

# Solving the 3 basic puller problems

## Puller selection basics

Power Team offers the most complete lines of manual and hydraulic pullers anywhere in the world. Combine the most complete line of pullers with our wide array of attachments, adapters and capacities and you now have a solution for nearly every pulling application imaginable.

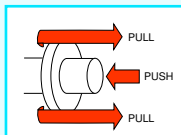
### Considerations:

- 1 Determine the type of puller or puller combination. Which puller type is best suited for gripping the part?
- 2 Is a combination of puller types required?
- 3 Determine the reach needed for your particular pulling problem. The puller you select must have a reach equal to or greater than the corresponding sizes of the part to be pulled.
- 4 Determine the spread needed. The spread is determined by the width of the part being pulled. The puller's spread should be greater than the width of the part to be pulled.
- 5 Estimate the force needed to solve your pulling problem. A puller with the proper reach and spread will usually have enough capacity to remove the corresponding part. When in doubt, always use a puller with a larger capacity than what may be needed. Rusted parts or parts with a large area of resistance may need more pulling force.

### PROBLEM

# #1

## Pulling a gear, bearing, wheel, pulley, ect., from a shaft

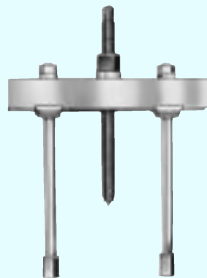


In order to perform a proper pull, be certain that you firmly grip the gear, bearing, wheel, pulley, ect., and apply force to the shaft. Use a 3-jaw puller, instead of a 2-jaw, whenever possible for better gripping power and a more uniform displacement of pulling force.

### Recommended tools:



**Jaw-type pullers:** Either manual or hydraulic. For extra force and convenience, use a hydraulic puller. Both are available in 2 or 3 jaw configurations and are used to grip the outer circumference of a part or can be used with a pulling attachment, such as a bearing/pulley attachment. (pages 116-117, 129-131, 140-141)



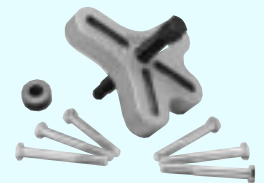
**Push-Pullers** can thread directly into a threaded part for easy and secure removal. Push-Pullers can be used in conjunction with bearing/pulley attachments which grip the part from behind. A wide assortment of male and female threaded adapters are available as well as metric adapters. (pages 118-119, 132-133)



**Slide hammers** are best suited for light-duty tasks. Slide hammers can be used for multiple pulling problems when combined pulling attachments. (pages 122-123)



**Bearing/pulley attachments** provide a "knife-like" edge to get behind parts for added versatility and secure removal of parts. Great for parts that don't offer adequate grip with jaw-type pullers. (page 121)



**Adapters.** Whether you need an adapter compatible with any number of threaded hole sizes, protection of part to be pulled or for assisting the installation of a component; Power Team offers a variety of adapters to assist in the removal or installation of parts. (pages 126-127)



### Mechanical Parts Catalog PC97

To order catalog #PC97, please contact your nearest Power Team distributor.

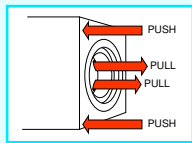
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## Puller selection basics

### PROBLEM

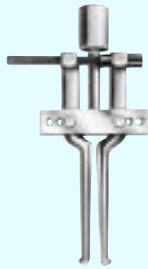
# #2

## Pulling internal bearing races, retainer, seals, ect.

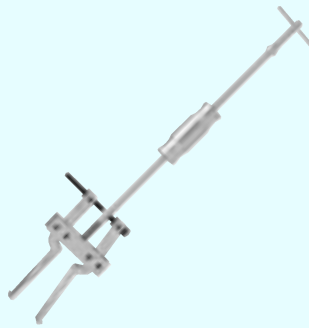


By extending the narrow jaws of an internal pulling attachment through the center of the part to be pulled, a straight pull is insured, and damage to the housing is avoided. While parts within a "blind hole" in a housing do present a problem, Power Team has the internal pulling attachment or a combination of an internal pulling attachment and puller to handle the situation.

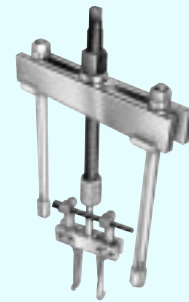
### Recommended tools:



**Internal pulling attachments** have narrow jaws which extend through the center of the part to be pulled. They provide a straight pull and avoid damaging housings. Internal attachments feature adjustable jaws to fit various diameter parts. (page 120)



**Slide hammer with internal attachment** is ideal for removing parts from blind holes, especially where there is no housing to brace puller legs against. (pages 122-123)

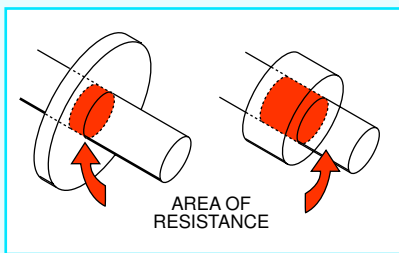
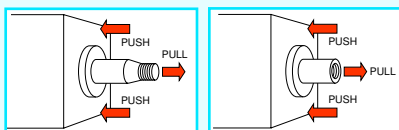


**Push-puller with internal attachment.** Push-puller is available in both manual and hydraulic versions. (pages 118-120, 132-133)

### PROBLEM

# #3

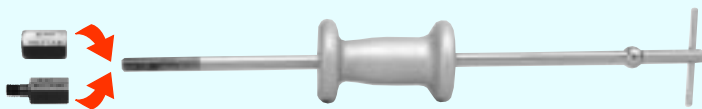
## Pulling a press-fitted shaft from a housing



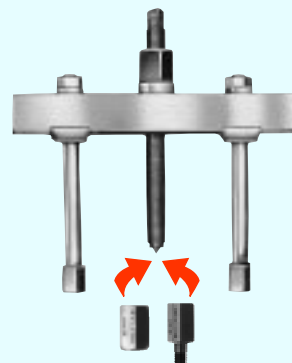
A shaft with a threaded end can be removed without damage by using one of our slide hammer, manual Push-puller or hydraulic Push-pullers, in conjunction with the proper threaded adapter. Removal is easy! If the shaft to be removed has external threads, simply choose one of our female threaded adapters of proper size/thread. If the shaft has internal threads, simply choose the correct size male threaded adapter.

**Note:** Manual pullers require that the shaft being pulled is no more than twice the diameter of the puller's forcing screw. To determine the recommended tonnage for hydraulic pullers, multiply the diameter (inches) of the shaft to be pulled by ten. Example: For a 25.4 mm (1") shaft, we recommend 10 tons of pulling force.

### Recommended tools:



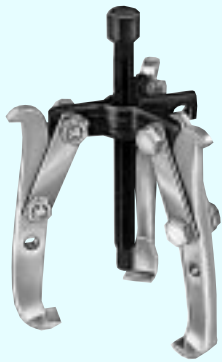
**Slide hammer puller** matched with a set of threaded adapters is a perfect tool for light duty pulling needs. (pages 122-123, 126-127)



**Push-pullers** matched with a set of threaded adapters make for an extra versatile pulling tool. (pages 118-119, 126-127, 132-133)

# Choosing the right puller

## Puller selection basics



### Features:

- Grip-O-Matic® feature on jaw type pullers
- 2-way, 3-way and 2/3-way combination pullers
  - 1 to 37 ton mechanical pullers
  - 5 to 50 ton hydraulic pullers
  - 54 mm (2<sup>1</sup>/<sub>8</sub>" ) to 702 mm (27<sup>5</sup>/<sub>8</sub>" ) reach
  - 83 mm (3<sup>1</sup>/<sub>4</sub>" ) to 1,118 mm (44" ) of spread
- Forged alloy steel jaws
- Machined puller jaw toes
- Alloy steel heads (forged or flame cut)
- Rolled "V" threads
- Special coating on threads
- Heat treated alloy steel cross bolts
- Standard hydraulic cylinders on Grip-O-Matic® series
- Adjusting nut on Super Grip-O-Matic® series



### Benefits:

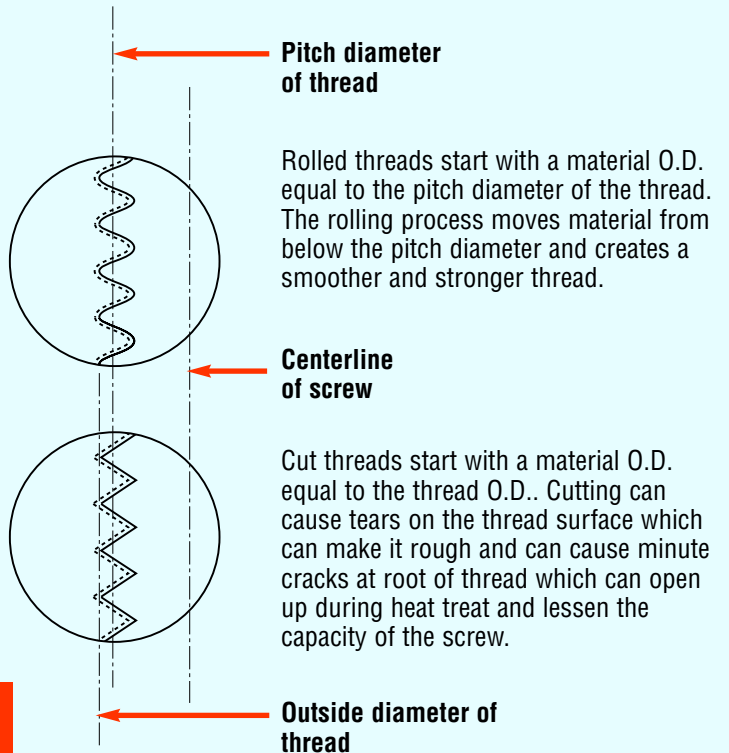
- The harder the pulling force, the tighter the jaws grip
- A wide variety of pullers; select a specific puller for a specific application or select one or more pullers for general applications
- Strongest possible part; the grain of the material follows the contour of the part.
- Larger and stronger pulling toe than most competitors
- Heat treated and designed for maximum strength
- Stronger and smoother than cut threads
- Resists corrosion, traps lubrication better than black oxide
- Designed for max. shear strength
- Cylinder can be removed from puller and used in other hydraulic applications
- Allows for controlled jaw spread adjustment



**Why our rolled puller threads are superior:**

SGH153CR with a bearing pulling attachment was used to take a bearing off a utilities well pump motor.

**NOTE:** The puller application photos shown in this catalog are shown without protective blankets for clarity of photos. Power Team strongly recommends you always make your pull with a protective device in place.



# Choosing the right puller

## Puller selection basics

### Operator Safety Comes FIRST!

Tons of force are being exerted with your Pulling System. You must respect this force, and observe safety precautions at all times

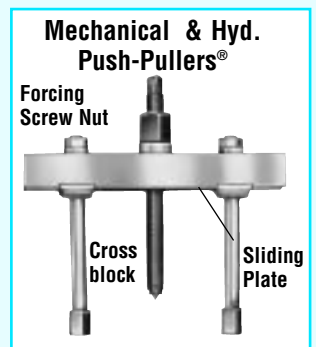
#### ⚠ CAUTION

It is impossible to predict the exact force required for every pulling job: setup requirements and the size, shape and condition of the parts being pulled vary a great deal. In addition, the Power Team Pulling System is so versatile, it is possible that components in a pulling setup may have different tonnage ratings. The lowest “capacity” component, then, determines the capacity of the setup. For example: When an accessory with a 1 ton capacity is used with a 10 ton capacity puller, the setup can be used only at a force of one ton.

These tools should be used only by trained personnel familiar with them. Always wear eye protection during a job since work parts, or the pulling tool itself, may break and parts may fly. It is recommended to cover the work with a Power Team Protective Blanket or use a shield while force is being applied. If you are at all unsure which tool or attachment to select, contact the Power Team factory.

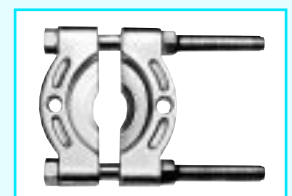
#### A FEW EASY TIPS TO REMEMBER:

- 1. Wear safety glasses at all times!** You have only one pair of eyes, so protect them from possible flying parts.
- 2. Keep your pulling tools in shape!** Clean and lubricate the puller’s forcing screw frequently, from threads to tip, to assure long service life and proper operation.
- 3. Cover work with a protective blanket!** With high forces being exerted on the part being pulled, breakage may sometimes result. By covering the work with a protective blanket, the mechanic reduces the danger of flying parts.
- 4. Apply force gradually!** The component should give a little at a time. Do not try speed removal by using an impact wrench on the puller screw.
- 5. Use the right size puller!** If you have applied maximum force and the part has not moved, go to a larger capacity puller. Resist sledging.
- 6. Align puller legs and jaws!** Be sure the setup is rigid and that the puller is square with the work.
- 7. Mount puller so grip is tight!** Tighten the adjusting strap-bolts when using a jaw type puller. ■ Always use a 3-jaw puller whenever possible. A 3-jaw puller gives a more secure grip, more even pulling power. ■ Apply force gradually. — Never use an extension on a wrench. — Never use an impact wrench. — Never strike the end of the forcing screw. ■ Always cover work with a protective blanket.
- 8. Do not couple puller legs!** The tonnage capacity of a Push-Puller® is reduced when longer than standard legs are used, or when legs are in compression. The chance of breaking, bending or misaligning legs increases. ■ Keep reach to a minimum. Use shortest legs possible to reach work-piece. ■ Thread legs into workpiece, pulling attachment or adapters evenly. Uneven legs will cause greater pull or push on one side, creating a bending action which could cause damage to work piece or cause a leg to break. ■ The sliding plates must always be on the opposite side of the cross block from the forcing screw nut or hydraulic cylinder. ■ Always cover work with a protective blanket.



#### Bearing pulling attachments

These attachments may not withstand the full tonnage of the pullers with which they are used. The shape and condition of the part being pulled affects the tonnage at which the puller blocks and/or studs may bend or break. Always select the largest attachment which will fit the part to be pulled.



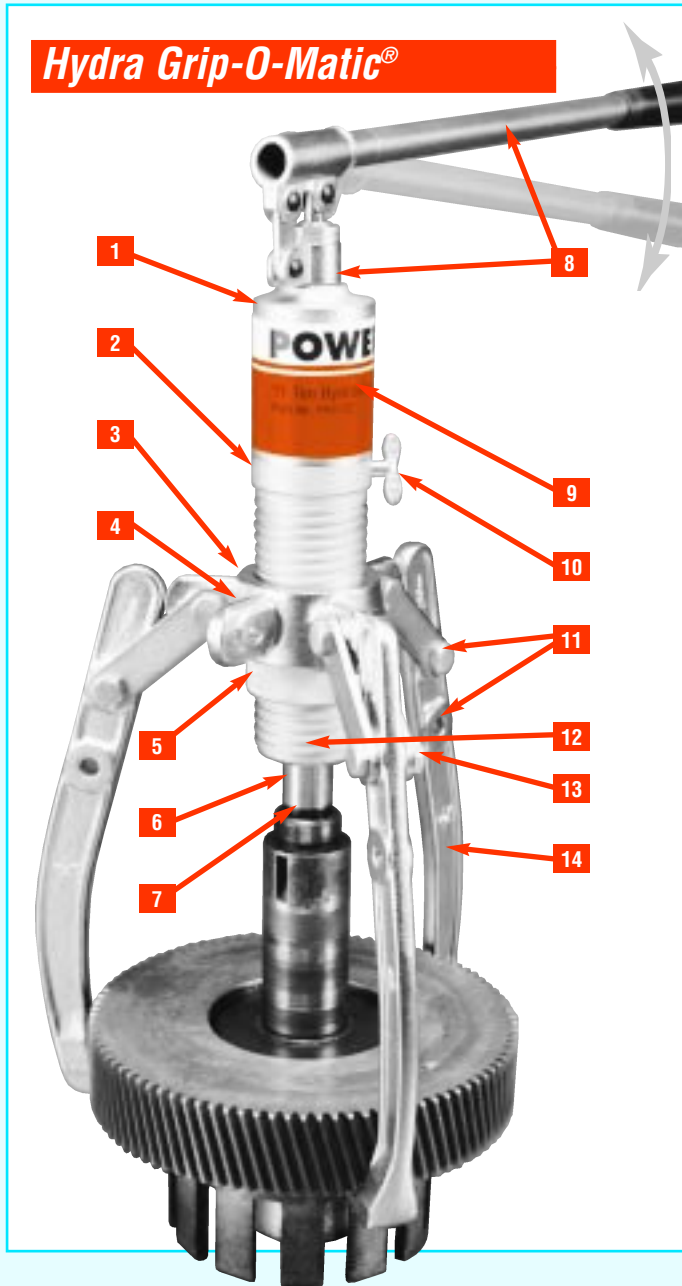
# Choosing the right puller

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A self contained pulling system in a compact package! You get a 2/3 way combination puller, hydraulic cylinder and built-in hand pump in one integral, lightweight unit with its own carrying case.

You get the world's most copied puller design; the harder the pulling force, the tighter the jaws grip for secure holding force. Power Team pullers are tested for top performance and reliability at maximum capacity and jaw spread. Use them with confidence! Removing a wide variety of gears, bearings, bushings, pulleys and other press-fitted parts becomes a routine task.

### Hydra Grip-O-Matic®



**Compare these Power Team features and benefits with any other pullers on the market!**

- 1 Bright chrome finish.** Resists corrosion.
- 2 Integral safety relief valve.** Prevents overloading puller.
- 3 Heat treated forged alloy steel head.** Provides much more strength and durability than a casting.
- 4 2/3-way combination puller head.** Provides the stability of a 3-jaw puller plus the 2-jaw option when space is limited. Three jaws give a more secure grip and more even pulling force. It's like getting two pullers for the price of one!
- 5 Rapid adjustment.** Acme thread and knurled adjusting nut provide for rapid adjustment of the hydraulic cylinder to the work surface.
- 6 Heat treated and chrome plated cylinder piston rod provides linear force.** Eliminates torque and friction forces encountered with conventional screw type pullers.
- 7 Spring loaded live centering cone (removable).** Centers puller on shafts with drilled centers and automatically retracts when pressing against plain or rusted shaft ends. Helps keep puller on the shaft when attaching and adjusting it to the part to be pulled.
- 8 Pump handle rotates 360°, is removable.** Flexibility in positioning handle at the most convenient pumping location. Handle is removed for compact storage of puller in the furnished, tough plastic carrying/storage case.
- 9 Bladder type oil reservoir.** Allows unit to be operated in any position/orientation.
- 10 Easily metered release valve control knob.** For retraction of cylinder rod.
- 11 Multiple cross bolt mountings.** Provide additional setup versatility.
- 12 Spring return hydraulic cylinder.** Provides rapid retraction of cylinder rod upon completion of the pull.
- 13 Heat treated alloy steel cross bolts.** For maximum shear strength.
- 14 Heat treated, forged alloy steel jaws are machined and serrated.** You get maximum durability, and an improved grip on the part being pulled.

