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ARAB ENGINEERING BUREAU

3 UNITARY EQUIPMENT

3.1 GENERAL

3.1.1 SCOPE

- 1 This Part details the requirements for all types of unitary equipment as specified in the Contract.
- 2 Related Sections are as follows:

Section 1 General
Section 21 Electrical Installation

3.2 AIR-CONDITIONERS

3.2.1 Window Air-conditioners

- 1 The unit offered in the tender shall be a reputed manufacturer who is represented locally and can provide an efficient maintenance and spare parts service.
- 2 The casing shall consist of a heavy gauge steel chassis with sheet metal casing. The minimum thickness shall be 1.2 mm. The whole unit shall be protected against corrosion and finished inside and outside with stoned primer and paint. The decorative front panel shall be of rigid plastic.
- 3 The unit shall be supplied completely packaged and ready for operation once connected to the suitable electrical supply.
- 4 The fan shall be of the forward curved centrifugal type and be made of aluminium reinforced glass fibre, rigid plastic material, aluminium or steel.
- 5 The air filters shall be of nylon fibre, glass fibre material or as supplied by the manufacturer and approved by the Engineer.
- 6 The filter shall be easily removable for cleaning without removing the unit from the wall.
- 7 The fan motor shall have factory lubricated bearings sealed of the sealed for life type.
- 8 The fan motor windings and electrical components shall be impregnated or protected to avoid problems from condensation.
- 9 The compressors shall be the hermetically sealed pattern complete with resilient mountings.
- 10 The condenser and evaporator coils shall be formed of copper primary tubes with aluminium or copper fins. If copper fins are used they shall be electro-tinned after manufacture. The fins shall be mechanically bonded to the tubes. Aluminium coils shall be guaranteed for five years.
- 11 The unit shall have control giving three running speeds and an off position.
- 12 The units shall incorporate a damper adjustable from the control panel to allow a percentage of fresh air to be included.
- 13 The units shall meet the specified duties for air flow and cooling capacity.
- 14 The units shall be installed according to the manufacturer's recommendations and installed on suitable galvanized supports where required.
- 15 The outlet grille shall be fully adjustable to enable the direction of airflow to be set to the desired direction.

- 16 The condensate drain shall be connected to the nearest floor gully or soakaway.
 - 17 The condensate pan shall be adequately treated against corrosion, insulated and pitched for positive drainage with the unit installed level.
 - 18 The controls shall include the following :
 - (a) high-low pressure switches
 - (b) oil pressure protection switch
 - (c) thermal overload cut-out.
 - 19 The air conditioners shall be quiet in operation. Sound level shall not exceed 55 dBA at low speed and 60 dBA at high speed when measured at 1 m distance in a room with normal furniture and occupancy.
 - 20 The air conditioning unit shall be capable of handling the cooling loads when operating in ambient conditions of 35 °C (Nominal load).
 - 21 The degree of cooling shall be adjustable from maximum to minimum.
- 3.2.2 Split Type Room Air-conditioners**
- 1 The unit offered in the tender shall be by a reputed manufacturer who is represented locally and can provide an efficient maintenance and spare part service.
 - 2 The casing shall consist of a heavy gauge steel chassis with sheet metal casing. The minimum thickness shall be 1.2 mm. The whole unit shall be protected against corrosion and finished inside and outside with stoned primer and paint.
 - 3 The casing for the inside unit shall be the same as mentioned above or of rigid plastic as supplied by the manufacturer.
 - 4 The fan shall be of the forward curved centrifugal type and be made of aluminium reinforced glass fibre or rigid plastic material.
 - 5 The air filters shall be of nylon fibre glass fibre material or as supplied by the manufacturer and approved by the Engineer.
 - 6 The filter shall be easily removable for cleaning.
 - 7 The inside unit fan and condenser fan motors shall have factory lubricated bearings of the sealed for life type.
 - 8 The motor winding and electrical components shall be impregnated or protected to avoid problems with condensation.
 - 9 The compressor in the outside unit shall be the hermetically sealed pattern complete with resilient mountings.
 - 10 The condenser and evaporator coils shall be formed of copper primary tubes with aluminium fins or copper fins. If copper fins are used they shall be electro-tinned after manufacture. The fins shall be mechanically bonded to the tubes. Aluminium coils shall be guaranteed for five years.
 - 11 The unit shall have control giving three running speeds and an off position.
 - 12 The outlet grille shall be fully adjustable to enable the direction of airflow to be set to the desired direction. Where the units are floor mounted the supply grilles shall be on the top of the unit.
 - 13 The units shall be installed in accordance with the manufacturer's recommendations to unit location, refrigerant piping, power and condensate piping.

- 14 Where the units are of the concealed type the Contractor shall ensure adequate access is provided for the removal of a complete unit.
- 15 The condensate pipe work shall be run to the nearest drain.
- 16 The units shall meet the specified duties for air flow and cooling capacities.
- 17 The controls shall include the following:
 - (a) high-low pressure switches
 - (b) oil pressure protection switch
 - (c) thermal overload cut-out.
- 18 The units shall incorporate the following accessories:
 - (a) electric crank case heater
 - (b) suction and discharge shut off valves
 - (c) changing, relief and purging valves
 - (d) gauge connections
 - (e) spring mounts for compressor.
- 19 The fin spacing for the evaporator and condenser coils shall be in line with the latest QGEWC regulations.
- 20 The air conditioning unit shall be capable of handling the cooling loads when operating in ambient conditions of 50 °C at the medium speed
- 21 The outdoor unit shall be designed to operate at outdoor ambient temperature of 50 °C.
- 22 The sound level shall not exceed 45 dBA at low speed and 55 dBA at high speed when measured at 1 m distance in a room with normal occupancy and furnishing.
- 23 The safety devices for the compressors shall be as per the manufacturer's recommendations.

3.3 DOMESTIC APPLIANCES

3.3.1 Domestic Refrigerators

- 1 The refrigerator offered in the tender shall be by a reputed manufacturer who is represented locally and can provide and efficient maintenance and spare parts service.
- 2 The refrigerator supplied shall be as close as possible to the size as detailed in the Project Documentation.
- 3 The refrigerator shall be installed in the allocated location with adequate ventilation for efficient operation.
- 4 The casing shall be plastic coated aluminium, plastic coated steel or stainless steel as detailed in the Project Documentation.
- 5 The refrigerator shall be insulated with foam injected CFC free insulation.
- 6 The compressor shall be the hermetically sealed pattern complete with resilient mountings.
- 7 The coils shall be manufactured of copper tubes with mechanically bonded aluminium or copper fins. Aluminium coils shall be guaranteed for five years.
- 8 Where detailed in the Project Documentation the refrigerator shall incorporate a separate freezer section, which shall be constructed of plastic.
- 9 The temperature shall be independently adjustable in both freezer and refrigerator sections.

- 10 The refrigerator shall be supplied complete with all shelves drawers and dispensers as detailed in the Project Documentation.
- 11 The door hinges shall be convertible hinges to allow the change of door swing from the right to left or vice versa.
- 12 The refrigerator shall be provided with rollers to assist installation and maintenance.

3.3.2 Drinking Water Coolers

- 1 The drinking water coolers offers in the tender shall be by a reputed manufacturer who is represented locally and can provide an efficient maintenance and spare parts service.
- 2 The water coolers shall be either the free standing type or recessed type as detailed in the Project Documentation.
- 3 The complete casing and faucets shall be manufactured of polished stainless steel.
- 4 The water coolers shall be installed in the allocated location with adequate ventilation to ensure efficient operation.
- 5 The compressor shall be the hermetically sealed pattern complete with resilient mountings.
- 6 The coils shall be manufactured of copper tubes with mechanically bonded aluminium or copper fins. Aluminium coils shall be guaranteed for five years.
- 7 The cooling coils shall be isolated from the stainless steel water storage tank to ensure contamination cannot occur in the event of a leak.
- 8 The water supply to the water cooler shall be filtered by a replaceable cartridge type filter. The filter shall be installed in an accessible location within or as close as possible to the water cooler.

END OF PART