



APPLICATION GUIDE

WIND TUNNEL



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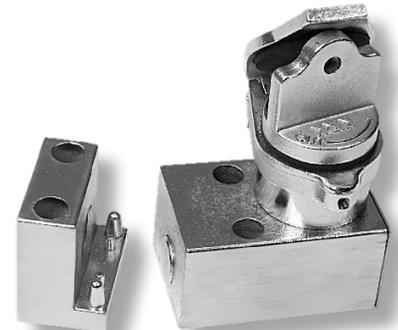
Wind tunnels, used for aerodynamic and acoustic testing in the automotive and aerospace industries, use one or more electrically driven fans to push or pull air through a test section. Some tunnels have one large fan, while others have multiple smaller fans. Air will either recirculate through a closed loop or be drawn in from the surroundings from one end of the tunnel and exhausted out the opposite end.

Around the wind tunnel, there are several full body access doors to allow for maintenance. It is critical to ensure no one enters the tunnel while in operation. Incorporating a trapped key interlock system ensures the proper sequence of energy isolation is performed. Introducing electro-mechanical interlocks within the system allows contacts to be tied into a PLC system, signaling when an interlock system has been engaged and the tunnel doors have been accessed. This process prevents unexpected startup until all maintenance is complete and everyone is safely out of the tunnel.

An example wind tunnel scheme, enhanced with KIRK® trapped key interlocks, is detailed step by step on the back side.



Type PPS

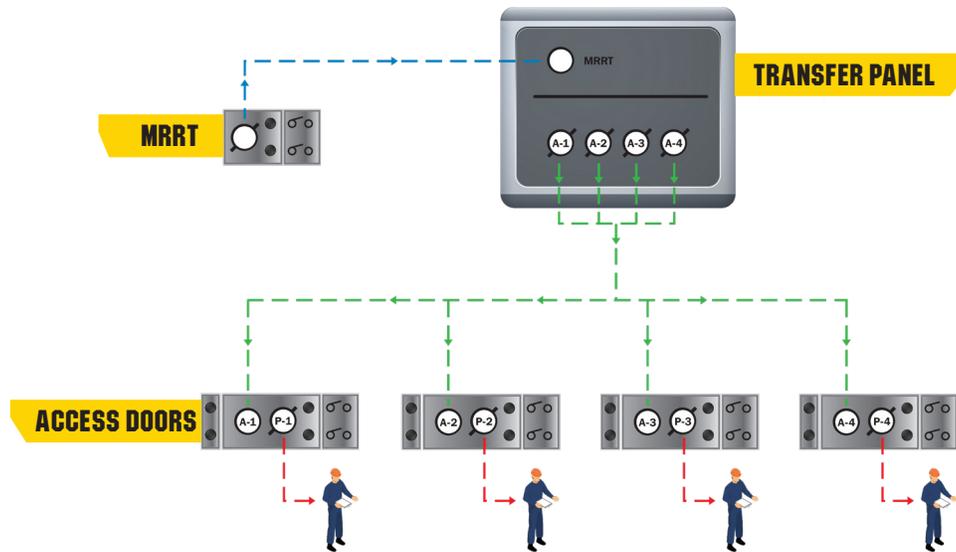


Type D



Transfer Panel

INTERLOCKING LOGIC



OPERATION

INITIAL SYSTEM STATUS:

The wind tunnel air circuit and test section doors are all locked. The main fan is no longer running and the wind tunnel is ready to allow entry in the air circuit.

SYSTEM OPERATION:

1. Rotate Master Key (MRRT) located in the Kirk Key PPS key switch at the Access Control Panel. This opens the dual contact switches on the PPS switch, sending a signal to the wind tunnel control system's safety-rated programmable logic controller (PLC). The safety PLC disables all subsystems (primarily the main fan drive) required for safe entry. MRRT can now be removed from the Access Control Panel.
2. Insert MRRT into the transfer key slot at the Kirk Key Transfer panel. Rotate key. All access door keys rotate to a position at which they can be removed from the transfer panel.
3. Remove the appropriate key (A1 in this example) for the door to be accessed. MRRT is now trapped in the transfer panel.
4. Proceed to access door A1 on the wind tunnel air circuit. Insert key A1 in the Kirk Key type D door lock mounted to the door and rotate. The door is now unlocked. An adjacent key, P1, rotates and can be removed. Key A1 is now trapped. Auxiliary contacts on the type D lock send a signal to the wind tunnel control system's safety PLC, which alerts the wind tunnel operator that this door has been accessed. It's also now an additional backup to the signal from the PPS switch, triggered earlier.
5. Remove P1 and open the access door. Carry this key on your person as you enter the air circuit to perform the inspection. Key A1 is now trapped and the door cannot be locked.
6. Repeat Steps 3-5 for additional access points (A2 - A4 in this example).
7. Once the wind tunnel inspection is complete and all personnel have exited and loose items have been removed, reverse the sequence to lock the door(s) and return the wind tunnel to safe operation.