

# PAWS WORKHOLDING



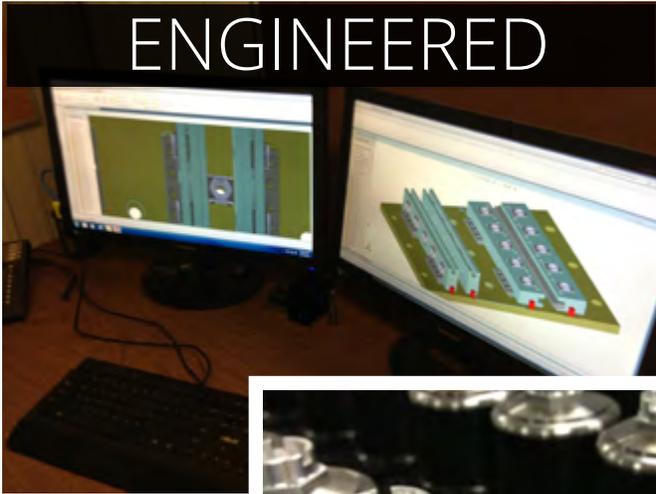
MULTIPLE-PART

WORKHOLDING

SOLUTIONS

[pawsworkholding.com](http://pawsworkholding.com)

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## WORKHOLDING SERVICES

PAWS Workholding has been providing clamping and fixturing solutions to the manufacturing community since the early 1990's. We have a wealth of experience in solving workholding challenges in production milling environments. Our staff of dedicated, knowledgeable engineers and designers can look at your workholding needs and develop a first class solution to help you achieve your manufacturing output goals.

Our team of Workholding Specialists use their combined knowledge along with some of the industry's leading CAD/CAM tools, such as Master CAM and SolidWorks, to design and engineer the right workholding solution for you. We have a wealth of experience in I.D. collet gripping, O.D. gripping (5c), Vise-type clamping, V-block bridge clamping and 4th Axis applications, as well as many custom solutions.

As the originator of our patented Hydraulic Clamping System, we understand the importance of efficiency

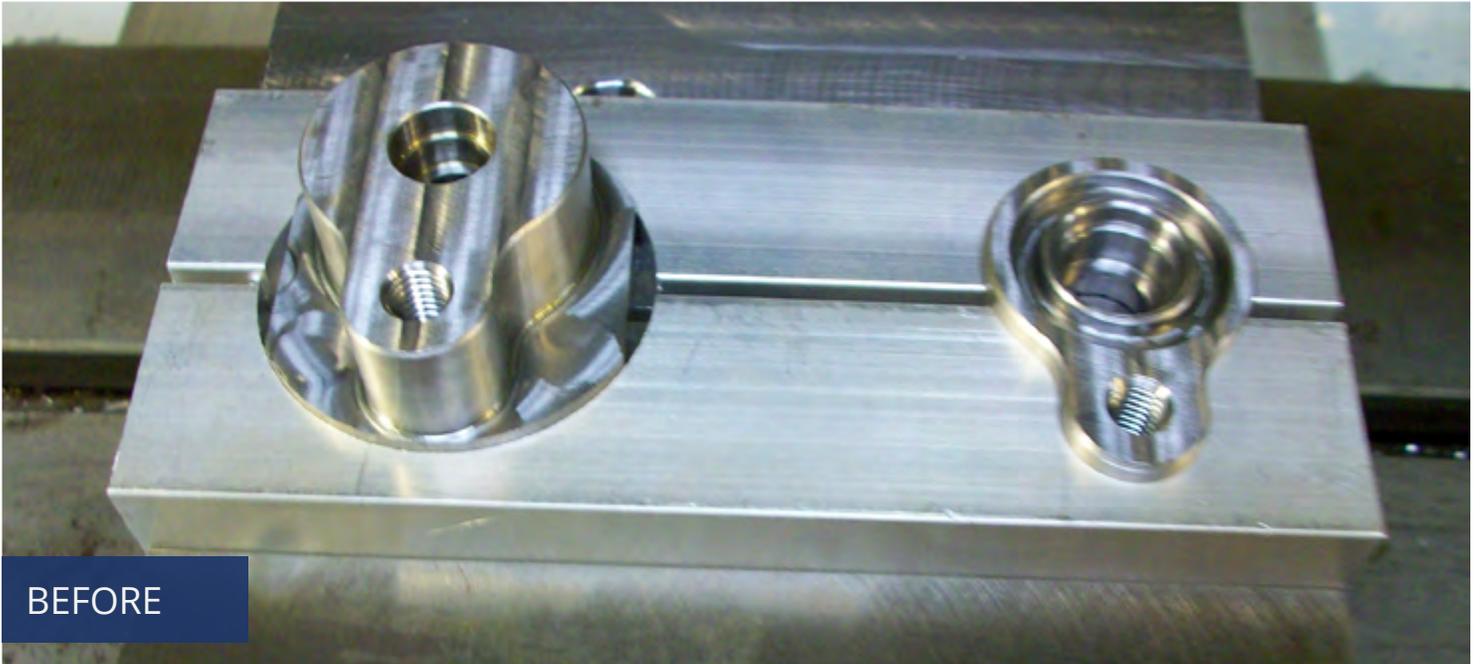
and productivity in a production milling environment. That is why we have developed a modular clamping system that allows for maximum density under the spindle, or Multiple Part Workholding, along with automated clamping to reduce load times and keep your spindle turning!

Understanding the "Multiple Part Workholding Advantage", we believe, is critical to maximizing your productivity and efficiency on your CNC Milling Center.

If you are looking for a Workholding Solution, please send us a print of your part along with any pertinent information about your process. Our staff will look at the application and, with no obligation, suggest a solution incorporating the use of our automated clamping system. Depending on the application and budget, we will design and build traditional hand clamping fixture plates as well.

# THE MULTIPLE-PART WORKHOLDING ADVANTAGE

HOW CAN I GET MORE MILLING EFFICIENCY ON MY EXISTING CNC EQUIPMENT?



Part Name	P-NUT
Make Quantity	52,000
Number of Tools	10
Tool Change Time	6.5 (sec)

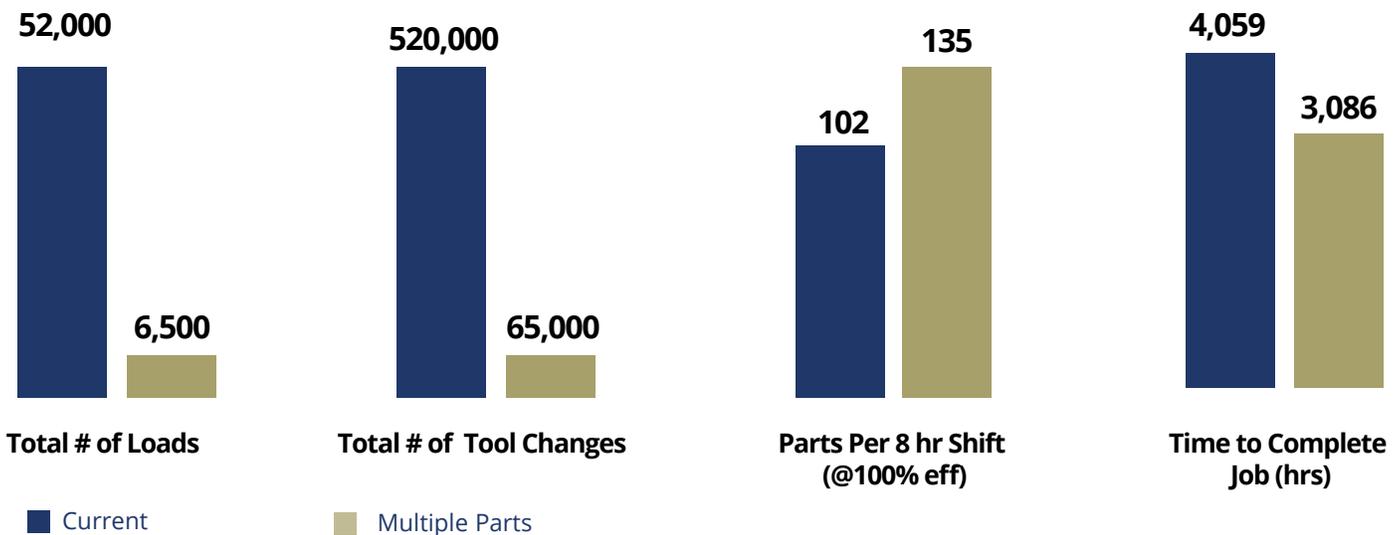


	Current	Multiple-Parts
Quantity Parts Under Spindle	2	16
Completed Parts per Load	1	8
Load/Unload Time (sec)	28	140
Run Time per Load (sec)	281	1,709

## JOB RESULTS

	Current	Multiple-Parts	Savings
Total Number of Tool Changes	<b>520,000</b>	<b>65,000</b>	<b>455,000 Less</b>
Total Number of Load Sequences	52,000	6,500	45,500 Less
Parts Per 8 Hour Shift (@100% efficiency)	102	135	31.54% Increase
Time between Loads (min)	4.22	26.15	21.93 Add. Time
Time to Complete Job (hrs)	4,058	3,086	973 Hours

**Annualized ROI @ \$75/hour: \$72,975.00**



# 5C COLLET

## AUTOMATED CLAMPING SYSTEMS



Perfect for gripping parts on the outside diameter, the PAWS 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"

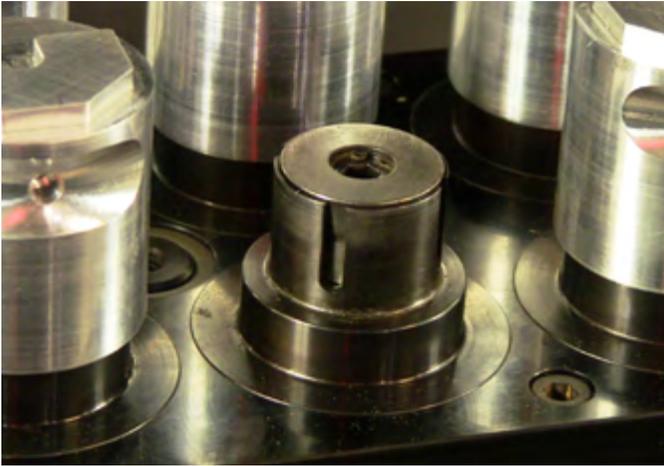
The 5C Collet fixture plate comes in two standard sizes, an 8 x 10" 8-Station system and a 12 x 16" 24-Station system. Custom configurations are available upon request.



Part Number	Description	# of Collets	Fits on Hydraulic Base
3420-5C08-DL-CP	8 Station 5C Collet Fixture Plate 8x10"	8	3080-20-CP
3420-5C24-DL-CP	24 Station 5C Collet Fixture Plate 12x16"	24	3080-48-CP
3400-14-5C-LS-CP	Locating Stops for 5C System		
3400-15-5C-CW-CP	5C Collet Wrench - Steel		

# ID COLLET

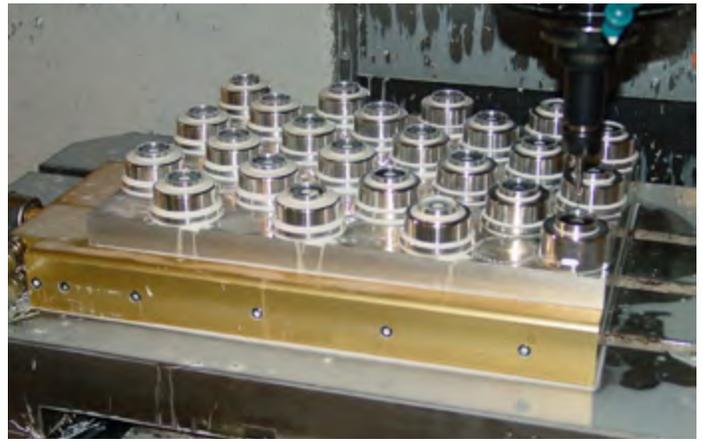
## FIXTURE PLATES

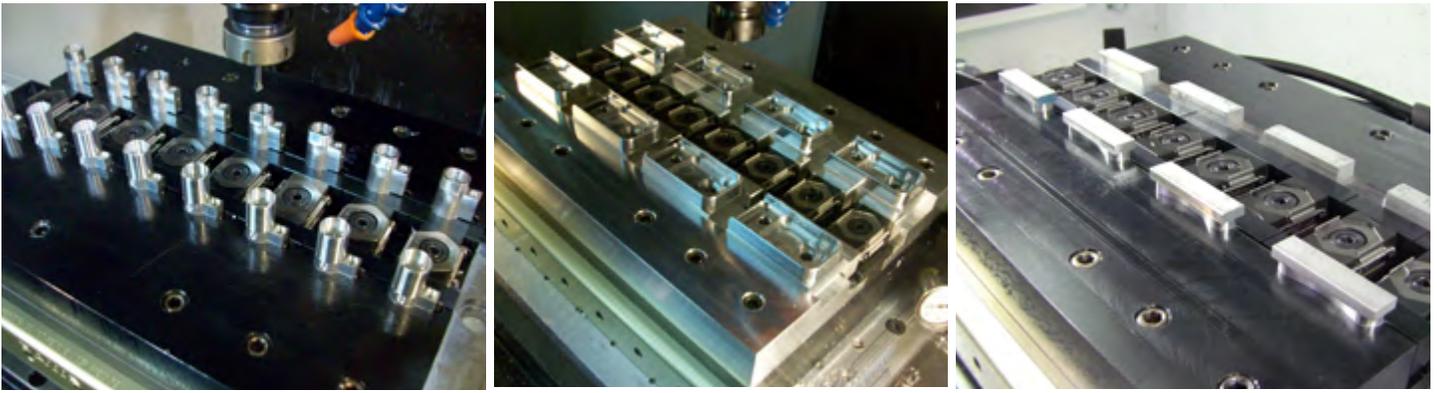


Expanding mandrel I.D. Collets are ideal for manufacturing applications that require gripping the inside diameter of a part.

PAWS Workholding can custom make 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.

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.





# HYDRAULIC MULTI-VISE SYSTEM

## 8 OR 16 STATION FIXTURE PLATES

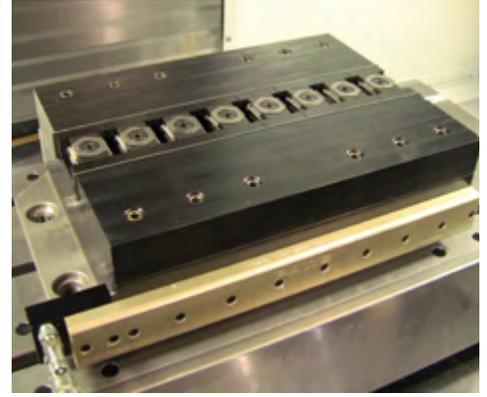
The PAWS Multi-Vise fixture plate has been developed to boost milling efficiency by getting more parts under the spindle. Add the ability to automate clamping with hydraulics and you have one powerful Workholding Solution for your production milling needs.

The Multi-Vise fixture plates comes in two sizes; the 8 x 10" - 8 Station Multi-Vise and the 12 x 16" - 16 Station Multi-Vise. The fixture plates fit on top of our standard 8 x 10" or 12 x 16" Hydraulic Base Plates. The package includes two machinable outer-fixed jaws with either eight or sixteen machinable, moveable jaws. The fixture plate comes standard with aluminum or steel jaws.

The wedge clamps used on the system are the OK-VISE® DK2-VT-T. These clamps are designed to give downward clamping force thus eliminating jaw lift. With the use of hydraulics, the clamping pressure is adjustable and consistent on every load! You get 3,470 lbs of clamping force per each 2" jaw, or use the 4" jaws and get 6,940 lbs of clamping force per jaw.

- ✔ Multi-Vise Fixture Plates locate on top of the PAWS Hydraulic Base Unit for automated clamping.
- ✔ Ideal for Vertical CNC production milling applications or pallet switching.
- ✔ Jaws are machinable and come in either steel or aluminum.





## Parts for Complete System

Part Number	16 Station Multi-Vise System
2017-16-OK-CP	16 Station Multi-Vise Fixture Plate
3080-40-CP	12" x 16" DA40 Hydraulic Base Unit
1315-40-CP	12" x 16" Interface Plate
3182-HPU-2117-CP	GX40 Hydraulic Pump (Inc. hoses & connectors)

Part Number	8 Station Multi-Vise System
2017-08-OK-CP	8 Station Multi-Vise Fixture Plate
3080-20-CP	8" x 10" DA20 Hydraulic Base Unit
1315-20-CP	8" x 10" Interface Plate
3182-HPU-2117-CP	GX40 Hydraulic Pump (Inc. hoses & connectors)

*Each system includes set of pre-load vise-jaw spacers and choice of standard, side or top mounted Control Valve porting.*

## Options and Accessories

Part Number	Description
2018-100-A-KIT-CP	8 Multi-Vise Jaw Kit - Alum * Jaw Kit Includes 2 fixed and 8 moveable jaws
2018-100-S-KIT-CP	8 Multi-Vise Jaw Kit - Steel * Jaw Kit Includes 2 fixed and 8 moveable jaws
2018-200-A-KIT-CP	16 Multi-Vise Jaw Kit - Alum * Jaw Kit Includes 2 fixed and 16 moveable jaws
2018-200-S-KIT-CP	16 Multi-Vise Jaw Kit - Steel * Jaw Kit Includes 2 fixed and 16 moveable jaws
2026-8/16-CP	Pre-load vice-jaw spacers
1209-CP	Accumulator Package
DK2-VT-T-CP	OK-VISE Clamp

# FOURTH AXIS

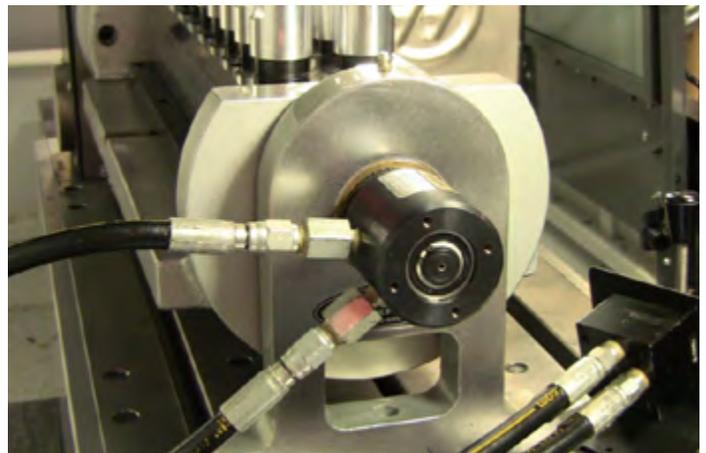
## TURN-KEY SOLUTIONS



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 is proud to offer an exciting turn-key solution to your 4th axis milling needs.

Use the PAWS DA16 Hydraulic Base to automate clamping and create your own top plates based on your part and application. Top plates are 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".



Part Number	Description
3080-16-CP	PAWS 4.5 x 17.25 " Hydraulic Base Plate (16 available pistons)
3350-012-CP	Two Passage Rotary Union
3380-HYD-CP	Hydraulic Manifold porting components and sub-plate.
1443-CP	In-line Control Valve, Hydraulic lines and connectors
3300-TRUN-CP	PAWS 9 x 24 Trunnion Table
3182-HPU-2117-CP	GX40 Hydraulic Pump

# 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

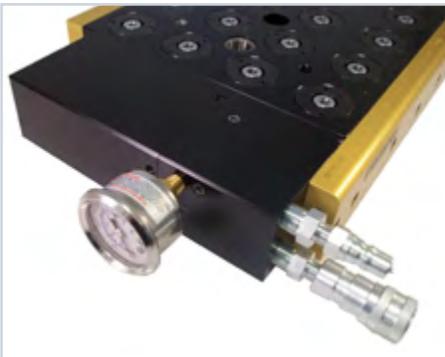
### PART 3220-CP SIDE MOUNT VALVE PORTING



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

## Accumulator Package

### PART 1209-CP



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

## Hydraulic Pump Option

### PART 3182 HPU-2117-CP



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.

## In-Line Pressure Sensor

### PART 1210-CP



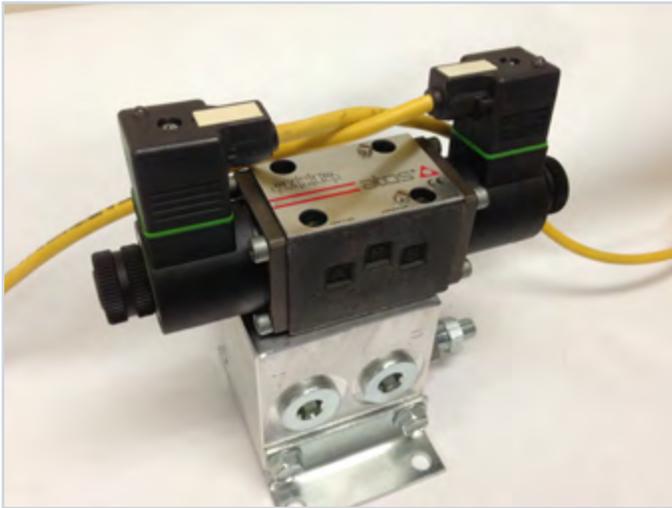
Pressure detection can help insure parts are properly clamped before the CNC Workcenter cycle starts. If the machine does not sense the proper pressure, it will alarm the machine and not allow the cycle to start. This Kit includes the following: One (1) Pressure Detection Switch (1450-3900 PSI Range)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

# PUMPS & VALVES

## 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.



**PAWS**  **WORKHOLDING**

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