Lake Shore Electric Corporation

Automatic Transfer Switches utilizing Draw-out switching elements. Accomplishing safe and completely serviceable bypass and isolation.

Reliability, dependability and maintainability of all electrical equipment are necessary and mandatory goals of all equipment manufacturers. This goal is one shared with the design professionals. Certainly, in transfer equipment, this goal is a critical requirement.

While automatic transfer equipment has been subjected to severe testing which is representative of the use that it may incur in the field, there still remains the necessity of maintaining or servicing the equipment. To be able to maintain and service transfer equipment without discontinuing service to the load is highly desirable. Although this may be a desirable feature, no transfer equipment can be completely maintained or serviced without disturbance to the load. It seems that whatever system of bypass or isolation is provided, there are always instances when disconnection of the load is necessary for total service.

In order to provide a means to service and maintain transfer switches, most transfer switch manufacturers have adopted a standard bypass and isolation configuration. This configuration as shown below in Figure A allows qualified personnel to bypass and then isolate the transfer switch for servicing needs. The bypassing function is accomplished either with or without interruption to the load.

This standard configuration of transfer switches with bypass and isolation is a classic example of creating a solution while simultaneously creating a problem. By adding bypass contacts and isolating fingers to a normal transfer switch, the user is able to bypass and then isolate the transfer switch for the regular, recommended and required maintenance and servicing of the transfer switch contacts without disconnection of the load. Unfortunately, the added bypass contacts are now continuously energized and they cannot be regularly maintained or serviced without complete disconnection of the power sources and the load.

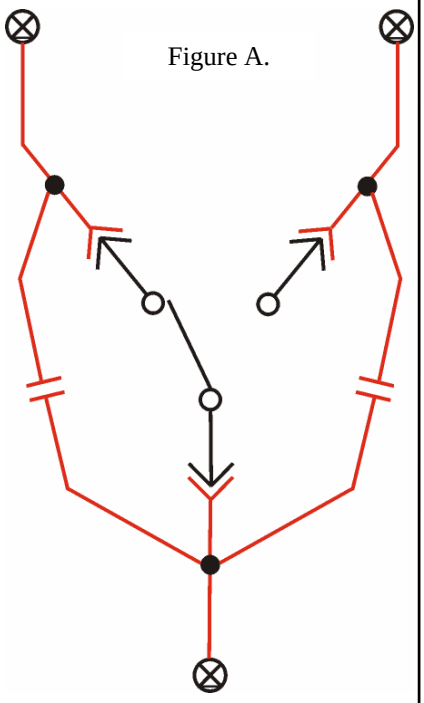
Figure A. shows a typical transfer switch with bypass isolation configuration. Please note that the bypass contacts are always “hot”.

To avoid this dilemma, the Lake Shore Electric Corporation IC transfer switch, when purchased in a draw-out configuration offers the ability to bypass and isolate individual portions of the transfer switch so that servicing and maintenance can be performed on all load break contacts without disconnecting the load. The reason that Lake Shore can accomplish this function in such a straightforward manner is that we provide separate physical paths from each source to the load. The result of this arrangement is that we can separate the contacts of the switch in such a way that one half of the switch can be serving the load while the other half is being serviced.

RED lines indicate live parts that are either normally energized or could become energized regardless of isolation status.

Bypass contacts are always “HOT” and un-maintainable.

Figure A.

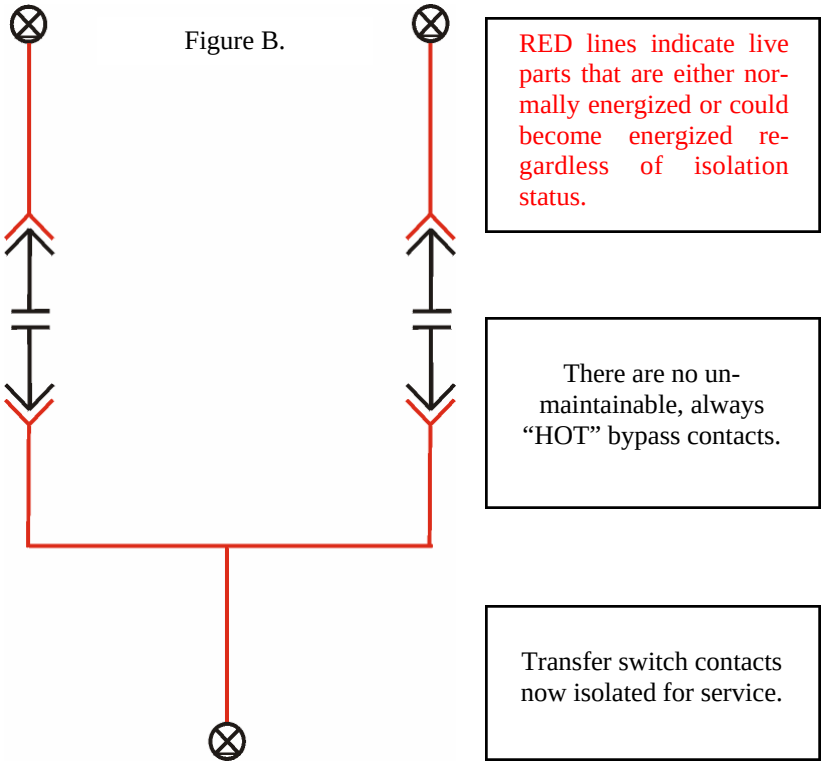


This product is manufactured from the same high quality Insulated Case, Power Circuit breakers that have been used throughout the industry. These UL listed circuit breakers have been the basic building block of switchgear products in this country. They provide stored energy operation, self-

aligning line and load side contacts, shutters, secondary contacts as well as “Connected”, “Test” and “Disconnected” positions. When used in transfer equipment, the withdraw-ability of each individual source element allows for isolation of that source without preventing the alternative source from being connected to the load. With this unique feature, the transfer switch itself becomes its own bypassing method.

Figure B. shows the Lake Shore Draw Out arrangement. Notice that the contacts are always isolatable.

Figure B.



Traditional transfer switches do not allow for this isolation of a single source while maintaining continuity with the alternate supply source. They must add external devices to the transfer switch in order to accomplish the bypass function. The unfortunate outcome of this solution is that the additional load break bypass contacts that are added to the equipment cannot be maintained at all. The only way to maintain or service the bypass contacts is to completely de-energize the entire system for an extended period of time.

After a user has paid almost twice the price of a standard transfer switch by adding the bypass isolation feature we do not think he should be shocked into the realization that he must undergo an extended shutdown so that the bypass contacts can be serviced and maintained. Such shutdowns are not typically acceptable.

With the Lake Shore Electric Corporation draw-out insulated case automatic transfer switch, reliability, serviceability and maintainability are preserved. A single spare element, when ordered, can be used as a replacement for either source thus increasing reliability and rapid restoration of normal service.

There are no multiple handles that must be operated in sequential order. Operation is simple and straightforward. The qualified maintenance personnel will instantly recognize the equipment since it is identical to existing installed power switchgear. The racking out of the elements to the “test” and then “disconnected” positions is common practice to the experienced maintenance person. The replacing of an element is the same as in any switchgear lineup. The weight and mass of a single element is less than half that of a traditional transfer switch. This allows the maintenance personnel ease of service and personnel safety.

All necessary switching parts are nationally available from Lake Shore Electric Corporation or the manufacturer of the power circuit breakers. No unnecessary waiting for replacement switching components.

The construction of the Lake Shore Electric Corporation IC draw-out automatic Transfer Switch is identical to the construction of a typical double-ended switchboard. The loads are served by two sources. Being withdrawn for service and replacement can isolate power circuit breakers for each source. Transfer to the alternate source will bypass the out of service source. Double-ended switchboards are not equipped with redundant, non-serviceable bypass-isolation switches. Likewise, a Lake Shore Electric draw-out transfer switch provides a simple, straightforward and serviceable method of accomplishing bypass and isolation operation without the addition of redundant, non-serviceable bypass contacts.

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