

How to Fit a Little Giant Die Key

Properly fit die keys are VERY IMPORTANT. First, they will keep the dies from working loose while you are using the machine. Second, poorly fit keys can create concentrated pressure points that may eventually lead to a broken dovetail. Third, a well fit key makes changing dies very easy. It takes time and patience to correctly fit a die key, but it will save you from frustration or a damaged machine.

REMOVE THE OLD DIE AND KEY:

Use a short chisel that is stout, so as to allow no flex. The end of the chisel should be squared off to present good contact for the driving area. If needed, grind the chisel thinner so it will reach behind the die.

Using the chisel, strike the small end of the key with a medium sized (2-3 LB) hammer. Avoid tapping with a small hammer, as this seems to cause the end of the key to swell. Penetrating oil or heat can sometimes be helpful. A slide hammer or other mechanical or hydraulic means can be utilized to pull the key out from the wide end.

If the small end of the die key is battered, or if 2 keys have been driven in from opposite directions, removal may require blowing out the die with a cutting torch.

CHECK THE CONDITION OF THE DOVETAIL:

The dovetail in the frame or ram needs to be straight and smooth, so as to allow as much contact as possible between the die and dovetail, and between the die key and dovetail. Using the die as a gauge, evaluate the condition of the dovetail. It must contact at the same angle as the die. Also, the floor of the dovetail must be flat. If your machine is an older model, the dovetail may have a pin in the center. We believe the pins were used at the factory in assembly, and know the pins can cause wallowing problems, so we discard them.

CORRECT PROBLEMS IN THE DOVETAIL:

If the floor of the dovetail is hammered in, typically filing will correct it. Extreme cases may require grinding or machining. In this case, a plate of steel can be added to the floor of the dovetail to replace material that has been removed. Any type of steel will work as long as it is the right thickness. Welding or bolting a plate in place is unnecessary as the die will hold it in place.

Size of Little Giant	Original Depth of Dovetail
25 LB	1"
50 LB	1 3/8"
100 LB	1 1/2"

For the sides of the dovetail, flat filing may be all they require. If done with care, grinding with a right angle grinder can expedite the process. Refer to the dovetail angle of the die to check accuracy throughout the process. A helpful trick is to use a soft brass or copper shim (.030 or .040) to give additional contact in an irregular dovetail, on the side without the key.

ESTABLISH WHICH WAY THE DIES GO IN:

The factory machined a straight dovetail on early models; on machines with removable sow block, the factory machined a taper of 1/8" per foot into the dovetails. They are generally set up with the small end to the left and the large to the right. It needs to be checked and verified. It is possible that the sow block could have been turned around, on models so equipped, causing the small and large ends to be reversed.

Dovetails on rams are not tapered from left to right. NOTE: On 25 LB Little Giants (and some very early 50 LB) the upper key has a double taper, from left to right and across the width.

The die needs to be checked for the same taper. On new dies from Little Giant, the ends are marked “W” for wide and “N” for narrow. Set the die into the dovetail with the narrow end into the wide end. This creates a natural taper into which the die key will be fit.

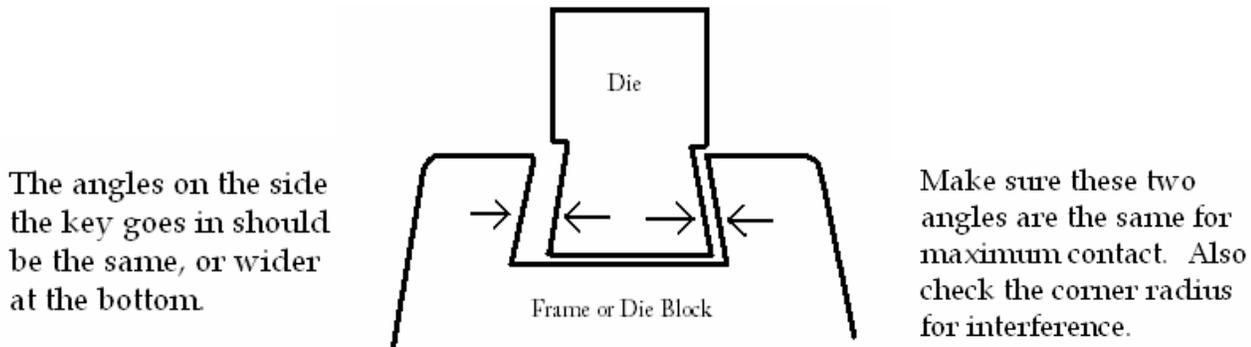
CORRECT THE DIE ALIGNMENT:

Usually the die is positioned to the front of the dovetail with the key going into the rear. Variations of this are found on some machines. It can be changed in order to position dies for better alignment with each other. On old style machines, the ram can be turned around, which sometimes will correct an alignment problem.

CHECK THE INITIAL FIT OF THE DIE:

Check the corner of the die for proper radius; the die should seat squarely on the floor of the dovetail. Compare the angles of the die and dovetail to ensure they are the same. Minor corrections can be made with a file or small grinder. Proceed slowly with corrections, as this fit is very important.

Move the die to the key side and check for the same fit. The angles should be the same, or a little wider at the bottom. It should not be wider at the top, as this causes the die key to ‘squirt’ up and out of the dovetail as it is driven in.



FITTING THE KEY:

Start the process by coating the two surfaces the key will be contacting with Prussian Blue. This is used in many close tolerance fitting applications in machine shops and garages, and is available or can be ordered at most auto parts stores. We use Permatex brand, part number 80038.

Insert the key and lightly tap it in. Drive the key back out with a long chisel, and notice the contact area as indicated by the blue left on the key. These are high areas that need to be removed by grinding. Make corrections in both the long taper and in the top-to-bottom dimension. The goal is to achieve at least 75% overall contact area. Stop to check the fit often while making corrections. It can be helpful to mark the key, so the same side is always up. (This is also a useful reference when changing dies.)

Continue to check and grind the key until it will extend to at least the far side of the die. Closely watch the contact area. Extra time during this process can save you time later.

Trim the key to length, leaving some extra on the large end to allow the key to be driven in as it conforms. Make sure the upper key will not interfere with ram guide. On old styles, the left end usually needs to be trimmed to clear the ram guide. On new styles, the right hand end needs to be checked, as it can interfere with the guide or frame. This needs to be checked carefully, as it is in a fairly hidden position. Chamfer

the ends of the key generously, particularly the small end. This will prevent it from swelling when driven out.

INSTALL THE KEY:

Drive the key in, again using a 2-3 LB hammer. If properly fit, it should drive to a certain spot and you should get a definitive solid sound when striking the key. Hit it solidly, without overdoing it. If the key is fit well, heavy hitting won't be necessary to install it. Run the hammer for a few blows, tapping the key occasionally to check. After a several minutes of operation the key should be seated, and will require very little attention for quite some time.

EXTRA BITS OF INFORMATION:

This method of fitting keys was distilled from years of rebuilding machines by Fred Caylor and in our shop at Little Giant.

New die keys are made of mild steel: tool steels and spring steels have been used with equal success.

This method of fitting die keys will work on other brands of power hammers.

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