CM0769/Y.1 JULY 2025

VENTILATION & AIR-CONDITIONING INSTALLATIONS

PROJECT TECHNICAL SPECIFICATIONS

1. SCOPE OF WORK

References to the Contractor, Subcontractor, Ventilation Contractor and/or Subcontractor in the specifications and drawings shall mean the Contractor for this Ventilation Installation.

The project is the fitout of the Western Cape Gambling and Racing Board offices.

The project scope comprises the following in accordance with the Engineer's drawings:
- Mechanical extraction for as per the drawings
- Mechanical Fresh Air as per the drawings
- Supply and install new AC units.

The Ventilation & Air-Conditioning Installations includes the supply, delivery, off-loading, storage, installation, testing, and certification, commissioning and handing over in proper working order of the complete ventilation installation as specified in this Specification, Schedules and on the Drawings.

The following broadly defined sections of work are included in this Ventilation & Air-Conditioning installation:

- Arrangements/Liaison with & attendance on Electrical Contractor for installation of electricity supplies, termination to these and switch-on.

- Extraction fan systems

- Labelling

- Supports

- Power supplies, connections to and rotation /operation tests of electrical drives / equipment, etc supplied & installed.

- Chasing of brickwork where reasonably required executing the installation.

- Pointing out and checking requirements for, positioning and correctness of building work required for and related to this services installation, e.g., making and closing / sealing openings, making good, etc, and electricity supply requirements, as well as checking thereof during construction so that it is correctly and timeously provided by the respective contractors.

- Submission of samples.

- Compiling, submission and resubmission of all workshop and as-built drawings and information, operating and maintenance manuals, also including Air flow rate measurements. (NB: manuals required in final approved format and content before final handover will be taken).

- Training of Employer / User staff and Standard Operating Procedures (SOP) for the Employer / User.

- Carrying out of tests and submission of test records and certificates, including compliance Certificates for the associated electrical installations.

- All other materials and labour to complete, tests, commission and hand over the services installation in accordance with this specification and the accompanying documents, drawings and schedules.

- One-year free maintenance and guarantee period with 2x complete inspections / alarm tests i.e. every 6 months including report back to Owner / User and Engineer.

Care shall be taken not to cause any water supply disruption, water loss, water damage and / or damage/disrupt any existing services/installations.

Any switching/switchover involving disruption of the water and / or power supply shall only be done outside normal hours as agreed with the Employer/User.

2. BUILDERS WORK AND WORK BY OTHERS

The following sections of work are not included in this Ventilation & Air Conditioning Installation:

- Builder's Work:
  - As requested during/with the tender
  - Holes for weather louvres
  - Holes for ducting
  - Painting of any exposed ducting or piping
  - Access panels
  - Making good of any penetrations
  - Power supply to all supply air fans, extraction fans & air conditioning units

Work by others as specified and/or requested shall be checked and verified by the Contractor:
- To be complete and sufficient, and point out any further requirements to the Engineer.
- During construction so that it is provided correctly and timeously by other contractors.

3. SITE AND SERVICES

The site is situated at 18 Fairway Close, Parrow.

The Contractor shall liaise with authorities (e.g. User / Tenant regarding the existence, positions, pointing out, protection and/or connection to and relocation of existing services and, after informing the Client/Architect/Engineer and having been instructed to proceed, arrange for and/or undertake the protection and/or relocation of affected existing services.

4. DRAWINGS

The Floor will require Ventilation Installations in certain areas and this is specified on the drawings as listed in the attached SCHEDULE OF DRAWINGS.

Schedule of drawings:
- CM0769/Y1 – GROUND FLOOR HAVC
- CM0769/Y2 – FIRST FLOOR HVAC
- CM0769/Y3 – SECOND FLOOR HVAC
- CM0769/Y4 – BASEMENT HAVAC
- CM0769/Y5 – ROOF HVAC

The Contractor shall also consult the architectural, civil, structural, electrical, fire and other services drawings.

The Contractor shall at tender stage submit sufficient information (including drawings, line diagrams, etc.) to clearly indicate the following:

- The layout(s) and sizes(s) of ducting, fans, louvres AC units etc.
- Builder’s work, and work by others, required by the contractor.

Workshop drawings shall be provided of the following:
- Extraction fan systems
- Fresh Air Fan systems
- AC layouts
- Builder’s works required for the service installation.

Workshop drawings must be submitted timeously to permit enough time for scrutiny, adjustment and resubmission and such that no delivery problems are caused.
The Engineer's scrutiny of calculations and / or shop drawings or samples shall not relieve the Contractor of responsibility for any deviation from the requirements of this Contract, unless the Contractor has informed the Engineer in writing of such deviations at the time of submission of shop drawings or samples and the Engineer has given written approval for the specific deviation, nor shall this relieve the Contractor of responsibility for errors or omissions in the shop drawings or samples.

As-built drawings of all drawings for which workshop drawings were submitted shall be provided.

5. SAMPLES AND ALTERNATIVES

Tenders shall be submitted to fully comply with the specifications and drawings.
- Alternatives may only be submitted as an extra over and / or saving.
- Alternative offers shall be clearly marked as ALTERNATIVES OFFER.

Should alternatives be offered, then a sample of the specified and alternative units, as well as the price implication per unit and the entire installation/project, shall be submitted.

Samples or catalogues are required of all the materials / equipment, e.g., fans, grilles, door grilles, standard colours, fixings, standard (BS, SANS, etc) compliant with, point of installation, etc.

These must be submitted timeously to permit enough time for scrutiny, adjustment and resubmission and such that no delivery problems are caused.

The Engineer's scrutiny of shop drawings or samples shall not relieve the Contractor of responsibility for any deviation from the requirements of this Contract, unless the Contractor has informed the Engineer in writing of such deviations at the time of submission of shop drawings or samples and the Engineer has given written approval for the specific deviation, nor shall this relieve the Contractor of responsibility for errors or omissions in the shop drawings or samples.

6. ELECTRICITY SUPPLY

Permanent electricity power supplies, isolators, outlets will be provided by the Electrical Contractor, as requested. The Contractor shall connect his equipment to these, as appropriate, and test & commission his equipment.

Electricity for erection, testing and commissioning purposes shall be arranged/provided by the Contractor from the existing electrical installations as agreed on site with the Employer/User.

Work on infrastructure which will require the existing water and / or power supply, or any other service, to be switched off, shall be scheduled/ carried out outside normal working hours as agreed with the Employer/User.

7. COMPLIANCE WITH THE REGULATIONS, STANDARDS AND CODES

The entire installation shall be carried out in accordance with the latest revisions and amendments of the following:

- National Building Regulations and SANS 10400-O 2011 Edition 3.
- National Building Regulations and SANS 1850
- The Code of Practise for the Wiring of Premises SANS 10142.
- The Occupational Safety and Health Act.
- The Municipal Bye-Laws and any special requirements of the local and supply authorities of the area.
- Telkom regulations and requirements.
- The applicable SANS Specifications and Codes of Practice or, where no SANS Specification or Code exists, the relevant BS or IEC Specifications or Codes of Practice shall apply.

The Contractor shall work safely and in accordance with the provisions of the (Construction Regulation (R3000) and OSH Act (85 of iggs). Should any hazardous situation arise during construction and/or from the work being performed/undertaken, the Contractor shall immediately inform the Main Contractor / Employer/Architect/Engineer of such situation, as well as what action he is taking to rectify this situation, alternatively what assistance/action he may require from the Main Contractor/Employer in this regard.

The Main Contractor/Employer reserves the right to take whatever action as may be required to enforce safety standards should the Main Contractor/ Employer/ Architect/ Engineer discover that the Contractor is working unsafely.

The Contractor shall indemnify the Employer from any claims, losses or expenditure which may arise as a result of the Contractor's actions, omissions and / or negligence to comply with the above-mentioned regulations.

The Contractor is required to appoint his safety co-ordinator on site who shall take responsibility for safety on site and liaise with the Main Contractor/Employer on matters relating to safety.

No claims for extras in respect of failure by the Contractor to comply with any of the above regulations will be considered.

8. NOTICES, FEES AND LOCAL AUTHORITY

The Contractor shall prepare and submit the necessary application forms to the local authority, including all liaison / arrangements, for the inspection, testing and final approval of the installation.

The Contractor shall prepare and arrange and pay the necessary inspection, testing and retesting fees where and as applicable.

The work shall not be considered complete unless final sign off by the Local Authority has been obtained

9. COMPLIANCE CERTIFICATE

The work shall not be considered complete and be handed over until the applicable test and/or the Contractor has issued compliance certificates to the responsible Authorities and copies of these have been submitted to the Employer/Principal Agent/Engineer by the Contractor.

Where it is required that the Engineer should also sign a certificate, the Contractor shall firstly complete and sign such certificate before submission to the Engineer for his signature.

10. ACCEPTANCE TESTS & COMMISSIONING

10.1 Pre-delivery Works Tests

The Contractor shall give the Engineer timeous notice when he is ready to undertake the test. The Contractor shall nevertheless undertake his own tests to ensure compliance and correct operation before informing the Engineer.

During the execution of the tests the Contractor shall record both steady state and transient load, voltage, frequency, oil pressure and engine temperature at regular intervals and shall provide the Engineer with an authenticated test report for his records.

10.2 Acceptance Inspection Test

Acceptance testing of the installation shall take place on site at a time prior to the contract practical completion date. The Contractor shall give the Engineer timeous notice of being ready for such tests.

The Contractor shall provide all necessary test equipment, materials and tools and competent staff for the performance of the acceptance tests of the complete installation on site.

If any portion of the works fails to pass the tests, tests of the said portion after replacement or rectification of the fault at the Contractor's expense shall be repeated within a reasonable time upon the same terms and conditions.

All reasonable expenses incurred by the Employer/Engineer by such repetition of the tests shall be paid to the Employer / Engineer by the Contractor, and shall not be added to the contract sum. Final payments in respect of the contract works will not be certified before all payments due to the Employer/Engineer in this respect have been made. Should the works fail to pass the test and inspection, the time required to remedy faults shall form part of the contract period. The Contractor is advised to perform the test as timeously as possible to allow time to rectify faults within the contract period. The guarantee period on the contract will commence from the date of issue of the Principal Agent's / Engineer's certificate of practical completion.

10.3 Maintenance

Notwithstanding the successful testing of the equipment and test results the Contactor shall remain responsible for the satisfactory operation of the system as a whole for a period of not less than one year from practical completion.

After completion, either in a part or as a whole, the complete installations shall be subject to acceptance tests by the Employer/Engineer. The Contractor shall assist the Employer/Engineer during any test carried out and must supply and operate/handle equipment, tools and instruments for testing purposes.

All labour, power, and all instruments and appliances that may be required for the tests and commissioning, shall be provided by the Subcontractor.

11. PROGRAMME

The Contractor shall at tender stage submit a program indicating lead and installation times & illustrate that these are such that the overall project program will be achieved.

12. FREE ISSUE MATERIALS AND PLANT: NIL

13. MATERIALS

The Contractor shall in all cases and at all times ensure that such equipment/materials comply with SANS code and bear the SANS mark, alternatively BS or other approved mark. Where no such code exists, the applicable NFPA code shall apply. It may at any time be required of the Contractor to provide proof hereof, without any additional cost or compensation to provide such proof and/or to comply herewith.

All materials, equipment and fixings must be corrosion resistant/proof.

Compatibility of equipment, materials and fixings with each other and the environment is vital. Where doubt exists regarding this aspect, it is the Subcontractor's responsibility to request, in writing, additional information from the Employer/ Architect/Engineer.

Interchangeability of equipment: similar and equivalent equipment shall be identical in all respects and to detail such as contacts, fuses, coils, methods of wiring, wiring numbers, instruments, indicating lights and other accessories. It shall be possible to replace any piece of equipment with any similar and equivalent item of equipment under the same contract/subcontract.

Where a certain manufacturer's material or apparatus is mentioned/specified in the drawings or specifications, such materials or apparatus shall be provided as specified, except where an alternative to this condition is allowed in the specifications. Where a specification for material or apparatus is not provided, it shall be understood that all normal requirements for the use of such material or equipment shall apply.

14. CONDUITS AND ACCESSORIES

All conduits and accessories shall be heavy-duty galvanised/thread-less (Bosal), with PVC permissible in the false ceilings and in the brick walls, and shall be recessed unless otherwise specified or approved.

15. MAKE SAFE AND REMOVAL

Make safe and removal shall include but not be limited to the following:

- Testing and disconnecting of all services e.g. water, electrical, etc.
- Removal of plant / equipment / materials as specified, including disconnection, disassembly, cutting up, etc.
- Dumping off site / disposal of materials after giving the Client the opportunity to keep some or all of the removed materials / equipment.
- Providing disposal certificates to the Engineer for disposal of materials like lamps, oil, etc.

16. OUTLET BOXES, DRAW BOXES AND COVER PLATES: (BY OTHERS)

17. INSTALLATION AND CONNECTION OF APPLIANCES AND EQUIPMENT

Any wiring exposed to heat shall be asbestos or silicone rubber insulated or other suitable heat resisting wiring to SANS 529.

The Contractor shall be responsible for the final connections to the appliances and equipment.

The termination onto machines or motors by means of cables or wiring in conduit as specified or approved shall form part of this contract. The Subcontractor shall provide the connections from the respective isolators and to the machine terminals.

18. POWER SUPPLIES TO AND CONNECTION OF SWITCHBOARDS / PLANT / EQUIPMENT / APPLIANCES

Power supplies to the switch / control boards and plant / equipment / appliances will be provided by others, only when, where and how specified with the final connections, terminations, etc. included in this Contract.

19. FIELD-MOUNTED CONTROL AND SWITCHING EQUIPMENT

Plant/Field-mounted equipment shall be mounted:
- As recommended by the Supplier, and/or
- As specified, and/or
- As approved by the Engineer.

Equipment housings, mounting and fixing materials shall be selected for the environment they will be required to operate in.

All circuits, equipment and mountings shall be earthed.

All equipment shall be identified by means of labels.

The Contractor shall submit workshop drawings of mounting details for scrutiny by the Engineer.

20. MANUALS, INSTRUCTION DRAWINGS, PARTS LIST

Three (3) sets of operations and maintenance manuals for the ventilation installation are required. These manuals shall include all calculations workshop and as-built drawings, approvals and CoC's.

A Standard Operating Procedure (SOP) shall be drawn up by the Contractor which shall after approval be included in the manuals and be installed in appropriate locations

The maintenance manual shall also include a section on systems and specific equipment trouble shooting procedures providing sufficient detail of equipment and abnormal conditions to facilitate fault diagnosis.

21. OPERATOR TRAINING

The Contractor shall train 3 Employer staff.

Training curriculum and notes shall be to the satisfaction of the Engineer and must be submitted for comment and approval and shall also be included in the manuals.

Training shall be by an approved Contractor employee at a venue to suit the Client and Contractor and shall consist of theoretical as well as practical training on the actual installation:

- Fundamentals of systems and equipment.
- System operation and action run.
- System troubleshooting and maintenance.
- Emergency procedures.
- Safety aspects.

22. SPARE PARTS AND TOOLS

No spare parts and tools are required

23. MAINTENANCE AND GUARANTEE

A one-year free maintenance and guarantee period is required, which shall be comprehensive and include replacement parts, labour, consumables, travel and all other associated costs. The year maintenance and guarantee period shall also include 2 complete inspections with alarm tests every 6 months.

The Contractor shall submit a written report on each inspection service to the Employer / User and Engineer.

24. SPECIFICATION & DRAWINGS

The specifications, schedules and drawings shall be read together and as a whole.

25. SCHEDULES OF INFORMATION & RATES

The Schedules of Information and Rates shall be completed in full and submitted at tender stage.

All rates and prices shall exclude VAT.

26. INSPECTIONS, TESTS & COMMISSIONING

26.1 General

The Engineer may call for the inspection of testing of all or any goods forming the subject of the Subcontract. The Engineer may be present or represented at any of the tests carried out at any stage during the manufacture or installation.

The Engineer reserves the right to inspect equipment in the manufacturer's works before despatch and provision should be made for this in the programming.

The Subcontractor shall replace any portion of the installation which does not meet with the requirements of this specification as may be found by test or inspection. Such replacement shall be done at his own cost.

26.2 Operational and Capacity Tests

All airflow quantities and pressures associated with the ventilation and air-conditioning systems and the cooling and heating capacities associated with the latter shall be measured, recorded and submitted to the Engineer as test and commissioning data.

27. NOISE AND VIBRATION

Equipment shall be selected, rerated (if necessary) and installed to minimise disturbing audible noise.

In particular the occupation categories of each area e.g. Meeting Rooms, open plan etc, have been designed For NC 40 and NC 35 the contractor shall in conjunction with the Engineer evaluate these within 3 weeks of award of contract.

All equipment generating vibration shall be mounted on anti-vibration mountings and springs to prevent any vibration carry-over to the building structure.

28. FANS

- All fans are of the axial flow type with long casing and come complete with following: Canvas collars, mating flanges mounting feet, pod type attenuators.
- The selections are based on AME, however, other makes can be offered

29. SOUND ATTENUATORS

Sound attenuators shall preferably be of the circular type.

The selection shall be indicated by the sub-contractor.

30. DUCTING

- All ducting shall be manufactured and installed to the latest SMACNA and SABS publications.
- No insulation is required for Fresh Air / Extraction systems
- Insulation to be provided for AC ducting

External ducting shall be manufactured and sealed to ensure no water an permeates the joints duct shall be cross broken on the top to ensure water does not settle on ducts.

All sundry items shall be hot dipped galvanised OR cadmium plated

31. FLEXIBLE DUCTING:

Flexible ducting shall be sound attenuating SONODEC type secured to ducting using metal straps and SMACNA approved aluminium duct tape. Flexible ducting length shall not exceed 1.5m per run.

32. FILTERS

- These shall be washable and 50mm thick
- They shall be housed in a slide out frame 100 deep with cliplock catches, hinge door and fully water proof. They shall be supplied by FILTERMATIC OR PETER MCLEOD FILTERS

32. WEATHER LOUVRES: Similar or equal to TROX AWK type natural anodised signs as per drawing

33. DISK VALVES: These shall be TROX / AME white DL-V type sizes as shown on drawing

34. DOOR GRILLES: Natural anodised

35. SUPPLY AND EXTRACT GRILLES: These shall be natural anodised either double deflection or single defection plus OBD

36. DIFFUSERS: These shall be of RICKARD type. Sizes as per drawing.

37. AIR CONDITIONING UNITS

All new AC units must make use of R410 refrigerant gas.

38. REFRIGERANT PIPING IN CABLE TRAYS

All refrigerant piping will run in cable trays above the units and in ceilings where possible.

Cable trays/ladders shall be of heavy-duty Weldmesh galvanised type.

Cable trays/ladders shall have 50mm turn-up (side rails).

39. AIR CONDITIONING CONTROLS

Each indoor unit shall be supplied with a wired controller. Controllers shall have full functionality as supplied by the manufacturer.

40. ELECTRICAL

Power supplies with local isolators shall be supplied within 1.5 meters of electrical equipment by others unless otherwise indicated.

Final connection will be done by the subcontractor.

Ventilation and AC controls form part of this contract.

The entire installation shall be properly and effectively earthed and bonded as prescribed in the SABS/SANS 10142 Code of Practice for Wiring of Premises.

36. MAINTENANCE CONTRACT

After the completion of the required maintenance period the Employer may require / choose to enter into a comprehensive maintenance contract with the installer for a period which may vary between one and five years, at the sole discretion of the employer.

Maintenance contract may be submitted to Client, after review by the Engineer.
Maintenance recommendations by all equipment suppliers must be stated in Tender after guarantee certificates shall be handed to Engineer for onward forwarding to client.

37. SCHEDULES OF INFORMATION & RATES

The Schedules of Information and Bills of Quantities shall be completed in full and submitted at tender stage.

All rates and prices shall exclude VAT.

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SCHEDULES OF MATERIAL AND EQUIPMENT

These schedules need only be completed for materials and equipment applicable to this contract.
The tender may be regarded as incomplete should these Schedules not be completed in full by the Tenderer.
Where types, etc are filled in below and these do not comply with the specification, this must be specifically pointed out by the Tenderer. Filling in of types, etc below does not, if they do comply with the specification, signify that they are acceptable or will be accepted.

The Tenderer shall provide information additional so that specifically called for here to illustrate the systems, equipment and auxiliaries offered and as required by the specifications, e.g.:

- Spares
- Operating, testing and maintenance tools and equipment and housings/racks for these.

Tenderers shall provide specific information. It is not sufficient to state “AS SPECIFIED”.

These schedules shall be completed for the equipment included in the main offer. Separate schedules shall be completed and submitted for further alternatives, which may or may not be to specification. For alternatives not to specification, the deviations shall be pointed out and explained and the Tenderer shall motivate why they are being offered.

NO	EQUIPMENT / DESIGNATION / INFORMATION	COMPLIANT WITH SPECIFICATION (YES / NO)
A.1.	DRAWINGS	
1.1	Drawings submitted with the Tender:	
	List the drawings furnished with this Tender:	
A.2.	INSPECTIONS, TESTS AND COMMISSIONING	
2.1	Type Tests	
	List type test certificates furnished/with this Tender/to be furnished:	
2.2	Routine Tests	
	List routine tests to be carried out:	
2.3	Special Tests	
	List special tests to be carried out:	
A.3.	OPERATION AND MAINTENANCE MANUALS	
	List the manuals to be provided:	
A.4.	TRAINING OF OPERATING AND MAINTENANCE STAFF	
	Provide details of the proposed training of operating and maintenance staff:	
5.	MAINTENANCE AND SERVICE CONTRACT	
5.1	Provide details of the proposed service contract(s), including scope and specific inclusions and exclusions:	
5.2	Provide address(es) and details of office(s) or workshop(s) from where maintenance will be undertaken:	

NO	EQUIPMENT / DESIGNATION / INFORMATION	COMPLIANT WITH SPECIFICATION (YES / NO)
A.6.	NOISE AND RADIO INTERFERENCE Is it necessary to suppress the system/any items? YES / NO State details of methods of suppression: _____ _____	_____
A.7.	FIXING OF MATERIALS Do all fixing methods to be used comply with the Specification? _____ State any deviation _____	_____ _____
A.8.	FINISHING OF MATERIALS AND EQUIPMENT Furnish details of all finishes requested in the Project Specification _____	_____

B.1 ELECTRICAL INSTALLATION

EQUIPMENT & MATERIAL	DESCRIPTION & MAKE
Electrical Switch / Distribution boards	
Cables and accessories	
Cable ladder/tray	

B.2 Fans

Fresh Air Fan B.1:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan G.1:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan G.2:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan G.3:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan G.4:

(a) Make of fan ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan G.5:

(a) Make of fan ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 1.1:

(a) Make of fan ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 1.2:

(a) Make of fan ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 1.3:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 1.4:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 1.5:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 2.1:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 2.2:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 2.3:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 2.4:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Fresh Air Fan 2.5:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

Extraction Fan 1:

(a) Make of fan .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass of fan……. ..... kg

B.3 Weather Louvres

(a) Make .....

(b) Country of origin .....

(c) Approved by.....

(d) Material of body .....

B.4 Filters

(a) Make .....

(b) Country of origin .....

(c) Approved by .....

(d) Material of body .....

B.4 Sound Attenuators

(a) Make .....

(b) Country of origin .....

(c) Approved by .....

(d) Material of body .....

AC G.2 & G.3

(a) Make of Unit .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ..... kg

(h) Refrigerant type .....

AC G.4

(a) Make of Unit .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ..... kg

(h) Refrigerant type .....

AC G.6

(a) Make of Unit .....

(b) Country of origin of fan.....

(c) Number of phases .....

(d) Rated power of motor..... k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ..... kg

(h) Refrigerant type .....

AC G.7

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC G.8

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC G.11

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC G.9

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC G.10

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC G.12

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 1.3

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 1.4

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 1.5

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 1.7

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 1.9

(a) Make of Unit ……..... .....

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 1.10

(a) Make of Unit ……..... .....

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 1.12

(a) Make of Unit ……..... .....

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 1.13

(a) Make of Unit …….....

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 1.15

(a) Make of Unit …….....

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 1.16

(a) Make of Unit …….....

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 1.17

(a) Make of Unit ……..

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…….. k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..…….....kg

(h) Refrigerant type ……..…….....

AC 1.18

(a) Make of Unit ……..

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…….. k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..…….....kg

(h) Refrigerant type ……..…….....

AC 1.6

(a) Make of Unit ……..

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…….. k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..…….....kg

(h) Refrigerant type ……..…….....

AC 1.11

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 1.14

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 1.8

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 2.1

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.3

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.5

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.6

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.7

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.8

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.9

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.10

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.11

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.12

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.13

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.14

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.15

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 2.16

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 2.2

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..……..... .....

AC 2.4

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.17

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....

AC 2.18

(a) Make of Unit ……

(b) Country of origin of fan.……

(c) Number of phases ……

(d) Rated power of motor.…… k W

(e) Maximum starting current. Amp ..... Amp

(f) Amperage at full load.amp..... Amp

(g) Total mass ……..……..... kg

(h) Refrigerant type ……..…….....