
INTERNATIONAL STANDARD



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Aircraft electrical circuit diagrams

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2042 was drawn up by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, and circulated to the Member Bodies in June 1970.

It has been approved by the Member Bodies of the following countries:

Australia	Greece	South Africa, Rep. of
Belgium	India	Spain
Canada	Israel	Switzerland
Czechoslovakia	Japan	Turkey
Egypt, Arab Rep. of	Netherlands	United Kingdom
France	New Zealand	U.S.A.

No Member Body expressed disapproval of the document.

Aircraft electrical circuit diagrams

1 SCOPE AND FIELD OF APPLICATION

This International Standard provides for uniformity in the preparation of aircraft electrical diagrams to permit the greatest ease of drawing consistent with the need for clear definition and legibility. It is intended that these drawings should be of a format suitable for use as production drawings or for reproduction in wiring diagram manuals.

A diagram illustrating the application of the principles laid down in this International Standard is shown in the Annex.

2 SYMBOLS

Symbols used in the preparation of aircraft electrical diagrams shall be selected from those in the appropriate booklet comprising IEC Publication 117, *Recommended graphical symbols*.¹⁾

3 PRESENTATION

3.1 Electrical diagrams shall be drawn to a size suitable for reproduction, in accordance with the appropriate national standard.

NOTE — All dimensions quoted in this International Standard relate to sheets not larger than ISO size A3 (297 mm × 420 mm; 11.69 in × 16.54 in) and should be proportionately increased in larger sheets.

3.2 If a complex component appears more than once on a diagram it is only necessary to draw the symbol once. Repetitions of the component may be in the form of a box with the appropriately annotated connections only.

3.3 All symbols shall be drawn to a size compatible with legibility upon reproduction. Component outlines when required should be represented by the appropriate chain-dotted line.

3.4 Lines shall be sharp and dense to obtain good reproduction. As most diagrams will be altered in size on reproduction, no exact thickness of line is specified.

4 LAYOUT

In general, electrical diagrams should preferably be laid out with the power supplies either at the left or top of the drawing.

5 CIRCUIT CONDITION

5.1 Electrical diagrams shall be drawn in the "aircraft-on-the-ground" conditions with the main power off. In general, all switches should be off and all relays, solenoids and contactors shown in their de-energized state. Circuit-breakers shall be drawn in their closed condition.

5.2 Should it be necessary to deviate from this form of presentation, a note should be added to define clearly the state of the aircraft as applied to the particular diagram. For example, for automatic pilot cut-out switches, such a note might read :

Aircraft system in take-off state

Main power on

Flaps down, elevator gear change "in coarse"

6 TITLES

6.1 Captions for technical publications shall be towards the right-hand edge of the bottom margin of the diagrams in letters which, when the drawing is reproduced to the size specified in the appropriate national standard, shall not be less than 2,5 mm (0.10 in) high.

1) Pending the publication of a current draft by IEC/TC 3 for inclusion as a separate IEC Publication 117 booklet for aircraft symbols, reference should be made also to ISO 1339, *Aircraft electrical symbols* (at present at the stage of draft).

6.2 All sub-titles shall be situated centrally at the top of the appropriate group and every effort made to use a standard nomenclature; the word "EQUIPMENT" must not be used as a group heading. An approximate location of all components should be indicated.

6.3 Component titles shall be at least 1,5 mm (0.06 in) high and may occupy more than one line. When titles will not fit within the outlines of components, sufficient space to take the title must be left either above or below the component symbol.

6.4 Component titles, sub-titles and notes on diagrams must not be underlined.

7 TERMINAL IDENTIFICATION

Numbers associated with a symbol for a termination or numbered earth shall be 1,5 mm (0.06 in) when reproduced. They should preferably appear within the symbol. Alternatively, where the space permits, the letters or numbers may be placed immediately outside the symbol.

8 NOTES

All notes must appear together in one part of the diagram, with suitable means of reference at the relevant positions on the diagram.

9 CABLE RUNS

9.1 Electrical diagrams shall be drawn showing conductors in straight line runs where possible. To this end, pin or terminal codes need not be arranged in alphabetical or numerical order, but varied where necessary in order that connecting conductors may be shown running straight.

9.2 When several conductors are shown as parallel lines, they should be grouped with wider spacings between the groups. Normally, the minimum spacing between conductors when reproduced should be 2,5 mm (0.10 in).

10 IDENTIFICATION

10.1 The revision state of all electrical diagrams shall be suitably identified.

10.2 All electrical diagrams should provide adequate information regarding cable sizes, cable specifications, components and circuit identification.

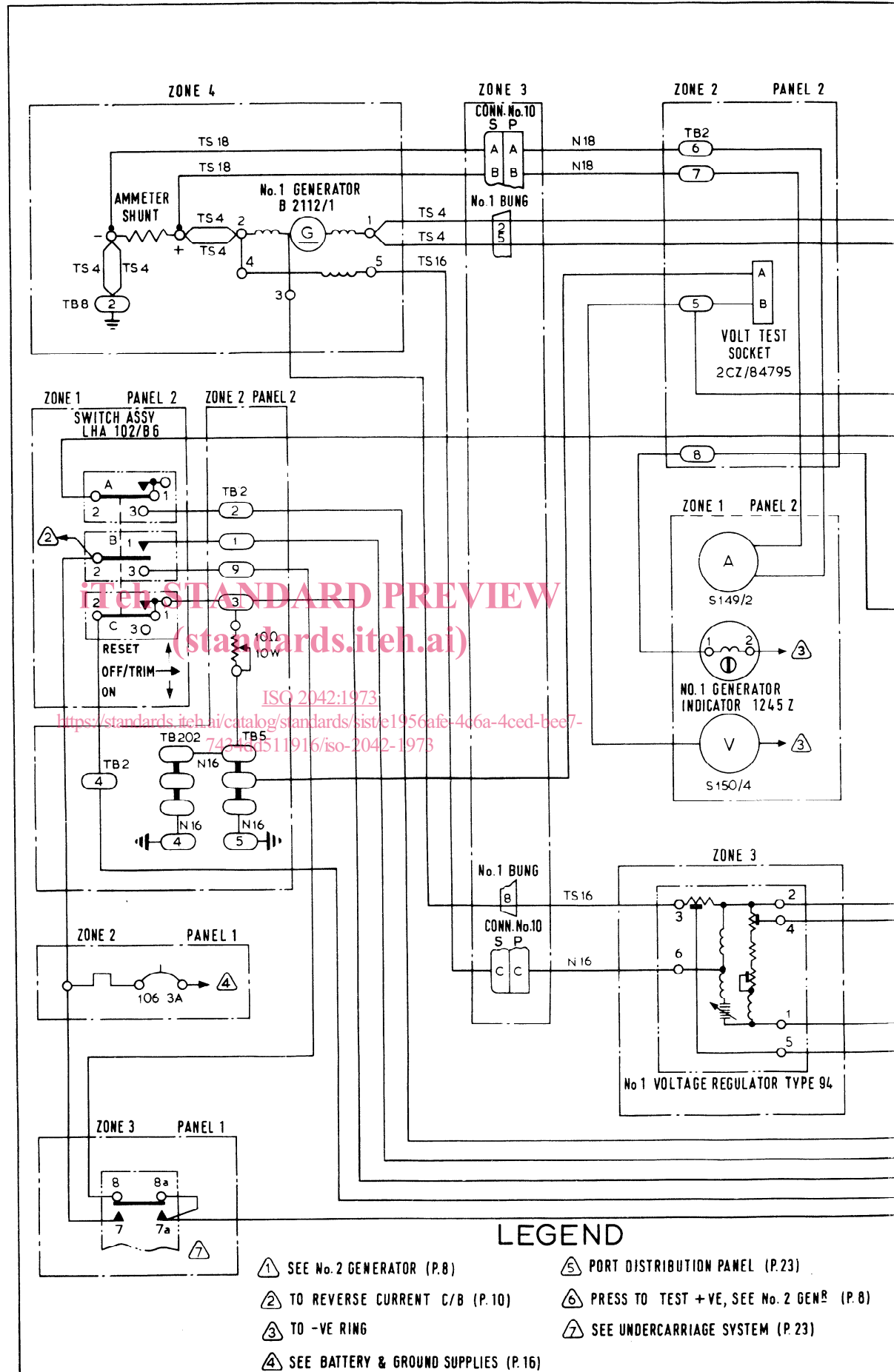
11 CROSS-REFERENCES

11.1 In general, cross-reference information must be indicated on all electrical diagrams. Where the complete connection of a cable is not shown on one page it must be continued on another page. An arbitrary code number or character should be assigned and printed in a triangle on each page adjacent to the appropriate connection and a list showing the related diagram references provided.

11.2 Cross-referencing should whenever possible be restricted to a minimum number of drawings so that full information of a particular fact can be obtained from reference to not more than two drawings.

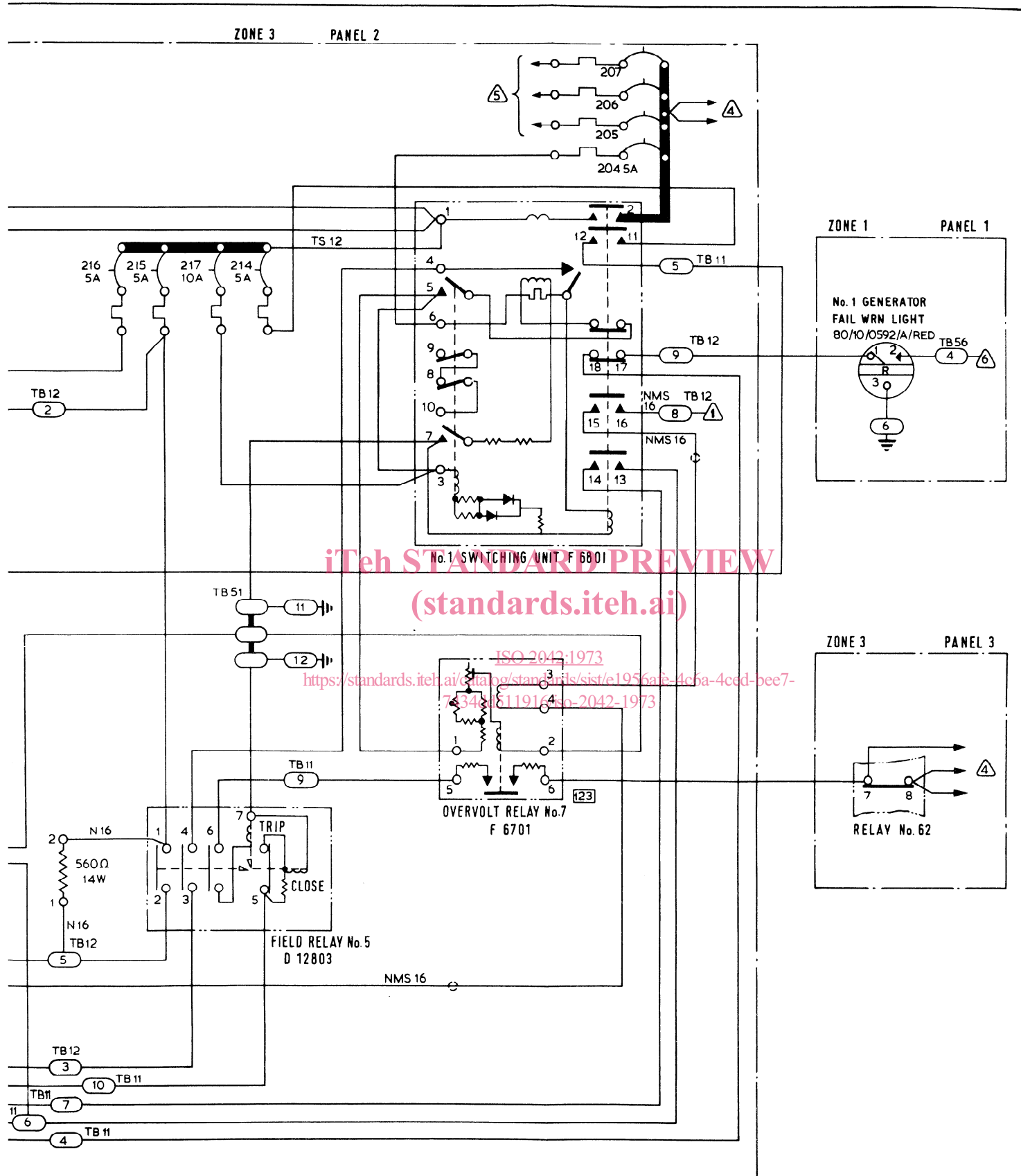
12 COLOUR CODING

When colour coding abbreviations are used, a key shall be provided on the drawing.



As an alternative to showing the part number of the component of the drawing, a boxed serialized equipment reference number is required, i.e. description of unit, part number and manufacturer. The alternative method is preferred on complicated diagrams.

AMPLE OF ELECTRICAL DIAGRAM



NOTES

ALL CABLES ARE NYVIN 22 UNLESS OTHERWISE STATED,
N=NYVIN, TS=TERSIL, NMS=NYVINMETSHEATH

may be shown adjacent to the component (see overvolt relay). A master equipment list included in the wiring diagram manual will then provide the information

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