Setup and removal of dies

Dies are usually heavy and hazardous to handle without proper equipment Uniform holes may be drilled in both sides of each heavy die block so that pins can be inserted to make lifting and moving easy The diameter of the pin and hole will depend upon the weight of the die Standard practice in many companies is to have the pin 1/16 in smaller in diameter than the hole The depth of the hole and the diameter of the hole and the pin should be uniform in dies of a certain weight group to assure that there will be sufficient pressure to prevent the pin from falling out

Transfer boards should not be used to transfer dies between the work bench and the machine Transfer trucks, preferably the elevating type, are safer and more efficient The top or table of the truck should be covered with sheet metal at least ¼ in thick and should be securely fastened in place

Power lift trucks should be used for transporting and installing dies Lift trucks should be well blocked or secured to the base of the hammer when dies are to be set or removed Otherwise, the truck may slip away from the hammer, causing the die to slip and fall

Where die trucks are still used, the frames of the hammers should have eyes to receive hooks attached to the trucks When a die is to be moved from the die truck onto the hammer bed, or vice versa, the hooks are first engaged in the eyes to prevent the truck from being pushed away from the hammer

When forge dies are set up or removed, the hammer man should act as leader of the group and should see that all efforts are coordinated and all safety rules are observed so that the work will be done efficiently and safely

Setting up dies The immediate area around the hammer must be clean and clear of obstructions Maintenance work should not be performed on the equipment during a die setup.

The hammer crew should make a complete check of the equipment between setups the hammer should be in good working order, the seats of both the sow block and the ram should be flat and clean, dowels and die keys should be inspected for galls and burrs, dies should be checked for burrs and other defects, such as cracks or sharp corners

It is important that the overall height of the dies be greater than the shut height of the hammer

Good lighting is essential for accurate setting of dies and for the safety of the crew Portable lights may be used, and should have heavy-duty cords, with bulbs protected by heavy screen guards

If lift trucks are used, the floor should be level, in good condition, and free of obstructions If cranes are used, the lift chains should be in good condition and the die pins should have a snug but free fit

Many methods are used in setting dies in hammers. The type and size of the dies and the type of hammer determine the method to be selected. The first action in setting up dies should be to prop the ram securely and to shut off and lock out the power, whether steam, electricity, or air

Die dowels made of a suitable grade of steel which will not splinter nor crack should then be driven into the dowel holes in the die shank Dimensions should be accurate to ensure a tight driven fit

After the bottom die of a steam hammer has been set in place, the bottom key should be driven to help line up the die and partially tighten it The top die should then be inverted and set in position so that the dies are face to face with the match lines lined up This procedure should be reversed for a gravity drop hammer the top die is set and keyed first Sometimes both dies can be set at once

The safety prop should be removed from between the ram and sow block at this time, and the ram allowed to descend slowly until it engages the top die

If shims are used on the dowel in the top die, an extra hazard is created. Normalized spring steel is used to shim dowels, and they must be set so that they will fall into place when the ram engages the die The number of shims and their location (whether front or back) should be recorded so that succeeding shifts or different hammer crews can refer to the record of the setup for that specific set of dies

If a die must be moved to match, a prop should be used after the ram is raised and before the operator reaches under the ham-