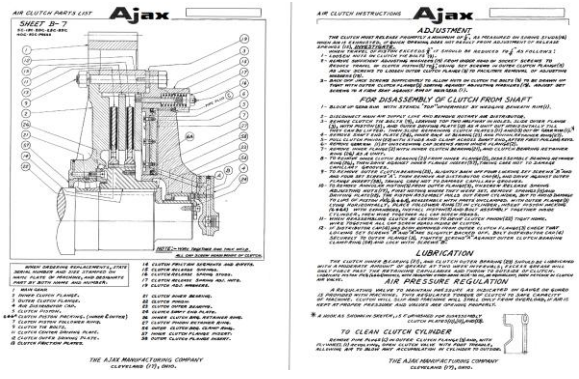
The Benefits of OEM Rebuilds and Updates for Hydraulic & Mechanical Forging Equipment

When it comes to maintenance of any sort, I think back to a line I read in *Hot Rod Magazine:* "If everything I owned worked, I'd be bored". All equipment no matter what it is or who built it will eventually require parts and service. Even well-maintained equipment will eventually wear out and require a rebuild or an update.

Nothing Beats Original Parts

It's often said that nothing beats original parts. And I think anyone that works on classic cars or older equipment is all too familiar with this. We've all been disappointed at some point with shoddy replacements parts for your car or your equipment. But when you can source the OE replacement parts, they drop right into place without having to fiddle around with them, and they last longer.



While you may not be able to source factory parts for all your equipment, many OE forging machine suppliers have all the original drawings, and even the service records of the equipment. This makes the difference when you want to be able to bring your machine back to OE tolerances. Parts that need to be repaired, modified or replaced have new drawings made and stored for record. This documentation and record keeping makes future replacement part orders more predictable. With accurate drawings engineers can more readily support customers should problems arise.

Aftermarket parts that are reverse engineered or "made to fit" can miss important details. While they may get a machine up and running without the appropriate documentation, future orders for replacement parts that are made to fit can be challenging. If drawings are incorrect the wrong parts my be ordered causing production delays. And reverse engineered parts while they may work to an extent, they are often based on worn out parts.

At a previous job, I worked on gears and rotating components. And in a particular application we used lead correction on a gear to account for shaft deflection under load. This modification was undetectable without the use of specialized measurement equipment, and undetectable at the time a rebuild was needed. Third party rebuild shops that copied and/or reverse engineered the gearing would miss the lead correction which ultimately led to a shorter gearbox life and premature failure. Details like this are easily missed (or neglected) by most aftermarket shops. Sometimes thousandths of an inch makes all the difference.

Controls and Automation

Equally as important to the mechanical and structural components are the electronics and controls. With constant updates being made to electronic components, older components get phased out. And become increasingly harder to source. New electronic components also have improved safety and diagnostic capabilities.

Legally, OE suppliers are required to update control and automation systems to the latest safety standards. While this may seem like undue burden, safety is something that should be taken very seriously from a legal and a preservation of health and life standpoint. For example starting on the outside of the cabinet is a voltage vision and voltage portal feature. Indicating the presence and the ability to test power without opening the cabinet. Also on the exterior of the cabinet is the SCCR rating, based on a thorough component study. Inside the cabinet Class J & L fuses are used to reduce arc flash radius. And dual cycle start pushbuttons to prevent inadvertent machine motions. These are just a few of the many updates that make controls OE rebuilds safer.

With more advanced controls comes the option for more automation. And with staffing and workforce shortages more and more forgers are moving to fully automated cells. With updated and more advanced controls cells can be better synchronized part picking, furnaces, conveyors, billet loaders, die spray, robot transfers and exit conveyors can all be more efficient.

Further improving efficiency is the use of VFD motor controls. With the use of VFD motor controls hydraulic pump motors can be slowed or idled when not in use. Idling the motors avoids the inrush current from stopping and starting the motors. Idling the motors also reduces noise, reduces pump wear and reduces cooling requirements. When VFD controlled motors are used in combination with "smart" variable displacement pumps, press velocity and

control functions are more efficient than resistive throttling. Mechanical presses can also benefit from the use of VFD controlled motors. With NEMA C&D motors being increasingly difficult to source VFD can be used to modify the torque curves of off the shelf motors. This allows for better speed control of mechanical presses.

Hydraulics

Significant advances have been made in hydraulic components and controls. While some components can be rebuilt, older components are phase out. While OE rebuilt components can restore a machine to it's original operating standard. Modern controls can enhance the performance of older equipment. OE hydraulic equipment is also engineering and sized to meet specific customer requirements. Hydraulic systems are designed to optimize performance, and minimize heat and pressure spikes. Hydraulic schematics are documented to assist with machine function and system diagnostics.

Modern hydraulics are also smarter, communicating with the control system to provide an active schematic on the operators screen, providing real time pressure, temperature and position feedback for easier diagnosis.

Adjacent to hydraulics, OE lubrication systems are engineered per application. Lubrication systems are designed to apply only as much lubrication as needed, based on effective area, velocity, and load. Because the system is properly sized abrasive wear is reduced, and less lubrication is wasted. In one application oil (or grease) consumption was cut in half with no adverse effects to the equipment.