips and debris will tend to slide off of this surface. Elevation is controlled with small raised pads surrounding the cone. They reduce the surface area on which debris and chips can contaminate the positioning and clamping process.

The clamping ring resides on the bottom of the pallet, a location that is not prone to collecting contamination when it is being stored in the robot or locked in a Unilock chuck.

## Assists in the Cleaning Process so the Chuck can be Safely Installed in an Automated Cell

When the chuck is in an open position (Fig. 1), an upward air blast is activated. These air passages project onto the bottom of the clamping ring to assist in the cleaning process. As the pallet nears its final position, the restriction of the upward air flow is redirected onto the contact surface (Fig. 2).

## Provides Feedback to the Cell Controller on Clamping Status

The air passages are restricted once the pallet is clamped. This restriction can be measured and used to verify pallet presence.

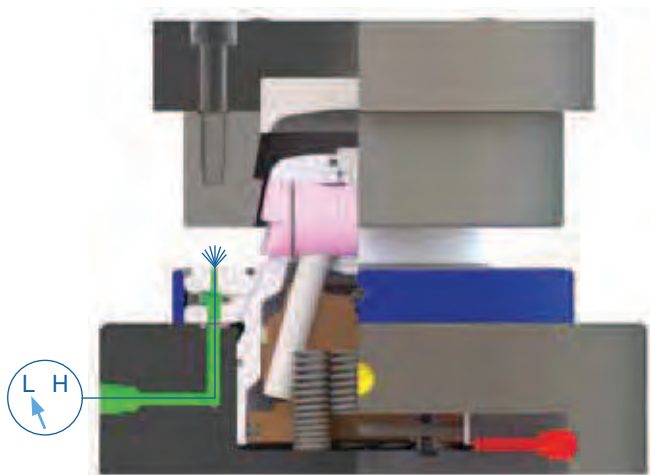
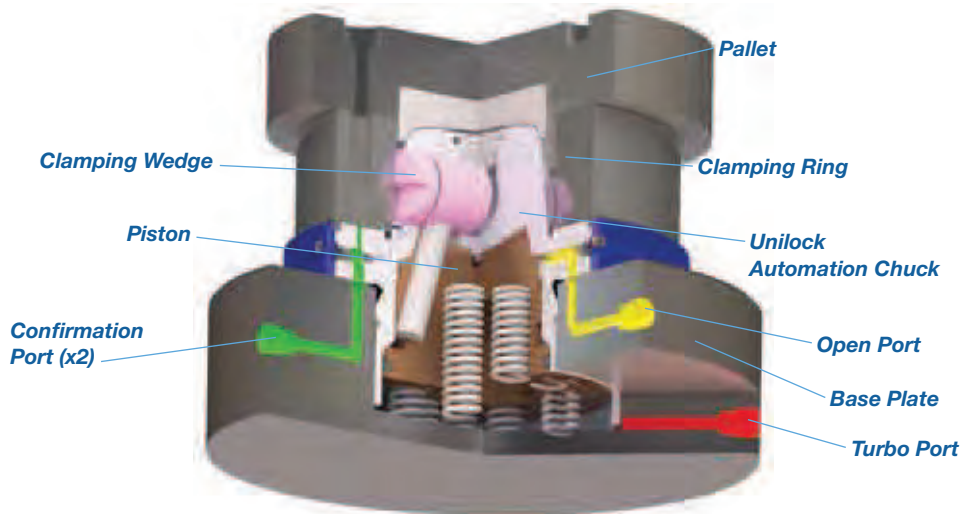


Figure 1



Figure 2





The ESA 110 automation chuck can be used as a single or multiple chuck solution. Pallets seal off air passages allowing for the verification of a pallet through back pressure monitoring.

### Features:

- Tapered chuck eases cleaning
- Air assisted clamping option
- Air blast cleaning passages
- Air verification of pallet presence
- Four elevated support pads



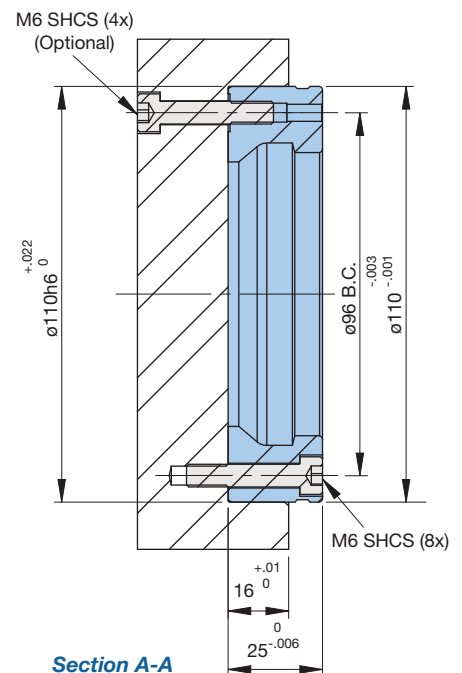
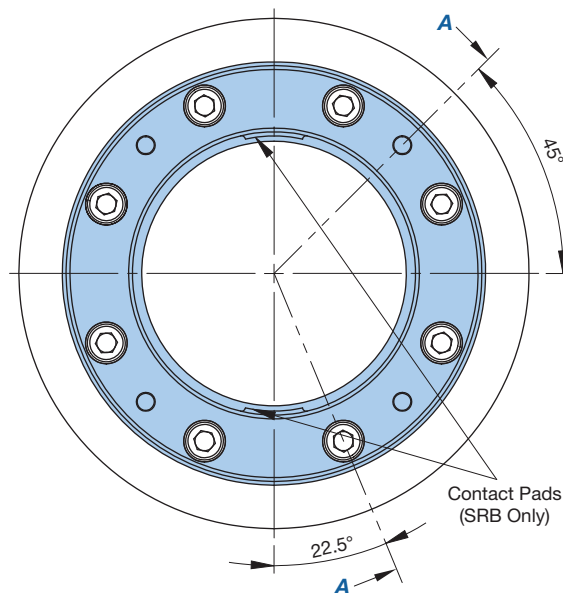
Chuck Model	Catalog Number	Clamping Force (lbs)		Weight (lbs)	Air Connection	
		Spring Only	Turbo Assist*		Port Size	Flange
ESA 110	15.277.110	660-880	3,080-3,300	4.8	—	✓

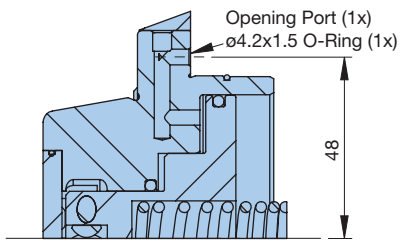
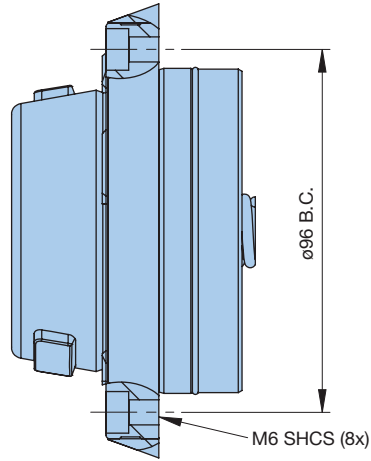
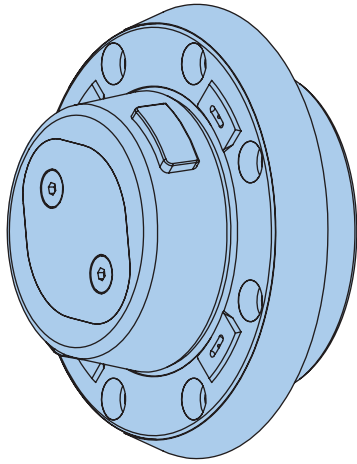
- Screws, screw covers and o-rings included
- \* Sealed pocket required for Turbo Assist

### Clamping Ring

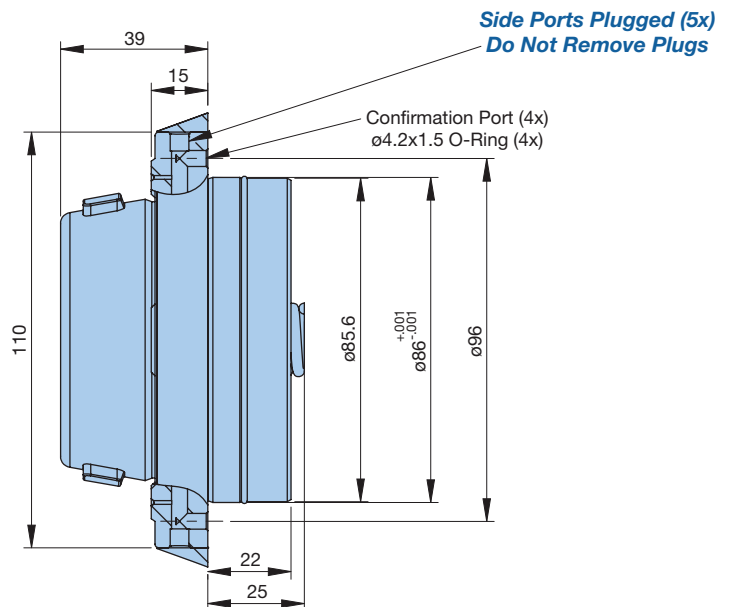
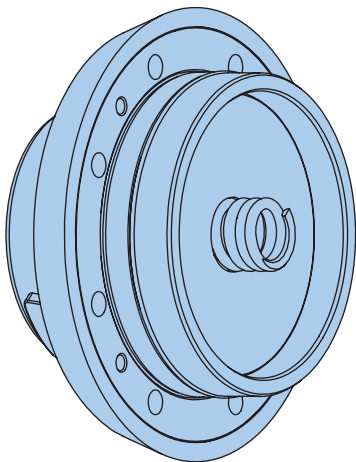
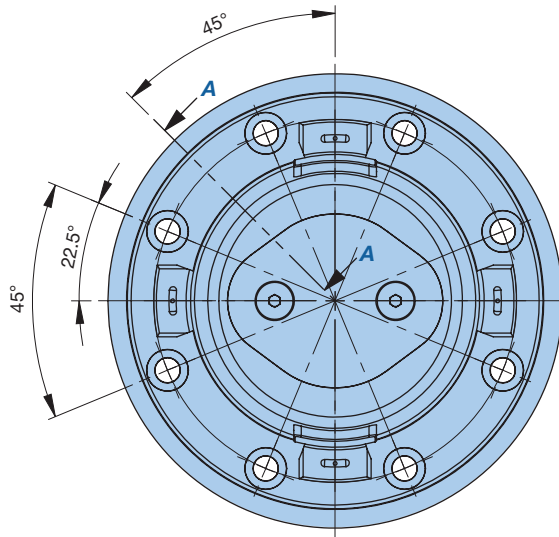
Ring Type	Catalog Number
SRA 110	15.277.030
SRB 110	15.277.031
SRC 110	15.277.032

- Screws included





**Section A-A**



• All dimensions are in millimeters



# NSA 125

The NSA 125 automation chuck can be used as a single or multiple chuck solution. Pallets seal off air passages allowing for the verification of a pallet through back pressure monitoring.

### Features:

- Tapered chuck eases cleaning
- Air assisted clamping option
- Air blast cleaning passages
- Air verification of pallet presence
- Two elevated support pads



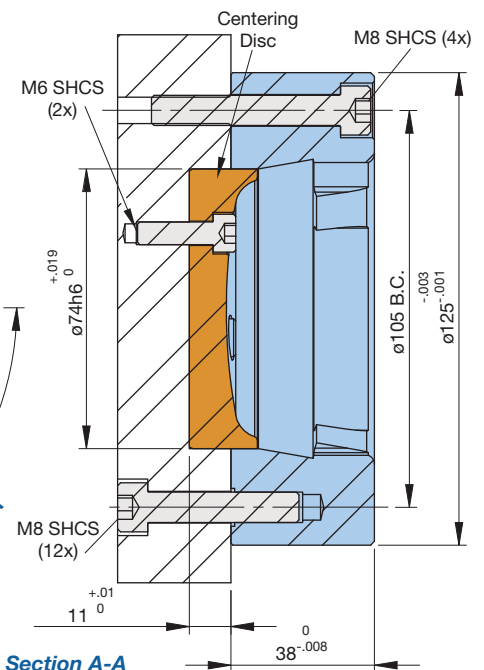
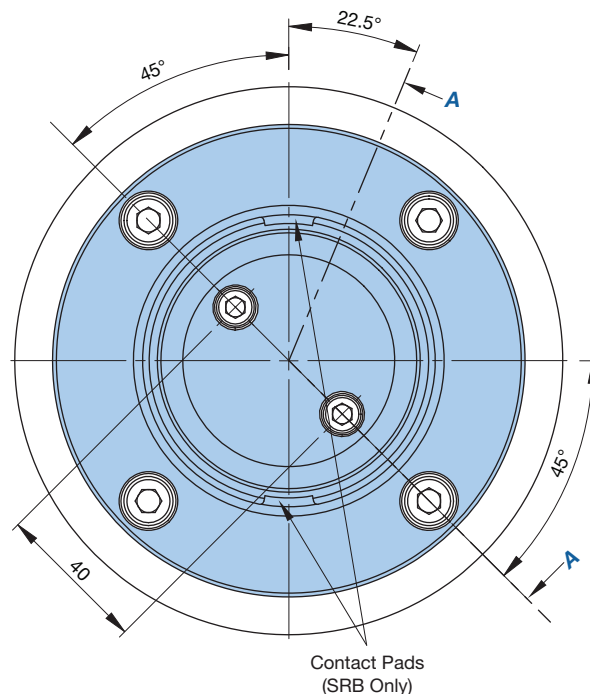
Chuck Model	Catalog Number	Clamping Force (lbs)		Weight (lbs)	Air Connection	
		Spring Only	Turbo Assist*		Port Size	Flange
NSA 125	15.277.125	1,100-1,350	3,300-3,740	7.9	—	✓

- Screws, screw covers and o-rings included
- \* Sealed pocket required for Turbo Assist

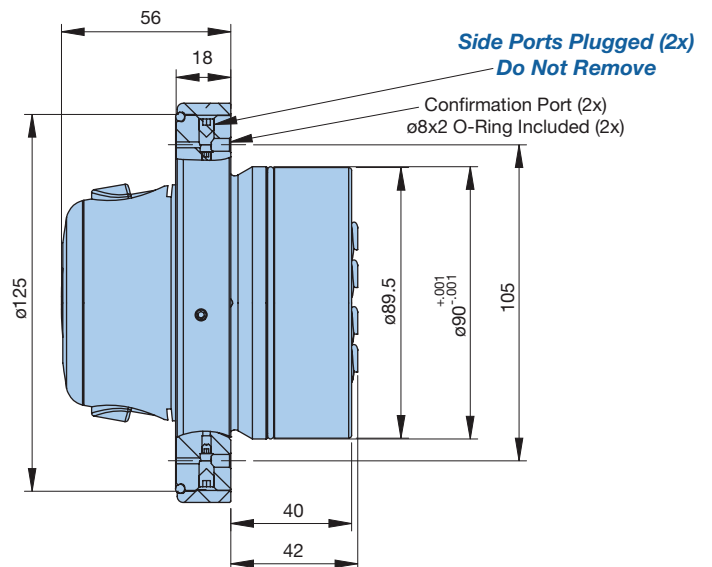
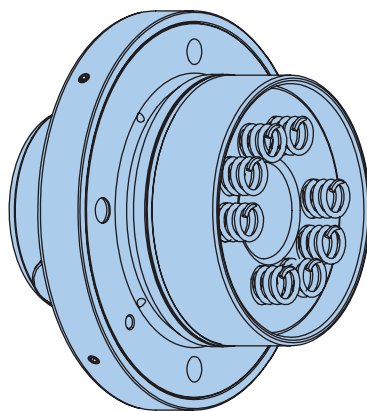
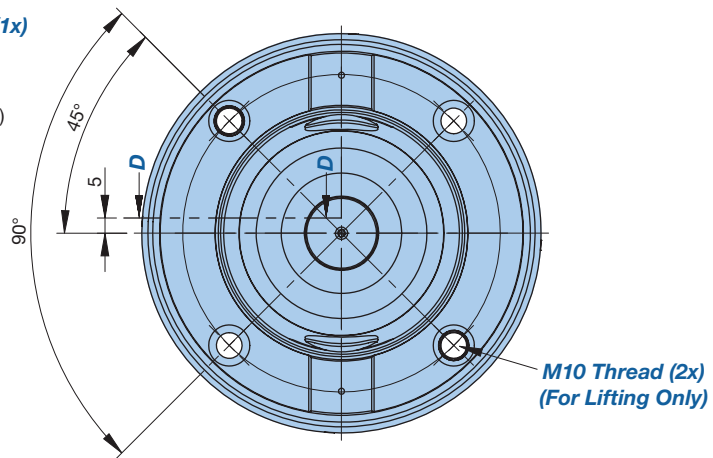
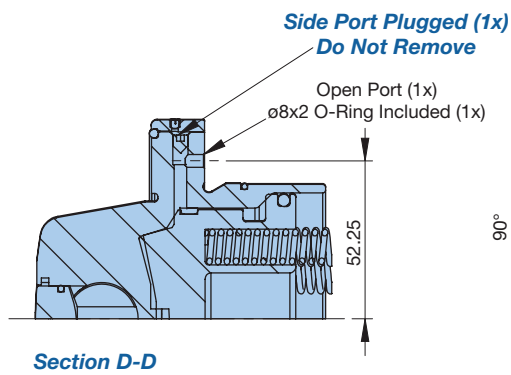
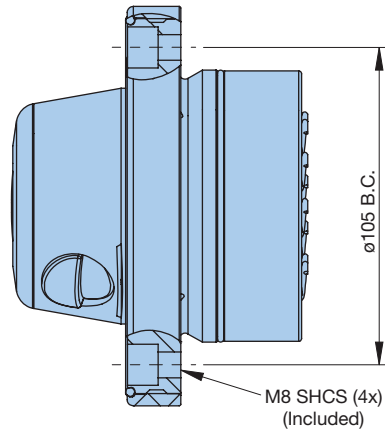
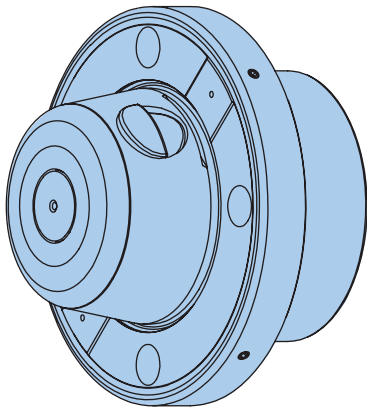
### Clamping Ring

Ring Type	Catalog Number
SRA 125	15.277.001
SRB 125	15.277.002
SRC 125	15.277.003

- Screws included







• All dimensions are in millimeters

# ESA 185

The ESA 185 chuck is the largest self cleaning Unilock clamping chuck. It is especially well suited for the use in heavy machining. Supporting pallets up to 1000mm x 1000mm with weight in excess of 10 tons, this chuck offers rigid clamping for turning and milling. After the blow-off function cleans the chuck during a load cycle, it can be used to monitor pallet presence.

### Features:

- Tapered chuck eases cleaning
- Air assisted clamping option
- Air blast cleaning passages
- Air verification of pallet presence
- Two elevated support pads



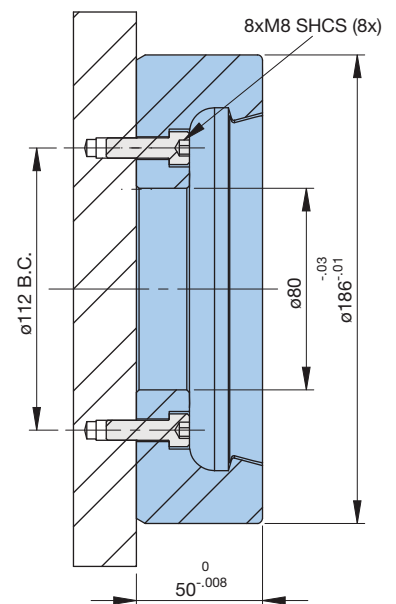
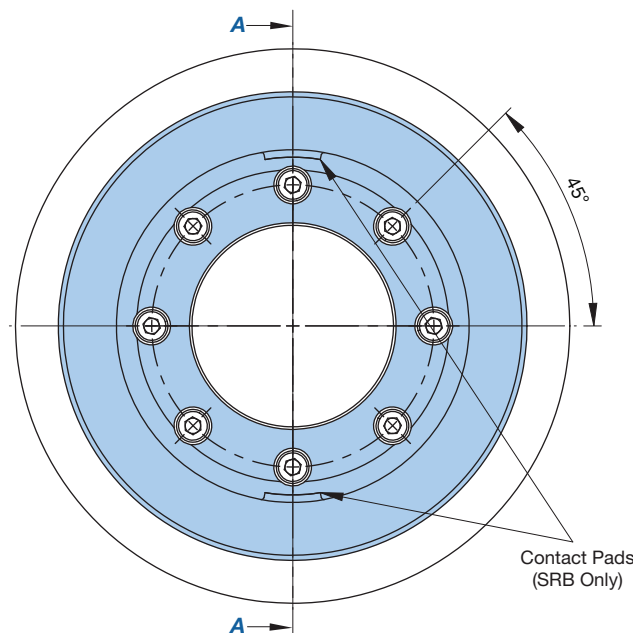
Chuck Model	Catalog Number	Clamping Force (lbs)		Weight (lbs)	Air Connection	
		Spring Only	Turbo Assist*		Port Size	Flange
ESA 185	<b>15.277.185</b>	2,850-3,300	6,600-8,800	21.4	—	✓

- Screws, screw covers and o-rings included
- \* Sealed pocket required for Turbo Assist

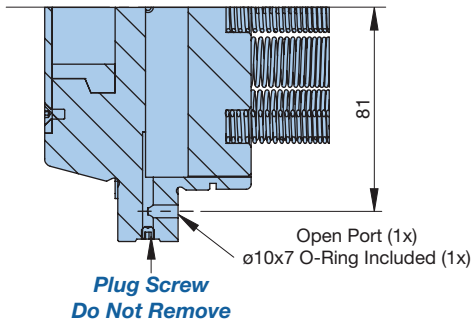
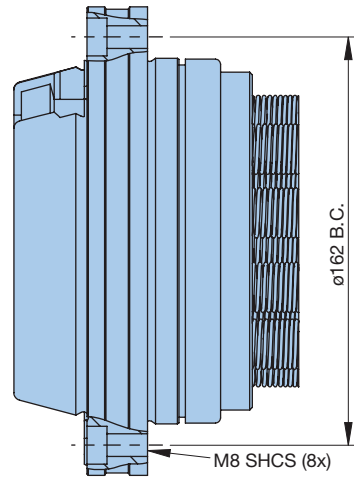
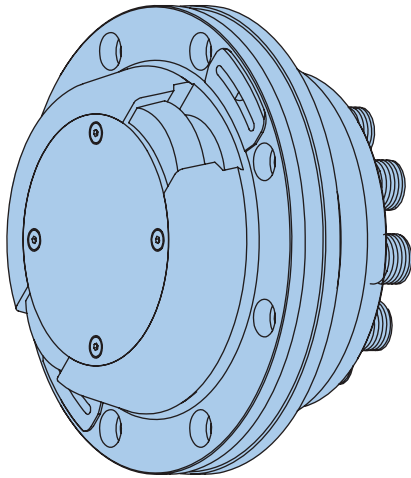
### Clamping Ring

Ring Type	Catalog Number
SRA 185	<b>15.277.040</b>
SRB 185	<b>15.277.041</b>
SRC 185	<b>15.277.043</b>

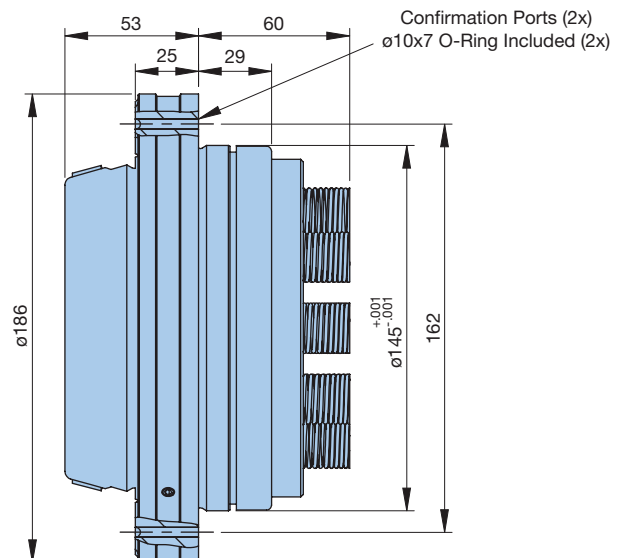
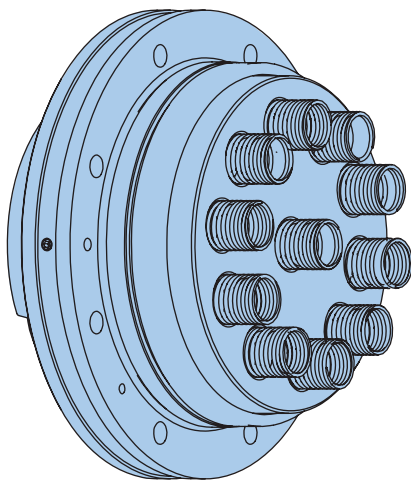
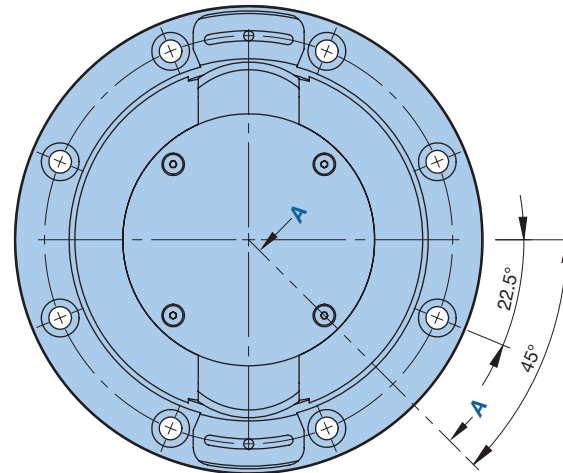
- Screws included



Section A-A



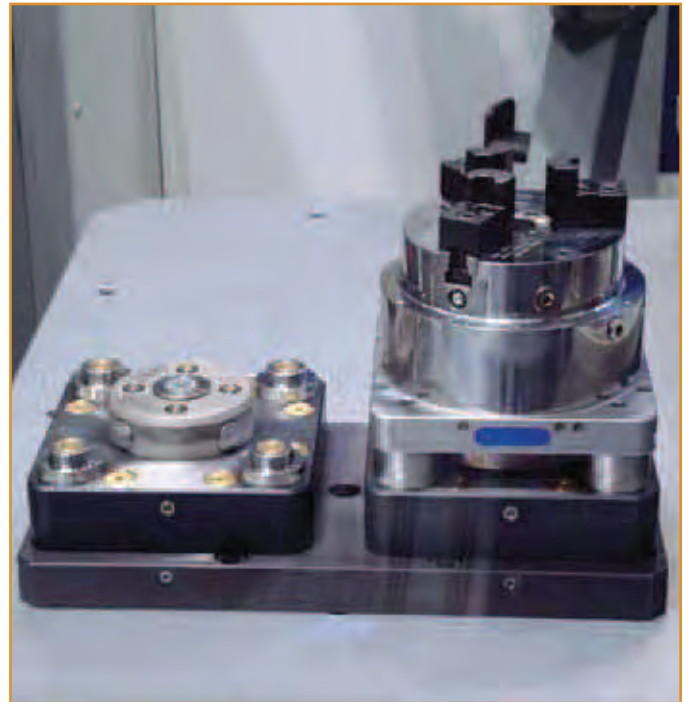
Section A-A



• All dimensions are in millimeters

## Pre-Assembled Automation Solutions

This automation chuck is produced from a steel body with dimensions of 170mm x 170mm. It is designed to accept a single clamping ring at centerline of the pallet. A stable platform is provided for all machining applications through the use of four clamping wedges and four supporting orientation pads.



Chuck Model	Catalog Number	Clamping Force (lbs)		Weight (lbs)	Air Connection	
		Spring Only	Turbo Assist*		Port Size	Flange
ASSF 170	15.279.170	1,100-1,350	2,860-3,300	20.1	1/8 (2x)	✓

- No hardware included
- \* Sealed pocket required for Turbo Assist

**PALLET DRAWING PG. 73**

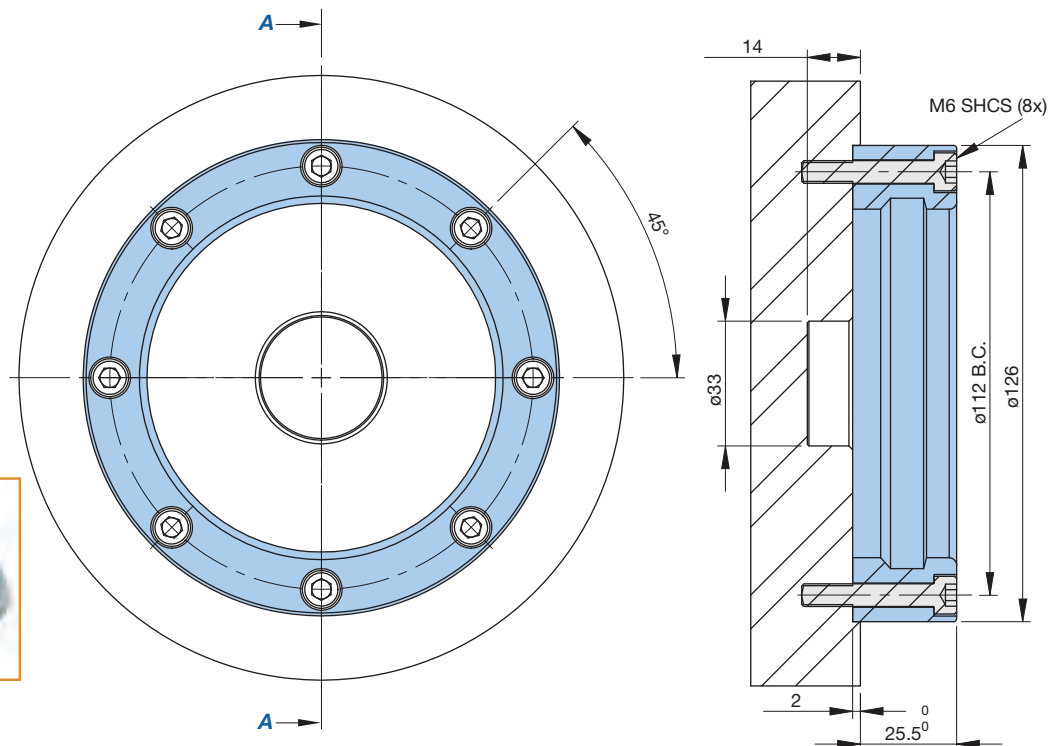
## Clamping Ring

Ring Type	Catalog Number
SRA 170	15.279.120

- Screws included



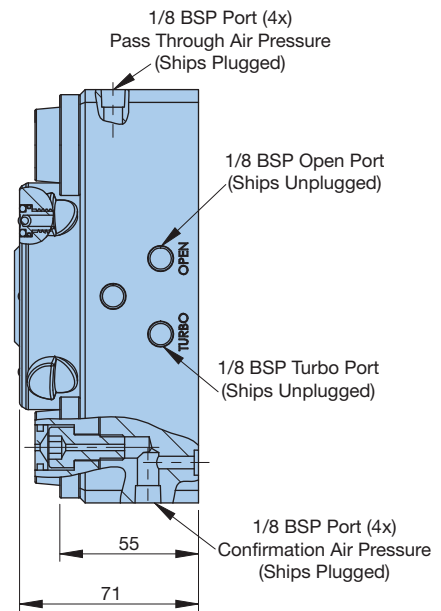
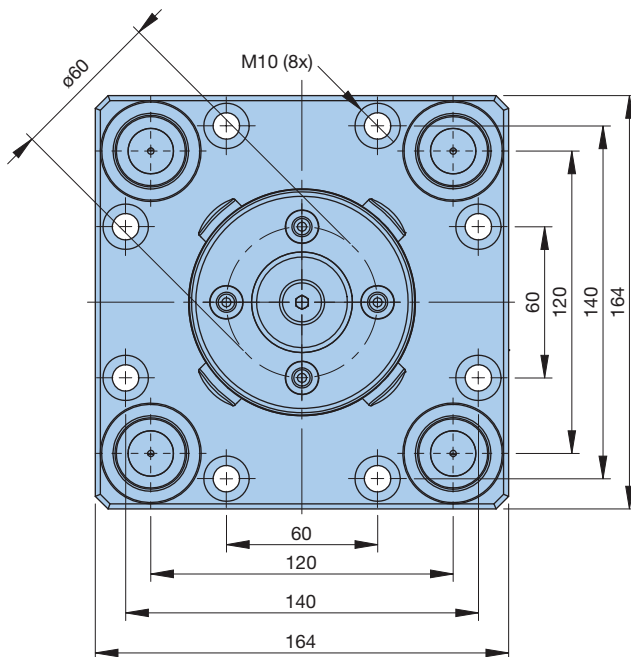
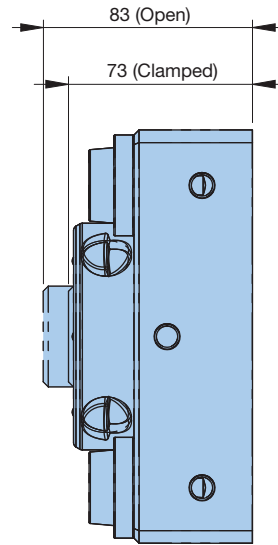
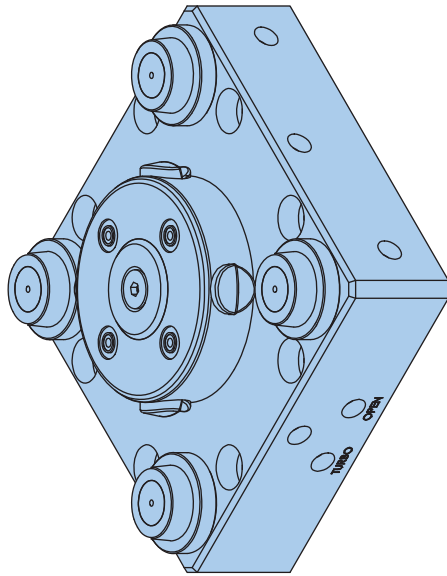
Ring shown on pallet



- All dimensions are in millimeters

**Section A-A**





- All dimensions are in millimeters
- Pallet drawing see Pg. 73

# ASSF 250

This automation chuck is produced from a steel body with dimensions of 250mm x 250mm. It is designed to accept a single clamping ring at centerline of the pallet. A stable platform is provided for all machining applications through the use of four clamping wedges and four supporting orientation pads. This chuck supports a passage for delivering compressed air to the top side of the fixture plate.



Chuck Model	Catalog Number	Clamping Force (lbs)		Weight (lbs)	Air Connection	
		Spring Only	Turbo Assist*		Port Size	Flange
ASSF 250	15.279.250	1,100-1,350	2,860-3,300	71.2	1/8 (2x)	✓

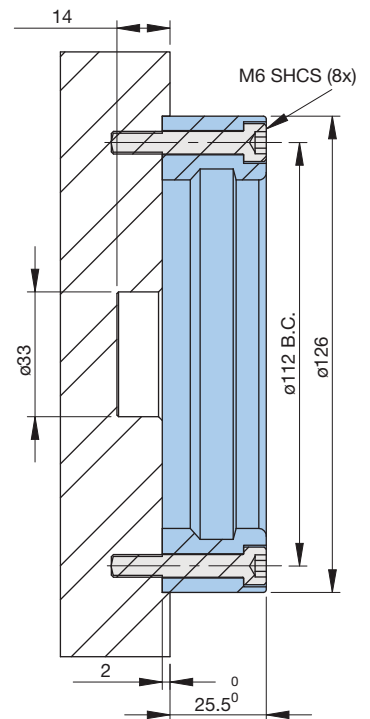
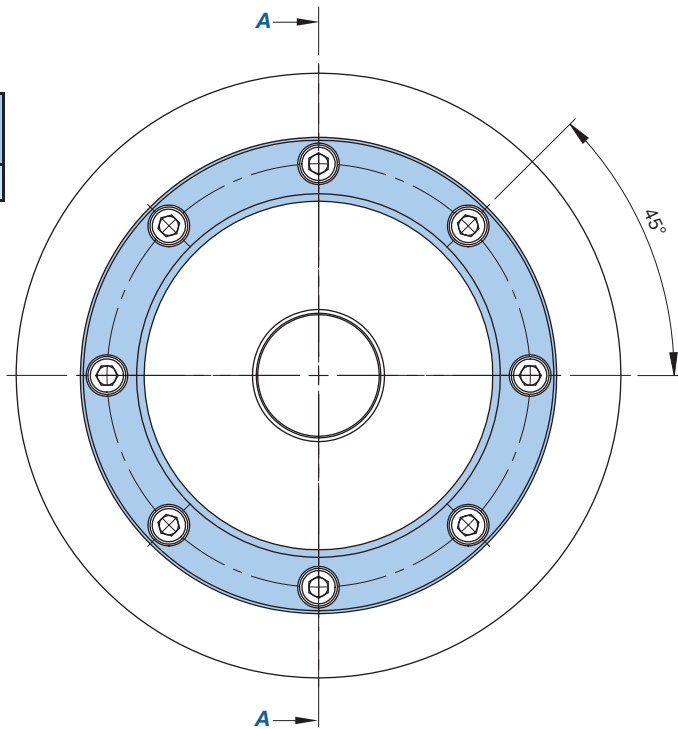
- No hardware included
- \* Sealed pocket required for Turbo Assist

**PALLET DRAWING PG. 73**

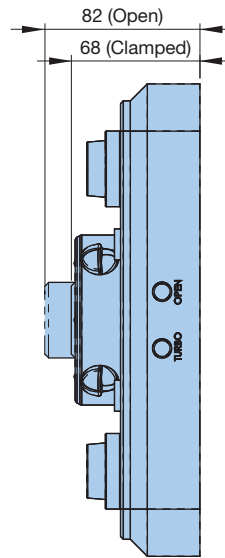
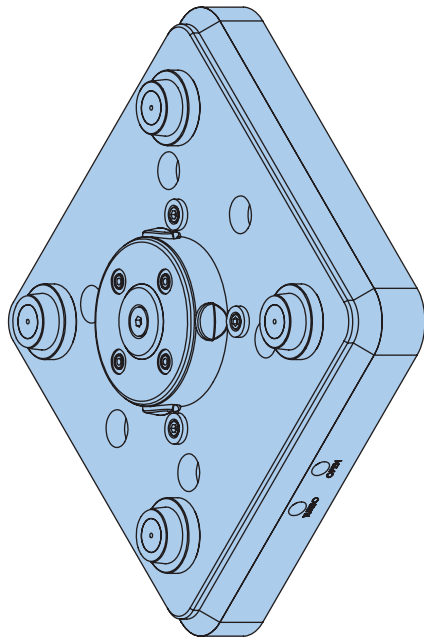
## Clamping Ring

Ring Type	Catalog Number
SRA 170	15.279.120

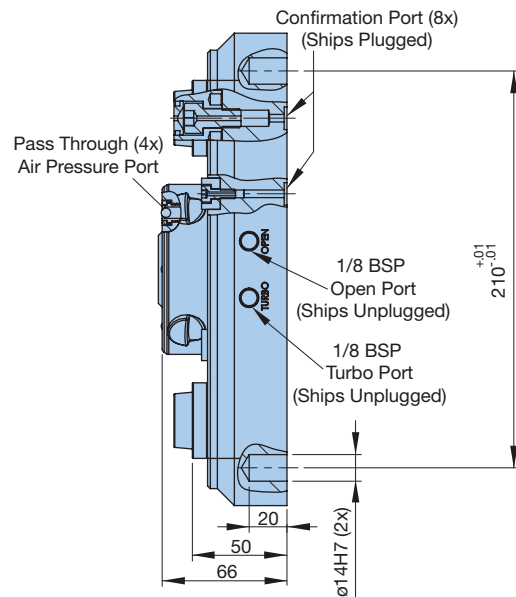
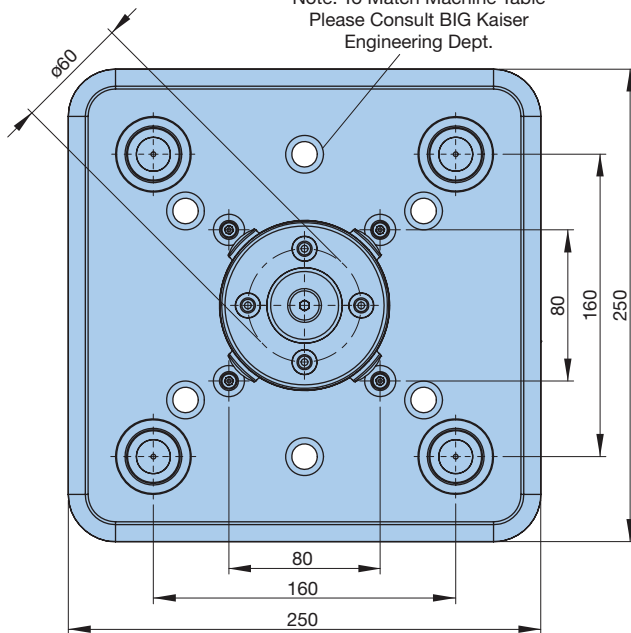
- Screws included



**Section A-A**



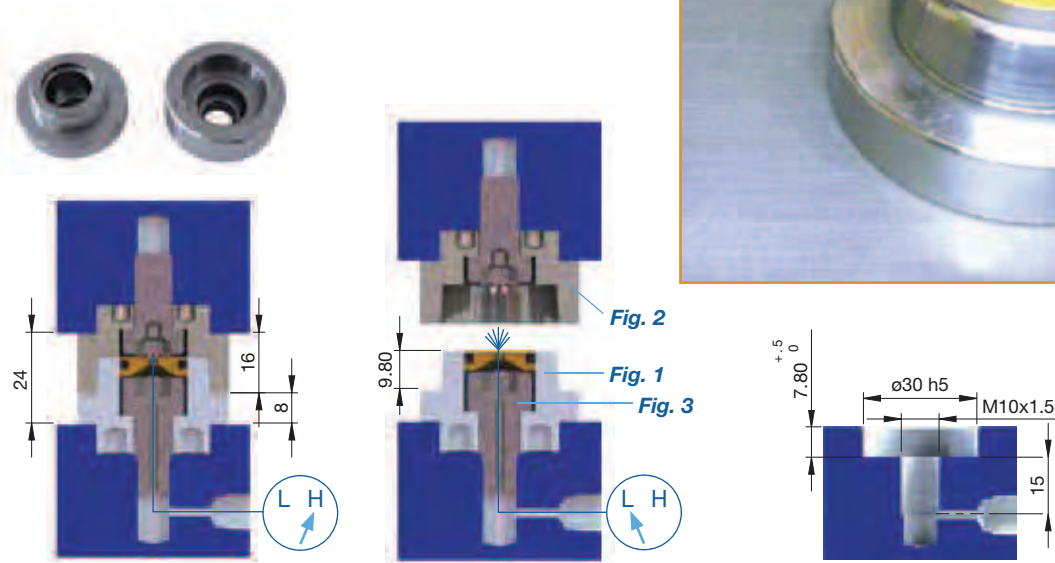
M12 Bolting Pattern  
 Note: To Match Machine Table  
 Please Consult BIG Kaiser  
 Engineering Dept.



- All dimensions are in millimeters
- Pallet drawing see Pg. 73

# BALF 170 & BALF 250 CLAMPING RING & LOCATORS

When automation pallets need additional support or orientation, a mating cup bushing and taper cone are used. Their tight fit delivers stability and accurate orientation for large pallets.

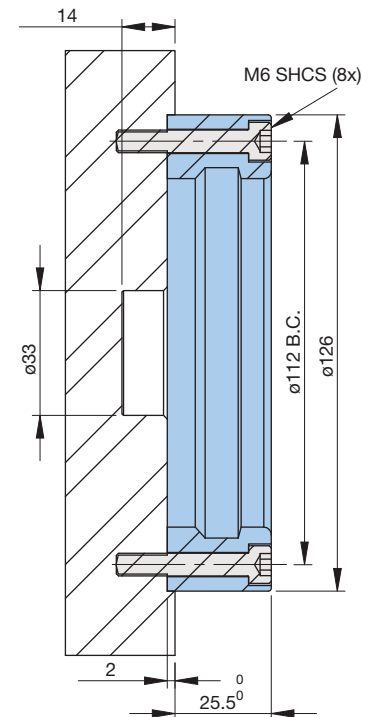
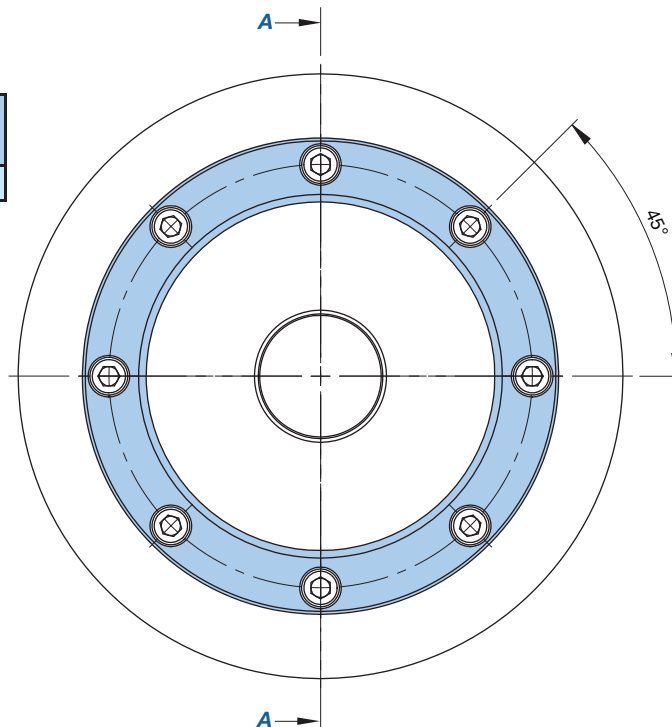


Catalog Number	Description	Figure
15.279.055	Centering Bushing Male Taper	1
15.279.056	Centering Bushing Female Taper	2
15.279.057	SHCS M10 x L20 w/ Air Passage	3

## Clamping Ring

Ring Type	Catalog Number
SRA 170	15.279.120

• Screws included



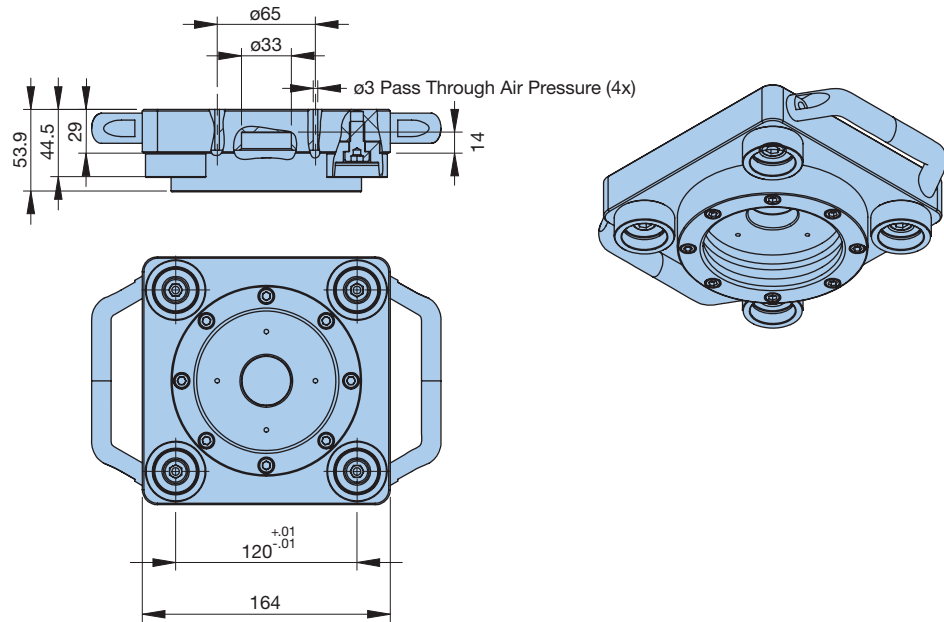
Section A-A



## BALSF 170 Pallet

Catalog Number
15.279.175

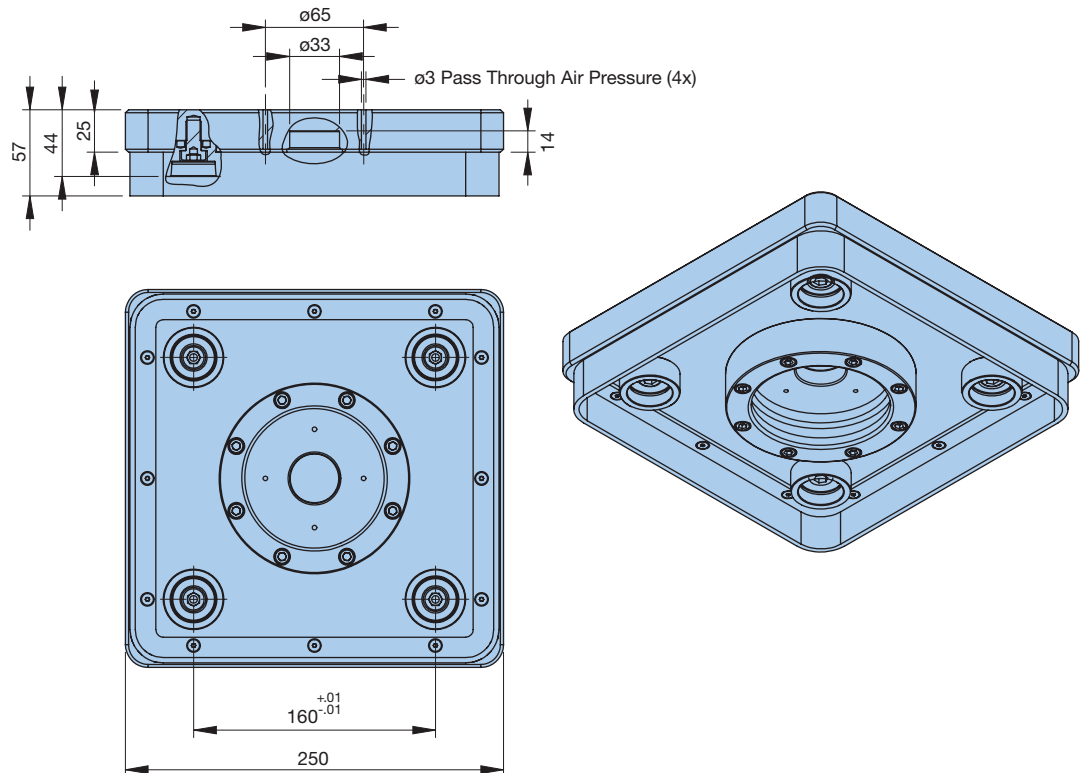
- Handles included



## BALSF 250 Pallet

Catalog Number
15.279.255

- Handles included but not shown on drawing



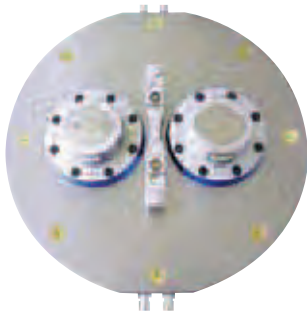
- All dimensions are in millimeters

# AUTOMATION PALLET SYSTEMS

Complete pallet assemblies are available for use in Mono, Duo and Quad configurations. For companies opting to produce their own pallets, all components can be purchased individually. The robot gripper couplings are also available.



## Dual Clamping Stations



*DSA 110*



*DPA 110*

## Quad Clamping Stations



*QSA 110*



*QPA 110*



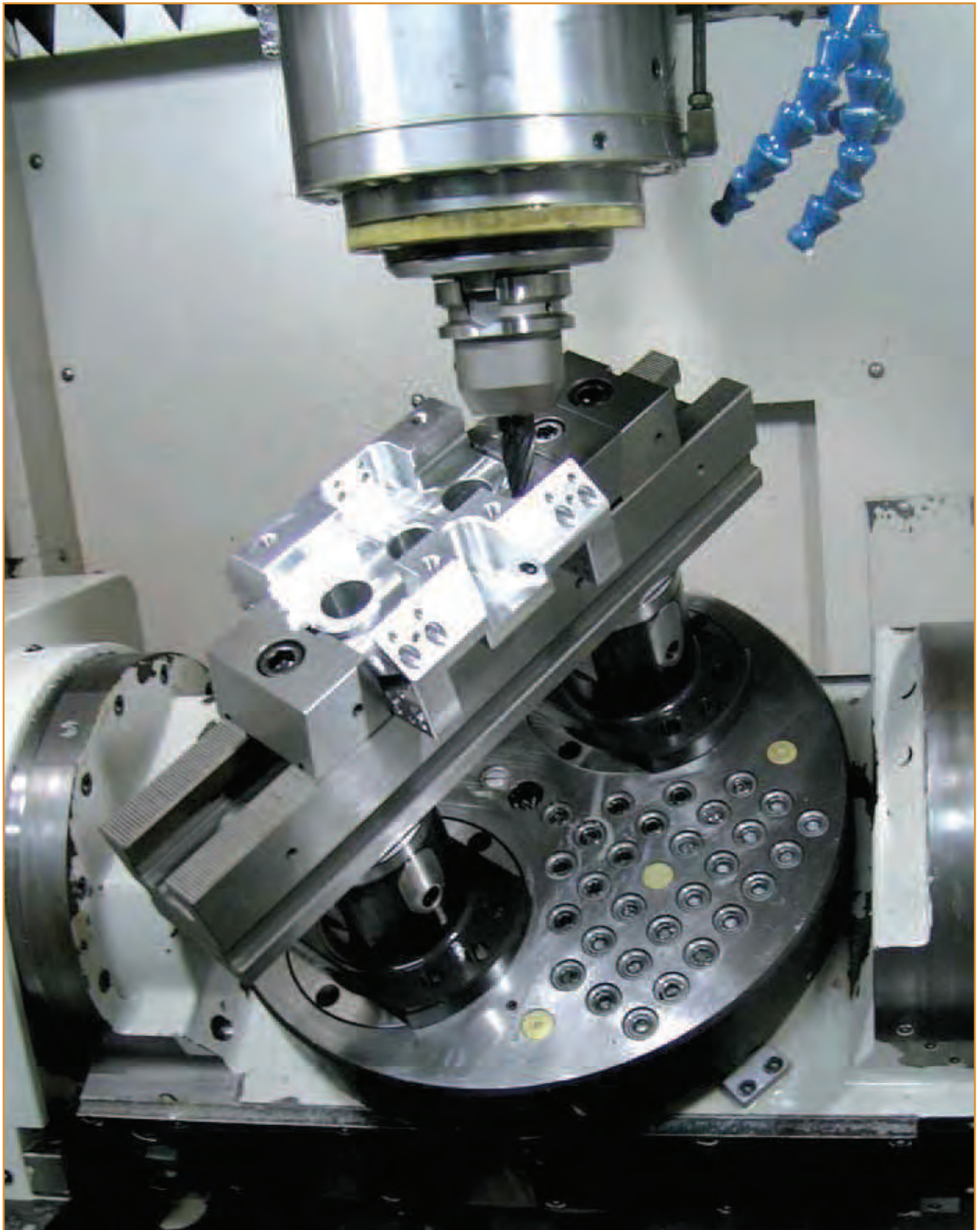
*QSA 125*



*QPA 125*









## Multi-Axis Systems for 5-Sided Machining

Our multi-axis workholding products are designed to provide flexibility and functionality for 5-axis machining and 5-sided machining via multiple part transfers. We also offer solutions for machines with retrofit 4th/5th axis tables. BIG Kaiser can help you to maximize the benefits of your machine design through efficient workholding.

These multi-axis workholding solutions locate and stabilize the workpieces without obstructing access to the top and sides of the part. They also allow a clamped workpiece to be flipped into new orientations for subsequent machining operations without unclamping it from the workholding.



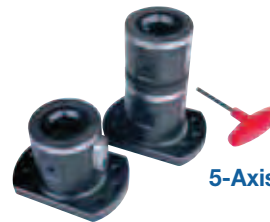
**5-Axis Duo Bridge** .....Pg. 80-81



**First Grip** .....Pg. 82-83



**Dovetail Grip** .....Pg. 84-85



**5-Axis Riser Chucks** ....Pg. 86-87

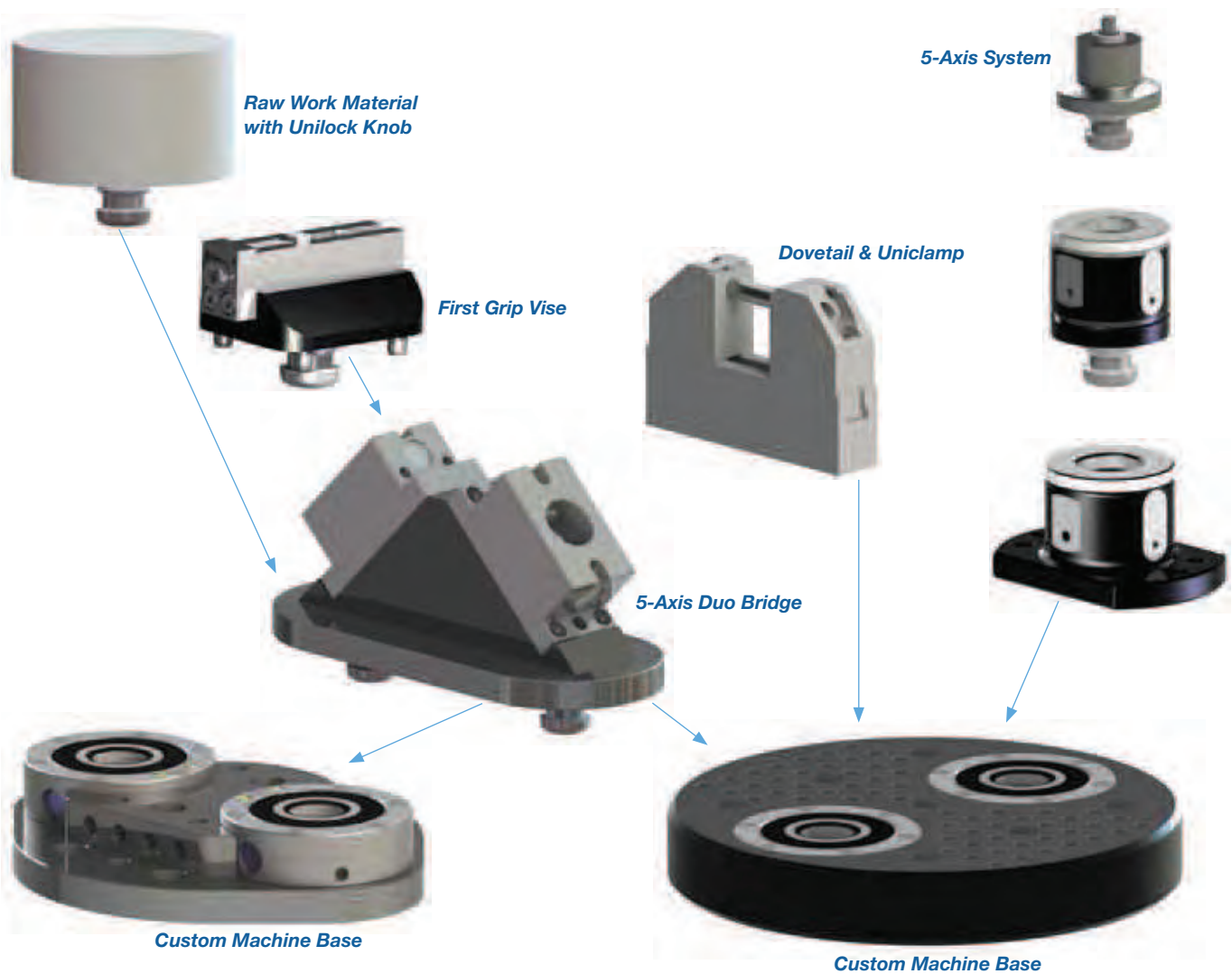
# MULTI-AXIS SYSTEMS OVERVIEW

## Workholding: When and Where You Need It

If your optimal work zone is directly over the center of the machine table, our low-profile grid plates with integrated Unilock zero-point clamping systems are available, out of the box, as turnkey solutions. By offering cap screw and dowel pin technology intermixed with zero-point Unilock chucks, our base plates allow you to quickly load virtually any workholding product, including 5-axis vises and dovetail clamping solutions.

If the workpiece needs to be elevated above the table and that feature is not built into the workholding component, Unilock can be used to raise the workholding or the workpiece. Unilock clamping knobs can also be attached directly to the bottom of the workpieces and within 25mm of the machining edge.

Unilock zero-point clamping chucks can also be surface mounted directly to the machine table. With an overall height of 46mm, the ASM 146 and ISM 160 chucks are excellent candidates when you need to quickly bolt on a quick-change Unilock receiver. Our 5-axis clamping products, Dovetail Grip and First Grip can also be directly affixed to a machine table, a grid plate or processed in Unilock chucks.



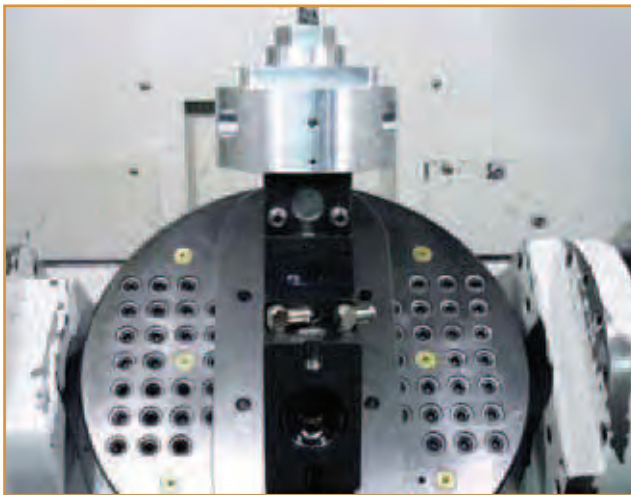
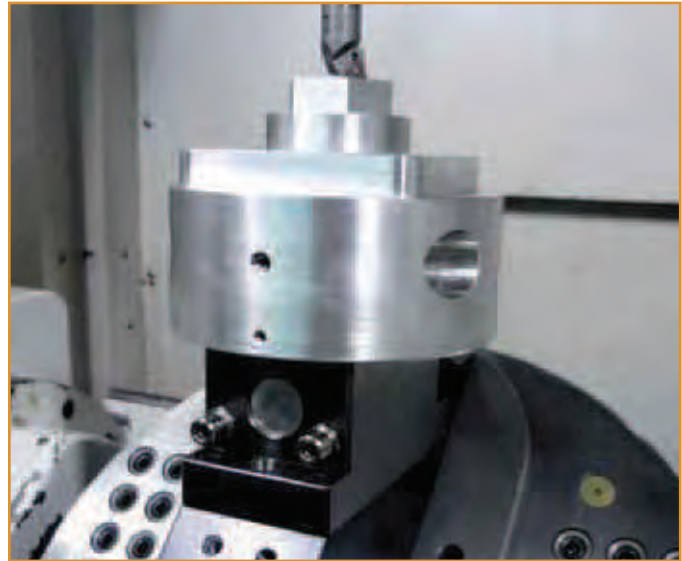


# 5-AXIS DUO BRIDGE DUAL 45° 105/65 BASE PLATES

This base plate can be mounted directly to the top of a 5-axis table or loaded through a pair of Unilock zero-point chucks. Two elevated Unilock chucks are mounted at 90 degrees to each other so one is out of the way while the other is being machined. Each cycle, two parts can be completed. Special base plates can be designed and manufactured, so there is no limit to the machine table configurations that can be supported by this solution.

**Features:**

- Process two workpieces at a time without interference
- Turbo option provides over 2,000 lbs of clamping force
- Two timing notches provide increased rigidity
- Timing pins can also locate off the sides of the chuck
- Plumbing is integrated into the bottom of the base plate



Catalog Number	Description	Chuck	Air Supply
15.270.365	DXB 200-45 5-Axis Duo Bridge	AFM 105/65 (2x)	Fittings or Through Base

- Fixture includes (1) SBA Knob and (1) SBB Knob





# FIRST GRIP

First Grip is a minimally intrusive clamping solution for 1st operations using raw bar or plate stock. Designed to bite into raw material, First Grip leaves an impression that in most cases will be machined away in a subsequent operation. First Grip can be used in a single jaw configuration or it can be used in series to hold larger workpieces. The fixed jaw can be removed allowing for unlimited workpiece sizes and shapes. For special fixture designs, dowel pin locations are provided to accurately position First Grip where you need it.

### Features:

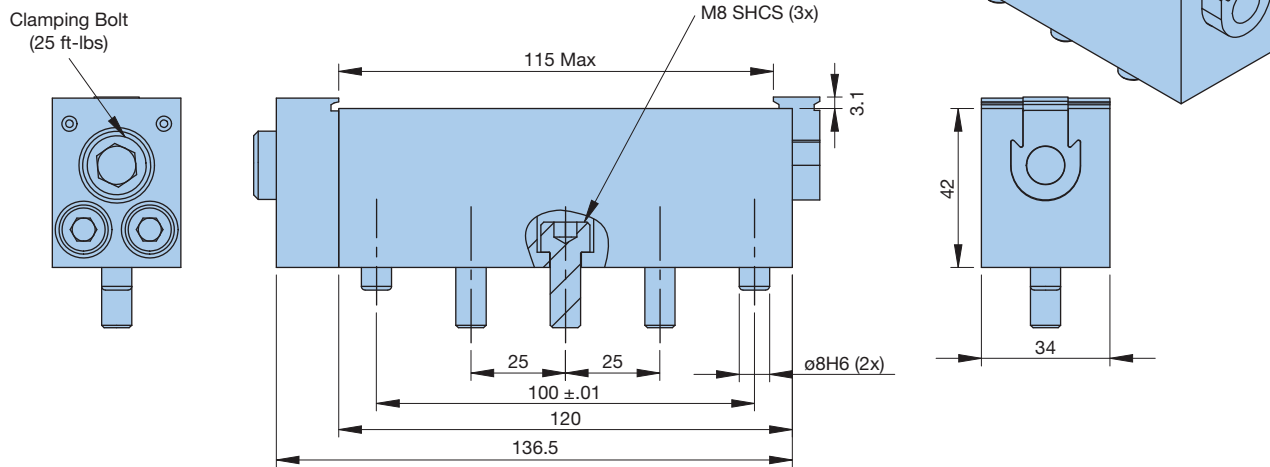
- No preparatory machining of workpieces is required
- Can be used in series for wide workpieces
- Available in two widths: 34mm and 50mm
- Unilock adapter plates are available



## First Grip 39

Catalog Number
15.282.120

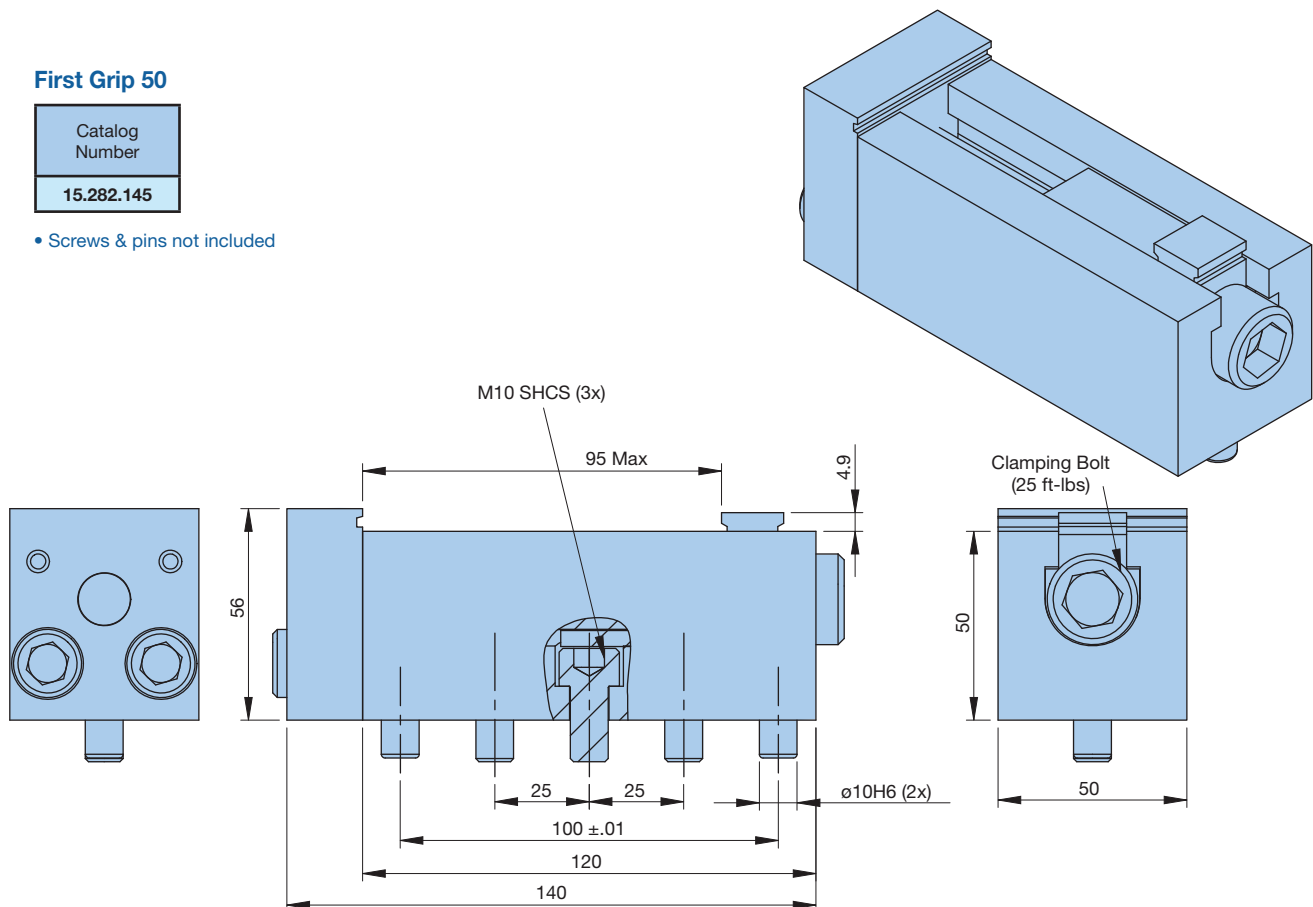
- Screws & pins not included



## First Grip 50

Catalog Number
15.282.145

- Screws & pins not included



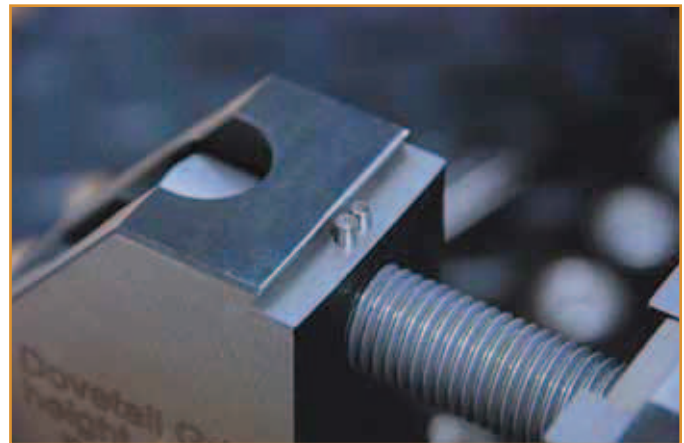
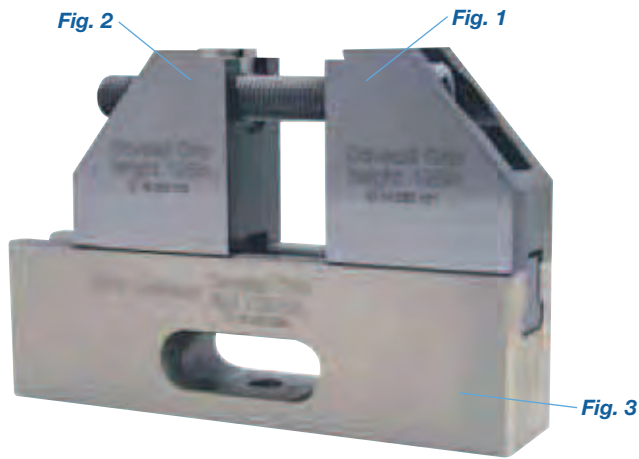
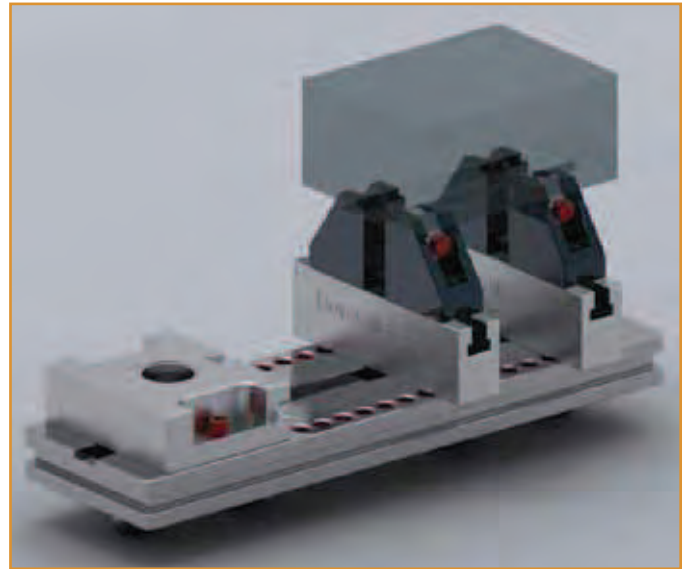
# DOVETAIL GRIP

Dovetail Grip is a universally adjustable clamping system where workpiece size is only limited by the length of the thread that pulls the jaws together. Each end of the jaw can be positioned anywhere on your machine table through the use of multiple bases that supports dowel pin position for 40mm and 50mm grid plates. The top of the bases are serrated allowing each jaw to be locked into the baseplate in 1.5mm increments.

Multiple jaw sets can be used on the same workpiece and the dovetail does not have to be cut to a specific size. The 78.9mm opening limit is only applicable when both jaws are attached to a single serrated base. Longer bases are available on request; however there is more system flexibility when multiple short bases are used. The serrated bases also support a vise jaw solution.

### Features:

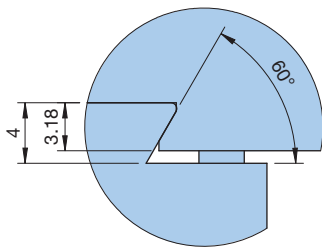
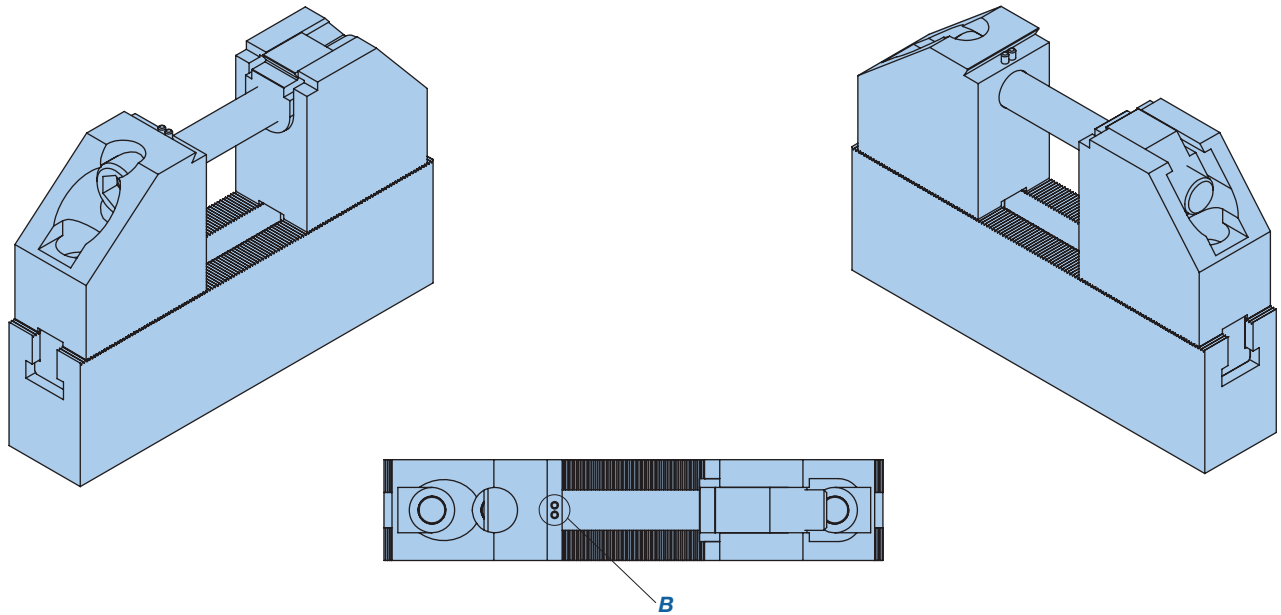
- Specific dovetail sizes are not required
- Infinitely adjustable when two base rails are use
- Can be used in sets to hold irregular shapes
- Conventional style vise jaws are available
- Multiple base rail lengths available



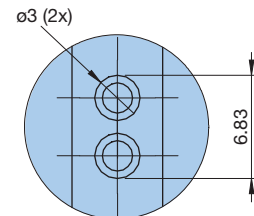
Catalog Number	Description	Figure
15.280.101	Fixed Jaw	1
15.280.102	Clamping Jaw	2
15.250.200†	Base Rail	3

† Longer base rails available upon request

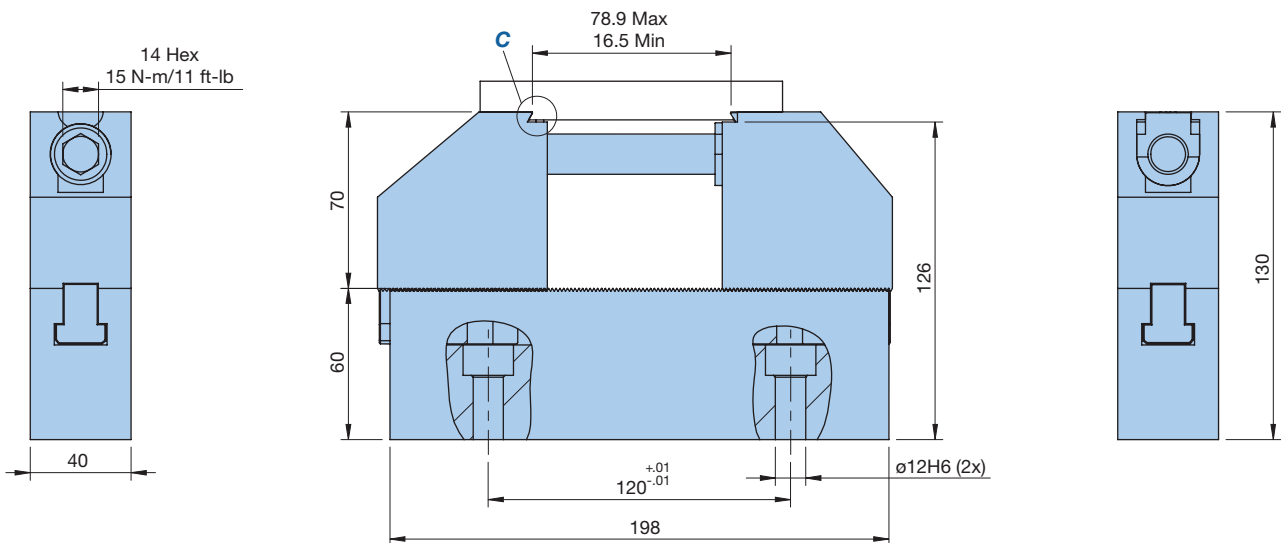




**Detail C**  
Scale 2:1



**Detail B**  
Scale 2:1



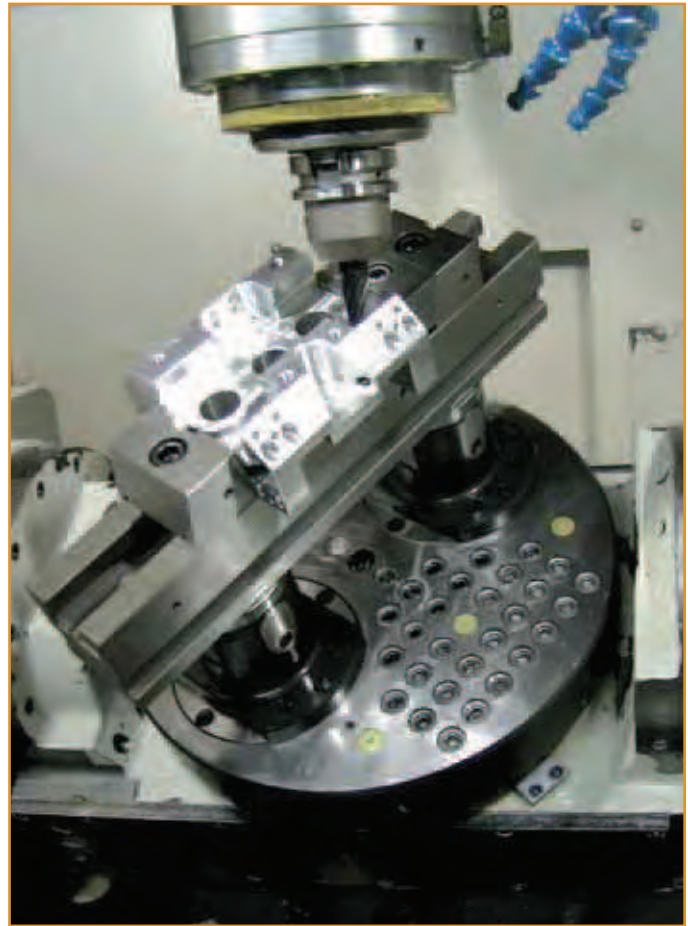
• All dimensions are in millimeters

# 5-AXIS RISER CHUCKS

## Unilock Riser Chucks, Extensions & Reductions

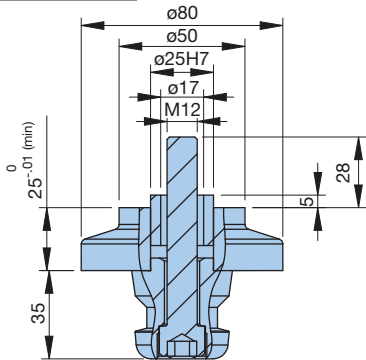
Unilock riser chucks have a working diameter of 80mm. They are available on base plates or as stacking modules in heights of 75mm and 100mm. Base plate chucks have 12mm dowel pin holes that locate chucks on 40mm and 50mm grid patterns. Base chucks can also have clamping knobs attached for use in other Unilock chucks or the stacking version can be used for elevation and clearance. All chucks open and close quickly with a single hex key.

The chucks are all capable of clamping any Unilock 40mm knob. By using a riser assembly, workpieces can be clamped 40mm from their edge. Extensions allow the clamping knob to be anchored 25mm from the workpiece edge. Extensions reduce the working diameter from 80mm to 50mm and add an additional elevation of 25mm or 50mm.



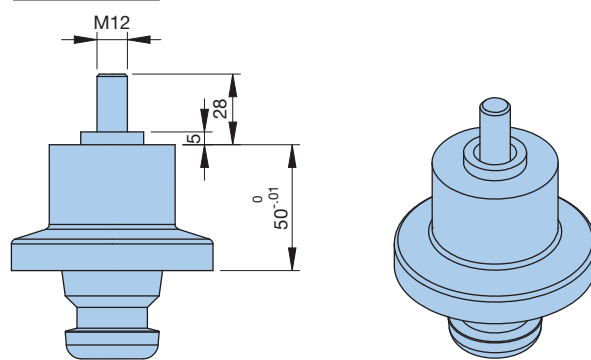
## Reduction

Catalog Number
<b>15.250.302</b>



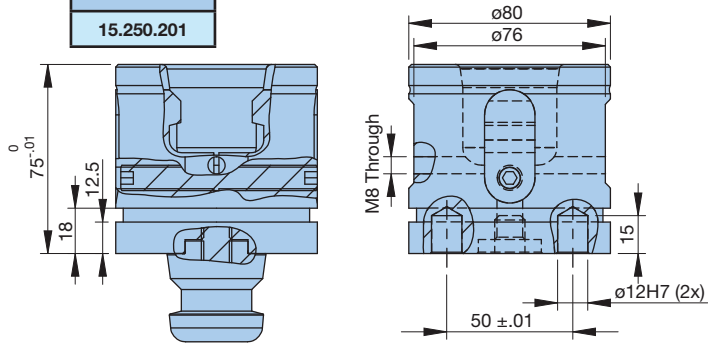
## Reduction

Catalog Number
<b>15.250.301</b>



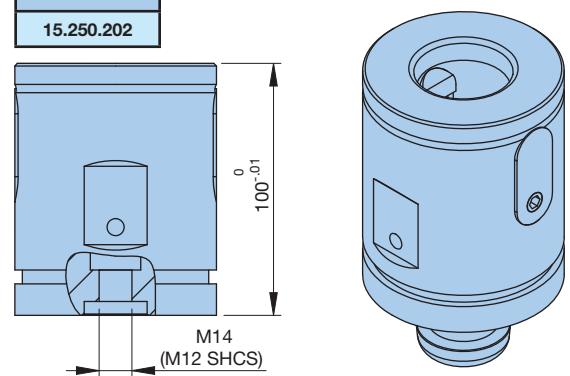
## Extension†

Catalog Number
<b>15.250.201</b>



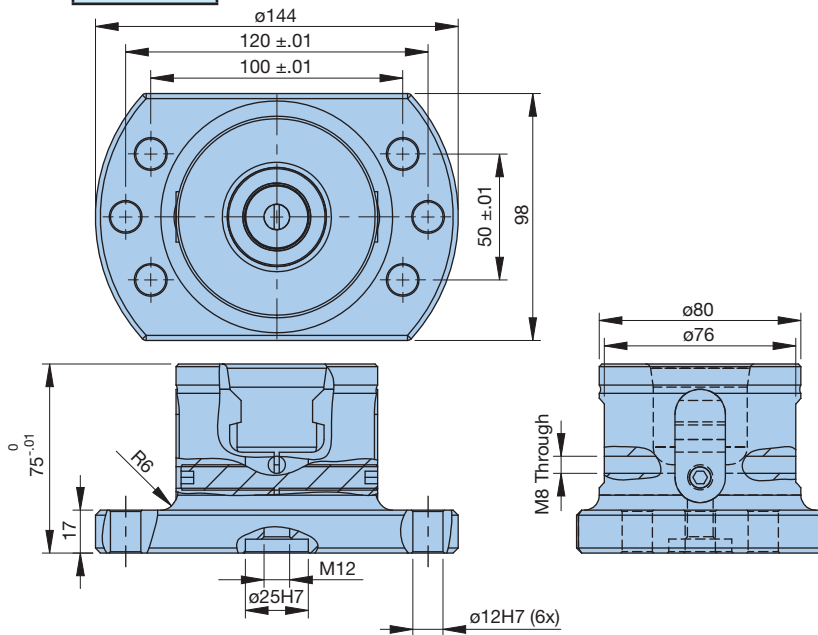
## Extension†

Catalog Number
<b>15.250.202</b>



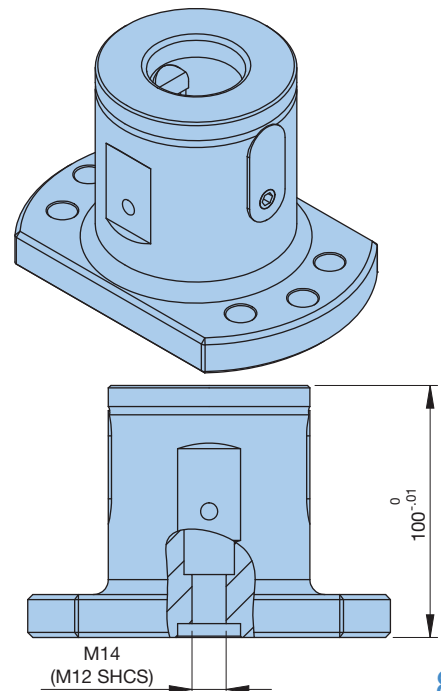
## Base†

Catalog Number
<b>15.250.101</b>



## Base†

Catalog Number
<b>15.250.102</b>



• All dimensions are in millimeters  
† 6mm hex wrench sold separately







## Mineral Cast Systems

ROC® mineral cast solutions increase capacity and throughput by reducing burden and transport weights. Much like a skyscraper, we produce a steel substructure for stability. Ours are precision machined and filled with ground positioning components and fasteners. We then fill or encapsulate the assembly with a composite structure of mineral particles and epoxy resin. The result is a working platform that is light weight, stable and damped.

Mineral particles make up about 90% of the added weight, with the remaining being resin and curing agents. The added composite structure has an excellent density to weight ratio of 2.3 kg/dm<sup>3</sup>. The finished composite structure is produced without heat to preserve the integrity of the precision machined surfaces and clamping components.

ROC® mineral cast media has low thermal conductivity and excellent resistance to corrosion. As the mineral cast component has low tensile and impact strength, unintended impacts to the composite structure will not disturb the steel positioning and clamping components. With attenuation rates 6 to 10 times better than grey cast iron, ROC® mineral cast solutions can increase cell output.

ROC® mineral cast columns can be designed and built to customer specifications. We do offer standard columns for horizontal machining center applications with integrated Unilock zero-point chucks or grid patterns.

Ergonomics and machine capacity aspects of manufacturing get easier with ROC® mineral cast workholding solutions, many of which are 50% lighter than alternatives. As companies look to standardize their operator interfaces, they should also look to ROC® mineral cast solutions to package these standards.

## Features:

- All critical metal surfaces are finish machined after molding
- Customer specific solutions are available upon request
- Weight reduced solutions do not induce vibration
- Hollow structures can be filled, solid structures can be encased
- Mineral cast surfaces are corrosion resistant



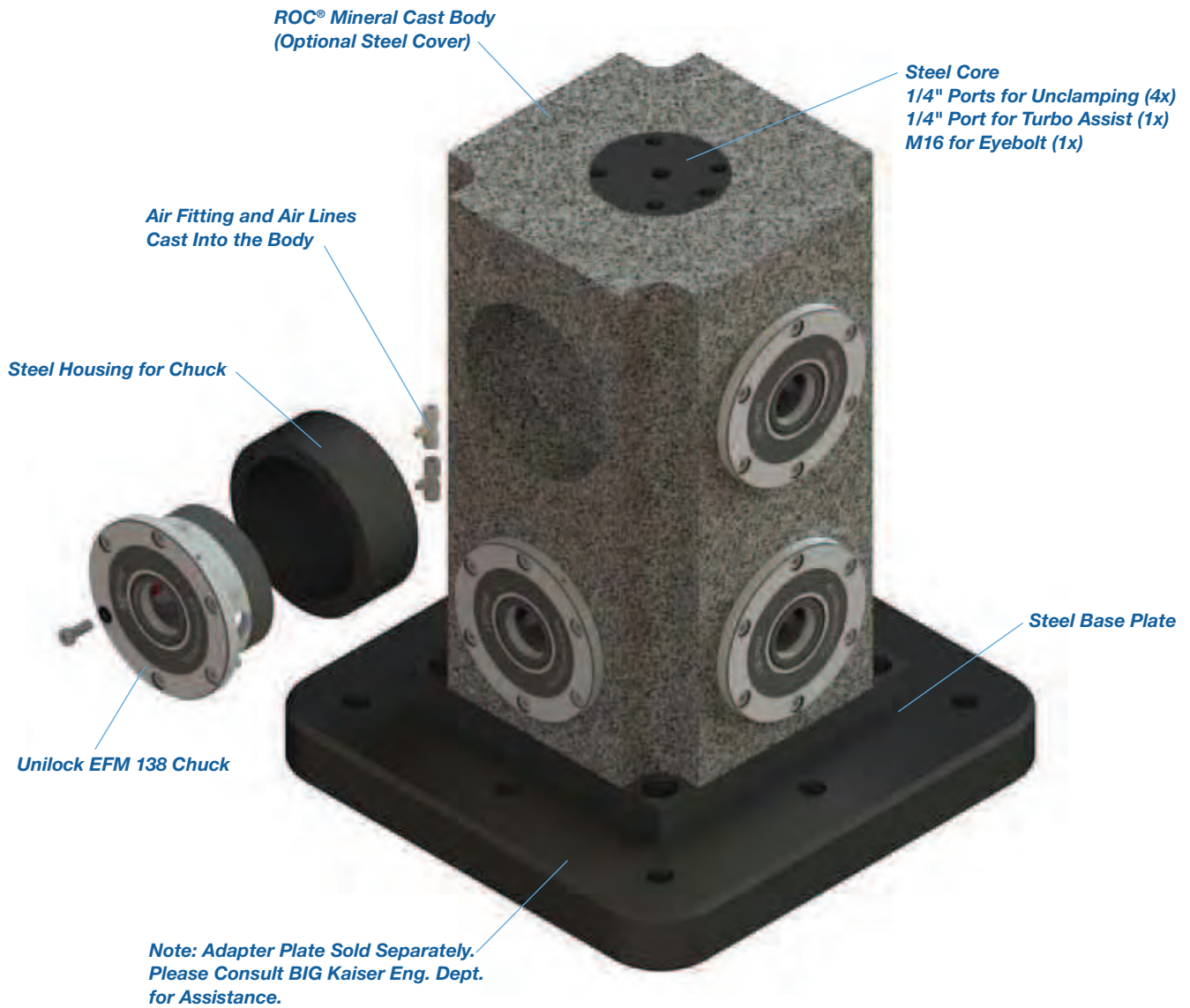
**Columns** ..... Pg. 90-91



**Grid Columns** ..... Pg. 92-93



**Pallets, Riser Pads & Custom Solutions** ..... Pg. 94-95



Catalog Number	Fig. (Pg. 91)	Shape	Steel Core	Steel Cover	Metric				Inch				Number Of Chucks		
					Length	Width	H1	H2	Length	Width	H1	H2			
15.100.000	1	Cross	✓	—	270	270	450	—	10.630	10.630	17.717	—	8		
15.100.001		Cross	✓	—			—	650			—	25.591	12		
15.100.002	2	Cross	—	✓	270	270	450	—	10.630	10.630	17.717	—	8		
15.100.003		Cross	—	✓			—	650			—	25.591	12		
15.100.004	3	Cube	—	✓	238	238	450	—	9.370	9.370	17.717	—	8		
15.100.005		Cube	—	✓			—	650			—	25.591	12		
15.100.006	4	Rectangle	—	✓	220	399	450	—	8.661	15.709	17.717	—	8		
15.100.007		Rectangle	—	✓			—	650			—	25.591	12		
15.100.008		Rectangle	—	✓		499	499	450		—	19.646	19.646	17.717	—	8
15.100.009		Rectangle	—	✓				—		650			—	25.591	12

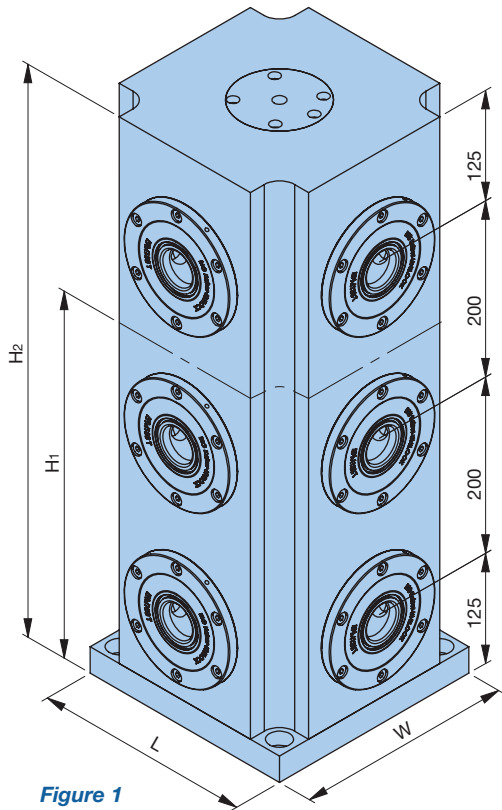


Figure 1

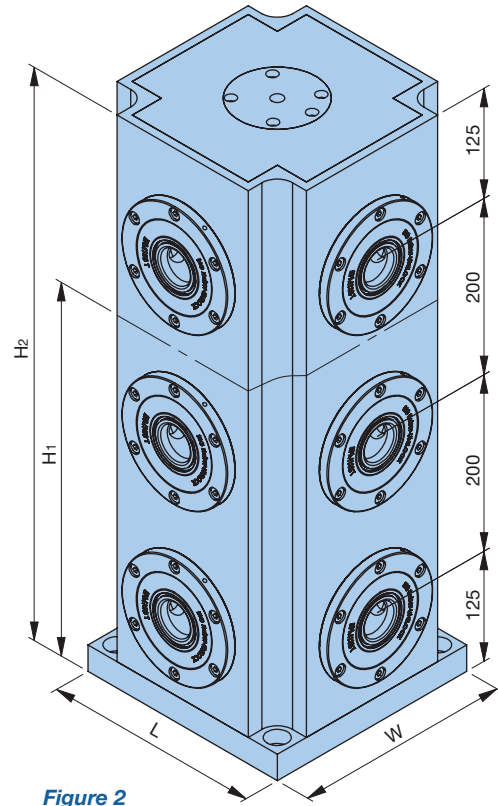


Figure 2

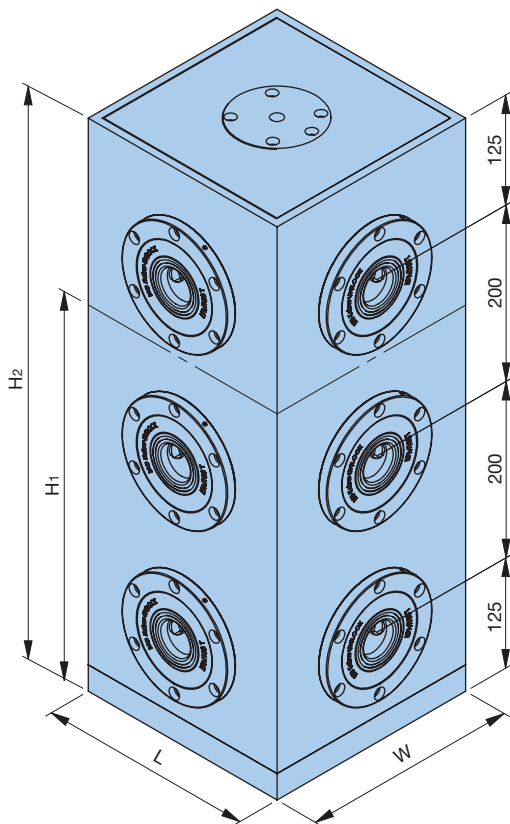


Figure 3

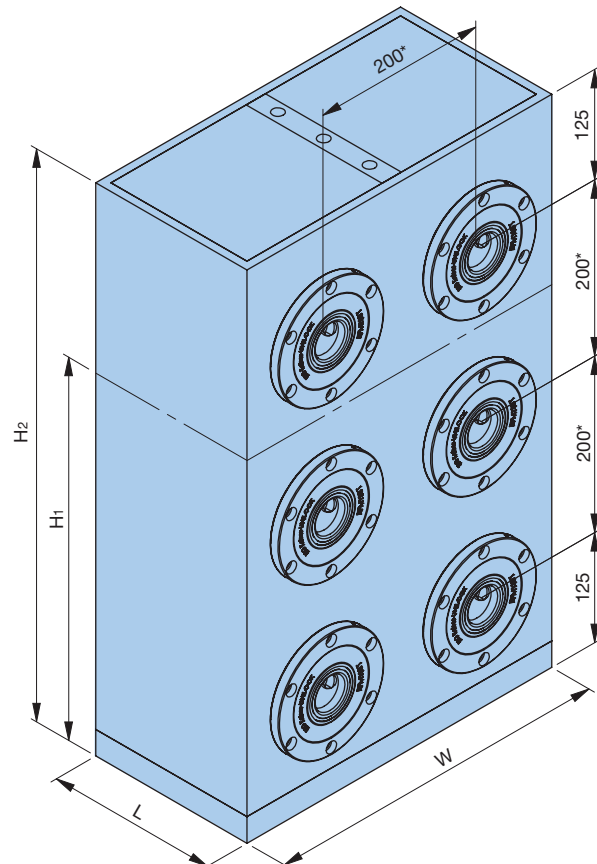
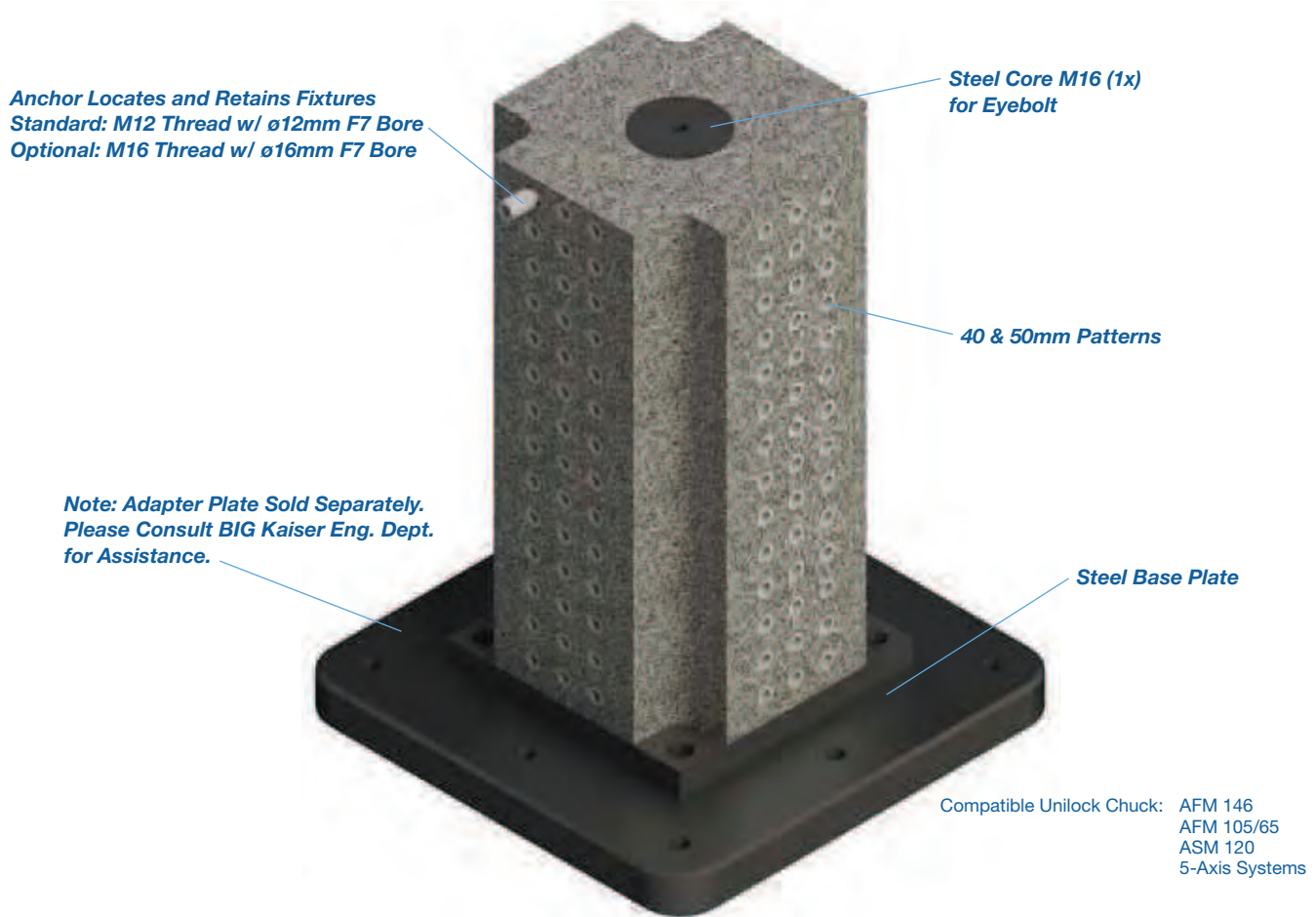


Figure 4

• All dimensions are in millimeters

\* 250mm spacing also available

# GRID COLUMNS



## 40mm Grid Pattern

Catalog Number	Fig.	Shape	Steel Core	Steel Cover	Metric			Inch						
					Length	Width	Height	Length	Width	Height				
15.100.010	1	Cross	✓	—	300	300	600	11.811	11.811	23.622				
15.100.012		Cross	✓	—			750			29.528				
15.100.014	2	Cube	✓	✓	300	300	600	11.811	11.811	23.622				
15.100.016		Cube	✓	✓			750			29.528				
15.100.018	3	Rectangle	✓	✓	400	200	600	15.748	7.874	23.622				
15.100.020		Rectangle	✓	✓			750			29.528				
15.100.022		Rectangle	✓	✓			500			200	750	19.685	7.874	29.528
15.100.024		Rectangle	✓	✓			630			200	800	24.803	7.874	31.496

## 50mm Grid Pattern

Catalog Number	Fig.	Shape	Steel Core	Steel Cover	Metric			Inch						
					Length	Width	Height	Length	Width	Height				
15.100.011	4	Cross	✓	—	300	300	600	11.811	11.811	23.622				
15.100.013		Cross	✓	—			750			29.528				
15.100.015	5	Cube	✓	✓	300	300	600	11.811	11.811	23.622				
15.100.017		Cube	✓	✓			750			29.528				
15.100.019	6	Rectangle	✓	✓	400	200	600	15.748	7.874	23.622				
15.100.021		Rectangle	✓	✓			750			29.528				
15.100.023		Rectangle	✓	✓			500			200	750	19.685	7.874	29.528
15.100.025		Rectangle	✓	✓			630			200	800	24.803	7.874	31.496



## 40mm Grid Pattern

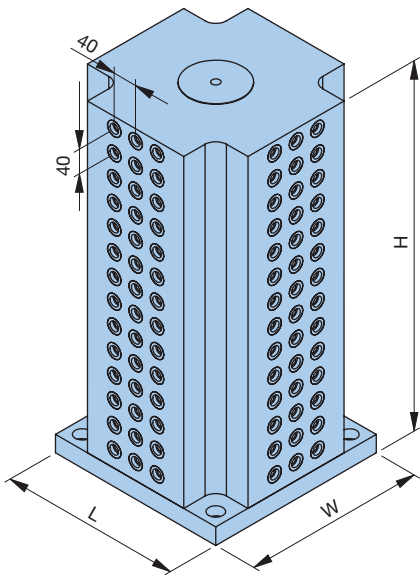


Figure 1

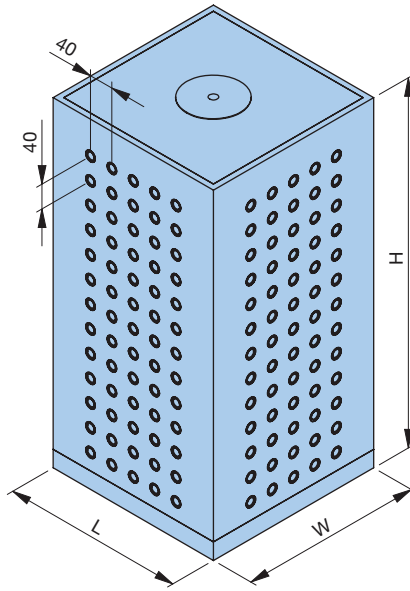


Figure 2

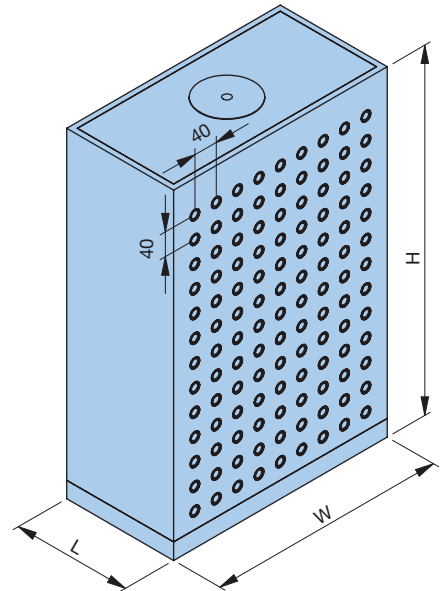


Figure 3

## 50mm Grid Pattern

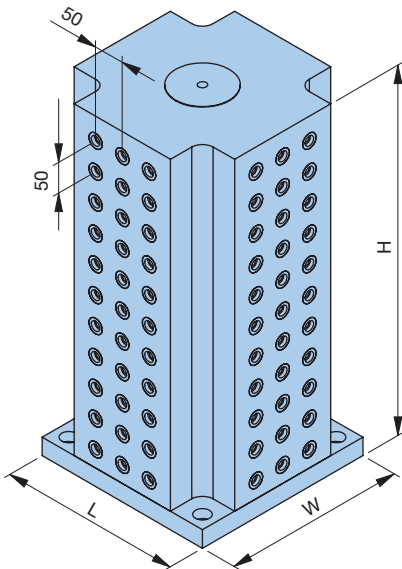


Figure 4

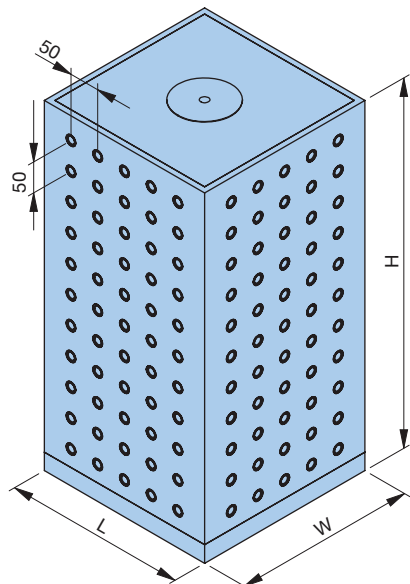


Figure 5

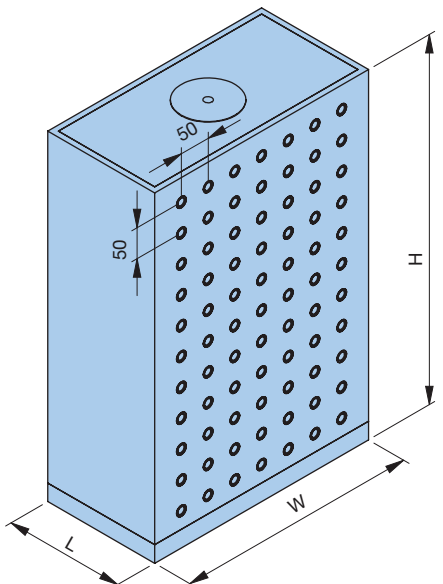


Figure 6

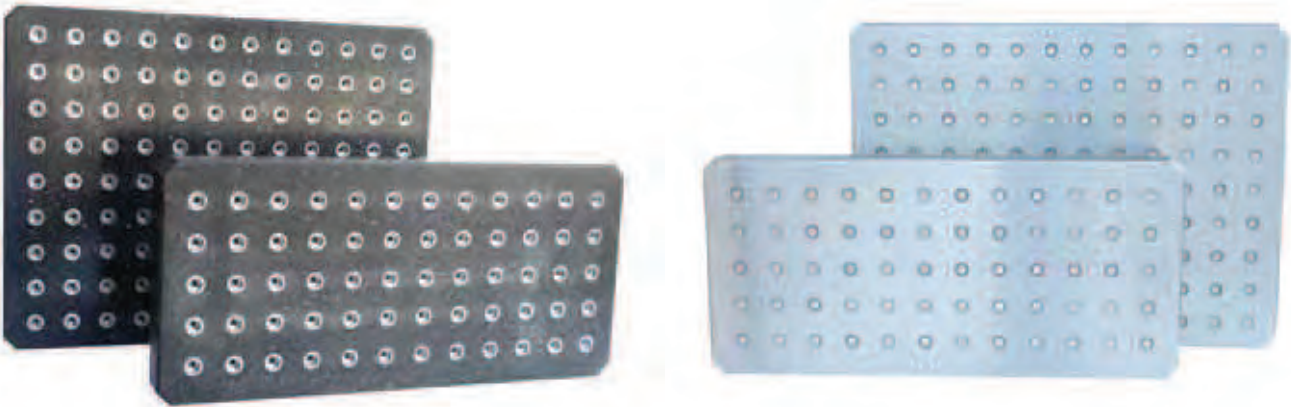
• All dimensions are in millimeters

# PALLETS, RISER PADS & CUSTOM SOLUTIONS



### Grid Clamping Pallets

Especially made for the requirements of new machining centers, we offer grid clamping pallets produced with the help of ROC® mineral casting, including a steel cover on the top of the pallet for optimal stability.



### Weight Reduction

All clamping pallets and devices can be manufactured as light as possible and filled up with ROC® mineral cast. Threaded inserts or other construction elements can be cast into the pallets. Pneumatic lines are incased in the casting and completely airtight.



## Riser Pads

For a more flexible use of your vices, we offer riser pads for many popular vices brands. With a width up to 4.921", vices can be elevated on our ROC® vice pads according to their mounting requirements.

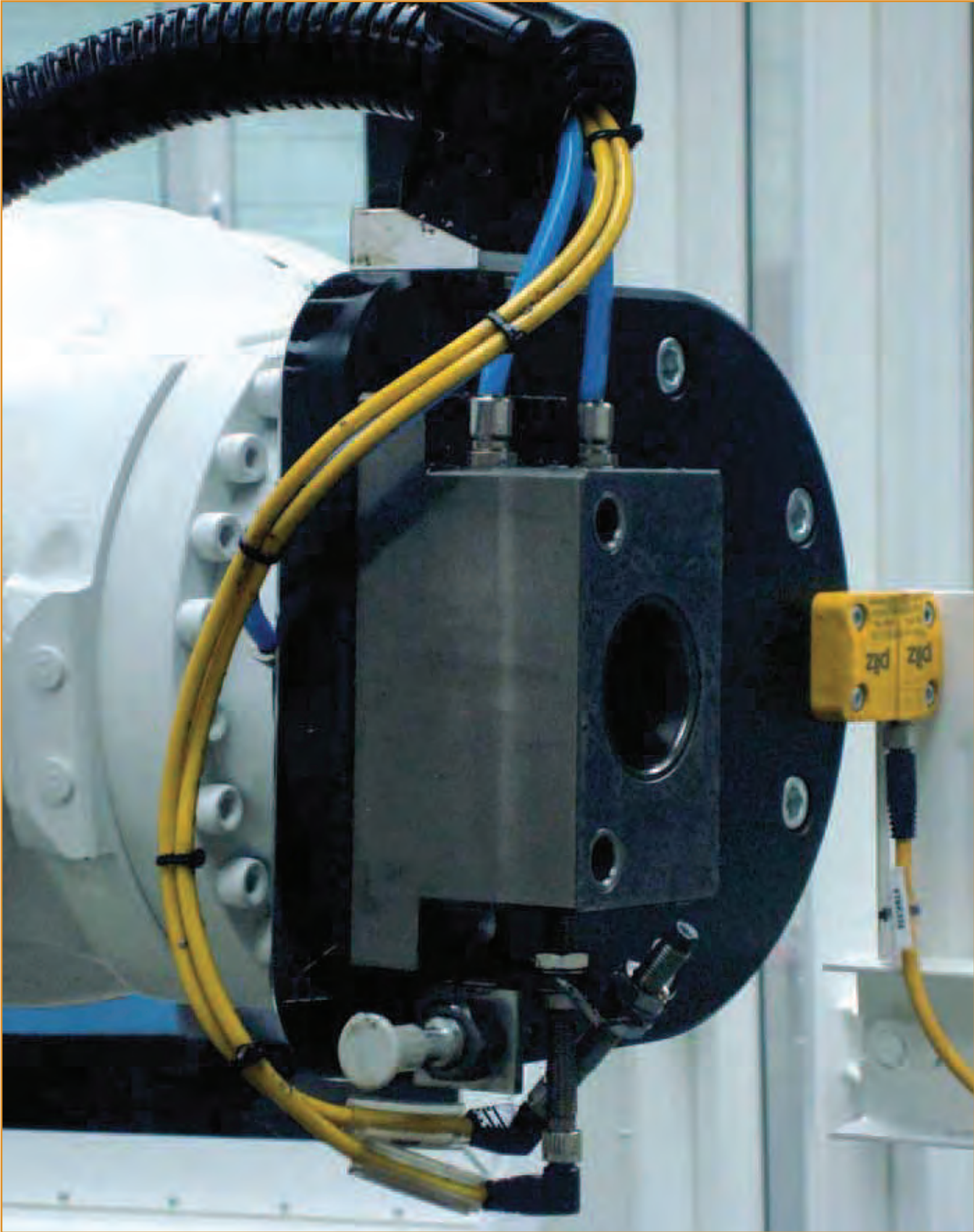


## Customized Items

ROC® mineral cast products can be customized to meet your specific needs. We gladly provide our know-how in this area for maximizing your designs. We look forward to giving you advice on the use of ROC® mineral cast technology for your own components and to show you possible cost-reducing potential.









## Robot Interfaces

When using robots to pick and place fixtured workpieces into machine tools, Unilock can be used on the table to control workpiece placement and clamping. Unilock can also be used on the end of the robot arm as the pick interface.



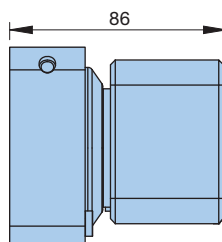
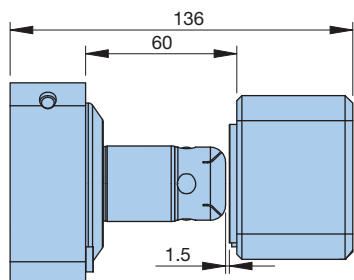
**Twin Pin Gripper** .....Pg. 98-99



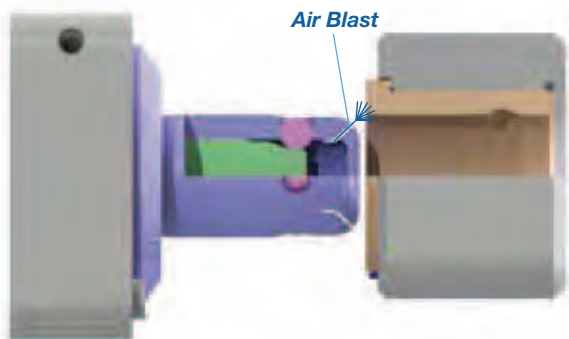
**Clamping Knob Gripper** .....Pg. 100-101

# TWIN PIN GRIPPER

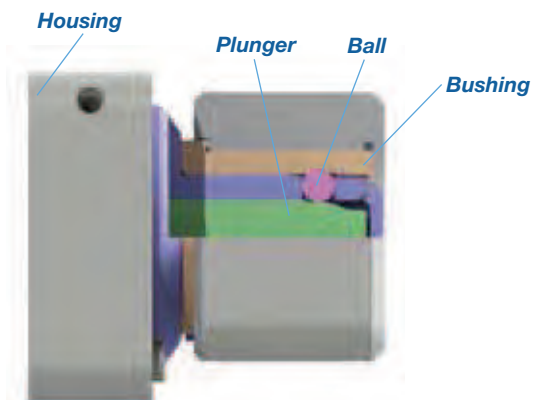
Sold as a complete assembly, the gripper is located on the robot arm or an adapter plate with two dowel pins. Four M8 threaded holes are used to secure it in place. The coupling is also oriented on the pallet with two dowel pins. Three M10 cap screws are used to attach the couplings to fixture plates.



• All dimensions are in millimeters



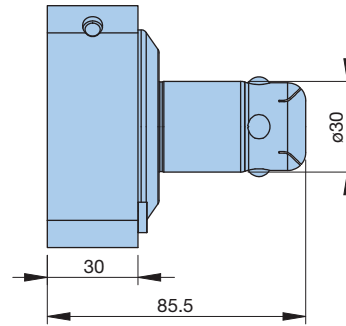
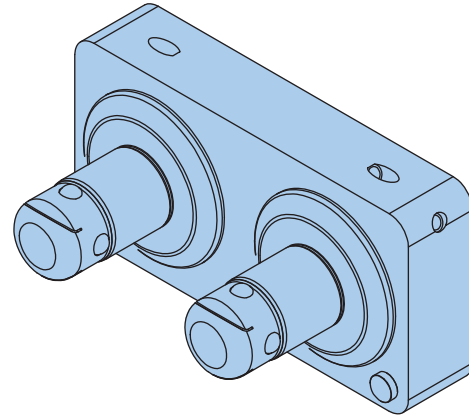
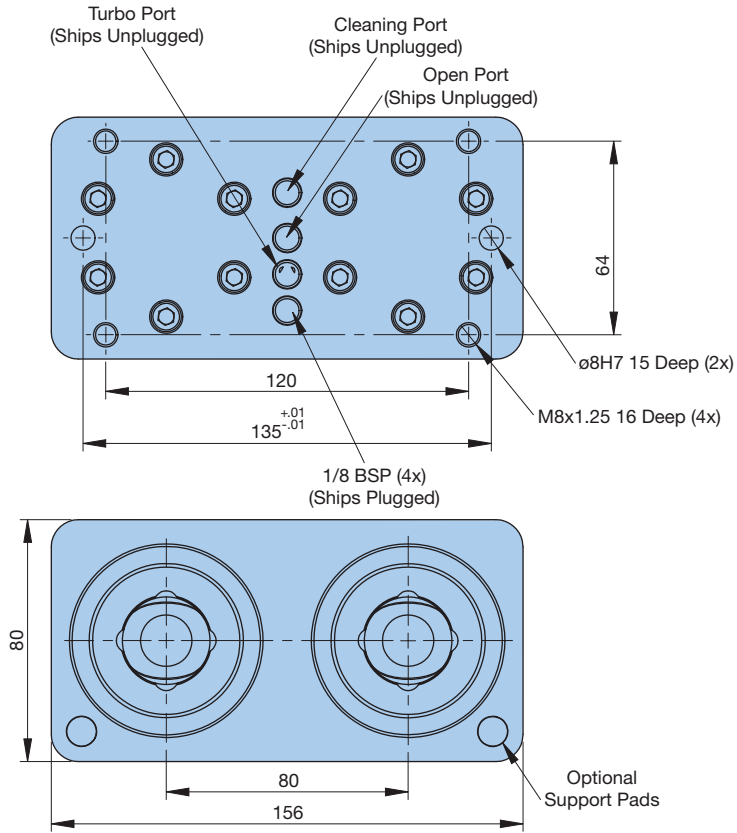
Unclamped



Clamped

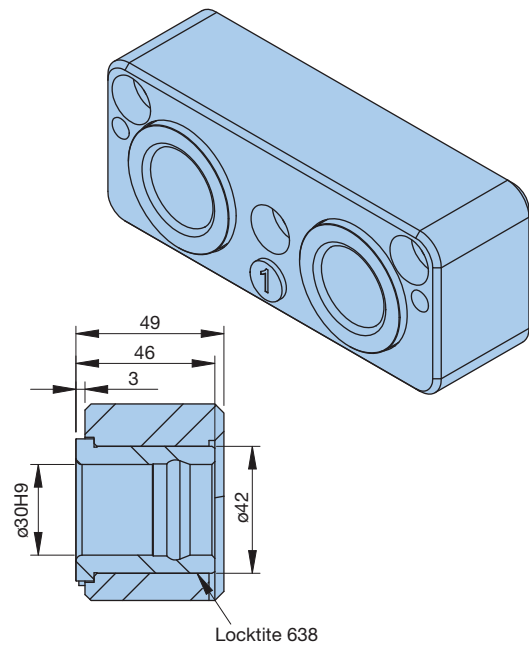
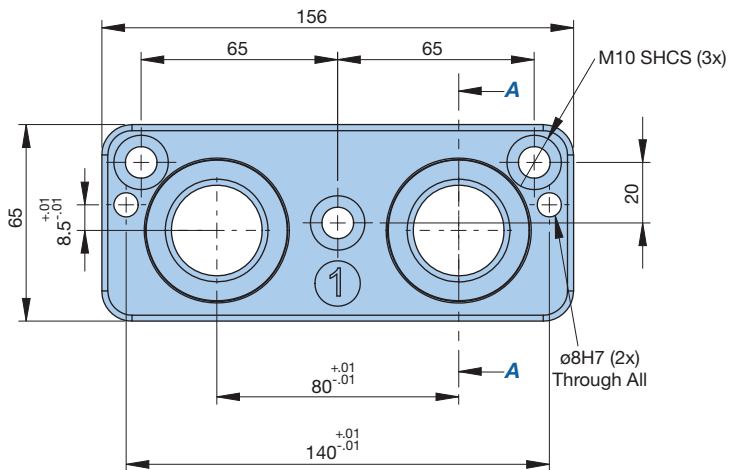
## Robot Gripper RK1

Catalog Number
<b>15.279.200</b>



## Robot Gripper Pallet Block PKV1

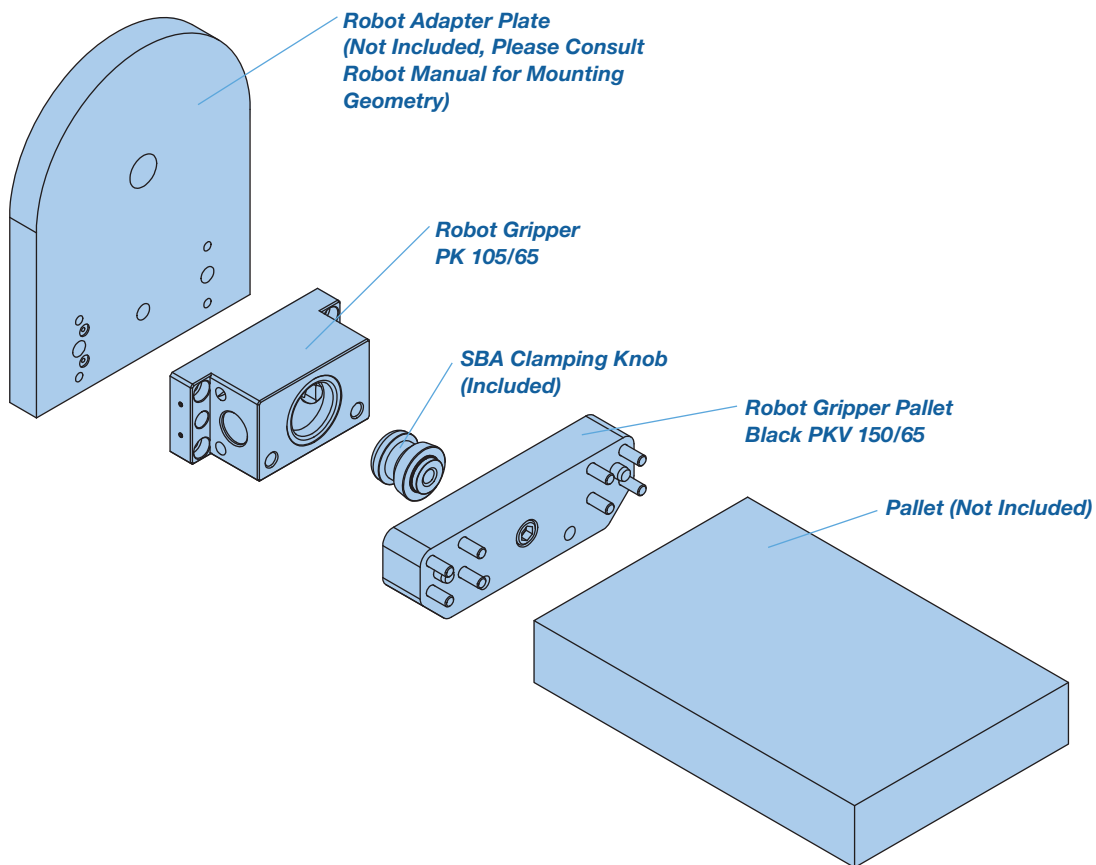
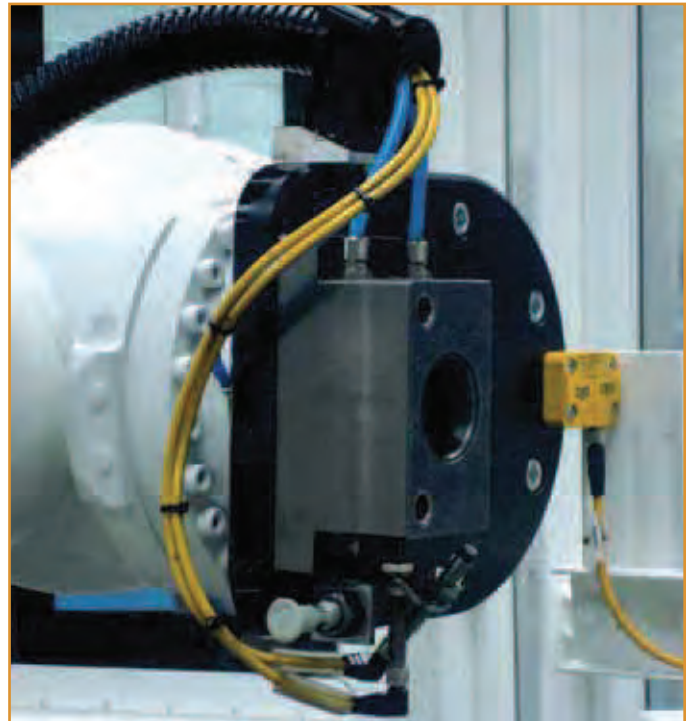
Catalog Number
<b>15.279.210</b>



Section A-A

# CLAMPING KNOB GRIPPER

Any Unilock chuck and clamping knob combination can be used as a robot gripper and coupler. In order to keep the pallet coupling to a minimal thickness, we offer a version of our AFM 105/65 chuck that has two dowel pin holes in the face to help support the pallet. These couplings can be purchased as an assembly or the clamping knob and pins can be attached directly to the pallets.

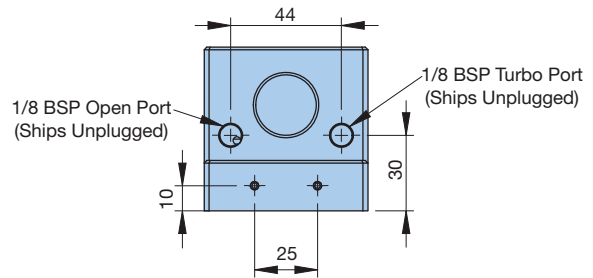
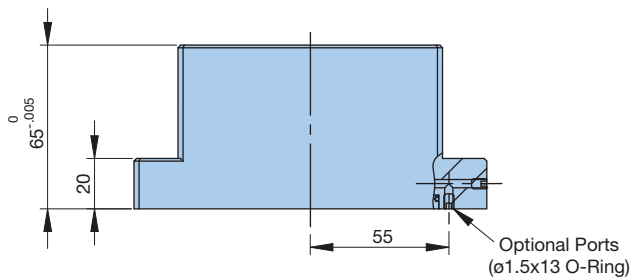
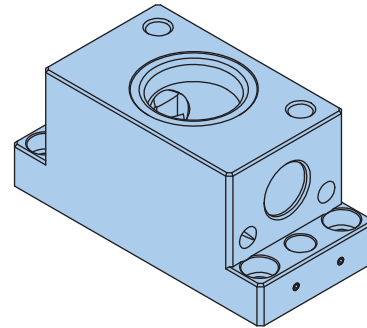
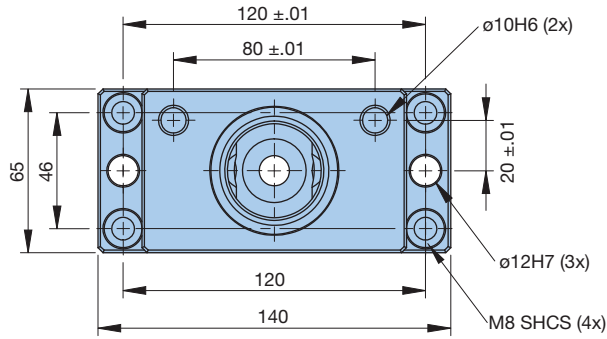




## Robot Gripper PK 105/65

Catalog Number
15.272.166

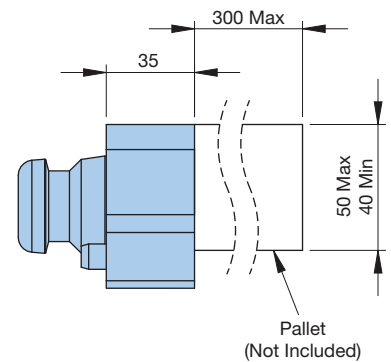
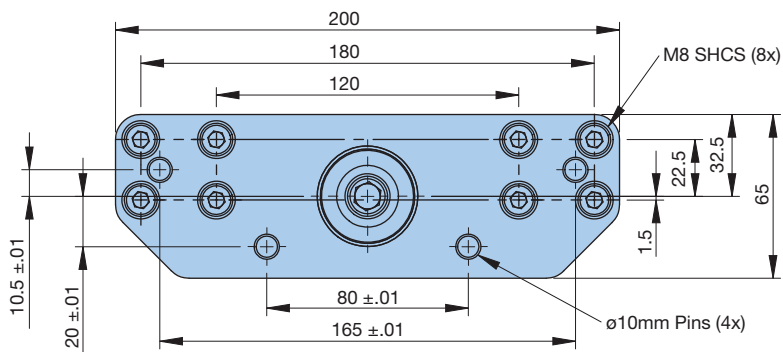
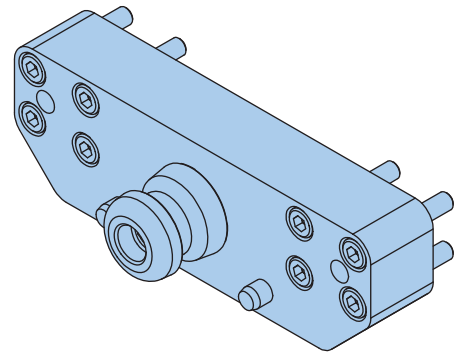
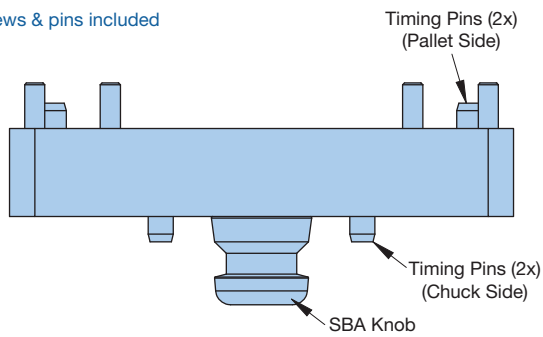
- No hardware included



## Robot Gripper Pallet Block PKV 105/65

Catalog Number
15.279.215

- Screws & pins included



- All dimensions are in millimeters



## Accessories

For proper operation of the Unilock chucks, air fittings, valves and supply systems are required. Please consult with BIG Kaiser Eng. Dept. for the proper selection.

Other accessories help with the maintenance and use of the system for various functions. Please consult BIG Kaiser Eng. Dept. for proper selection.



**Chuck Air Fittings** .....Pg. 104-105



**Subplate Air Fittings** ..... Pg. 106



**Positioning Pins & Bushings** .....Pg. 107



**Dust Covers** ..... Pg. 107



**Toe Clamps** .....Pg. 107



**Mounting Rings & Rotary Table Kits** ..... Pg. 107



**Repair & Replacement Components** .....Pg. 107

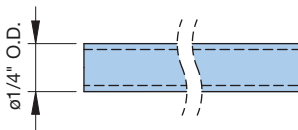
# CHUCK AIR FITTINGS

Air fittings and parts are sold separately or as a kit.  
 Other valve options available upon request. Please consult  
 BIG Kaiser Eng. Dept.



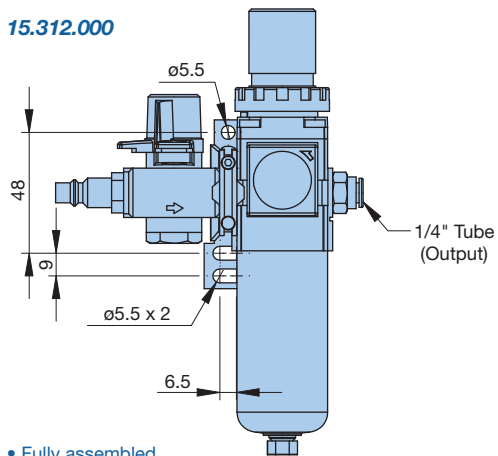
Air Kit Catalog Number	Contents		
	Catalog Number	Description	Quantity
15.350.000	15.312.000	Filter Regulator Assembly	1
	15.350.009	Standard Hand Valve	1
	15.350.020	Uni. Thread 1/4" Tube	1
	15.350.021	Uni. Thread 1/8 Pipe x 1/4" Tube	1
	15.350.001	1/4" OD Tube	10 ft

## 15.350.001



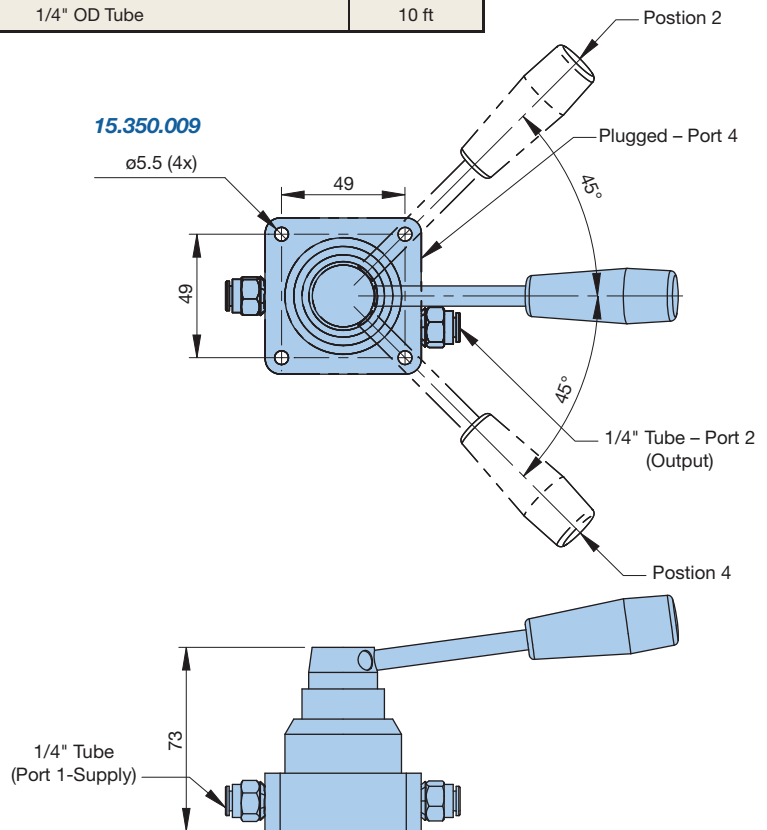
• Sold by the foot

## 15.312.000



• Fully assembled  
 • All dimensions are in millimeters

## 15.350.009

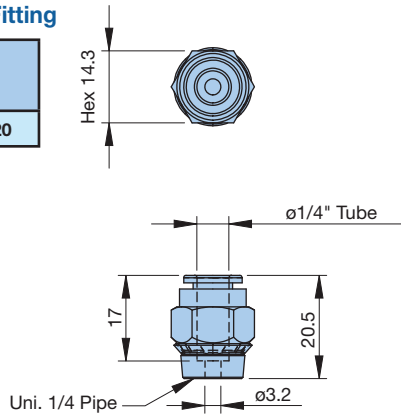


• Fully assembled  
 • Other options available  
 • All dimensions are in millimeters  
**Vent - Port 3  
 Do Not Plug**



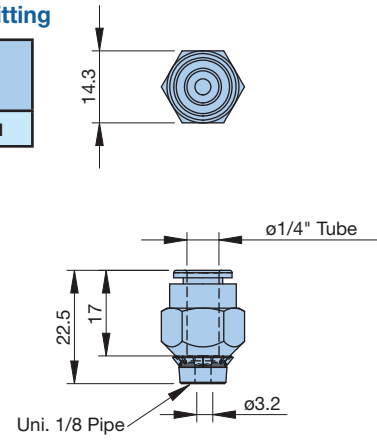
## 1/4 Pipe Fitting

Catalog Number
15.350.020



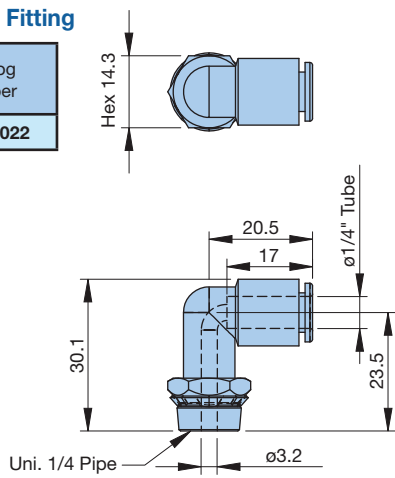
## 1/8 Pipe Fitting

Catalog Number
15.350.021



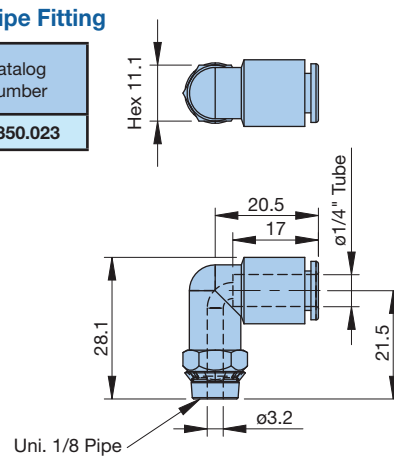
## 1/4 Pipe Fitting

Catalog Number
15.350.022



## 1/8 Pipe Fitting

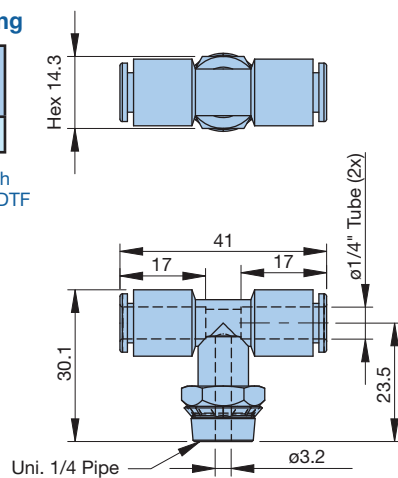
Catalog Number
15.350.023



## 1/4 Pipe Fitting

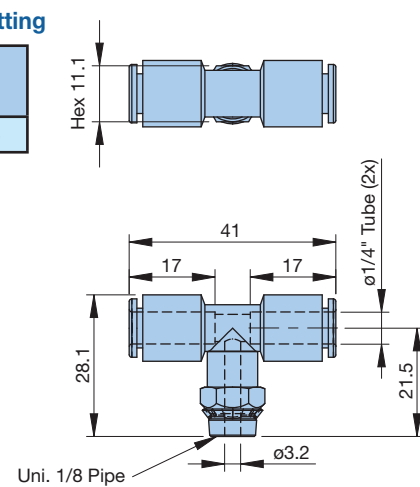
Catalog Number
15.350.024

- Compatible with Rc, GNDT & NDTF

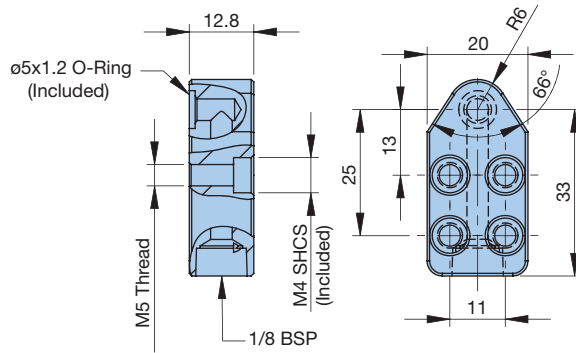


## 1/8 Pipe Fitting

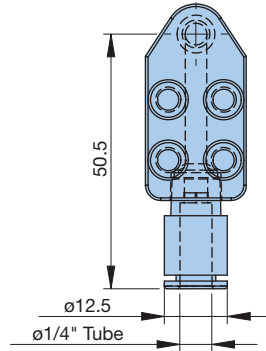
Catalog Number
15.350.025



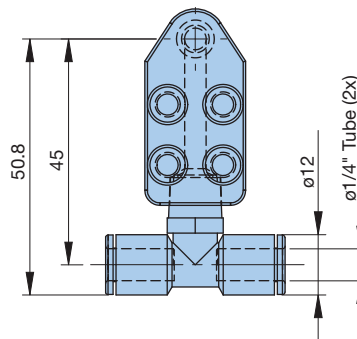
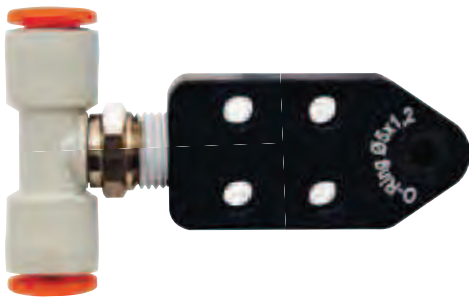
# SUBPLATE AIR FITTINGS



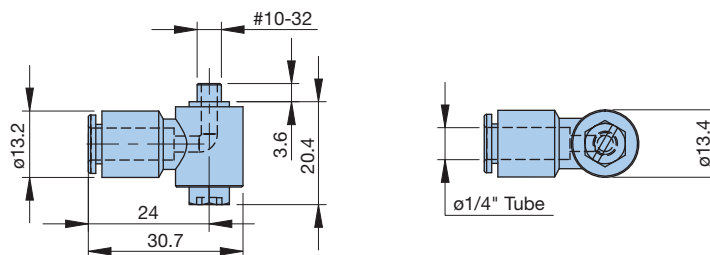
Catalog Number
15.260.727



Catalog Number
15.260.728



Catalog Number
15.260.729



Catalog Number
15.350.260



**Positioning Pins & Bushings**

Catalog Number	Description
15.260.309	Positioning Bushing - Indexing
15.260.350	Positioning Pin 12mm Indexing
15.260.351	Positioning Pin 8mm Indexing
15.260.352	Positioning Pin 10mm Indexing
15.261.169	Positioning Pin 25mm Indexing
15.270.420	Positioning Pin - ASM 120 - 12/10
15.270.422	Positioning Pin - ASM 120 - 12/12
15.270.426	Positioning Pin - ASM 120 - 12/16
15.270.427	Indexing Pin ø14mm
15.270.428	Indexing Step Pin ø8/ø14mm
15.270.429	14mm Indexing Key



**Dust Covers**

Catalog Number	Description
15.260.170	Chip Guard 170
15.270.090	Chip Guard 90
15.270.120	Chip Guard 120
15.270.130	Chip Guard 138
15.260.310	Chip Guard Clamping Knob M8
15.260.790	M8 SHCS Cover (Pkg of 6)

• Clamping knobs included with dust covers



**Toe Clamps**

Catalog Number	Description
15.270.403	Adj. Toe Clamp - S30
15.270.404	Adj. Toe Clamp - S40
15.270.405	Adj. Toe Clamp - S50
15.270.450	Toe Clamp Blank
15.270.454	Toe Clamp Blank (Set of 4)



**Mounting Rings & Rotary Table Kits**

Catalog Number	Description
15.260.200	ø217mm Mounting Ring for MSM 170
15.260.205	ø210mm Mounting Ring for MSM 170
15.260.215	Ctr. Plug ø2" for ø210mm Ring
15.270.186	ø170mm Split Ring (ASM 120)

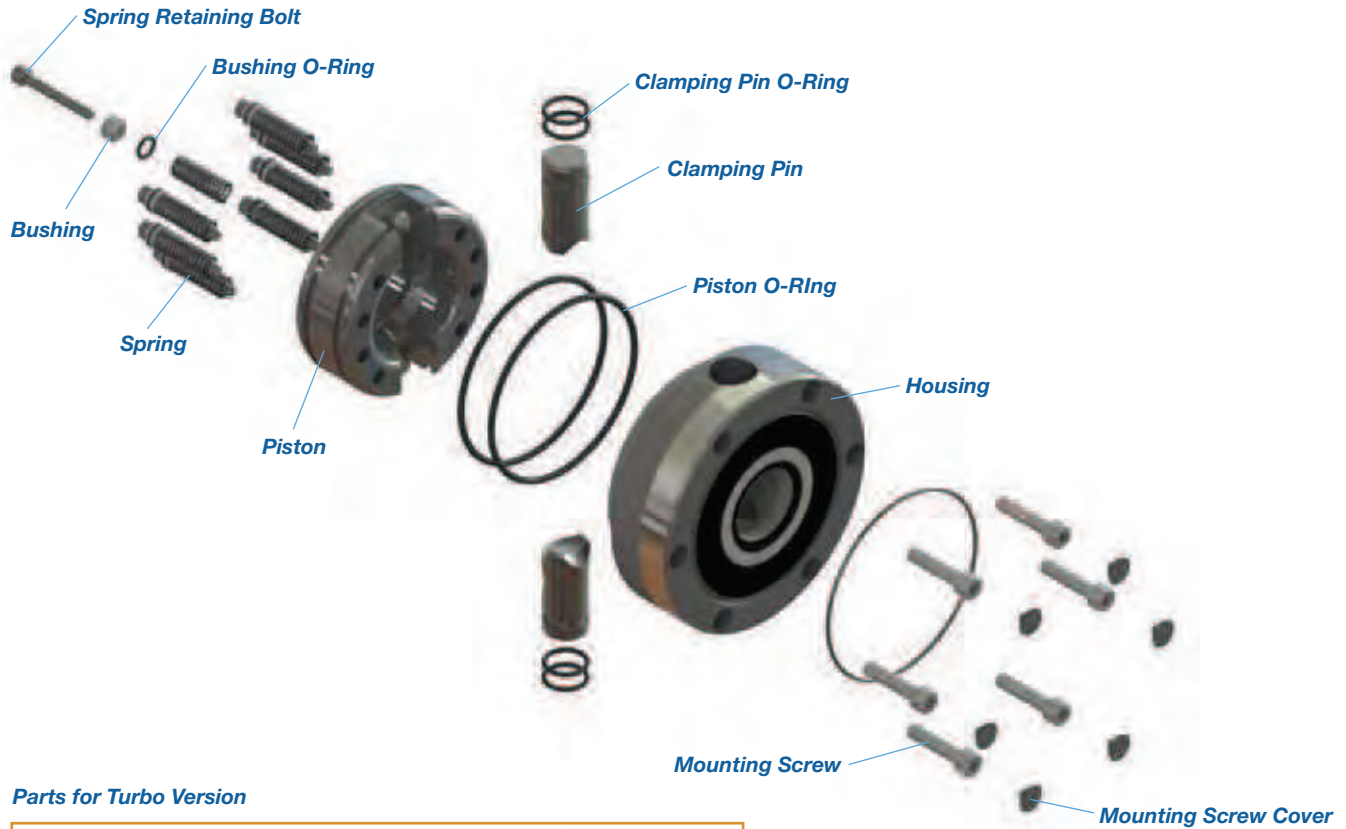


**Repair & Replacement Components**

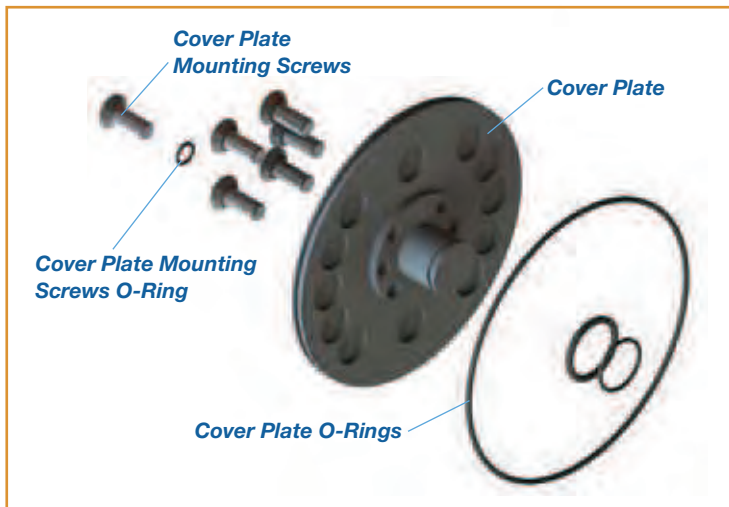
Catalog Number	Description
15.260.792	O-Ring, Bottom Port Unilock
15.260.794	O-Ring, Face Unilock ESM 138
15.260.795	O-Ring, Spring Assembly (Pkg of 8)
15.260.796	O-Ring, Piston Unilock ESM 138
15.270.191	O-Ring, Clamp Pin Outside - Viton
15.270.192	O-Ring Kit for Unilock ESM 138
15.270.198	O-Ring Kit for Unilock ASM 120
15.272.190	Repair Kit for ESM 176 Turbo - Viton







### Parts for Turbo Version



- Min. operating air pressure: 75 PSI
- Min. recommended air line:  $\phi$ .250" O.D.
- Air must be filtered to a maximum particle size of 10 $\mu$ m, dried, and lubricated
- Use of dust covers is recommended for chucks that are not in use
- Close all air connections when chuck is not in use
- For vertical wall mounting, chuck orientation should be such that the clamping pins are horizontal
- For longer term storage, spray rust preventative into air ports and cycle the chucks 4-5 times
- For more in-depth service instructions please consult BIG Kaiser Engineering Department

BIG Kaiser Precision Tooling Inc. is not just zero-point workholding. We're boring tools, tool holders, cutting tools, tool presetters, accessories and so much more. We're BIG-PLUS®, CAT, BT, HSK and BIG Coromant Capto. We're tightening tolerances, reducing setup and cycle times, increasing tool life, and enhancing performance while driving down cost. We're delivering high-performance products and ingenuity for shops that demand results.



# **BIG KAISER**®

## **PRECISION TOOLING INC.**

2600 Huntington Blvd, Hoffman Estates, IL 60192  
Phone: 847.228.7660 • Fax: 847.228.0881  
[www.bigkaiser.com](http://www.bigkaiser.com) • [bigkaiser@bigkaiser.com](mailto:bigkaiser@bigkaiser.com)