

Installation And Maintenance Instructions For Power & Control Panels



POWER CONTROL CENTRES:

JAKSON Power Control Centre is metal enclosed, sheet steel fabricated, vertical bay, indoor operated, base mounting, free standing type. The Power Control Centre is of utilized construction. PCC made of number of standardized independent vertical sections bolted together. Every vertical section contains a set of horizontal bus bars housed in the bus bar chamber at the top. Similarly, one horizontal and one vertical cable bay for incoming and outgoing cables are provided in each vertical section.

COMPARTMENT:

Each vertical section is sub-divided in various compartments to house individual feeders.

The Control gear for every feeder contains different components like circuit breaker, Switch Fuse, Contactors, Push Buttons, Indicating Lamps, Terminal Blocks etc. mounted on a sheet steel plate duly wired and ferruled. The sheet steel plate, with all this equipments, is bolted inside such compartment. Each compartment is isolated from other compartment in the same vertical section and has its own separate door with or without door- interlocking as per the requirement of the customer. The width and depth of the Power Control Centre and its compartments are according to the requirements of the customer and according to the requirement of the components to be provided in each individual feeder. The general arrangement drawing shows the front view of the Power Control Centre. Similarly, a foundation plan for control center is also given in such front view and general arrangement drawings. As per the requirements of the customer, drawings showing the installation of each electrical component in each individual compartment are also provided to the customer together with the dispatch of the equipment. A set containing copies of as manufactured drawings, with General Arrangement, Single Line, Wiring Diagrams and Terminal Details is also provided to the customer in case utilization of equipments.

INCOMING CONNECTIONS:

The horizontal bus bars, which are located in the bus bar chamber on top, are fed by the bolted link through the incoming feeder. The Switch/Breaker in such a case is to be fed by an incoming cable through the horizontal bottom cable bay. Further, connections from the horizontal bus bars to different compartments are made by bolted bus bars joints or by suitable section of PVC insulated copper wires brought adequately in a bunch through the vertical wire bay.

OUTGING CONNECTIONS:

The outgoing connections are to be made by the customer by opening the cable alley doors where in suitable glands for incoming conduits are provided by him as per requirement on the right-hand side of the vertical cable alley, slotted supports are provided for clamping the incoming cable. These cables are then connected to the individual outgoing terminals of the different compartments. Adequate precautions must be taken to close the cable alley doors after entering the cables.

DOOR INTERLOCKING:

As per the requirements of the customer, all incoming and outgoing feeders using switch fuse units are door-interlocked, thereby preventing the door to be opened in the "ON" position of the Switch. Similarly, the switch can only be closed or re-switched "ON" after the door has been closed in its position.

RECEIVING AND HANDLING INSTRUCTIONS:

Power Control Centre is split into convenient shipping sections as shown in the General Arrangement Drawing for ease of transportation. These are provide with polythene and waterproof paper wrapping and are packed in wooden cases after giving suitable paddings to protect the same from damage.

NOTE:

- Inspect the Power Control Centre immediately upon receipt.
- Close covers and replace polythene wrappers until erection work is started
- Report any damage in transit to the carrier and lodge a claim with the under writers if you consider this necessary.
- Facilities are provided for lifting with cranes. Where the crane facilities are not available, the panels may be moved by using rollers under the shipping skids. The skids should be left in place while moving the assembly on rollers.

STORAGE:

If the Power Control Centre is not used immediately after receipt, then store it in a clean and dry building.

- Keep all doors closed.
- Replace the protective polythene covers to keep out dust, moisture etc.
- Outdoor storage, even with the help of the tarpaulin, is inadequate and not recommended. The equipment must be protected from excessive dust, direct and corrosive atmosphere.

FLOOR PREPARATION:

It is essential that a flat and level floor space should be provided for the Control Centre. An uneven foundation will cause miss alignment of parts, especially in the access doors of the units.

SHIPPING SECTION:

For the convenience of handling and shipping, the Power Control Centre is dispatched in shipping

sections. Joint the adjacent sections into integral assembly by holding the sections together and connecting the fishplates of the main bus bars. Use the General Arrangement drawing for guidance.

TO JOIN BUS BARS:

- 1) Move the two sections together and check for the alignment of both, base and front face of the structures.
- 2) Bolt the structures together using the bolts sent along with the sections. The horizontal bus bars of the section will now be properly aligned position.
- 3) Remove cover plates at the top of the horizontal bus bars.
- 4) Prepare aluminium bus bars as follows: -
 - (i) Clean the sections to be joined thoroughly with a wire brush.
 - (ii) Apply contact grease immediately, ESSO MPL contact grease or its equivalent is recommended.
- 5) Bolt the bus bars together by using the fishplates and spring washers provided alongwith the one section.
- 6) Check the bolts and make sure that they are tightened properly.
- 7) Replace the top cover plate.
- 8) Join the internal module control circuit connections of the adjacent sections.
- 9) When a section is being added to control center purchased earlier, remove the end cover at the joining end. After having joined it, fit the same and cover on the now free end.

INCOMING LINE CONNECTIONS:

As incoming switch is mounted inside Power Control Centre the incoming stubs have been provide in the cable alley. Open the cable alley doors. Connect the incoming cable with these stubs through cable lugs keeping in view the phase sequence. Close the cable alley door properly.

INSTRUCTIONS BEFORE ENERGISING:

- 1) Remove all foreign material from the Power Control Centre.
 - 2) Inspect main horizontal bus bars and bus ducts for tools, conductors etc. and remove them.
 - 3) Use a vacuum cleaner and remove dust etc. wipe the insides, particularly insulation surface, clean with clean, dry cloth. Do not use cotton waste.
 - 4) Check all wiring connections for tightness. If there are any loose connections, tighten them suitably.
 - 5) Check all power connections for tightness.
 - 6) Inspect all relays and make sure that any blocking used for shipping purposes is removed and the armature moves freely.
 - 7) Check all doors for proper mounting with respect to the switch handle.
 - 8) Check the door interlock mechanism. It should not allow the door to be opened when the switch is in the "ON" position.
 - 9) Check overload relay setting and adjust, if necessary.
 - 10) Check the continuity of the control circuits.
 - 11) Test the insulation of the boards with a 500V, DC Meggar. If Meggar value is below 1M ohm heat the board with blowlamps and Meggar value.
(Under certain conditions, such as long storage prior to energizing, the Meggar test may show low insulation value).
- 2) The individual components, as well as the completely assembled Control center, are subjected to

HV tests at different stages of Manufacture/assembly. Once Meggar results are satisfactory, repetition of the HV tests at the site is not considered necessary. Repeated application of high voltage may cause deterioration of insulation properties. However, if the test must be conducted, it should be as per the relevant IS specifications.

WORKING AND INTERLOCKING:

The working, operation and interlocking of the Power Control Centre is as per the single line, control schematic/ wiring diagram terminal details supplied.

MAINTENANCE:

In operating, servicing and adjusting the equipment, the attendant should consult the specific diagram, if any, and also the general and specific device instruction leaflets and particularly note the following points: -

1. When working on equipment, de-energise, disconnect and if possible, lock all circuits in the open position.
2. For major maintenance work, pull out the chassis or equipment place completely. For inspection/minor maintenance, the chassis or the equipment plate can be partially drawn out.
(It can be fully disconnected and padlocked wherever such a provision has been made).
3. Keep the equipment clean at all times. Remove any accumulations of dust and dirt, manually, while the bus is de-energized.
4. Inspect all devices periodically to ensure that the equipment is working properly.
5. Replace badly worn contacts before there can be a serious failure.
6. Keep all connections tight. Tighten all screws on power connections once a month.
7. Apply grease to the rolling and guiding systems periodically.