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	FORMAT AND CONTENT OF TECHNICAL SPECIFICATIONS FOR MATERIAL, EQUIPMENT AND SERVICES	ISSUE 0
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1 SCOPE

This Standard details the requirements for the format and content of AA technical specifications for Equipment supplied to Group companies.

2 GENERAL CONSIDERATIONS

2.1.1 Safety: Statutory or accepted safety factors shall be observed.

2.1.1.1 Statutory requirements do not need to be invoked unless it is necessary to reference a particular requirement

2.1.1.2 Assessable: Requirements should be based upon functionality of the Equipment wherever possible.

Phrases having subjective interpretation shall not be used. e.g. 'Free from harmful defects'

2.1.2 Self-contained: Specifications shall be explicit, unambiguous, concise, and expressed simply in technically correct terminology.

2.1.3 Optional requirements

Requirements involving the exercise of option on the part of the Company shall incorporate a suitable phrase, 'unless otherwise specified on order or contract' or 'as required/specified on order or contract'. Occasionally it is necessary to use the phrase 'as agreed upon between Company and Contractor but the circumstances should be given very careful consideration and the following points should be borne in mind:

- Company's option may be exercised. There is no compulsion to use a specification in its entirety, i.e. the Company may state 'AA Specification except that Clauses 6 and 8 shall be omitted.
- Contractor's option may be exercised by not tendering.
- Non-standard requirements conflict with standardisation.
- Order/Contract complication is increased as each alternative has to be selected and specified on contracts and orders.


2.1.4 Cost effectiveness: Requirements should be sufficiently stringent to produce a product of the requisite quality, interchangeability, etc.

2.1.4.1 Compatibility: Documents should not duplicate other requirements such as General Conditions of Contract

2.1.5 Practical: Are material, components, processes, etc, specified readily available.

2.1.6 Essential: Not covered in a different way by another requirement.

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2.1.7 Proprietary products

The use of trade marks, copyrighted and proprietary products shall be avoided where possible and limited to those instances where the required product cannot be specified adequately without the use of the name.

Approved brands or Contractors may be listed in an appendix. Where these brands vary globally each local identification should be included.

3 SPECIFICATION FORMAT

3.1 FONTS

The header and headings of the document shall be Arial 12.

The text of the document shall be Arial 11.

The footers shall be Arial 8

Specifications shall include the following clauses in the sequence stated:

- Index
- Scope
- Technical requirements to be specified by the Engineer
- Definitions
- Requirements
- Quality Assurance provisions
- Test and inspection methods
- Packing and marking
- Appendix A: Related documents
- Appendix B: Record of amendments
- Any subsequent appendices

3.2 INDEX


The index shall contain contents of all main and first level sub-headings (See Clause 7.3 and index of this specification).

Note: The construction and critical review of an index serves to clarify heading, eliminate duplication, classify and bring together related subjects, standardise presentation of each clause and aid easy use of the specification.

3.3 HEADINGS

Each clause and sub-clause shall have a heading. This shall be the subject of the Clause and as brief as possible.

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3.4 FOOTNOTES

Footnotes should be avoided. When an aside with legal standing is required it should take the form of a note at the foot of the sub-section.

4 CONTENT

4.1 SCOPE CONTENT

The subject matter of the specification shall be kept within the limits defined in the scope, consequently the scope shall be correct, adequate and restricted to a concise statement of the commodity covered by the specification

(e.g. 'This specification details the requirements for three types of diaphragm valves').

Amplification may be necessary in order to avoid ambiguity such as an explicit statement of commodities not covered

(e.g. 'Requirements for valves with stainless steel spindles are not covered by this specification').

4.2 TECHNICAL REQUIREMENTS TO BE SPECIFIED BY THE ENGINEER

The clause shall start with the sentence 'The following requirements shall be specified on every order, contract, or invitation to tender'. List each alternative the specification user has to select and specify with each order, e.g.

- Colour (see Clause.....)
- Size (see Clause.....) etc.

4.3 DEFINITIONS

Definitions shall be in absolute agreement with dictionary or standard glossaries of technical terms on the subject.

Definitions shall be detailed in the specification and the introductory sentence shall be:

'For the purpose of this specification the following definitions shall apply'

These shall be listed in alphabetical order. Give only those definitions that are necessary.

Where terms are defined in the General Conditions of Contract, these shall be referred to.


4.4 REQUIREMENTS

4.4.1 Phraseology

"Shall" indicates mandatory.

(e.g. 'The width shall be 250mm minimum').

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4.4.2 Sub-sections

Requirements shall be given in one clause which may be sub-divided and grouped together for clarity

(e.g. 'Materials', 'Components', 'Dimensions', 'Chemical', 'Electrical', 'constructional' 'Finished Product', etc.)

4.4.3 Metrication

The ISO metric system shall be used. Imperial units shall only be used when dictated to by circumstances.

4.4.4 Presentation of variables

Type, size, class, dimensional, compositional and other requirements shall preferably be tabulated e.g.

TABLE 1 - FAN MOTOR REQUIREMENTS

FAN TYPE	MOTOR FRAME SIZE SABS 478	MAX POWER kW	MIN POWER FACTOR	TEST METHOD
A	L 100 SA	10	0.85	SABS 478
B	L 130 SA	20	0.90	SECTION 4.3
C	L 160 SA	30	0.93	SECTION 4.3

4.4.5 Requirement sequence

The requirement sequence shall follow the manufacturing sequence, general and qualitative requirements shall be followed by quantitative requirements. If there is no particular logical order, requirements shall be given in the order in which they are to be assessed.

4.4.6 Tolerances


Tolerances shall be specified or referred to in the Requirement Clause. The use of upper and lower limits is preferred to that of a nominal value and tolerances.

4.4.7 Other specifications

International and National standards should be invoked when they are suitable.

Reference to other specifications shall be by identification letters and number only

(E.g. AAC Specification 164004; ASTM A101; SABS Method 24).

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4.4.8 Assessment methods

Reference shall be made to the method of test to assess compliance. In such cases, the phrase 'When tested in accordance with Clause.....' shall be used, it may be incorporated in the requirement, e.g. 'When subjected to a temperature of 70°C for 48 hours, the product shall remain stable'.

When reference to the relevant test method is not considered necessary, it may be omitted from a requirement, e.g. analysis methods for material composition.

5 QUALITY ASSURANCE PROVISIONS

5.1 CRITICAL ITEMS

Items classified as 'Critical' and 'Major' shall include the following Clause.

"AA STD 100 shall apply."

5.2 INSPECTION

When an AA specification is produced there is an implicit requirement for ensuring conformance of the product. Provision may be made for this by using the paragraph:

'The Contractor shall supply Independent certification that the product complies in all respects to this specification with every batch supplied to the Company.'

5.3 SAMPLING

The paragraph below shall always be used.

'The following sampling procedure shall be applied to determine whether a lot complies with the requirements of this specification. The sample(s) so drawn shall be deemed to represent the lot and shall be used by the Company in cases of dispute'.

5.3.1 Production lot procedure: for items having a critical safety connotation to personnel or equipment.

5.3.2 Statistical sample procedure: as appropriate to the product and end use.


5.4 DESIGN REVIEW

Where a specification leaves detail design to the contractor (e.g. a 'Performance' specification) a design review may be necessary. In such instances the following (or similar) paragraph should be used:

'The Contractor shall provide the drawings and design calculations as listed below'.

The required data should then be listed.

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6 PACKING AND MARKING REQUIREMENTS

Marking, labelling and packing of the final product shall be cross-referenced with the definitions of 'Lot' and 'Batch' which will vary according to the application. (Failure to achieve this cross-referenced renders sampling for assessment of compliance difficult).

Packing requirements shall always cover preservation, protection against damage, shipment protection, handling requirements

7 TEST METHODS

7.1 STANDARD TEST METHODS

Shall be used where possible (ISO, IEC, ASME, Din, SABS, BS etc).

7.2 FORMAT

Tests conducted by different laboratories shall not be intermingled. It may be necessary to sub-divide tests for this purpose, e.g. 'Electrical Tests', 'Mechanical Tests', etc

The section shall cover, in the order given, the relevant items below:

7.2.1 Method of inspection

7.2.1.1 Sequence of tests if a similar test sequence is specified in an International specification, the methods shall be given in that sequence: if not, they should follow a logical sequence.

7.2.2 Standard test conditions: of temperature, humidity, etc.

7.2.3 Number of samples


7.2.4 Test Methods:

All non-destructive tests shall precede destructive tests. The measurement accuracy requirements shall be defined.

Each method should contain, in the order given, the following items as relevant:

- Apparatus: Avoid the use of trade names, if possible, but refer to BS, ASTM etc.
- Materials used
- Calculation, evaluation and reporting of results: The introductory sentence shall be 'The product shall be deemed to comply if it meets the requirements specified in Clause.....' The clause number given shall be that applicable from the 'requirements'.
- Evaluation shall not include requirements (e.g. 'The specimen shall not fail', 'The shaft shall not fracture'). These shall always be specified in the 'requirements'.
- Calculation formulae, if used, shall always be stated with defined symbols and using SI units.
- The test methods shall specify only those parameters required for evaluation (e.g. 'record failure voltage': 'state 2% proof stress').

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8 APPENDICES

Appendices shall be headed Appendix A, Appendix B, etc.

Two appendices shall be necessary in most specifications.

- Appendix A in which the documents related to the specifications are listed and
- Appendix B in which a record of amendments is detailed.

Other appendices may be used as a supplement to provide information to the text of the specification.

Where information such as graphs, figures and tables cannot be accommodated in the document they shall be detailed on an AAC standard drawing sheet and referenced in the specification.

9 SPECIFICATION NUMBERING


The specification reference number shall be numbered using the first three digits of the AAC Stores Catalogue code (AMCAT) for the series in which the material occurs, followed by a sequential number taken from the standards register for that series.

E.g. the first three digits of the nine digit stores catalogue code for degreasing fluids is 163. The first degreasing fluid specification would be 163001, the second 163002, etc.

10 SPECIFICATION PROCESSING

AAC specifications shall be processed in accordance with the requirements of AA STD P1


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APPENDIX A: RELATED DOCUMENTS

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APPENDIX B: RECORD OF AMENDMENTS

Issue 0 : Based upon AAC SPECIFICATION 999002 Issue 7

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