Double Action Press

1. Features of double action press

Double action presses are available in double action mechanical presses and double action hydraulic presses. The double-action press has two sliders, which press and draw separately according to their respective motion laws. Double action press is mainly used for deep drawing of large and complex parts. Compared with single-action presses, it has the following characteristics:

1) The double-action press has a large pressing force, which is generally 0.6-1 times of the drawing force. The pressing force of the single-action press is provided by the elastic pressing device, and the maximum is about 0.3 times of the drawing force. When the large or complex cover part is drawn, the pressing force is insufficient.
2) The four corners of the double action press slider can be adjusted to make the pressure ring slightly tilt, thus adjusting the press of each part.
3) The speed of pressure slider of the double action press is close to zero at the time of pressing. Its stroke is almost unchanged and consumes very little energy.
4) The lower drawing die of the double-action press is fixed on the working table, and the blank is easy to be placed and positioned on the die, which is convenient for feeding and picking up by robot.
5) The double-action press has good compression rigidity and can fully exert the effect of pulling rib on the pressing surface.
6) When the double-action press starts to press, the speed of the press slider is close to zero, and the force impact is small.

2. Double action mechanical press

The double action mechanical press has an outer slide and an inner slide. The pressure ring is fixed on the outer slide for pressing, and the convex mold is fixed on the inner slide for deep drawing. The outer slide is generally moved by a linkage mechanism.

The outer slider moves downwards ahead of the inner slider and reaches the bottom dead center to press the blank and then remains stationary. At this time, the inner sliders are

descending and at the bottom dead center of the outer slider starts to draw until the inner slider reaches the bottom dead center of its own, then the drawing ends. After the drawing is completed, the inner slider firstly rises, and the outer slider keeps staying at the bottom dead point for a while and rises too. The outer slider rises faster, and has begun to move downward again when the inner slider reaches the top dead center.

The double-action mechanical press is also divided into single point, double point and four points as per the number of crank links (the number of point is for inner slider, the outer slider is all four points); according to the transmission type, it can be divided into 3 type: eccentric upper transmission, and multilink upper transmission and lower transmission. The number of points and arrangement are the same as for single-action mechanical presses.

3. Double action hydraulic press

The two sliders of double action hydraulic press are called the main slider and the pressure slider, respectively, for drawing and pressing. The two sliders can be interlocked and the pressure can be superimposed as a single-action press. There are two types of slider arrangement for double action presses, namely inner and outer slider type and upper and lower slider type.

Compared with the double-action mechanical press, the double-action hydraulic press has a simple structure, low manufacturing cost, convenient slider speed adjustment, uniform speed and pressure of the slider at various stroke points, and small vibration and noise during operation. However, the production efficiency is low, the power consumption is large, and the maintenance is inconvenient. Therefore, the double-action hydraulic press is suitable for parts with small batch size, complicated shape and deep drawing depth, while the double-action mechanical press is suitable for small-scale drawn parts which are produced in large quantities.