



Instruction Sheet

Slug-Out 90™

IMPORTANT RECEIVING INSTRUCTIONS: Visually inspect all components for shipping damage. If any shipping damage is found, notify carrier at once. Shipping damage is NOT covered by warranty. The carrier is responsible for all repair or replacement costs resulting from damage in shipment.

SAFETY FIRST

IMPORTANT — USER SAFETY AND PROTECTION: In setting up systems to fit your operations, care must be taken to select the proper components and design to insure appropriate integration with your operations and existing equipment and that all safety measures have been taken to avoid the risk of personal injury and property damage from your application or system.

GB ELECTRICAL CANNOT BE RESPONSIBLE FOR DAMAGE OR INJURY CAUSED BY UNSAFE USE, MAINTENANCE OR APPLICATION OF ITS PRODUCTS. Please contact GB Electrical for guidance when you are in doubt as to the proper safety precautions to be taken in designing and setting up your particular application.



To prevent injury keep hands away from the punch and die while punching holes. Always wear approved eye protection.

Avoid dropping the cylinder. During punch operation, support the cylinder to prevent it from falling after punching is completed.

To prevent thread damage, be sure punch is threaded onto the stud until the stud extends beyond the punch. Make sure all rods, studs and punches are secured before operating hydraulic driver.

Do not operate near live circuits. Contact with live circuits can cause injury or death.

Never exceed rated capacity of the tool. Use this tool for its intended use only.

Never operate the pump lever after the ram motion stops. Continued operation after ram motion stops will damage driver and could result in injury.

Note: Inspect tool and components for wear & damage. Replace worn, damaged, or missing components with genuine GB replacement parts. To ensure ease of assembly & operation, keep all threads clean & lightly oiled.

Slug-Out 90™ 1/2" - 2" Self-contained Right-angle Hydraulic Knockout Set

Features

- Four-point punches for easy slug removal.
- Right-angle head swivels 360° for flexible punching in tight work spaces.
- Punches up to 2 1/2" conduit sizes in up to 12-gauge stainless or 10-gauge mild steel.
- Compact, lightweight size: 7 1/2 pounds and 13" long.
- Operating pressure rated at 10,000 psi.

KOS5290 Kit Components:

Model	Description
KLP6	Hydraulic Driver
KPR7520	Pull Rod
KPS50	Pull Stud
KSA50	Pull Stud Adapter
Z88010	Storage Case
KP500B	1/2" Punch
KD500B	1/2" Die
KP750B	3/4" Punch

Model	Description
KPD750B	3/4" Die
KP1000B	1" Punch
KD1000B	1" Die
KP1250B	1 1/4" Punch
KD1250B	1 1/4" Die
KP1500B	1 1/2" Punch
KD1500B	1 1/2" Die
KP2000B	2" Punch
KD2000B	2" Die

To Protect Your Warranty, Use Only Enerpac Hydraulic Oil.

Drilling Guide Holes

1. Mark the center position, drill a $\frac{1}{8}$ " pilot hole. Enlarge the hole with a $\frac{7}{16}$ " drill to provide pull rod clearance.
 - a. If working to close tolerances, mark the center position by scribing cross lines shown in Figure 1.

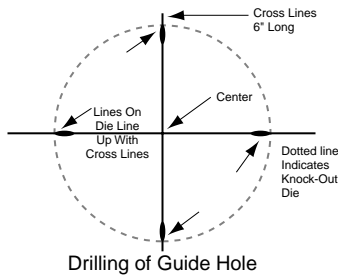


Figure 1

- b. When assembling the punch to the pull rod, align the cross marks with the four marks on the outer die surface.

NOTE: If pre-punched knockouts are already in the desired location, drilling a guide hole is not required.

2. For larger holes $\frac{3}{4}$ " to $2\frac{1}{2}$ ", the $\frac{1}{2}$ " punch is used to make the guide hole.

Punching $\frac{1}{2}$ " Holes

1. Thread the pull stud into the pull stud adapter end until firmly seated. (Figure 2)

NOTE: The pull stud and pull stud adapter are only used with the $\frac{1}{2}$ " punch. The $\frac{1}{2}$ " punch is used to make guide holes for larger punch sizes.

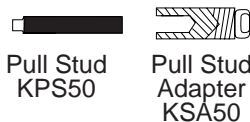


Figure 2

2. Attach the pull stud adapter to the cylinder by inserting the pull stud adapter into the plunger opening and threading until the pull stud extends beyond the end of the cylinder. (Figure 3)

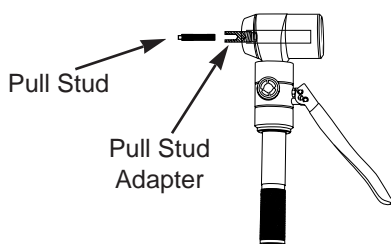


Figure 3

3. Slide the $\frac{1}{2}$ " die over the pull stud, flat side toward the cylinder.
4. Insert the pull stud through the guide hole (Figure 4). Attach the $\frac{1}{2}$ " punch to the pull stud. Turn the punch until it is completely threaded onto the pull stud.

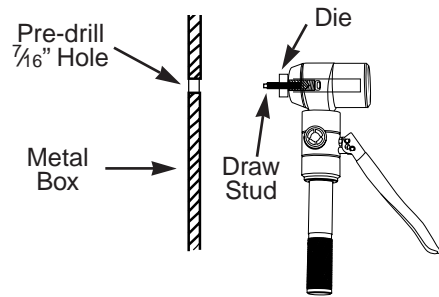


Figure 4

5. Close the pump release valve by turning it clockwise (Figure 5). Hold the punch set in position, work the pump handle until the punch completely penetrates the metal.

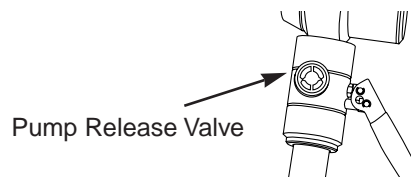


Figure 5

6. Remove the punch set from the hole. Turn pump release valve counterclockwise to open. The cylinder will retract and the slug must be removed from between the punch and die.

Punching $\frac{3}{4}$ " through $2\frac{1}{2}$ " Holes

1. Drill a pilot hole ($\frac{7}{16}$ " install the $\frac{1}{2}$ " punch and make guide hole. See *Punching $\frac{1}{2}$ " Holes*.
2. Remove the $\frac{1}{2}$ " punch and die set. Also remove the pull stud and pull stud adapter.
3. Attach the pull rod (KPR7520) to the cylinder by inserting the rod into the plunger opening and threading until the pull rod extends beyond the end of the cylinder.
4. Select the punch set needed. Slide the die over the pull rod.
5. Place the pull rod into the $\frac{1}{2}$ " guide hole, thread the punch onto the pull rod. Be sure the pull rod extends beyond the punch.
6. Operate the hand punch until the punch penetrates the metal. Open the punch release valve. Remove the slug.

Note: To avoid excessive wear and tear on the pull rod threads during punching, center the guide hole accurately enough so that the pull rod does not rest against the metal edge of the guide hole. Also, be sure that all points of the punch are in uniform contact with the metal surface when starting to punch.

REPAIR AND SERVICE INSTRUCTIONS: For repair service and parts contact your nearest GB ELECTRICAL Service Center. The GB ELECTRICAL Service Center will provide complete and prompt service on all GB ELECTRICAL products.

PARTS AND SERVICE: For quality workmanship and genuine GB ELECTRICAL parts, select an Authorized GB Service Center for your repair needs. Only repairs performed by an Authorized Service Center displaying the official GB Authorized sign are backed with full factory warranty. Contact GB Electrical (414)352-4160 for the name of the nearest GB Authorized Service Center.

WARRANTY: GB ELECTRICAL, INC. warrants its product against defects in workmanship and materials for 1 year from date of delivery to user. Warranty does not cover ordinary wear and tear, abuse, misuse, overloading, altered products or use of improper fluid.

WARRANTY RETURN PROCEDURE: When question of warranty claim arises, send the unit to the nearest GB Authorized Service Center for inspection, transportation prepaid. Furnish evidence of purchase date. If the claim comes under the terms of our warranty the Authorized Service Center will REPAIR OR REPLACE PARTS AFFECTED and return the unit prepaid.

GB
Gardner
Bender

A unit of **apw** Tools and Supplies

6101 N. Baker Road, Milwaukee, WI 53209 • Phone: (414) 352-4160 • FAX (414) 352-2377

RPS-0129 4/98