

ALIGNMENT TOOL STACK

The advantage of having an alignment tool stack is the ease that is made of checking press alignment, the die stack alignment to the pressure plate bore and the stem alignment to the container bore.

The alignment tool stack is made to the same outside dimensions as the die stack and bolster stack. The bore is made to the same internal dimensions as the container bore and the pressure plate hole. When the alignment tool stack is sitting in the die holder with the container sealed, you can look through platen hole and check the alignment of the container to the die stack.

The stem should then be brought forward without the alignment tool stack, to the entrance of the container and held so that the stem can be checked for alignment to the container bore. The stem should then be brought forward to the end of the stroke. It should be on center all the way through the container. If not, the stem is out of alignment.

Press - Alignment

Most often the problem is not a single one, but a number of small ones which add up to a major problem. Problems with press alignment can often start from the press foundation and bed, which can move over time from normal use. Foundation bolts and shims can become loose, allowing the press to shift.

Some presses are supplied with a pair of alignment blocks. In this case, the ways are on an angle and the alignment blocks can be placed on the ways with a straight edge and machinery level. This will soon tell the story (of course, more efficient lasers can be used if available).

Should the bed of a press be out of level problems will multiply as you proceed with alignment. The tie rods should be checked and maintained within .005" (.127 mm) in all directions.

The main ram (with level bed) should be moved out approx. 30" (750 mm) and a machinery level placed on top of the ram. The ram can then be leveled with shims under the main ram shoes. If the stem is not level, both the crosshead pressure plate and the stem should be checked.

With the alignment tool stack installed in the die slide, align the pressure platen hole and container bore to the alignment tool stack. If you have misalignment between the container and the alignment tool stack, check the die changer for height and base of the die changer for level. The alignment tool stack should then be removed from the stem and the stem moved forward and centered to the container bore (a taper wedge is useful for



this purpose). Looking through the platen, the stem should then be moved slowly through the bore of container, it should be in the center of the bore all the way through.

After the stem is aligned, align the billet loader so that the plates are approx. .020" (5mm) above the bottom of the container bore. The face of stem should be checked for mushrooming. If mushroomed, the stem must be stressed relieved, checked for cracks and machined.

The extrusion cycle should also be checked. The container should only open 3/4" to 1" (20-25 mm) before the main ram starts to retract. This is usually accomplished by adjusting limit switches. This will reduce the damage caused to the alignment tool stack and container face during ram return.

Many problems are caused by aluminum build up on the seal face of the container or the die. This may be due to poor butt shear adjustment, bad loader alignment, or a butt lodging between the container and the die which forces the container to move. A tilt switch can be installed to stop serious damage to the stem and the loader if this occurs.

Another area which should be examined is the main ram bushing and the main ram packing. If there is wear in this area there will be signs of oil leakage and the stem will be out of parallel. A short term solution is to rotate the bushing 180°.

EXTRUSION

