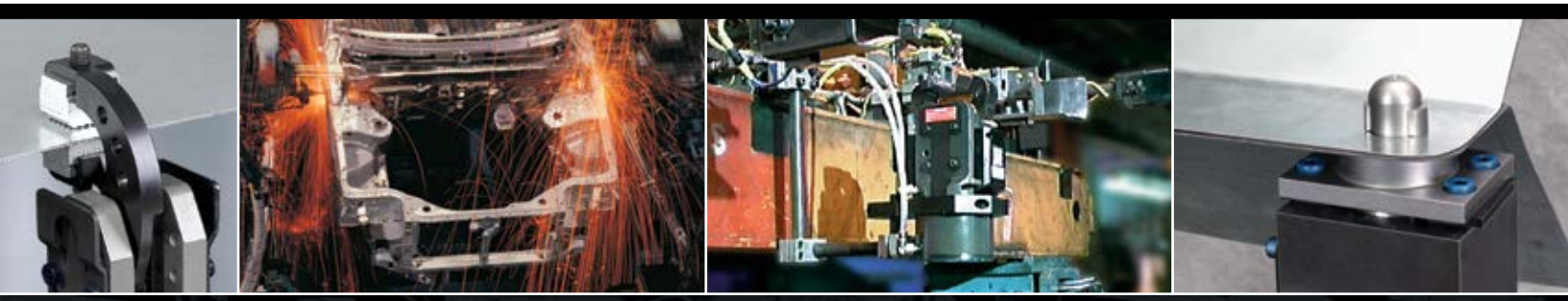
phd® CLAMPS

phdinc.com **(800) 624-8511**

WORKHOLDING SOLUTIONS & AUTOMATED SHEET METAL STAMPING

PNEUMATIC CLAMPS



LOW COST OF OWNERSHIP, EXCEPTIONAL FLEXIBILITY, AND UNSURPASSED IN RUGGEDNESS

2-JAW CLAMPS

PIN CLAMPS

SWING CLAMPS

STAMPING CLAMPS

FRAME CLAMPS

TOGGLE CLAMPS

IDENTIFICATION & CRIMPING CLAMPS

DIE LIFTERS

phd® SOLUTIONS FOR INDUSTRIAL AUTOMATION

CLAMPIB18

Sheet Metal Handling

Low Cost Of Ownership, Exceptional Flexibility, and Unsurpassed In Ruggedness

PHD Pneumatic Clamps and Die Lifters are for use in automated sheet metal stamping in transfer presses, welding, metal forming, assembly applications and for sheet metal handling equipment. PHD offers many styles, sizes, and options of heavy-duty pneumatic clamping products including 2-jaw clamps, toggle, swing, and pin clamps, as well as identification marking clamps, frame clamps, lifters, gauges, and crowders.

To request literature, visit www.phdinc.com/resources/inforequest/

PHD Clamp facilities are located in Huntington, Indiana.

Solutions that Save

Dedicated to Quality

Rugged Design for Long Life

PHD Clamps are rugged, long life actuators. Customer-driven, lab and field-tested designs ensure peak performance throughout the life of the product. You can be assured PHD Clamp products work right the first time and perform as expected every time. PHD Clamp products exhibit excellent wear characteristics and longevity which minimize the need for repair and costly down time, thus maximizing productivity and profitability.

Superior Delivery

FASTER delivery than competitor

Excellent delivery saves you money by getting you back to business faster.

Unique Solutions

Exceptional FLEXIBILITY

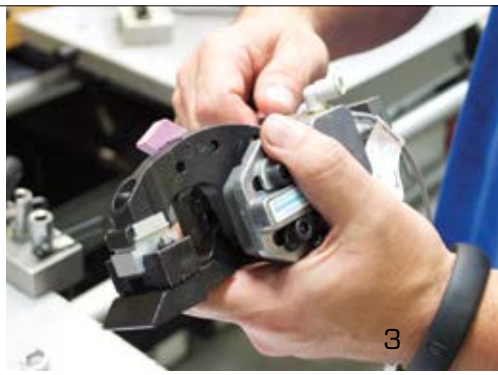
PHD offers a variety of components already designed to fit unique requirements. If your application requires a modified component from outside our large database of designs, our team is ready to help. We welcome special requests, regardless of quantity or frequency of order.

phd Unlimited® UNIQUE SOLUTIONS

Rebuild Program

Return to service

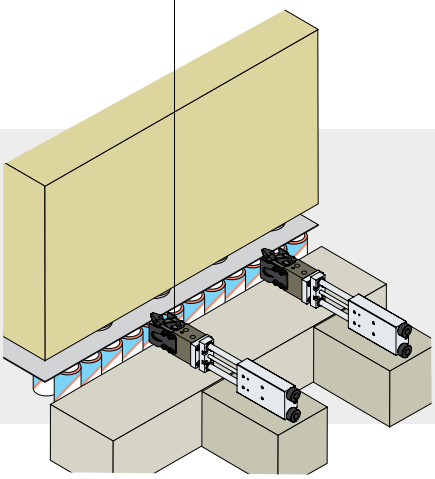
Our products can be rebuilt and put back in service for continued savings. Plus, you will receive a "like new" warranty. See back page for more information.



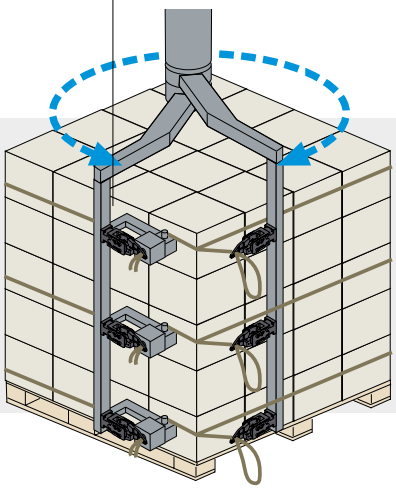
GRM, ARM OVER, PIN LOCATING, SWING ARM CLAMP APPLICATIONS

PHD Clamps have become the industry standard for handling sheet metal in automotive transfer presses and other workholding/transfer applications. All PHD Clamps are customer-driven designs with on-site testing.

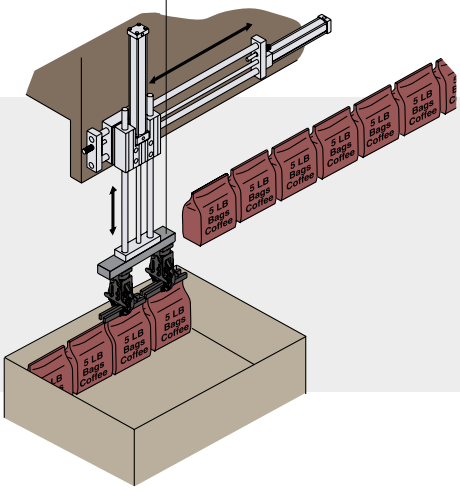
Grab slip sheet in depalletizing machine
• Series GRM Size 1 Standard Jaw Style

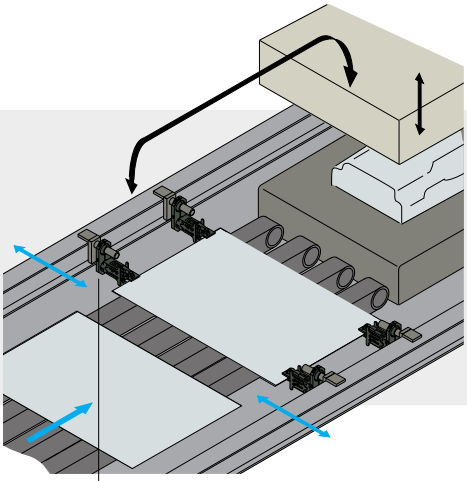


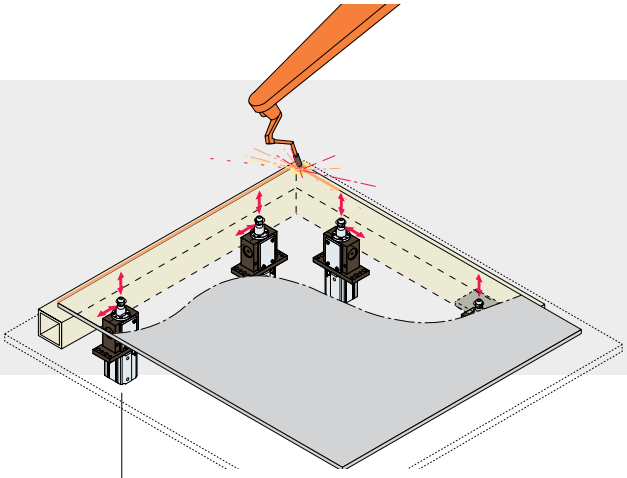
Automate pallet binding machine
• Series GRM Size 2 Needlenose Jaw Style

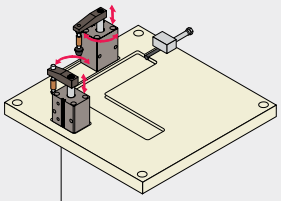


Move filled bags from conveyor to carton
• Series GRM Size 2 Standard Jaw Style







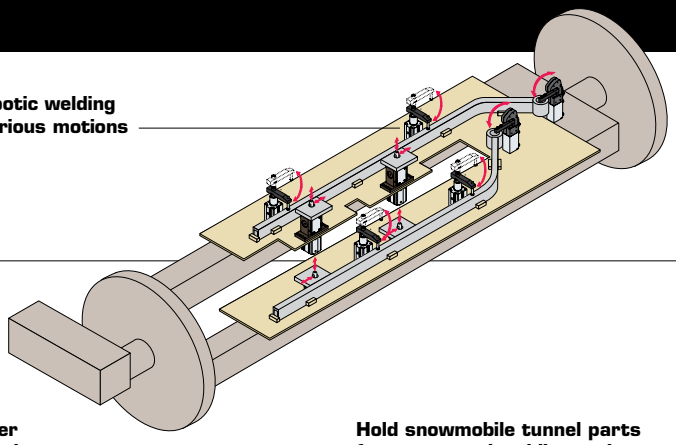


Handle sheet metal for automotive stamping press
• Series GRM Size 2 Standard Jaw Style

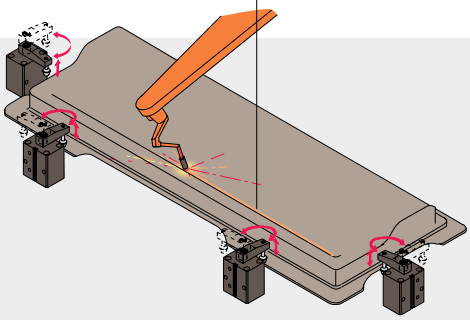
Hold sheet panels securely in position during welding application. Clamp pin retracts fully into part support.
• Series PLKD Pin Locating Clamps

Hold part down during automated trimming operation
• Series PA Swing Arm Clamps

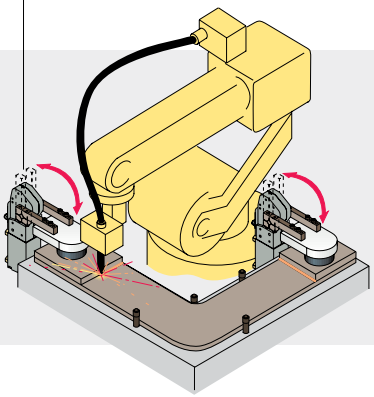
Hold frame parts together during robotic welding process. PHD clamps are ideal for various motions and speed in setting parts
- Series PC Swing Arm Clamps
- Series PLKD Pin Locating Clamps
- Series PEC Arm Over Clamps



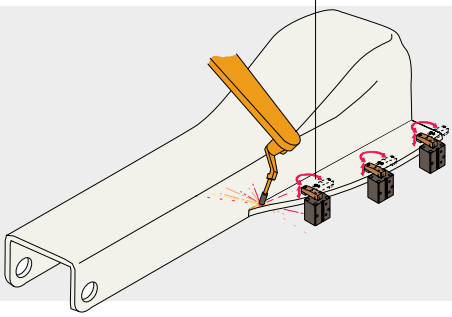
Hold door panel components together for robotic welding process
- Series PA Swing Arm Clamps

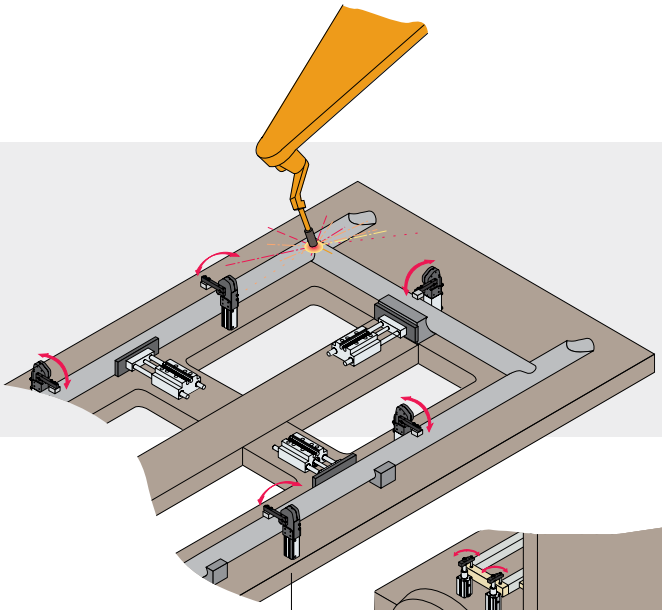


Hold door panel components together for robotic welding process. Cam design allows for more part thickness variation without having to adjust
- Series PEC Arm Over Clamps

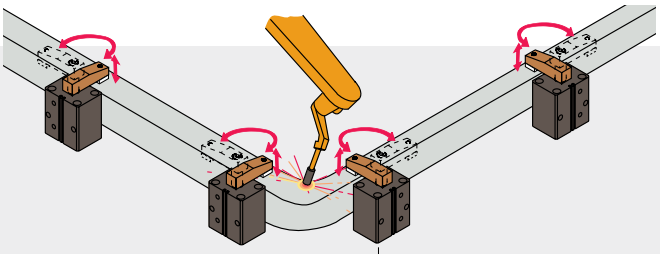


Hold snowmobile tunnel parts for automated welding and riveting process
- Series PA Swing Arm Clamps

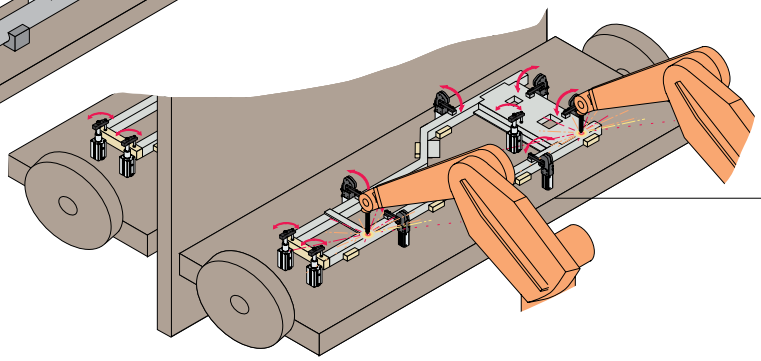




Hold tubular parts during welding process
- Series PEC Arm Over Clamps



Secure tubes during robotic welding
- Series PA Swing Arm Clamps



Set ATV frame components together during robotic welding
- Series PB Swing Arm Clamps
- Series PEC Arm Over Clamps

Series GRM

BEST CLAMP IN INDUSTRY

The Series GRM Clamp continues to be the industry-leading pneumatic actuator of choice for material handling solutions worldwide. Its simple design and rugged construction have proven customer satisfaction and loyalty since 1998. Three standard sizes (25, 32, and 40 mm bores), 13 standard jaw styles, and countless options and accessories make the Series GRM Clamp the most versatile and modular clamp in the world.

GRM2/GRM4 Pneumatic Workholding Clamp

- Grips and locks on panels with varying thicknesses without adjustment
- 13 jaw styles
- Sheet metal handling applications
- Modular designed tips
- Simple design, long life
- Fully field-repairable

GRM1 Miniature Pneumatic Workholding Clamp

- 2 jaw styles
- Lightweight and high grip force
- Sheet metal handling requiring compact design
- Modular designed tips for various thicknesses
- Simple design, long life
- Fully field-repairable

www.phdinc.com/myphd

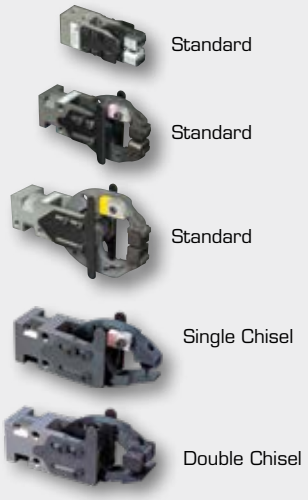
MyPHD is a new feature of PHD's e-tools online sizing and CAD to help in your design process.

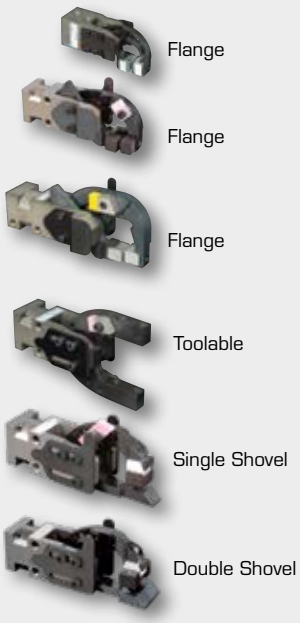
- Sizing and CAD remembers your preferences and saves your projects for future revisions
- Sizing seamlessly links to CAD configurator
- CAD makes quoting easy right from configurator
- CAD retains history for future use for easy project management

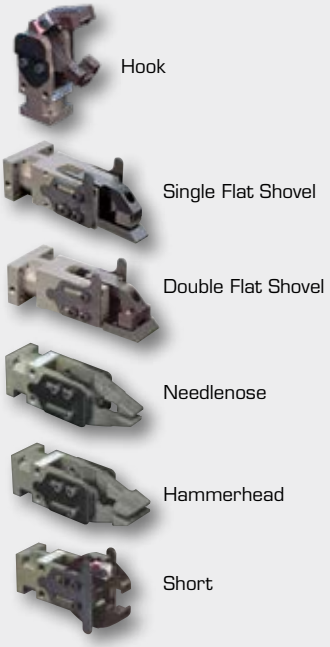
Get the app or size online!

13 Jaw Styles & Modular-Designed Tips

The Series GRM Clamp has 13 standard jaw styles and numerous jaw openings available to fit your application requirements. If you are unable to locate a jaw style that suits your application needs, contact your local distributor or a member of PHD for assistance.







Series PLC, PLK, PLKD

PHD Keeps Weld Slag Out

Competition Lets Weld Slag In!

Competitor designs do not include an enclosed finger design, allowing debris to enter the unit.

Pin Holding

PLC locates and holds the part simultaneously

PLK

PLKD

Disappearing Pin Designs

PLKD locates, holds, and retracts fully

PART POSITIONING AND HOLDING

The Series PLC, PLK, and PLKD Clamps are ideal for part positioning and holding applications. See below for how each series performs its own particular specialty.

Designed for welding applications, the completely enclosed finger/pin designs keeps weld slag out. In addition, the internal locking mechanism retains the part if pressure is lost. All pin clamps are available in a wide range of pin diameters and styles to fit your specific application needs.

PLC Robust Pneumatic Pin Clamp

- Used to locate and clamp a part through a hole or slot
- Ideal for part clamping in weld areas
- Enclosed finger design keeps weld slag out

PLK Pin Clamp

- Completely enclosed finger/pin
- 5 or 10 mm clamping stroke with 3 pin styles; short, medium, and long pin top shapes
- Available in pin diameters from 12.00 to 30.00 mm diameter
- Position sensing provides open or closed sensing with industry standard AC or DC weld field immune switch mounted in protected housing
- Can be built as drop-in replacement for competitor units

PLKD Disappearing Pin Clamp

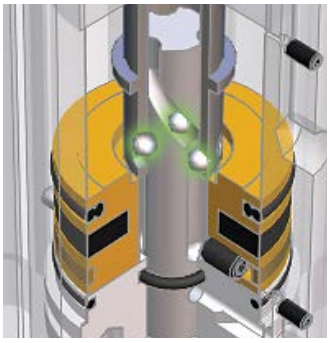
- Locating pin retracts fully into part support for ease of panel removal
- Retractable pin allows for sideways loading and unloading
- Available with single or dual switch position sensing

Series PA, PB, PC

Swing Arm Designs

Swing arms allow clearance for part placement and removal

Superior Design for Longer Life



All PHD swing arm clamps are rotated into position by three hardened steel balls running against a hardened steel spline. This superior design outlasts the competitor's single pin design.

Series PA and PC arms rotate 90°, but also employ a tapered rod end for 360° of arm positioning

PART POSITIONING AND HOLDING

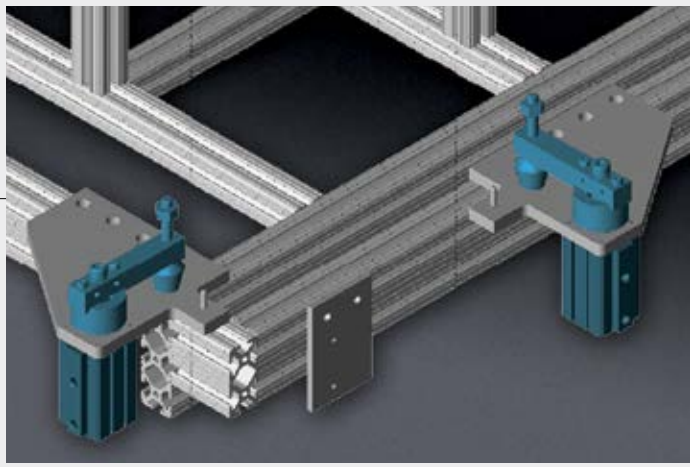
The Series PA, PB, and PC Swing Arm Clamps offer the ability to swing the arm out of the way of the part, giving clearance for part placement and removal. The simple designs provide multiple sizes and left and right arm rotations.

PA Pneumatic Swing Clamp

Simple design, small size, high clamp force, and long life

Five sizes with left and right arm rotations

Ideal for automated workholding



PB Pneumatic Swing Clamp

3 ball mechanism provides longer life than competitor's single pin design

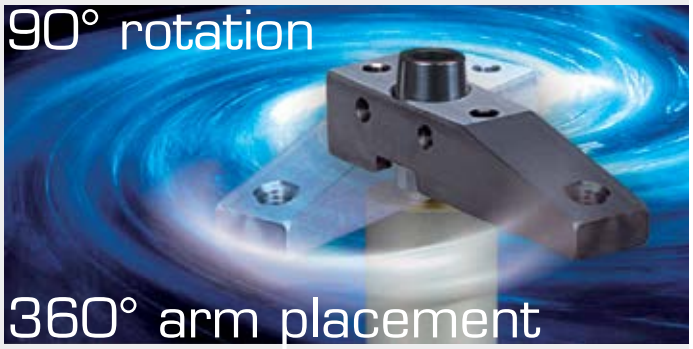
Options for long or short strokes

Easy drop-in replacement

Four bore sizes with short or long strokes

Left or right arm rotations

Ideal for automotive, packaging, assembly, and general automation

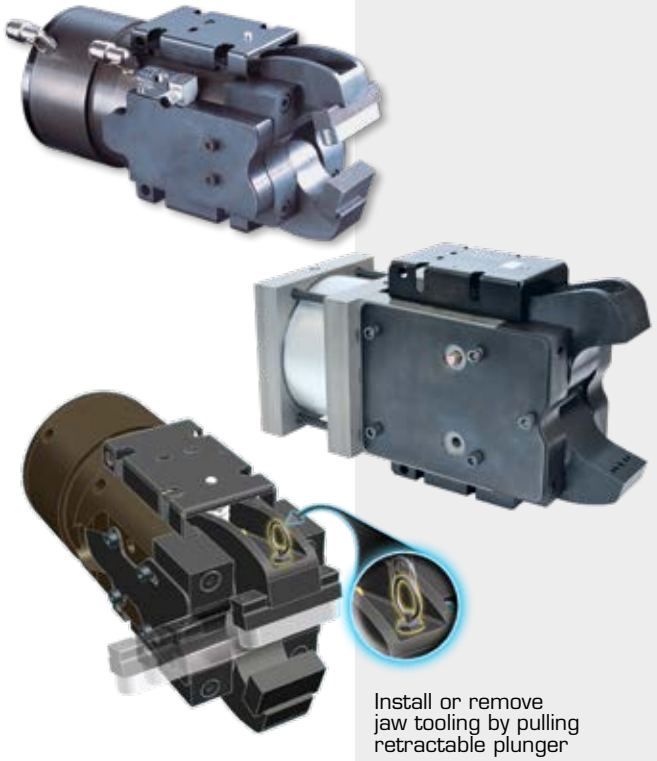


PC Tapered Pneumatic Swing Clamp

Feature tapered rod end for easy angle adjustment as well as mounting patterns for drop-in replacements

Left or right rotations are available

Series PNC, PNC Mongo



Install or remove jaw tooling by pulling retractable plunger

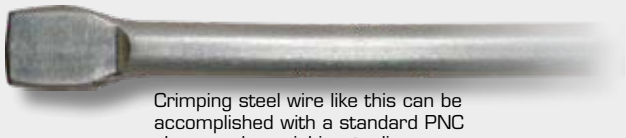
Quick Tooling Identity & Crimping

IDENTITY MARKING & CRIMPING SYSTEMS

The Number Cruncher® and PNC Mongo are cost-effective marking systems that stamp part numbers, dates, shift codes, and logos into sheet metal, plastic, and other materials. Both units may also be used to simply crimp and form materials.

PNC Number Cruncher® Clamp

- Provides cost effective solution for stamping identification characters into parts
- High clamp force produces characters in draw quality steel
- Operates quietly in less than 0.24 seconds
- Force: Up to 48,330 lb at 87 psi [215.0 kN at 6.0 bar]
- Weight: Up to 116 lb [52.6 kg]
- Three sizes available



Crimping steel wire like this can be accomplished with a standard PNC clamp and special jaw tooling.

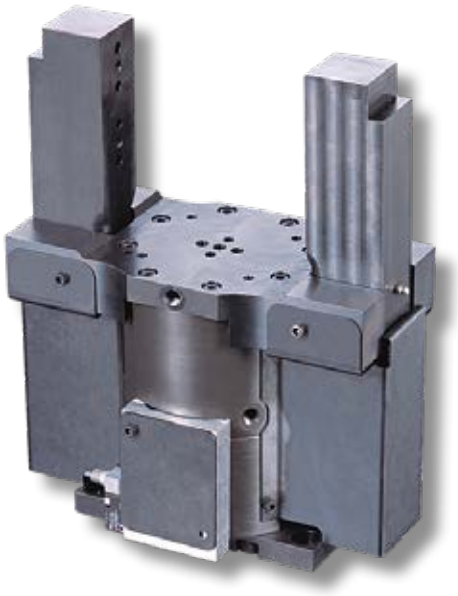
Heavy Duty Identity & Crimping

The PNC Mongo Clamp is capable of generating 60,000 lb [266.9 kN] of total clamp force. The PNC Mongo provides twice the force of a standard PNC Clamp.

PNC MONGO Clamp

- Force: 60,000 lb at 87 psi [266.9 kN at 6.0 bar]
- Weight: 154 lb [69.9 kg]
- Size: (2) 7 in bore cylinders
- Higher force for heavy duty crimping and forming applications
- Accommodates Series PNC Number Cruncher® jaw tooling

Series PFC, PFC Mongo



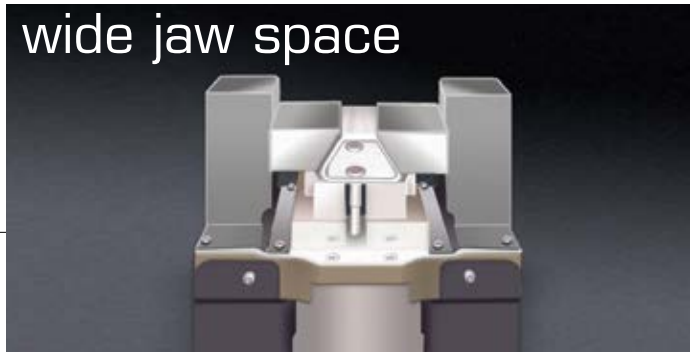
Heavy Duty

HEAVY DUTY CLAMPING FORCE

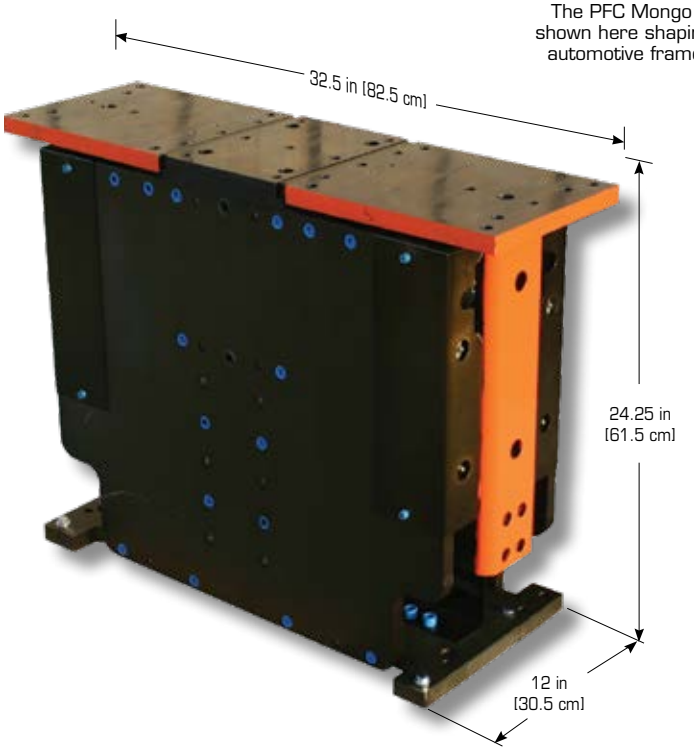
The Series PFC Frame Clamps provide a high force clamping solution specifically designed for heavy duty workholding and welding applications in the automotive industry. Jaws with NAAMS™ mounting patterns allow for fast field setup while optional weld-field immune switches provide position feedback for continuous operation. In addition, weld cover options increase the longevity of the product in high contamination environments, thus reducing costly down time.

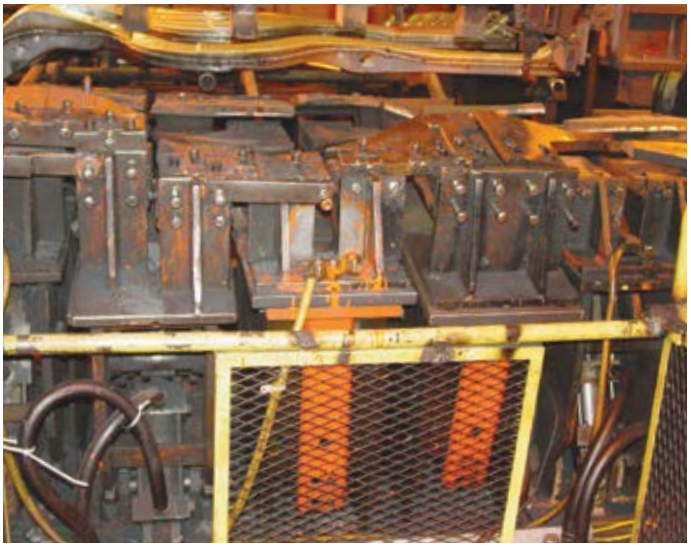
PFC Frame Clamp

- Securely holds heavy parts in place
- Power window of 0.137 in [3.5 mm]
- Wide jaw space allows for clamping large parts
- NAAMS™ mounting patterns for ease of tooling interface
- Force: 11,250 lb at 87 psi [50.0 kN at 6.0 bar]
- Weight: 75 lb [34.0 kg]



The PFC Mongo is shown here shaping automotive frames





PFC Mongo Clamp

- Rugged cam design provides consistent clamping force throughout a wide power window
- Securely holds heavy parts in place
- Long and short jaw travels
- Modular design allows changes from short jaw travel to long jaw travel by simply moving pivot pins
- Force: Up to 50,000 lb at 87 psi [222.4 kN at 6.0 bar]
- Weight: 700 lb [317.5 kg]

Other Clamp Solutions

PART POSITIONING AND HOLDING

PEC Pneumatic Toggle Clamp (Arm Over)

Superior part holding for assembly and welding applications

Clamps and locks over last six degrees of rotation

Retains part in the event of pressure loss

PSP Pneumatic Shot Pin Actuator

Short body length, high pin package accuracy, and the best repeatability in its class

Urethane wipers or optional bronze scrapers provide excellent protection from contamination

Designed for long life and accuracy in welding and assembly areas

PHL Heavy Duty Pneumatic Lifter Slide

Simple design, compact size, long life and the ability to handle high off-center loads

Available as drop-in replacement for General Motors Global Die Standards. See catalog for details.

Built-in rod compliance eliminates side load on cylinder piston rod, thus increasing life

Cost effective replaceable composite bearings

PDG Pneumatic Disappearing Gage Slide

Simple design, compact size, long actuator life, and absorbs high impact forces

Compact design allows it to fit inside a progressive die where it will retract or "disappear" from the work area as panels move to the next stage of processing

Ideal for stopping and positioning sheet metal panels or other parts

PDK Pneumatic Crowder Slide

Simple design, compact size, long actuator life, and absorbs high impact forces

Built-in rod compliance eliminates side load on the cylinder's piston rod

Ideal for pushing sheet metal into location for precise positioning

PLL Pneumatic Light Lifter Slide

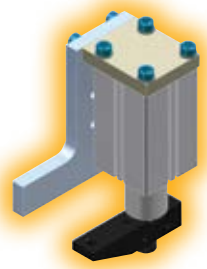
Simple design, compact size, long actuator life, and the ability to absorb high impact forces

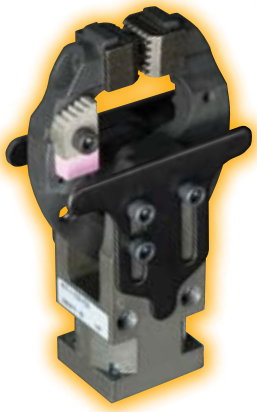
Compact size allows the unit to fit inside the press and close to the panel to accommodate short tooling arms

Ideal for lifting lightweight sheet metal panels out of dies

High-Temp Solutions

- Proven performance at temps over 1700°F [927°C]
- Hot-forming/stamping applications
- Dissipating shields minimize radiant heat
- Coated tips to reflect heat
- High-temp seals and lube





Rebuild Program

REBUILD
REPAIR
RECYCLE

A green solution that helps your bottom line.

Return your old units for rebuilding

Get a 12 Month "Like New" Warranty

- PHD's Rebuild Program refurbishes your existing PHD products with all new wear items
- Rebuilt units offer the same PHD quality that you're used to, but for a fraction of the cost of a new unit, reducing your total cost of ownership
- Rebuilt units are placed back into service, thus reducing your total cost and saving valuable components from scrap
- All PHD factory rebuilt units receive a 12 month "like new" warranty

SAVE MONEY

PHD's rebuild program can reduce your facilities' needs for and costly expenses associated with: training curriculums, increased employee workloads, inventory for repair/replacement parts, and unnecessary equipment and floor space for rebuilds.

ISO 9001 REGISTERED
Quality Management System Certified

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