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Satisfying the CUSTOMer

Hydraulic Press Market Grows



Slow, leaky and noisy—the stereotypical description of the hydraulic press. Things have changed. New technology in hydraulic presses such as soft shift valves, “O” ring fittings, manifolds, replacement of hard plumbing with hoses and hydraulic decompression circuits have eliminated leaks. New pumping systems and electro-hydraulic servo valves significantly increased the speed while high efficiency electric motors and these new pumping systems have lowered noise levels down into the 60-65 decibel range.

“...the hydraulic press has evolved into a viable candidate for applications historically dedicated to mechanical presses...”

With these types of technological improvements, the hydraulic press has evolved into a viable candidate for applications historically dedicated to mechanical presses, especially those with hand fed operations. Furthermore, the overall economic attractiveness of the hydraulic press versus its mechanical counterpart persuades engineers to choose them for applications where they previously would not have even been considered. All of this has significantly contributed to the growth in utilization of hydraulic presses throughout the metal-forming industry. Stamping, deep drawing, coining, embossing and many other new applications now join the standard hydraulic press applications such as assembly, crimping, staking and bearing insertion.

in our industry. Hydraulic presses are built to last, with longevity easily reaching 25 years and more. Safety features such as the Neff Press Hydro-Guard press control system are now readily available to ensure that the hydraulic press conforms to industry standards set forth by OSHA and ANSI B11.2-1995. Also, the reasons why hydraulic presses require minimal maintenance and troubleshooting is very simple. These are just a few of the reasons why customers are now more serious in their evaluation of the hydraulic press.

‘Custom’izing

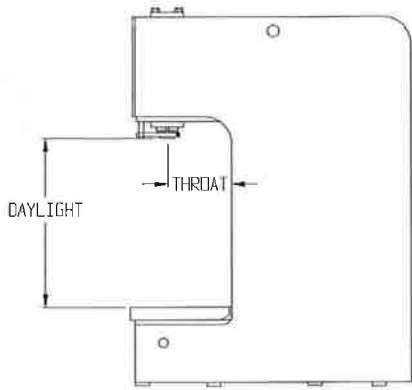
An advantage of the hydraulic press is the ease that custom modifications can be accomplished. Hydraulic, electronic and even mechanical modifications are simple and economical to integrate. For instance, stroke can be increased or decreased for very little investment. Frame dimensions such as daylight and throat (see dwg. #1) can be modified to suit an application for minimal investment and with little impact on delivery. Hydraulic circuits are commonly modified to add auxiliary clamping cylinders, to increase cycle rates, to allow timed dwell under force, to



Special indexing unit

Other factors support the continued growth of the hydraulic press

Drawing 1:
Daylight and throat are easily modified



control ram speeds, to integrate hydraulic die cushions or even to modify the sequence of ram travel. There is also a myriad of control modifications that can be accomplished such as multiple top stop arrangements, special PLC integration, special control components, buzzers, alarms, good part/bad part detection and many, many more.

Even the actual configuration of the press can be tailored to the application. A hydraulic ram does not care if it is oriented upside down, vertically or horizontally because hydraulic fluid is the energy source. As long as the hydraulic pump and electric motor are operating properly, fluid will get to the ram and it will do its work. An automotive supplier recently took delivery of a Neff hydraulic press that was oriented horizontally and upside down on its face. The hydraulic power unit remained in its standard vertical position mounted in the back of the "C", but now on top of the press.



There are many specific examples of custom modifications to standard hydraulic presses that directly solve a customer's problem or address a unique application. Following are some custom applications that Neff Press has recently encountered.

Special Staking Press

A major customer contacted Neff Press with a requirement to stake components into a round assembly. This application was complicated because a single press was tasked to handle different diameter assemblies requiring varying numbers of components to stake, depending on the diameter of the assembly.

The solution was to mount a special, servo-driven indexing unit within a Neff 12-ton bench model press with special throat, daylight and stroke. The index unit could be programmed to stop at up to 360 stations, however this application required programming it to stop at 2, 4, 6, 8 and 10 stations, depending on the number of components to stake

(see photo on previous page). The operator simply chooses the appropriate program using a selector switch, and the press is now configured to stake the correct number of components into the assembly.

In order to handle the different assembly diameters, the press was designed so that the indexing unit is adjusted in or out with a crank handle to properly position the assembly under the ram tip. A fixed scale is included to assist in positioning the index unit based upon the assembly diameter.

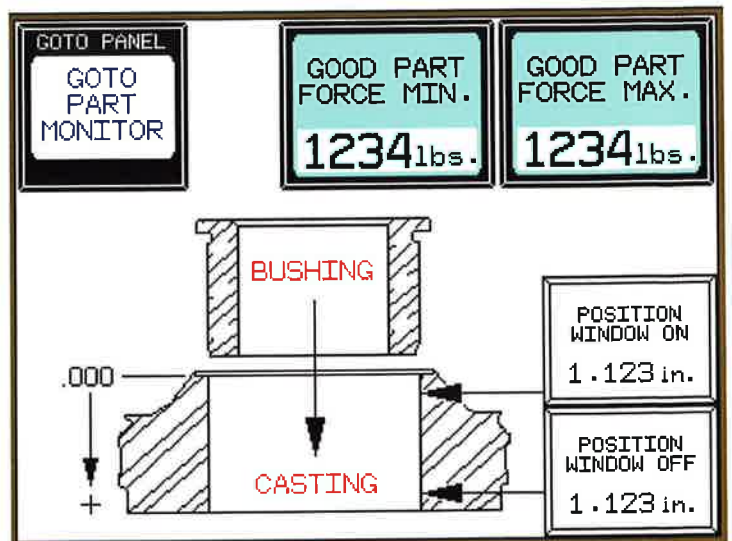


Special staking press

Special Automatic Bearing Insertion Press

Many hydraulic presses are utilized to clamp an assembly and subsequently insert other components into that assembly. Neff has supplied presses to do this type of operation before, however, without any data feedback. The problem often encountered is that even when a component such as a bushing is fully inserted (i.e. the bushing shoulder fully bottoms on its assembly), there is no assurance that the press fit is correct. Tolerance stack-up in the bushing size and the mating hole size will sometimes present a too loose or too tight condition resulting in costly part failures in the field (see drawing below)

Neff integrated a Force-vs.-Distance Measurement and Data Acquisition System into a special 12-ton column press to rectify this problem. This system allows the machine operator to key in minimum and maximum force set point values and the distance window that these figures will be evaluated within (see drawing below). Each



Data input and display screen

inserted component has its own force and distance feedback plus its own individual set points. If the press fit of each inserted part does not fall within the required tonnage limits, the operator interface displays the inserted component that was faulty and the amount of force achieved during the pressing cycle. Based upon this measurement, the operator can now make the decision not only that a bad part is present, but also can determine why it is bad, (i.e., the bushing was too large or the mating hole was too small or too

large). This system has successfully identified failed parts that would not have been caught with previous inspection procedures and these faulty parts could have caused serious problems in the field.

Heavy-Duty Trim Press

A major foundry required a press to trim castings, but several modifications were necessary to a Neff standard 100-ton C-frame press in order to meet this customer's requirements. To accommodate the large tools, the

press daylight was stretched from 24 to 50 inches, the throat was increased from 10 to 22 inches and the stroke was increased from 10 to 24 inches. Because of the multitude of daily job changeovers, hydraulic servo valves were integrated with CNC controls to provide accurate and programmable ram position, ram speed and hydraulic pressure. A color touch screen operator interface was also included to program, store and retrieve key press parameters using alphanumeric recipes. These recipes were stored within a menu and could easily be retrieved to automatically set up the press for the next job, reducing set-up times from over 40 minutes to under 10. Finally, ergonomics were a serious issue with this customer due to the nature of the part to be trimmed. By specially mounting the operator station on the side of the press, unnecessary and potentially harmful movement by the operator was eliminated.



Heavy duty trim press

These custom presses represent just a small sample of the multitude of applications that can be solved with relatively simple modifications to hydraulic presses. Over 80% of the products that Neff Press ships are custom in some fashion. Any hydraulic press manufacturer would agree—satisfying the 'custom'er is key to long-term success.

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