

# Testing & Commissioning Procedure for Ventilation and General Exhaust Fans

## **Mechanical Pre-commissioning checks for Exhaust Fans**

- Carefully inspect the unit and check the installation with anti-vibration materials is complete. Check and ensure the shipping bolts / clamps are removed. Check tightness of all nuts / bolts, screws, fasteners etc. as applicable. Check the alignment of belts and adjust the tension (where applicable).
- Check the ductwork connections are complete as per approved drawings /details. Ensure the fan interiors and the ducts are clean and free from foreign material. Properly secure all safety guards (where applicable). Rotate the fan by hand and ensure free rotation.

## **Electrical Pre-commissioning checks**

- Ensure the connected cables have been tested and verify the test reports. Check all terminations are complete and tightened as required. Check the cabling / wiring including grounding is completed and dressed neatly. Check the isolator/emergency stop switch is fixed close to the fan for emergency power shutdown. Ensure all identification and labelling is completed.

## **Start-up and Testing Commissioning Procedure**

- Check the line voltage and phase rotation before energizing the power. Verify for the proper operation of the motor, drive system and fan impeller. Measure the current drawn (amperage) by the fan motor and record the same. Check for any abnormal noise and vibration on start-up. Rectify as / if required. After about an hours operation, check that all nuts / bolts, screws, clamps etc. are tight and secure.
- Check the tension of ‘V’ Belts and adjust if required (where applicable). Measure the total airflow delivered by the fan, check against the design flow and record the same in the approved format. Work Inspection Request shall be raised for Consultants approval. Inspection shall be recorded in the approved format.

### **Functional Test of Exhaust Fans**

The following functional test will be carried out for testing & commissioning of **Ventilation and General Exhaust Fans**.

- Check and ensure pre-commissioning is done for Ventilation and General Exhaust Fans, use pre commissioning checklist for recording the inspections.
- Check and ensure permit to work is obtained and approved for the work to be performed.

### **Ventilation and General Exhaust Fans – Start-up:**

- Check and ensure control panel are completed and commissioned related to Ventilation and General Exhaust Fans is prior to start-up.
- Check the line voltage by using multi meter.
- Switch on the control panel and check the indication lights are ON.
- Switch on the push button in the control panel (HOA switch shall be in Hand Mode) and run the motor for few minutes.
- Check the motor rotation for correct direction, if the rotation is in opposite direction, then inter change any two phases at motor terminals for correct rotation.
- Check and ensure that there is no unusual noise or vibration after start-up.
- After one hour operation of the Fan, check that all bolts / fasteners are secure and tight.
- Measure the voltage and drawn current of the motor and record the readings for motor starting amps, running amps, voltage.
- All BMS controls (peripherals) are checked for proper operation.

### **Testing & Balancing of Exhaust Fans**

Please note, after start-up and commissioning of Ventilation and General Exhaust Fans, approved independent third party agency will check and carryout the Testing & Balancing works in accordance with project specification, refer to Testing, Adjusting & Balancing approved procedure.