Annis “through type” demagnetizers create a powerful cyclical magnetic field through which the work to be demagnetized is passed. Actual demagnetizing is accomplished as the work is gradually moved out and away from the cyclically reversing demagnetizing field.

It is important that work be moved completely out of the demagnetizing field. There should be a minimum separation of 2 to 3 times the shortest demagnetizing coil opening dimension between the coil and the trailing end of the work prior to turning the power off, otherwise demagnetizing will not be accomplished. This is due to the fact that the last half-cycle of demagnetizing field will leave the work in a magnetized condition, if still within the field area. Rate of travel of work out of the demagnetizing field should not exceed 1 foot per second, except on special tapered field type demagnetizers.

Work having one long dimension, such as shafts and bars, should always pass through the demagnetizer in a lengthwise direction. Work having considerable width, such as rings, hears or steel cabinets etc., should be rotated approximately 90 degrees while passing through the demagnetizer, for optimum results. Wide work can also be demagnetized again while oriented at right angles to the original pass.

Demagnetizers should not be positioned close to sources of heat such as ovens or radiant heaters etc., which might radiate any appreciable heat onto the demagnetizer. Demagnetizers should always be located so as to have ample clear space on all sides to allow for adequate convection air-cooling.

When mounting powerful pass-through demagnetizers, all supporting or fixed structure immediately adjacent to the demagnetizing coil must be made of non-magnetic materials. A good “rule of thumb” is to keep a separation distance of at least 2 times the shortest coil-opening dimension between coil and iron or steel structure.

Close supporting structure is preferably made of electrically non-conducting material such as dry hardwood or Baketite type materials etc. Should non-magnetic metal be used, make sure that there are no closed structural “loops” formed which might encircle a portion of the return demagnetizing field. Any such loop will act as a short-circuited secondary, causing both the structural material and the demagnetizing coil to overheat. If a metallic loop is unavoidable, then it must be open-circuited by electrically insulating a joint somewhere in the loop. Circulating secondary induced loop current can amount to hundreds of amperes.
Connect demagnetizer to the correct voltage and frequency, as shown on the name plate. Intermittent rated demagnetizers are designed for practical, short time duty at rated voltage. They have about twice the demagnetizing field as compared to the same size continuous rated unit at the KVA rating. Such intermittent rated demagnetizers are rated for 25% duty with energized periods not to exceed 5 to 10 minutes. If energized for 5 minutes, it should have a cooling-off period of at least 15 minutes.

Intermittently rated demagnetizers will “burn-out” if left connected to their rated supply voltage. Accidental overheating of such units can usually be prevented through the use of a momentary contact type hand or foot switch, a bright signal light or through the use of a magnetic switch equipped with thermal overload heaters rated at approximately 50% of the demagnetizer current.

Annis 60 Hz. pass-through demagnetizers are supplied in over 1000 different sizes and ratings, but they do have their limitations, and cannot be recommended for all jobs. For any given demagnetizer, there is a limit to the size of the workload it will handle. A basket of small parts can be loaded too deeply for effective demagnetization, especially in the center of the load.

It is essentially useless to demagnetize work going to: magnetic conveyors, magnetic separators, magnetic chucks and holding fixtures, or lifting magnets, etc. Demagnetizing is recommended prior to cleaning operations, plating, electro polishing, finish machining, or final assembly, etc.

Commercial frequency demagnetizing (60 Hz.) becomes progressively less effective as the cross-sectional area of the work increases. This is due to the “bucking” secondary eddy current induced within the work itself. The center of a 1” diameter solid steel bar is demagnetized at 90% efficiency while the center of a 3” bar is limited to about 7% efficiency. Heavy steel sections can be effectively demagnetized at very low frequency, in the order of 0.1 Hz. Such “Lo Cycle” equipment is available.

Demagnetizers should be “tailored” to the job they are expected to do. Demagnetizers should be kept dry and free from excessive dirt and mechanical damage like other electrical equipment.

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