MANUAL TRANSFER UNDER LOAD

One important feature of a Transfer Switch is the ability to manually transfer power under full load conditions. It is often desirable to override the automatic controls of the transfer switch to accomplish true manual transfer under full load conditions. One obvious example of this need is when control logic must be isolated for maintenance purposes. Some competitive transfer switch products have explicit warning instructions affixed to the device forbidding manual power transfer under load. Other manufacturers do not expressly prohibit such manual load transfer, but strongly recommend that load circuits be de-energized prior to manual operation. All transfer switch designs accommodate full load transfer automatically (or electrically) when re-transferring load circuits from the standby power source to a restored utility power source. So what conditions are present during manual operation that would preclude transfer under load? The answer lies in the inherent design weakness of many competitive transfer switch main contacts and associated transfer mechanisms.

The phrase “Quick-Break” should be addressed at this point. Quick-Break implies quick, positive, and complete disconnection of the main power circuit contact. This quick break operation also necessitates sufficient contact separation to insure complete arc isolation and extinction. Although many transfer switch manufacturers certify that their contact operation is quick-break, quick-make / this type of operation is often contingent upon the speed and the opening force achieved by the electrical operator. Under automatic operation the electrical operator will apply a continuous and uniform mechanical force to open the main contacts under load. The resulting current arc is safely isolated and dissipated through the arc suppression provisions inherent in the main contact assemblies. During true manual operation, however, the electrical operator is disabled and opening of the main contacts is accomplished by operating personnel via the manual operating handle.

Obviously, hand operation speed and force will vary from that experienced during electrical operation. With many competitive products, operating personnel are able to “tease” the power contacts open by slowly actuating the manual operator. The current arc, normally adequately extinguished during electrical operation, is now allowed to continue at the contact surface areas creating excessive heat that will lead to contact damage.

One transfer switch manufacturer further compounds the problem of manual operation by providing a non-permanently affixed manual operating handle which must be installed in a poorly identified, marginally accessible location immediately adjacent to potentially energised components.

Even on competitive products that provide permanently affixed manual operators, warning instructions state that personal injury can result should the electrical operator become energised during hand operation. With extremely fast acting transfer mechanisms, operating personnel could literally have their hands broken or worse due to an unexpected electrical operation should they fail to heed such warnings while performing hand operation.

Manufacturers who recognise their inherent design flaw in accommodating manual transfer under load go to great lengths to camouflage this issue by stating that such manual load transfer is not a true need in actual installation applications.

Fortunately, with Cutler-Hammer Transfer Switches, should manual load transfer become necessary, critical loads experience minimal interruption. After all, isn't that what a transfer switch is intended to accomplish? All Cutler-Hammer Transfer Switch products are equipped with permanently affixed safe manual operators capable of manual transfer under full load conditions. These manual operators are totally isolated from energised parts, and are prominently located and marked to insure foolproof operation.

The Cutler-Hammer unique transfer mechanism design prevents injury to operating personnel should the electrical operator be energised during manual operation by disengaging under such conditions. Contact operation is true "quick-break, quick-make" with no opportunity for contact "teasing" regardless of the speed of manual operation.

Hopefully, you can appreciate the necessity of specifying your next transfer switch with provisions for safe, quick-break, manual operation under full load conditions.