



# PAWS WORKHOLDING

*EFFICIENCY COMES STANDARD*

MULTIPLE-PART WORKHOLDING SOLUTIONS

# WORKHOLDING IS OUR PASSION

## Company Profile

PAWS Workholding has been providing clamping and fixturing solutions to the manufacturing community since the early 1990's. As the originator of our patented Hydraulic Clamping System, we understand the importance of efficiency and productivity in a production milling environment.

*Our modular clamping systems allows for maximum density under the spindle, automated clamping to reduce load times and more efficiency through utilizing multiple-part workholding practices.*

## Standard Workholding Products

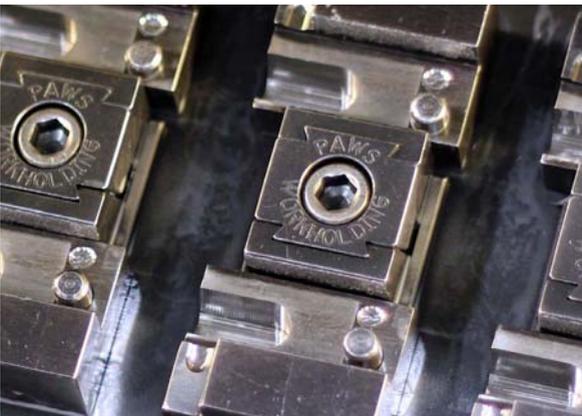
- Our **collet systems** are one of a kind. Through the use of our pull-to-close collet technology, we are able to hold tight tolerances with exceptional repeatability. We offer several standard configurations for our 5C and 3J collet systems.
- Our line of **wedge clamps** and **rails** allows you to be creative and flexible with your fixturing design. The Vise Force wedge clamps can be automated with our hydraulic clamping system or used in a traditional manner with manual hand clamping. The low profile, internal spring design allows for maximum part density for your fixture. The clamps come in seven different variations to handle a variety of applications.

## Application Specific Engineered Workholding Solutions

- We have a wealth of experience in I.D. collet gripping, O.D. gripping (5C & 3J), Vise-type clamping, V-block bridge clamping and 4th Axis applications.
- Our solutions involve a strong emphasis on process stability and consistency on every load. Through the integration of automation, multiple-part workholding and advanced engineering design, we can increase milling efficiency and maximize spindle uptime.
- From robotics to horizontal tombstone applications, we can deliver on our promise of efficiency and innovation for your workholding needs.

# WISE FORCE WEDGE CLAMPS

STANDARD PRODUCT  
Workholding Solutions



Vise Force® wedge clamps from PAWS Workholding® offer several unique advantages, including:

- Chip free design (Internal return springs)
- Through hardened (50-52 Rc)
- Seven clamp models for a variety of applications
- Holding forces of up to 5,500 lbs
- One bolt tightening operation (5/16-18 SHCS)
- Low profile design
- Ideal for automated clamping systems

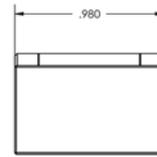
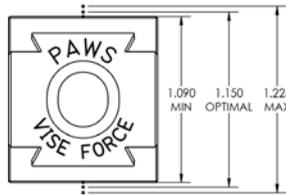
The clamps are constructed to expand evenly and apply balanced workholding pressure to the work piece. Our low profile clamps improve your machining process by eliminating movement, vibration, and chatter.

# WISE FORCE 1 WEDGE CLAMPS

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Workholding Solutions

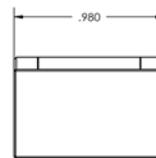
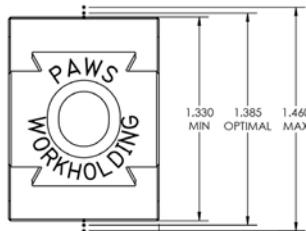


## Vise Force 1 Smooth Jaw Clamp



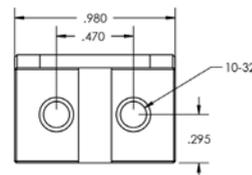
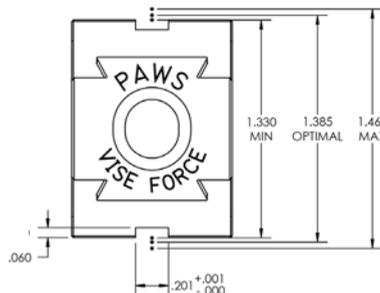
Part Number	Min.	Opt.	Max.	Mounting SHCS	Jaw Hardness	Torque (ft/lbs)	Lateral Pressing Force (lbs)
2030-VF1-S-CP	1.090	1.150	1.225	5/16-18	50-52 Rc	30	5,500

## Vise Force 1 +3 Machinable Jaw Clamp



Part Number	Min.	Opt.	Max.	Mounting SHCS	Jaw Hardness	Torque (ft/lbs)	Lateral Pressing Force (lbs)
2030-VF1+3-CP	1.330	1.385	1.460	5/16-18	28-32 Rc	30	5,500

## Vise Force 1 Tapped Jaw Clamp



Part Number	Min.	Opt.	Max.	Mounting SHCS	Jaw Hardness	Torque (ft/lbs)	Lateral Pressing Force (lbs)
2030-VF1-TP-CP	1.330	1.385	1.460	5/16-18	50-52 Rc	30	5,500

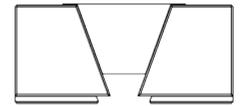
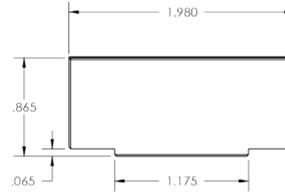
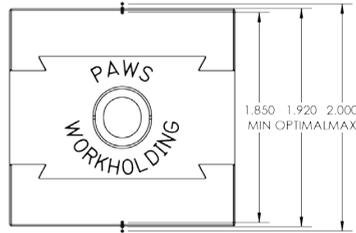
Part Number	Item	Mounting Screw	Jaw Hardness
2030-VF1-TP-SJ-100-CP	1.00 Machinable Jaw Set	10-32 SHCS	28-32 Rc
2030-VF1-TP-SJ-150-CP	1.50 Machinable Jaw Set	10-32 SHCS	28-32 Rc

# WISE FORCE 2 WEDGE CLAMPS

STANDARD PRODUCT  
Workholding Solutions

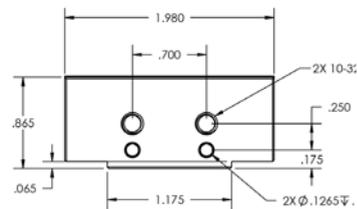
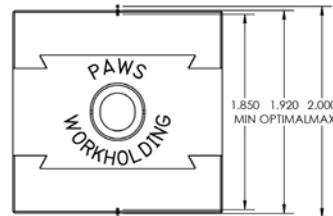


## Vise Force 2 Smooth Jaw Clamp



Part Number	Min.	Opt.	Max.	Mounting SHCS	Jaw Hardness	Torque (ft/lbs)	Lateral Pressing Force (lbs)
2030-VF2-S-CP	1.850	1.920	2.00	5/16-18	50-52 Rc	30	5,500

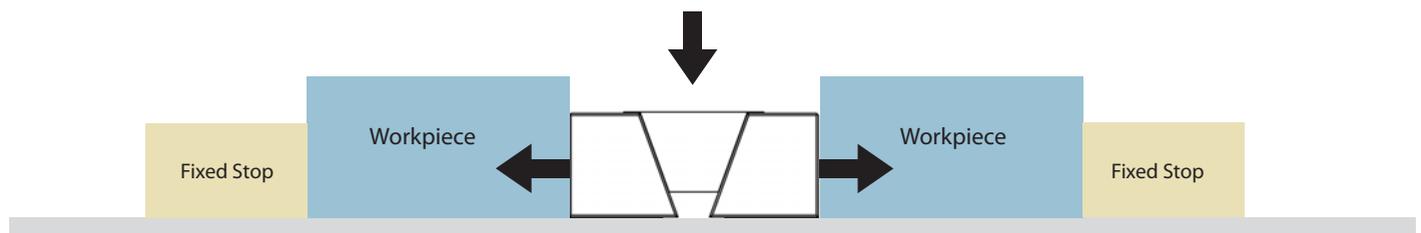
## Vise Force 2 Tapped Jaw Clamp



Part Number	Min.	Opt.	Max.	Mounting SHCS	Jaw Hardness	Torque (ft/lbs)	Lateral Pressing Force (lbs)
2030-VF2-TP-CP	1.850	1.920	2.00	5/16-18	50-52 Rc	30	5,500

Part Number	Item	Mounting Screw	Jaw Hardness
2030-VF2-TP-SJ-200-CP	2.00 Machinable Jaw Set	10-32 SHCS	28-32 Rc

\* Note: The pull down force is adjustable by varying the hydraulic system pressure.

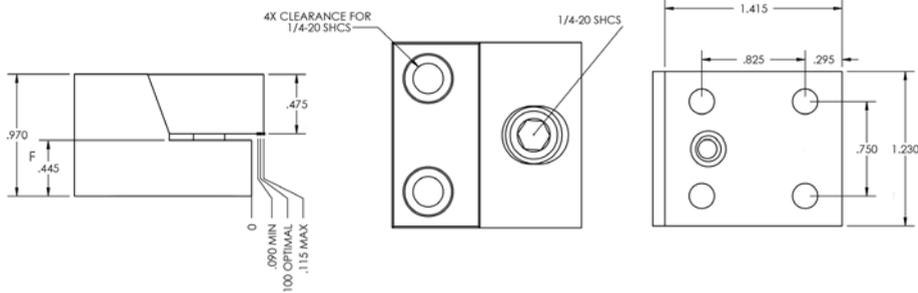


# WISE FORCE SIDE LOAD CLAMPS

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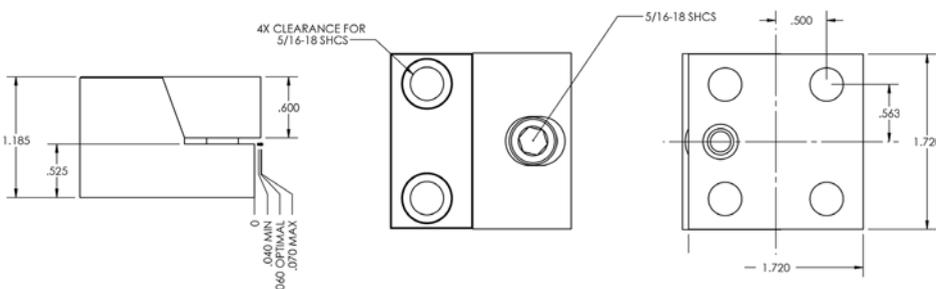


## Vise Force 1 Side Load Clamp



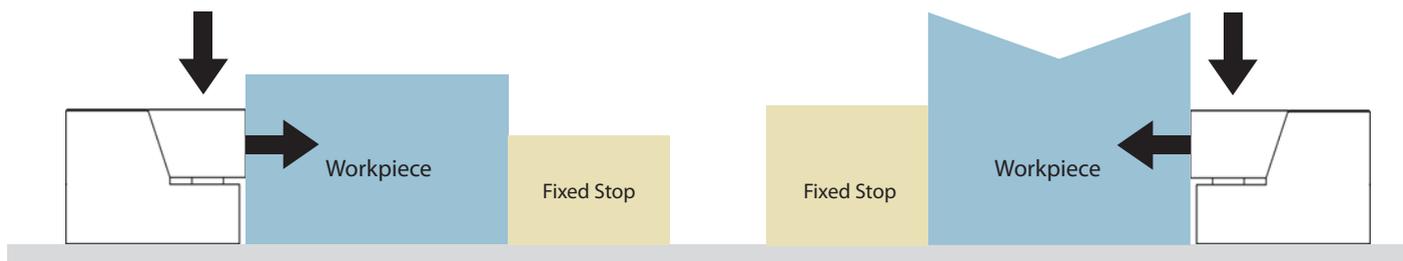
Part Number	Min.	Opt.	Max.	Mounting SHCS	Jaw Hardness	Torque (ft/lbs)	Lateral Pressing Force (lbs)
2030-VF1-SW-CP	.090	.100	.115	1/4-20	50-52 Rc	30	5,500

## Vise Force 2 Side Load Clamp



Part Number	Min.	Opt.	Max.	Mounting SHCS	Jaw Hardness	Torque (ft/lbs)	Lateral Pressing Force (lbs)
2030-VF2-SW-CP	.040	.060	.070	5/16-18	50-52 Rc	30	5,500

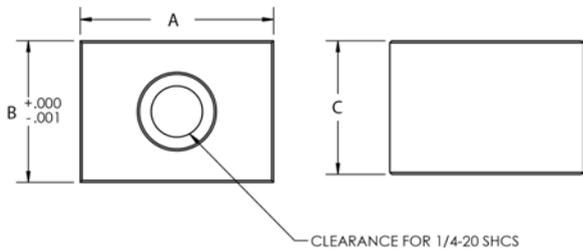
Note: Designed for manual clamping only. Not for use on hydraulic fixtures.



# LOCATING RAILS FOR FIXTURES

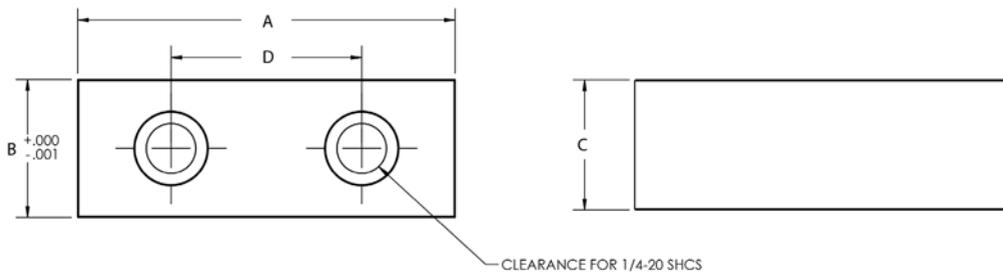


## 1.00" Locating Rail



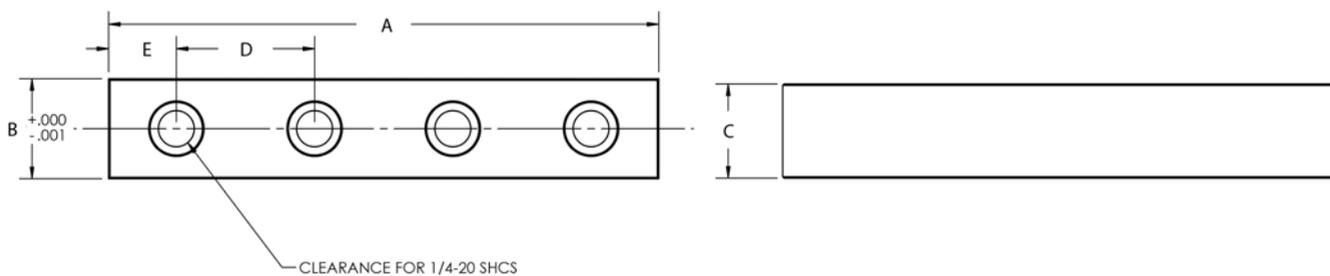
Part Number	A	B	C	Mounting SHCS	Material
2030-VF1-RAIL-100-CP	.980	.720	.680	1/4-20	4140 Steel
2030-VF2-RAIL-100-CP	.980	.720	.980	1/4-20	4140 Steel

## 2.00" Locating Rail



Part Number	A	B	C	D	Mounting SHCS	Material
2030-VF1-RAIL-200-CP	1.980	.720	.680	1.000	1/4-20	4140 Steel
2030-VF2-RAIL-200-CP	1.980	.720	.980	1.000	1/4-20	4140 Steel

## 4.00" Locating Rail



Part Number	A	B	C	D	E	Mounting SHCS	Material
2030-VF1-RAIL-400-CP	3.980	.720	.680	1.000	.490	1/4-20	4140 Steel
2030-VF2-RAIL-400-CP	3.980	.720	.980	1.000	.490	1/4-20	4140 Steel

# 8 STATION 5C COLLET

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Workholding Solutions



Perfect for gripping parts on the outside diameter, the PAWS 8 station 5C Collet clamping system allows you to hold multiple parts on one fixture plate with the added benefit of fast clamping. Our 5C dead length system has been designed with several key engineering features that make it ideal for OD gripping when tight tolerances, rigidity, and part repeatability are critical.

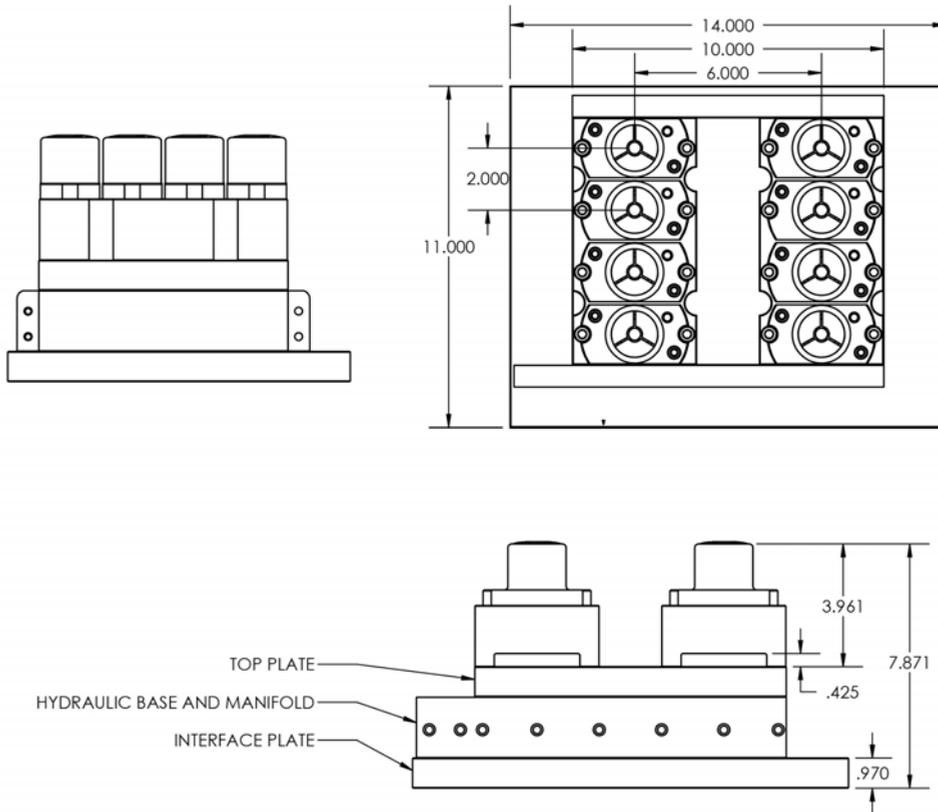
A key advantage of The PAWS 5C system is that it uses fixed (or static) collet sleeves, which control part location and provides center line repeatability of less than .0002". Our system also uses a proprietary "Pull to Close" clamping mechanism, so parts are pulled down against the dead length stop as the 5C collet closes, giving "Z" Axis length repeatability of less than .0002". The 5C Collet system holds parts up to 1.00" in diameter.

- Z-Axis length repeatability of less than .0002"
- Use on horizontal or vertical milling centers
- Pull-to-Close collet technology for true dead-length stop accuracy
- Center line repeatability of less than .0002"

**34%**  
INCREASE  
IN PARTS PER SHIFT

**72%**  
REDUCTION  
IN LOAD/UNLOAD TIME

**ELIMINATE**  
**87%**  
OF TOOL CHANGE TIME



Part Number	8 Station 5C Collet Package
3420-5C08-PKG-CP	8 Station 5C Collet Fixture Plate 8 x 10"
	DA20 Hydraulic Base
	Locating Stops for 5C System
	5C Collet Wrench - Steel
3182-HPU-2117-CP	*GX40 Dual Acting Hydraulic Pump (Includes Hoses and Connectors) - Max Pressure 1,000 PSI

\* Hydraulic pump sold seperately.



Perfect for gripping parts on the outside diameter, the PAWS 24 station 5C Collet clamping system allows you to hold multiple parts on one fixture plate with the added benefit of fast clamping. Our 5C dead length system has been designed with several key engineering features that make it ideal for OD gripping when tight tolerances, rigidity, and part repeatability are critical.

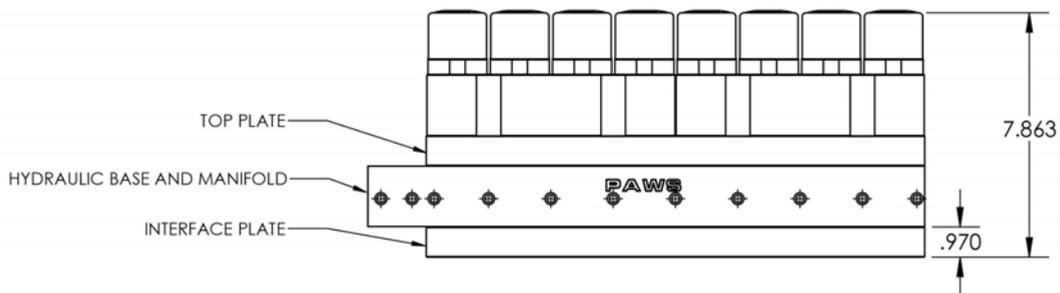
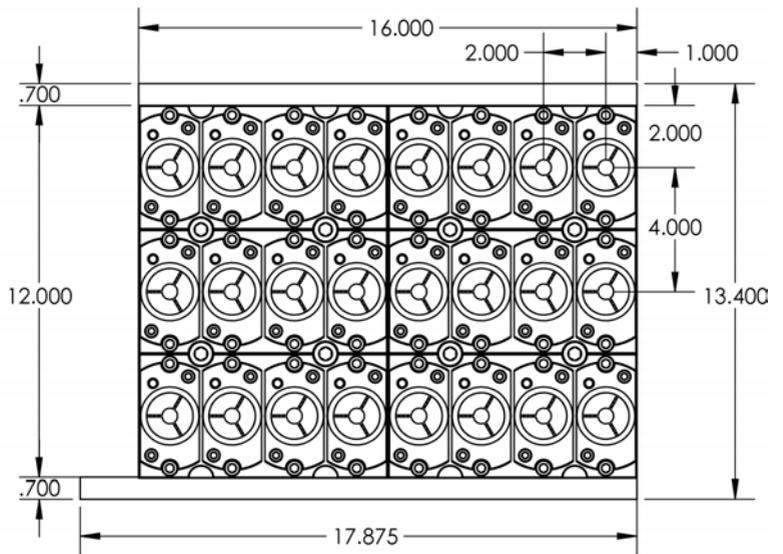
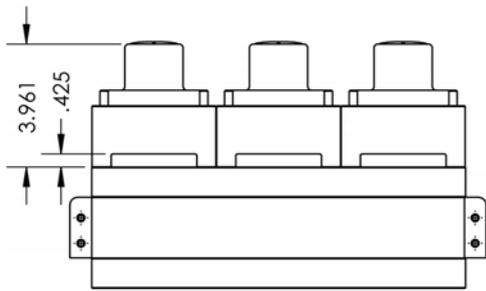
A key advantage of The PAWS 5C system is that it uses fixed (or static) collet sleeves, which control part location and provides center line repeatability of less than .0002". Our system also uses a proprietary "Pull to Close" clamping mechanism, so parts are pulled down against the dead length stop as the 5C collet closes, giving "Z" Axis length repeatability of less than .0002". The 5C Collet system holds parts up to 1.00" in diameter.

- Z-Axis length repeatability of less than .0002"
- Use on horizontal or vertical milling centers
- Pull-to-Close collet technology for true dead-length stop accuracy
- Center line repeatability of less than .0002"

**52%**  
INCREASE  
IN PARTS PER SHIFT

**65%**  
REDUCTION  
IN LOAD/UNLOAD TIME

**ELIMINATE**  
**96%**  
OF TOOL CHANGE TIME



Part Number	24 Station 5C Collet Package
3420-5C24-PKG-CP	24 Station 5C Collet Fixture Plate 12 x 16"
	DA48 Hydraulic Base
	Locating Stops for 5C System
	5C Collet Wrench - Steel
3182-HPU-2117-CP	*GX40 Dual Acting Hydraulic Pump (Includes Hoses and Connectors) - Max-Pressure 1,000 PSI

\* Hydraulic pump sold separately.

# 8 STATION 3J COLLET

STANDARD PRODUCT  
Workholding Solutions



Perfect for gripping parts on the outside diameter, the PAWS 8 station 3J Collet clamping system allows you to hold multiple parts on one fixture plate with the added benefit of fast clamping. Our 3J dead length system has been designed with several key engineering features that make it ideal for OD gripping when tight tolerances, rigidity, and part repeatability are critical.

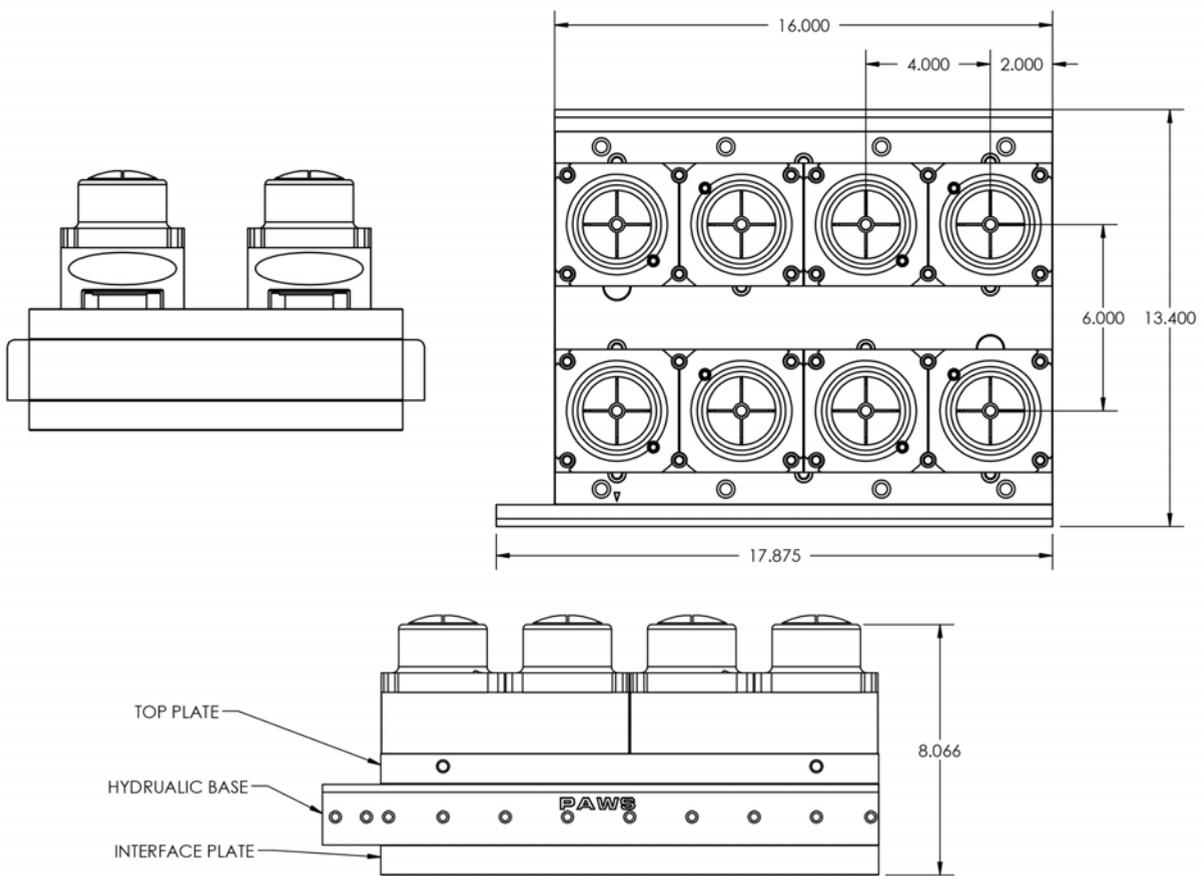
A key advantage of The PAWS 3J system is that it uses fixed (or static) collet sleeves, which control part location and provides center line repeatability of less than .0002". Our system also uses a proprietary "Pull to Close" clamping mechanism, so parts are pulled down against the dead length stop as the 3J collet closes, giving "Z" Axis length repeatability of less than .0002". The 3J Collet system holds parts up to 1.750" in diameter.

- Z-Axis length repeatability of less than .0002"
- Use on horizontal or vertical milling centers
- Pull-to-Close collet technology for true dead-length stop accuracy
- Center line repeatability of less than .0002"

**34%**  
INCREASE  
IN PARTS PER SHIFT

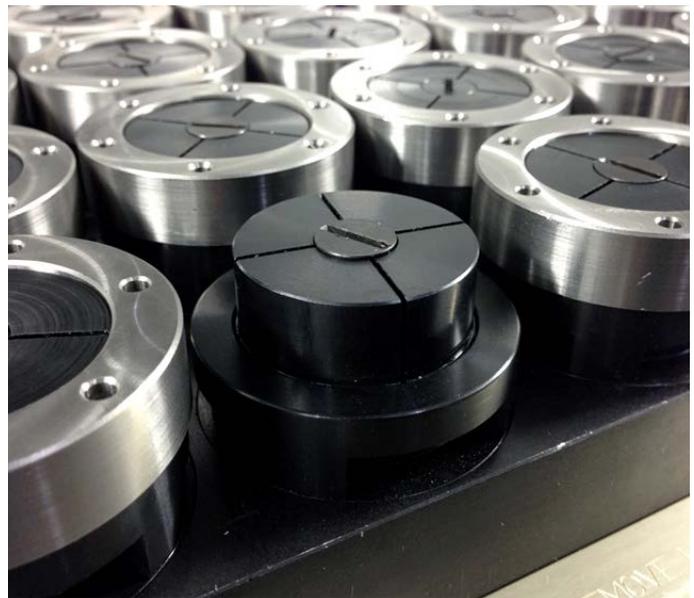
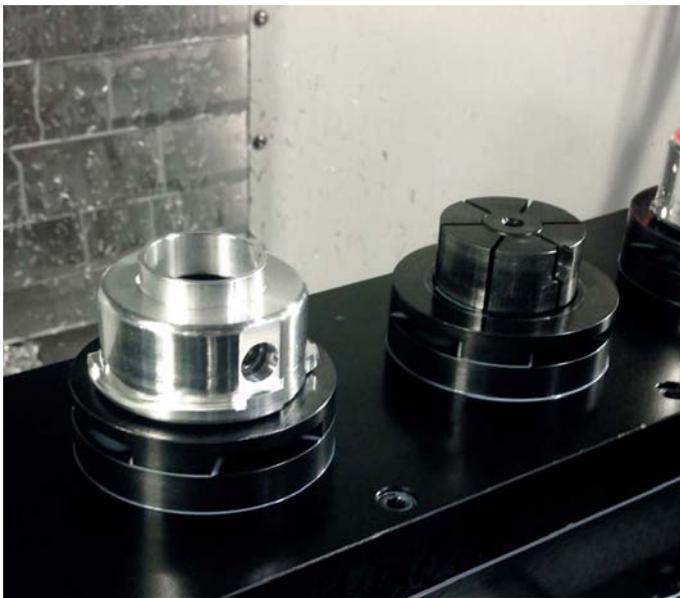
**72%**  
REDUCTION  
IN LOAD/UNLOAD TIME

**ELIMINATE**  
**87%**  
OF TOOL CHANGE TIME



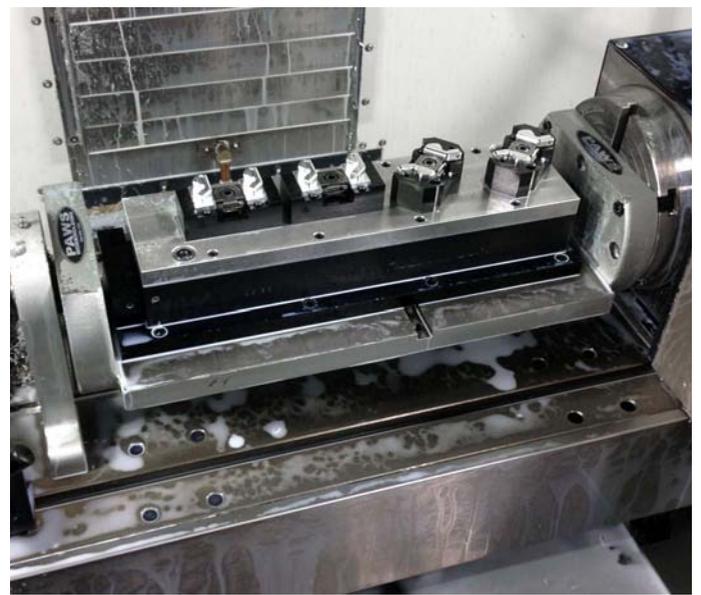
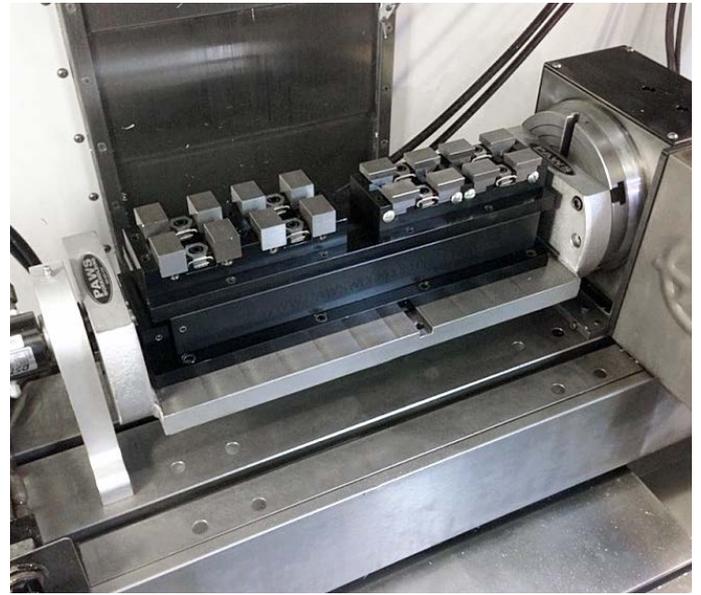
Part Number	8 Station 3J Collet Package
3420-3J08-PKG-CP	8 Station 3J Collet Fixture Plate 12 x 16"
	DA40 Hydraulic Base
	Locating Stops for 3J System
	3J Collet Wrench - Steel
3182-HPU-2117-CP	*GX40 Dual Acting Hydraulic Pump (Includes Hoses and Connectors) - Max Pressure 1,000 PSI

\* Hydraulic pump sold separately.



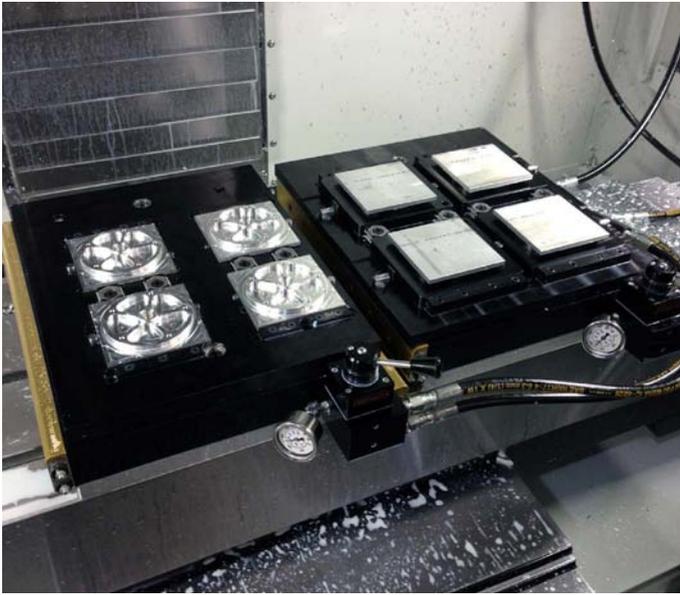
Expanding mandrel I.D. collets are ideal for manufacturing applications that require gripping the inside diameter of a part. PAWS Workholding can design and manufacture ID Collets with work stops to match the bore of the part you need to hold. We have experience gripping on small bores and large, and can create a Multiple-Part Workholding fixture plate for your manufacturing job.

These I.D. collets are specifically designed to be used with our hydraulic clamping system and locate on top of our standard hydraulic base plates. Depending on part diameter, it is possible to automatically clamp as many as eighty parts at a time using one of our standard Hydraulic Base units. We can help you choose the appropriate amount of collets to use based on your application and production requirements.



Convert your VMC using a rotary unit and trunnion table to get many of the same advantages of a HMC at a fraction of the cost. PAWS Workholding can design and build both manual clamp and automated clamping fixtures specifically design for your 4th axis application. We also have standard 5c collet, 3J collet, and Multi-vise fixture plates to use with our Hydraulic clamping trunnion system.

Fixture plates can be engineered to be modular and interchangeable. Save time and money by reducing the number of operations it takes to make your part complete! The two-passage rotary union included in the package allows the trunnion table to rotate 360 degrees on a six inch center line. The trunnion table has an overall width and length of 9 x 24". If you would like assistance, our engineering group can help you design and build a custom fixture plate for your application



PAWS Workholding will design and build multiple part workholding fixtures to fit your specific application. Our system utilizes a low-profile, non-dedicated hydraulic base plate with dual-acting pistons that automate clamping in CNC Milling environments. Available in several sizes, the PAWS hydraulic base plate offers embedded pistons (or points of clamping) every two inches on center. This gives the user a clamping point grid map, or foundation, for creating automated clamping fixture plates.

Clamps placed on the fixture plate are linked to the pistons underneath with socket head cap screws that pass through the fixture plate and into the ID thread of piston. Considering part size, part configuration, and tool clearance, you select the points of clamping that best meet your needs. Our standard fixture plates are counter-bored underneath to provide clearance for piston movement up and down.



PAWS Workholding can design and build Horizontal Tombstone fixture plates for your specific application. We have experience building operator friendly fixtures that can be loaded and charged outside the work envelope for pallet switching and pallet pool environments. Through the use of accumulators or hard plumbing the HMC with hydraulics, automated clamping creates faster load times and more consistent holding force. We can also design and build manual tombstone fixtures as well.

We have experience building HMC fixtures with hex, square, triangle, diamond, two sided, and angle plate tombstones. Through the use of Solid Works as a design tool, we can lay out fixturing concepts for you to see what will work best based on your dimensional tolerances and production needs. We can also provide the components for you to build your own custom fixturing, or provide a complete turn-key solution including installation.

# PUMPS & VALVES

## Hydraulic Valve Porting Options

There are several valve porting options to choose from when you purchase a PAWS Workholding Hydraulic Base Plate; standard porting, top mount porting, and side mount porting. We can also assist you with the installation and plumbing of hydraulic lines on your CNC workcenter.

### PART 1201-CP STANDARD PORTING



Control valve is *in-line* and not mounted on hydraulic porting block

### PART 3210-CP TOP MOUNT VALVE PORTING



Control valve mounted *on top* of the hydraulic porting block

### PART 3220-CP SIDE MOUNT VALVE PORTING



Control valve mounted *on side* of the hydraulic porting block

## Accumulator Package



An accumulator enables the PAWS Clamping System to remain hydraulically charged when hoses are disconnected. It is intended for use in palletized applications. The package includes an accumulator, P.O. Check Valve, Pressure Gauge, quick dis-connects, and a cover.

Part Number	Description
1209-CP	Accumulator Package

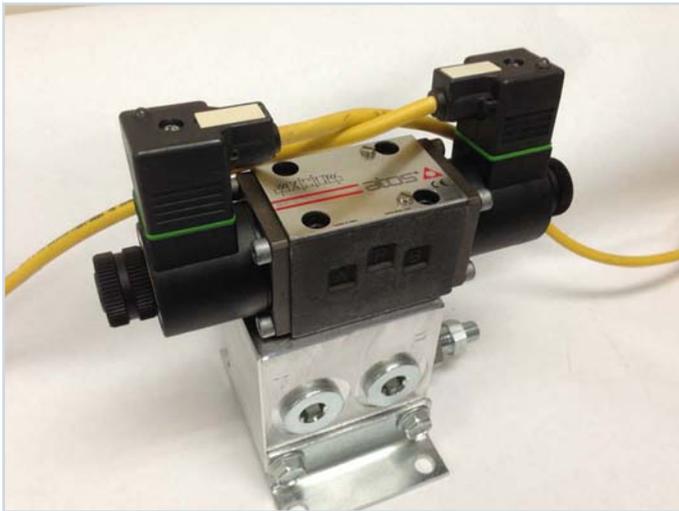
## Hydraulic Pump



GX40 Hydraulic Pump this is an Air-Driven Double Acting Hydraulic Pump with 1:40 pressure ratio mounted on a 10 Litre resevoir with strainer, return filter and sight gage. Also includes an integral filter/regulator 1/2' NPT port with 0-150 PSI air gage. Maximum 4,000 PSI pump pressure rating.

Part Number	Description
3182 HPU-2117-CP	Hydraulic Pump

## Solenoid M-Code Activation Kit



M-CODE Activation allows for automated clamping and unclamping commands to be included into the CNC program file, and eliminates the possibility of an operator forgetting to clamp. Combined with pressure detection, the M-CODE activation gives an added level of efficiency in the CNC production Milling environment.

The Solenoid Manifold Kit contains the following: One (1) Solenoid Directional Valve (DHE-0711-X-110/50/60 AC), Two (2) Wire Leads, One (1) Manifold Block, One (1) PAWS Standard Block (replaces your 3 way valve) and One (1) Check Valve.

## In-Line Pressure Sensor



Pressure detection can help insure parts are properly clamped before the CNC Workcenter cycle starts. If the machine does not sense the proper pressure, it will alarm the machine and not allow the cycle to start. This Kit includes the following: One (1) Pressure Detection Switch (1450-3900 PSI Range) and One (1) Wire Lead.

Part Number	Description
1210-CP	Pressure Sensor



Using the PAWS System, a part that originally ran at 13 minutes is now down to 2.5 minutes. Mr. Collins says, "We'll make 10 or 12 thousand of these, saving 10.5 minutes per part. At that rate it doesn't take long to justify the cost of the system."

WAYNE COLLINS  
*DIRECTOR OF MACHINE OPERATIONS, SCOTT ARCHERY*



**PAWS**  **WORKHOLDING**

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